WOAH Collaborative Centre Reports Activities 2022

Activities in 2022

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Centre Information

Title of WOAH Collaborating Centre	Research and Control of emerging and re-emerging swine diseases in Europe
Address of WOAH 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 Tecnología 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 WOAH

Disease Control	
Title of activity	Scope
	Ongoing project is aimed to the optimization of diagnosis and

Use of antibiotics, research	treatment of post-weaning diarrheas in pigs, with the final objective to improve the rational use of antibiotics.
Disease Control	
Title of activity	Scope
Glaesserella parasuis, research	Control of this bacterial infection by means of vaccination and/or modification of the nasal microbiota.
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope
Respiratory virus surveillance, research	Diagnostic study including influenza A, B and D viruses, Porcine reproductive and respiratory syndrome virus (PRRSV), Porcine respiratory coronavirus (PRCV), Porcine cytomegalovirus (PCMV), Porcine circovirus 2 (PCV2), 3 (PCV3) and 4 (PCV), Porcine parainfluenza 1 (PPIV1) and Swine orthopneumovirus (SOV).
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope
PRRSV diagnosis, research	PRRSV prevalence by means of processing fluids use for diagnosis in breeding herds
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope
Porcine circovirus 3, research	Retrospective study on PCV-3 association with clinical disease, mainly at reproductive and postweaning levels, and detection of the virus at different gestational ages.
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope
Maternally derived immunity in front of several pathogens, review	Review on the effect of maternally derived immunity, with focus on antibodies, regarding the effects of vaccination in face of such immunity.
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope

Detection of Mycoplasma hyopneumoniae, research	Environmental detection of Mycoplasma hyopneumoniae in breed-to-wean farms.
Zoonoses	
Title of activity	Scope
Surveillance of SARS-CoV-2 in pigs, research	Sporadic infections in the field cannot be excluded, but large-scale SARS-CoV-2 transmission among pigs is unlikely.
Training, capacity building	
Title of activity	Scope
PhD students	The research center has a permanent number of around 20 PhD students dealing with different aspects on animal health. Approximately one third of them are devoted to swine research.
Training, capacity building	
Title of activity	Scope
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	
Title of activity	Scope
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.
Training, capacity building	
Title of activity	Scope
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 IRTACReSA.
Zoonoses	
Title of activity	Scope
	The Centre is involved in the Wildlife Health Surveillance Plan of Catalonia. The main tasks of the Centre were to follow-up TB

Wild boar tuberculosis surveillance, service	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.
Zoonoses	
Title of activity	Scope
Campylobacer spp. and Salmonella spp. in wild boar, research	Zoonotic Campylobacter spp. and Salmonella spp. detection was carried by wild boars in a metropolitan area, with focus on occurrence, antimicrobial susceptibility and public health relevance.
Diagnosis, biotechnology and laboratory	
Title of activity	Scope
Mycoplasma hyopneumoniae diagnosis, research	Improving Mycoplasma hyopneumoniae diagnostic capabilities by harnessing the infection dynamics.
Diagnosis, biotechnology and laboratory	
Title of activity	Scope
Porcine circovirus 2, diagnostic criteria	Revisiting Porcine Circovirus Disease Diagnostic Criteria in the Current Porcine Circovirus 2 Epidemiological Context.
Veterinary medicinal products	
Title of activity	Scope
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	
Title of activity	Scope
African swine fever virus, research	Multiple studies regarding immunology of ASFV and testing of different ASFV vaccine prototypes.
Vaccines	
Title of activity	Scope

Classical swine fever virus, research	Multiple studies regarding immunology of CSFV and testing of different CSFV vaccine prototypes.
Vaccines	
Title of activity	Scope
Porcine circovirus 2, applied research	Field studies on the effects of porcine circovirus 2 (PCV-2) vaccination in piglets at different ages.
Vaccines	
Title of activity	Scope
Swine influenza virus, research	Identification and Characterization of Swine Influenza Virus subtypes Generated in Vaccinated and Nonvaccinated, Challenged Pigs.
Vaccines	
Title of activity	Scope
Porcine epidemic diarrhea virus, research on immunology	Immune response does not prevent homologous Porcine epidemic diarrhoea virus reinfection five months after the initial challenge. Characterization and cross-protection of experimental infections with SeCoV and two PEDV variants
Feed safety	
Title of activity	Scope
Porcine plasma, research	Estimated quantity of swine virus genomes based on quantitative PCR analysis in spray-dried porcine plasma samples collected from multiple manufacturing plants.
Feed safety	
Title of activity	Scope
Diets and immunity, research	Influence of dietary n-3 long-chain fatty acids on microbial diversity and composition of sows' feces, colostrum, milk, and suckling piglets' feces. Eicosapentaenoic acid- and docosahexaenoic acid-rich fish oil in sow and piglet diets modifies blood oxylipins and immune indicators in both, sows and suckling piglets.
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope

Development of epidemiological tools	Development of epidemiological tools to help the Regional Authorities in the surveillance and control of African Swine fever.

Zoonoses	
Title of activity	Scope
Streptococcus suis, research	Investigation of risk factors of Streptoccus suis-associated disease in Spanish in pig farms, conducted within the framework of a European Project.

Zoonoses	
Title of activity	Scope
Serological studies of Crimean-Congo Hemorrhagic Fever in Eastern Spain	Detection of several hotspots of CCHFV transmission in the eastern Mediterranean area of Spain.

TOR3: HARMONISATION OF STANDARDS

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

Proposal title	Scope/Content	Applicable area
Diagnosis of endemic swine diseases	We have the capabilities to work as expert laboratory and specialists on training and education on swine health management.	Laboratory expertise Training and education health management
African swine fever vaccine development	The project aims to develop strategies for protection against ASFV.	Laboratory expertise Training and education Veterinary products

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

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
		Europe	Research collaboration on

OIE Reference Laboratory on Classical Swine Fever	Spain		swine pestiviruses
Department of Animal Medicine, Production and Health (MAPS), University of Padua	Italy	Europe	Research collaboration on porcine circoviruses
Centro Nacioanl 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 vaccine and adjuvant testing
Helmholtz Centre for Infection Research, Department of Vaccinology and Applied Microbiology	Germany	Europe	Research collaboration on vaccine and adjuvant testing
Institute of Virology and Immunology (IVI)	Switzerland	Europe	Research collaboration on classical swine fever
Universidad de León	Spain	Europe	Research collaboration on endemic enteric viruses
OIE Reference Laboratory for Swine Influenza Virus, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-	Italy	Europe	Research collaboration on SIV sequencing

Romagna			
Wildlife Ecology and Health group (WE&H) and Servei d'Ecopatologia de Fauna Salvatge (SEFaS), Universitat Autònoma de Barcelona	Spain	Europe	Research collaboration on wild boar as a public health issue
University of Minnesota	USA	Americas	Research collaborations on PRRSV and Mycoplasma hyopneumoniae
Department Viroscience, Erasmus Medical Centre	The Netherlands	Europe	Research collaboration on SARS-CoV-2 infection in pigs

TOR4 AND 5: NETWORKING AND COLLABORATION

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

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Erasmus Medical Center (EMC)	The Netherlands	Europe	Research collaboration on MERS-CoV
University of Hannover	Germany	Europe	Research collaboration on MERS-CoV
University of Utrecht	The Netherlands	Europe	Research collaboration on MERS-CoV
IrsiCaixa	Spain	Europe	Research collaboration on SARS-CoV-2

Barcelona Supercomputing Center	Spain	Europe	Research collaboration on SARS-CoV-2
Huvepharma	Belgium	Europe	Research collaboration on ASFV
Boehringer Ingelheim	Germany	Europe	Research collaboration on ASFV
APC Europe	Spain	Europe	Research collaboration on ASFV
CEVA	Spain	Europe	Industrial doctorate on PCV-2
Centro de Investigación en Sanidad Animal (CISA), Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA-CSIC)	Spain	Europe	Research collaboration on West Nile Virus
Institut Pasteur, Université Paris Cité	France	Europe	Research collaboration on Arboviruses and Insect Vectors
Zoetis	Spain	Europe	Research collaboration on PCV-2 vaccines
Royal Holloway University of London	United Kingdom	Europe	Research collaboration on SARS-CoV-2

TOR6: EXPERT CONSULTANTS

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

Yes

NAME OF EXPERT	KIND OF CONSULTANCY	SUBJECT
Lourdes Migura-García	WOAH expert appointed to revise the "Technical Reference Document listing Antimicrobial Agents of Veterinary Importance for Swine"	Antimicrobial Agents of Veterinary Importance for Swine

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

No

Our center is very open to provide advice/service to requests from Members in our area of expertise, but we did not get any so far.

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

Yes

a) Technical visit :

b) Seminars : 1

c) Hands-on training courses: 1

d) Internships (>1 month) : 1

TYPE OF TECHNICAL TRAINING PROVIDED (A, B, C OR D)	CONTENT	COUNTRY OF ORIGIN OF THE EXPERT(S) PROVIDED WITH TRAINING	NO. PARTICIPANTS FROM THE CORRESPONDING COUNTRY
Online seminar	Annual SESC Meeting 2022	Spain	30
Hands-on training course	Course on abbatoir condemned viscera and common findings at slaughter	Spain	20
Internship	Education on ASFV and CSFV diagnosis	Mexico	1

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 WOAH?

Yes

NATIONAL/INTERNATIONAL	TITLE OF EVENT	CO-ORGANISER	DATE (MM/YY)	LOCATION	NO. PARTICIPANTS

International	14th Annual Meeting EPIZONE	EPIZONE partners	2022-05-18	Barcelona	250
National	Transmissió de la tuberculosi entre la fauna silvestre i els animals domèstics	Jornada PATT del Departament d'Acció Climàtica, Alimentació i Agenda Rural de la Generalitat de Catalunya	2022-06-06	Online	50

TOR9: DATA AND INFORMATION DISSEMINATION

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

a) Articles published in peer-reviewed journals:

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Pleguezuelos P, Sibila M, Ramírez C, López-Jiménez R, Pérez D, Huerta E, Llorens AM, Pérez M, Correa-Fiz F, Mancera Gracia JC, Taylor LP, Smith J, Bandrick M, Borowski S, Saunders G, Segalés J, López-Soria S, Fort M, Balasch M. Efficacy Studies against PCV-2 of a New Trivalent Vaccine including PCV-2a and PCV-2b Genotypes and Mycoplasma hyopneumoniae When Administered at 3 Weeks of Age. Vaccines (Basel). 2022 Dec 9;10(12):2108. doi: 10.3390/vaccines10122108.

Llauradó-Calero E, Climent E, Chenoll E, Ballester M, Badiola I, Lizardo R, Torrallardona D, Esteve-Garcia E, Tous N. Influence of dietary n-3 long-chain fatty acids on microbial diversity and composition of sows' feces, colostrum, milk, and suckling piglets' feces. Front Microbiol. 2022 Dec 5;13:982712. doi: 10.3389/fmicb.2022.982712. eCollection 2022.

Kikuti M, Vilalta C, Sanhueza J, Melini CM, Corzo CA. Porcine reproductive and respiratory syndrome prevalence and processing fluids use for diagnosis in United States breeding herds. Front Vet Sci. 2022 Nov 24;9:953918. doi: 10.3389/fvets.2022.953918. eCollection 2022.

Cobos À, Sibila M, Alomar J, Pérez M, Huerta E, Segalés J. Retrospective assessment of porcine circovirus 3 (PCV-3) in formalin-fixed, paraffin-embedded tissues from pigs affected by different clinical-pathological conditions. Porcine Health Manag. 2022 Dec 5;8(1):51. doi: 10.1186/s40813-022-00293-8.

Bosch-Camós L, Alonso U, Esteve-Codina A, Chang CY, Martín-Mur B, Accensi F, Muñoz M, Navas MJ, Dabad M, Vidal E, Pina-Pedrero S, Pleguezuelos P, Caratù G, Salas ML, Liu L, Bataklieva S, Gavrilov B, Rodríguez F, Argilaguet J. Cross-protection against African swine fever virus upon intranasal vaccination is associated with an adaptive-innate immune crosstalk. PLoS Pathog. 2022 Nov 9;18(11):e1010931. doi: 10.1371/journal.ppat.1010931. eCollection 2022 Nov.

Martín-Valls GE, Li Y, Díaz I, Cano E, Sosa-Portugal S, Mateu E. Diversity of respiratory viruses present in nasal swabs under influenza suspicion in respiratory disease cases of weaned pigs. Front Vet Sci. 2022 Oct 19;9:1014475. doi: 10.3389/fvets.2022.1014475. eCollection 2022.

De Jong A, El Garch F, Hocquet D, Prenger-Berninghoff E, Dewulf J, Migura-Garcia L, Perrin-Guyomard A, Veldman KT, Janosi S, Skarzynska M, Simjee S, Moyaert H, Rose M; EASSA Study Group. European-wide antimicrobial resistance monitoring in commensal Escherichia coli isolated from healthy food animals between 2004 and 2018. J Antimicrob Chemother. 2022 Nov 28;77(12):3301-3311. doi: 10.1093/jac/dkac318.

Llauradó-Calero E, Badiola I, Samarra I, Lizardo R, Torrallardona D, Esteve-Garcia E, Tous N. Eicosapentaenoic acid- and docosahexaenoic acid-rich fish oil in sow and piglet diets modifies blood oxylipins and immune indicators in both, sows and suckling piglets. Animal. 2022 Oct;16(10):100634. doi: 10.1016/j.animal.2022.100634. Epub 2022 Oct 3.

Sibila M, Llorens A, Huerta E, Fablet C, Faderl M, Ferrari L, Rose N, Palzer A, Martelli P, Venegas-Vargas MC, Fredrickson D, Taylor L, Balasch M, Bandrick M, Segalés J. Descriptive analyses of maternally-derived antibody levels against porcine circovirus 2 (PCV-2) in 3- and 21-day-old piglets from farms of four European countries using different vaccination protocols in sows. Porcine Health Manag. 2022 Oct 3;8(1):41. doi: 10.1186/s40813-022-00284-9.

López-Valiñas Á, Baioni L, Córdoba L, Darji A, Chiapponi C, Segalés J, Ganges L, Núñez JI. Evolution of Swine Influenza Virus H3N2 in Vaccinated and Nonvaccinated Pigs after Previous Natural H1N1 Infection. Viruses. 2022 Sep 10;14(9):2008. doi: 10.3390/v14092008.

Bohórquez JA, Wang M, Díaz I, Alberch M, Pérez-Simó M, Rosell R, Gladue DP, Borca MV, Ganges L. The FlagT4G Vaccine Confers a Strong and Regulated Immunity and Early Virological Protection against Classical Swine Fever. Viruses. 2022 Sep 2;14(9):1954. doi: 10.3390/v14091954.

Pleguezuelos P, Sibila M, Cuadrado-Matías R, López-Jiménez R, Pérez D, Huerta E, Pérez M, Correa-Fiz F, Mancera-Gracia JC, Taylor LP, Borowski S, Saunders G, Segalés J, López-Soria S, Balasch M. Efficacy Studies of a Trivalent Vaccine Containing PCV-2a, PCV-2b Genotypes and Mycoplasma hyopneumoniae When Administered at 3 Days of Age and 3 Weeks Later against Porcine Circovirus 2 (PCV-2) Infection. Vaccines (Basel). 2022 Aug 1;10(8):1234. doi: 10.3390/vaccines10081234.

Puente H, Díaz I, Arguello H, Mencía-Ares Ó, Gómez-García M, Pérez-Pérez L, Vega C, Cortey M, Martín M, Rubio P, Carvajal A. Characterization and cross-protection of experimental infections with SeCoV and two PEDV variants. Transbound Emerg Dis. 2022 Aug 2. doi: 10.1111/tbed.14674. Online ahead of print.

Garcia-Morante B, Maes D, Sibila M, Betlach AM, Sponheim A, Canturri A, Pieters M. Improving Mycoplasma hyopneumoniae diagnostic capabilities by harnessing the infection dynamics. Vet J. 2022 Oct;288:105877. doi: 10.1016/j.tvjl.2022.105877. Epub 2022 Jul 25.

Díaz I. Rules of thumb to obtain, isolate, and preserve porcine peripheral blood mononuclear cells. Vet Immunol Immunopathol. 2022 Sep;251:110461. doi: 10.1016/j.vetimm.2022.110461. Epub 2022 Jul 16.

Guitart-Matas J, Gonzalez-Escalona N, Maguire M, Vilaró A, Martinez-Urtaza J, Fraile L, Migura-Garcia L. Revealing Genomic Insights of the Unexplored Porcine Pathogen Actinobacillus pleuropneumoniae Using Whole Genome Sequencing. Microbiol Spectr. 2022 Aug 31;10(4):e0118522. doi: 10.1128/spectrum.01185-22. Epub 2022 Jul 20.

Vilaró A, Novell E, Enrique-Tarancon V, Balielles J, Migura-García L, Fraile L. Antimicrobial Susceptibility Testing of Porcine Bacterial Pathogens: Investigating the Prospect of Testing a Representative Drug for Each Antimicrobial Family. Antibiotics (Basel). 2022 May 10;11(5):638. doi: 10.3390/antibiotics11050638.

Blázquez E, Pujols J, Segalés J, Rodríguez C, Campbell J, Russell L, Polo J. Estimated quantity of swine virus genomes based on quantitative PCR analysis in spray-dried porcine plasma samples collected from multiple manufacturing plants. PLoS One. 2022 May 23;17(5):e0259613. doi: 10.1371/journal.pone.0259613. eCollection 2022.

López-Cano A, Bach A, López-Serrano S, Aragon V, Blanch M, Pastor JJ, Tedó G, Morais S, Garcia-Fruitós E, Arís A. Potential of Oral Nanoparticles Containing Cytokines as Intestinal Mucosal Immunostimulants in Pigs: A Pilot Study. Animals (Basel). 2022 Apr 21;12(9):1075. doi: 10.3390/ani12091075.

Segalés J, Sibila M. Revisiting Porcine Circovirus Disease Diagnostic Criteria in the Current Porcine Circovirus 2 Epidemiological Context. Vet Sci. 2022 Mar 2;9(3):110. doi: 10.3390/vetsci9030110.

Martínez-Boixaderas N, Garza-Moreno L, Sibila M, Segalés J. Impact of maternally derived immunity on immune responses elicited by piglet early vaccination against the most common pathogens involved in porcine respiratory disease complex. Porcine Health Manag. 2022 Mar 16;8(1):11. doi: 10.1186/s40813-022-00252-3.

Blanco-Fuertes M, Correa-Fiz F, López-Serrano S, Sibila M, Aragon V. Sow vaccination against virulent Glaesserella parasuis shapes the nasal microbiota of their offspring. Sci Rep. 2022 Mar 1;12(1):3357. doi: 10.1038/s41598-022-07382-2.

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Accensi F, Bosch-Camós L, Monteagudo PL, Rodríguez F. DNA Vaccines in Pigs: From Immunization to Antigen Identification. Methods Mol Biol. 2022;2465:109-124. doi: 10.1007/978-1-0716-2168-4_6.

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Ramirez-Medina E, Vuono E, Rai A, Pruitt S, Espinoza N, Velazquez-Salinas L, Pina-Pedrero S, Zhu J, Rodriguez F, Borca MV, Gladue DP. Deletion of E184L, a Putative DIVA Target from the Pandemic Strain of African Swine Fever Virus, Produces a Reduction in Virulence and Protection against Virulent Challenge. J Virol. 2022 Jan 12;96(1):e0141921. doi: 10.1128/JVI.01419-21. Epub 2021 Oct 20.

Pineda P, Santa C, Deluque A, Peña M, Casal J. Evaluation of the sensitivity of the classical swine fever surveillance system in two free zones in Colombia. Transbound Emerg Dis. 2022 May;69(3):1294-1306. doi: 10.1111/tbed.14092. Epub 2021 Apr 20.

Díaz I, Pujols J, Cano E, Cortey M, Navarro N, Vidal A, Mateu E, Martín M. Immune response does not prevent homologous Porcine epidemic diarrhoea virus reinfection five months after the initial challenge. Transbound Emerg Dis. 2022 May;69(3):997-1009. doi:

10.1111/tbed.14055. Epub 2021 Mar 31.
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b) International conferences:
13
J. Segalés. "Pathology and diagnosis of swine enteric diseases". Intensive Course on Intestinal Health (IntestiPig) organized by MSD Animal Health. 1/2/22 (Americas), 23/2/22 (Europe) (online).
J. Segalés, J. Pujols. "Bioseguridad de los ingredientes en la dieta de cerdos". XXVIII Congreso AMVECAJ (Asociación de Médicos VEterinarios Colegiados del Alto Jalisco), Tepatitán de Morelos (México). 9-11/2/22 (online).
F. Rodríguez. "Vaccines and something else (Vacunas y algo más)". XXVIII Congress AMVECAJ (Asociación de Médicos VEterinarios Colegiados del Alto Jalisco), Tepatitán de Morelos (México). 9-11/2/22.
J. Segalés. "PCV-2 diagnosis and vaccination in 2022: not all that glitters is gold!". Meeting on PRDC organized by CEVA Italia. 26/4/22 (online).
J. Segalés. "Porcine circovirus 3: another virus of concern for the swine industry?". Seminar der SVTP und SVSM. Appenzell (Switzerland). 19-20/5/22.
J. Segalés. "Diagnosing PCV-2 infections in 2022... What has changed?". Meeting entitled "PCV2 herd immunity: current challenges and vaccination programs" organized by CEVA Vietnam. 12/7/22 (online).
J. Segalés. "Circovirus porcinos en 2022... ¿dónde estamos?". Jornada organizada por CEVA Chile. 5/8/22 (online).
J. Segalés. "Animal models for animal and human diseases: research and training". Annual ESVP/ECVP Congress 2022. 7-10/9/22. Athens (Greece).
J. Segalés. "Comparative pathology of pneumonias in pigs". First Scientific Day at AM Animalia, 20/9/22. La Vall de Bianya (Girona, Spain).
J. Segalés "Porcine circovirus 3: another virus of concern for the swine industry?". Swine Debate Group at Iowa State University (Ames, Iowa, USA). 23/9/22 (online).
J. Segalés, J. Pujols. "Bioseguridad de los ingredientes en la dieta de cerdos". Seminar APC and CLANA, Colegio Latinoamericano de Nutrición Animal. Mérida, Yucatán. México. 29/9/22 (online).
V. Aragón. "Actualización de la enfermedad de Glässer: Diagnóstico y control." XXIX Día del Porcicultor del sur de Sonora 2022, Alamos (Sonora), México. 9-10/11/22.
L. Ganges. "Pathogenesis of African swine fever virus: implication for the development of diagnostic tools". Veterinary Vaccines 2022 organized by the CIGB. Varadero (Cuba). 27/11/22-1/12/22.

c) National conferences:
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A. Urniza, J. Segalés, L.E. Martín, E. Andradas, L. de Juan, B. González-Zorn, J.L. Sáez. "Enfermedades transmisibles de origen animal. Zoonosis y Vacunación". IV Panel del Spain One Health Summit 2022 organizado por la Fundación Bamberg. 23/3/22. Madrid (España).
B. Pérez de Val. "Brotes recientes de tuberculosis en el ganado y la fauna silvestre en Catalunya". Jornada del día mundial de la tuberculosis 2022, Organised by fuiTB, Barcelona (Spain). 22/03/2022.
J. Segalés. "Una salut: un concepte inclusiu". Primera Jornada One Health organizada por el Consell de Col·legis Veterinaris de Catalunya. 30/3/22. Bellaterra (Spain).
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d) Other (Provide website address or link to appropriate information):
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https://sesc.cat/es/cual-es-tu-diagnostico-103/

11. What have you done in the past year to advance your area of focus, e.g. updated technology?
We have been increasing the technical capabilities of the BSL3 animal facilities with new imaging equipment to study viral and bacterial infections in real time.

12. Additional comments regarding your report: