Virus Name: Negishi	Abbreviation: NEGV

Status
Possible Arbovirus

Select Agent
No

SALS Level
3

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

Other Information

Antigenic Group
B

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation

Accession Number

Original Date Submitted
1/24/1985

Family
Flaviviridae

Genus
Flavivirus

Information From
Takeshi Okuno, M.D.

Address
JEVRU, c/o WHO Office, P.O. Box 3762, Tapei, Taiwan

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
K. Ando, et al. (1)

Isolated at Institute
Tokyo, Japan

Host Genus
Man

Species

Host Age/Stage
6 years

Sex
Male

Isolated From	Isolation Details
Other Fluids	**CSF**

Signs and Symptoms of Illness
Clinically diagnosed as Japanese encephalitis

Arthropod

Time Held Alive before Inoculation

Collection Method
By lumpar puncture

Collection Date
8/1/1948

Place Collected (Minimum of City, State, Country)
Tokyo, Japan

Latitude
35° N

Longitude
140° E

Macrohabitat
Urban

Microhabitat

Method of Storage until Inoculated
No storage

Footnotes

Section III - Method of Isolation

Inoculation Date
8/12/1948

Animal (Details will be in Section 6)
wn mice

Route Inoculated
Intracerebral

Reisolation
Not tried

Other Reasons
No RSSE-related virus had been handled in the laboratory at the time of isolation.

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) **1:500**	After Treatment Titer **<3.0 dex**	Control Titer **8.5 dex**

Other (formalin, radiation)
Protamine sulphate: 2.5 mg/ml: after, 8.6 dex; before, 8.4 dex

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

Hemaggiutination	Antigen Source	Erythrocytes (species used)
Yes	**SMB ext. by alk. aqueous + prot.; acetone-ether + prot.; sucrose-acetone + prot.**	**Goose**

pH Range	pH Optimum
6.2-6.4	**6.3**

Temperature Range	Temperature Optimum
Room temperature, 37dC	

Remarks
The improvement of HA in titer and pH range has been remarkable by protamine tr.

Serologic Methods Recommended
HI, CF, NT, antibody absorption

Footnotes
The improvement of HA in titer and pH range has been remarkable by protamine tr.

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

Immune Serum	Negishi antigen or virus				
	HI(4)	8 units	CF(4)		NT(1)
RSSE(2i)	40/80	1/2			
RSSE(4i)	160/640	1/4	64/256	1/4	1.5/2.7
Powassan(1i)	20/160	1/8			
Powassan(4i)	20/640	1/32	32/256	1/8	
JE Nak.-NIH(1i)	<20/40				
JE Nak.-NIH(4i)	<20/1280		<4/64		0/2.3
MVE(1i)	<20/160				
MVE(4i)			<4/128		
WN(1i)	<20/640				
WN(5i)			<4/128		
SLE(1i)	<20/160				

SLE(4i)			<4/64		0/2.7
Modoc(1i)	<20/320				
Modoc(4i)	40/1280	1/32	<4/128		
YF17D(2i)	<20/320				
YF17D(5i)	<20/1280		<4/32		

		Negishi Primary serum			
Antigen or Virus	**HI(4)**		**CF(4)**		**NT(1)**
RSSE	20/80	1/4			
Powassan	<20/80				
JE Nak.-NIH	<20/80				
MVE	20/80	1/4			
WN	20/80	1/4			
SLE	<20/80				
Modoc	<20/80				
YF 17D	<20/80				
			Negishi Hyperimmune serum		
RSSE	640/1280	1/2	64/128	1/2	2.0/3.0
Powassan	320/1280	1/4	32/128	1/4	
JE Nak.-NIH	160/1280	1/8	<4/128		0/3.0
MVE	2560/1280	2/1	4/128	1/32	
WN	2560/1280	2/1	16/128	1/8	
SLE	640/1280	1/2	16/128	1/8	2.0/3.0
Modoc	80/1280	1/16	<4/128		
YF17D	320/1280	1/4	<4/128		

NT: LNI given in dex.

The preliminary HI study revealed that the Negishi virus did not relate either to Group A, Group Bunyamwera or Akabane viruses

Above table indicates that the virus is most closely related to the tick-borne complex of B group. Antibody absorption tests carried out in 1961 at RFVL indicated that Negishi virus was a new member of the tick-borne complex since it diverged significantly from both Central European tick-borne encephalitis and louping ill viruses. [9]
In addition, see Reference [11] .

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
Blood (M)(LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn mice; continuous green monkey kidney, HEp-2 and primary avian 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)	
Hamster kidney cells (PC)	P-6	2-6	Complete CPE (8)						
Vero (CL)	P-9				15	3 mm	8.5* (10)		
LLC-MK2 (CL)					7	1 mm	9.0 (10)		

* 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	2/293 *		Tokyo area, Japan.
Man		0/226 * CF	Tokyo area, Japan.
Man		2/105 HI	Cases of randomly collected aseptic meningoencephalitis throughout Japan 1956-1960. May be interpreted as a cross reaction to JE though the titer against Negishi was found to be equal or slightly higher than against JE (5).
Man (1 yr to >0)		4/483 HI	Gumma Prefect, Japan;1960 (6)
Man (1 yr to >0)		38/1344 HI	Gumma Prefect, Japan; 1962 (6)
Aedes vexans nipponi	1		Khabarovsk, USSR, 1976 (12)
Ae. vexans	1		Khabarovsk, USSR, 1978(12)

* Encephalitis cases from JE epidemic of 1948 in Tokyo area. Twenty-four additional isolates were identified as JE virus (1).

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)	Many passages	ic 0.02	Illness and death	4-6	9.7
Mice (nb)		ip			
Mice (nb)		sc			
Mice (wn)		ic 0.03	Paralysis and death	4-6	9.5
Mice (wn)		ip 0.2	Paralysis and death	5-10	>6.7
guinea pig	Early level	ic 0.1	No specific sympton(1)		
guinea pig (250 gm)		ic 0.1	No evidence of virus mult.		
rabbit	Early level	ic 0.1	Same as guinea pig(1)		
rabbit (2500 gm)		ic 0.1	Same as guinea pig(1)		
goat	Early level	ic 0.5	Fever, viremia, paralysis and death (7)		

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)
No precise description has been available

Inclusion Bodies — Intranuclear

Organs/Tissues Affected

Category of tropism
Neurotropic

Section XI - Human Disease

In Nature	Residual	Death
Reported		**Reported**

Subclinical

Overt Disease
Reported

Clinical Manifestations
Fever (S), headache (R), prostration (S), CNS signs (including encephalitis) (S)

Number of Cases
Two encephalitic cases with fatal sequelae

Category (i.e. febrile illness, etc.)
Encephalitis

Section XII - Geographic Distribution

Known (Virus detected)
Japan; USSR (12)

Suspected (Antibody only detected)

Section XIII - References

1. Ando, K., et al. 1952. Kitasato Arch. of Exper. Med. XXIV:49-61.
2. Honda, Y. 1951. Kitasato Jikken Igaku, 24:91-93 (Text in Japanese).
3. Hironaka, N. 1952. Jap. J. Med. Sci. and Biol. 5:133-157.
4. Okuno, T., et al. 1961. Jap. J. Med. Sci. and Biol. 14:51-59.
5. Okuno, T. 1962. Rinsho-Byori 10:466-475 (Text in Japanese).
6. Matsuyama, T., et al. 1967. Kita-kanto-Igaku 17:229 (Japanese, English summary).
7. Kuratsuka, K. 1962. Unpublished.
8. Oya, A. 1960. Unpublished.
9. Rockefeller Foundation Virus Laboratory, New York. 1961. Unpublished.
10. Stim, T.B. 1969. J. Gen. Virol. 5:329-338.
11. De Madrid, A.T. and Porterfield, J.S. 1974. J. Gen. Virol. 23:91-96.
12. Demenev, V.A., et al. 1987. Vop. Virusol. 32:105-108.

Remarks