

Virus Name: Hart Park		Abbreviation: HPV
Status <b>Probable 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>Hart Park</b>		

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

Prototype Strain Number / Designation <b>Ar70</b>	Accession Number	Original Date Submitted <b>2/6/1985</b>
Family <b>Rhabdoviridae</b>	Genus <b>Not listed</b>	
Information From <b>Harald N. Johnson</b>	Address <b>California State Health Department, Viral and Rickettsial Disease Laboratory</b>	
Information Footnote <b>Reviewed by editor</b>		

#### Section II - Original Source

Isolated By (name) <b>Harald N. Johnson (2)</b>	Isolated at Institute <b>Berkeley, California</b>	
Host Genus <b>Culex tarsalis (pool of 56)</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>Depleted</b>	
Time Held Alive before Inoculation		
Collection Method <b>Hand collection with aspirator</b>	Collection Date <b>8/5/1955</b>	
Place Collected (Minimum of City, State, Country) <b>Hart Park, Kern County, California, USA</b>		
Latitude <b>35° N</b>	Longitude <b>119° W</b>	
Macrohabitat <b>Public park on Kern River, irrigated grassland and trees</b>	Microhabitat <b>Natural resting places in park buildings</b>	Method of Storage until Inoculated <b>Sealed glass tubes stored in dry ice chest</b>
Footnotes		

### Section III - Method of Isolation

Inoculation Date  
12/28/1955

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

Route Inoculated  
**Intracerebral**

Reisolation  
**Not tried**

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)

Lipid Solvent (ether - % used to test)	After Treatment Titer	Control Titer
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate)	After Treatment Titer	Control Titer
Other (formalin, radiation)		

#### Virion Morphology

Shape  
**Bullet-shaped (3)**

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

Hemagglutination	Antigen Source	Erythrocytes (species used)
Yes	SMB ext. by sucrose-acetone	Goose
pH Range	pH Optimum	
Temperature Range	Temperature Optimum	
Remarks		
Serologic Methods Recommended		
CF, NT		
Footnotes		

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

Hart Park virus antigen: Failed to react in the CF test with the following mouse hyperimmune sera: Akabane, Junin, Bunyamwera, Ilesha, California, AR 8226, Piry, Acara, Pacui, Irituia, Mossuril, Ingwavuma, Palyam, Wongal, Mapputa, Witwatersrand, Tacaribe, Tete, Ganjam, Maguari, Germiston, Sororoca, Icoaraci, Tacaiuma, Wanowrie, Lumbo, Nyamaninni, Lukuni, Triniti, Aruac, Oropouche, Sathuperi, Ketapang, Bakau, Navarro, Manzanilla, Simbu, Chenuda, Quaranfil, Cocal, Candiru, Minnal, Nyando, Jurona, Pongola, Nodamura, Lebombo, Wad Medani, AR671, Batai, Melao, Guaroa, trivittatus, Tahyna, SF Naples, SF Sicilian, VSNJ, LCM, VSI, AN32260, Anopheles A, Anopheles B, CTF, AN114, Kern Canyon, Tsuruse, K622, Group A, Group B, Group C, Group Guama, Capim group, California group, Simbu group, Triniti, Sororoco 1, NJ deer, SE65, SE493, Lunyo [4] , [5] .

Hart Park virus hyperimmune serum: Failed to react in the CF test with GD7 mouse polio antigen [6] .

Hart Park hyperimmune serum: Failed to react in the HI test with the following HA antigens: Akabane, Bwamba, SF Naples, Ingwavuma, Tacaiuma, Guama, Icoaraci, Bakau, Ketapang, Sathuperi, Ndumu, dengue 2, Oriboca, Caraparu, Maguari, Germiston, Witwatersrand, Turlock, Umbre, Manzanilla, EEE, VEE, WEE, Mayaro, Aura, Una, Bunyamwera, Ilesha, Guaroa, Tahyna, California [4] , [5] .

Hart Park virus is closely related to Flanders; they may be strains of the same virus, or both members of the Hart Park complex [1] .

Prototype strains of Hart Park (Ar 70) and Flanders (61-7484) antigenically related but different from each other in CF, NT and double-diffusion tests [14] .

## Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)

Blood (LV), pancreas (LV), spleen-heart-kidney-pancreas  
pool (LV), spleen-heart-kidney-lung pool (LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS)

Newborn mice

Cell system (a)	Virus passage history (b)	Evidence of Infection						Growth Without CPE +/- (g)	
		CPE		PLAQUES					
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)		
LLC-MK2 (CL)	P-29					No plaques (12)			
Vero (CL)					4	1 mm	5.7* (12)		
BHK-21 (CL)		3	No CPE	3.8* (15)					
Vero (CL)			No CPE					- (15)	
E6 (CL)			No CPE					- (15)	
PS (CL)			No CPE					- (15)	
CER (CL)			No CPE					- (15)	
C6/36 (CL)			No CPE					- (15)	
Vero (CL)					7	Plaques (15)			

Virus did not multiply in HeLa, hamster kidney, human diploid, calf kidney or chick embryo tissue culture (7).

\* 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
<i>Culex tarsalis</i>	10		California; 1955-60(7)
<i>Cx tarsalis</i>	8		Utah; 1967 (13)
<i>Cx tarsalis</i>	2		Texas; 1961 (8)
<i>Cx tarsalis</i>	31		Texas; 1963 (10)
<i>Cx restuans</i>	1		New Jersey; 1960 (9)
<i>Cx restuans</i>	1		Alabama; 1960 (9)
<i>Cx nigripalpus</i>	1		Florida; 1961 (9)
<i>Cx pipiens</i>	1		New York; 1961 (8)
<i>Culiseta melanura</i>	2		Alabama; 1960 and 1962 (9)
<i>Culiseta melanura</i>	1		New Jersey; 1960 (9)
<i>Culiseta melanura</i>	5		New York; 1961-1962 (8)
<i>Culiseta melanura</i>	30		Georgia; 1963 (9)
<i>Xanthocephalus xantho</i> (bird)	1		California; 1957 (7)
<i>Passer domesticus</i> (bird)	2		
<i>Agelaius tricolor</i> (bird)	1		California; 1960 (7)
<i>Carpodacus mexicanus</i> (bird)	1		California; 1961 (7)
<i>Seiurus aurocapillus</i> (bird)	1		New York; 1961 (8)

**Section VIII - Susceptibility to Experimental Infection (include viremia)**

<b>Experimental host and age</b>	<b>Passage history and strain</b>	<b>Inoculation Route-Dose</b>	<b>Evidence of infection</b>	<b>AST (days)</b>	<b>Titer log10/ml</b>	
Mice (nb)	SM 15	ic 0.015	Illness and death	4	6	
Mice (nb)		ip 0.015	None			
Mice (nb)		sc				
Mice (wn)		ic 0.015	None			
Mice (wn)		ip				
chick embryos		al.c. 0.1	Virus positive			
1/2 day chicks			None; no viremia (9)			
rabbits			None; no viremia (9)			
guinea pigs			None; no viremia (9)			

**Section IX - Experimental Arthropod Infection and Transmission**

<b>Arthropod species &amp; virus source(a)</b>	<b>Method of Infection log10/ml (b)</b>		<b>Incubation period (c)</b>		<b>Transmision by bite (d)</b>		<b>Assay of arthropod, log10/ml (e)</b>		
	<b>Feeding</b>	<b>Injected</b>	<b>Days</b>	<b>°C</b>	<b>Host</b>	<b>Ratio</b>	<b>Whole</b>	<b>Organ</b>	<b>System</b>

Virus could be maintained for six passages in Aedes aegypti inoculated intrathoracically by passing infected salivary glands (11).

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## 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
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Subclinical	Overt Disease
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Clinical Manifestations

Number of Cases	Category (i.e. febrile illness, etc.)
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## Section XII - Geographic Distribution

Known (Virus detected)

**California, Texas, Illinois, Alabama, Georgia, Florida, New Jersey, New York, Utah, USA**

Suspected (Antibody only detected)

## Section XIII - References

1. Director, Yale Arbovirus Research Unit. Personal communication. 1972.
2. Taylor, R.M. (Comp.) Catalogue of Arthropod-borne Viruses, PHS Publication No. 1760, 1967, pp. 425-428.
3. Jenson, A.B., et al. 1967. Exp. Mol. Pathol. 7:1-10.
4. Director, Yale Arbovirus Research Unit. Personal communication.
5. Casals, J. 1961. Bull. World Health Organization 24:723-724.
6. Lennette, E.H. Personal communication.
7. Johnson, H.N. Unpublished results.
8. Whitney, E. 1964. Am. J. Trop. Med. Hyg. 13:123-131.
9. Chief, Arbovirus Unit, CDC, Atlanta. Personal communication.
10. Director, CDC Lab, Greeley, Colorado. Personal communication.
11. Whitman, L. Personal communication.
12. Stimpert, T.B. 1969. J. Gen. Virol. 5:329-338.
13. Crane, G.T., et al. 1970. Am. J. Trop. Med. Hyg. 19:540-543.
14. Boyd, K.R. 1972. Infect. Immun. 5:933-937.
15. Kerschner, J. Personal communication. 1983.

## Remarks