

<b>Virus Name: Santarem</b>		<b>Abbreviation: STMV</b>
Status <b>Possible Arbovirus</b>	Select Agent <b>No</b>	SALS Level <b>3</b>
SALS Basis <b>Insufficient experience with virus; i.e., experience factor from SALS surveys was less than 500 in laboratory facilities with low biocontainment.</b>		
Other Information		
Antigenic Group <b>ungrouped</b>		

**SECTION I - Full Virus Name and Prototype Number**

Prototype Strain Number / Designation <b>BeAn 238758</b>	Accession Number	Original Date Submitted <b>9/25/1984</b>
Family <b>unclassified</b>	Genus	
Information From <b>F.P. Pinheiro and Amelia P.A.T. Rosa</b>	Address <b>Instituto Evandro Chagas, FSESP, Ministry of Health, CP-621, Belem, Para, Brazil</b>	
Information Footnote <b>Reviewed by editor</b>		

**Section II - Original Source**

Isolated By (name) <b>F. Pinheiro and Amelia P.A.T. Rosa</b>	Isolated at Institute <b>Instituto Evandro Chagas</b>	
Host Genus <b>Oryzomys sp.</b>	Species	Host Age/Stage <b>adult</b>
Sex <b>Female</b>		
<u>Isolated From</u>	<u>Isolation Details</u>	
<b>Whole Blood</b>		
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method <b>trapped</b>	Collection Date <b>6/6/1973</b>	
Place Collected (Minimum of City, State, Country) <b>Santarem-Cuiaba Highway, km. 212, Para</b>		
Latitude <b>3° 57' S</b>	Longitude <b>54° 54' W</b>	
Macrohabitat <b>tropical rain forest</b>	Microhabitat <b>ground level</b>	Method of Storage until Inoculated <b>liquid nitrogen and mechanical freezer (-60dC)</b>
Footnotes		

**Section III - Method of Isolation**

Inoculation Date  
**12/6/1973**

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) <b>1:1000</b>	After Treatment Titer <b>1.8 dex</b>	Control Titer <b>2.8 dex</b>
Other (formalin, radiation)		

**Virion Morphology**

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 <b>No</b>	Antigen Source <b>SMB ext. by sucrose-acetone + sonication</b>	Erythrocytes (species used) <b>goose</b>
pH Range <b>5.8-7.0</b>	pH Optimum	
Temperature Range <b>room, 37dC</b>	Temperature Optimum	
Remarks		
Serologic Methods Recommended <b>CF and NT</b>		
Footnotes		

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

A CF antigen for virus strain BeAn 238758 did not react with hyperimmune ascitic fluids to groups A, B, C, Bunyamwera, Guama, Capim, Phlebotomus fever, and to viruses Amapari, Ieri, Tacaiuma, Serra do Navio, Chaco, Belem, Agua Preta, Irituia, Cocal, Mosqueiro, Melao, Cotia-like, Utinga, Marco, Oropouche, Mirim, Pacui, Lukuni, Tembe, Timbo, Inhangapi, Jurona, Araguari, Kwatta, Trinita, Cuiaba, Piry, Acara, Turlock, Mapuera, herpesvirus, EMC, GD VII, Boraceia, Cotia, Aruac, Pacora, BeAr 263191, Para, BeAn 238209, Mojui dos Campos, Itupiranga and Xiburema.

YARU: 1:4 and 1:40 dilutions of BeAn 238758 CF antigen did not react with the following hyperimmune grouping sera; groups A, B, C, Guama, Capim, Bunyamwera, Simbu, VSV, Phlebotomus fever, Tacaribe, California, Sakhalin, Kemerovo; polyvalents Palyam, Bwamba, Quarantfil, Patois, Anopheles A, rabies, etc., (rabies, LCM, NDV, herpesvirus, vaccinia), Anopheles A, etc., Congo, etc., 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, and mouse hepatitis virus.

A hyperimmune mouse serum to this virus (homologous CF titer of  $\geq 128$ ) failed to react with 192 arbovirus antigens from the collection of the Yale Arbovirus Research Unit, but it presented a 1:4 cross-reaction with two strains of Congo virus. Attempts to repeat this reaction were uniformly negative both by CF and IFA when five other strains of Congo virus were tested [1].

## Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)  
blood (LV)Lab Methods of Virus Recovery (ALL ISOLATIONS)  
newborn mice

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)	
CER (CL)	SMB 7		No CPE			No Plaques		+(2)
Vero (CL)			No CPE					+
LLC-MK2 (CL)			No CPE					+
BHK-21 (CL)			No CPE					+
Ae albopictus (CL)			No CPE					+
Ae pseudoscutellaris (CL)			No CPE					+

Virus multiplication was detected by IFA technique in all cell lines listed above, and a titer of 8.0 dex/0.1 ml was obtained in CER as assayed by the IFA technique (2).

## 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
Man		0/102 NT	Santarem-Cuiaba road, km. 212, Para, Brazil
Oryzomys sp. (rodent; blood)	1/189	9/76 NT	
Oryzomys sp.		0/17 CF	
Proechimys sp.	0/102	0/42 NT	
Proechimys sp.		0/44 CF	
Nectomys	0/27	0/11 NT	

Nectomys		0/8 CF	
Other rodents	0/27	0/8 NT	
Other rodents		0/6 CF	
Marsupials	0/138	0/15 NT	
Marsupials		0/16 CF	
Other animals	0/84	0/6 NT	
Other animals		0/6 CF	
Wild birds	0/665		
Oryzomys sp.		1/38 NT	Itaituba-Jacareacanga, km. 212, Para, Brazil
Oryzomys sp.		13/53 CF	
Proechimys		0/56 NT	
Proechimys		6/56 CF	
Nectomys		0/29 NT	
Nectomys		13/29 CF	
Other rodents		0/11 NT	
Other rodents		0/13 CF	
Marsupials		0/43 NT	
Primates		0/14 NT	
Reptiles		0/5 NT	
Other animals		0/2 NT	

Santarem virus was not isolated from 6,075 Culicidae, 1,324 Phlebotomine flies and 1,521 Culicoides spp. collected at km. 212 of Santarem-Cuiaba highway during April-July 1973.

**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 log <sub>10</sub> /ml
mice (nb)	SMB 4	ic 0.02	death	5.8	6.3
mice (nb)	SMB 5	ip 0.02	irregular deaths		
mice (nb)		sc			
mice (wn)		ic 0.03	antibodies		
mice (wn)		ip 0.03	antibodies		

**Section IX - Experimental Arthropod Infection and Transmission**

Arthropod species & virus source(a)	Method of Infection log <sub>10</sub> /ml (b)		Incubation period (c)		Transmission by bite (d)		Assay of arthropod, log <sub>10</sub> /ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System

**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)
Suspected (Antibody only detected)

**Section XIII - References**

1. Director, YARU. Personal communication. 1978. 2. Oliva, O.F.P. Personal communication. 1978.
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**Remarks**

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