

FAO World Reference Laboratory for Foot-and-Mouth Disease (WRLFMD)

Genotyping Report

FMDV serotype: SAT3
Country: Namibia
Year: 2019
Batch: WRLMEG/2019/00042
No. of sequences: 2
Report date: 27th August 2019
Report generated by: Nick Knowles
Report checked by: Hayley Hicks

This report is prepared on behalf of the OIE Sub-Saharan Africa Regional Reference laboratory (SSARRL) for FMD (Botswana Vaccine Institute, Gaborone, Botswana) and covers VP1 sequences submitted to the WRLFMD on 25 August 2019.



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www: <http://www.wrlfmd.org/>

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Virus sample name:	NAM06/2019
Sender reference:	SAT3/NAM06/2019
Location of origin:	Katima-Mulilo, Kabwe North, Zambezi
Country of origin:	Namibia
Date of collection:	08/08/2019
Host species:	bovine
Serotype:	SAT3
Topotype:	II
Lineage:	
Sublineage:	
Sequence length:	648
Ambiguities:	0
Material submitted for sequencing:	epithelial tissue extract
Harvest date of material:	n/a
Primers:	SAT3-1C559F/SAT-2B208R
Received for sequencing:	n/a
Created:	27/08/2019
Last updated:	27/08/2019
VIBASys IDs: sample 42650, genome 42651, sequence viba_42652, sequencing info 42653	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42656	NAM07/2019	bovine	100.0	0	SAT3	II		
viba_26624	BOT/P10/2010	African buffalo	90.4	5	SAT3	II		
viba_26891	ZIM/P30/90 CHER-31	African buffalo	89.2	0	SAT3	II		
viba_26592	BOT-BUFF/13/70	African buffalo	86.0	0	SAT3	II		
viba_27022	ZIM/P40/91 BUMI-4	African buffalo	85.5	0	SAT3	II		
viba_33808	ZAM/07/2017	bovine	85.5	0	SAT3	II		
viba_26895	ZIM/P30/90 CHER-32	African buffalo	85.4	0	SAT3	II		
viba_35222	ZAM/1/2017	cattle	85.4	0	SAT3	II		
viba_37621	ZAM/9/2015	cattle	85.2	0	SAT3	II		
viba_27754	ZAM/3/2015	bovine	85.2	0	SAT3	II		

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_599	BEC/20/61		84.1	0	SAT3	II		
viba_770	BEC/1/65		82.7	0	SAT3	II		
viba_26691	RV/7/34	cattle	79.3	0	SAT3	I		
viba_227	KNP/10/90	African buffalo	77.9	0	SAT3	I		
viba_572	SA/57/59		77.4	0	SAT3	I		
viba_748	ZAM/P2/96 MUL-4	African buffalo	76.9	0	SAT3	IV		
viba_364	ZIM/P25/91 UR-7	African buffalo	75.2	0	SAT3	III		
viba_26659	MOZ/P13/2010 BUF B7	African buffalo	75.2	0	SAT3	I		
viba_56	UGA/2/97	African buffalo	65.7	0	SAT3	V		
viba_156	UGA/92/70	African buffalo	64.8	0	SAT3	V		

Virus sample name:	NAM07/2019
Sender reference:	SAT3/NAM07/2019
Location of origin:	Katima-Mulilo, Kabwe North, Zambezi
Country of origin:	Namibia
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Host species:	bovine
Serotype:	SAT3
Topotype:	II
Lineage:	
Sublineage:	
Sequence length:	648
Ambiguities:	0
Material submitted for sequencing:	epithelial tissue extract
Harvest date of material:	n/a
Primers:	SAT3-1C559F/SAT-2B208R
Received for sequencing:	n/a
Created:	27/08/2019
Last updated:	27/08/2019
VIBASys IDs: sample 42654, genome 42655, sequence viba_42656, sequencing info 42657	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42652	NAM06/2019	bovine	100.0	0	SAT3	II		
viba_26624	BOT/P10/2010	African buffalo	90.4	5	SAT3	II		
viba_26891	ZIM/P30/90 CHER-31	African buffalo	89.2	0	SAT3	II		
viba_26592	BOT-BUFF/13/70	African buffalo	86.0	0	SAT3	II		
viba_27022	ZIM/P40/91 BUMI-4	African buffalo	85.5	0	SAT3	II		
viba_33808	ZAM/07/2017	bovine	85.5	0	SAT3	II		
viba_26895	ZIM/P30/90 CHER-32	African buffalo	85.4	0	SAT3	II		
viba_35222	ZAM/1/2017	cattle	85.4	0	SAT3	II		
viba_37621	ZAM/9/2015	cattle	85.2	0	SAT3	II		
viba_27754	ZAM/3/2015	bovine	85.2	0	SAT3	II		

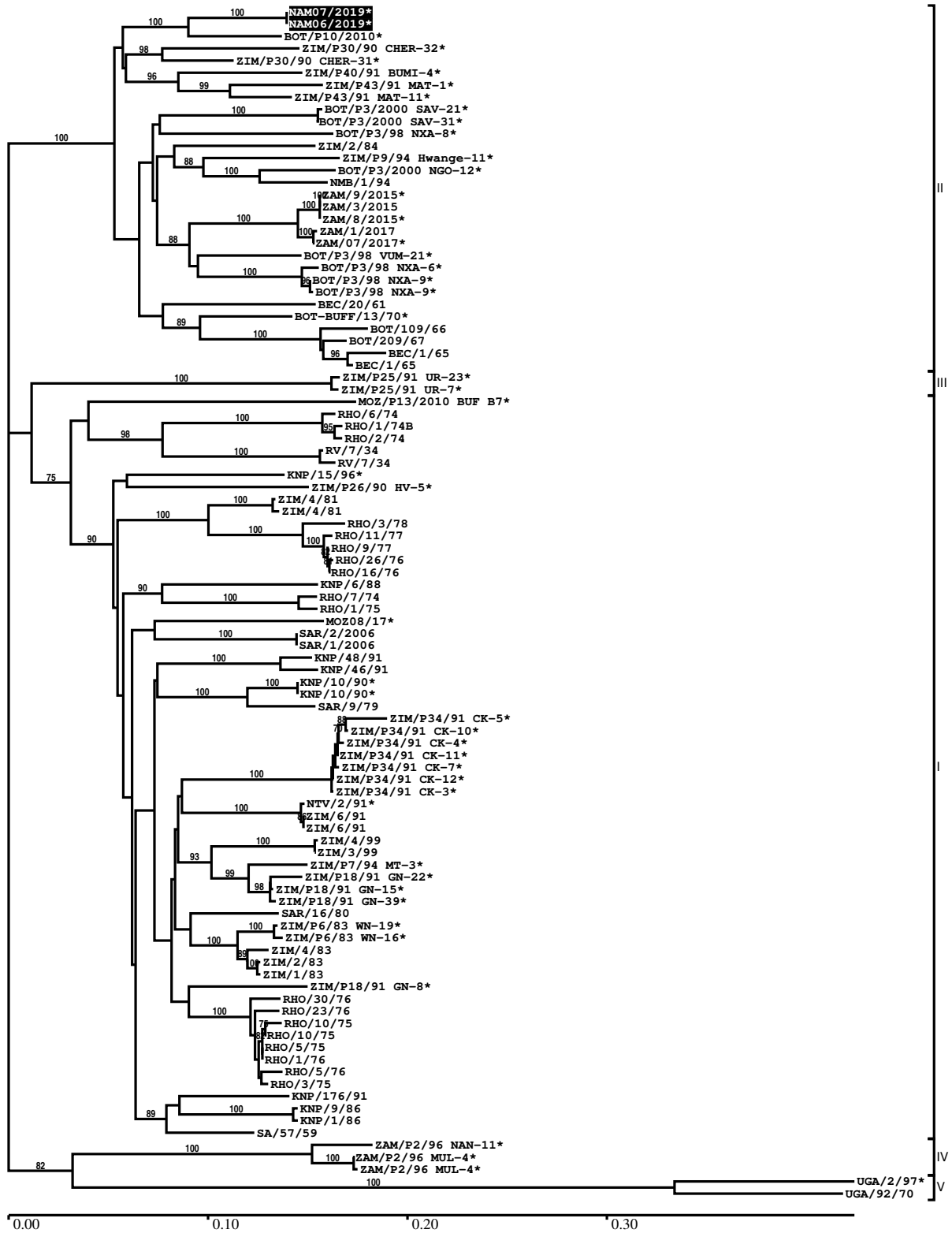
Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_599	BEC/20/61		84.1	0	SAT3	II		
viba_770	BEC/1/65		82.7	0	SAT3	II		
viba_26691	RV/7/34	cattle	79.3	0	SAT3	I		
viba_227	KNP/10/90	African buffalo	77.9	0	SAT3	I		
viba_572	SA/57/59		77.4	0	SAT3	I		
viba_748	ZAM/P2/96 MUL-4	African buffalo	76.9	0	SAT3	IV		
viba_364	ZIM/P25/91 UR-7	African buffalo	75.2	0	SAT3	III		
viba_26659	MOZ/P13/2010 BUF B7	African buffalo	75.2	0	SAT3	I		
viba_56	UGA/2/97	African buffalo	65.7	0	SAT3	V		
viba_156	UGA/92/70	African buffalo	64.8	0	SAT3	V		

Report on FMDV SAT3 in Namibia in 2019

Batch: WRLMEG/2019/00042



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor:	vp1_SAT3
Query sequence set:	WRLMEG/2019/00042-Namibia-SAT3 (2 sequences)
Sequence database set:	allseqs_SAT3 (156 sequences)
Prototype sequence set:	!prototypes_SAT3 (10 sequences)
Number of related sequences reported:	10
Minimal VP1 subsequence match length	600
Sequence alignment method:	muscle (default parameters)
Sequence alignment length:	648
Phylogeny reconstruction method:	fdnadist, fneighbor
Number of bootstrap samples:	1000
Random seed for bootstrapping:	1
Displaying bootstrap values above:	70.0%
Number of sequences in tree capped at:	100
Number of prototype sequences in tree:	10
VIBASys version:	reflabs-1.1.2

Sequences in the Phylogenetic Tree

All sequences in the tree are in taxonomic group FMDV/SAT3

label	accession	host(s)	lab	country	taxonomic information
NAM07/2019*	n/a	bovine	BVI	Namibia	II
NAM06/2019*	n/a	bovine	BVI	Namibia	II
BOT/P10/2010*	n/a	African buffalo	WRLFMD	Botswana	II
ZIM/P30/90 CHER-32*	n/a	African buffalo	WRLFMD	Zimbabwe	II
ZIM/P30/90 CHER-31*	n/a	African buffalo	WRLFMD	Zimbabwe	II
ZIM/P40/91 BUMI-4*	n/a	African buffalo	WRLFMD	Zimbabwe	II
ZIM/P43/91 MAT-1*	n/a	African buffalo	WRLFMD	Zimbabwe	II
ZIM/P43/91 MAT-11*	n/a	African buffalo	WRLFMD	Zimbabwe	II
BOT/P3/2000 SAV-21*	n/a	African buffalo	WRLFMD	Botswana	II
BOT/P3/2000 SAV-31*	n/a	African buffalo	WRLFMD	Botswana	II
BOT/P3/98 NXA-8*	n/a	African buffalo	WRLFMD	Botswana	II
ZIM/2/84	n/a	cattle	WRLFMD	Zimbabwe	II
ZIM/P9/94 Hwange-11*	n/a	African buffalo	WRLFMD	Zimbabwe	II
BOT/P3/2000 NGO-12*	n/a	African buffalo	WRLFMD	Botswana	II
NMB/1/94	n/a	cattle	WRLFMD	Namibia	II
ZAM/9/2015*	n/a	cattle	BVI	Zambia	II
ZAM/3/2015	n/a	bovine	WRLFMD	Zambia	II
ZAM/8/2015*	n/a	cattle	BVI	Zambia	II
ZAM/1/2017	n/a	cattle	WRLFMD	Zambia	II
ZAM/07/2017*	n/a	bovine	BVI	Zambia	II
BOT/P3/98 VUM-21*	n/a	African buffalo	WRLFMD	Botswana	II
BOT/P3/98 NXA-6*	n/a	African buffalo	WRLFMD	Botswana	II
BOT/P3/98 NXA-9*	KT161976	African buffalo	OVI	Botswana	II
BOT/P3/98 NXA-9*	n/a	African buffalo	WRLFMD	Botswana	II
BEC/20/61	AY593851	n/a	PIADC	Bechuanaland	II
BOT-BUFF/13/70*	n/a	African buffalo	WRLFMD	Botswana	II
BOT/109/66	n/a	cattle	WRLFMD	Botswana	II
BOT/209/67	n/a	cattle	WRLFMD	Botswana	II
BEC/1/65	M28719	n/a	WELLCOME	Bechuanaland	II
BEC/1/65	AY593853	n/a	PIADC	Bechuanaland	II
ZIM/P25/91 UR-23*	n/a	African buffalo	WRLFMD	Zimbabwe	III
ZIM/P25/91 UR-7*	KY091306	African buffalo	WRLFMD	Zimbabwe	III
MOZ/P13/2010 BUF B7*	KF219693	African buffalo	WRLFMD	Mozambique	I
RHO/6/74	n/a	n/a	WRLFMD	Rhodesia	I
RHO/1/74B	n/a	cattle	WRLFMD	Rhodesia	I
RHO/2/74	n/a	n/a	WRLFMD	Rhodesia	I

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label	accession	host(s)	lab	country	taxonomic information
RV/7/34	n/a	cattle	WRLFMD	Rhodesia	I
RV/7/34	n/a	cattle	WRLFMD	Rhodesia	I
KNP/15/96*	KT161977	African buffalo	OVI	South Africa (KNP)	I
ZIM/P26/90 HV-5*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/4/81	n/a	cattle	WRLFMD	Zimbabwe	I
ZIM/4/81	KX375417	cattle	APQA, ROK	Zimbabwe	I
RHO/3/78	n/a	cattle	WRLFMD	Rhodesia	I
RHO/11/77	n/a	cattle	WRLFMD	Rhodesia	I
RHO/9/77	n/a	n/a	WRLFMD	Rhodesia	I
RHO/26/76	n/a	cattle	WRLFMD	Rhodesia	I
RHO/16/76	n/a	cattle	WRLFMD	Rhodesia	I
KNP/6/88	n/a	African buffalo	WRLFMD	South Africa (KNP)	I
RHO/7/74	n/a	n/a	WRLFMD	Rhodesia	I
RHO/1/75	n/a	cattle	WRLFMD	Rhodesia	I
MOZ08/17*	n/a	bovine	BVI	Mozambique	I
SAR/2/2006	n/a	cattle	WRLFMD	Republic of South Africa	I
SAR/1/2006	n/a	cattle	WRLFMD	Republic of South Africa	I
KNP/48/91	n/a	African buffalo	WRLFMD	South Africa (KNP)	I
KNP/46/91	n/a	African buffalo	WRLFMD	South Africa (KNP)	I
KNP/10/90*	n/a	African buffalo	WRLFMD	South Africa (KNP)	I
KNP/10/90*	n/a	African buffalo	WRLFMD	South Africa (KNP)	I
SAR/9/79	n/a	cattle	WRLFMD	Republic of South Africa	I
ZIM/P34/91 CK-5*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/P34/91 CK-10*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/P34/91 CK-4*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/P34/91 CK-11*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/P34/91 CK-7*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/P34/91 CK-12*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/P34/91 CK-3*	n/a	African buffalo	WRLFMD	Zimbabwe	I
NTV/2/91*	n/a	African buffalo	WRLFMD	South Africa (NTV)	I
ZIM/6/91	KM268901	cattle	WRLFMD	Zimbabwe	I
ZIM/6/91	n/a	cattle	WRLFMD	Zimbabwe	I
ZIM/4/99	n/a	cattle	WRLFMD	Zimbabwe	I
ZIM/3/99	n/a	cattle	WRLFMD	Zimbabwe	I
ZIM/P7/94 MT-3*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/P18/91 GN-22*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/P18/91 GN-15*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/P18/91 GN-39*	n/a	African buffalo	WRLFMD	Zimbabwe	I
SAR/16/80	n/a	African buffalo	WRLFMD	Republic of South Africa	I
ZIM/P6/83 WN-19*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/P6/83 WN-16*	n/a	African buffalo	WRLFMD	Zimbabwe	I
ZIM/4/83	n/a	n/a	WRLFMD	Zimbabwe	I
ZIM/2/83	n/a	cattle	WRLFMD	Zimbabwe	I
ZIM/1/83	n/a	n/a	WRLFMD	Zimbabwe	I
ZIM/P18/91 GN-8*	n/a	African buffalo	WRLFMD	Zimbabwe	I
RHO/30/76	n/a	n/a	WRLFMD	Rhodesia	I
RHO/23/76	n/a	cattle	WRLFMD	Rhodesia	I
RHO/10/75	n/a	greater kudu	WRLFMD	Rhodesia	I
RHO/10/75	n/a	greater kudu	WRLFMD	Rhodesia	I
RHO/5/75	n/a	cattle	WRLFMD	Rhodesia	I
RHO/1/76	n/a	cattle	WRLFMD	Rhodesia	I
RHO/5/76	n/a	n/a	WRLFMD	Rhodesia	I
RHO/3/75	n/a	cattle	WRLFMD	Rhodesia	I
KNP/176/91	n/a	African buffalo	WRLFMD	South Africa (KNP)	I
KNP/9/86	n/a	African buffalo	WRLFMD	South Africa (KNP)	I

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label	accession	host(s)	lab	country	taxonomic information
KNP/1/86	n/a	African buffalo	WRLFMD	South Africa (KNP)	I
SA/57/59	AY593850	n/a	PIADC	South Africa (SA)	I
ZAM/P2/96 NAN-11*	n/a	African buffalo	WRLFMD	Zambia	IV
ZAM/P2/96 MUL-4*	KY091307	African buffalo	WRLFMD	Zambia	IV
ZAM/P2/96 MUL-4*	DQ009741	African buffalo	OVI	Zambia	IV
UGA/2/97*	DQ009742	African buffalo	OVI	Uganda	V
UGA/92/70	KF219685	African buffalo	WRLFMD	Uganda	V

*, not a WRLFMD Reference Number

n/a, not available