

Virus Name: Fort Sherman		Abbreviation: FSV
Status Possible Arbovirus	Select Agent No	SALS Level
SALS Basis		
Other Information		
Antigenic Group Bunyamwera		

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation 86MSP18	Accession Number	Original Date Submitted 1/26/1989
Family	Genus Bunyavirus	
Information From Joseph A. Mangiafico (1)	Address U.S.A.M.R.I.I.D., Fort Detrick, Fredrick, Maryland, 21701-5011	
Information Footnote		

Section II - Original Source

Isolated By (name) Joseph A. Mangiafico	Isolated at Institute	
Host Genus Human	Species	Host Age/Stage 36 yrs. Adult
Sex Male		
<u>Isolated From</u>	<u>Isolation Details</u>	
Serum/Plasma		
Signs and Symptoms of Illness Fever (101dF), malaise, muscle aches, sore throat	Arthropod	
Time Held Alive before Inoculation		
Collection Method Venipuncture	Collection Date 6/13/1985	
Place Collected (Minimum of City, State, Country) Fort Sherman, Republic of Panama		
Latitude 9° 20' N	Longitude 79° 58' W	
Macrohabitat Clinic	Microhabitat	Method of Storage until Inoculated Dry ice and -100dF freezer
Footnotes		

Section III - Method of Isolation

Inoculation Date
1/14/1986

Animal (Details will be in Section 6)
Vero cells (Tissue Culture)

Route Inoculated
Reisolation
Yes

Other Reasons

Homologous Antibody Formation by Source Animal
Yes

Test(s) Used
CF, NT

Footnotes

Section IV - Virus Properties

Physicochemical

Pieces (number of genome segments)	Infectivity	Sedimentation Coefficients(s) (S)
Percentage wt, of Virion Protein	Lipid	Carbohydrate
Virion Polypeptides: Number	Details	
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	Control Titer
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate) 1:1000	After Treatment Titer 1.0 dex PFU/0.1 ml	Control Titer 4.1 dex PFU/0.1 ml
Other (formalin, radiation)		

Virion Morphology

Shape	Dimensions	
Mean nm	Range nm	
Measurement Method	Surface Projections/Envelope	Nucleocapsid Dimensions, Symmetry

Morphogenesis

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

Hemagglutination No	Antigen Source SMB ext. sucrose-acetone	Erythrocytes (species used) Goose
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pH Range 5.8 - 7.2	pH Optimum	
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Temperature Range	Temperature Optimum	
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Remarks

Serologic Methods Recommended
CF, PRNT

Footnotes

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

Results of CF tests conducted at YARU showed viral isolate 86MSP18 to be in the Bunyamwera serogroup and to cross-react to titer or almost to titer with Cache Valley, Maguari, Bunyamwera, Playas, and Xingu viruses and to a lesser titer with Kairi, Tai, Guaro and Germiston viruses [2].

COMPLEMENT FIXATION TEST REACTIONS OF 86MSP18 VIRUS WITH VIRUSES IN THE BUNYAMWERA SEROGROUP

Antigen	Antibody									
	86MSP18	CV	MAG	BUN	PLA	XINGU	KAI	TAI	GAO	GER
86MSP18	512/32 *	512/32	32/32	128/32	512/32	128/32	0/0	8/4	0/0	0/0
CV	512/256	512/256								
MAG	512/64		32/64							
BUN	512/64			512/254						
PLA	512/8				512/8					
XINGU	128/8					512/8				
KAI	8/64						128/56			
TAI	8/256							128/256		
GAO	32/256								128/256	
GER	8/8									32/8

* Antibody titer/antigen titer; 0/0 = <8/<4.

Results by PRNT show viral strain 86MSP18 to be distinct from Maguari and Xingu viruses but more closely related to Playas and Cache Valley viruses.

RESULTS OF SERUM DILUTION PLAQUE-REDUCTION NEUTRALIZATION TEST WITH FORT SHERMAN VIRUS, STRAIN 86MSP18, AND SELECTED BUNYAMWERA SEROGROUP VIRUSES

Virus	Strain	Antibody				
		Fort Sherman	Xingu	Maguari	Playas	Cache Valley
Fort Sherman	86MSP18	640	<10	<10	640	640
Xingu	BeM388464	20	1280	<10	40	10
Maguari	Be Ar 7272	80	<10	80	160	320
Playas	75V3066	640	<10	<10	5120	2560
Cache Valley	6V-633	640	<10	10	5120	10,240

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
Serum (human)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Vero cell culture and newborn mice

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)	
Vero (CL)	orig.	3	2+		4	0.5 - 1 mm	7.7 dex	
Vero (CL)	Vero 1	3	2+		3	0.5 - 1 mm	7.0 dex	
C6/36 (CL)	Vero 1	5	No CPE				6.2 dex	

Section VII - Natural Host Range (Additional text can be added below table)

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Human (serum)	1/18		Fort Sherman, Panama

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)	original	ic	Illness and death	4-5	
"" (nb)		ip			
"" (nb)		sq			
"" (wn)		ic			
"" (wn)		ip			

Section IX - Experimental Arthropod Infection and Transmission

Arthropod species & virus source(a)	Method of Infection log ₁₀ /ml (b)		Incubation period (c)		Transmission by bite (d)		Assay of arthropod, log ₁₀ /ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System

Section X - Histopathology

Character of lesions (specify host)

Inclusion Bodies

Intranuclear

Organs/Tissues Affected

Category of tropism

Section XI - Human Disease

In Nature
Reported

Residual

Death

Subclinical

Overt Disease

Clinical Manifestations

Fever, malaise, muscle aches, and sore throat

Number of Cases

1

Category (i.e. febrile illness, etc.)

Febrile illness

Section XII - Geographic Distribution

Known (Virus detected)

Panama

Suspected (Antibody only detected)

Section XIII - References

1. Mangiafico, J.A., et.al. 1988. Am. J. Trop. Med. Hyg. 39:593-596.
2. Shope, R.E., Personal communication. 1986.

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