

WOAH Collaborative Centre Reports Activities 2023

Activities in 2023

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Centre Information

Title of WOA Collaborating Centre	Research and control of emerging and re-emerging swine diseases in Europe
Address of WOA Collaborating Centre	Centre de Recerca en Sanitat Animal (CReSA) Edifici CReSA Campus Universitat Autònoma de Barcelona 08193 Bellaterra (Barcelona) SPAIN
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Name Director of Institute (Responsible Official):	Josep Usall, General Director, Institut de Recerca i Tecnologia Agroalimentàries (IRTA)
Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):	Joaquim Segalés, Full Professor at the Universitat Autònoma de Barcelona and Researcher at the Institut de Recerca i Tecnologia Agroalimentàries (IRTA) - Centre de Recerca en Sanitat Animal (CReSA)
Name of the writer:	Joaquim Segalés

TOR1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOA

Category	Title of activity	Scope
Disease control (true)	Use of antibiotics, research	Ongoing projects aimed to the optimization of diagnosis and treatment of post-weaning diarrheas in pigs, with the final objective to improve the rational use of antibiotics. Also, antimicrobial resistance profiles and characterization of Escherichia coli strains from cases of neonatal diarrhea in Spanish pig farms was performed.
Epidemiology, surveillance, risk assessment, (true)	Development of epidemiological tools	Development of epidemiological tools to help the Regional Authorities in the surveillance and control of African Swine fever.
Training, capacity building (true)	Master in Laboratory Animal Science and Animal Welfare	A number of lecturers of this master's degree, organized by the Universitat Autònoma de Barcelona (UAB) are researchers of IRTA-CReSA.
Zoonoses (true)	Wild boar tuberculosis surveillance, service	The Centre is involved in the Wildlife Health Surveillance Plan of Catalonia. The main tasks of the Centre were to follow-up TB focuses and to estimate the apparent prevalence of TB in wild boar. The role

		of wild boars in bovine and caprine TB outbreaks was also investigated.
Wildlife (true)	Tuberculosis surveillance, service	The Centre is involved in the Wildlife Health Surveillance Plan of Catalonia. The main tasks of the Centre were to follow-up TB focuses and to estimate the apparent prevalence of TB in wild boar.
Diagnosis, biotechnology and laboratory (true)	Pathology, diagnosis	The slaughterhouse support network, SESC, is a continuing educational tool for meat inspectors from the Public Health Agency of Catalonia (ASPCAT). The network is managed by IRTA-CReSA in collaboration with UAB's Veterinary Faculty.
Veterinary medicinal products (true)	Spanish Medicine Agency, expert participation	"Plan Nacional de Resistencias a Antibióticos (PRAN): Plan estratégico y de acción para reducir el riesgo de selección y diseminación de resistencias a los antibióticos." Working group analysing consumption of antimicrobials and antimicrobial resistance with a one health approach (IACRA report), "Informe sobre el Análisis del Consumo y de la Resistencia a los Antibióticos"
Vaccines (true)	African swine fever, research	Multiple studies regarding immunology of ASFV and testing of different ASFV vaccine prototypes.
Feed safety (true)	Spray-dried porcine plasma, research	Feeding Spray-Dried Porcine Plasma to Pigs Reduces African Swine Fever Virus Load in Infected Pigs and Delays Virus Transmission. Also, Feeding Spray-Dried Porcine Plasma to Pigs Improves the Protection Afforded by the African Swine Fever Virus (ASFV) BA71ΔCD2 Vaccine Prototype against Experimental Challenge with the Pandemic ASFV.
Disease control (true)	Polyserositis in swine, research	Control of polyserositis caused by Glaesserella parasuis, Streptococcus suis and Mycoplasma hyorhynchus by means of vaccination, management approaches and/or modification of the nasal microbiota.
Disease control (true)	Respiratory disease, research	Definition of the cornerstone nasal microbiota for respiratory disease control in pigs
Disease control (true)	Nasal microbiota effect, research	Study of the functionality and the effect of the nasal microbiota of piglets on the immune response
Epidemiology, surveillance, risk assessment, (true)	Assessing the PRRS incidence in breeding herds	Assess the incidence of PRRSV outbreaks in breeding herds in the region of Catalonia.
Epidemiology, surveillance, risk assessment (true)	Development of epidemiological tools, research	Developing data-driven decision support tools that offer robust and early signals of disease emergence and options for diagnostic confirmation (DECIDE project).
Epidemiology, surveillance, risk assessment (true)	First detection of PCV-4 in Europe, research	Surveillance efforts have been demonstrating the first evidence of PCV-4 infection in pigs out from the Asian continent. It has been described in Europe, specifically in Spain in wild boar and Iberian pigs.

Epidemiology, surveillance, risk assessment (true)	Economic impact of diseases	The economic impact of endemic respiratory disease in pigs and related interventions was reviewed.
Training, capacity building (true)	International Master on Infectious Diseases and One Health (IDOH)	A number of lecturers of this master's degree, organized by the Universitat Autònoma de Barcelona (UAB) are researchers of IRTA-CReSA.
Training, capacity building (true)	Master on Swine Health and Production	A number of lecturers of this master's degree, organized by the Universitat de Lleida (UdL), are researchers of IRTA-CReSA.
Training, capacity building (true)	PhD students	The research center has a permanent number of around 20 to 30 PhD students dealing with different aspects on animal health. Approximately one third to one half of them are devoted to swine research.
Training, capacity building (true)	Curso de Formación de Personal Investigador Usuario de Animales para Experimentación y otros Fines Científicos	A number of lecturers of this course, organized by the Universitat Autònoma de Barcelona (UAB) are researchers of IRTA-CReSA.
Epidemiology, surveillance, risk assessment (true)	Enteric virus surveillance, research	Detection and genetic characterization of enteric viruses in diarrhoea outbreaks from swine farms in Spain.
Zoonoses (true)	Streptococcus suis, research	The emergence and diversification of a zoonotic pathogen from within the microbiota of intensively farmed pigs.
Diagnosis, biotechnology and laboratory (true)	Porcine Forebrain Vacuolization, research	Porcine Forebrain Vacuolization Associated with Wasting in Pigs: A potential Novel Pathological Outcome Associated with Vitamin-Mineral Deficiency.
Diagnosis, biotechnology and laboratory (true)	African swine fever diagnosis, research	Development of an efficient detection of African Swine Fever Virus using minimal equipment through a LAMP PCR method.
Diagnosis, biotechnology and laboratory (true)	Diagnosis based on processing fluids, research	Assessment of the role of sow parity on PRRSV detection by RT-qPCR through weekly processing fluids monitoring in breeding herds
Vaccines (true)	Classical swine fever virus, research	Multiple studies regarding immunology of CSFV and testing of different CSFV vaccine prototypes.
Vaccines (true)	Swine influenza virus variability upon vaccination, research	Genetic diversification patterns in swine influenza A virus (H1N2) in vaccinated and nonvaccinated animals.
Vaccines (true)	PRRSV vaccine, research	Protection provided by a commercial modified-live porcine reproductive and respiratory syndrome virus (PRRSV) 1 vaccine (PRRSV1-MLV) against a Japanese PRRSV2 field strain.

Vaccines (true)	Glaesserella parasuis vaccine, research	Immune responses following neonatal vaccination with conserved F4 fragment of VtaA proteins from virulent Glaesserella parasuis adjuvanted with CAF® 01 or CDA.
Diagnosis, biotechnology and laboratory (true)	On farm diagnosis, research	Development of an on-farm rapid test for prognosis and diagnosis of porcine polyserositis
Disease control (true)	New antimicrobials, research	INNOvative approaches to identification of metabolic TARGETS for antimicrobials (Innotargets) Innovative Training Networks (ITN)

TOR3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main focus area for which you were designated

Proposal title	Scope/Content	Applicable area
African swine fever vaccine development	The project aims to develop strategies for protection against ASFV.	health management Animal production Veterinary products

3. In exercising your activities, have you identified any regulatory research needs* relevant for WOA?H?

Yes

Research need : 1

Please type the Research need: There is a lack of epidemiological cut off values (ECOFF) and clinical breakpoints (CB) defined for interpretation of susceptibility testing results for many combinations of pathogens/antimicrobials of pig origin. This action should start by collecting isolates of the main pathogens affecting pigs (*Glaesserella parasuis*, *Actinobacillus pleuropneumoniae*, *Streptococcus suis*, *Salmonella*, *Escherichia coli*,...) and performing MIC determinations for antimicrobials representing the different families of these drugs. Some isolates are already available at CReSA, but the collection needs to be updated and expanded.

Relevance for WOA?H Disease Control, Standard Setting,

Relevance for the Codes or Manual Manual,

Field Epidemiology and Surveillance, Diagnostics, Therapeutics,

Animal Category Terrestrial,

Disease:

Kind of disease (Zoonosis, Transboundary diseases)

If any, please specify relevance for Codes or Manual, chapter and title

(e.g. Terrestrial Manual Chapter 2.3.5 - Minimum requirements for aseptic production in vaccine manufacture)

Answer:

Notes:

Answer:

4. Did your Collaborating Centre maintain a network with other WOA?H Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of WOA?H CC/RL/other	Region of

organisation(s)	Location	networking Centre	Purpose
WOAH Reference Laboratory on Classical Swine Fever	Spain	Europe	Research collaboration on swine pestiviruses.
Department of Animal Medicine, Production and Health (MAPS), University of Padua	Italy	Europe	Research collaboration on porcine circoviruses.
Centro Nacional de Sanidad Agropecuaria (CENSA)	Cuba	Americas	Research collaboration on classical swine fever.
Plum Island Animal Disease Center	USA	Americas	Research Collaboration on CSFV and ASFV.
Swine and Poultry Infectious Diseases Research Center (CRIPA)	Canada	Americas	Research collaboration on S. suis and G. parasuis.
Department of Virus and Microbiological Special Diagnostics, Statens Serum Institut	Denmark	Europe	Research collaboration on G. parasuis virus vaccine and adjuvant testing.
Helmholtz Centre for Infection Research, Department of Vaccinology and Applied Microbiology	Germany	Europe	Research collaboration on G. parasuis virus vaccine and adjuvant testing.
Institute of Virology and Immunology (IVI)	Switzerland	Europe	Research collaboration on CSFV.
Universidad de León	Spain	Europe	Research collaboration on endemic enteric viruses.
WOAH Reference Laboratory for Swine Influenza Virus, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia Romagna	Italy	Europe	Research collaboration on SIV sequencing.
University of Minnesota	USA	Americas	Research collaboration on PRRSV.
			Research collaboration on

Eidgenössische Technische Hochschule (ETH) Zürich	Switzerland	Europe	social sciences, focus on farmer and veterinarians needs for controlling diseases.
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TOR4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAHC Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOAHC CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Erasmus Medical Center (EMC)	The Netherlands	Europe	Research collaboration on MERS-CoV.
IrsiCaixa	Spain	Europe	Research collaboration on SARS-CoV-2.
Huvepharma	Belgium		Research collaboration on ASFV.
APC Europe	Spain	Europe	Research collaboration on ASFV.
CEVA	Spain	Europe	Industrial doctorate on PCV-2.
Trouw Nutrition R&D	The Netherlands		Research collaboration on Streptococcus suis.
Danish Technical University	Denmark	Europe	Research collaboration on PEDV.
Institut Pasteur, Université Paris Cité	France	Europe	Research collaboration on Arboviruses and Insect Vectors
Barcelona Supercomputing Center	Spain	Europe	Research collaboration on SARS-CoV-2.

Pharmamar	Spain	Europe	Research collaboration on SARS-CoV-2.
SYVA	Spain	Europe	Industrial doctorate on PCV-2.
Boehringer Ingelheim	Germany	Europe	Research collaboration on ASFV.

TOR6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAAH?

Yes

NAME OF EXPERT	KIND OF CONSULTANCY	SUBJECT
Joaquim Segalés	Request from WOAAH for expertise on the zoonotic nature of Postweaning Multisystemic Wasting Syndrome	Zoonotic potential of a swine disease.

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

No

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAAH, to personnel from WOAAH Members?

No

TOR8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAAH?

Yes

NATIONAL/INTERNATIONAL	TITLE OF EVENT	CO-ORGANISER	DATE (MM/YY)	LOCATION	NO. PARTICIPANTS
National	Course on abattoir condemned viscera and common findings at slaughter	IRTA	2023-06-20	Bellaterra, Barcelona (Spain)	20
National	Annual SESC Meeting 2023	IRTA	2023-12-14	Bellaterra, Barcelona (Spain)	30

TOR9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAAH that may be useful to Members of WOAAH

a) Articles published in peer-reviewed journals:

32

The DECIDE project: from surveillance data to decision-support for farmers and veterinarians.

van Schaik G, Hostens M, Faverjon C, Jensen DB, Kristensen AR, Ezanno P, Frössling J, Dórea F, Jensen BB, Carmo LP, Steeneveld W, Rushton J, Gilbert W, Bearth A, Siegrist M, Kaler J, Ripperger J, Siehler J, de Wit S, Garcia-Morante B, Segalés J, Pardon B, Bokma J, Nielsen M. Open Res Eur. 2023 May 17;3:82. doi: 10.12688/openreseurope.15988.1. eCollection 2023. PMID: 38778904

Potential business model for a European vaccine R&D infrastructure and its estimated socio-economic impact.

Jungbluth S, Martin W, Slezak M, Depraetere H, Guzman CA, Ussi A, Morrow D, Van Heuverswyn F, Arnouts S, Carrondo MJT, Olesen O, Ottenhoff THM, Dockrell HM, Ho MM, Dobby A, Christensen D, Segalés J, Laurent F, Lantier F, Stockhofe-Zurwieden N, Morelli F, Langermans JAM, Verreck FAW, Le Grand R, Sloots A, Medagliani D, Lawrenz M, Collin N.F1000Res. 2023 Oct 24;12:1401. doi: 10.12688/f1000research.141399.1. eCollection 2023.PMID: 38298529

2023 International African Swine Fever Workshop: Critical Issues That Need to Be Addressed for ASF Control.

Wang L, Ganges L, Dixon LK, Bu Z, Zhao D, Truong QL, Richt JA, Jin M, Netherton CL, Benarafa C, Summerfield A, Weng C, Peng G, Reis AL, Han J, Penrith ML, Mo Y, Su Z, Vu Hoang D, Pogranichniy RM, Balaban-Oglan DA, Li Y, Wang K, Cai X, Shi J.Viruses. 2023 Dec 19;16(1):4. doi: 10.3390/v16010004.PMID: 38275939

Clinical, Pathological and Virological Outcomes of Tissue-Homogenate-Derived and Cell-Adapted Strains of Porcine Epidemic Diarrhea Virus (PEDV) in a Neonatal Pig Model.

López-Figueroa C, Cano E, Navarro N, Pérez-Maíllo M, Pujols J, Núñez JJ, Vergara-Alert J, Segalés J.Viruses. 2023 Dec 27;16(1):44. doi: 10.3390/v16010044.PMID: 38257745

Molecular contamination of an animal facility during and after African swine fever virus infection.

Walczak M, Szymankiewicz K, Rodriguez F, Argilagué J, Gavrilov B, Żmudzki J, Kochanowski M, Juskiewicz M, Szczotka-Bochniarz A.J Vet Res. 2023 Dec 19;67(4):503-508. doi: 10.2478/jvetres-2023-0065. eCollection 2023 Dec.PMID: 38130453

Editorial: Porcine respiratory disease complex: dynamics of polymicrobial infections, synergistic effects and management strategies.

Ramos N, Sibila M, Neira V.Front Vet Sci. 2023 Nov 29;10:1329073. doi: 10.3389/fvets.2023.1329073. eCollection 2023.PMID: 38094500 No abstract available.

Metabolic insights and background from naturally affected pigs during *Streptococcus suis* outbreaks.

Fabà L, Aragon V, Litiens R, Galofré-Milà N, Segura M, Gottschalk M, Doelman J.Transl Anim Sci. 2023 Nov 6;7(1):txad126. doi: 10.1093/tas/txad126. eCollection 2023.PMID: 38023423

Intensive antibiotic treatment of sows with parenteral crystalline ceftiofur and tulathromycin alters the composition of the nasal microbiota of their offspring.

Bonillo-Lopez L, Obregon-Gutierrez P, Huerta E, Correa-Fiz F, Sibila M, Aragon V.Vet Res. 2023 Nov 24;54(1):112. doi: 10.1186/s13567-023-01237-y.PMID: 38001497

The Susceptibility Trends of Respiratory and Enteric Porcine Pathogens to Last-Resource Antimicrobials.

Vilaró A, Novell E, Enrique-Tarancon V, Baliellas J, Migura-García L, Fraile L.Antibiotics (Basel). 2023 Oct 28;12(11):1575. doi: 10.3390/antibiotics12111575.PMID: 37998776

The emergence and diversification of a zoonotic pathogen from within the microbiota of intensively farmed pigs.

Murray GGR, Hossain ASMM, Miller EL, Bruchmann S, Balmer AJ, Matuszewska M, Herbert J, Hadjirin NF, Mugabi R, Li G, Ferrando ML, Fernandes de Oliveira IM, Nguyen T, Yen PLK, Phuc HD, Zaw Moe A, Su Wai T, Gottschalk M, Aragon V, Valentin-Weigand P, Heegaard PMH, Vrieling M, Thein Maw M, Thidar Myint H, Tun Win Y, Thi Hoa N, Bentley SD, Clavijo MJ, Wells JM, Tucker AW, Weinert LA.Proc Natl Acad Sci U S A. 2023 Nov 21;120(47):e2307773120. doi: 10.1073/pnas.2307773120. Epub 2023 Nov 14.PMID: 37963246

Ceftiofur treatment of sows results in long-term alterations in the nasal microbiota of the offspring that can be ameliorated by inoculation of nasal colonizers.

Blanco-Fuertes M, Sibila M, Franco G, Obregon-Gutierrez P, Illas F, Correa-Fiz F, Aragón V.Anim Microbiome. 2023 Oct 20;5(1):53. doi: 10.1186/s42523-023-00275-3.PMID: 37864263

Experimental Inoculation of Porcine Circovirus 3 (PCV-3) in Pregnant Gilts Causes PCV-3-Associated Lesions in Newborn Piglets that Persist until Weaning.

Cobos A, Ruiz A, Pérez M, Llorens A, Huerta E, Correa-Fiz F, Lohse R, Balasch M, Segalés J, Sibila M.Transbound Emerg Dis. 2023 Oct; 5270254. doi: doi.org/10.1155/2023/5270254.105854.

The economic impact of endemic respiratory disease in pigs and related interventions - a systematic review.

Boeters M, Garcia-Morante B, van Schaik G, Segalés J, Rushton J, Steeneveld W.Porcine Health Manag. 2023 Oct 17;9(1):45. doi: 10.1186/s40813-023-00342-w.PMID: 37848972 Review.

First detection of porcine circovirus 4 (PCV-4) in Europe.

Holgado-Martín R, Amal JL, Sibila M, Franco G, Martín-Jurado D, Risco D, Segalés J, Gómez L.Virol J. 2023 Oct 10;20(1):230. doi: 10.1186/s12985-023-02181-1.PMID: 37817216

Genetic diversification patterns in swine influenza A virus (H1N2) in vaccinated and nonvaccinated animals.

López-Valiñas Á, Valle M, Pérez M, Darji A, Chiapponi C, Ganges L, Segalés J, Núñez JJ.Front Cell Infect Microbiol. 2023 Sep 15;13:1258321. doi: 10.3389/fcimb.2023.1258321. eCollection 2023.PMID: 37780850

Porcine Reproductive and Respiratory Syndrome (PRRSV2) Viral Diversity within a Farrow-to-Wean Farm Cohort Study.

Kikuti M, Vilalta C, Sanhuesa J, Pamornchainavakul N, Kevill J, Yang M, Paploski IAD, Lenskaia T, Odogwu NM, Kiehne R, VanderWaal K, Schroeder D, Corzo CA.Viruses. 2023 Aug 30;15(9):1837. doi: 10.3390/v15091837.PMID: 37766244

Molecular characterization of *Glaesserella parasuis* strains circulating in North American swine production systems.

Mugabi R, Silva APSP, Hu X, Gottschalk M, Aragon V, Macedo NR, Sahin O, Harms P, Main R, Tucker AW, Li G, Clavijo MJ.BMC Vet Res. 2023 Aug 28;19(1):135. doi: 10.1186/s12917-023-03698-x.PMID: 37641044

Protection provided by a commercial modified-live porcine reproductive and respiratory syndrome virus (PRRSV) 1 vaccine (PRRSV1-MLV) against a Japanese PRRSV2 field strain.

Miranda J, Romero S, de Lucas L, Saito F, Fenech M, Díaz I.J Vet Sci. 2023 Sep;24(5):e54. doi: 10.4142/jvs.23025. Epub 2023 Jul 7.PMID: 37638707

Inactivation of African swine fever virus inoculated in liquid plasma by spray drying and storage for 14 days at 4°C or 20°C.

Blázquez E, Pujols J, Segalés J, Navarro N, Rodríguez C, Ródenas J, Polo J. *PLoS One*. 2023 Aug 22;18(8):e0290395. doi: 10.1371/journal.pone.0290395. eCollection 2023. PMID: 37607204

Porcine Forebrain Vacuolization Associated with Wasting in Pigs: A Novel Pathological Outcome Associated with Vitamin-Mineral Deficiency?

Ruiz-Riera E, Vidal E, Canturri A, Lehmecker A, Cuvertoret M, Lopez-Figueroa C, Baumgärtner W, Domingo M, Segalés J. *Animals (Basel)*. 2023 Jul 10;13(14):2255. doi: 10.3390/ani13142255. PMID: 37508034

A single, episodic event of unilateral/bilateral scrotal swelling in a group of adult boars at an Austrian boar stud.

Schwarz L, Dürlinger S, Martin V, Weißenböck H, Brunthaler R, Rumenapf T, Auer A, Loncaric I, Zimpernik I, Reisinger N, Behler-Wöchtel B, Scarlet D, Althouse G, Kuster C, Kauffold J, Segales J, Laitat M, Thilmant P, Grahofer A, Ladinig A. *Porcine Health Manag*. 2023 Jul 14;9(1):17. doi: 10.1186/s40813-023-00313-1. PMID: 37443098

*Immune responses following neonatal vaccination with conserved F4 fragment of VtaA proteins from virulent *Glaesserella parasuis* adjuvanted with CAF® 01 or CDA.*

López-Serrano S, Mahmmod YS, Christensen D, Ebsen T, Guzmán CA, Rodríguez F, Segalés J, Aragón V. *Vaccine X*. 2023 Jun 10;14:100330. doi: 10.1016/j.jvacx.2023.100330. eCollection 2023 Aug. PMID: 37361051

Detection and genetic characterization of enteric viruses in diarrhoea outbreaks from swine farms in Spain.

Puente H, Arguello H, Cortey M, Gómez-García M, Mencía-Ares O, Pérez-Perez L, Díaz I, Carvajal A. *Porcine Health Manag*. 2023 Jun 22;9(1):29. doi: 10.1186/s40813-023-00326-w. PMID: 37349807

Feeding Spray-Dried Porcine Plasma to Pigs Improves the Protection Afforded by the African Swine Fever Virus (ASFV) BA71ΔCD2 Vaccine Prototype against Experimental Challenge with the Pandemic ASFV-Study 2.

Pujols J, Blázquez E, Segalés J, Rodríguez F, Chang CY, Argilagueta J, Bosch-Camós L, Rosell R, Pailler-García L, Gavrilov B, Campbell J, Polo J. *Vaccines (Basel)*. 2023 Apr 10;11(4):825. doi: 10.3390/vaccines11040825. PMID: 37112737

Feeding Spray-Dried Porcine Plasma to Pigs Reduces African Swine Fever Virus Load in Infected Pigs and Delays Virus Transmission-Study 1.

Blázquez E, Pujols J, Rodríguez F, Segalés J, Rosell R, Campbell J, Polo J. *Vaccines (Basel)*. 2023 Apr 10;11(4):824. doi: 10.3390/vaccines11040824. PMID: 37112736

Vaccination against swine influenza in pigs causes different drift evolutionary patterns upon swine influenza virus experimental infection and reduces the likelihood of genomic reassortments.

López-Valiñas Á, Valle M, Wang M, Darji A, Cantero G, Chiapponi C, Segalés J, Ganges L, Núñez JJ. *Front Cell Infect Microbiol*. 2023 Mar 13;13:1111143. doi: 10.3389/fcimb.2023.1111143. eCollection 2023. PMID: 36992684

Genetic architecture of innate and adaptive immune cells in pigs.

Ballester M, Jové-Juncà T, Pascual A, López-Serrano S, Crespo-Piazuelo D, Hernández-Banqué C, González-Rodríguez O, Ramayo-Caldas Y, Quintanilla R. *Front Immunol*. 2023 Feb 6;14:1058346. doi: 10.3389/fimmu.2023.1058346. eCollection 2023. PMID: 36814923

Systemic CD4 cytotoxic T cells improve protection against PRRSV-1 transplacental infection.

Li Y, Díaz I, Martín-Valls G, Beyersdorf N, Mateu E. *Front Immunol*. 2023 Jan 17;13:1020227. doi: 10.3389/fimmu.2022.1020227. eCollection 2022. PMID: 36798517

Efficient detection of African Swine Fever Virus using minimal equipment through a LAMP PCR method.

Bohorquez JA, Lanka S, Rosell R, Pérez-Simó M, Alberch M, Rodriguez F, Ganges L, Maddox CW. *Front Cell Infect Microbiol*. 2023 Jan 27;13:1114772. doi: 10.3389/fcimb.2023.1114772. eCollection 2023. PMID: 36779186

Porcine circovirus 3 (PCV-3) variability: Is it in the virus or in the classification criteria?

Franzo G, Segalés J. *Virology*. 2023 Feb 9;20(1):26. doi: 10.1186/s12985-023-01984-6. PMID: 36759848

Assessing the role of sow parity on PRRSV detection by RT-qPCR through weekly processing fluids monitoring in breeding herds.

Sanhueza JM, Schwartz M, Corzo CA, Kikuti M, Yeske P, Leuwerke B, Schelkopf A, Williams T, Feuerbach S, Johnson C, Toohill E, Tapia-Escarate D, Yang M, Schroeder D, Vilalta C. *Prev Vet Med*. 2023 Apr;213:105854. doi: 10.1016/j.prevetmed.2023.105854. Epub 2023 Jan 23. PMID: 36758300

Review on the methodology to assess respiratory tract lesions in pigs and their production impact.

Maes D, Sibila M, Pieters M, Haesebrouck F, Segalés J, de Oliveira LG. *Vet Res*. 2023 Feb 1;54(1):8. doi: 10.1186/s13567-023-01136-2. PMID: 36726112 Review.

b) International conferences:

16

Online conference: "Update on SARS-CoV-2 in humans and animals including pigs". Swine and Wine Meeting. 1-2/10/2023. Arlberg (Austria). Author: J. Segalés.

Conference: "Challenges and future threat of respiratory virus diseases that emerge through zoonotic transmission". 1er Workshop AC Virose Respiratoire organizado por ANRS - Emerging Infectious Diseases des INSERM. Paris (Francia). 31/3/23. Autores: J. Segalés.

Conference: "The many things that we can do to fight African swine fever besides searching for a vaccine" SINSUI 2023, Porto Alegre (Brasil). 9-11 May 2023. Author: Fernando Rodríguez.

Round table discussion: "Recent emerging of porcine viruses". 8th International Symposium on Emerging and Re-emerging Pig Diseases. Bangkok (Tailândia). 4-7/6/2023. Autores: T. Opriessnig, J. Segalés, C. Lin, D.P. Gladue.

- Conference: "Porcine circoviruses and their impacts on reproductive diseases" 8th International Symposium on Emerging and Re-emerging Pig Diseases. Bangkok (Tailàndia). 4-7/6/2023. Authors: J. Segalés.
- Round table discussion: "Panel discussion on new era of PRRS vaccines" 8th International Symposium on Emerging and Re-emerging Pig Diseases. Bangkok (Tailàndia). 4-7/6/2023. Authors: S. Suradhat, H. Nauwynck, T. Opriessnig, J. Segalés.
- Online conference: "BA71dCD2 vaccine". Conversatorio de PPA en Republica Dominicana (on-line). 6 June 2023. Author: J. Argilaguët.
- Conference: "Advantages and disadvantages of using large animals in experimentation". ESLAV-ECLAM annual meeting 2023. Tallinn (Estonia). 26-27/6/2023. Authors: J. Segalés.
- Round table discussion: "One health from laboratory animal science & medicine perspective". ESLAV-ECLAM annual meeting 2023. Tallinn (Estonia). 26-27/6/2023. Authors: A. Thomas, J. Segalés, C. Brayton.
- Conference: "Intranasal immunization with BA71ΔCD2 confers solid cross-protection associated with an adaptive-innate immune crosstalk". IFRc-ImmunoSensation International School on Advanced Immunology, Gleys (Germany). 17-22 September 2023. Author: Uxía Alonso.
- Online conference: "PCV-3 reproductive versus post-weaning diseases: two faces of the same coin?". Swine and Wine Meeting. 29-30/9/2023. Plovdiv (Bulgaria). Author: J. Segalés.
- Conference: "Polyserositis by early colonizers and the role of the upper respiratory tract microbiota". CONGRESO: XX Congreso Abraves. 16-19 October, 2023. Porto Alegre, Brasil. Author: V. Aragón.
- Conference: "Does PCV-3 cause disease in pigs? Current findings on pathology and pathogenesis". BPT Veterinary Congress 2023, German Veterinary Practitioners Association. 19-21/10/2023. Munich (Alemania). Author: J. Segalés.
- Online conference: "PCV-2d and PCV-3; emerging swine diseases and best control options". North Carolina Veterinary Conference. 3/11/2023. Raleigh (Carolina del Norte, Estados Unidos). Authors: J. Segalés, D. Madson.
- Online conference: "PCV-3 associated disease: to what extent should we worry?". Ontario Association of Swine Veterinarians, 17th Annual Fall Conference. 3-4/11/2023. Benmiller (Ontario, Canadá). Author: J. Segalés.
- Conference: "Contribución de la secuenciación masiva en la investigación de brotes de tuberculosis animal". XXVII Jornadas Internacionales sobre Tuberculosis. Barcelona (Spain), 13-14 november, 2023. Authors: Bernat Pérez de Val, Carles Riera, Albert Sanz, Jose Luis Sáez, Enric Vidal.
- c) National conferences:
6
- Conference: "Microbiota respiratoria en el ámbito veterinario". CONGRESO: IVX workshop de la Sociedad Española de microbiota, prebióticos y probióticos (SEMPyP). 8-10 marzo, 2023. Pamplona, España. Authors: V. Aragón, F. Correa-Fiz.
- Conference: "Proyecto DECIDE: Control basado en datos de enfermedades infecciosas en animales de abasto". 1r 333 Experience Congress Encargados de Granja y Recursos Humanos. 20-21/9/2023. Lleida (España). Authors: B. García-Morante, J. Segalés.
- Conference: "Infección por Senecavirus A: ¿nos debería preocupar?". XLII Congreso ANAPORC. 4-5/10/2023. Burgos (España). Author: J. Segalés.
- Conference: "Estrategias de manejo en granja con impacto en salud animal y en la emergencia de bacterias resistentes". Jornada PATI, Torre Marimon IRTA 17 Nov 2023. Author: L. Migura.
- Conference: "Uso de la secuenciación de nueva generación en la investigación de brotes reemergentes de tuberculosis en un contexto multihospedador". XXVI Symposium of AVEDILA. Elche (Spain), 19-21 november, 2023. Authors: Bernat Pérez de Val, Carles Riera, Albert Sanz, Enric Vidal.
- Conference: "Una Salut... D'on venim, on som i cap on anem!". III Jornada d'Actualització en Malalties Infeccioses, organitzada per Xarxa Assistencial Universitària de Manresa (ALTHAIA). 30/11/23. Manresa (España). Author: J. Segalés.
- d) Other (Provide website address or link to appropriate information):
¿Cómo afecta la inmunidad materna a la respuesta inmunitaria generada por la vacunación temprana de los lechones? Martínez-Boixaderas N; L Graza-Moreno; M. Sibila; J. Segalés. https://www.3tres3.com/articulos/la-inmunidad-maternal-y-vacunacion-temprana-de-lechones_49722/ Publicado 10/1/2023.
- Pulmonary lesions at slaughterhouse: how to evaluate them. M. Sibila, J. Segalés, M. Pieters, LG. Oliveira and D. Maes. Pig333. 10-07-2023. https://www.pig333.com/articles/how-to-evaluate-pulmonary-lesions-in-pigs_19354/.
- Lesiones pulmonares en matadero: ¿Cómo evaluarlas? M. Sibila, J. Segalés, M. Pieters, LG. Oliveira and D. Maes. Pig333. 11-07-2023. https://www.3tres3.com/articulos/%C2%BFcomo-evaluar-lesiones-pulmonares-en-cerdos-en-matadero_49422/

<https://sesc.cat/es>

11. What have you done in the past year to advance your area of focus, e.g. updated technology?

We have implemented the technical capabilities of the BSL3 animal facilities with new imaging equipment to study viral and bacterial infections in real time.

Design of an extension of the BSL3 animal and laboratory facilities to be constructed in the next few years.

12. Additional comments regarding your report: