

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

Genotyping Report

FMDV serotype: SAT2
Country: Zimbabwe
Year: 2015
Batch: WRLFMD/2016/00023
No. of sequences: 2
Report date: 2nd August 2016
Report generated by: Nick Knowles
Report checked by: Kasia Bankowska

Analysis Parameters

VP1 subsequence extractor: vp1_SAT2
Query sequence set: WRLFMD/2016/00023-Zimbabwe-SAT2 (2 sequences)
Sequence database set: !allseqs_SAT2 (816 sequences)
Prototype sequence set: !prototypes_SAT2 (25 sequences)
Number of related sequences reported: 10
Minimal VP1 subsequence match length: 600
VIBASys version: reflabs-1.0.3



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

email: reporting@pirbright.ac.uk

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Virus sample name:	ZIM/23/2015
Sender reference:	ZIM 01/15
Location of origin:	Umguza, Matebeleland North province
Country of origin:	Zimbabwe
Date of collection:	15/04/2015
Host species:	bovine
Serotype:	SAT2
Topotype:	II
Lineage:	
Sublineage:	
Sequence length:	642
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	29/06/2016
Primers:	SAT2-1C445F/SAT-2B208R; SAT2-P1-1223F/SAT-2B208R
Received for sequencing:	25/07/2016
Created:	26/07/2016
Last updated:	26/07/2016
VIBASys IDs: sample 29672, genome 29673, sequence viba_29674, sequencing info 29675	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_25790	ZIM01/15a	cattle	100.0	0	SAT2	II		
viba_25742	ZIM/1/2015	bovine	100.0	0	SAT2	II		
viba_29678	ZIM/25/2015	bovine	99.5	0	SAT2	II		
viba_25762	ZIM/11/2015	bovine	99.4	0	SAT2	II		
viba_23692	ZIM/1/2014	bovine	98.9	0	SAT2	II		
viba_25758	ZIM/9/2015	bovine	98.4	0	SAT2	II		
viba_25795	ZIM01/15b	cattle	98.4	8	SAT2	II		
viba_25754	ZIM/6/2015	bovine	98.3	0	SAT2	II		
viba_25746	ZIM/4/2015	bovine	98.3	0	SAT2	II		
viba_25778	ZIM/20/2015	bovine	98.0	0	SAT2	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_567	ZIM/7/83	bovine	90.0	0	SAT2	II		
viba_546	ZIM/5/81	bovine	81.3	0	SAT2	II		
viba_752	SA/106/59		77.8	0	SAT2	I		
viba_380	RHO/1/48		76.5	0	SAT2	III		
viba_451	BOT/P3/98 VUM-29	african buffalo	76.2	1	SAT2	III		
viba_183	ZIM/14/2002	bovine	76.1	0	SAT2	I		
viba_111	MAL/1/2003	bovine	75.9	0	SAT2	I		
viba_273	ETH/1/90	bovine	75.8	0	SAT2	IV		
viba_728	GHA/2/90	bovine	75.4	0	SAT2	V		
viba_248	KEN/1/84	bovine	75.3	0	SAT2	IV		

Virus sample name:	ZIM/25/2015
Sender reference:	ZIM 13/15
Location of origin:	n/a
Country of origin:	Zimbabwe
Date of collection:	15/04/2015
Host species:	bovine
Serotype:	SAT2
Topotype:	II
Lineage:	
Sublineage:	
Sequence length:	642
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	30/06/2016
Primers:	SAT2-1C445F/SAT-2B208R; SAT2-P1-1223F/SAT-2B208R
Received for sequencing:	25/07/2016
Created:	26/07/2016
Last updated:	26/07/2016
VIBASys IDs: sample 29676, genome 29677, sequence viba_29678, sequencing info 29679	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_25762	ZIM/11/2015	bovine	99.8	0	SAT2	II		
viba_29674	ZIM/23/2015	bovine	99.5	0	SAT2	II		
viba_25790	ZIM01/15a	cattle	99.5	0	SAT2	II		
viba_25742	ZIM/1/2015	bovine	99.5	0	SAT2	II		
viba_25795	ZIM01/15b	cattle	98.8	8	SAT2	II		
viba_23692	ZIM/1/2014	bovine	98.4	0	SAT2	II		
viba_25758	ZIM/9/2015	bovine	98.3	0	SAT2	II		
viba_25754	ZIM/6/2015	bovine	98.1	0	SAT2	II		
viba_25746	ZIM/4/2015	bovine	98.1	0	SAT2	II		
viba_25778	ZIM/20/2015	bovine	97.8	0	SAT2	II		

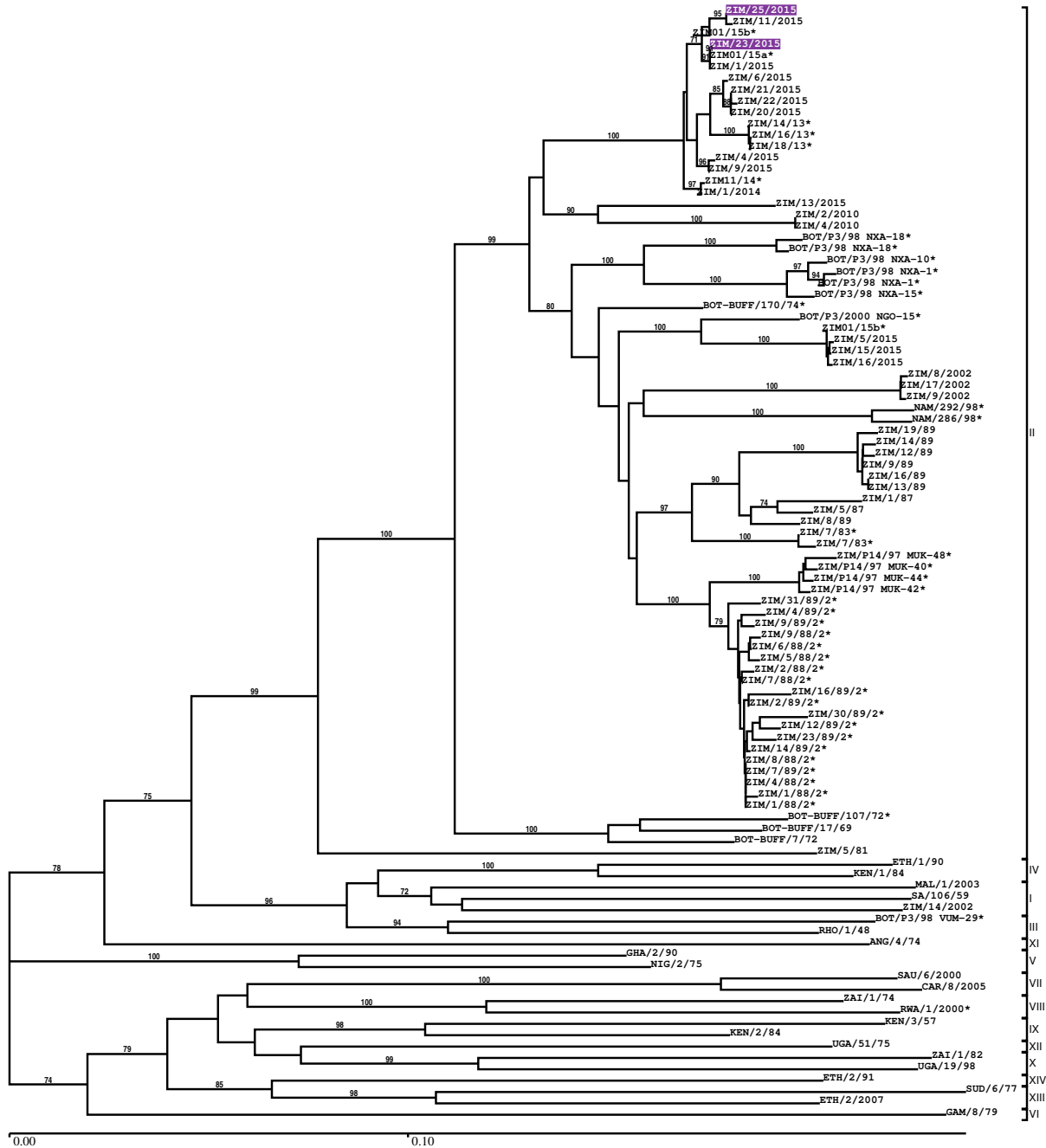
Most Closely Related Prototype Sequences

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

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_567	ZIM/7/83	bovine	89.9	0	SAT2	II		
viba_546	ZIM/5/81	bovine	80.8	0	SAT2	II		
viba_752	SA/106/59		77.4	0	SAT2	I		
viba_380	RHO/1/48		76.5	0	SAT2	III		
viba_451	BOT/P3/98 VUM-29	african buffalo	76.4	1	SAT2	III		
viba_183	ZIM/14/2002	bovine	75.8	0	SAT2	I		
viba_273	ETH/1/90	bovine	75.5	0	SAT2	IV		
viba_111	MAL/1/2003	bovine	75.5	0	SAT2	I		
viba_248	KEN/1/84	bovine	75.3	0	SAT2	IV		
viba_728	GHA/2/90	bovine	75.1	0	SAT2	V		

Report on FMDV SAT2 in Zimbabwe in 2015

Batch: WRLFMD/2016/00023



Sequence alignment method: muscle (default parameters)
 Phylogeny reconstruction method: fdnadist, fneighbor
 Number of bootstrap samples: 1000
 Displaying bootstrap values above: 70.0%
 Number of sequences in tree capped at: 100
 *, not a WRLFMD Reference Number

Sequences in the Phylogenetic Tree

All sequences in the tree are in taxonomic group FMDV/SAT2

label	accession	host(s)	lab	country	taxonomic information
ZIM/25/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/11/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM01/15b*	n/a	cattle	BVI	Zimbabwe	II
ZIM/23/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM01/15a*	n/a	cattle	BVI	Zimbabwe	II
ZIM/1/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/6/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/21/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/22/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/20/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/14/13*	n/a	bovine	BVI	Zimbabwe	II
ZIM/16/13*	n/a	bovine	BVI	Zimbabwe	II
ZIM/18/13*	n/a	bovine	BVI	Zimbabwe	II
ZIM/4/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/9/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM11/14*	n/a	bovine	BVI	Zimbabwe	II
ZIM/1/2014	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/13/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/2/2010	n/a	cattle	WRLFMD	Zimbabwe	II
ZIM/4/2010	n/a	cattle	WRLFMD	Zimbabwe	II
BOT/P3/98 NXA-18*	AF367123	african buffalo	OVI	Botswana	II
BOT/P3/98 NXA-18*	n/a	african buffalo	WRLFMD	Botswana	II
BOT/P3/98 NXA-10*	n/a	african buffalo	WRLFMD	Botswana	II
BOT/P3/98 NXA-1*	AF367122	african buffalo	OVI	Botswana	II
BOT/P3/98 NXA-1*	n/a	african buffalo	WRLFMD	Botswana	II
BOT/P3/98 NXA-15*	n/a	african buffalo	n/a	Botswana	II
BOT-BUFF/170/74*	n/a	african buffalo	WRLFMD	Botswana	II
BOT/P3/2000 NGO-15*	n/a	african buffalo	WRLFMD	Botswana	II
ZIM01/15b*	n/a	cattle	BVI	Zimbabwe	II
ZIM/5/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/15/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/16/2015	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/8/2002	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/17/2002	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/9/2002	n/a	bovine	WRLFMD	Zimbabwe	II
NAM/292/98*	AF367128	n/a	OVI	Namibia	II
NAM/286/98*	AF367127	n/a	OVI	Namibia	II
ZIM/19/89	n/a	cattle	WRLFMD	Zimbabwe	II
ZIM/14/89	n/a	cattle	WRLFMD	Zimbabwe	II
ZIM/12/89	n/a	cattle	WRLFMD	Zimbabwe	II
ZIM/9/89	KF112976	bovine	WRLFMD	Zimbabwe	II
ZIM/16/89	n/a	bovine	WRLFMD	Zimbabwe	II
ZIM/13/89	n/a	cattle	WRLFMD	Zimbabwe	II
ZIM/1/87	KF112973	bovine	WRLFMD	Zimbabwe	II
ZIM/5/87	KF112974	bovine	WRLFMD	Zimbabwe	II
ZIM/8/89	KF112975	bovine	WRLFMD	Zimbabwe	II
ZIM/7/83*	AF136607	bovine	OVI	Zimbabwe	II
ZIM/7/83*	DQ009726	bovine	OVI	Zimbabwe	II
ZIM/P14/97 MUK-48*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/P14/97 MUK-40*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/P14/97 MUK-44*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/P14/97 MUK-42*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/31/89/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/4/89/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/9/89/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/9/88/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/6/88/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/5/88/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/2/88/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/7/88/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II

continued on next page

label	accession	host(s)	lab	country	taxonomic information
ZIM/16/89/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/2/89/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/30/89/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/12/89/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/23/89/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/14/89/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/8/88/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/7/89/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/4/88/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
ZIM/1/88/2*	AF367108	african buffalo	OVI	Zimbabwe	II
ZIM/1/88/2*	n/a	african buffalo	WRLFMD	Zimbabwe	II
BOT-BUFF/107/72*	n/a	african buffalo	WRLFMD	Botswana	II
BOT-BUFF/17/69	n/a	african buffalo	WRLFMD	Botswana	II
BOT-BUFF/7/72	n/a	african buffalo	WRLFMD	Botswana	II
ZIM/5/81	EF134951	bovine	WRLFMD	Zimbabwe	II
ETH/1/90	AY343935	bovine	OVI	Ethiopia	IV
KEN/1/84	AY344505	bovine	OVI	Kenya	IV
MAL/1/2003	n/a	bovine	WRLFMD	Malawi	I
SA/106/59	AY593848	n/a	PIADC	South Africa (SA)	I
ZIM/14/2002	KF219689	bovine	WRLFMD	Zimbabwe	I
BOT/P3/98 VUM-29*	AF367124	african buffalo	OVI	Botswana	III
RHO/1/48	AY593847	n/a	PIADC	Rhodesia	III
ANG/4/74	AF479417	n/a	OVI	Angola	XI
GHA/2/90	AF479415	bovine	OVI	Ghana	V
NIG/2/75	AF367139	bovine	OVI	Nigeria	V
SAU/6/2000	AF367135	bovine	OVI	Saudi Arabia	VII
CAR/8/2005	JX570616	cattle	WRLFMD	Cameroon	VII
ZAI/1/74	DQ009737	n/a	OVI	Zaire	VIII
RWA/1/2000*	AF367134	n/a	OVI	Rwanda	VIII
KEN/3/57	AJ251473	n/a	WRLFMD	Kenya	IX
KEN/2/84	AY343941	bovine	OVI	Kenya	IX
UGA/51/75	AY343963	bovine	OVI	Uganda	XII
ZAI/1/82	AF367100	bovine	OVI	Zaire	X
UGA/19/98	AY343969	n/a	OVI	Uganda	X
ETH/2/91	AY343938	bovine	OVI	Ethiopia	XIV
SUD/6/77	AY343939	n/a	OVI	Sudan	XIII
ETH/2/2007	FJ798161	cattle	WRLFMD	Ethiopia	XIII
GAM/8/79	AF479410	bovine	OVI	Gambia	VI

*, not a WRLFMD Reference Number

n/a, not available