

Virus Name: Mono Lake		Abbreviation: MLV
Status Possible Arbovirus	Select Agent No	SALS Level 2
SALS Basis Results of SALS surveys and information from the Catalogue.		
Other Information		
Antigenic Group Kemerovo		

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation Ar 861	Accession Number	Original Date Submitted 11/27/1984
Family Reoviridae	Genus Orbivirus	
Information From Harald N. Johnson and Jordi Casals	Address California Dept. of Health, Berkeley, CA and Yale Arbovirus Research Unit, New Haven, CT	
Information Footnote Reviewed by editor		

Section II - Original Source

Isolated By (name) Harald N. Johnson (1)	Isolated at Institute Berkeley, CA	
Host Genus Argas cooleyi, pool of 10 ticks	Species	Host Age/Stage Adult
Sex Not Answered		
<u>Isolated From</u>	<u>Isolation Details</u>	
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method By hand	Collection Date 5/18/1966	
Place Collected (Minimum of City, State, Country) Mono Lake, Mono County, California, USA		
Latitude 38° N	Longitude 119° W	
Macrohabitat Small rocky island near Negit Island in Mono Lake	Microhabitat Rock clefts and rocky debris under nests of Larus californicus gulls	Method of Storage until Inoculated Held alive in plastic bags with rock debris from nests
Footnotes		

Section III - Method of Isolation

Inoculation Date
5/24/1966

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)	After Treatment Titer	Control Titer
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 No	Antigen Source SMB ext. by sucrose-acetone	Erythrocytes (species used) Goose
pH Range 6.0-7.0	pH Optimum	
Temperature Range 37dC	Temperature Optimum	
Remarks		
Serologic Methods Recommended CF, NT		
Footnotes		

Complement-fixation test:

Grouping immune sera or ascitic fluids (in dilutions beginning at 1:4) for the listed groups, reacted negatively against antigen Mono Lake at dilution 1:8: Groups A, B, C, Anopheles A, Bunyamwera, Bwamba, California, Capim, Guama, Nyando, Palyam, rhabdoviruses, Simbu, Tacaribe, Tete, and VSV.

The following type specific sera diluted as above, reacted negatively with Mono Lake antigen: Aruac, Changuinola, Cotia, Kern Canyon, LCM, Lukuni, Nariva, Pacui, rabies, and Tembe.

Immune serum for Mono Lake with a titer of 128, reacted negatively with the following antigens: Acara, Aruac, Hart Park, Jurona, Lebombo, Mapputta, Marco, Mirim, Mossuril, Navarro, Nyando, Pacui, Palyam, and Trinit.

In cross complement-fixation tests with about 40 non-group B tick-borne viruses, Mono Lake has only cross-reacted with members of the Kemerovo group. An example of the crossing is shown:

Complement-fixation Test							
Antigen	Serum						
	KEM	LIP	TRB	CNU	ML	HUA	WM
Kemerovo	512/128	64/32	64/32	8/8	16/32	0	0
Lipovnik	64/64	256/64	128/64	8/8	8/8	0	Traces
Tribec	64/256	128/256	128/256	8/32	16/128	0	Traces
Chenuda	16/16	32/32	32/32	256/128	64/64	16/8	Traces
Mono Lake	16/16	8/16	32/16	32/16	256/64	64/32	
Huacho	8/8			16/16	128/32	256/32	
Wad Medani	0		8/16				128/64

Serum titer/antigen titer; first dilution = 1:4.

Neutralization Test		
Serum	Virus	
	Mono Lake	Huacho
Mono Lake	<1.5	3.6
Huacho	2.5	<1.5
Normal mouse	5.1	5.2

Virus titer in dex, in the presence of the serum; ic test in mice.

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)

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)			
Vero (CL)	P8					1-3 mm	5.3* (2)			
MA-111 (CL)						1-3 mm (2)				
DE (PC)						No plaques (2)				
* 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 cooleyi	1/6		Mono Lake, CA, 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)	Original	ic 0.015	4/8 sick, 10-15 days			
Mice (nb)		ip				
Mice (nb)		sc				
Mice (wn)	P4	ic 0.015	4/4 sick, 6-15 days			
Mice (wn)		ip				
Mice (nb)	P6	ic 0.015	8/8 dead	9-17	3.0	
Mice (nb)	P8	ic 0.015	8/8 dead	6-7		

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

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)

California, USA.

Suspected (Antibody only detected)

Section XIII - References

1. Johnson, H.N. and Casals, J. 1972. In: Transcontinental Connections of Migratory Birds and their Role in the Distribution of Arboviruses; edited by Cherepanov, A.I., et al. Publishing House "NAUKA". Siberian Branch, Novosibirsk.
2. Calisher, C.H. Personal communication. 1977.

Remarks

Closely related virus isolated from *Argas cooleyi* from swallow nests in Texas by Rocky Mountain Laboratory, Hamilton, Montana (Sixgun City).