Virus Name: Isfahan		Abbreviation: ISFV
Status **Probable Arbovirus**	Select Agent **No**	SALS Level **2**

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

Other Information

Antigenic Group
Vesicular Stomatitis

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation	Accession Number	Original Date Submitted
91026-167 (1)		7/6/1984

Family	Genus
Rhabdoviridae	**Vesiculovirus**

Information From	Address
Robert B. Tesh	**Yale Arbovirus Research Unit**

Information Footnote
Revised

Section II - Original Source

Isolated By (name)	Isolated at Institute	
R.B. Tesh and S. Saidi	**Pacific Research Section, Honolulu**	
Host Genus **Phlebotomus papatasi (pool of 25)**	Species	Host Age/Stage **Adult**

Sex
Female

Isolated From	Isolation Details
Signs and Symptoms of Illness	Arthropod **Depleted**
Time Held Alive before Inoculation	
Collection Method **Hand aspirator**	Collection Date **8/18/1975**

Place Collected (Minimum of City, State, Country)
Dormian village, Isfahan Province, Iran

Latitude	Longitude
33° N	**52° E**

Macrohabitat	Microhabitat	Method of Storage until Inoculated
Desert village at 1,500 meters elevation	**Inside human dwellings and animal shelters**	**Liquid nitrogen, dry ice and mechanical freezer at -80dC**

Footnotes

Section III - Method of Isolation

Inoculation Date
2/17/1976

Animal (Details will be in Section 6)
(Tissue Culture)

Route Inoculated

Reisolation
Not tried

Other Reasons
Virus recovered simultaneously in tube and microplate cultures

Homologous Antibody Formation by Source Animal

Test(s) Used

Footnotes

Section IV - Virus Properties

Physicochemical
RNA, Single Strand

Pieces (number of genome segments)	Infectivity	Sedimentation Coefficients(s)
1	**No**	**38-45 s**(S)
Percentage wt, of Virion Protein	Lipid	Carbohydrate
Virion Polypeptides: Number **5**	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) **50%**	After Treatment Titer **2.0 dex**	Control Titer **7.4 dex (1)**
Lipid Solvent (deoxycholate)	After Treatment Titer	Control Titer

Other (formalin, radiation)

Virion Morphology

Shape	Dimensions	
Bullet-shaped (1)	**Length 210 nm; diameter 64 nm (1)**	
Mean nm	Range **207-214x60-67 nm**nm	
Measurement Method **Negative contrast electron microscopy**	Surface Projections/Envelope	Nucleocapsid Dimensions, Symmetry

Morphogenesis

Site of Constituent Formation in Cell	Site of Virion Assembly	Site of Virion Accumulation
Cytoplasm	**Budding from cell membrane (1)**	**Extracellular and in cytoplasmic vesicles**
Inclusion Bodies	Other	

Hemagglutination

Hemaggiutination	Antigen Source	Erythrocytes (species used)
Not tried		
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

Results of Plaque Reduction Neutralization Tests [1]

Immune Serum	Virus VSNJ	VSI	COC	PIRY	CHP	ISF
VSNJ	10240 *	<10	<10	<10	<10	<10
VSI	<10	327680	320	<10	<10	<10
COC	<10	160	5120	<10	<10	<10
VSA	<10	20	20	<10	<10	<10
PIRY	<10	<10	<10	10240	<10	<10
CHP	<10	<10	<10	<10	10240	<10
ISF	<10	<10	<10	<10	<10	2560
Group						
VSV **	640	2560	160	5120	1280	40

* Reciprocal of highest serum dilution producing >95% plaque inhibition

Reciprocal of highest serum dilution producing >95% plaque inhibition.

** Prepared in a guinea pig sequentially inoculated with Piry Chandipura, Indiana, New Jersey, and Cocal viruses.

Note: All immune sera prepared in guinea pigs receiving 2-5 subcutaneous injections of live virus at 14-day intervals.

Results of Complement Fixation Tests [2]

	Antibody			
Antigen	ISF MIAF	ISF GP Serum	CHP MIAF	Piry IMS
Isfahan	1024/1024	256/256	16/16	8/4
Chandipura (I 653514)	64/256	32/16	256/1024	16/64
Chandipura (IbAn 9978)	32/256	32/16	256/1024	16/16
Piry	64/16	8/4	16/4	512/64
Flanders (Control)	4/<4	<4/<4	<4/<4	<4/<4

Antibody titer/antigen titer

In other CF tests, ISF antigen (8 units) and guinea pig antiserum were negative when tested against VSNJ (homologous serum titer = 128), VSI (2048) and COC (128) viruses. Also, ISF antigen did not react with VSA antiserum (200) [1] .

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Vero 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)	
Vero (CL)	Vero 3	24 hrs.	4+		3	2 mm	8.0(a)		

(a) 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
	pools		
Phlebotomus papatasi (females)	2/263	(10,615 insects)	Dormian village, Isfahan Province, Iran (1)
Phlebotomus papatasi (males)	0/41	(1,870 insects)	
Phlebotomus papatasi	2/195	Kirov Dist., Turkmenia, USSR (4)	
Man		0/30 NT	East Azerbaijan Prov., Iran (1)
Man		0/30 NT	Gilan Prov., Iran
Man		79/167 NT	Khorasan Prov., Iran
Man		2/60 NT	Tehran Prov., Iran
Man		103/154 NT	Isfahan Prov., Iran
Man		0/32 NT	Kermanshah Prov., Iran
Man		5/92 NT	Khuzestan Prov., Iran

Man		0/163 NT	Moldavia, USSR (3)
Man		0/98 NT	Azerbaijan, USSR
Man		2/158 NT	Tajikistan, USSR
Man		2/197 NT	Uzbekistan, USSR
Man		24/100 NT	Turkmen, USSR
Gerbils (Rhombomys optimus)		26/33 NT	Isfahan Prov., Iran
Sheep		0/175 NT	Isfahan, Tehran and Khuzestan Prov., Iran
Cows		0/86 NT	
Goats		0/41 NT	Isfahan and Khuzestan Prov., Iran
Pigeons		0/23 NT	Isfahan Prov., Iran
Chickens		0/5 NT	
Hyalomma asiaticum	2		Turkmenia, USSR (7)
Aedes caspius	3		

For additional serologic results see Reference 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)	Vero 3(prototype)	ic	Death (1)	<24 hrs	9.0 (brain)
Mice (nb)		ip			2.9 (blood)
Mice (nb)		sc			
Mice (wn)		ic			
Mice (wn)		ip			
guinea pig (ad)		sc	Antibody		

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
Toxorhynchites amboinensis		X	7	32				CO2 sensitivity and IFA (4)	
Culex quinquefasciatus		X	7	32			4.2	CO2 sensitivity and IFA (4)	
Drosophila melanogaster		X(2.6)		28				Also induces CO2 sensitivity (5)	

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)
Iran (1), USSR (7)

Suspected (Antibody only detected)
USSR (3)

Section XIII - References

1. Tesh, R., et al. 1977. Am. J. Trop. Med. Hyg 26:299-306.
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Remarks