











## Introduction

Ithough described in the late 1850s and its causative agent isolated in 1886, brucellosis remains a matter of concern worldwide. The disease has been eradicated in a number of countries but continues to threaten human and animal health in many areas of the world, as well as animal productions. Moreover, new *Brucella* strains or species have emerged; and "classical" *Brucella* species are confirming their capacity to influence social, cultural, economic and agricultural environments. The need to enhance current knowledge for the scientific community and to share the most updated information with policy makers remains a priority of paramount importance in the context of the control and eradication of the disease in endemic areas.

On behalf of the International Brucellosis Society, the Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise (IZS - Teramo) is organizing the "Brucellosis 2022 International Conference," including the 74th Annual Brucellosis Research Conference, which will be held in Giulianova, Teramo, Italy from September 16th to 19th, 2022. The IZSAM is the WOAH Reference Laboratory for Brucellosis and National Reference Centre for Brucellosis.

During the conference, scientists, researchers, veterinarians, physicians, policymakers, national competent authorities, representatives of the International Organisations, and other stakeholders will exchange knowledge and opinions on the determinants influencing the emergence and spread of the different species of *Brucella*. This will include recent advances in understanding the biology, and evolution of the genus *Brucella*. The most recent developments in laboratory diagnostic procedures, as well as the most modern tools for surveillance and control, as well as disease impact on economics and world trade will be discussed.

Researchers from all over the world will take this opportunity to share their insights about the strategies, methods and tools to control the impact of brucellosis on diverse social, cultural and environmental conditions. The congress will strengthen the network of existing intersectorial and multidisciplinary collaborations, essential to fight this continuously changing and adapting disease.



## Aims of the conference

- ▲ To provide an environment for discussion about recent progress made by the international scientific community on the knowledge about all aspects of brucellosis.
- ▲ To support a high-qualified international forum for scientists, researchers, veterinarians, medical clinicians, and public health professionals to exchange experiences and views on the most up-to date understanding on brucellosis issues.
- To foster collaboration among participants in identifying common goals, projects, tools, and solutions to address the challenges associated with the control and eradication of brucellosis in endemic countries, as well as with the prevention of disease reemergence in free areas.

## **Conference topics**

The Conference programme includes 9 sessions. Each session, chaired by a recognised International expert, will host keynote lectures followed by oral presentations. Poster sessions will offer further opportunities to present and discuss scientific findings. All conference sessions will be run in plenary.

The Brucellosis 2022 International Research Conference will cover the following thematic areas:

1	Taxonomy, Evolution, Emerging Species
2	Genomics and Proteomics
3	Pathogenesis and Host-Pathogen Interaction
4	Immunology
5	Vaccination
6	Diagnostic
7	Human Brucellosis
8	Epidemiology, control and eradication
9	Wildlife Brucellosis



**15 - 16 - 17 - 18 - 19** September 2022

## Thursday, 15 September 2022

17:00	Welcome Reception and participants' registration
18:30	Welcome Cocktail
20:30	End of the day

## Friday, 16 September 2022

08:00	Registration

## **09:00** Opening Ceremony

## **NICOLA D'ALTERIO**

Director General, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

### JWAN COSTANTINI

Major of Giulianova, Teramo, Italy

## **MARCO MARSILIO**

President of the Abruzzo Region, Italy

## PIERDAVIDE LECCHINI

Director General, Animal health and veterinary drugs, CVO, Ministry of health, Rome, Italy

#### SIMONA FORCELLA

Policy officer, European Commission – Directorate-General For Health And Food Safety - Unit G2 - Animal Health, Brussels, Belgium

#### FRANK BOELAERT (vdc)

Senior scientific officer, Biological Hazards & Animal Health and Welfare unit (BIOHAW), European Food Safety Authority (EFSA), Parma , Italy

## **KEITH SUMPTION**

Chief Veterinary Officer/ Leader Animal Health Programme (NSAH)
Chief, Joint Zoonotic Diseases and AMR Centre (CJWZ),
Food and Agriculture Organization of the United Nations (FAO), Rome. Italy

## **ROMANO MARABELLI**

Advisor to the Director General, World Organization for Animal Health (WOAH), Paris, France

## **FABRIZIO DE MASSIS** (conference chair)

WOAH and National Reference Laboratory for Brucellosis Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

## 11:00 Coffee Break



## Friday, 16 September 2022

# SESSION 1 Taxonomy, Evolution, Emerging Species

Chair: ADRIAN WHATMORE

Animal and Plant Health Agency, Addlestone, Surrey, UK

11:30 **Keynote Lecture:** The ever expanding *Brucella* genus

## David O'Callaghan

VBIC, INSERM U1047, University of Montpellier, National Reference Center for Brucella, Microbiology laboratory, Nimes, France

**12:00** The global spread of the most famous *Brucella* species

## **Jeffrey Foster**

Pathogen and Microbiome Institute, Northern Arizona University, Flagstaff, USA

**12:15** East African *Brucella* phylogenomics: introducing OrthoPhylo, A turn-key tool for generating ortholog based bacterial whole genome phylogenetic trees

### Earl Middlebrook

Los Alamos National Labs, Los Alamos, USA

12:30 Canine Brucellosis in France due to *Brucella canis*: an emerging disease?

#### **Guillaume Girault**

EU, WOAH & National Reference Laboratory for Animal Brucellosis, Animal Health Laboratory, Paris-Est University/ANSES, Maisons-Alfort, France

**12:45** Evolution towards pathogenicity: phylogenomic insights into *Brucellaceae* 

## Maite Loperena-Barber

Institute of Tropical Health (ISTUN), University of Navarra, Spain

**13:00** Brucellosis on the Guiana Shield: emergence of a new *Brucella* species?

### **Anne Keriel**

University of Montpellier, INSERM / Hospital Center of Nîmes, France

13:15 Atypical *Brucella* spp. are facultatively anaerobic in the presence of nitrates, correlating with increased expression of denitrification genes under anoxic conditions

## Stephan Köhler

Infectious Diseases Research Institute (IRIM), CNRS, University of Montpellier, France

13:30 Lunch Break / Poster Session (Session 1)



## Friday, 16 September 2022

## **SESSION 2**Genomics and Proteomics

## Chair: GIULIANO GAROFOLO

Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale", Teramo, Italy

**15:30 Keynote Lecture:** Next-generation proteomics in the fight against pathogens: a guide tour

## Jean Armengaud

National Institute of Agronomic Research (INRA), Bagnols sur Cèze, France

**16:00** Brucella Databases at BioCyc.org: Pathways, Omics Tools, and Enhanced Genome Annotation

## Ron Caspi

Bioinformatics Research Group, SRI International, Menlo Park, California, USA

**16:15** Histidine metabolism and metal homeostasis in *Brucella abortus* 

#### **Charline Focant**

Research Unit in Microorganisms Biology (URBM), University of Namur, Belgium

**16:30** Metabolic Glycoengineering: A strategy to label *Brucella abortus* cell envelope with synthetic analogues of D-mannose

## **Angeline Reboul**

Research Unit in Microorganisms Biology (URBM), University of Namur, Belgium

**16:45** Targeted methodology for the identification of protein-peptide vaccine candidates

## Louisa B. Tabatabai (vdc)

Department of Biochemistry, Biophysics and Molecular Biology, Iowa State University, Ames Iowa, USA

17:00 Whole genome based tools in epidemiological surveillance of *Brucella abortus*, *Brucella melitensis* and *Brucella suis* bv2 in Italy in the last decade.

### **Anna Janowicz**

WOAH and National Reference Laboratory for Brucellosis, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

17:15 In silico pipeline for protein comparisons in *Brucella* genus

#### **Vitomir Djokic**

EU, WOAH & National Reference Laboratory for Animal Brucellosis, Animal Health Laboratory, Paris-Est University/ANSES, Maisons-Alfort, France

## 17:30 Coffee Break / Poster Session (Session 2)

## **19:00** End of the first day



## Saturday, 17 September 2022

# SESSION 3 Pathogenesis and Host-Pathogen-Interaction

Chair: MARTY ROOP

Brody School of Medicine, East Carolina University, Greenville, North Carolina, USA

**09:00 Keynote Lecture:** Metabolic interaction between *Brucella abortus* and its host **Renée Tsolis** 

University of California, Davis, California, USA

**09:30** BNIP3L-dependent mitophagy induced by *Brucella abortus* in host cells is required for bacterial egress

## **Jeremy Verbeke**

Research Unit in Cell Biology – Namur Research Institute for Life Sciences (NARILIS), University of Namur, Belgium

**09:45** RNA-immunoprecipitation/miRNA-Seq reveals miRNA-like, small noncoding RNAs of *Brucella suis*, translocated into the cytoplasm of infected murine macrophages

## Stephan Köhler

Infectious Diseases Research Institute (IRIM), CNRS, University of Montpellier, France

**10:00** Lipopolysaccharide synthesis and traffic in the envelope of the pathogen *Brucella abortus* 

#### **Caroline Servais**

Research Unit in Microorganisms Biology (URBM), University of Namur, Belgium

**10:15** A *Brucella* effector that modulates host retrograde transport to promote intravacuolar replication

## Jean Celli

Paul G. Allen School for Global Animal Health, Washington State University, Pullman, USA

10:30 Novel H-NS-like Protein MucR Coordinates Virulence Gene Expression During Host- Association in *Brucella* spp. Through Silencer/Counter-Silencer Interactions

#### lan S. Barton

Department of Microbiology and Immunology, Brody School of Medicine, East Carolina University, Greenville, North Carolina, USA

**10:45** Structural insights into the NyxA/B effector family

#### **Laurent Terradot**

Laboratory of Molecular Microbiology and Structural Biochemistry, Centre National de la Recherche Scientifique, Université de Lyon, France

## 11:00 Coffee Break



## Saturday, 17 September 2022

## SESSION 4 Immunology

## Chair: PAOLO PASQUALI

Istituto Superiore di Sanità, Roma, Italy

11:30 **Keynote Lecture:** Internal affairs: defining how cytosolic receptors sense *Brucella* and contributes to host defense

## Sergio Costa Oliveira

Federal University of Minas Gerais, Belo Horizonte, Brazil

12:00 Antibody response elicited by *Brucella abortus* strain RB51 vaccine in young water buffaloes (*Bubalus bubalis*) using a triple dose and the WOAH vaccination schedule. A long term trial

#### Flavio Sacchini

WOAH and National Reference Laboratory for Brucellosis, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

Antibody response elicited by *Brucella abortus* strain RB51 vaccine in young water buffaloes (*Bubalus bubalis*) using a triple dose and the vaccination schedule authorised in Caserta province, Italy

#### **Fabrizio De Massis**

WOAH and National Reference Laboratory for Brucellosis, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

12:30 Use of brucellin skin test to identify water buffaloes (*Bubalus bubalis*) vaccinated with the live attenuated vaccine *B. abortus* strain RB51

#### Flavio Sacchini

WOAH and National Reference Laboratory for Brucellosis, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

**12:45** Effects of age on immune response induced by *Brucella abortus* s19 or RB51 vaccination in heifers

## **Elaine M. S. Dorneles**

Federal University of Lavras, Brazil

13:00 TIRAP exon 5 polymorphisms influence the outcome of *B. melitensis* infection in goats

#### **Carlos Rossetti**

National Institute of Agricultural Technology (INTA), Buenos Aires, Argentina

**13:15** PMNs supports *Brucella* dispersal with reduced immune recognition

#### Elías Barquero-Calvo

Research Program in Tropical Diseases, School of Veterinary Medicine, National University, Heredia, Costa Rica

## 13:30 Lunch Break / Poster Session (Session 3 e 4)

## **14:30** International Brucellosis Society Business Meeting



## Saturday, 17 September 2022

## **SESSION 5**Vaccination

## Chair: JOSÉ MARIA BLASCO

Agrifood Institute of Aragón(IA2) CITA- University of Zaragoza, Spain

**15:30 Keynote Lecture:** The bumpy road to a *Brucella* vaccine: the near hits and good catches

## Angela M. Arenas-Gamboa

Texas A&M University, College Station, Texas, USA

**16:00** Registered Influenza Viral Vector Based *Brucella abortus* Vaccine for Cattle in Kazakhstan: Age-Wise Safety and Efficacy Studies

## **Kaissar Tabynov**

Kazakh National Agrarian Research University (KazNARU), Almaty, Kazakhstan

**16:15** Improving Rev1 vaccine safety in pregnant ewes

#### Pilar M. Muñoz

Department of Animal Science, Center for Research and Agrifood Technology of Aragón-IA2, Zaragoza, Spain

**16:30** Screening for vaccinal candidates in *Brucella canis*: A genomic based strategy for selection of potential DNA target regions

## Ana M. Zúñiga-Pereira

CIET, Microbiology Faculty, University of San José, Costa Rica

**16:45** BM Delta-pgm, a superior vaccine for the control of brucellosis in small ruminants

## **Diego Comerci**

Biotechnolgical Research Institute, National University of San Martin (IIB-UNSAM-CONICET), Buenos Aires, Argentina

17:00 Pathogenesis of *Brucella ovis* in pregnant mice and protection induced by the candidate vaccine strain *B. ovis* AabcBA

#### Renato de Lima Santos

Department of Veterinary Clinic and Surgery, School of Veterinary Medicine, Federal University of Minas Gerais, Belo Horizonte, Brazil

**17:15** Identification by Transposon-sequencing of essential genes for chronic infection by *Brucella* in mice

### **Emeline Barbieux**

Research Unit in Biology of Microorganisms (URBM), NARILIS, UNamur, Belgium, Laboratoire de Parasitologie, Université Libre de Bruxelles and ULB Center for Research in Immunology (U-CRI), Gosselies, Belgium

**17:30** Brucella abortus RB51 Vaccine Strain and Raw Milk Consumption: An Emerging Public Health Risk

### Rebekah Tiller

NCEZID/DHCPP/BSPB Zoonoses and Select Agent Laboratory, Atlanta, Georgia, USA

## 17:45 Coffee Break / Poster Session (Session 5)

## **19:00** End of the second day



## Sunday, 18 September 2022

## **SESSION 6** Diagnostics

Chair: FALK MELZER

Friedrich-Loeffler-Institute, Federal Research Institute for Animal Health, Jena, Germany

**09:00 Keynote Lecture:** The diagnosis of brucellosis

#### John McGiven

Brucellosis Reference Laboratory, Animal and Plant Health Agency (APHA), Bacteriology Department, Addlestone, United Kingdom

**09:30** Investigation into efficacy of rLPS based serodiagnostic antigens

#### **Laurence Howells**

Brucellosis Reference Laboratory, Animal and Plant Health Agency (APHA), Bacteriology Department, Addlestone, United Kingdom

**09:45** Cross-reaction comparative evaluation of five enzyme-linked immunosorbent assay and Golden Standard methods for porcine Brucellosis diagnosis

#### **Acacia Ferreira Vicente**

EU, WOAH & National Reference Laboratory for Animal Brucellosis, Animal Health Laboratory, Paris-Est University/ANSES, Maisons-Alfort, France

**10:00** Machine Learning for MALDI-TOF MS identification of *Brucella* 

#### **Teresa Romualdi**

WOAH and National Reference Laboratory for Brucellosis, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

10:15 Swab types and storage conditions affect *Brucella* recovery and DNA detection

#### Luca Freddi

EU, WOAH & National Reference Laboratory for Animal Brucellosis, Animal Health Laboratory, Paris-Est University/ANSES, Maisons-Alfort, France

**10:30** Proteomics-based identification of immunodominant *Brucella canis* proteins as candidates for serodiagnosis and vaccine development

### **Dirk Hofreuter**

Department of Biological Safety, German Federal Institute for Risk Assessment, Berlin, Germany

**10:45** Preliminary study of interferon gamma test used for diagnosis of brucellosis in the water buffalo

#### Lorena Schiavo

National Reference Centre for Hygiene and Technology of Breeding and Buffalo Production, Istituto Zooprofilattico Sperimentale del Mezzogiorno, Salerno, Italy

11:00 Coffee Break



## Sunday, 18 September 2022

## SESSION 7 Human Brucellosis

## Chair: IGNACIO MORIYÓN

Emeritus Professor, Institute for Tropical Health and Department of Microbiology, University of Navarra, Pamplona, Spain

11:30 Keynote Lecture: Challenges in human brucellosis

## Nicholas J. Beeching

Liverpool School of Tropical Medicine, Liverpool, UK

**12:00** Brucellosis in a farming community in central South Africa: A longitudinal cohort study (2015-2018)

#### **Jennifer Rossouw**

National Institute for Communicable Diseases, Johannesburg, South Africa

**12:15** First analysis of antimicrobial resistance in *Brucella* strains isolated in Italy

### Katiuscia Zilli

WOAH and National Reference Laboratory for Brucellosis, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

**12:30** Whole Genome Sequencing for Tracing Geographical Origin of Imported Cases of Human Brucellosis in Sweden

#### **Tara Wahab**

Department of Microbiology, Public Health Agency of Sweden, Solna, Sweden

**12:45** Screening of FDA approved Drugs to treat Brucellosis

## Nammalwar Sriranganathan

Biomedical Sciences and Pathobiology, Virginia Tech, Blacksburg, Virginia, USA

13:00 Human brucellosis exposure in confirmed cutaneous anthrax cases, Dien Bien, Vietnam with an update on human prevalence regionally

#### Jason Blackburn

Spatial Epidemiology & Ecology Research Laboratory, Department of Geography, University of Florida, Gaine-sville, Florida, USA

**13:15** Going chronic: about a complicated case of pediatric brucellosis being the first 'endemic' incident of human brucellosis in Belgium (2021-2022)

#### Marcella Mori

National Reference Centre for Brucella spp., Sciensano, (Brussels), Belgium

## 13:30 Lunch Break / Poster Session (Session 6-7)



## Sunday, 18 September 2022

# SESSION 8 Epidemiology, Control and Eradication

Chair: PAOLO CALISTRI

Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

## **15:30 Keynote Lecture:** Control of Brucellosis in Domestic Ruminants. Yes we can! **Bruno Garin-Bastuii**

French Agency for Food, Environmental and Occupational Health & Safety (ANSES), Maisons-Alfort, France

16:00 T-Racing: a contact tracing tool for supporting epidemiological investigation during livestock disease outbreaks

## **Luca Candeloro**

WOAH and National Reference Laboratory for Brucellosis, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

**16:15** Follow up investigations on non-infected dogs adopted from the *B. canis* italian outbreak

#### **Fabrizio De Massis**

WOAH and National Reference Laboratory for Brucellosis, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

16:30 Risk factors for the persistence and spread of Brucellosis in buffaloes in the province of Caserta (2015-2020)

#### **Maria Ottaiano**

Istituto Zooprofilattico Sperimentale del Mezzogiorno, Portici, Italia

16:45 Outbreak of bovine brucellosis in the Bargy mountain: special feature of *B. melitensis* infection in cattle

#### **Claire Ponsart**

EU, WOAH & National Reference Laboratory for Animal Brucellosis, Animal Health Laboratory, Paris-Est University/ANSES, Maisons-Alfort, France

17:00 Human brucellosis: First calculated estimate of global annual incidence

#### **Christopher G. Laine**

Department of Veterinary Pathobiology, College of Veterinary Medicine & Biomedical Sciences, Texas A&M University, College Station, Texas, USA

17:15 Insights into the seroprevalence of *Brucella canis* infection in dogs in Portugal **Ana Cristina Ferreira** 

National Institute of Agricultural and Veterinary Research (INIAV), Oeiras, Portugal

## 17:30 Coffee Break / Poster Session (Session 8)

## 19:30 Gala Dinner

Lectio Magistralis: Brucellosis and OneHealth: inherited and future challenges

### Ignacio Moriyón

Professor, Institute for Tropical Health and Department of Microbiology, University of Navarra, Pamplona, Spain



## Monday, 19 September 2022

## SESSION 9 Wildlife brucellosis

## Chair: JACQUES GODFROID

The Arctic University of Norway, Tromsø, Norway

**09:00 Keynote Lecture:** Brucellosis in wildlife and livestock

Henriette van Heerden

University of Pretoria, Onderstepoort, South Africa

**09:30** Isolation of *Brucella suis* biovar 2 in a male roe deer (*Capreolus capreolus*),

in central Italy

**Marco Gobbi** 

Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Perugia, Italy

09:45 Brucella ceti infection in cetaceans from Italian Seas: associated lesions and

epidemiological data

Carla Grattarola

C.Re.Di.Ma., Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta, Torino, Italy

**10:00** Brucellosis in vampire bats of Costa Rica: *Brucella nosferati* sp. nov.

Gabriela Hernandez-Mora

Veterinary Medical Microbiology Unit, National Animal Health Service (SENASA), Ministry of Agriculture and Livestock. Heredia. Costa Rica

10:15 Pathogenesis of *Brucella suis* biovar 1 in the armadillo (*Chaetophractus villosus*)

**Luis Ernesto Samartino** 

University of Salvador, Pilar, Buenos Aires, Catholic University of Cuyo, San Luis, Argentina

10:30 Coffee Break / Poster Session (Session 9)

**Closing Ceremony** 

Chair: NICOLA D'ALTERIO Director General, IZS Teramo

**11:00** Poster Award from the International Brucellosis Society

**12:00** Closing Remarks and Farewell - Closure of the Conference











