African Swine Fever Virus (ASFV)

An outbreak of African Swine Fever Virus (ASFV) is ravaging Asia's pig industry and continuing to spread globally. The outbreak began in China in August 2018 and since the initial infection, the country has lost 22% of its pig herd and is predicted to lose up to 50%, representing the largest livestock loss in modern history. The disease has spread to neighboring countries including Mongolia, Russia, Cambodia and Vietnam and there is a high risk of it spreading throughout Europe and to the USA.

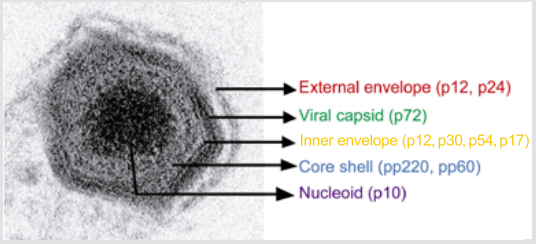
ASFV is a DNA virus that is transmitted through direct contact with an infected pig, contaminated feed or through the bite of an infected tick. Virus isolates can vary in virulence from highly pathogenic strains that cause acute disease and high mortality (90-100%) to low–virulence isolates that present similar but less intense symptoms making the disease chronic and difficult to diagnose. There is no vaccine or treatment.

The genome of ASFV is very large and complex, consisting of over 150 genes with variability in expression, leading to 22 different genotypes of ASFV. Several immunogenic viral antigens have been identified, including p30 which is one of the most antigenic structural proteins involved in ASFV entry and is expressed very early on in infection (2-4 hours post-infection) *(Zhang et. al., 2017)*. Research has shown that with low-virulence strains, virus shedding and antibodies to the virus can persist for months after infection.

ASFV can be diagnosed by virus isolation, ELISA, immunofluorescence or PCR. Clinical samples used for testing are lymph nodes, kidneys, spleen, lung, blood and serum. The simultaneous detection of both antigens and antibodies is recommended in order to identify the presence of potentially chronic infections that continue to spread the disease.

Monoclonal Antibodies to ASFV	Recombinant Antigens to ASFV
MAb to ASFV p30 Detects the early-expressed p30 structural antigen. Suitable for ELISA, IFA, IHC, IP and WB. Cat# C01881M Cat# C01882M	Produced in insect cells and affinity purified by proprietary chromatography. **ASFV p30** Cat# R01793 **ASFV p30** Cat# R01795 **ASFV p54** Cat# R01796

Zhang, J. et al. (2017). Roles of African Swine Fever Virus structural proteins in viral infection. J. Vet Res., 61, 135-143.



Electron microscopy image of the extracellular African Swine Virus particle. The ASFV virion is composed of different concentric layers: the external envelope (red), the viral capsid (green), the inner envelope (yellow), the core shell (blue), and the nucleoid (purple).

Zhang, J. et al., (2017)

Molecular reagents

PRODUCT	CATALOG #	DESCRIPTION
ENZYMES		
Low DNA Taq HS 5 U/µL	MDX009	Heat-activated, thermostable DNA polymerase with low residual DNA content. Ideal for multiplex assays involving amplification of bacterial and fungal DNA.
Low DNA Taq HS 10 U/µL	MDX010	
Aptamer Taq HS (Glycerol-Free)	MDX015	A high concentration (50U/ml), lyophilization-compatible Taq DNA polymerase containing a DNA aptamer which binds reversibly to the polymerase. Suitable for developing highly specific, high-throughput assays.
OPTMIZED MASTER MIXES		
Low DNA qPCR Mix	MDX030	Designed for multiplex assays detecting microbial or fungal DNA. Incorporates a heat-activated DNA polymerase with low residual DNA content.
Fast qPCR Mix	MDX020	Ideal for multiplex assays requiring sensitive detection of DNA targets in inhibitor-rich samples. Contains an antibody-mediated hot-start polymerase.
Inhibitor-Tolerant qPCR Mix	MDX013	Designed for amplification direct from crude lysates or inhibitor-rich samples such as urine, cerebral spinal fluid (CSF), blood as well as plants. Contains an antibody-mediated hot-start polymerase.
COMPANION REAGENTS		
Tissue Extract-PCR Buffers	MDX004	Lysis and neutralization buffer optimized for use with Taq HS DNA.
Fast qPCR Buffer, 4x	MDX033	Optimized for use with *Taq HS DNA Polymerase (MDX008)*.
1-Step RT-qPCR Buffer, 4x	MDX034	Optimized for use with *Taq HS DNA Polymerase (MDX008)* and *RNase-Tolerant MMLV-RT (MDX043)*.
RNase Inhibitor	MDX056	Inhibits a broad spectrum of eukaryotic RNases, including RNases A, B and C to control for contaminants in RT-PCR assays.
Taq HS Antibody	MDX014	A mix of anti-Taq antibodies designed to inhibit Taq DNA polymerase activity at room temperature. For use in hot-start PCR.

Product Reference Chart

Product Name	Cat#	Master Mix	Hot-Start	DNA Detection	RNA Detection	Multiplex Reactions	High-Sensitivity (Low copy target)	Inhibitor-Rich Samples	Room-Temperature Assay Set-Up
Taq DNA Polymerase	MDX001		No	✓		•			
Taq DNA HS Polymerase	MDX008		Antibody	✓		••	••	•	
Aptamer Taq HS	MDX015		Aptamer	✓		••	••	••	••
Low DNA Taq HS	MDX009 & MDX010		Chemical	✓		••			••
Fast qPCR Mix	MDX020	✓	Antibody	✓		••	•		
Inhibitor-Tolerant qPCR Mix	MDX013	✓	Antibody	✓		••		••	
Low DNA qPCR Mix	MDX030	✓	Antibody	✓		••	••		••

• Suitable | •• Recommended

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