

# WOAH Reference Laboratory Reports Activities 2025

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## LABORATORY INFORMATION

<b>*Name of disease (or topic) for which you are a designated WOAHO Reference Laboratory:</b>	Brucellosis (Brucella abortus, Brucella melitensis, Brucella suis)
<b>*Address of laboratory:</b>	Via Campo Boario, 64100 Teramo
<b>*Tel:</b>	+390-861 33 26 26
<b>*E-mail address:</b>	f.demassis@izs.it
<b>Website:</b>	www.izs.it
<b>*Name (including Title) of Head of Laboratory (Responsible Official):</b>	Dr Nicola D'Alterio, DVM, Director General
<b>*Name (including Title and Position) of WOAHO Reference Expert:</b>	Dr Fabrizio De Massis, DVM, Head of Branch Laboratory
<b>*Which of the following defines your laboratory? Check all that apply:</b>	Governmental Research agency

## 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

Diagnostic Test	Indicated in WOAHO Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
<b>Indirect diagnostic tests</b>			
RBT	Yes	155910	20
CFT	Yes	23309	20
SAT B. canis	No	345	0
FDC B. canis	No	344	0
IFAT B. canis	No	330	0
I-ELISA (bovine serum)	Yes	3724	0
C-ELISA (Bovine / Ovine / Caprine sera)	Yes	1308	20
CFT RB51	No	820	0
<b>Direct diagnostic tests</b>			
Bacterial isolation	Yes	543	0
Brucella identification and biotyping (animal strains)	Yes	253	0
Brucella identification and biotyping (human strains)	Yes	2	0
Real-Time PCR	Yes	3084	0
PCR-RFLP (identification)	Yes	400	0

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Bruceladder	Yes	288	0
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## TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOA?H?

No

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

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient WOA?H Member Countries	Country of recipients
Rose Bengal Antigen	RBT	Produced (63680 ml) and provided	119460	0	1	ITALY,
Brucella RB51 Antigen	CFT-RB51	Produced (5000 ml) and provided	1014	0	1	ITALY,
Brucella canis SAT Antigen	SAT	Produced (0 ml) and provided	330	0	1	ITALY,
B. ovis antigen for CFT	CFT	Produced (0 ml) and provided	33	12	2	ITALY, SPAIN,
LPS Antigen from Brucella abortus s 99	Various	Produced (140 ml) and provided	0	0	1	ITALY,
Rabbit Serum positive for Brucella canis	Positive control for all serological methods	Produced (0 ml) and provided	5.5	0	1	ITALY,
Sheep Serum negative for Brucella spp.	Negative control for all serological methods	Produced (0 ml) and provided	66	0	1	ITALY,
Sheep Serum Positive for Brucella spp.	Positive control for all serological methods	Produced (0 ml) and provided	12	0	1	ITALY,
Bovine, ovine, caprine and bufaline sera positive for Brucella ring trials	Sera for interlaboratory proficiency testing	Produced (0 ml) and provided	800	0	24	ITALY,
Negative Buffalo Serum for Brucella spp.	Negative control for all serological methods	Produced (4000 ml) and provided	128	0	24	ITALY,
Positive Buffalo Serum for RB51	CFT	Produced (0 ml) and provided	14	0	1	ITALY,
Negative Standard Bovine Serum for Brucella abortus	Negative control for all serological methods	Produced (4000 ml) and provided	128	0	1	ITALY,
Pig Serum Positive for Brucella suis	Positive control for all serological methods	Produced (0 ml) and provided	10	0	1	ITALY,
Pig Serum Negative for Brucella suis	Negative control for all serological methods	Produced (0 ml) and provided	10	0	1	ITALY,
Positive Bovine Milk for B. abortus	MRT for control and ring trial	Produced (0 ml) and provided	300	0	1	ITALY,
Weak Positive Bovine Milk for B. abortus	MRT for control and ring trial	Produced (0 ml) and provided	300	0	1	ITALY,
National Standard Serum for Brucella abortus	Positive control for all serological methods	Produced (0 ml) and provided	120	0	1	ITALY,
Milk contaminated with B. suis	Ring Trials	Produced (0 ml) and provided	200	0	1	ITALY,
Sheep Serum Positive for Brucella melitensis	Positive control for all serological methods	Produced (0 ml) and provided	200	0	1	ITALY,
Goat Serum Positive for Brucella spp.	Positive control for all serological methods	Produced (0 ml) and provided	200	0	1	ITALY,
Water Buffalo Serum Positive for Brucella	Positive control for all serological methods	Produced (0 ml) and provided	300	0	1	ITALY,

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spp.						
Brucellin B115	Research Project	Produced (1200 ml)	0	0	1	ITALY,
Brucella spp. Strains (DNA) PCR Standardization Produced (0 ml) and provided 10 aliquots of 20µl 0 1 Italy	PCR Standardization	Produced (0 ml) and provided	10 aliquots of 20µl	0	1	ITALY,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOA Members?

## TOR3: NEW PROCEDURES

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

No

7. Did your laboratory validate diagnostic methods according to WOA Standards for the designated pathogen or disease?

Yes

Name of the new test or diagnostic method developed	Description and References (Publication, website, etc.)
Detection of Brucella spp. through real-time PCR	Revision of the Method: 2025
Detection of Brucella spp. in organic material	Revision of the Method: 2025
Detection of Brucella antibodies in bovine and buffalo milk through indirect ELISA	Revision of the Method: 2024
Detection of Brucella antibodies in bovine, buffalo, ovine-caprine, and swine serum through indirect ELISA	Revision of the Method: 2024
Official control of buffered Rose Bengal antigen for serological diagnosis of brucellosis	Revision of the Method: 2023
Official control of Complement fixation antigen for serological diagnosis of brucellosis	Revision of the Method: 2007
Detection of antibodies against Brucella canis in dog serum through Slow Agglutination Test (mSAT)	Revision of the Method: 2023
Detection of antibodies against Brucella canis in dog serum through Indirect Immunofluorescence Assay (IFA)	Revision of the Method: 2021
Detection of antibodies against Brucella spp. (smooth strains) through Rose Bengal test and complement fixation test	Revision of the Method: 2025
Detection of anti-Brucella ovis antibodies by complement fixation test (CFT)	Revision of the Method: 2021
Detection of antibodies against Brucella abortus strain RB51 in serum through Complement Fixation test (CFT)	Revision of the Method: 2024
Production of s-LPS antigen from Brucella abortus strain 99 and other s-LPS producing bacteria	Revision of the Method: 2023
Production of Brucella ovis HSE antigen for complement fixation test (CFT)	Revision of the Method: 2025
Production of Brucella canis antigen for serum agglutination test (SAT)	Revision of the Method: 2024
Production of Brucella abortus RB51 antigen for complement fixation test (CFT), live and inactivated	Revision of the Method: 2024
Molecular typing of Brucella spp.	Revision of the Method: 2022
Brucella: species and biovar identification	Revision of the Method: 2023
Molecular typing of Brucella spp. and Brucella vaccine strains using PCR Bruce-Ladder	Revision of the Method: 2023
Molecular typing of Brucella suis using PCR –Ladder suis	Revision of the Method: 2024
Detection of Brucella spp. in food for human consumption	Revision of the Method: 2024
Identification of Brucella abortus, melitensis, ovis, suis 1-4, canis, and ceti/pinnipedialis species through real-time PCR Revision of the Method: 2023	Revision of the Method: 2023
Molecular characterization of Brucella spp. through MLVA Revision of the Method: 2017	Revision of the Method: 2017
NGS data analysis for Brucella spp. genotyping	Revision of the Method: 2024
Detection of Brucella antibodies in bovine, buffalo, ovine-caprine, and swine serum	

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through competitive ELISA

Revision of the Method: 2024

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

9. Did your laboratory validate vaccines according to WOAHS Standards for the designated pathogen or disease?

## TOR4: DIAGNOSTIC TESTING FACILITIES

10. Did your laboratory carry out diagnostic testing for other WOAHS Members?

Yes

Name of WOAHS Member Country seeking assistance	Date	Which diagnostic test used	No. samples received for provision of diagnostic support	No. samples received for provision of confirmatory diagnoses
MALTA	2025-12-20	CFT	20	20
MALTA	2025-12-20	RBT	20	20

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAHS Member?

No

## TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	WOAHS Member Countries involved other than your country
ERFAN. Enhancing Research and Development in Africa through WOAHS Reference Laboratories and Collaborating Centres, and Poles of Excellence, as result of WOAHS twinning Projects - ERFAN	5 years (2019-2024) To be Renewed	ERFAN is an WOAHS network to facilitate and strengthen collaboration among countries of the SADC Region and Arab Maghreb Union (UMA) as well as IZSAM in the Animal health and food security domains.	WOAHS CC University of Pretoria National Central Veterinary Laboratories, and some Faculties of Veterinary Science of other African countries: Angola, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe	ALGERIA LIBYA MAURITANIA MOROCCO MOZAMBIQUE NAMIBIA TANZANIA TUNISIA ZAMBIA ZIMBABWE
WOAHS research project on "Filling the gap: production and validation of reagents and tools for the diagnosis and control of camel-specific pathogens".	2 years (2024-2026)	WOAHS research project	Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" and Abu Dhabi United Arab Emirates (ADAFSA)	UNITED ARAB EMIRATES
EUOHZ Report	4 years 2025-2030	Provision of support to EFSA and to ECDC in the production of the EU One Health Zoonoses report and in related zoonoses online interactive data visualisation dashboards and zoonoses story maps	IZSAM (lead) + different experts coming from the EU Member States	
Twinning Project France-Italy-Tunisia "Renforcement du dispositif national d'encadrement vétérinaire de la santé animale" - TN 18 ENI AG 01 21) 3 years (2022-2025) Twinning project founded by the European Union Tunisian Veterinary Services Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" France Vétérinaire International France Tunisia	3 years (2022-2025)	Twinning project founded by the European Union	Tunisian Veterinary Services Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" France Vétérinaire International	FRANCE TUNISIA

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Twinning Project France-Italy-Madagascar "Appui au renforcement du dispositif de surveillance et de contrôle de la qualité et conformité sanitaire et phytosanitaire des produits agricoles et agroalimentaires à Madagascar", - MG 19 FED AG 01 21.	2 years (2022-2025)	Twinning project founded by the European Union	Malgasi Veterinary Services Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" France Vétérinaire International	FRANCE MADAGASCAR
Research Project (PhD) Seroprevalence and characterization of Brucellosis in Ethiopia and risk assessment of human in pastoral regions	3 years (2022-2025)	Technical, administrative and logistical support from the Zooprohylactic Institute of Teramo-WOAH Reference Laboratory (RL) for Brucellosis, the University of Pretoria and the National Animal Health Diagnostic Institute Center (NAHDIC) of Sebeta, Ethiopia, as part of the research project	Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" University of Pretoria	SOUTH AFRICA
Small Scale Research Project (SSRP) Brucellosis surveillance in Mozambique, Tanzania, Zambia and Zimbabwe" – BSA	3 years (2022-2025)	Technical, administrative and logistical support to the TVLA-Tanzania, LCV-Mozambique, CVRI-Zambia, CVL-Zimbabwe and WOAHL RL Brucellosis IZSTE within the research project	Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" TVLA-Tanzania, LCV-Mozambique, CVRI-Zambia, CVL-Zimbabwe	MOZAMBIQUE TANZANIA ZAMBIA ZIMBABWE
WOAH Laboratory Twinning Project between IZS-Teramo (Italy) and INMV-LCV (Algeria) on RVF, PPR, BTV, Brucellosis, and Salmonellosis	2 years (2024-2026)	Technical, administrative and logistical support to the INMV-LCV	Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" and INMV-LCV	ALGERIA
European Partnership for Animal Health and Welfare (EUPAHW): Project: 101136346 — EUPAHW — HORIZON-CL6-2023-FARM2FORK-01 - BRUCELLIN	3 years (2025-2027)	To develop novel integrated approaches for brucellosis prevention, control and eradication using brucellin-derived tools in production animals	ANSES (EURL Brucellosis - France) FLI (Germany) INIAV (Portugal) IZS-Teramo (Italy) CNR Bari (Italy) CEA (France) ARSIA (Belgium) SCIENSANO (Belgium)	BELGIUM FRANCE GERMANY PORTUGAL

13. In exercising your activities, have you identified any regulatory research needs\* relevant for WOAHL?

No

## 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:

The Reference Laboratory collaborates with the WOAHL CC for veterinary epidemiology, Teramo, in managing and updating the Information System on animal brucellosis, taking care, in particular, of the publication of a dashboard summarizing indicators on the progress of the national plans for the eradication of bovine, buffalo, sheep and goat brucellosis in non-officially free territories. Criteria for the calculation of main epidemiological indicators have been defined in order to highlight the dissemination or persistence of infection in specific geographic areas. The dashboard summaries are produced by integrating the laboratory data with the data generated by veterinary services activities.

As part of its institutional activities in collaboration with the national reference centers for brucellosis and epidemiology, the CRNB has provided technical support in the analysis and organization of the data and information necessary for the preparation of national plans for the eradication of bovine, buffalo, sheep and goats brucellosis in Italy, submitted to the European Commission for the approval of the financial contribution and the necessary changes due to the entry into force of Regulation (EU) 2016/429 (the so-called Animal Health Law - AHL).

The lab also contributed to the drafting of the EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control). 2024. The European Union One Health 2024 Zoonoses Report. EFSA Journal. Volume23, Issue12 December 2025. e9759 <https://doi.org/10.2903/j.efsa.2025.9759>

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:

International and national research conference and seminars. See publications below

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:

15

1. Jeffrey T. Foster, Kevin G. Daly, Giuliano Garofolo, 2025 Chapter 1 - Historical context and background of brucellosis in the world, in: *Brucellosis: the silent threat for livestock and human health*. Editor(s): Maryam Dadar (Ed.), Brucellosis, Academic Press, 2026, Pages 3-10, ISBN: 978-0-443-30067-7, DOI: 10.1016/C2023-0-52191-3
2. De Massis F., 2025. Chapter 21 - Brucellosis control, eradication, and prevention in: *Brucellosis. The Silent Threat to Livestock and Human Health*, Maryam Dadar (Ed.), Academic Press, Elsevier, 281-298. ISBN: 978-0-443-30067-7. DOI: 10.1016/C2023-0-52191-3.
3. De Massis F., 2025. Chapter 34 - Brucellosis and Food Safety in: *Brucellosis. The Silent Threat to Livestock and Human Health*, Maryam Dadar (Ed.), Academic Press, Elsevier, 451-466. ISBN: 978-0-443-30067-7. DOI: 10.1016/C2023-0-52191-3.
4. Schirone, M., Perletta, F., Paparella, A., & Luciani, M. (2025). Human brucellosis: Incidence, prevention and strategies for control. *Advances in health and disease* (pp. 123-141) Nova Science Publishers, Inc.
5. Marenzoni, M. L., Attura, S., Favi, B., Antognoni, M. T., Conti, M. B., Felici, A., Maresca, C., Scoccia, E., Bonci, M. R., Pistolesi, A., Zanghi, S., Confaloni, A., Sylla, L., Marini, D., Massis, F. D., Sacchini, F., & Tittarelli, M. (2025). Absence of *Brucella canis* Detection in Dogs from Central Italy: Implications for Regional Surveillance and Zoonotic Risk. *Epidemiologia*, 6(4), 71. <https://doi.org/10.3390/epidemiologia6040071>
6. Abichu, G., De Massis, F., Rufael, T., Scacchia, M., Aliyi, A., Garofolo, G., & van Heerden, H. (2025). Seroprevalence, characterization, and risk factors of brucellosis in cattle, sheep, goats, and camels in the Oromia region, Borena Zone, Ethiopia. *Preventive Veterinary Medicine*, 106634. <https://doi.org/10.1016/j.prevetmed.2025.106634>
7. Paolo Pietro Albonetti, Ivano Repetto, Giorgio Chiaranz, Stefano Ferretti, Fabrizio De Massis, 2025. Census and Control of *Columba livia var. domestica* in Genoa, Italy: Trends in the Higher-Central District (2010-2017) *Veterinaria Italiana*, Vol. 61 No. 4 (2025) <https://doi.org/10.12834/VetIt.3739.35888.2>
8. Cossu C.A., Wentzel J, de Klerk L.-M., De Massis F., Godfroid J, van Schalkwyk L.O., Garofolo G., van Heerden H. (2025) Epidemiological baseline of *Brucella* spp. in South African wildlife. *PLoS Negl Trop Dis* 19(12): e0013754. <https://doi.org/10.1371/journal.pntd.0013754>
9. Cossu, C. A., Garofolo, G., Janowicz, A., De Massis, F., Wentzel, J., Ledwaba, M. B., Sabeta C., De Klerk L.-M., Godfroid J., Vergnaud G., Van Heerden, H., 2025. Phylogenomics of *Brucella abortus* isolated from African Buffalo in Kruger National Park: New perspectives on wildlife-cattle disease dynamics. *Veterinary Microbiology*, 304, 110493. <https://doi.org/10.1016/j.vetmic.2025.110493>
10. Dadar M., Fakhri Y., Shahali Y., Tittarelli M., Sacchini F., De Massis F. (2025). Global epidemiology and diagnostic insights into canine brucellosis: A comprehensive meta-analysis and meta-regression. *One Health*, 101225. <https://doi.org/10.1016/j.onehlt.2025.101225>
11. Krasteva I., Luciani M., D'Onofrio F., Di Febo T., Di Pancrazio C., Perletta F., Maggetti M., Ullisse S., Sonsini L., Orsini G., Caporale M., Ponsart C., Djokic V., Vicente A.F., Freddi L., D'Alterio N., Tittarelli M., De Massis F., Sacchini F., 2025. Identifying immunoreactive proteins in brucellin for enhanced brucellosis diagnosis: a proteomic approach. *Frontiers in Microbiology* 16:1641710. <https://doi.org/10.3389/fmicb.2025.1641710>
12. Abichu, G., De Massis, F., Rufael, T., Scacchia, M., Aliyi, A., Garofolo, G., & van Heerden, H., 2025. Seroprevalence, characterization, and risk factors of brucellosis in cattle, sheep, goats, and camels in the Oromia region, Borena Zone, Ethiopia. *Preventive Veterinary Medicine*, 244 (2025) 106634. <https://doi.org/10.1016/j.prevetmed.2025.106634>
13. Carlo Andrea Cossu, Giuliano Garofolo, Anna Janowicz, Fabrizio De Massis, Jeanette Wentzel, Maphuti Betty Ledwaba, Claude Sabeta, Lin-Mari De Klerk, Jacques Godfroid, Gilles Vergnaud, Henriette van Heerden, 2025. Phylogenomics of *Brucella abortus* isolated from African Buffalo in Kruger National Park: New perspectives on wildlife-cattle disease dynamics. *Veterinary Microbiology*, Volume 304, May 2025, 110493 <https://doi.org/10.1016/j.vetmic.2025.110493>
14. Candeloro L., Savini L., Conte A., Calistri P., Palma D., Peticara S., Costa A.C.T.R.B., Di Lorenzo A., Tora S., Serrani S., Toro M., Baumgarten K.D., De Massis F., 2025. T-Racing: a modern tool for supporting epidemiological investigation in animal disease outbreaks in Italy. *PLoS ONE* 20(2): e0317313. <https://doi.org/10.1371/journal.pone.0317313>
15. Di Febo T., Di Francesco G., Grattarola C., Sonsini L., Di Renzo L., Lucifora G., Puleio R., Di Francesco C. E., Smoglica C., Di Guardo G. & Tittarelli M. 2025. Serological Diagnosis of *Brucella* Infection in Cetaceans by Rapid Serum Agglutination Test and Competitive ELISA with *Brucella abortus* and *Brucella ceti* as Antigens. *Pathogens* (Basel, Switzerland), 14(1), 26. doi: 10.3390/pathogens14010026. doi:10.3390/pathogens14010026

b) International conferences:

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1. M. Toro, N. D'Aurelio, S. Serrani, A. Sferrella, D. Giansante, L. Gentile, F. De Massis, 2025. Parametri ematologici e biochimici di lupi (*Canis lupus italicus*) in cattività negli appennini centrali in Italia. *Proceedings of the XXIII Congresso Nazionale SIDILV, Palermo, Isola delle Femmine, 15-17 ottobre 2025*. 180-182.
2. De Massis, F. 2025. Towards the Eradication of Brucellosis in Italy: Epidemiological Insights, Biosecurity Challenges, and Informative Tools supporting Eradication

Strategies. Update on Bacterial Biological Agents in the Euro-MENA Region and their Implications for Bioterrorism. *GMPC TOP. 5 (2)*. pp. 34.

<https://doi.org/10.51585/gtop.2025.2.0039>

3. Matteucci G., Dossantos Lima M., Rossi E., Iannetti L., Podaliri Vulpiani M., Tittarelli M., De Massis F., Saluti G., Di Febo T., Maggetti M., Ripà P., Natale A., Sacchini F., 2025. Long-term Biocontainment and Welfare in Water Buffaloes Enrolled for Experimental Research. Abstracts to the 16th FELASA Congress 2025 - 2-5th June, Athens, Greece. *Laboratory Animals*, Volume 59 Number 1S June 2025 ISSN 0023-6772.
4. Janowicz, A., De Massis, F., Serrani, S., Toro, M., Sferrella, A., D'Aurelio, N., Di Marcantonio, L., Felicioni, E., Villani, C., Romualdi, T., Abass, A., Zilli, K., Garofolo, G., 2025. Genomic characterization of *Brucella* species in Italy over a 10-year period (2011–2021). *Proceedings of the Conference of Research Workers in Animal Diseases (CRWAD 2025)*, January 18–21, 2025, Chicago Marriott Downtown Magnificent Mile, Chicago, IL, USA, p. 56. Poster.
5. Janowicz, A., De Massis, F., Serrani, S., Toro, M., Sferrella, A., D'Aurelio, N., Di Marcantonio, L., Felicioni, E., Villani, C., Romualdi, T., Abass, A., Zilli, K. & Garofolo, G. Genomic characterization of *Brucella* species in Italy over a 10-year period (2011 - 2021). *Conference of Research Workers in Animal Disease (CRWAD)*. Chicago; 18-21 January, 2025; Poster
6. M. E. de Souza Teixeira Campos, C. Rodrigues Pereira, E. M. Seles Dorneles, F. Melzer, M. V. Canário Viana, F. Marotta, L. Di arcantonio, R. Di Romualdo, F. Di Timoteo, A. L. Abass, F. De Massis, G. Garofolo, K. Zilli Antimicrobial resistance rifampicin in *Brucella* spp.: Association between genotype and phenotype of strains from different regions of the world. 77th International Research Conference. Costa Rica 4-7 November, 2025, Poster
7. Flavio Sacchini. From proteomic characterization to functional validation of Brucellin: Development of a standardized antigen. 18th Workshop of the EU Brucellosis National Reference Laboratories. Maisons-Alfort, France; 09-10 October, 2025; Oral.
8. Giuliano Garofolo. *Brucella* Phylogeography Across Italy, the Mediterranean, and Europe. International Research Congress Brucellosis 2025. San José, Costa Rica; 04-07 November, 2025. Oral.
9. Katuscia Zilli. Genomic Analysis of *Brucella ovis* Strains Reveals Distinct Italian Diversity within a Global Context. International research. International Research Congress Brucellosis 2025. San José, Costa Rica; 04-07 November, 2025; Oral.
10. Sacchini, F., De Massis, F., Matteucci, G., Dos Santos, M., Averaimo, D., Alessiani, A., Cocco, A., Felicioni, E., Zilli, K., Romualdi, T., Di Febo, T., Rodomonti, D., Maggetti, M., Ripà, P., Gonçalves, M. S., Dorneles, E. M. S., Pereira Lage, A., D'Alterio, N. & Tittarelli, M. Assessment of long term efficacy of *Brucella abortus* RB51 vaccine by challenge of pregnant water buffaloes vaccinated at 6-9 months age. International Research Congress Brucellosis 2025. San José, Costa Rica; 04-07 November, 2025; Oral.
11. Sericola, M., Giansante, D., Toro, M., Serrani, S., D'Aurelio, N., Sferrella, A. & De Massis, F. Evaluation of the *Brucella* Estimated Limit of Detection (eLOD50) in Bovine Milk. International Research Congress Brucellosis 2025. San José, Costa Rica; 04-07 November, 2025; Poster
12. Luciani, M., Krasteva, I., D'Onofrio, F., Di Febo, T., Di Pancrazio, C. F., Maggetti, M., Ulisse, S., Sonsini, L., Orsini, G., Caporale, M., Ponsart, C., Djokic, V., Vicente, A., Freddi, L., D'Alterio, N., Tittarelli, M., De Massis, F. & Sacchini, F. Proteomic profiling of Brucellin: identifying key immunoreactive proteins for enhanced brucellosis diagnosis. 14th International Veterinary Immunology Symposium (IVIS 2025). Vienna; 11-14 August, 2025; Poster
13. -Serpa Gonçalves, M., Di Pancrazio, C., Maggetti, M., Luciani, M., Di Gennaro, A., Rodomonti, D., Ripà, P., Rossi, E., Dos Santos Lima, M., Matteucci, G., Felicioni, E., Dorneles, E. M. S., De Massis, F., Sferrella, A., Tittarelli, M. & Sacchini, F. Long-Term Immune Memory and Cytokine Profiling in Buffaloes Vaccinated with *Brucella abortus* RB51: Implications for Adaptive Immunity and Booster Strategies. 14th International Veterinary Immunology Symposium (IVIS 2025). Vienna; 11-14 August, 2025; Poster

c) National conferences:

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1. Alessiani, A., Pompilii, C., Rulli, M., Averaimo, D., Cocco, A., Rossi, E., Sacchini, F., Ripà, P., Vincifori, G., Marfoglia, C., Coccia, L., Di Marcello, V., Tittarelli, M. & Petrini, A. Approccio ottimizzato per la rilevazione molecolare di *Brucella* spp.: inserimento del controllo interno di processo e valutazione comparativa tra PCR Real Time e isolamento. XXIII Congresso SIDILV 2025. Palermo; 15-17 October, 2025; Poster
2. M. Serpa Gonçalves, C. Di Pancrazio, M. Maggetti, M. Luciani, A. Di Gennaro, D. Rodomonti, P. Ripà, E. Rossi, M. Dos Santos Lima, G. Matteucci, E. Felicioni, E.M. Seles Dorneles, F. De Massis, A. Sferrella, E. Tittarelli, F. Sacchini, 2025. Studio sulla memoria immunitaria e sul profilo citochinico in bufale vaccinate con *brucella abortus* RB51: impatto sull'immunità adattativa e strategie di richiamo. *Proceedings of the XXIII Congresso Nazionale SIDILV, Palermo, Isola delle Femmine, 15-17 ottobre 2025*. 40-42. Oral
3. Capone, M. R. & Calistri, P. La situazione epidemiologica della Brucellosi bovina, bufalina ed ovi-caprina sul territorio nazionale. *Giornata di studio sulla Brucellosi*; 25 September, 2025; Roma.
4. De Massis, F. & Di Giuseppe A. Indagine epidemiologica e Brucellosi. *Giornata di studio del Centro di Referenza Nazionale per l'Epidemiologia Veterinaria, la Programmazione, l'Informazione e l'Analisi del Rischio (COVEPI)*; 19 November, 2025; Teramo.
5. Flavio Sacchini. Valutazione dell'efficacia del vaccino RB51 in bufali gravidi sottoposti ad infezione: studio pilota. *Giornata di studio sulla Brucellosi 2025*; 25 September, 2025; Roma.
6. Manuela Tittarelli. Ruolo dei camelidi nei piani di eradicazione della brucellosi. 25 September, 2025; Roma.
7. Katuscia Zilli. DNA extraction, quantification and quality check (QC). *Training period on Whole Genome Sequencing (WGS) and Sanger sequencing data analysis*; 15 July, 2025; Teramo.
8. Massimo Ancora. Prospettive ed opportunità nella sanità veterinaria: La piattaforma GenPat come strumento di supporto nella gestione della brucellosi. *Giornata di studio sulla Brucellosi 2025*; 25 September, 2025; Roma.
9. Mazzagufò, S., Ciampani, M. & Remediani, V. Presentazione applicativo "Circuiti interlaboratorio". *Giornata di studio sulla brucellosi*; 25 September, 2025; Roma.
10. Mirella Luciani. Diagnostica della brucellosi: analisi comparativa delle formulazioni di Brucellina mediante analisi proteomica. *Giornata Di Studio Sulla Brucellosi 2025*. 25 September, 2025; Roma.
11. Zilli, K. & Garofolo, G. *Brucella* clustering analysis by SNP analysis, cgMLST, and wgMLST. *Training period on Whole Genome Sequencing (WGS) and Sanger sequencing data analysis*; 16-17 July, 2025; Teramo.

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

## TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 7

b) Seminars : 13

c) Hands-on training courses: 4

d) Internships (>1 month) 0

Type of technical training provided (a, b, c or d)	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
A	ALGERIA	60
A	BRAZIL	1
A	UNITED STATES OF AMERICA	3
B	ITALY	583
B	BRAZIL	5
B	NEW ZEALAND	4
B	UNITED KINGDOM	2
C	ALGERIA	4
C	FRANCE	1
C	RUSSIA	30
C	ARMENIA	30
C	AZERBAIJAN	30

## TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO 17025	PDF	2027 Certificato Accredia ISO17025.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Complement Fixation test (CFT)	ACCREDIA (member of EA, IAF and ILAC)
RBT	ACCREDIA (member of EA, IAF and ILAC)
I-ELISA (milk and serum)	ACCREDIA (member of EA, IAF and ILAC)
FPA	ACCREDIA (member of EA, IAF and ILAC)
CFT - RB51	ACCREDIA (member of EA, IAF and ILAC)
mSAT Brucella canis	ACCREDIA (member of EA, IAF and ILAC)
IFAT Brucella canis	ACCREDIA (member of EA, IAF and ILAC)
Brucella spp. Isolation	ACCREDIA (member of EA, IAF and ILAC)
Brucella spp. real time PCR	ACCREDIA (member of EA, IAF and ILAC)
Brucella spp. PCR	ACCREDIA (member of EA, IAF and ILAC)
Brucella spp. Isolation from food matrix	ACCREDIA (member of EA, IAF and ILAC)
Identification and typing	ACCREDIA (member of EA, IAF and ILAC)

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c-ELISA	ACCREDIA (member of EA, IAF and ILAC)
PCR-RFLP	ACCREDIA (member of EA, IAF and ILAC)
PCR Bruce ladder	ACCREDIA (member of EA, IAF and ILAC)

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

Yes

We have a BSL-3 practices when handling products suspected or clinical specimens to prevent the risk of agent exposure or release

## TOR9: SCIENTIFIC MEETINGS

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

No

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

No

## TOR10: NETWORK WITH WOAHP REFERENCE LABORATORIES

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

Yes

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

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

25. Did you organise or participate in inter-laboratory proficiency tests with WOAHP Reference Laboratories designated for the same pathogen during the past 2 years?

Yes

Purpose of the proficiency test:	Role of your Reference Laboratory (organiser/ participant)	No. participating Laboratories	Participating WOAHP Ref. Labs/ organising WOAHP Ref Lab
EU Bovine Milk-ELISA organised by EU-RL ANSES.	Participant	EU Countries	ANSES France EU RL for Brucellosis
Interlaboratory test PCR HRM for Brucella sp. Identification – Validation of the method, organized by EU-RL ANSES – Code EURL_BRU_PCR_HRM_EILV	Participant	EU Countries	ANSES France EU RL for Brucellosis

26. Did your laboratory collaborate with other WOAHP Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

Yes

Title of the project or contract	Scope	Name(s) of relevant WOAHP Reference Laboratories
ERFAN. Enhancing Research and Development in Africa through WOAHP Reference Laboratories and Collaborating Centres, and Poles of Excellence, as resultant of WOAHP twinning Projects - ERFAN	ERFAN is an WOAHP network to facilitate and strengthen collaboration among countries of the SADC Region and Arab Maghreb Union (UMA) as well as IZSAM in the Animal health and food security domains.	IZS-Teramo, Lybia, Tunisia, Algeria, Morocco, Mauritania, Angola, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe
Provision of support to EFSA and to ECDC in the production of the EU One Health Zoonoses report and in related zoonoses online interactive data visualisation dashboards and zoonoses story maps" (EUOHZ Report).	The project aims to provide support in the preparation of the joint EFSA-ECDC annual report on zoonoses in the European Union, Brucella Included.	All EU Reference Labs

## TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAHP Reference Laboratories for the same pathogen during the past 2 years?

Yes

Purpose for inter-laboratory test comparisons <sup>1</sup>	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOAHP Member Countries
IZSAM National and international proficiency testing for brucellosis	Organiser	7	Brucella spp. Isolation and Identification	ITALY,

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identification in food			identification	
IZSAM National and international proficiency testing for brucellosis identification in	Organiser	18	Brucella spp. Isolation and Identification	ITALY,
IZSAM National and international brucellosis serology	Organiser	32	Rose Bengal test – Complement Fixation test – Milk ELISA - Serum ELISA	
IZSAM National and international molecular identification	Organiser	32	molecular identification	KAZAKHSTAN, KYRGYZSTAN, TAJIKISTAN, UZBEKISTAN,

## TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

Yes

- Organised by EU; Chairmanship of the Task force on monitoring animal disease eradication programmes in Member States– Brucellosis subgroup (no meetings in 2025).
- Organised by EFSA; Participation to the Animal Health and Welfare Network
- Organised by EFSA; Participation to the Task Force on Zoonosis Data Collection;
- Organised by EFSA; Participation to the Working group on Zoonosis SINZOO;
- Organised by EFSA; Participation to the Zoonosis Monitoring Network;
- Organised by EFSA; Expert training session for Story maps - – EFSA/2024/OP/0002 WP5 Task 11
- Organised by EFSA; Participation as an expert in the working group for the preparation of the European One Health Zoonoses Report (EUOHZ) – chapter brucellosis.
- Organised by WOA?H ERFAN Project: Meetings of the ERFAN Brucellosis Working Groups
- Organised by EURL for Brucellosis: Expert Meetings of the EU Brucellosis National Reference Laboratories
- Participation in the working group (Ministry of Health, Regions and Reference Centers for Brucellosis, Tuberculosis and Enzootic Bovine Leucosis) for the drafting of the Ministerial Decree on eradication plans and programs for 2025.
- Participation to the 2025 International Brucellosis Conference, including the 77° Brucellosis International Research Conference, San José, Costa Rica, 4-7 November 2025.