IRTA, ANIMAL FACILITY

(ES)

Research topics:	The IRTA-CReSA BSL3 animal facility is dedicated to animal experimentation with pathogens of veterinary importance and public health relevance. Establishment of animal models for studies on pathogenesis, vaccine trials and immune monitoring are the main core research activities. Most of the IRTA-CReSA laboratories are dedicated to research activities which encompass from studies on the pathogenesis of diseases, vaccine design, improvement of diagnostic tools and epidemiology. Below is a non-exhaustive list of IRTA_CRESA recent articles: -Oliveira Cavalcanti M, Vaughn E, Capua I, Cattoli G, Terregino C, Harder T, Grund C, Vega C, Robles F, Franco J, Darji A, Arafa AS, Mundt E. A genetically engineered H5 protein expressed in insect cells confers protection against different clades of H5N1 highly pathogenic avian influenza viruses in chickens. Avian Pathol. 2017; 46:224-233. -Vergara-Alert J, van den Brand JM, Widagdo W, Muñoz M 5th, Raj S, Schipper D, Solanes D, Cordón I, Bensaid A, Haagmans BL, Segalés J. Livestock Susceptibility to Infection with Middle East Respiratory Syndrome Coronavirus. Emerg Infect Dis. 2017; 23:232-240. -Vidaña B, Martínez J, Martorell J, Montoya M, Córdoba L, Pérez M, Majó N. Involvement of the different lung compartments in the pathogenesis of pH1N1 influenza virus infection in ferrets. Vet Res. 2016; 47:113. -Muñoz-González S, Pérez-Simó M, Colom-Cadena A, Cabezón O, Bohórquez JA, Rosell R, Pérez LJ, Marco I, Lavín S, Domingo M, Ganges L. Classical Swine Fever Virus vs. Classical Swine Fever Virus: The Superinfection Exclusion Phenomenon in

Experimentally Infected Wild Boar. PLoS One. 2016; 11:e0149469.

-Haagmans BL, van den Brand JM, Raj VS, Volz A, Wohlsein P, Smits SL, Schipper D, Bestebroer TM, Okba N, Fux R, Bensaid A, Solanes Foz D, Kuiken T, Baumgärtner W, Segalés J, Sutter G, Osterhaus AD. An orthopoxvirus-based vaccine reduces virus excretion after MERS-CoV infection in dromedary camels. Science. 2016; 351:77-81.

-Lacasta A, Monteagudo PL, Jiménez-Marín Á, Accensi F, Ballester M, Argilaguet J, Galindo-Cardiel I, Segalés J, Salas ML, Domínguez J, Moreno Á, Garrido JJ, Rodríguez F. Live attenuated African swine fever viruses as ideal tools to dissect the mechanisms involved in viral pathogenesis and immune protection. Vet Res. 2015; 46:135.

-Blázquez E, Rodríguez C, Ródenas J, Pérez de Rozas A, Segalés J, Pujols J, Polo J. Ultraviolet (UV-C) inactivation of Enterococcus faecium, Salmonella choleraesuis and Salmonella typhimurium in porcine plasma. PLoS One. 2017; 12:e0175289

-Coronado L, Liniger M, Muñoz-González S, Postel A, Pérez LJ, Pérez-Simó M, Perera CL, Frías-Lepoureau MT, Rosell R, Grundhoff A, Indenbirken D, Alawi M, Fischer N, Becher P, Ruggli N, Ganges L. Novel poly-uridine insertion in the 3'UTR and E2 amino acid substitutions in a low virulent classical swine fever virus. Vet Microbiol. 2017; 201:103-112.

-Correa-Fiz F, Fraile L, Aragon V. Piglet nasal microbiota at weaning may influence the development of Glässer's disease during the rearing period. BMC Genomics. 2016; 17:404.

-Brustolin M, Talavera S, Santamaría C, Rivas R, Pujol N, Aranda C, Marquès E, Valle M, Verdún M, Pagès N, Busquets N. Culex pipiens and Stegomyia albopicta (= Aedes albopictus) populations as

	vectors for lineage 1 and 2 West Nile virus in Europe. Med Vet Entomol. 2016; 30:166-73. -Pérez de Val B, Vidal E, López-Soria S, Marco A, Cervera Z, Martín M, Mercader I, Singh M, Raeber A, Domingo M. Assessment of safety and interferon gamma responses of Mycobacterium bovis BCG vaccine in goat kids and milking goats. Vaccine. 2016 Feb 10; 34:881-6. -Accensi F, Rodríguez F, Monteagudo PL. DNA Vaccines: Experiences in the Swine Model. Methods Mol Biol. 2016; 1349:49-62.
Activities and services currently offered by the infrastructure/installation:	Animal facilities comprise 1150 m2 for animal experimentation. The high containment animal experimental facility is an enhanced (plus) BSL-3 facility (BSL-3+) operating with double filtration of exhaust air, compulsory shower out, waterproof walls and ceilings with easy cleaning, capability of sealing for gas- or vapor-phase decontamination, and redundancy of critical equipment. There are 8 boxes for large animals (i.e. pigs, ruminants) and two for poultry, with seven isolators. Two more rooms are dedicated to rodents, guinea pigs and rabbits. A necropsy room is adjacent to the boxes. There are two more working spaces inside the Bio containment Unit, 1500 m2 for air filtration (HEPA filtration) and 1500 m2 for the effluents treatment. This latter area includes 35 m2 for entomological BSL-3 studies. Such level of biocontainment allows working on a number of exotic infectious diseases that threaten the Spanish territory. All activities are carried out under GLP and GCP conditions and animal welfare regulations following European guidelines. The animal units are constructed as multi-purpose facilities and can house various species from mouse to pig or cattle and wild animal species as well. IRTA-CReSA offers animal facilities to external users (academic researchers, pharmaceutical companies, biotech industry, agri-business industry). The extensive expertise on fundamental and applied research on bacterial and viral diseases in target species makes it an attractive partner for academic and industry

	collaborations. Dedicated teams of animal keepers, veterinarians, pathologists, biosafety officer, scientists and technicians provide services and advice from the design of experimental reproduction of diseases to sampling, necropsy, sampling conditioning and shipment. Users, when qualified, will fully participate in the activities under the closed supervision of the ad-hoc IRTA staff. - IRTA offers state-of-the-art animal and laboratory BSL3 facilities to external users performing research on bacterial and viral diseases in livestock and wildlife target species. Each year, between 4 to 6 international users perform experimental infections with epizootic and zoonotic pathogens including CSFV, ASFV, SBV, HPAIV, BTV, RVFV, CHKV, DENGV, MERS-CoV, endemic virus such as PRRSV, PCV2, TTV, HEV, PEDV, IBV and IBDV and bacteria (Mycobacterium spp., Mycoplasma hyopneumoniae, Haemophilus parasuis, Streptococcus suis, Actinobacillus pleuropneumoniae, etc.) –mainly for pathogenesis studies, vaccine developments and diagnostic purposes.
Description of the access to be provided under VetBioNet TNA call:	The present TNA offer includes: -Experimental reproduction of animal infectious diseases and laboratory work requiring BSL3 containment for studies on pathogenesis, vaccine development and testing of antimicrobial compounds or immunostimulants. -Production of Caesarean derived and colostrum deprived (CDCD) piglets. -Sampling ranging from swabs and bleedings to tissues and organs. -Conditioning of the sample for shipment. -Decontamination of samples. -Shipment of samples (with selected couriers) according to IATA regulations. In this particular case, users are not expected to come to the facilities (remote access). The unit of access is defined as two animal experimental boxes/BSL3 laboratory area (space dedicated to virology/bacteriology/immunology/sample

	storage) of use for one month. One typical access consists of one to two units of access. Upon approval of the TNA project proposal, IRTA scientific and animal facilities teams get in touch with the users in order to establish the dates of availability of the infrastructure. Protocols are revised and detailed in order to comply with internal regulations and provide the necessary legal approvals, including the ethical review and a study plan, which will be signed by the user prior to the start of the study. Animals will then be ordered and/or purchased (if not previously done). With respect to protocols involving animal experimentation and/or laboratory work, dedicated IRTA work teams will be constituted to perform the experiments. For histopathological and immunological studies some reagents (e.g. specific antibodies) might not be available at IRTA and must be provided by the user. Users will be provided with the requested samples with a description of the main characteristics according to the requested work (animal and/or laboratory experimentation) and results from laboratory tests.
Animal species/pathogens that can be worked on in this infrastructure/installation:	-Animal species that can be worked on in these facilities: mice, rats, rabbits, guinea pigs, ferrets, all ruminants (not exceeding 250 kg), pigs (including caesarean-derived, colostrum-deprived piglets), poultry and other wildlife avian species (falcon, partridge, quail...), wild boar, chamois, camelids such as alpaca and llamas, and dromedaries not exceeding 250 kg or 6 months of age. -All veterinary BSL2/3 pathogens with the exception of FMDV can be worked in the installations. Below is a non-exhaustive list of pathogens currently experimented at CReSA. CSFV, ASFV, SBV, HPAI, BTV, RVFV, MERS-CoV, endemic virus such as PRRSV, PCV2, TTV, HEV, PEDV, IBV and IBDV and bacteria (*Mycobacterium* spp., *Mycoplasma hyopneumoniae*, *Haemophilus parasuis*, *Streptococcus suis*, *Actinobacillus pleuropneumoniae* etc.)

Travel and subsistence costs:	Under this particular TNA offer, users are not expected to visit the installations (remote access – samples on demand)
Infrastructure/installation ethical rules:	Not applicable in this particular case.