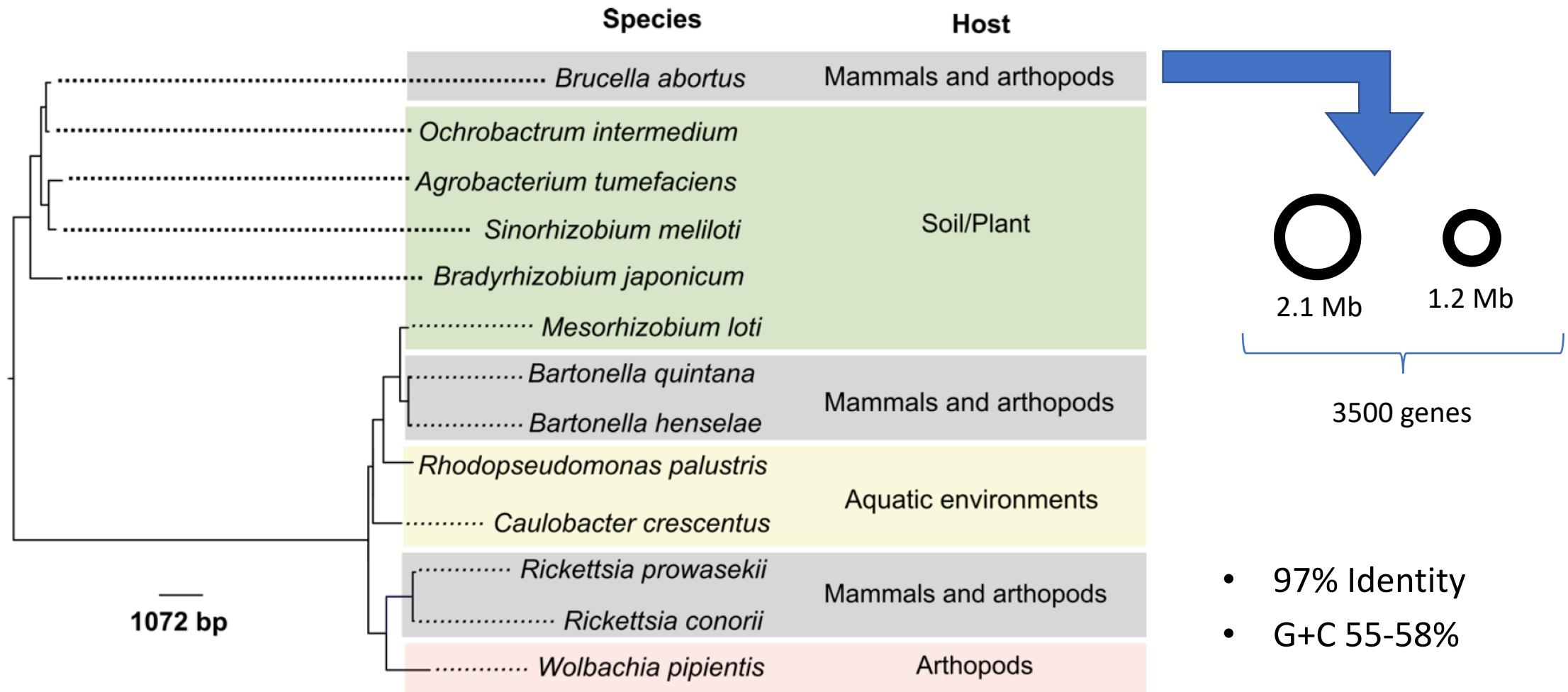
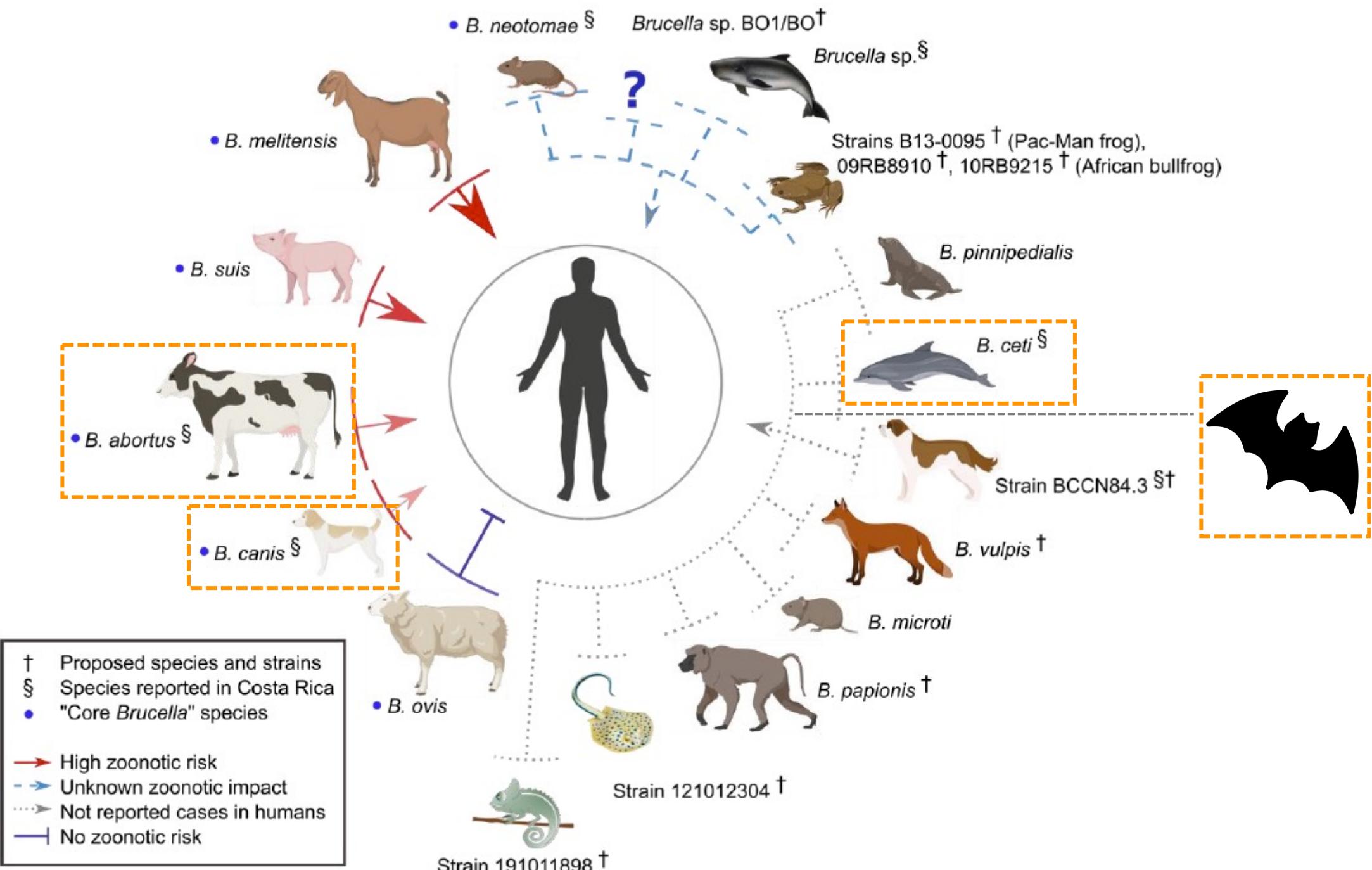


“*Brucella* genomics in Costa Rica: a path of learning from scratch to networking

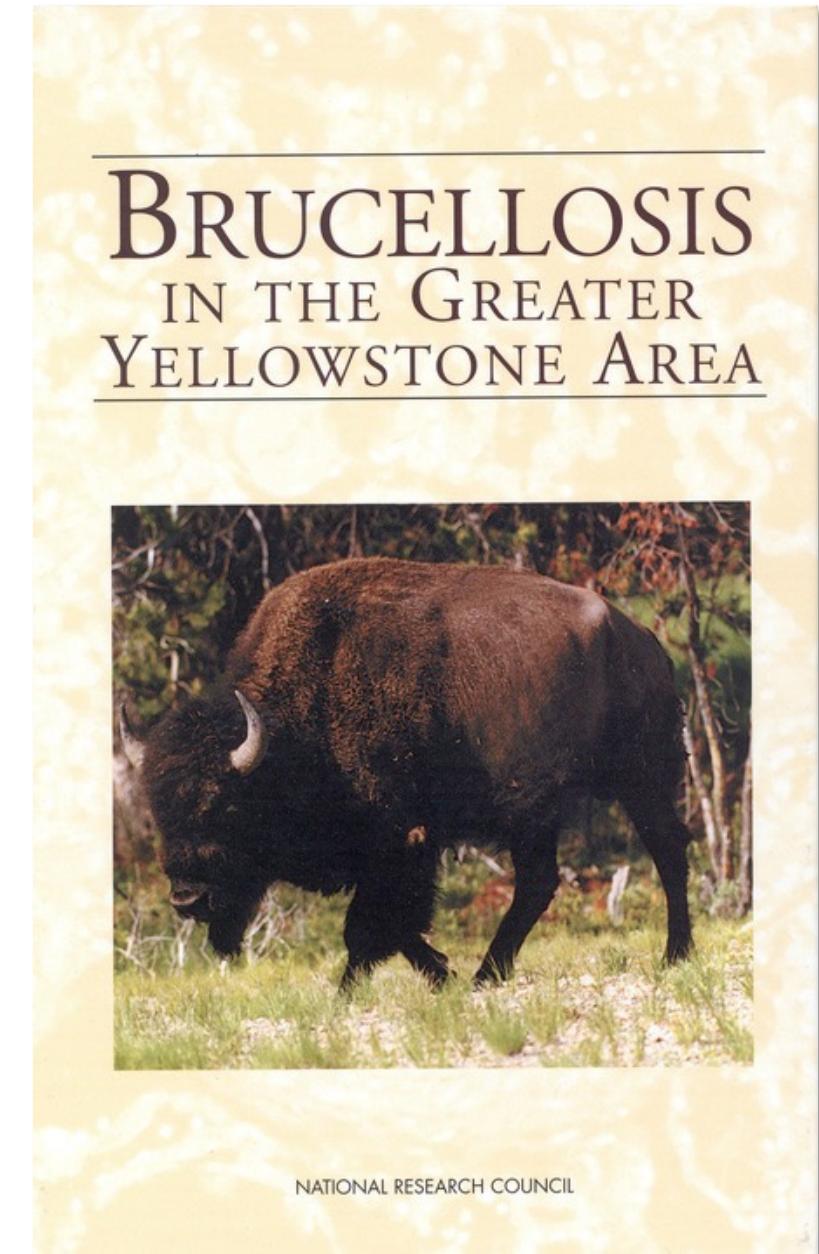
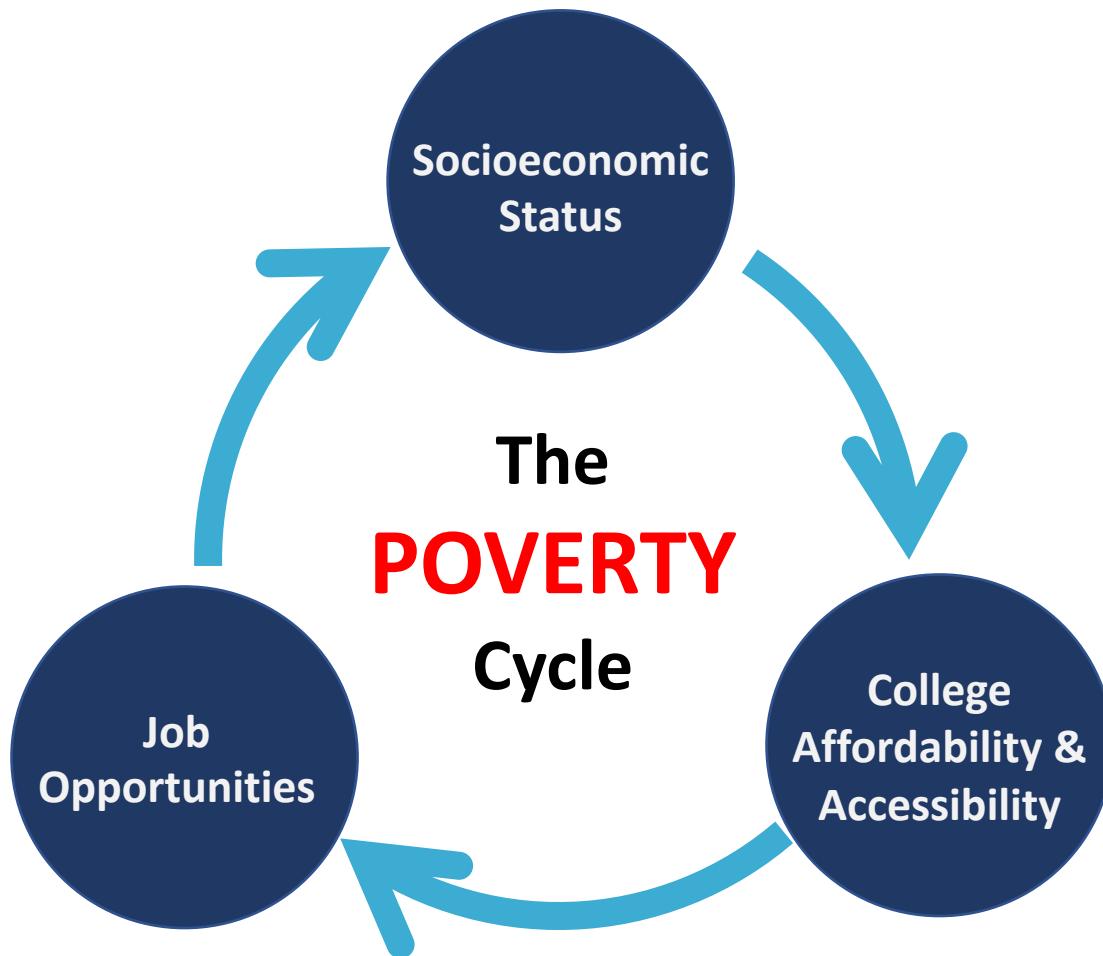
Marcela Suárez-Esquivel, DMV, PhD

The genus *Brucella*





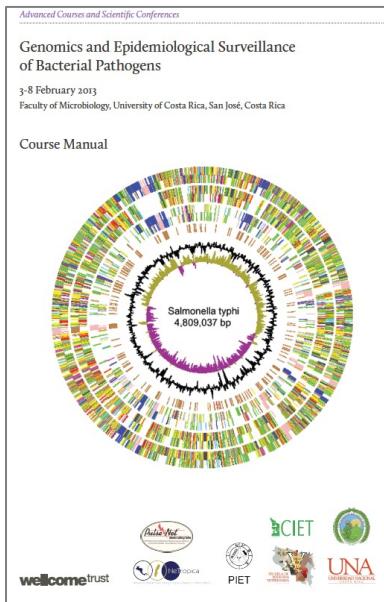
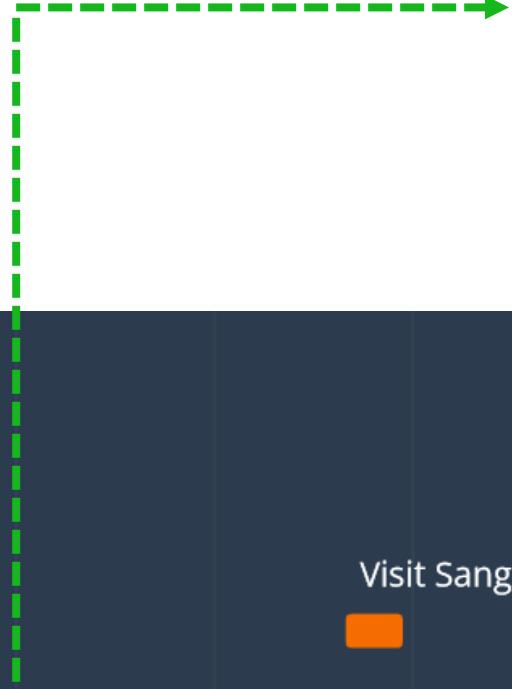
Brucellosis: Importance



WCS Training in Timeline Latin America



2013



2014-15



2016



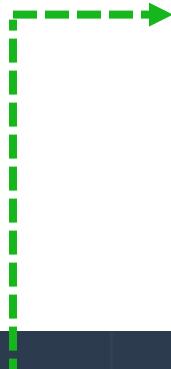
2017



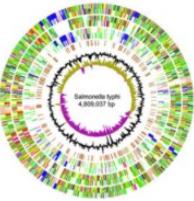
Genomics and Epidemiological Surveillance of Bacterial Pathogens (San Jose, Costa Rica)

9–14 July 2017

San Jose, Costa Rica



2018



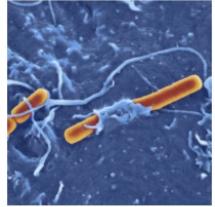
Working with Pathogen Genomes (Montevideo, Uruguay)

11–16 November 2018

Institute of Hygiene, Montevideo, Uruguay



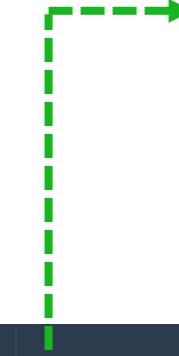
2019



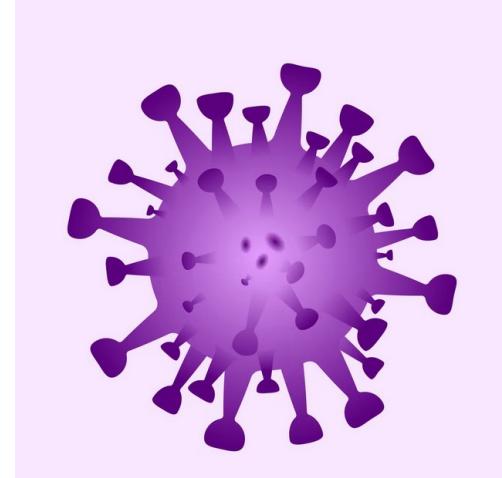
Genomics and Epidemiological Surveillance of Bacterial Pathogens (Lima, Peru)

3–8 March 2019

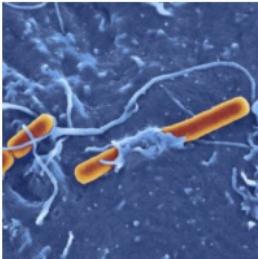
Universidad Peruana Cayetano Heredia (UPCH), Lima, Peru



2020



2021



Genomics and Epidemiological Surveillance of Bacterial Pathogens (Latin America) (Virtual)

25–29 October 2021

Virtual Course



2022



SARS-CoV-2 Bioinformatics for Beginners

31 October–2 December 2022

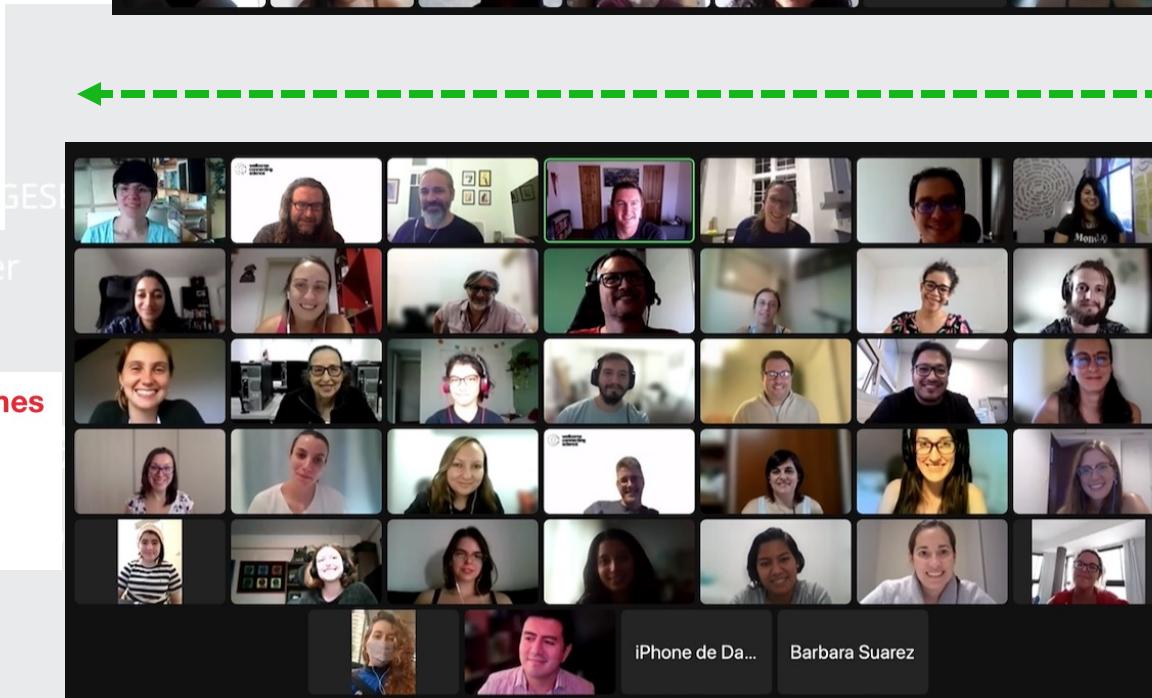
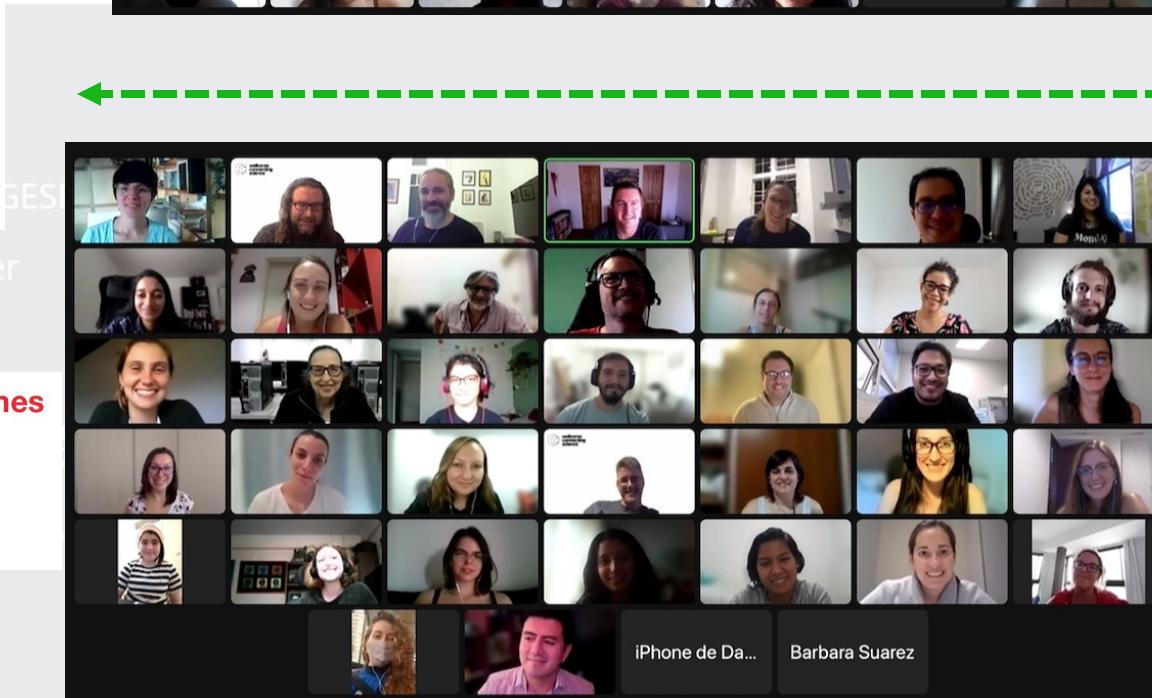
Distributed Classrooms across Asia, Latin America, and Africa



Train-the-Trainer: Course design and delivery for bioinformatics trainers (virtual)

22 November–8 December 2022

Tuesdays & Thursdays, 12:00 - 15:00 GMT (14:00 – 17:00 CAT)



Working with Pathogen Genomes (Latin America) (Virtual)

7–11 February 2022

Virtual Course

GESBP-CostaRica

GESBP-CostaRica

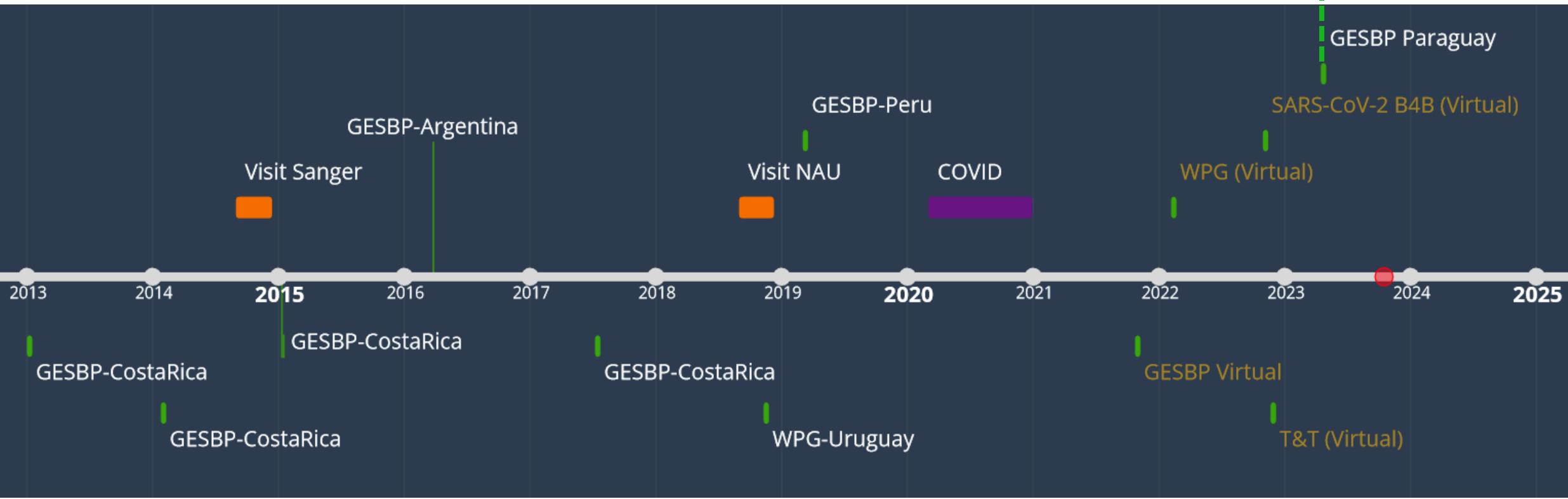
10 years anniversary!!!



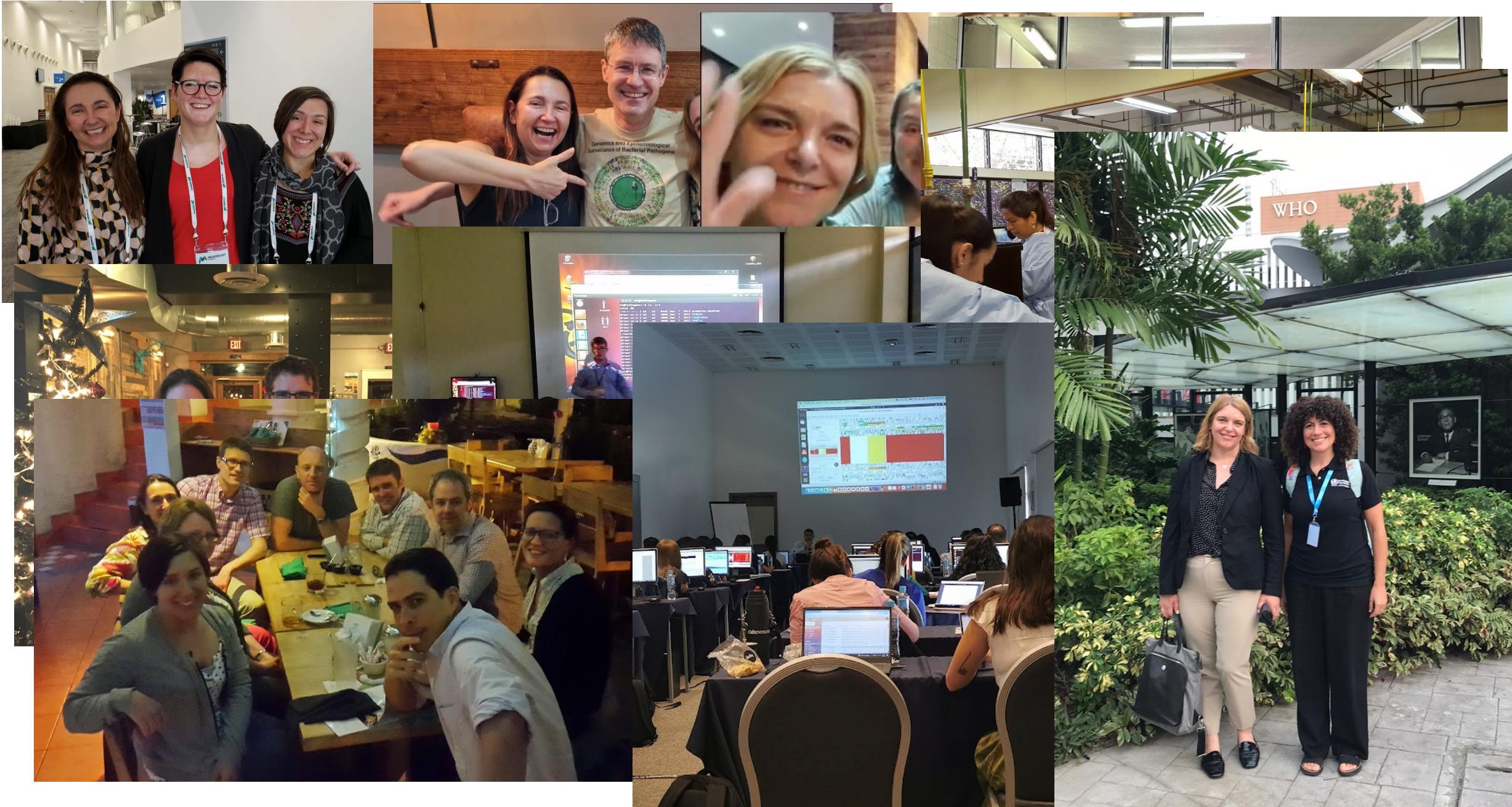
Genomics and Epidemiological Surveillance of Bacterial Pathogens - Latin America and the Caribbean

16–21 April 2023

Asunción, Paraguay









UNIVERSIDAD PERUANA
CAYETANO HEREDIA





Years	Project
2021-2023	SIA 0576-20 "Understanding <i>Brucella</i> phylogeography: a road to specific diagnostic tools" "Comprendiendo la filogeografía de <i>Brucella</i> : un camino para herramientas de diagnóstico específicas".
2020-2021	SIA 0652-19 "Desarrollo de herramientas hechas a la medida para el combate de la brucelosis en Costa Rica". FEES CONARE.
2020-2022	SIA 0648-19 "Diversidad genómica de <i>Salmonella enterica</i> y genes de resistencia a los antimicrobianos en poblaciones humanas, animales y alimentos en Costa Rica". FEES CONARE.
2018-2019	SIA 0045-17 "Implementación de la secuenciación de genoma completo de <i>Brucella abortus</i> como un modelo para el estudio de las enfermedades infecciosas en Costa Rica". Fondo Institucional para el Desarrollo Académico de la UNA (FIDA).
2018-2019	SIA 0607-17 "Descifrando la especificidad de hospedero: el caso de las bacterias intracelulares del género <i>Brucella</i> ". FEES CONARE.
2017-2019	SIA 0260-14 "Fortalecimiento de la Actividad Científica en la Región Latinoamericana".
2016-2017	SIA 0545-15 "Regulación transcripcional de la virulencia de <i>Brucella abortus</i> ". FEES CONARE.
2015-2017	SIA 0391-14 "Cerrando la brecha entre el diagnóstico convencional de enfermedades infecciosas y el diagnóstico de nueva generación". FEES CONARE.
2014-2015	SIA 0075-14 Epidemiología molecular a nivel genómico de un patógeno bacteriano re emergente con potencial zoonótico y de un patógeno bacteriano emergente de importancia nosocomial. FEES-CONARE



International Centre for Genetic
Engineering and Biotechnology



***Brucella abortus* Strain 2308 Wisconsin Genome: Importance of the Definition of Reference Strains**

Marcela Suárez-Esquivel¹, Nazareth Ruiz-Villalobos¹, Amanda Castillo-Zeledón¹, César Jiménez-Rojas¹, R. Martín Roop II², Diego J. Comerci³, Elías Barquero-Calvo⁴, Carlos Chacón-Díaz^{1,4}, Clayton C. Caswell⁵, Kate S. Baker^{6,7}, Esteban Chaves-Olarte⁴, Nicholas R. Thomson^{6,8}, Edgardo Moreno^{1,9}, Jean J. Letesson¹⁰, Xavier De Bolle¹⁰ and Caterina Guzmán-Verrí^{1,4*}

EMERGING INFECTIOUS DISEASES®

Brucella neotomae Infection in Humans, Costa Rica

Marcela Suárez-Esquivel, Nazareth Ruiz-Villalobos, César Jiménez-Rojas, Elías Barquero-Calvo, Carlos Chacón-Díaz, Eunice Víquez-Ruiz, Norman Rojas-Campos, Kate S. Baker¹, Gerardo Oviedo-Sánchez, Ernesto Amuy, Esteban Chaves-Olarte, Nicholas R. Thomson, Edgardo Moreno, and Caterina Guzmán-Verrí

Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 23, No. 6, June 2017



ACCESS MICROBIOLOGY

an open research platform

Volume 1, Issue 1A

Meeting Report | Open Access

***Brucella* sequence Type 27 isolated from Dwarf Sperm Whale (*Kogia sima*) stranded in the Costa Rican Pacific Coast**

Marcela Suárez-Esquivel¹, Nazareth Ruiz-Villalobos¹, Gabriela Hernández-Mora², Rocío González-Barrientos², José David Palacios-Alfaró³, Elías Barquero-Calvo^{1,4}, Esteban Chaves-Olarte⁴, Nicholas Thomson⁵, Edgardo Moreno^{1,4}, Caterina Guzmán-Verrí^{1,4}

GBE

***Brucella* Genetic Variability in Wildlife Marine Mammals Populations Relates to Host Preference and Ocean Distribution**

Marcela Suárez-Esquivel¹, Kate S. Baker^{2,3}, Nazareth Ruiz-Villalobos¹, Gabriela Hernández-Mora⁴, Elías Barquero-Calvo^{1,5}, Rocío González-Barrientos⁴, Amanda Castillo-Zeledón¹, César Jiménez-Rojas¹, Carlos Chacón-Díaz⁵, Axel Cloeckaert⁶, Esteban Chaves-Olarte⁵, Nicholas R. Thomson², Edgardo Moreno¹, and Caterina Guzmán-Verrí^{1,5,*}

Genome Biol. Evol. 9(7):1901–1912. doi:10.1093/gbe/evx137 Advance Access publication July 20, 2017

1901



Genetic and Phenotypic Characterization of the Etiological Agent of Canine Orchiepididymitis Smooth *Brucella* sp. BCCN84.3

Caterina Guzmán-Verrí^{1,2}, Marcela Suárez-Esquivel¹, Nazareth Ruiz-Villalobos¹, Michel S. Zygmunt³, Mathieu Gonnet³, Elena Campos⁴, Eunice Víquez-Ruiz¹, Carlos Chacón-Díaz², Beatriz Aragón-Aranda⁵, Raquel Conde-Alvarez⁵, Ignacio Moriyón⁵, José María Blasco⁶, Pilar M. Muñoz⁶, Kate S. Baker^{7,8}, Nicholas R. Thomson⁷, Axel Cloeckaert⁹ and Edgardo Moreno¹⁰*

PLOS NEGLECTED TROPICAL DISEASES

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Persistence of *Brucella abortus* lineages revealed by genomic characterization and phylodynamic analysis

Marcela Suárez-Esquivel, Gabriela Hernández-Mora, Nazareth Ruiz-Villalobos, Elías Barquero-Calvo, Carlos Chacón-Díaz, Jason T. Ladner, Gerardo Oviedo-Sánchez, Jeffrey T. Foster, Norman Rojas-Campos, Esteban Chaves-Olarte, Nicholas R. Thomson, Edgardo Moreno, Caterina Guzmán-Verrí





International Journal of
Molecular Sciences

Brucella Genomics: Macro and Micro Evolution

by  **Marcela Suárez-Esquível**  ,  **Esteban Chaves-Olarte**  ,  **Edgardo Moreno**   and  **Caterina Guzmán-Verri**   

¹ Programa de Investigación en Enfermedades Tropicales, Escuela de Medicina Veterinaria, Universidad Nacional, Heredia 3000, Costa Rica

² Centro de Investigación en Enfermedades Tropicales, Facultad de Microbiología, Universidad de Costa Rica, San José 1180, Costa Rica

* Author to whom correspondence should be addressed.

Int. J. Mol. Sci. **2020**, *21*(20), 7749; <https://doi.org/10.3390/ijms21207749>



Veterinary Microbiology

Volume 257, June 2021, 109072



Canine brucellosis in Costa Rica reveals widespread *Brucella canis* infection and the recent introduction of foreign strains

Marcela Suárez-Esquível^a, Nazareth Ruiz-Villalobos^a, Warren Hidalgo-Jara^a,
Carlos Chacón-Díaz^b, Ana Mariel Zúñiga-Pereira^b, Mario Masis-Mora^c,
Ericka Fernández-Fernández^c, Gabriela Hernández-Mora^d, Elías Barquero-Calvo^a,
Esteban Chaves-Olarque^b, Nicholas R. Thomson^e, Jeffrey T. Foster^f, Edgardo Moreno^a  

Show more >

 Add to Mendeley Share Cite

<https://doi.org/10.1016/j.vetmic.2021.109072> 23

[View Details](#)



 ELSEVIER

Veterinary Microbiology

Volume 245, June 2020, 108703



Molecular characterization of *Brucella ovis* in Argentina

Show more >

+ Add to Mendeley  Share  Cite

<https://doi.org/10.1016/j.vetmic.2020.108703>

European Journal of Wildlife Research (2021) 67:63

<https://doi.org/10.1007/s10344-021-01502-5>

SHORT COMMUNICATION



Brucella* sp. sequence-type 27 associated with abortion in dwarf sperm whale *Kogia sima

Gabriela Hernández-Mora¹ · Rocío González-Barrientos¹ · Eunice Víquez-Ruiz² · José David Palacios-Alfaro³ · Gianmarco Bettoni-Rodríguez⁴ · Marlène Gendre⁵ · Charline Vincent⁵ · Karol Roca-Monge⁶ · Nazareth Ruiz-Villalobos² · Marcela Suárez-Esquível² · Minor Cordero-Chavarría¹ · Esteban Chaves-Olarte⁷ · Nicholas R. Thomson⁸ · Elías Barquero-Calvo² · Edgardo Moreno²  · Caterina Guzmán-Verrí²

Virulent *Brucella nosferati* infecting *Desmodus rotundus* has emerging potential due to the broad foraging range of its bat host for humans and wild and domestic animals

Authors: Gabriela Hernández-Mora, Carlos Chacón-Díaz , Andres Moreira-Soto, Osvaldo Barrantes-Granados, Marcela Suárez-Esquivel, Eunice Viquez-Ruiz, Elías Barquero-Calvo, [SHOW ALL \(19 AUTHORS\)](#), Edgardo Moreno   | [AUTHORS INFO & AFFILIATIONS](#)

DOI: <https://doi.org/10.1128/msphere.00061-23> •  Check for updates



Article

Age and Sexual Maturity Estimation of Stranded Striped Dolphins, *Stenella coeruleoalba*, Infected with *Brucella ceti*

Karol Roca-Monge ¹, Rocío González-Barrientos ², Marcela Suárez-Esquivel ¹, José David Palacios-Alfaro ³, Laura Castro-Ramírez ¹, Mauricio Jiménez-Soto ¹, Minor Cordero-Chavarría ⁴, Daniel García-Párraga ⁵, Ashley Barratclough ⁶, Edgardo Moreno ¹ and Gabriela Hernández-Mora ^{4,*}

Oceans 2022, 3, 494–508. <https://doi.org/10.3390/oceans3040033>

www.mdpi.com/journal/oceans



CURRENT PROTOCOLS

PROTOCOL

ASGARD+: A New Modular Platform for Bacterial Antibiotic-Resistant Analysis

Maripaz Montero-Vargas , Alex Saenz-Rojas, Marcela Suárez-Esquivel, Lizbeth Ramirez-Carvajal

First published: 09 March 2023 | <https://doi.org/10.1002/cpz1.680>

Published in the Microbiology section



Article

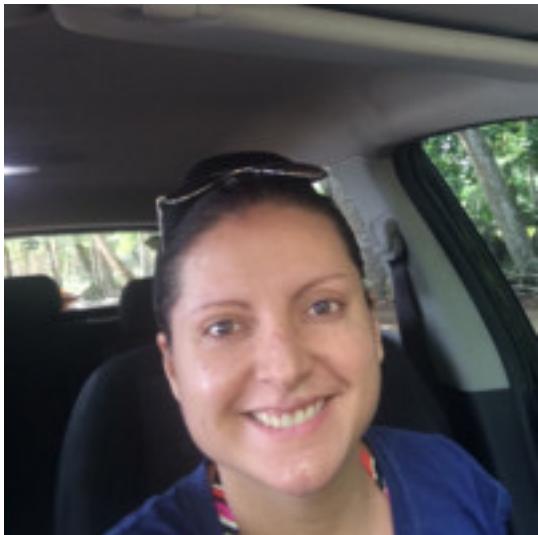
Pathological Studies and Postmortem Computed Tomography of Dolphins with Meningoencephalomyelitis and Osteoarthritis Caused by *Brucella ceti*

Andrés Granados-Zapata ¹, María José Robles-Malagamba ², Rocío González-Barrientos ³, Brian Chin-Wing Kot ^{2,4}, Elías Barquero-Calvo ⁵, Minor Cordero-Chavarría ⁶, Marcela Suárez-Esquivel ⁵, Caterina Guzmán-Verri ⁵, José David Palacios-Alfaro ⁷, Connie Tien-Sung ⁸, Edgardo Moreno ^{5,*} and Gabriela Hernández-Mora ^{6,*}

Oceans 2022, 3, 189–203. <https://doi.org/10.3390/oceans3020014>

www.mdpi.com/journal/oceans





Gabriela Hernández-Mora

PLOS ONE

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Brucellosis in mammals of Costa Rica: An epidemiological survey

Gabriela Hernández-Mora, Roberto Bonilla-Montoya, Osvaldo Barrantes-Granados, Andrea Esquivel-Suárez, Danilo Montero-Caballero, Rocío González-Barrientos, Zeanne Fallas-Monge, José David Palacios-Alfaro, Mario Baldi, Elena Campos, Grettel Chanto, Elías Barquero-Calvo, Carlos Chacón-Díaz, [...], Edgardo Moreno [view all]

Published: August 9, 2017 • <https://doi.org/10.1371/journal.pone.0182644>

PLOS ONE

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Epidemiology of bovine brucellosis in Costa Rica: Lessons learned from failures in the control of the disease

Gabriela Hernández-Mora, Nazareth Ruiz-Villalobos, Roberto Bonilla-Montoya, Juan-José Romero-Zúniga, Julio Jiménez-Arias, Rocío González-Barrientos, Elías Barquero-Calvo, Carlos Chacón-Díaz, Norman Rojas, Esteban Chaves-Olarte, Caterina Guzmán-Verri, Edgardo Moreno

Published: August 10, 2017 • <https://doi.org/10.1371/journal.pone.0182380>

PLOS NEGLECTED TROPICAL DISEASES

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Persistence of *Brucella abortus* lineages revealed by genomic characterization and phylodynamic analysis

Marcela Suárez-Esquível, Gabriela Hernández-Mora, Nazareth Ruiz-Villalobos, Elías Barquero-Calvo, Carlos Chacón-Díaz, Jason T. Ladner, Gerardo Oviedo-Sánchez, Jeffrey T. Foster, Norman Rojas-Campos, Esteban Chaves-Olarte, Nicholas R. Thomson, Edgardo Moreno, Caterina Guzmán-Verri

Version 2

Published: April 14, 2020 • <https://doi.org/10.1371/journal.pntd.0008235>

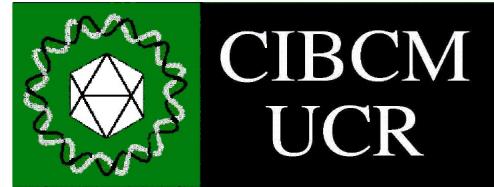


Main Scientific Conclusions

- Our results establish basis for future analysis of *Brucella* genomes
- We reported for the first time the zoonotic infection by *B. neotomae*
- We reported a new *Brucella* strain and a new species: *B. nosferati*
- There is greater variability among *Brucella* isolates from wildlife than among *B. abortus* and *B. canis* isolates, given by the pattern and number of SNPs, *IS711* distribution and number, and by the GI / SARs order.
- The variability is associated with of geographic distribution patterns and host preference range.
- We described how the TCS BvrR/BvrS contributes to the dynamics and complex gene regulatory functions during host-microbe interactions

Other Important Conclusions

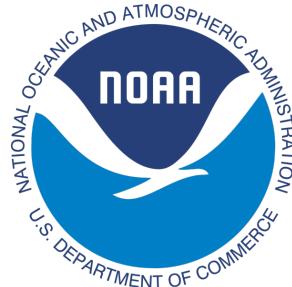
- Networking potentiate the power of results and the broadening of the research impact.
- Networking not only improves your work, but also the way you work.
- We are social beings, and “being part” is more important than we might think.



wellcome
sanger
institute



Dep. Sanidad Animal,
Zaragoza, España



wellcome
connecting
science



NORTHERN
ARIZONA
UNIVERSITY



