Virus Name: Sakhalin		Abbreviation: SAKV
Status **Possible Arbovirus**	Select Agent **No**	SALS Level **2**

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

Other Information

Antigenic Group
Sakhalin

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
LEIV-71C

Accession Number

Original Date Submitted
11/27/1984

Family
Bunyaviridae

Genus
Nairovirus

Information From
D.K. Lvov

Address
Inst. of Virology, USSR Academy of Medical Sciences, Gamaleya 16, Moscow D-98, USSR

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
D.K. Lvov and co-workers

Isolated at Institute
Inst. of Virology, USSR Academy of Medical Sciences, Gamaleya 16, Moscow D-98, USSR

Host Genus
Ixodes (Ceratixodes) putus (= Ixodes uriae)

Species

Host Age/Stage
Nymphs

Sex
Not Answered

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod

Time Held Alive before Inoculation

Collection Method
Substrate collected from birds' nesting grounds

Collection Date
8/18/1969

Place Collected (Minimum of City, State, Country)
Tyuleniy Island, Sea of Okhotsk, USSR

Latitude
48° 30' N

Longitude
144° 43' E

Macrohabitat
Nesting grounds of sea birds Uria aalge (seashore colony)

Microhabitat
Rifts of rocks

Method of Storage until Inoculated
Alive at +4dC in refrigerator

Footnotes

Section III - Method of Isolation

Inoculation Date
11/21/1969

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
Yes

Other Reasons
No work with other arboviruses was conducted in the laboratory.

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) **50%**	After Treatment Titer **<1.0 dex**	Control Titer **6.0 dex**
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate) **1:100**	After Treatment Titer **<1.0 dex**	Control Titer **6.0 dex**

Other (formalin, radiation)

Virion Morphology

Shape	Dimensions **100-200 nm**	
Mean nm	Range nm	
Measurement Method **Millipore filtration**	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)
No	**SMB ext. by sucrose-acetone**	**Goose**
pH Range	pH Optimum	
5.5-7.0		
Temperature Range	Temperature Optimum	
4dC, 22dC		

Remarks

Serologic Methods Recommended
CF, NT

Footnotes

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

Sakhalin antigen in the CF test did not react with antisera to arboviruses poly A, poly B, JBE, Tyuleniy, Kemerovo, Chenuda, Tahyna, Quaranfil, Kaisodi, Uukuniemi, Congo, Hughes, Colorado tick fever, Bhanja, Nyamanini; and to murine viruses: reovirus 3, EMC, ectromelia virus [2] , [3] .
Immune ascitic fluid against the Sakhalin virus did not react in the CF test with arboviruses [4] : Kemerovo group; Seletar, Tribec, Kemerovo, Lipovnik, Chenuda, Mono Lake, Punta Salinas, Wad Medani; Uukuniemi group; Uukuniemi, Grand Arbaud, Manawa. Quaranfil group; Quaranfil, Johnston Atoll. Qalyub group: Qalyub, Bandia. NSD group; Ganjam, Dugbe. Hughes group; Hughes, Farallon, Punta Salinas, Soldado, Zirqa. Kaisodi group; Kaisodi, Lanjan, Silverwater. Bakau group; Lahore. Others; Congo, Bhanja, Colorado tick fever, Dhori, DGK, Hazara, Lone Star, Matucare, Nyamanini, Sawgrass, Thogoto, Upolu, Wanowrie, Keterah, Jos, and Kairi.
Related by CF test to Avalon, Clo Mor, and Taggert viruses [5] .

Sakhalin virus and members of the Sakhalin serogroup share intergroup relationships with other viruses of serogroups included in the Nairovirus genus (CHF-CON, DGK, HUG, NSD, QYB) [7] , [8] .

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	
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	+/- (g)	

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
Ixodes putus *	18/7,000		Tyuleniy Island, Sea of Okhotsk, USSR (1, 2, 3)
Common Guillemots (sea birds)		5/54 CF	Tyuleniy and Kurile Islands, USSR
Larus schistiagus (gulls)		0/17 CF	
Snipe (4 species)		0/13 CF	
Ducks (5 species)		0/4 CF	
Cormorants (2 species)		0/26 CF	
Storm petrels		0/6 CF	

* Isolation of a number of strains from males of I. putus ticks indicates transstadial transmission of virus. Isolation of a virus strain from larvae hatched from clutches of eggs under laboratory conditions indicates transovarial transmission of virus (3).

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)	SMB 4	ic 0.01	Paralysis, death	7-10	5.6-6.0
Mice (nb)		ip 0.03	None		
Mice (nb)		sc			
Mice (wn)	SMB 4-6	ic 0.03	None		
Mice (wn)		ip			
guinea pigs (2 mo)		ip	None		
rabbits (2 mo)		ip	CF antibodies		
chicks (1 day)		sc	None		
hamsters (2-3 mo)		ip	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
Culex molestus and Aedes aegytpi infected by feeding on virus-containing material showed virus titers of 1.0, 1.5, and 2.0 log10 LD50/0.01 ml on days 9, 14, and 19 following infection, respectively (ground mosquito suspensions titrated in suckling mice). Transmission of virus by bite to suckling mice not demonstrated (3).									

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)
Tyuleniy Island, USSR

Suspected (Antibody only detected)
Kurile Islands, USSR

Section XIII - References

1. Lvov, D.K., et al. 1970. Vop. Virusol. 15(4):440-444.
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4. Casals, J. Personal communication. 1970.
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7. Casals, J. and Tignor, G.H. 1980. Intervirology 14:144-147.
8. Bishop, D.H.L., et al. 1980. Intervirology 14:125-143.

Remarks