

<b>Virus Name: African swine fever</b>		<b>Abbreviation: ASFV</b>
Status <b>Arbovirus</b>	Select Agent <b>No</b>	SALS Level
SALS Basis		
Other Information <b>USDA Restricted, USDA High Consequence Agent</b>		
Antigenic Group <b>ungrouped</b>		

**SECTION I - Full Virus Name and Prototype Number**

Prototype Strain Number / Designation	Accession Number	Original Date Submitted 11/23/1984
Family <b>Iridoviridae</b>	Genus <b>not listed</b>	
Information From <b>W. Plowright</b>	Address <b>The Royal Veterinary College, Royal College Street, London NW1 OTU, England</b>	
Information Footnote <b>Reviewed by editor</b>		

**Section II - Original Source**

Isolated By (name) <b>R.E. Montgomery (1)</b>	Isolated at Institute <b>Kabete, Kenya, E. Africa</b>	
Host Genus <b>Pig</b>	Species	Host Age/Stage
Sex <b>Not Answered</b>		
<u>Isolated From</u>	<u>Isolation Details</u>	
<b>Whole Blood</b>		
<b>Serum/Plasma</b>		
<b>Other Fluids</b>		
<b>Organs/Tissues</b>		
Signs and Symptoms of Illness <b>Febrile reaction, anorexia, cyanosis of skin, diarrhea (+) incoordination</b>	Arthropod	
Time Held Alive before Inoculation		
Collection Method <b>Probably blood from sick pig</b>	Collection Date <b>6/1/2010</b>	
Place Collected (Minimum of City, State, Country) <b>Kenya</b>		
Latitude	Longitude	
Macrohabitat <b>Suitable for warthogs or bushpigs</b>	Microhabitat	Method of Storage until Inoculated <b>Probably potassium oxalate 0.125%, phenol 0.125%, glycerol 25%</b>
Footnotes		

**Section III - Method of Isolation**

Inoculation Date	
Animal (Details will be in Section 6) <b>Pig (Tissue Culture)</b>	
Route Inoculated <b>Parenteral</b>	Reisolation <b>Yes</b>
Other Reasons	
Homologous Antibody Formation by <u>Source Animal</u> <b>Yes</b>	
Test(s) Used <b>CF, AGDP and haemadsorption-inhibition</b>	
Footnotes	

**Section IV - Virus Properties**

Physicochemical <b>DNA</b>	
Disease/Number of organisms	Infectivity
	Quantitative Coefficient(s)

Pieces (number of genome segments)	Infectivity	Sedimentation Coefficients(s) (S)
Percentage wt, of Virion Protein	Lipid	Carbohydrate
Virion Polypeptides: Number	Details <b>Very resistant to exposure at environmental and higher temperatures(5)</b>	
Non-virion Polypeptides: Number	Details	
Virion Density	Sedimentation Coefficients(s) (S)	
Nucleocapsid Density	Sedimentation Coefficients(s) (S)	

### Stability of Infectivity (effects)

pH (infective range)

Lipid Solvent (ether - % used to test)	After Treatment Titer <b>&lt;1.0 dex</b>	Control Titer <b>7.2 dex</b>
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate)	After Treatment Titer	Control Titer

Other (formalin, radiation)

**Sensitive to chloroform, sodium dodecyl sulphate, hypochlorite.**

### Virion Morphology

Shape <b>Usually hexagonal</b>	Dimensions	
Mean nm	Range nm	
Measurement Method <b>EM of thin section disrupted cells (3,4)</b>	Surface Projections/Envelope <b>Envelope observed. 175-215 nm</b>	Nucleocapsid Dimensions, Symmetry <b>Capsid has dense outer shell, central nucleoid = 7</b>

### Morphogenesis

Site of Constituent Formation in Cell	Site of Virion Assembly	Site of Virion Accumulation
Inclusion Bodies	Other	

### Hemagglutination

Hemagglutination <b>No</b>	Antigen Source <b>Cell cultures; pig tissues tr.by tween-ether; ether, ether-acetone</b>	Erythrocytes (species used) <b>Pig</b>
pH Range <b>Various</b>	pH Optimum	
Temperature Range	Temperature Optimum	

Remarks

**\* There is no recognized prototype strain. Pig, warthog, and tick isolates are available in large numbers at low passage levels.**

levels.  
Serologic Methods Recommended

**Haemadsorption-inhibition and agar-gel diffusion p**

Footnotes

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#### **Section V - Antigenic Relationship and Lack of Relationship to Other Viruses**

No antigenic relationship to any other virus, including that of hog cholera (CF, NT, cross-protection).

No neutralizing antibody is produced in any species. The CF and many of the AGDP antigens are apparently common to all isolates.

Cross-immunity experiments indicate that there may be several immunological types; haemadsorption-inhibiting antibodies are isolate specific. ( [1] , [2] , [4] , [8] )

**Section VI - Biologic Characteristics**

Virus Source (all VERTEBRATE isolates)  
**Blood (LV), heart (LV), lung (LV), liver (LV), spleen (LV), kidney (LV), nasopharyngeal (LV) urine (LV), feces (LV) and lymph node (LV)**

Lab Methods of Virus Recovery (ALL ISOLATIONS)  
**Normal pigs, primary and continuous porcine cell cultures**

Cell system (a)	Virus passage history (b)	Evidence of Infection						
		CPE			PLAQUES			Growth Without CPE +/- (g)
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	
Porcine leucocyte (PC)	Probably		CPE, haemadsorption					
Porcine bone marrow (PC)	Probably all strains		CPE, haemadsorption					
Porcine kidney (PC)			CPE, haemadsorption					
Chick embryo (PC)			CPE, haemadsorption					
Pig kidney (CL)	Various		CPE			Plaques		
BHK-21 (CL)			CPE	(1,2)				
Lamb testis (CL)			CPE					

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Pig ( <i>Sus scrofa</i> )	Numerous		Africa, Spain , Portugal
Warthog ( <i>Phacochoerus aethiopicus</i> )	80/113		Kenya , Tanzania (11)
Warthog ( <i>Phacochoerus aethiopicus</i> )	30/115		Uganda (11)
Bushpig ( <i>Potamochoerus</i> sp.)	1/46		Kenya (1)
Giant forest hog ( <i>Hylchoerus meinertzhageni</i> )	1/9		Kenya (17)
(The wild swine are all inapparent virus reservoirs)			
Ornithodoros erraticus	No details		Spain (10)
Ornithodoros moubat aporcinus	10/64,600		Uganda (11-13)
Ornithodoros moubata porcinus	223/50,000		Tanzania (11-13)
Haematopinus phacochoeri	*		
Haematomyzus spp.	*		
* No isolations from several hundred pigs infected with ASF on farm in the Netherlands (19)			

**Section VIII - Susceptibility to Experimental Infection (include viremia)**

Experimental host and age	Passage history and strain	Inoculation Route-Dose	Evidence of infection	AST (days)	Titer log10/ml
Mice (nb)		ic			
Mice (nb)		ip			
Mice (nb)		sc			
Mice (wn)		ic			
Mice (wn)		ip			
rabbit			Serial passages successful		
cattle , sheep , dog		sc,iv	Not susceptible		
goat			Recovery of virus		

**Section IX - Experimental Arthropod Infection and Transmission**

*O. moubata* porcinus Adult infected per oram, by bite. Virus detected in excretions, ova nymphal offspring for as long as three years and may contain as much as 9.0 dex of virus/tick (11,14).  
*Amblyomma variegatum* *Rhipicephalus simus* 1 Infection attempted per oram. No evidence of virus multiplication or transmission to pig.

**Section X - Histopathology**

Character of lesions (specify host)

**Pig: Destruction of lymphoreticular elements. Vasculitis and widespread haemorrhages, occasionally thrombosis and infarction.**

Inclusion Bodies

Intranuclear

**Lower Vertebrates**

Organs/Tissues Affected

**Brain (LV), spinal cord (LV), lungs (LV), liver (LV), spleen (LV) kidney (LV) blood vessels (LV), and marrow (LV)**

Category of tropism

**Primarily to RE/macrophage system (pantropic)**

**Section XI - Human Disease**

In Nature	Residual	Death
Subclinical	Overt Disease	
Clinical Manifestations		
Number of Cases	Category (i.e. febrile illness, etc.)	

**Section XII - Geographic Distribution**

Known (Virus detected) <b>Africa, Portugal, Spain (temporarily France, Italy and Cuba)</b>
Suspected (Antibody only detected)

**Section XIII - References**

<ol style="list-style-type: none"> <li>1. Montgomery, R.E. 1921. J. Comp. Path. 34:159-191; 243-262.</li> <li>2. De Tray, D.E. 1963. Adv. Vet. Sci. 8:299-333.</li> <li>3. Malmquist, W.A. and Hay, D. 1970. Am. J. Vet. Res. 21:104-108.</li> <li>4. Breese, S.S. and DeBoer, C.J. 1966. Virology 28:420-428.</li> <li>5. Hess, W.R. 1970. Virology Monographs 9:1-33.</li> <li>6. Almeida, J.D., et al. 1967. Arch. ges. Virusforsch. 20:392-396.</li> <li>7. Plowright, W. and Parker, J. 1967. Arch. ges. Virusforsch 21:383-402.</li> <li>8. Malmquist, W.A. 1962. Am. J. Vet. Res. 23:241-247.</li> <li>9. Malmquist, W.A. 1963. Am. J. Vet. Res. 24:450-459.</li> <li>10. Sanchez Botija, C. 1963. Bull. Off. Int. Epiz. 60:895-899.</li> <li>11. Plowright, W., et al. 1972. Unpublished</li> <li>12. Plowright, W., et al. 1969. Nature 221:1071-1073.</li> <li>13. Plowright, W., et al. 1969. Vet. Rec. 85:668-674.</li> <li>14. Plowright, W., et al. 1970. Arch. ges. Virusforsch. 31:33-50.</li> <li>15. Plowright, W., et al. 1970. Res. Vet. Sci. 11:582-584.</li> <li>16. Greig, A. Unpublished. 1971.</li> <li>17. Heuschele, W.P. and Coggins, L. 1965. Bull. epiz. Dis. Afr. 13:255-256.</li> <li>18. Plowright, W., et al. 1974. Res. Vet. Sci. 17:106-113.</li> <li>19. Terpstra, C. and Vensvoort, G. 1986. Tijdschrift voor Diergeneeskunde. 111:389-392.</li> </ol>
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**Remarks**

<p><b>The executive Committee of the International Committee on Taxonomy of Viruses has accepted a taxonomic proposal which stated that African Swine Fever virus should be considered a family separate from the Iridoviridae family (19) ASFV localizes predominately in the mid-gut of the tick, but rapidly invades haemocoel and other tissues (16). It is transmitted transovarially and also from infected male to female ticks, probably during copulation (11,15,16,18).</b></p>
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