Virus Name: Tettnang		Abbreviation: TETV
Status **Possible Arbovirus**	Select Agent **No**	SALS Level **2**

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

Other Information

Antigenic Group
Ungoruped

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation	Accession Number	Original Date Submitted
63		8/17/1984

Family	Genus
Coronaviridae	**Not listed**

Information From	Address
B. Rehse-Kupper, R. Ackermann	**Department of Virology, Neurology Clinic, University of Cologne, 5 Cologne 41, Germany**

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)	Isolated at Institute
B. Rehse-Kupper, et al. (1)	**Department of Virology, Cologne**

Host Genus	Species	Host Age/Stage
Ixodes ricinus (L.)		**Nymph**

Sex
Not Answered

Isolated From	Isolation Details
Signs and Symptoms of Illness	Arthropod
Time Held Alive before Inoculation	

Collection Method	Collection Date
Flagging the vegetation	**5/20/1970**

Place Collected (Minimum of City, State, Country)
Tettnang near Friedrichshafen Bodensee, Germany

Latitude	Longitude
47° 40' N	**9° 35' E**

Macrohabitat	Microhabitat	Method of Storage until Inoculated
Mixed woodland and meadows		**In glass tube at +4dC**

Footnotes

Section III - Method of Isolation

Inoculation Date
6/4/1970

Animal (Details will be in Section 6)
nb mice

Route Inoculated
ic and sc

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) **1:5**	After Treatment Titer **2.3 dex**	Control Titer **>4.5 dex**
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate) **1:1000**	After Treatment Titer **0.6 dex**	Control Titer **3.6 dex**

Other (formalin, radiation)

Virion Morphology

Shape	Dimensions **<100 nm**	
Mean nm	Range nm	
Measurement Method **Filtered using Millipore and Satorius**	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)
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

Serological relationships (CF test).

Comparison to other European tick-borne viruses:

Antigen	Serum titer						
	63a	225	Uukuniemi	Tribec	CEE	Kemerovo	Bhanja
63a	16	0	0	0	0	0	0
225a	8	8	0	0			
Uukuniemi	0		128				
Tribec	0			16			
CEE	0				64		

0 = negative: blank = not tested

Studies at YARU have shown that strain 63 is indistinguishable, by complement fixation test, from another strain, Art 1147 ** previously received from NAMRU-3, Cairo, isolated by the staff of that laboratory. Both virus strains, 63 and Art 1147, were compared by complement-fixation test with a large number of tick-borne viruses not of group B: Immune sera against both strains reacted negatively with the following antigens; Bandia, Bhanja, Chenuda, Colorado tick fever, Crimean hemorrhagic fever-Congo, DGK, Dhori, Dugbe, Farallon, Ganjam, Grand Arbaud, Hazara, Huacho, Hughes, Johnston Atoll, Kaisodi, Kemerovo, Lanjan, Lipovnik, Lone Star, Keterah, Manawa, Matucare, Mono Lake, Nyamanini, Qualyub, Quaranfil, Sawgrass, Silverwater, Soldado, Thogoto, Tribec, Upolu, Uukuniemi, Wad Medani, Zirqa, Jos, Punta Salinas, Kao Shuan and Pathum Thani.
The homologous titers of the strains 63 and Art 1147 antisera used at YARU were between 1:64 and 1:128.

Prototype Tettnang virus was found to cross-react with mouse hepatitis virus by complement-fixation tests. This observation was independently confirmed by Dr. J. Casals [4] . There are two possible interpretations of these observations: 1) Prototype Tettnang virus is mouse hepatitis virus or closely related to mouse hepatitis virus. 2) Tettnang virus has been contaminated with mouse hepatitis virus subsequent to its isolation. (ed.)
The antigenic relationship of Tettnang virus strains to mouse hepatitis virus strains was confirmed by NT [6] .

** Art 1147 was isolated from Hyalomma dromedarii ticks taken from a camel in Egypt. (J. Casals, personal communication).

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
Blood (M)(LV), CNS (M)(LV), liver (LV), spleen (LV), kidney (LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn and weanling 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)	
Chick embryo (PC)	SMB 47		No CPE						
Green monkey kidney (CL)	SMB 60		No CPE						
Mouse embryo cells (CL)	SMB 65		No CPE						

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
Apodemus flavicollis (brain)	1		Czechoslavakia (3)
Ixodes ricinus	1/82		Tettnang near Friedrichshafen, W. Germany
Man (CSF) *	1		Czechoslovakia (5) Konigsforst, near Cologne, W. Germany
Ixodes ricinus	2/52		
Ixodes ricinus	1/86		Hurtgenwald, near Duren, W. Germany
I. ricinus (nymphs and males)	3		Moravia, Slovakia, Czechoslovakia(2, 3)
Dermacentor reticulatus	1		Czechoslovakia (3)
Aedes cantans	1		
Clethrionomys glareolus(brain)	1		

* Child with pharyngitis and encephalitic reaction. Child seroconverted following virus isolation (5).

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)	SMB 42	ic 0.02	Death	2-3	7.6
Mice (nb)		ip 0.03	Death	4-7	
Mice (nb)		sc			
Mice (wn)	SMB 37, 40, 56	ic 0.03	No disease		
Mice (wn)	SMB 74	ip 0.25	No disease		
mice (nb)	SMB 42	sc 0.03	Death		

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)

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)
West Germany; Egypt; Czechoslovakia (2)

Suspected (Antibody only detected)

Section XIII - References

1. Rehse-Kupper, B., et al. 1973. Zb. Bakt. Hyg., I Abt. Orig. A 224:168-177.
2. Kozuch, O., et al. 1978. Acta. Virol. 22:74-76.
3. Kozuch, O., et al. 1979. Acta. Virol. 23:86-88.
4. Bardos, V. Personal communication. 1979.
5. Malkova, D., et al. 1980. Acta. Virol. 24:363-366.
6. Smith, A.L., et al. 1983. Am. J. Trop. Med. Hyg. 32:1172-1176.

Remarks