Virus Name: Gamboa	Abbreviation: GAMV

Status
Probable Arbovirus

Select Agent
No

SALS Level
2

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

Other Information

Antigenic Group
Gamboa

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
MARU 10962

Accession Number

Original Date Submitted
6/11/1984

Family
Bunyaviridae

Genus
Bunyavirus

Information From
Gustavo Justines

Address
Middle America Research Unit, Box 2011, Balboa Heights, Canal Zone

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
Gustavo Justines (1)

Isolated at Institute
Gamboa, Canal Zone Panama

Host Genus
Aedeomyia squamipennis (pool of 18 unfed mosquitoes)

Species

Host Age/Stage
Adult

Sex
Female

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod
Depleted

Time Held Alive before Inoculation

Collection Method
Light trap

Collection Date
12/20/1962

Place Collected (Minimum of City, State, Country)
Gamboa, Canal Zone,

Latitude
9° 8' N

Longitude
79° 42' W

Macrohabitat
Semi deciduous forest at river margin

Microhabitat
Five feet off ground

Method of Storage until Inoculated
4dC

Footnotes

Section III - Method of Isolation

Inoculation Date
12/21/1962

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
RNA

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) **1:20**	After Treatment Titer **<1.0 dex**	Control Titer **5.3 dex**
Lipid Solvent (deoxycholate) **1:100**	After Treatment Titer **<2.0 dex**	Control Titer **4.7 dex**

Other (formalin, radiation)

Virion Morphology

Shape	Dimensions **75-150 nm**	
Mean nm	Range nm	
Measurement Method **Passed 220 nm Millipore membrane but not 100 nm**	Surface Projections/Envelope	Nucleocapsid Dimensions, Symmetry

Morphogenesis

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

Hemagglutination

Hemaggiutination **Yes**	Antigen Source **SMB ext. by sucrose-acetone + sonicated**	Erythrocytes (species used) **Goose**
pH Range **5.8-6.2**	pH Optimum **6.0**	
Temperature Range	Temperature Optimum **26dC**	

Remarks

Serologic Methods Recommended
CF, HI and NT

Footnotes

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

	Antigen/Virus of Registered Virus					Immune Serum of Registered Virus			
	CF		NT			CF		NT	
Immune Sera	Ht/Ho	Ratio	Ht/Ho	Ratio	Antigen/Virus	Ht/Ho	Ratio	Ht/Ho	Ratio
Moriche	0/64	0	0/1024	0	Moriche	0/256	0	0/1024	0
Bushbush	2/32	1/16	0/8192	0	Bushbush	0/32	0	0/8192	0
Guajara	0/64	0	0/256	0	Guajara	0/128	0	0/256	0
Capim	0/64	0	0/2048	0	Capim	0/256	0	0/2048	0
Acara	0/512	0	0/1024	0	Acara	0/32	0	0/1024	0
Juan Diaz	0/64	0	0/1024	0	Juan Diaz	0/256	0	0/1024	0
TR 61469	2/4	1/2	1024/1024	1/1	TR 61469	16/32	1/2	512/1024	1/2

A relationship to the Capim viruses was encountered in early HI studies.

Antigenic studies have shown that four distinct viruses, including prototype Gamboa virus, comprise the Gamboa serogroup [2] .

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)	
Vero (CL)		2-4	CPE		4-6	Plaques	5.3*		

* 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
Aedeomyia squamipennis	5/13		
Culex (Culex) sp.	0/12		Gamboa, Canal Zone, Panama
Culex (Melanoconion) sp.	0/130		
Mansonia sp.	0/54		
Uranotaenia sp.	0/8		
Phlebotomus sp.	0/8		
Aedeomyia squimipennis (larvae)	14		Panama (3) (See note, IX.(1))
Sentinel mouse	0/2,219		
Didelphis marsupialis	0/14		
Philander and Marmosa sp.	0/8		
Proechimys semispinosus	0/19		
Oryzomys and Sigmodon	0/8		
Ameiva ameiva	0/9		
Birds:Several species	0/71		

NOTE: 24 viruses isolated from Ad squamipennis collected in Ecuador, 1974-1978; one additional isolate each was obtained from same vector collected in Argentina, 1974-1978 and Panama. All isolates were antigenically related but not necessarily identical to Gamboa virus (2).

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 0.02	Death	5-6	6.4
Mice (nb)		ip 0.03	Death		
Mice (nb)		sc			
Mice (wn)		ic 0.03	Death		
Mice (wn)		ip 0.03	Antibody		

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
Gamboa virus was isolated in the laboratory from Aedeomyia squamipennis adults emerged from larvae collected in nature. Demonstrates transovarial transmission of Gamboa virus in the above cited mosquito vector (3).									

Section X - Histopathology

Character of lesions (specify host)

Inclusion Bodies — Intranuclear

Organs/Tissues Affected

Category of tropism

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)
Republic of Panama, Surinam

Suspected (Antibody only detected)

Section XIII - References

1. Subcommittee on Information Exchange. 1970. Catalogue of Arthropod-Borne Viruses of the World. Am. J. Trop. Med. Hyg. (Supplement) 19:1153-1154.
2. Calisher, C.H., et al. 1981. Am. J. Trop. Med. Hyg. 30:219-223.
3. Galindo, P. and Peralta, P.H. Unpublished data.

Remarks

Another agent (TR 61469), antigenically similar to the Gamboa virus, was isolated in Surinam from Aedes sp. by Dr. R.A. de Haas.