

# OIE Collaborating Centres Reports Activities

## *Activities in 2021*

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<b>Title of collaborating centre:</b>	Investigación y el control de las enfermedades porcinas emergentes y reemergentes en Europa
<b>Address of Collaborating Centre:</b>	Centre de Recerca en Sanitat Animal (CReSA) Edifici CReSA Campus Universitat Autònoma de Barcelona 08193 Bellaterra (Barcelona) SPAIN
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<b>Name of Director of Institute (Responsible Official):</b>	Josep Usall, General Director, Institut de Recerca i Tecnologia Agroalimentàries (IRTA)
<b>Name (including Title and Position) of Head of the Collaborating Centre (formally OIE Contact Point):</b>	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)
<b>Name of writer:</b>	Joaquim Segalés

**ToR: To provide services to the OIE, in particular within the region, in the designated specialty, in support of the implementation of OIE policies and, where required, seek for collaboration with OIE Reference Laboratories**

**ToR: To identify and maintain existing expertise, in particular within its region**

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

<b>Disease control</b>	
<b>Title of activity</b>	<b>Scope</b>
Use of antibiotics, research	An ongoing project is 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.
Glaesserella parasuis, research	Control of this bacterial infection by means of vaccination and/or modification of the nasal microbiota.
<b>Epidemiology, surveillance, risk assessment, modelling</b>	
<b>Title of activity</b>	<b>Scope</b>
Influenza A viruses, research	Diversity of influenza A viruses retrieved from respiratory disease outbreaks and subclinically infected herds in Spain (2017-2019).
Porcine circovirus 2, research	Genotyping of Porcine Circovirus 2 (PCV-2) in Vaccinated Pigs Suffering from PCV-2-Systemic Disease between 2009 and 2020 in Spain.
Porcine circovirus 3, research	Detection in Aborted Fetuses and Stillborn Piglets from Swine Reproductive Failure Cases and its association with wasting in postweaning pigs.
Classical swine fever, surveillance	Evaluation of the sensitivity of the classical swine fever surveillance system in two free zones in Colombia.
Rotavirus, research	First identification and characterization of rotavirus H in swine in Spain.
Biosecurity, review	Biosecurity in pig farms.
Streptococcus suis, review	Review of the speculative role of co-infections in Streptococcus suis-associated diseases in pigs.
Salmonella spp, research	Prevalence of Salmonella in Free-Range Pigs: Risk Factors and Intestinal Microbiota Composition.
<b>Training, capacity building</b>	
<b>Title of activity</b>	<b>Scope</b>

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.
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.
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.
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.
<b>Zoonoses</b>	
<b>Title of activity</b>	<b>Scope</b>
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.
Streptococcus suis, research	Investigation of Streptococcus suis outbreaks in pig farms is being conducted in the framework of a European Project.
Severe Acute Respiratory Syndrome - coronavirus 2 (SARSCoV-2), research	Pigs are not susceptible to SARS-CoV-2 infection.
<b>Wildlife</b>	
<b>Title of activity</b>	<b>Scope</b>
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.
Tuberculosis, research	Phylogenetic studies on Mycobacterium tuberculosis and Mycobacterium caprae in the wild boar
Antibiotic resistance, research	Detection of Beta-Lactam-Resistant Escherichia coli and Toxigenic Clostridioides difficile Strains in Wild Boars Foraging in an Anthropization Gradient
<b>Diagnosis, biotechnology and laboratory</b>	
<b>Title of activity</b>	<b>Scope</b>
Pathology, diagnosis	Neoplastic lesions in domestic pigs detected at slaughter: literature review and a 20-year review (1998-2018) of carcass inspection in Catalonia. Also, a case of uterine inclusion cysts in a sow was described.
Glaesserella parasuis, molecular characterization	Molecular characterization of Glaesserella parasuis strains isolated from North America, Europe and Asia by serotyping PCR and LS-PCR.
Porcine circovirus 3, diagnostic criteria	Porcine circovirus 3 (PCV-3) as a causal agent of disease in swine and a proposal of PCV-3 associated disease case definition.

Porcine epidemic diarrhea virus, serological diagnosis	Assessment of three commercial ELISAs for the detection of antibodies against Porcine epidemic diarrhea virus at different stages of the immune response.
Antibiotic resistance, research	Transmission of Similar Mcr-1 Carrying Plasmids among Different Escherichia coli Lineages Isolated from Livestock and the Farmer.
<b>Veterinary medicinal products</b>	
<b>Title of activity</b>	<b>Scope</b>
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”
<b>Vaccines</b>	
<b>Title of activity</b>	<b>Scope</b>
African swine fever virus, research	Multiple studies regarding immunology of ASFV and testing of different ASFV vaccine prototypes.
Classical swine fever virus, research	Multiple studies regarding immunology of CSFV and testing of different CSFV vaccine prototypes.
Porcine circovirus 2, research	Field study on the effects of porcine circovirus 2 (PCV-2) sow vaccination at different physiological stages mimicking blanket vaccination.
Swine influenza virus, research	Immune Responses to Pandemic H1N1 Influenza Virus Infection in Pigs Vaccinated with a Conserved Hemagglutinin HA1 Peptide Adjuvanted with two different adjuvants.
Swine influenza virus variability upon vaccination, research	Identification and Characterization of Swine Influenza Virus H1N1 Variants Generated in Vaccinated and Nonvaccinated, Challenged Pigs.
Porcine epidemic diarrhea virus, research on immunology	Immune response does not prevent homologous Porcine epidemic diarrhoea virus reinfection five months after the initial challenge.
Porcine respiratory and reproductive syndrome virus, research on immunology	Activation of regulated cell death in the lung of piglets infected with virulent PRRSV-1 Lena strain occurs earlier and mediated by cleaved Caspase-8. Interaction of PRRSV with dendritic cells.
Edema disease, field study	Effect of Edema Disease Vaccination on Mortality and Growth Parameters in Nursery Pigs in a Shiga Toxin 2e Positive Commercial Farm.
Foot and mouth disease virus, review	Peptide-Based Vaccines: Foot-and-Mouth Disease Virus, a Paradigm in Animal Health.
<b>Feed safety</b>	
<b>Title of activity</b>	<b>Scope</b>
Porcine plasma, research	Effect of spray-drying and ultraviolet C radiation as biosafety steps for CSFV and ASFV inactivation in porcine plasma.

**ToR : To propose or develop methods and procedures that facilitate harmonisation of international standards and guidelines applicable to the designated specialty**

**2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the surveillance and control of animal diseases, food safety or animal welfare**

Proposal title	Scope/Content	Applicable area
African swine fever vaccine development	The project aims to develop strategies for protection against ASFV.	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare

**ToR: To establish and maintain a network with other OIE Collaborating Centres designated for the same specialty, and should the need arise, with Collaborating Centres in other disciplines**

**ToR: To carry out and/or coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations**

**3. Did your Collaborating Centre maintain a network with other OIE 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
OIE Reference Laboratory on Classical Swine Fever	Spain	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on swine pestiviruses
Department of Animal Medicine, Production and Health (MAPS), University of Padua	Italy	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on porcine circoviruses
Centro Nacional de Sanidad Agropecuaria (CENSA)	Cuba	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on classical swine fever

Plum Island Animal Disease Center	USA	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research Collaboration on CSFV and ASFV
Swine and Poultry Infectious Diseases Research Center (CRIPA)	Canada	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on S. suis and G. parasuis
Department of Virus and Microbiological Special Diagnostics, Statens Serum Institut	Denmark	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on swine influenza virus vaccine and adjuvant testing
Helmholtz Centre for Infection Research, Department of Vaccinology and Applied Microbiology	Germany	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on swine influenza virus vaccine and adjuvant testing
Institute of Virology and Immunology (IVI)	Switzerland	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on CSFV
Universidad de León	Spain	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on endemic enteric viruses
Colombian Agriculture and Livestock Institute (ICA)	Colombia	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on epidemiology of CSF
Facultad de Ciencias Veterinarias, Universidad Nacional de La Plata	Argentina	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on biosecurity
Laboratorio de Inmunología, Centro de Investigación en Alimentación y Desarrollo (CIAD)	México	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on immunology and PRRSV

Agence Nationale de Sécurité de l'Alimentation, de l'Environnement et du Travail (ANSES)	France	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on wildlife TB
National Veterinary Services Laboratories, United States Department of Agriculture (USDA)	USA	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on wildlife TB
OIE Reference Laboratory for Swine Influenza Virus, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna	Italy	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on SIV sequencing

**4. Did your Collaborating Centre maintain a network with other OIE 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	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on MERS-CoV
IrsiCaixa	Spain	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on SARS-CoV-2
University of Hannover	Germany	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on MERS-CoV
University of Utrecht	The Netherlands	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on MERS-CoV
Barcelona Supercomputing Center	Spain	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on SARS-CoV-2

Univbersity of Eastern Finland	Finland	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on SARS-CoV-2
Huvepharma	Belgium	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on ASFV
Boehringer Ingelheim	Germany/Spain	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on ASFV
APC Europe	USA/Spain	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Research collaboration on ASFV
CEVA	Spain	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Industrial doctorate on PCV-2

**ToR: To place expert consultants at the disposal of the OIE.**

**5. Did your Collaborating Centre place expert consultants at the disposal of the OIE?**

No

**ToR: To provide, within the designated specialty, scientific and technical training to personnel from OIE Member Countries**

**6. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by the OIE, to personnel from OIE Member Countries?**

No

**ToR: To organise and participate in scientific meetings and other activities on**



**7. Did your Collaborating Centre organise or participate in the organisation of scientific meetings on behalf of the OIE?**

Yes

National/International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
National	Annual SESC Meeting 2021	IRTA-CReSA and Department of Health of Catalan Government	12/21	Bellaterra, Barcelona	50

***ToR: To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty***

**8. Publication and dissemination of any information within the remit of the mandate given by the OIE that may be useful to Member Countries of the OIE**

a) Articles published in peer-reviewed journals: 49

Piglet innate immune response to *Streptococcus suis* colonization is modulated by the virulence of the strain. Neila-Ibáñez C, Brogaard L, Pailler-García L, Martínez J, Segalés J, Segura M, Heegaard PMH, Aragon V. *Vet Res*. 2021 Dec 19;52(1):145. doi: 10.1186/s13567-021-01013-w.

Stochastic Assessment of the Economic Impact of *Streptococcus suis*-Associated Disease in German, Dutch and Spanish Swine Farms.

Neila-Ibáñez C, Casal J, Hennig-Pauka I, Stockhofe-Zurwieden N, Gottschalk M, Migura-García L, Pailler-García L, Napp S. *Front Vet Sci*. 2021 Aug 19;8:676002. doi: 10.3389/fvets.2021.676002. eCollection 2021.

*Haemophilus parasuis* (*Glaesserella parasuis*) as a Potential Driver of Molecular Mimicry and Inflammation in Rheumatoid Arthritis.

Di Sante G, Gremese E, Tolusso B, Cattani P, Di Mario C, Marchetti S, Alivernini S, Tredicine M, Petricca L, Palucci I, Camponeschi C, Aragon V, Gambotto A, Ria F, Ferraccioli G. *Front Med (Lausanne)*. 2021 Aug 17;8:671018. doi: 10.3389/fmed.2021.671018. eCollection 2021.

Sow Contact Is a Major Driver in the Development of the Nasal Microbiota of Piglets.

Obregon-Gutierrez P, Aragon V, Correa-Fiz F. *Pathogens*. 2021 Jun 3;10(6):697. doi: 10.3390/pathogens10060697.

Altered Nasal Microbiota Composition Associated with Development of Polyserositis by *Mycoplasma hyorhinis*.

Blanco-Fuertes M, Correa-Fiz F, Fraile L, Sibila M, Aragon V. *Pathogens*. 2021 May 14;10(5):603. doi: 10.3390/pathogens10050603.

Sow Vaccination with a Protein Fragment against Virulent *Glaesserella* (*Haemophilus*) *parasuis* Modulates Immunity Traits in Their Offspring.

López-Serrano S, Neila-Ibáñez C, Costa-Hurtado M, Mahmmod Y, Martínez-Martínez J, Galindo-Cardiel JJ, Darji A, Rodríguez F, Sibila M, Aragon V. *Vaccines (Basel)*. 2021 May 20;9(5):534. doi: 10.3390/vaccines9050534.

Molecular characterization of *Glaesserella parasuis* strains isolated from North America, Europe and Asia by serotyping PCR and LS-PCR.

Macedo N, Gottschalk M, Strutzberg-Minder K, Van CN, Zhang L, Zou G, Zhou R, Marostica T, Clavijo MJ, Tucker A, Aragon V. *Vet Res*. 2021 May 12;52(1):68. doi: 10.1186/s13567-021-00935-9.

Review of the speculative role of co-infections in Streptococcus suis-associated diseases in pigs.

Obradovic MR, Segura M, Segalés J, Gottschalk M. *Vet Res.* 2021 Mar 20;52(1):49. doi: 10.1186/s13567-021-00918-w.

Impact of Cryopreservation on Viability, Phenotype, and Functionality of Porcine PBMC.

Li Y, Mateu E, Díaz I. *Front Immunol.* 2021 Nov 29;12:765667. doi: 10.3389/fimmu.2021.765667. eCollection 2021.

Swine Dendritic Cell Response to Porcine Reproductive and Respiratory Syndrome Virus: An Update.

Hernández J, Li Y, Mateu E. *Front Immunol.* 2021 Jul 28;12:712109. doi: 10.3389/fimmu.2021.712109. eCollection 2021.

Interaction of Type 1 Porcine Reproductive and Respiratory Syndrome Virus With In Vitro Derived Conventional Dendritic Cells.

Li Y, Mateu E. *Front Immunol.* 2021 Jun 2;12:674185. doi: 10.3389/fimmu.2021.674185. eCollection 2021.

Activation of regulated cell death in the lung of piglets infected with virulent PRRSV-1 Lena strain occurs earlier and mediated by cleaved Caspase-8.

Sánchez-Carvajal JM, Ruedas-Torres I, Carrasco L, Pallarés FJ, Mateu E, Rodríguez-Gómez IM, Gómez-Laguna J. *Vet Res.* 2021 Jan 22;52(1):12. doi: 10.1186/s13567-020-00882-x.

Identification of African Swine Fever Virus Transcription within Peripheral Blood Mononuclear Cells of Acutely Infected Pigs.

Olesen AS, Kodama M, Lohse L, Accensi F, Rasmussen TB, Lazov CM, Limborg MT, Gilbert MTP, Bøtner A, Belsham GJ. *Viruses.* 2021 Nov 22;13(11):2333. doi: 10.3390/v13112333.

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.

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. *J Virol.* 2022 Jan 12;96(1):e0141921. doi: 10.1128/JVI.01419-21. Epub 2021 Oct 20.

Deletion Mutants of the Attenuated Recombinant ASF Virus, BA71ΔCD2, Show Decreased Vaccine Efficacy.

Lopez E, Bosch-Camós L, Ramirez-Medina E, Vuono E, Navas MJ, Muñoz M, Accensi F, Zhang J, Alonso U, Argilagué J, Salas ML, Anachkov N, Gladue DP, Borca MV, Pina-Pedrero S, Rodríguez F. *Viruses.* 2021 Aug 25;13(9):1678. doi: 10.3390/v13091678.

M448R and MGF505-7R: Two African Swine Fever Virus Antigens Commonly Recognized by ASFV-Specific T-Cells and with Protective Potential.

Bosch-Camós L, López E, Collado J, Navas MJ, Blanco-Fuertes M, Pina-Pedrero S, Accensi F, Salas ML, Mundt E, Nikolin V, Rodríguez F. *Vaccines (Basel).* 2021 May 14;9(5):508. doi: 10.3390/vaccines9050508.

The genetic variation landscape of African swine fever virus reveals frequent positive selection and adaptive flexibility.

Bao YJ, Qiu J, Luo Y, Rodríguez F, Qiu HJ. *Transbound Emerg Dis.* 2021 Sep;68(5):2703-2721. doi: 10.1111/tbed.14018. Epub 2021 Mar 9.

Identification of Promiscuous African Swine Fever Virus T-Cell Determinants Using a Multiple Technical Approach.

Bosch-Camós L, López E, Navas MJ, Pina-Pedrero S, Accensi F, Correa-Fiz F, Park C, Carrascal M, Domínguez J, Salas ML, Nikolin V, Collado J, Rodríguez F. *Vaccines (Basel).* 2021 Jan 7;9(1):29. doi: 10.3390/vaccines9010029.

Fish oil rich in eicosapentaenoic acid and docosahexaenoic acid in sow diets modifies oxylipins and immune indicators in colostrum and milk.

Llauradó-Calero E, Badiola I, Delpino-Rius A, Lizardo R, Torrallardona D, Esteve-Garcia E, Tous N. *Animal.* 2021 Dec;15(12):100403. doi: 10.1016/j.animal.2021.100403. Epub 2021 Nov 15.

Effect of spray-drying and ultraviolet C radiation as biosafety steps for CSFV and ASFV inactivation in porcine plasma.

Blázquez E, Rodríguez C, Ródenas J, Rosell R, Segalés J, Pujols J, Polo J. *PLoS One.* 2021 Apr 28;16(4):e0249935. doi: 10.1371/journal.pone.0249935. eCollection 2021.

A case of uterine inclusion cysts in a sow.

Ruiz-Riera E, Nofrarias M, Martí-García B, Domingo M, Segalés J, Vidal E. *Porcine Health Manag.* 2021 Nov 1;7(1):58. doi: 10.1186/s40813-021-00237-8.

Neoplastic lesions in domestic pigs detected at slaughter: literature review and a 20-year review (1998-2018) of carcass inspection in Catalonia.

Morey-Matamalas A, Vidal E, Martínez J, Alomar J, Ramis A, Marco A, Domingo M, Segalés J. *Porcine Health Manag.* 2021 Apr 7;7(1):30. doi: 10.1186/s40813-021-00207-0.

Identification and Characterization of Swine Influenza Virus H1N1 Variants Generated in Vaccinated and Nonvaccinated, Challenged Pigs.

López-Valiñas Á, Sisteré-Oró M, López-Serrano S, Baioni L, Darji A, Chiapponi C, Segalés J, Ganges L, Núñez JI. *Viruses.* 2021 Oct 16;13(10):2087. doi: 10.3390/v13102087.

Immune Responses to Pandemic H1N1 Influenza Virus Infection in Pigs Vaccinated with a Conserved Hemagglutinin HA1 Peptide Adjuvanted with CAF®01 or CDA/αGalCerMPEG.

López-Serrano S, Cordoba L, Pérez-Maillo M, Pleguezuelos P, Remarque EJ, Ebensen T, Guzmán CA, Christensen D, Segalés J, Darji A. *Vaccines (Basel).* 2021 Jul 6;9(7):751. doi: 10.3390/vaccines9070751.

Diversity of influenza A viruses retrieved from respiratory disease outbreaks and subclinically infected herds in Spain (2017-2019).

Sosa Portugal S, Cortey M, Tello M, Casanovas C, Mesonero-Escuredo S, Barrabés S, Pineda P, Wachek S, Martín-Valls G, Mateu E. *Transbound Emerg Dis.* 2021 Mar;68(2):519-530. doi: 10.1111/tbed.13709. Epub 2020 Jul 14.

Development of a Dendrimeric Peptide-Based Approach for the Differentiation of Animals Vaccinated with FlagT4G against Classical Swine Fever from Infected Pigs.

Bohórquez JA, Defaus S, Rosell R, Pérez-Simó M, Alberch M, Gladue DP, Borca MV, Andreu D, Ganges L. *Viruses.* 2021 Oct 2;13(10):1980. doi: 10.3390/v13101980.

Abrogation of the RNase activity of E(rns) in a low virulence classical swine fever virus enhances the humoral immune response and reduces virulence, transmissibility, and persistence in pigs.

Wang M, Bohórquez JA, Hinojosa Y, Muñoz-González S, Gerber M, Coronado L, Perera CL, Liniger M, Ruggli N, Ganges L. *Virulence.* 2021 Dec;12(1):2037-2049. doi: 10.1080/21505594.2021.1959715.

Early and Solid Protection Afforded by the Thiverval Vaccine Provides Novel Vaccination Alternatives Against Classical Swine Fever Virus.

Lamothe-Reyes Y, Bohórquez JA, Wang M, Alberch M, Pérez-Simó M, Rosell R, Ganges L. *Vaccines (Basel).* 2021 May 6;9(5):464. doi: 10.3390/vaccines9050464.

A Novel E2 Glycoprotein Subunit Marker Vaccine Produced in Plant Is Able to Prevent Classical Swine Fever Virus Vertical Transmission after Double Vaccination.

Park Y, Oh Y, Wang M, Ganges L, Bohórquez JA, Park S, Gu S, Park J, Lee S, Kim J, Sohn E. *Vaccines (Basel).* 2021 Apr 22;9(5):418. doi: 10.3390/vaccines9050418.

The new emerging ovine pestivirus can infect pigs and confers strong protection against classical swine fever virus.

Bohórquez JA, Sozzi E, Wang M, Alberch M, Abad X, Gaffuri A, Lelli D, Rosell R, Pérez LJ, Moreno A, Ganges L. *Transbound Emerg Dis.* 2021 Apr 25. doi: 10.1111/tbed.14119. Online ahead of print.

Evaluation of the sensitivity of the classical swine fever surveillance system in two free zones in Colombia.

Pineda P, Santa C, Deluque A, Peña M, Casal J. *Transbound Emerg Dis.* 2021 Apr 1. doi: 10.1111/tbed.14092. Online ahead of print.

Genotyping of Porcine Circovirus 2 (PCV-2) in Vaccinated Pigs Suffering from PCV-2-Systemic Disease between 2009 and 2020 in Spain.

Sibila M, Rocco C, Franzo G, Huerta E, Domingo M, Núñez JI, Segalés J. *Pathogens.* 2021 Aug 12;10(8):1016. doi: 10.3390/pathogens10081016.

Multisystemic lymphoplasmacytic inflammation associated with PCV-3 in wasting pigs.

Alomar J, Saporiti V, Pérez M, Gonçalves D, Sibila M, Segalés J. *Transbound Emerg Dis.* 2021 Nov;68(6):2969-2974. doi: 10.1111/tbed.14260. Epub 2021 Aug 6.

Porcine circovirus 3 (PCV-3) as a causal agent of disease in swine and a proposal of PCV-3 associated disease case definition.

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## BIOSECURITY

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b) International conferences: 20

J. Segalés. Aspectos prácticos de la vacunación frente a PCV-2. Webinar organized by Hipra Mexico, 18/3/21.

J. Segalés. Porcine circovirus 2 (PCV-2): hotspots in 2021. Webinar organized by Boehringer Ingelheim Australia, 31/3/21.

E. Mateu. Control of influenza – Webinar for veterinary practitioners of Italy – Organized by CEVA Santé Animale, April 2021.

J. Segalés. Cirovirosis porcina... ¿se puede considerar una “enfermedad roja”? Curso de Sanidad Porcina AMVEC – Senasica, Mexico – Webinar, April 2021.

J. Segalés. Aspectos prácticos de la vacunación frente a PCV-2. Webinar organized by Pharmagate-Vetanco, Argentina, April 2021.

F. Rodríguez. Health status and integral immunity: key aspects to fight African swine fever. 2021 ASF Expert Series: How to Combat this Long Battle & Succeed. APC-China – Webinar, 23/4/21.

J. Segalés. Porcine circovirus 2 (PCV-2): current challenges in the diagnosis and vaccination. Webinar organized by Zoetis Russia, 12/5/21.

J. Segalés. Cirovirosis porcinos en 2021... ¿dónde estamos?. Webinar organized by MSD Mexico, 5/7/21.

J. Segalés. Porcine circovirus 2 (PCV-2): where are we?. Webinar organized by MSD The Netherlands, 17/5/21.

J. Segalés. FAQ on porcine circoviruses. Webinar organized by Boehringer Ingelheim Brazil in the framework of the SINSUI symposium. 7/7/21.

L. García-Migura. Estrategias y alternativas en el uso de antimicrobianos. L. Migura-Garcia. II Seminario RAM: Enfoque Práctico en el Manejo Responsable de Antimicrobianos. Alianza Colombiana para el buen uso de los antimicrobianos, 16/9/21.

E. Mateu. Strategies to improve immune response, with particular attention to vaccination against PRRS – Kemin Intestinal Health Conference – Webinar, 16-17/9/21.

J. Segalés. PCV-2 vaccination: past, present and future. Webinar Understanding of the PRDC in farms, organized by CEVA – webinar, 27/9/21.

J. Segalés. Porcine circovirus 2 (PCV-2): where are we?. Webinar organized by MSD The Netherlands, 23/9/21.

J. Segalés. Porcine circovirus 2 (PCV-2): where are we?. Webinar organized by MSD Germany, 28/9/21.

J. Segalés. Porcine circovirus 2 (PCV-2): where are we?. Webinar organized by Hipra France, 30/9/21.

E. Mateu. Control de influenza y PCV2. Curso de postgrado – Universidad de La Plata, Argentina, 26/11/21.

M. Sibila. Update on *Mycoplasma hyopneumoniae*. Webinar organized by CEVA, 30/11/21.

F. Rodriguez. Fighting ASFV: Vaccines and something else. International Symposium for Classical Swine Fever, Beijing – Webinar, 1/3-12/21.

c) National conferences: 8

J. Segalés. Diagnóstico de las enfermedades asociadas a la infección por PCV-2. Webinar organized by Agrinews and Zoetis, 29/4/21.

J. Segalés. Cirovirosis porcina en una granja vacunada, ¿qué ha fallado? – Webinar – Organized by 3tres3, 12/5/21.

E. Mateu. PRRS roundtable - Webinar - Organised by 3tres3, 13/5/21.

F. Rodríguez. Peste porcina Africana: investigar, un paso esencial previo a la toma de decisiones. Jornada técnica en línea organizada Plan Anual de Transferencia (PAT), Departamento de Agricultura y Ganadería de la Generalitat de Cataluña, 6/4/21.

J. Segalés. ¿Puede jugar el cerdo un papel importante en futuras pandemias?. CEVA One Health (online), 3/6/21.

L. Migura-García. Microbiota intestinal como reservorio de resistencias antimicrobianas. XII Workshop de la Sociedad Española de Microbiota, Probióticos y Prebióticos (SEMIpP) y I Congreso de la Sociedad Iberoamericana de Microbiota, Probióticos y Prebióticos (SIAMPyP), 15-18/9/21.

E. Mateu. Aspectos prácticos en el control de PRRS - XIV SEPOR - Murcia, 26/10/21.

E. Mateu. Evolution of PRRS virus - Webinar - Organised: Agrinews, 19/11/21.

d) Other

(Provide website address or link to appropriate information): 1

SESC service entries:

<http://www.cresa.cat/blogs/sesc/quin-es-el-teu-diagnostic-93/?lang=en>

<http://www.cresa.cat/blogs/sesc/20-anys-de-neoplasies-porcines/?lang=en>

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<http://www.cresa.cat/blogs/sesc/les-zoonosis-invisibles-i-salmonellosi-en-carn-i-productes-carnis-de-porc/?lang=en>

<http://www.cresa.cat/blogs/sesc/pielonefritis-per-e-coli-en-una-canal-de-porc/?lang=en>

<http://www.cresa.cat/blogs/sesc/quin-es-el-teu-diagnostic-100/?lang=en>

## 9. Additional comments regarding your report:

Our experts are always placed at the disposal of the OIE member countries. However, during 2020 we have not received any request for potential missions or for providing technical training within the mandate of the OIE Collaborating Centre.