Virus Name: Gumbo Limbo		Abbreviation: GLV
Status **Probable Arbovirus**	Select Agent **No**	SALS Level **2**

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

Other Information

Antigenic Group
C

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation	Accession Number	Original Date Submitted
FE3-71H		10/19/1984

Family	Genus
Bunyaviridae	**Bunyavirus**

Information From	Address
Arbovirology Unit	**Center for Disease Control, Atlanta, Georgia 30333, USA**

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)	Isolated at Institute	
Arbovirus Ecology Lab	**CDC, Atlanta, GA**	
Host Genus **Culex (Melanoconion) sp., pool of 23**	Species	Host Age/Stage **Adult**

Sex
Female

Isolated From	Isolation Details
Signs and Symptoms of Illness	Arthropod

Time Held Alive before Inoculation

Collection Method	Collection Date
CDC light trap	**7/24/1963**

Place Collected (Minimum of City, State, Country)
Avocado Creek area, Everglades National Park, FL.

Latitude	Longitude
25° N	**81° W**

Macrohabitat	Microhabitat	Method of Storage until Inoculated
Mangrove-hardwood hammock		**-60dC**

Footnotes

Section III - Method of Isolation

Inoculation Date
7/1/1964

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
7.7 dex

Other (formalin, radiation)

Virion Morphology

Shape
Spherical

Dimensions
100 nm

Mean
nm

Range
nm

Measurement Method
Filtration and electron microscopy

Surface Projections/Envelope
Envelope observed

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
Difficult to obtain good hemagglutinin.

Serologic Methods Recommended
HI, CF and NT

Footnotes
Difficult to obtain good hemagglutinin.

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.

	Gumbo Limbo Antigen [a]			Gumbo Limbo Mouse 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
Oriboca	<10/160	64/64	0.4/3.7	0/40	64/512	1.2/>4.7
Apeu	<10/320	64/64	0.2/4.4	20/40	64/512	1.9/>4.7
Maratuba	10/640	128/128	3.2/4.1	0/40	64/512	2.0/>4.7
Caraparu	10/80	32/32	0.1/3.7	10/40	32/512	2.1/>4.7
Itaqui	10/160	32/64	2.5/4.2	0/40	32/512	2.0/>4.7
Restan	20/1280	64/512	3.7/>5.5	0/40	64/512	3.1/>4.7
Ossa	<10/320	32/64	0.2/>5.3	20/40	32/512	0.9/>4.7
Nepuyo		256/512	3.4/3.1		256/512	1.7/>4.7
Murutucu	<10/80	64/128	3.3/4.3	0/40	64/512	2.8/>4.7
Madrid	<10/40	32/128	0.0/3.4	0/40	32/512	0.5/4.7
Gumbo Limbo	40	512	>4.7	40	512	>4.7

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

[b] Titers expressed as reciprocal of highest serum dilution inhibiting 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 9				5		7.5*		
GMK (CL)					5		6.5		

* 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.	13/33,853		Everglades National Park, Florida, 1963-65
Aedes taeniorhynchus	1/544,207		
Sigomodon hispidus (cotton rat)	2/22		
Culex (Mel) sp.	48		Everglades National Park, Florida, 1966-69
Aedes taeniorhynchus	1		

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 9	ic 0.02	Illness and death	2-3	6.7
Mice (nb)		ip			
Mice (nb)		sc			
Mice (wn)		ic 0.03	Illness and death	3-5	5.0
Mice (wn)		ip			

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)
Congested right ventricle and lungs. Tiny foci of hepatic necrosis with focal inflammation. Degenerated adrenal medulla.

Inclusion Bodies — Intranuclear

Organs/Tissues Affected
Liver (LV), heart (LV), blood vessels (LV)

Category of tropism
Probable 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

Suspected (Antibody only detected)

Section XIII - References

1. Henderson, B.E., et al. 1969. Am. J. Epidem. 89:227-231.

Remarks