Virus Name: Shark River	Abbreviation: SRV

Status
Probable Arbovirus

Select Agent
No

SALS Level
2

SALS Basis
Results of SALS surveys and information from the Catalogue.

Other Information

Antigenic Group
Patois

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
FE4-1R

Accession Number

Original Date Submitted
10/19/1984

Family
Bunyaviridae

Genus
Bunyavirus

Information From
Arbovirology Unit

Address
Center for Disease Control, Atlanta, Georgia 30333, USA

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
Arbovirus Ecology Lab

Isolated at Institute
Arbovirus Unit, CDC, Atlanta, GA

Host Genus
Culex (Melanoconion) sp.

Species

Host Age/Stage
27 adults

Sex
Female

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod

Time Held Alive before Inoculation

Collection Method
Light trap

Collection Date
1/25/1964

Place Collected (Minimum of City, State, Country)
Mahogany Hammock, Everglades National Park, FL

Latitude
25° N

Longitude
81° W

Macrohabitat
Palm-hardwood hammock

Microhabitat

Method of Storage until Inoculated
-60dC

Footnotes

Section III - Method of Isolation

Inoculation Date
2/10/1964

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
Yes

Other Reasons

Homologous Antibody Formation by Source Animal

Test(s) Used

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) **1:200**	After Treatment Titer **<3.2 dex**	Control Titer **8.2 dex**

Other (formalin, radiation)

Virion Morphology

Shape **Spherical**	Dimensions **Approx. 100 nm**	
Mean nm	Range nm	
Measurement Method **Filtration and electron microscopy**	Surface Projections/Envelope **Envelope observed; diameter 5 nm; capsid diameter 104 nm**	Nucleocapsid Dimensions, Symmetry

Morphogenesis

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

Hemagglutination

Hemaggiutination	Antigen Source	Erythrocytes (species used)
Yes	**SM serum ext. by acetone**	**Goose**
pH Range	pH Optimum	
5.7-5.9	**5.75**	
Temperature Range	Temperature Optimum	
	37dC	

Remarks

Serologic Methods Recommended
HI, CF, NT

Footnotes

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

In CF testing, a SM liver antigen did not react with the following ascitic fluids: EEE, WEE, VEE, Mayaro, Una, Pixuna, Ilheus, SLE, yellow fever, dengue 2, Murray Valley encephalitis, Cache Valley, Tensaw, Silverwater, Turlock, California (La Crosse and trivittatus), Oropouche, Sathuperi, Aruac, Ieri, Sororoca, Anopheles A, Anopheles B, VS-Indiana, CTF, Buttonwillow, Flanders, Herpes simplex, Broad Group A, Broad Group B, Broad California, Broad Guama, Broad Capim, Broad Bunyamwera and Broad Simbu. A hyperimmune ascitic fluid of the prototype failed to inhibit hemagglutinins of EEE, WEE, SLE, MVE, LAC, Tensaw and Buttonwillow.

	Shark River Antigen [a]			Shark River Hyperimmune Ascitic Fluid		
	HI [b]	CF [c]	NT [d]	HI	CF	NT
Immune Ascitic Fluid or Antigen	Ht/Ho	Ht/Ho	Ht/Ho	Ht/Ho	Ht/Ho	Ht/Ho
Patois	20/160	32/64	2.7/>4.5	320/640	256/512	3.8/>6.4
Zegla	10/320	256/1024	1.8/>4.6	40/640	256/512	3.0/>6.4
Pahayokee	<10/40	16/64	0.5/3.2	10/640	512/512	0.1/>6.4
Shark River	640	512	>6.4	640	512	>6.4
Broad Guama	20	<8	2.4			
Broad C	<10	<8	0.1			

[a] Antigen prepared by acetone extraction of infectious mouse serum.

[b] Titers expressed as reciprocal of highest serum dilution of inhibition using 4-8 units of antigen.

[c] Titers expressed as reciprocal of highest serum dilution fixing 5-50% units of complement in box CF.

[d] Tissue culture neutralization index derived from plaque-reduction neutralization test in BHK-21 cells. Titers expressed as dex.

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn mice

Cell system (a)	Virus passage history (b)	Evidence of Infection							
		CPE			PLAQUES			Growth Without CPE	
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	+/- (g)	
BHK-21 (CL)	SMB 14				5		9.4*		
GMK (CL)					5		8.5		

* Expressed in 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
Culex (Mel) sp.	16/33,853		Everglades National Park, Florida, 1963-65
Sigmodon hispidus (cotton rat)	1/22		
Culex (Mel) sp.	50		Everglades National Park, Florida, 1966-69
Culex nigripalpus	1		
Anopheles crucians	1		
Sentinel hamster	1		Guatemala (3)
Sentinel hamster	1		Mexico (3)

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)	SMB 14	ic 0.02	Illness and death	2	9.7 *
Mice (nb)		ip			
Mice (nb)		sc			
Mice (wn)		ic 0.03	Illness and death	3-5	3.8
Mice (wn)		ip			

* Highest infectious titer in suckling mice found in serum and liver.

Section IX - Experimental Arthropod Infection and Transmission

Arthropod species & virus source(a)	Method of Infection log10/ml (b)		Incubation period (c)		Transmision by bite (d)		Assay of arthropod, log10/ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System

Section X - Histopathology

Character of lesions (specify host)
Hepatitis, severe necrotizing eosinophilic hyalin body formation ("Councilman-like") and small polychromatophilic purple cytoplasmic and extracellular bodies (nb mice).

Inclusion Bodies — Intranuclear
Lower Vertabrates

Organs/Tissues Affected
Liver (LV)

Category of tropism
Viscerotropism

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)
South Florida, USA; Mexico, Guatemala

Suspected (Antibody only detected)

Section XIII - References

1. Srihongse, S., et al. 1966. Am. J. Trop. Med. and Hyg. 15:379-384.
2. Fields, B.N., et al. 1969. Am. J. Epidem. 89:222-226.
3. Scherer, W.F., et al. 1972. Am. J. Trop. Med. and Hyg. 21:194-200.

Remarks