

Status: Arbovirus**SALS Level:** 2**Antigenic Group:** Guama**Taxonomic status:** *Bunyavirus***Other Information:** None.**Select Agent:****SALS Basis:** S**HEPA Filtration:****Section I - Full Virus Name and Prototype Number**

Full Virus Name: **Prototype Number:**

Guama BeAn 277

Information from: R.E. Shope**Date:**

* 1/27/1985

Address: Yale Arbovirus Research Unit, New Haven, Connecticut

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Reviewed by editor

Section II - Original Source

Isolated by: Belem Virus Laboratory **at:** Belem, Para, Brazil**Genus and species:** Cebus apella (1), Sentinel **Sentinel X****Age/Stage:** **Sex:****Isolated From****Isolation detail****Signs and symptoms of illness:****Arthropod engorged depleted gravid****Time held alive before inoculation:****Collection date:** 3/3/1955 **Method:** Femoral venipuncture**Place collected:** 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 and Validity**

Inoculation Date: 3/3/1955**Animal:** nb mice **Embryonated egg:** **Tissue Culture:**

(Details in Section VI - Biologic Char.)

Route inoculated: Intracerebral **Reisolation:** Not tried**Other reasons:****Homologous antibody formation by source animal (See Section II):** Not tested**Test used:** HI CF NT**Other:****Footnotes:**

Section IV - Virus Properties

Physicochemical:

RNA: DNA: Single Strand: Double Strand:
Pieces: Infectivity: Sedimentation coefficient(s): /strong>
Percentage wt. of virion protein , lipid carbohydrate
Virion polypeptides:
Number: Details:
Non-virion polypeptides:
Number: Details:
Virion density:
Nucleocapsid density Sedimentation coefficient:
Sedimentation coefficient:

Stability of infectivity (effects) pH

Lipid solvent:
(ether) After treatment titer Control titer
(chloroform) After treatment titer Control titer
Detergent:
(deoxycholate) After treatment titer Control titer
Other (formalin, radiation):

Virion morphology:

Shape Dimensions
Mean (nm) range (nm) how measured
Surface projections, envelope
Nucleocapsid dimensions, symmetry

Morphogenesis:

Site of constituent formation in cell
Site of virion assembly
Inclusion bodies
Other

Hemagglutination:

Hemagglutination Yes Antigen source SMB, serum ext. by sucrose-acetone; acetone
Erthrocytes Goose pH range 6.0-6.4 pH optimum 6.2
Temperature optimum 27dC range
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

Susceptibility of Cell Culture Systems:

Cell system (a)	Virus passage history (b)	Evidence of Infection						Growth Without CPE					
		CPE			PLAQUES								
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)						
HeLa (CL)	BeAn277	CPE	>8.5* (13)		8-15	Plaques	4.7* (11)						
Mouse embryo(PC)					4	0.5-1.5mm	4.2 (12)						
BHK-21 (CL)					5	1-1.5mm	7.3 (12)						
Vero (CL)		CPE (11)											
GMK (CL)													
Chick embryo (PC)					3-5	Plaques	5.5 (11)						
BHK-21 (CL)	MB 5	2-3	4+	7.0 (19)									

* Expressed in dex

Section VII - Natural Host Range

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 Oryomys	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 brevicauda	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).

Section VIII - Susceptibility To Experimental Infection (Record 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	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
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: ad, nb mice; ic and ip: hydropic tumefaction, chromatolysis, minimal retraction, necrosis, perivasular infiltration (mononuclear); also rarely necrotic areas of spleen and liver, and muscular degeneration (3).

Inclusion bodies:

Cytoplasmic: (M)

(LV)

Intranuclear: (M)

(LV)

Organs-tissues affected: Brain (LV), liver (LV), spleen (LV), skeletal muscles (LV)

Category of tropism: Neurotropic, viscerotropic

Section XI - Human Disease

Human disease: In nature: (S) (R) X

Death: (S) (R)

Residua: (S) (R)

Laboratory infections: Subclinical: (S) (R)

Overt Disease: (S) (R)

Clinical manifestations: Fever (S), headache (S), myalgia (S), arthralgia (S), leukopenia (S)

Category: Febrile illness **No. of cases:** 7

Section XII - Geographic Distribution

Known (virus):

Brazil, Trinidad, Surinam, French Guiana, Panama

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. Karabatos, 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.

Section XIV - Remarks