Virus Name: Cache Valley	Abbreviation: CVV

Status
Arbovirus

Select Agent
No

SALS Level
2

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

Other Information

Antigenic Group
Bunyamwera

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
6V633

Accession Number

Original Date Submitted
2/27/1985

Family
Bunyaviridae

Genus
Bunyavirus

Information From
A.D. Hess and P. Holden

Address
U.S. Public Health Service, P.O. Box 551, Fort Collins, Colorado 80521

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
P. Holden and A.D. Hess (1)

Isolated at Institute
CDC, Fort Collins, Colorado

Host Genus
Culiseta inornata (pool of 50)

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
Hand-operated aspirator tube

Collection Date
8/16/1956

Place Collected (Minimum of City, State, Country)
Cache Valley near Wellsville, Utah

Latitude
42° N

Longitude
106° W

Macrohabitat
Irrigated river valley

Microhabitat
Daytime resting sites beneath bridge spanning small stream

Method of Storage until Inoculated
Hermetically sealed tubes in CO2 chest

Footnotes

Section III - Method of Isolation

Inoculation Date
4/1/1957

Animal (Details will be in Section 6)
wn mice

Route Inoculated
Intracerebral

Reisolation
Yes

Other Reasons
Neutralizing anti-bodies found in 4 of 7 resident horses in Cache Valley, Utah

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)	After Treatment Titer **Sensitive (2)**	Control Titer **Titers not given (2)**

Other (formalin, radiation)
Heat-labile (56C)

Virion Morphology

Shape	Dimensions **94 nm**	
Mean nm	Range nm	
Measurement Method **Electron microscopy (10)**	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	Antigen Source	Erythrocytes (species used)
Yes	**SMB ext. by sucrose-acetone erthroc**	**Goose**
pH Range	pH Optimum	
6.0-6.4	**6.2**	
Temperature Range	Temperature Optimum	

Remarks

Serologic Methods Recommended
NT, CF, HI

Footnotes

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

Cache Valley virus has been placed in a group designated Bunyamwera which includes Wyeomyia, Kairi [3] , Ilesha, Germiston, Batai, Calovo, Maguari, Tensaw [4] and Lokern viruses. For tabulated data on the antigenic relationship of these viruses, see References [3] and [4] and registration cards in the Catalogue of above named viruses.
Maguari virus (BeAr 7272) was originally reported as Cache Valley [5] , but is now regarded as a closely related, but distinct virus. In addition, it is now believed that strains isolated in Trinidad and reported as Cache Valley [2] are more closely related to Maguari. It is possible that a more careful study of the strains recently reported from Jamaica [7] may show that they are more closely related to Maguari.
SIRACA has antigenically classified Cache Valley virus and placed it in the Bunyamwera complex of the Bunyamwera serogroup. Maguari and Playas virus were classified as subtypes and Tlacotalpan virus as a variety of Cache Valley virus [15] .

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn and weanling 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)	
BHK-21 (CL)			CPE						
BLN (CL)			CPE						
Duck embryo (PC)						Plaques			
Vero (CL)						Plaques			
MA-111 (CL)						Plaques			
Vero (CL)	P-10				4	1 mm	5.4* (16)		
LLC-MK2 (CL)					4	4 mm	4.6 (16)		

* 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
Man		15/46 NT	Trinidad (2)
Man		4/18 NT	Guyana (2)
Man		42/265 NT	Maryland and Virginia, USA (8)
Monkey (Aloutta)		3/28 NT	Trinidad (2)
Horses		4/7 NT	

Horses		20/26 NT	Guyana (2)
Domestic ungulates		156/256 NT	Maryland and Virginia, USA (8, 12)
Wild rodents		4/215 NT	
Raccoon		3/10 NT	
White-tailed deer		4/10 NT	
Gray fox		1/4 NT	
Cs inornata	1		Utah, USA (1)
Culiseta inornata	10		North Dakota, USA(6)
Ae sollicitans	6		Maryland and Virginia, USA (8)
Ae taeniorhynchus	3		
Psorophora confinnis	1		Indiana, USA (9)
Ae taeniorhynchus	1		Jamaica (7)
Anopheles grabhamii	1		
Anopheles quadrimaculatus	Many		Illinois, USA (11)
An crucians	1		Maryland and Virginia, USA (8)
Normal horse (blood)	1		Michigan, USA (17)

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	Death	**	**
Mice (nb)		ip	Death	**	
Mice (nb)		sc			
Mice (wn)		ic	Death	**	
Mice (wn)	P-4	ip	Death	**	4.6
Mice	P-14	ic	Death	**	7.7
rabbits (3-4 wk)		ip,sc,im	None, antibodies		
chicks (1/2 day)		sc	Noninfectious		
chickens, 5 species of wild birds			None, no antibody		
hamster			Viremia, antibodies		
hare, ground squirrel			None		
cottontail rabbit, antelope, ground squirrel, kangaroo rat, mice			Viremia and/or antibody		

** Records not available.

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
Cx tarsalis, Cs inornata, Ae dorsalis, Ae melanimon, Ae nigromaculis:	infected by feeding on infective pledgets (4-21 days).								
Ae. sollicitans, Ae. taeniorhynchus:	Readily infected by feeding on infected blood; transmitted to suckling mice by feeding 6 to 10 days later(13).								

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)
Utah (1); North Dakota (6); Maryland and Virginia (8); and Indiana (9), USA; possibly Jamaica (7) and Canada (14); Michigan, (17)

Suspected (Antibody only detected)
In view of cross-reaction with other members of the Bunyamwera group, results of serologic surveys were difficult to interpret. (Editor's note)

Section XIII - References

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Remarks