Virus Name: Meaban		Abbreviation: MEAV
Status **Possible Arbovirus**	Select Agent **No**	SALS Level

SALS Basis

Other Information

Antigenic Group
B

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
Brest/Ar/T-707

Accession Number

Original Date Submitted
12/25/1984

Family
Flaviviridae

Genus
Flavivirus

Information From
C. Chastel (Brest) and A.J. Main (YARU)

Address
Virus Laboratory, Faculty of Medicine, Brest, France; YARU, P.O. Box 3333, New Haven, CT

Information Footnote

Section II - Original Source

Isolated By (name)
C. Chastel

Isolated at Institute
Brest, France

Host Genus
Ornithodoros (Alectorobius) maritimus, pool of 12

Species

Host Age/Stage
12 Nymphs

Sex
Not Answered

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod
Depleted

Time Held Alive before Inoculation

Collection Method
By hand

Collection Date
7/3/1981

Place Collected (Minimum of City, State, Country)
Gulf of Morbihan, Morbihan, France

Latitude
47° 31' N

Longitude
2° 56' W

Macrohabitat
Herring gull (Larus argentatus) colony

Microhabitat
Herring gull nests

Method of Storage until Inoculated
-70dC

Footnotes

Section III - Method of Isolation

Inoculation Date
12/11/1981

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)
ph: 3.0; after treatment: 2.0 dex; Control titer: 7.3 dex

Lipid Solvent (ether - % used to test)	After Treatment Titer **1.5 dex**	Control Titer **7.3 dex**
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate)	After Treatment Titer	Control Titer

Other (formalin, radiation)

Virion Morphology

Shape	Dimensions	
Mean **45nm**nm	Range **40-45nm**nm	
Measurement Method **Electron microscopy**	Surface Projections/Envelope **Envelope present**	Nucleocapsid Dimensions, Symmetry

Morphogenesis

Site of Constituent Formation in Cell
Cytoplasm

Site of Virion Assembly
Intracytoplasmic vacuoles

Site of Virion Accumulation
Extracellular spaces

Inclusion Bodies
Not seen

Other

Hemagglutination

Hemaggiutination
Yes

Antigen Source
SMB ext. by sucrose-acetone

Erythrocytes (species used)
Goose

pH Range
5.8-6.8

pH Optimum
6.4

Temperature Range
4dC, 22dC, 37dC

Temperature Optimum
4dC

Remarks

Serologic Methods Recommended
CF, HI, NT

Footnotes

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

In CF and HI tests done at YARU with 65 flaviviruses, the closest relationships were seen with the following:

	Brest/Ar/T-707			
	Antigen		Antibody	
Antibodies or Antigens	CF Ht/Ho	HI Ht/Ho	CF Ht/Ho	HI Ht/Ho
Murray Valley encephalitis	16/64	10/160	256/4096	640/81920
Tyuleniy (FinV-724)	16/128	40/1280	256/4096	5120/81920
Sepik	128/>1024	160/>10240	256/4096	320/81920
Gadget's Gully	<8/64	<10/40	256/4096	160/81920
Saumarez Reef	128/256	80/160	128/4096	160/81920
Usutu	128/256	160/1280	128/4096	640/81920
Tyuliney (TAR)	64/256	160/>10240	128/4096	1280/81920
Banzi	<8/32	<10/20	128/4096	640/81920
Ilheus	64/512	10/5120	128/4096	2560/81920
Wesselsbron	<8/64	<10/40	128/4096	1280/81920

Apoi	<8/128	10/160	128/4096	640/81920
Edge Hill	<8/128	10/80	128/4096	640/81920
Tick-borne encephalitis (RSSE)	64/128	20/1280	64/4096	80/81920
Tyuleniy (LEIV 6c)	512/>1024	320/2560	64/4096	160/81920
Entebbe Bat	<8/16	<10/40	64/4096	40960/81920
Israel Turkey Encephalitis	64/256	320/640	64/4096	640/81920
Kadam	16/64	40/640	64/4096	1280/81920
Royal Farm	64/256	10/5120	64/4096	80/81920
Ntaya	<8/32	<10/160	64/4096	10240/81920
Tembusu	<8/32	<10/160	64/4096	640/81920
West Nile	64/512	10/>10240	64/4096	640/81920
Langat	16/128	10/640	64/4096	320/81920
Dakar bat	<8/64	<10/10	64/4096	80/81920
Spondweni	<8/64	<10/40	64/4096	40/81920
Saboya	32/512	160/10240	64/4096	10240/81920
Dengue 3	16/512	10/80	64/4096	80/81920
Bussaquara	<8/256	<10/80	64/4096	640/81920

NT tests at Brest demonstrated that Brest/Ar/T-707 is distinct from West Nile, Tyuleniy and Saumarez Reef [1] . CF, HI, and NT tests at CDC, Fort Collins demonstrated that Brest/Ar/T-707 is distinct from Langat, Negishi, Tyuleniy, Saumarez Reef, Carey Island and Gadgets Gully [2] .

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)
MRC-5 (CL)	Brest/		None					-
Vero (CL)	Ar/T-707,		None					-
BHK-21 (CL)	SM 3		None					-
Monkey kidney (PC)			None					-
LLC-MK2 (CL)	P3 SM 1				9-10	Plaques	7.8* (2)	
Vero (CL)						No plaques (2)		
PS (CL)						No plaques (2)		
CER (CL)						No plaques (2)		
SW 13 (CL)						No plaques (2)		
Duck embryo (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
Ornithodoros (Al.) maritimus	5/147		Meaban Island, South Brittany, France; 1981
Ornithodoros (Al.) maritimus	2/59		Penfred Island, Glenan Archipelago, France; 1982
Man		0/562 HI	Brittany, France
Seabirds:			
Larus fuscus fuscus		1/21 HI	
Larus argentatus		16/163 HI	
Larus marinus		0/3 HI	
Larus ridibundus		0/14 HI	
Rissa tridactyla		0/6 HI	
Phalacrocorax aristotelis		0/5 HI	
Phalacrocorax carbo		0/3 HI	
Nonmarine birds (mainly passeriformes)		0/74 HI	

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)	Brest/Ar/T707, SM 3	ic	Paralysis, death	6.6	>3.5
Mice (nb)		ip	Paralysis, death	8.3	>3.5
Mice (nb)		sc			
Mice (wn)		ic	Paralysis, death	10.0	>3.5
Mice (wn)		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

Section X - Histopathology

Character of lesions (specify host)
Acute meningo-encephalitis in inoculated sm; no lesions in liver, spleen, heart and kidney

Inclusion Bodies — Intranuclear

Organs/Tissues Affected
Brain (LV)

Category of tropism
Neurotropic

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)
South Brittany, France

Suspected (Antibody only detected)

Section XIII - References

1. Chastel, C., et al. 1985. Arch. Virol. 83:129-140.
2. Karabatsos, N. Personal communication. 1984.

Remarks