

<b>Virus Name: Whataroa</b>		<b>Abbreviation: WHAV</b>
Status <b>Arbovirus</b>	Select Agent <b>No</b>	SALS Level <b>2</b>
SALS Basis <b>Results of SALS surveys and information from the Catalogue.</b>		
Other Information		
Antigenic Group <b>A</b>		

**SECTION I - Full Virus Name and Prototype Number**

Prototype Strain Number / Designation <b>M78</b>	Accession Number	Original Date Submitted <b>12/20/1984</b>
Family <b>Togaviridae</b>	Genus <b>Alphavirus</b>	
Information From <b>F.J. Austin</b>	Address <b>Virus Research Unit, University of Otago, P.O. Box 56, Dunedin, New Zealand</b>	
Information Footnote <b>Revised</b>		

**Section II - Original Source**

Isolated By (name) <b>Ross, Austin, Miles and Maguire (1)</b>	Isolated at Institute <b>Dunedin, New Zealand</b>	
Host Genus <b>Culex pervigilans</b>	Species	Host Age/Stage <b>Adult</b>
Sex <b>Female</b>		
<u>Isolated From</u>	<u>Isolation Details</u>	
Signs and Symptoms of Illness	Arthropod <b>Engorged</b>	
Time Held Alive before Inoculation <b>Four hours, then frozen</b>		
Collection Method <b>Resting collection in piggery</b>	Collection Date <b>2/1/1962</b>	
Place Collected (Minimum of City, State, Country) <b>Whataroa, Westland, New Zealand</b>		
Latitude <b>43° 10' S</b>	Longitude <b>170° 20' E</b>	
Macrohabitat <b>Cleared land fringed by swamp</b>	Microhabitat <b>Domestic animal shelter</b>	Method of Storage until Inoculated <b>Frozen at -56dC</b>
Footnotes		



**Morphogenesis**

Site of Constituent Formation in Cell

Site of Virion Assembly

Site of Virion Accumulation  
**Cytoplasm**

Inclusion Bodies

Other

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**Hemagglutination**

Hemagglutination  
**Yes**

Antigen Source  
**SMB ext. by sucrose-acetone**

Erythrocytes (species used)  
**Goose**

pH Range  
**5.8-6.6**

pH Optimum  
**6.0**

Temperature Range

Temperature Optimum  
**37dC**

Remarks

Serologic Methods Recommended  
**HI, CF, PRNT**

Footnotes

See Reference [2].

Sera or Antigens *	Whataroa Antigen				Whataroa Serum *			
	HI		CF		HI		CF	
	Ht/Ho	Ratio	Ht/Ho	Ratio	Ht/Ho	Ratio	Ht/Ho	Ratio
Sindbis								
C-263	80/320	1/4	16/32	1/2	80/5120	1/64	16/64	1/4
EgAr 339	640/320	2	8/64	1/8	40/5120	1/128	16/64	1/4
C-377	1280/1280	1	16/128	1/8	80/5120	1/64	32/64	1/2
P-886	160/320	1/2	16/64	1/4	40/5120	1/128	8/64	1/8
MRM 39	640/1280	1/2	16/128	1/8	160/5120	1/32	8/64	1/8
Ross River			8/64	1/8			0/64	>1/64
Bebaru	40/1280	1/32			20/5120	1/256		
WEE	40/1280	1/32			40/5120	1/128		
Semliki	40/640	1/16			20/5120	1/256		

\* Sera were hyperimmune mouse produced by two injections of virus ip, the first being formalin killed seed and the second, live seed; Blank = signifies not done.

Neutralization tests: Same sera as above.

Method: Constant serum/virus dilutions incubated 37C for 1 hour, then inoculated into suckling mice, ip.

Virus	Neutralization Index (Dex)		
	Whataroa	Serum	
		Sindbis EgAr 339	Sindbis MRM 39
Whataroa	>4.0	2.7	2.7
EgAr 339	2.6	4.0	3.7

Virus Source (all VERTEBRATE isolates)

Lab Methods of Virus Recovery (ALL ISOLATIONS)

Plaques on chicken embryo cell cultures; 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)	
Chick embryo (PC)	3 CE				3	2-4 mm	9.0**	
Duck embryo (PC)					3	2-4 mm	9.0	
BHK-21 (CL)					4	3 mm	5.4 (3)	
HeLa (CL)	13 SMB							+
Vero (CL)					3	4 mm	8.3 (4)	
LLC-MK2 (CL)					7	1 mm	5.5 (4)	
Aedes aegypti (CL)	4 CE							+

\*\* Expressed in dex

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Man		16/84 NT	Westland, New Zealand
Man		6/66 NT	Fiji
Man		6/54 NT	Western Samoa
Trichosurus vulpecula (marsupial)		12/76 NT	Westland, New Zealand
Birds:		6/54 NT	Western Samoa (2)
Passerines (open country)		154/904 NT	Westland and Otago, New Zealand (5, 6)
Passerines (bush)		6/358 NT	Westland, New Zealand (5, 6)
Water birds		4/135 NT	
Shore birds and waders		6/32	
Mosquitoes:			
Culex pervigilans	1/35,687		Westland, New Zealand
Culiseta tonnoiri	2/39,466		

Experimental host and age	Passage history and strain	Inoculation Route-Dose	Evidence of infection	AST (days)	Titer log <sub>10</sub> /ml
Mice (nb)	SMB 5	ic 0.01	Death	5	8.5
Mice (nb)		ip			
Mice (nb)		sc 0.05	Viremia and death	5	8.5
Mice (wn)		ic			
Mice (wn)		ip			
guinea pigs		3 dex sc	Viremia		4.0
wild birds (various species)		3 dex sc	Viremia		2.9-6.0

**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
Aedes australis		3.0/ insect	4	22	SM	5/9	7.0/ins		Plaques (7)
Aedes australis	9.0		17	20	SM	6/10	6.0	sg. 5.0	Plaques (8)
Culiseta tonnoiri		2.0	8	20			6.5		Plaques (8)
Culiseta tonnoiri	9.0		10-24	20	SM	3/7	5.0		Plaques (8)
Ae notoscriptus		2.0	7	22			6.7		Plaques
Culex pervigilans		3.0	6	22				sg. 7.2	Plaques
Opifex fuscus		3.0	5	22			7.4		Plaques
Austrosimulium ungulatum		2.2	14	22			6.0		Plaques (7)

**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)

**New Zealand**

Suspected (Antibody only detected)

**Fiji, Western Samoa**

## Section XIII - References

1. Ross, R.W., et al. 1963. Aust. J. Sci. 26:20.
2. Maguire, T., et al. 1967. Am. J. Trop. Med. and Hyg. 16:371-373.
3. Miles, J.A.R. and Austin, F.J. 1963. Aust. J. Sci. 25:466.
4. Stim, T.B. 1969. J. Gen. Virol. 5:329-338.
5. Ross, R.W., et al. 1964. Aust. J. Exp. Biol. Med. Sci. 42:689-702.
6. Miles, J.A.R., et al. 1971. Aust. J. Exp. Biol. Med. Sci. 49:365-376.
7. Austin, F.J. 1967. Ann. Trop. Med. and Parasitol. 61:189-199.
8. Miles, J.A.R., et al. 1973. J. Med. Ent. 10:176-185.

## Remarks