



# SWINE DIAGNOSTIC SUBMISSION GUIDE

Pathogen/Disease suspected	Specimen	Sample Preparation	Diagnostic Method
<b>VIRAL PATHOGEN/DISEASE</b>			
<b>African Swine Fever (ASF)/ Classical Swine Fever (CSF)</b>	aborted fetuses, placental membranes, uterus, lungs, spleen, liver, kidneys, brain, heart, FTA-cards*	refrigerated/frozen	PCR
	serum, paper strips* (ASF only)	refrigerated	serology
<b>Aujeszky's disease (AK)</b>	serum	refrigerated	serology
<b>Coronaviruses (TGE, PED, Swine Delta-Coronavirus)</b>	fecal samples/swabs, intestine (small intestine/ileum), FTA-cards*	refrigerated/frozen	PCR
	serum (TGE and PED)	refrigerated	serology
<b>Swine Influenza (SIV)</b>	lungs, BALF, nasal/tracheal swabs, blood, oral fluids, FTA-cards* (PCR only)	refrigerated/frozen	PCR (screening, H- & N-typing of Influenza A)
		refrigerated <b>Culture: swabs with specific viral medium!</b>	virus isolation
	refrigerated/fixed in formalin <b>DO NOT FREEZE!</b>	immunohistochemistry	
	serum, oral fluids, paper strips* (not suitable for HI)	refrigerated	serology (screening and typing via hemagglutination inhibition testing (HI) (avH1N1, huH1N2, huH3N2, panH1N1, panH1N2)
<b>Parvovirus (Porcine Parvovirus, PPV)</b>	aborted fetuses (lungs, navel), placental membranes, uterus, FTA-cards*	refrigerated/frozen	PCR
	serum, paper strips*	refrigerated	serology
<b>Porcine Circovirus 2 (PCV-2)</b>	aborted fetuses (heart, lymphatic tissue), placental membranes, lungs, lymph nodes, spleen, thymus, kidney, blood, oral fluids, intestine, pancreas, FTA-cards*	refrigerated/frozen	PCR (screening and quantification)
		refrigerated/fixed in formalin <b>DO NOT FREEZE!</b>	sequencing (differentiation type a-d) immunohistochemistry
	serum, paper strips*	refrigerated	serology (IgM and IgG)
<b>Porcine Circovirus 3 (PCV-3)</b>	aborted fetuses (heart, lymphatic tissue), placental membranes, lungs, lymph nodes, spleen, thymus, kidney, blood, oral fluids, FTA-cards*	refrigerated/frozen	PCR
<b>Porcine Teschovirus (PTV)</b>	fecal samples/swabs, intestine, brain, cerebrospinal fluid, spinal cord FTA-cards*	refrigerated/frozen	PCR
<b>Porcine Respiratory and Reproductive Syndrome (PRRSV)</b>	aborted fetuses (lungs, lymphatic tissue, lymph nodes), placental membranes, uterus, lungs, BALF, nasal/tracheal swabs, oral fluids, blood, semen FTA-cards*	refrigerated/frozen	PCR (EU/NA) sequencing based on ORF-5 (EU/NA) sequencing based on ORF 7 (EU/NA)
		refrigerated/fixed in formalin <b>DO NOT FREEZE!</b>	immunohistochemistry
	serum, paper strips*	refrigerated	serology
<b>Rotavirus infection (Rotavirus A and C)</b>	fecal samples/swabs, intestine (small intestine), FTA-cards* (PCR only)	refrigerated/frozen	PCR sequencing of Rotavirus A based on VP4 and VP7
		refrigerated	virus isolation (Rotavirus A only)
	refrigerated/fixed in formalin <b>DO NOT FREEZE!</b>	immunohistochemistry (Rotavirus A only)	

\*no special storing or shipment requirements

# SWINE DIAGNOSTIC SUBMISSION GUIDE

Pathogen/Disease suspected	Specimen	Sample Preparation	Diagnostic Method
<b>BACTERIAL PATHOGEN/ DISEASE</b>			
<b>Actinobacillus pleuropneumoniae (APP)</b>	lungs, tonsils, oral fluids, FTA-cards* (PCR only)	refrigerated	culture, sensitivity testing, serotyping via PCR
		refrigerated/frozen	PCR (screening, typing (capsule genes/toxin gene differentiation, serotypes 1-18))
	refrigerated/fixated in formalin <b>DO NOT FREEZE!</b>	immunohistochemistry	
	serum, paper strips*	refrigerated	serology (screening, typing via serology, serotypes 1-12)
<b>Brucellosis (Brucella suis)</b>	serum, paper strips*	refrigerated	serology
<b>Brachyspira spp.</b>	fecal samples/swabs, intestine (ileum/ large intestine), FTA-cards* (PCR only)	refrigerated <b>Culture: swabs with specific anaerobic medium! DO NOT FREEZE!</b>	<b>specific</b> culture (sensitivity testing on request)
		refrigerated/frozen	PCR (screening for Brachy- spira spp. incl. B. innocens, B. murdochii, B. hyodysenteriae, B. pilosicoli, B. intermedia, B. hampsonii, B. suanatina,  PCR (direct screening for B. hyodysenteriae/B. pilosicoli)  MLST for B. hyodysenteriae
<b>Campylobacter spp. (C. coli, C. jejuni, C. lari)</b>	fecal samples/swabs, intestine	refrigerated <b>DO NOT FREEZE!</b>	culture, sensitivity testing
		refrigerated <b>DO NOT FREEZE!</b>	PCR
<b>Chlamydia spp.</b>	aborted fetuses (lungs, liver, navel), placental membranes, uterus, cervical swabs, joints, joint fluid, lungs, conjunc- tival swabs, FTA-cards*  serum	refrigerated/frozen	PCR (screening for patho- genic Chlamydia spp.)
			serology (KBR)
<b>Clostridium difficile</b>	fecal samples, intestine (large intestine)	refrigerated	<b>specific</b> culture, sensitivity testing, typing via PCR (toxin genes A and B)
<b>Clostridium perfringens</b>	fecal samples/swabs, stomach, intestine (small intestine)	refrigerated	<b>specific</b> culture, sensitivity testing, typing via PCR (toxovar, major-/minor-toxin genes)t
<b>Colibacillosis/Colisepsis/ Edema disease (Pathogenic E. coli)</b>	fecal samples/swabs, stomach, intestine (small intestine)	refrigerated	culture, sensitivity testing, typing via PCR (virulence and adherence factors, specific panels for suckling piglets (12x) and weaners (9x))

\*no special storing or shipment requirements



# SWINE DIAGNOSTIC SUBMISSION GUIDE

Pathogen/Disease suspected	Specimen	Sample Preparation	Diagnostic Method
<b>Edema disease (Stx2e)</b>	fecal samples/swabs, intestine (small intestine) FTA-cards*	refrigerated/frozen	PCR (specific screening for Stx2e without previous culture)
<b>Erysipelas (Erysipelothrix rhusiopathiae)</b>	joints, joint fluids + cartilage, skin lesions, heart, liver, spleen, lymph nodes, blood, FTA-cards* (PCR only)	refrigerated refrigerated/frozen	culture, sensitivity testing PCR
	serum, paper strips*	refrigerated	serology
	<b>Glässer's disease (Haemophilus parasuis, HPS)</b>	lungs, joints, joint fluids + cartilage, brain, heart including pericardium, liquor cerebrospinalis, swabs of pleura/peritoneum, exudate, FTA-cards* (PCR only)	refrigerated refrigerated/frozen
	serum, paper strips*	refrigerated	serology
<b>Porcine Proliferative Enteropathy (Lawsonia intracellularis, PIA)</b>	fecal samples/swabs, intestine (ileum/large Intestine), FTA-cards*	refrigerated/frozen refrigerated, fixed in formalin <b>DO NOT FREEZE!</b>	PCR immunohistochemistry
	serum	refrigerated	serology
	<b>Leptospirosis (Pathogenic Leptospira spp.)</b>	aborted fetuses (lungs, liver, kidney, navel), placental membranes, uterus, cervical swabs, urine, kidneys, FTA-cards*	refrigerated/frozen refrigerated/fixed in formalin <b>DO NOT FREEZE!</b>
serum		refrigerated	serology by microagglutination test (MAT), differentiation of L. australis, L. bratislava, L. autumnalis, L. canicola, L. grippityphosa, L. icterohaemorrhagiae, L. pomona, L. hardjo, L. tarassovi)
<b>Mycoplasma hyopneumoniae</b>		lungs, BALF, nasal/tracheal swabs, oral fluids, FTA-cards*	refrigerated/frozen refrigerated/fixed in formalin <b>DO NOT FREEZE!</b>
	serum, paper strips*	refrigerated	serology
<b>Mycoplasma hyorhinis</b>	lungs, nasal/tracheal swabs, heart including pericardium, swabs of pleura/peritoneum, joints, joint fluids + cartilage, FTA-cards* (PCR only)	refrigerated <b>Culture: swabs with specific Mycoplasma medium!</b> <b>DO NOT FREEZE!</b>	<b>specific</b> culture (sensitivity testing on request)
		refrigerated/frozen	PCR
<b>Mycoplasma hyosynoviae</b>	joints, joint fluids + cartilage, FTA-cards* (PCR only)	refrigerated <b>Culture: swabs with specific Mycoplasma medium!</b> <b>DO NOT FREEZE!</b>	<b>specific</b> culture (sensitivity testing on request)
		refrigerated/frozen	PCR
<b>Mycoplasma suis (Eperythrozoonosis)</b>	aborted fetuses (liver, spleen), placental membranes, blood (EDTA), spleen, liver, FTA-cards*	refrigerated/frozen	PCR

\*no special storing or shipment requirements



# SWINE DIAGNOSTIC SUBMISSION GUIDE

Pathogen/Disease suspected	Specimen	Sample Preparation	Diagnostic Method
<b>Pasteurella multocida (including atrophic rhinitis)</b>	lungs, BALF, nasal/tracheal swabs, turbinates, FTA-cards* (PCR only)	refrigerated refrigerated/frozen	culture, sensitivity testing PCR (screening, typing based on capsule genes (A, B, D, E, F), proof of gene for toxin A (atrophic rhinitis))
	serum	refrigerated	Toxin-ELISA (atrophic rhinitis)
<b>Salmonellosis (Salmonella spp.)</b>	fecal samples/swabs, intestine (small and large intestine), mesenteric lymph nodes, spleen, liver, lungs, swipe samples, boot swabs, dust, FTA-cards* (PCR only)	refrigerated refrigerated	<b>specific</b> culture, sensitivity testing, serotyping via agglutination PCR (screening, differentiation SE/ST, ST DNA PCR)
	serum, paper strips*	refrigerated	serology
<b>Streptococcus suis</b>	lungs, joints, joint fluids + cartilage, brain, heart including pericardium, swabs of pleura/peritoneum, liquor cerebrospinalis, spleen, liver, FTA-cards* (PCR only)	refrigerated refrigerated/frozen	culture, sensitivity testing, typing/virulence factors via PCR PCR (screening, typing (capsule genes, serotypes 1-19, 21, 23-25, 27-31, 1/2), virulence factors)
	<b>Streptococcus dysgalactiae</b>	lungs, joints, joint fluids + cartilage, brain, heart including pericardium, swabs of pleura/peritoneum, liquor cerebrospinalis, liver, spleen	refrigerated

Pathogen/Disease suspected	Specimen	Sample Preparation	Diagnostic Method
<b>PARASITOLOGICAL PATHOGEN/DISEASE</b>			
<b>Coccidiosis (Isospora suis)</b>	fecal samples, intestine (small intestine)	refrigerated	flotation, microscopic investigation
<b>Cryptosporidiosis (C. parvum)</b>	fecal samples/swabs, intestine, FTA-cards* (PCR only)	refrigerated/frozen	PCR
<b>Sarcoptic Mange (Sarcoptes scabiei var. suis)</b>	serum, paper strips*	refrigerated	serology
	deep skin scrapings	refrigerated	microscopic investigation
<b>Parasitological investigation</b>	fecal samples, intestine	refrigerated	flotation/sedimentation, microscopic investigation

**PCR/Sequencing:** All organs listed may be sampled as tissue samples or alternatively as dry swabs that carry sufficient load of suitable tissue material. Moreover, FTA-cards are suitable for PCR investigations and sequencing. A special submission guide for FTA-cards can be found here ([https://www.anicon.eu/templates/images/documents/AniCon\\_SubmissionGuidelineFTACardsSWINE\\_Rev10012017.pdf](https://www.anicon.eu/templates/images/documents/AniCon_SubmissionGuidelineFTACardsSWINE_Rev10012017.pdf)). Sequencing includes phylogenetic analysis visualized in a phylogenetic tree and a comparison to vaccine strains, if data of commercial live attenuated vaccines is available.

**Bacterial Culture:** We recommend swabs with transport media to prevent desiccation. Specific media might be required (e.g. for Mycoplasma spp. or Brachyspira spp.).

**Viral Culture:** We recommend organ/ tissue samples. Swabs for viral culture should carry sufficient load of tissue material and should be placed into viral transport media.

**Serology:** If not stated differently ELISA will be applied by default. Serum samples can be sent frozen for ELISA, HI or MAT, if centrifugated before (pure serum). Moreover, paper strips might be used for serological investigations, if stated. A special submission guide for paper strips can be found here ([https://www.anicon.eu/templates/images/documents/AniCon\\_SubmissionGuidelinePaperStripsSWINE\\_Rev092016.pdf](https://www.anicon.eu/templates/images/documents/AniCon_SubmissionGuidelinePaperStripsSWINE_Rev092016.pdf)).

**Histopathology/Immunohistopathology:** Do not freeze the samples! This will destroy the tissue and induces artifacts. Best results will be achieved, if samples are placed in formalin prompt after sampling.

**Autogenous Vaccines:** For the production of bacterial autogenous vaccines we prefer the most invasive isolates (e.g. isolated from brain, lungs, joints, pericardium). For production of viral autogenous vaccines, please sample affected organs related to clinical signs (e.g. small intestine for Rotavirus A, lungs for SIV).

Please note that the sample material may vary depending on state of the infection or type of manifestation of the disease.

For selection of suitable sample material clinical symptoms, course of disease and gross pathological lesions should be taken into consideration.

**Information on how to correctly wrap samples for sending them in** and which accompanying documents are needed can be provided by AniCon Labor GmbH, if desired.

For fast and correct investigations according your specific demands please fill in the **interactive Diagnostic Request Form** which you can find here:

[https://www.anicon.eu/templates/images/documents/AniCon\\_SubmissionformSWINE\\_01\\_07\\_2018.pdf](https://www.anicon.eu/templates/images/documents/AniCon_SubmissionformSWINE_01_07_2018.pdf)

**For further information please don't hesitate to contact us!**

**E-mail: [info@anicon.eu](mailto:info@anicon.eu) · Phone: +49 4473 943830**

\*no special storing or shipment requirements