Virus Name: Sunday Canyon	Abbreviation: SCAV

Status
Possible Arbovirus

Select Agent
No

SALS Level
2

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

Other Information

Antigenic Group
Ungoruped

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
RML52301-11

Accession Number

Original Date Submitted
8/20/1984

Family
Bunyaviridae

Genus
Bunyavirus-like

Information From
C.E. Yunker

Address
Rocky Mountain Laboratory, NIAID, NIH, Hamilton, Montana 59840 USA

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
M.D. Corwin

Isolated at Institute
Rocky Mountain Laboratory

Host Genus
Argas (Argas) cooleyi Kohls and Hoogstraal, 1960

Species

Host Age/Stage
25 adults

Sex
Not Answered

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod
Depleted

Time Held Alive before Inoculation
8-1/2 months

Collection Method
By hand, by J.E. George

Collection Date
6/29/1969

Place Collected (Minimum of City, State, Country)
Randall County, Texas, 19 km E. of Canyon

Latitude
34° 59' N

Longitude
102° 45' W

Macrohabitat
Sunday Canyon, a part of the northwest end of Palo Duro Canyon

Microhabitat
Under flakes of rock on cliff-face, below active cliff swallow colony

Method of Storage until Inoculated
Held alive at ambient temperatures for 8-1/2 mo., then triturated and held at -70dC for additional 14-1/2 mo.

Footnotes

Section III - Method of Isolation

Inoculation Date
5/26/1971

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
Not tried

Other Reasons
Different from any other virus in laboratory and mouse colony

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 **Infectivity for Vero cells not reduced by exposure to 10-5 M 5-bromodeoxyuridine or 1 mcg/ml actinomycin-D (1)**	
Non-virion Polypeptides: Number	Details	
Virion Density	Sedimentation Coefficients(s) (S)	
Nucleocapsid Density	Sedimentation Coefficients(s) (S)	

Stability of Infectivity (effects)

pH (infective range)
Inactivated by exposure to pH 3.0

Lipid Solvent (ether - % used to test)	After Treatment Titer **2.8 dex**	Control Titer **6.7 dex**
Lipid Solvent (chloroform)	After Treatment Titer **1.2 dex**	Control Titer **6.6 dex**
Lipid Solvent (deoxycholate)	After Treatment Titer	Control Titer

Other (formalin, radiation)
Stable for at least 5 days at 41.5C, but inactivated within 2 hr. at 56dC

Virion Morphology

Shape **Uniformly spherical**	Dimensions **100 nm diameter**	
Mean **100 nm**nm	Range nm	
Measurement Method	Surface Projections/Envelope	Nucleocapsid Dimensions,

Graded millipore filtration (1) EM (2)	**Envelope prominent (2)**	Symmetry

Morphogenesis

Site of Constituent Formation in Cell	Site of Virion Assembly	Site of Virion Accumulation
Inclusion Bodies	Other **"Bunyavirus-like in appearance (2)**	

Hemagglutination

Hemaggiutination **No**	Antigen Source **SMB ext. by sucrose-acetone**	Erythrocytes (species used) **Chick**
pH Range **6.0-7.0**	pH Optimum	
Temperature Range **4dC, 22dC, 37dC**	Temperature Optimum	

Remarks
A very rough hemagglutination was produced at pH 6.6 and 37/C. This was unsatisfactory in HI test and probably nonspecific

Serologic Methods Recommended
CF, NT

Footnotes
A very rough hemagglutination was produced at pH 6.6 and 37/C. This was unsatisfactory in HI test and probably nonspecific

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

No serological relationship to any of 196 strains of arboviruses or 20 other viruses, mostly murine [1] .

In CF tests hyperimmune sera or ascitic fluids prepared in mice against Sunday Canyon virus did not react with any of 139 virus antigens of diverse origin. In other CF tests, potent Sunday Canyon virus antigens failed to fix complement in the presence of hyperimmune fluids prepared against 177 viruses or of 6 pools of sera randomly selected at various times from the Rocky Mountain Laboratory (RML) normal mouse colony. Included in these tests were 25 polyvalent grouping antisera known to be reactive with all viruses of a given serological group * or with the nominal viruses (CF results mainly from L. Thomas, RML and J. Casals, YARU).
In NT tests, suckling mice were not protected from ic inoculation of Sunday Canyon virus after its incubation with hyperimmune serum from 16 tick-borne viruses: Farallon, Hughes, Huacho, Johnston Atoll, Kemerovo, Mono Lake, Nyamanini, Punta Salinas, Quaranfil, Raza, Sapphire I, Sapphire II, Sixgun City, Tyuleniy, Yaquina Head, and Zirqa. In Vero cells, Sunday Canyon plaques were not reduced by prior incubation of the virus with potent antisera prepared against Hughes, Punta Salinas, Sapphire II, Sixgun City and Yaquina Head viruses.
In "mouse antibody production tests" performed at Microbiological Associates by J. Parker, known-virus free mice inoculated with Sunday Canyon virus failed to respond with CF or HI antibodies against 12 murine viruses: ectromelia, GDVII, K, LCM, LDH **, minute virus of mice, mouse hepatitis, mouse pneumonia, murine adenovirus, polyoma, reovirus-3, and Sendai.

* Groups A, C, BUN, CAL, CAP, GMA, KEM, PHL, SIM, TCR, TETE, VSV
** lactic dehydrogenase virus

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
tongue epithelium and vesicular fluid (LV); blood (M)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
newborn and weaning mice, chick embryos, guinea pigs, ad vertebrate cell cultures

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)	SMB 5	6	4+	9.5 (a)	9	<1 mm	8.7(a)	
Grace's Antheraea eucalypti (CL)								+
Singh's Aedes albopictus (CL)								-
Singh's Ae aegypti (CL)								-
Peleg's Ae aegypti (CL)								-
Varma and Pudney's Ae aegypti (CL)								-
Singh and Bhat's Ae w-albus (CL)								-
Dermacentor andersoni (PC) hemocytes								-
nymphal tissues								-

(a) 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
Argas (Argas) cooleyi	1/1,097 (1/250 pools)		Randall Co., Texas, USA

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)	4th MB	ic 0.02	Death	5.7	8.7
Mice (nb)		ip 0.05	Death		4.3
Mice (nb)		sc			
Mice (wn)		ic 0.03	Death	8.9	7.5
Mice (wn)		ip 0.05	None		

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)

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)
Texas, USA

Suspected (Antibody only detected)

Section XIII - References

1. Yunker, C.E., et al. 1977. Acta Virol. 21:36-44.
2. Murphy, F., Harrison, A., in litt.

Remarks