| Virus Name: Paramushir | Abbreviation: PMRV |
|---|---|

Status
**Possible Arbovirus**

Select Agent
**No**

SALS Level
**3**

SALS Basis
**Isufficient experience with virus; i.e., experience factor from SALS surveys was less than 500 in laboratory facilities with low biocontainment.**

Other Information

Antigenic Group
**Sakhalin**

## SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
**LEIV-2268Ku**

Accession Number

Original Date Submitted
8/21/1984

Family
**Bunyaviridae**

Genus
**Nairovirus**

Information From
**D.K. Lvov**

Address
**Inst. of Virology, USSR Acad. of Med. Sciences, Gamaleya, 16, Moscow, USSR**

Information Footnote
**Reviewed by editor**

## Section II - Original Source

Isolated By (name)
**D.K. Lvov, et al.**

Isolated at Institute
**Moscow, USSR**

Host Genus
**Ixodes signatus, pool of 10 ticks**

Species

Host Age/Stage
**Adult**

Sex
**Female**

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod

Time Held Alive before Inoculation

Collection Method
**Hand collected from nest substrates**

Collection Date
**9/2/1972**

Place Collected (Minimum of City, State, Country)
**Paramushir island, Sea of Okhotsk, USSR**

Latitude
**51° 16' N**

Longitude
**155° 20' E**

Macrohabitat
**Area consisting of seabird colonies**

Microhabitat
**In the soil**

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

Footnotes

## Section III - Method of Isolation

Inoculation Date
**10/25/1972**

Animal (Details will be in Section 6)
**nb mice**

Route Inoculated
**Intracerebral**

Reisolation
**Yes**

Other Reasons
**Virus different from those existing in the laboratory**

Homologous Antibody Formation by Source Animal

Test(s) Used

Footnotes

## Section IV - Virus Properties

Physicochemical
**RNA**

| | | |
|---|---|---|
| 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)<br>**50%** | After Treatment Titer<br>**0 dex** | Control Titer<br>**3.3 dex** |
| Lipid Solvent (chloroform) | After Treatment Titer | Control Titer |
| Lipid Solvent (deoxycholate)<br>**1:1000** | After Treatment Titer<br>**0 dex** | Control Titer<br>**3.0 dex** |

Other (formalin, radiation)

### Virion Morphology

| | | |
|---|---|---|
| Shape | Dimensions<br>**50-100 nm** | |
| Mean<br>nm | Range<br>nm | |
| Measurement Method<br>**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
*** Type of nucleic acid determined by sensitivity of the virus to 5-bromo-2- deoxyuridine.**

Serologic Methods Recommended
**CF**

Footnotes
*** Type of nucleic acid determined by sensitivity of the virus to 5-bromo-2- deoxyuridine.**

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

Paramushir antigen in the CF test did not react with polyvalent MIAF to arbovirus groups A, B, Bakau, Bunyamwera. It did not react with MIAF to arboviruses: Getah, Sindbis of group A; tickborne encephalitis, Powassan, Langat, Japanese encephalitis, West Nile, Karshi, Kadam, St. Louis encephalitis, Sokuluk of group B; Tahyna, trivittatus of group California; Dugbe of group NSD; CHF of group CHF-CON; Batai, Shokwe of group Bunyamwera; Kaisodi, Lanjan, Silverwater of group Kaisodi; Kemerovo, Baku, Okhotskiy, Wad Medani, Chenuda of group Kemerovo; Qalyub, Bandia of group Qalyub; C-5502 of group Quaranfil; Simbu, Akabane, Sabo, Sango, Shamonda, Sathuperi, Aino of group Simbu; Turlock, Umbre of group Turlock; Hughes, Soldado of group Hughes; Uukuniemi, Zaliv Terpeniya, Grand Arbaud of group Uukuniemi; Matariya of MTY group; Tete, Bahig, Matruh of group Tete; Sakhalin of group Sakhalin; Bhanja of group Bhanja; Colorado tick fever of CTF group; Dera Ghazi Khan of DGK group; Nyamanini of Nyamanini group; Sawgrass of Sawgrass group; Upolu of Upolu group; Wanowrie, Dhori, Lone Star, Matucare, Chobar Gorge, Jos, Batken, Issyk-Kul, Oyta, Khasan, Tamdy, Razdan, Artashat, Chim of ungrouped arboviruses. Ectromelia, reovirus, type 3, and LCM were serologically excluded. The then ungrouped Khasan virus is now a member of the CHF-CON group (ed.)
Polyvalent MIAF's were obtained from YARU.

Paramushir virus subsequently was shown to be serologically identical to Avalon virus [3] .

## 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) | |
| Chicken, duck and human embryo fibroblast (PC) | | Virus multiplication without CPE; interference with WEE virus | | 3.5-5.5** | | | | + | |
| L cell cultures (CL) | | | CPE noted | 2.5 | | | | | |
| A1 cell cultures (CL) | | | CPE noted | 4.5 | | | | | |
| RH cell cultures (CL) | | | No CPE | | | | | | |
| HeLa (CL) | | | CPE noted | 6.0 | | | | | |
| Vero (CL) | | | No CPE | | | | | | |

** 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 |
|---|---|---|---|
| Ixodes signatus | 1/130 pools (7,244 ticks) | | Paramushir Island (Northern Kuril Islands) Sakhalinsk region, USSR |
| Ixodes (Ceratixodes) putus | 3/335 pools (8,302 ticks) | | Tyuleniy Island, Sakhalinsk region, USSR |
| Ixodes (Ceratixodes) putus | 1/400 pools (20,270 ticks) | | Bering Island (Commodore Islands) Kamchatsk region, USSR |

## 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 5 | ic 0.01 | Paralysis and death | 5-7 | 8.8 |
| Mice (nb) | | ip 0.10 | No illness | | |
| Mice (nb) | | sc | | | |
| Mice (wn) | | ic 0.03 | Antibody | | |
| Mice (wn) | | ip 0.20 | Antibody | | |
| Mice (ad) | | ip 0.20 | Antibody | | |
| hamsters (ad) | | ip 0.50 | No illness | | |
| guinea pigs (ad) | | ip 1.00 | No illness | | |
| rats (ad) | | ip 1.00 | No illness | | |
| rats (nb) | | ic 0.03 | No illness | | |

## 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)
**USSR**

Suspected (Antibody only detected)

## Section XIII - References

1. Lvov, D.K., et al. 1970. Vop. Virusol. 5:440-444.
2. Lvov, D.K., et al. 1976. Arch. Virol. 51:157-164.
3. Lvov, D.K., et al. 1981. Vop. Virusol. No. 2, p. 148-152.

## Remarks