

Virus Name: Guama		Abbreviation: GMAV
Status Arbovirus	Select Agent No	SALS Level 2
SALS Basis Results of SALS surveys and information from the Catalogue.		
Other Information		
Antigenic Group Guama		

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation BeAn 277	Accession Number	Original Date Submitted 1/27/1985
Family Bunyaviridae	Genus Bunyavirus	
Information From R.E. Shope	Address Yale Arbovirus Research Unit, New Haven, Connecticut	
Information Footnote Reviewed by editor		

Section II - Original Source

Isolated By (name) Belem Virus Laboratory	Isolated at Institute Belem, Para, Brazil	
Host Genus Cebus apella (1), Sentinel	Species	Host Age/Stage
Sex Not Answered		
<u>Isolated From</u>	<u>Isolation Details</u>	
Serum/Plasma		
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method Femoral venipuncture	Collection Date 3/3/1955	
Place Collected (Minimum of City, State, Country) Oriboca Forest, Brazil		
Latitude 2° S	Longitude 48° W	
Macrohabitat Virgin forest	Microhabitat Wire cage, 4 meters from ground	Method of Storage until Inoculated
Footnotes		

Section III - Method of Isolation

Inoculation Date 3/3/1955	
Animal (Details will be in Section 6) nb mice	
Route Inoculated Intracerebral	Reisolation Not tried
Other Reasons	
Homologous Antibody Formation by <u>Source Animal</u> Not tested	
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)	
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<u>Stability of Infectivity (effects)</u>		
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)	After Treatment Titer	Control Titer
Other (formalin, radiation)		
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<u>Virion Morphology</u>		
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
Inclusion Bodies	Other	

Hemagglutination

Hemagglutination Yes	Antigen Source SMB, serum ext. by sucrose-acetone; acetone	Erythrocytes (species used) Goose
pH Range 6.0-6.4	pH Optimum 6.2	
Temperature Range	Temperature Optimum 27dC	
Remarks		
Serologic Methods Recommended HI, CF, NT		
Footnotes		

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

Belongs to Guama Group; for antigenic relationships see Reference [2] . In addition, SIRACA has antigenically classified Guama virus as a distinct virus type and placed it in the Guama complex, one of five complexes comprising the Guama serogroup [20] .

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
Blood (M)(LV), pool of heart, liver, spleen (LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn mice and monkey kidney cell culture

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)	
HeLa (CL)	BeAn277		CPE	>8.5* (13)				
Mouse embryo(PC)					8-15	Plaques	4.7* (11)	
BHK-21 (CL)					4	0.5- 1.5mm	4.2 (12)	
Vero (CL)					5	1-1.5mm	7.3 (12)	
GMK (CL)			CPE (11)					
Chick embryo(PC)					3-5	Plaques	5.5 (11)	
BHK-21 (CL)	MB 5	2-3	4+	7.0 (19)				

* Expressed in dex

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Man	7		Para, Brazil
Sentinel Alouatta	2		
Sentinel Cebus	25		
Sentinel mice	471/16,315		Para, Brazil, Panama(4), Trinidad(5)
Sentinel mice	1		Surinam (6)
Sentinel Oryzomys	1		Trinidad (5)
Sentinel hamster	1		Panama (7)
Oryzomys spp.	35		Para, Brazil, Trinidad(5)
Proechimys guyannensis	25		Para and Amapa, Brazil; Trinidad (5)
Nectomys squamipes	4		Para, Brazil
Heteromys anomalus	2		Trinidad (5)
Zygodontomys breviceauda	7		Trinidad
Coendou sp. (rodent)	1		Para, Brazil
Marsupials, 3 genera	8		
Bat	1		

Above isolations mainly from blood; viremia may be prolonged, up to 12 days in a sentinel monkey.

Mosquitoes: *Culex portesi* 53 Belem, 39 Trinidad (5), 25 French Guiana (8); *Cx vomerifer* 8 Panama (9); all other *Culex* spp. 7 Belem, 2 Trinidad; also isolations from *Aedes*, *Mansonia*, *Limatus*, *Psorophora*, *Trichoprosopon*(21), and *Phlebotomines*: *Lutzomyia*(18).

Experimental host and age	Passage history and strain	Inoculation Route-Dose	Evidence of infection	AST (days)	Titer log ₁₀ /ml
Mice (nb)		ic 0.02	Death	4.8	9.1
Mice (nb)		ip 0.02	Death, viremia	5.0	9.2
Mice (nb)		sc			
Mice (wn)		ic 0.03	Some die		
Mice (wn)		ip 0.03	Antibody		
hamsters (ad)		ic,sc	Antibody (10)		
Oryzomys laticeps (ad)		sc	Viremia, antibody (17)		
Zygodontomys brevicauda (ad)		sc	Viremia, antibody (17)		

Section IX - Experimental Arthropod Infection and Transmission

Arthropod species & virus source(a)	Method of Infection log10/ml (b)		Incubation period (c)		Transmission by bite (d)		Assay of arthropod, log10/ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System
Aedes aegypti, An quadrimaculatus: parenterally inoculated; virus in salivary glands after several passages; titer = + 4 dex/ml (14).									
3 Culex portesi and 1 Culex B17, naturally infected, transmitted to mice (18).									
Cx taeniopus; naturally infected, transmitted to mice (15).									
Cx vomerifer; naturally infected, transmitted to mice (16).									

Section X - Histopathology

Character of lesions (specify host)
ad, nb mice; ic and ip: hydropic tumefaction, chromatolysis, minimal retraction, necrosis, perivascular infiltration (mononuclear); also rarely necrotic areas of spleen and liver, and muscular degeneration (3).

Inclusion Bodies Intranuclear

Organs/Tissues Affected
Brain (LV), liver (LV), spleen (LV), skeletal muscles (LV)

Category of tropism
Neurotropic, viscerotropic

Section XI - Human Disease

In Nature	Residual	Death
Reported		
Subclinical	Overt Disease	
Clinical Manifestations		
Fever (S), headache (S), myalgia(S), arthralgia (S), leukopenia(S)		
Number of Cases	Category (i.e. febrile illness, etc.)	
7	Febrile illness	

Section XII - Geographic Distribution

Known (Virus detected)

Brazil, Trinidad, Surinam, French Guiana, Panama

Suspected (Antibody only detected)

Section XIII - References

1. Causey, O.R., et al. 1961. *Am. J. Trop. Med. Hyg.* 10:227-249.
2. Whitman, L. and Casals, J. 1961. *Am. J. Trop. Med. Hyg.* 10:259-263.
3. De Paola, D. 1963. *An. Microbiol.* 11:187-208.
4. Gorgas Memorial Laboratory, Panama. 1970. Unpublished.
5. Jonkers, A.H., et al. 1968. *Am. J. Trop. Med. Hyg.* 17:285-298.
6. de Haas, R.A. Personal communication.
7. Srihongse, S., et al. 1967. *Am. J. Trop. Med. Hyg.* 16:519-524.
8. Serie, C. *Arch. Inst. Pasteur Guyane Fr.* No. 527, 1970; No. 529, 1971.
9. Peralta, P. and Shelokov, A. 1966. *Am. J. Trop. Med. Hyg.* 15:369-378.
10. Srihongse, S. and Johnson, K.M. 1969. *Ibid.* 18:273-279.
11. Pinheiro, F.P. Personal communication.
12. Bergold, G.H. and Mazzali, R. 1968. *J. Gen. Virol.* 2:273-284.
13. Buckley, S.M. 1964. *Proc. Soc. Exp. Biol. Med.* 116:354-358.
14. Whitman, L. Personal communication.
15. Toda, A. and Shope, R.E. 1965. *Nature* 208:304.
16. Galindo, P. and Srihongse, S. 1967. *Am. J. Trop. Med. Hyg.* 16:525-530.
17. Jonkers, A.H., et al. 1968. *Ibid.* 17:299-307.
18. Belem Virus Laboratory, Brazil. 1966. Unpublished.
19. Karabatsos, N. and Buckley, S.M. 1967. *Am. J. Trop. Med. Hyg.* 16:99-105.
20. Calisher, C.H., et al. 1985. *Intervirology*. To be submitted.
21. Digoutte, J.P., et al. *Rapport Annuel De l'Institut Pasteur De La Guyane Francaise.* 1975. p 22.

Remarks