

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

Genotyping Report

FMDV serotype: A
Country: Saudi Arabia
Year: 2016
Batch: WRLFMD/2016/00035
No. of sequences: 2
Report date: 9th November 2016
Report generated by: Kasia Bankowska
Report checked by: Nick Knowles



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

email: reporting@pirbright.ac.uk

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Virus sample name:	SAU/19/2016
Sender reference:	Fanar 15771
Location of origin:	Almarai Company, Haradh Rd, Al Kharj, Central Region
Country of origin:	Saudi Arabia
Date of collection:	14/10/2016
Host species:	cattle
Serotype:	A
Topotype:	ASIA
Lineage:	G-VII
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	26/10/2016
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R
Received for sequencing:	07/11/2016
Created:	08/11/2016
Last updated:	08/11/2016
VIBASys IDs: sample 30454, genome 30455, sequence viba_30456, sequencing info 30457	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_30460	SAU/20/2016	cattle	100.0	0	A	ASIA	G-VII	
viba_25979	SAU/21/2015	bovine	98.4	0	A	ASIA	G-VII	
viba_25863	SAU/7/2015	cattle	98.4	0	A	ASIA	G-VII	
viba_25247	SAU/5/2015	cattle	98.3	0	A	ASIA	G-VII	
viba_25967	SAU/15/2015	ovine	98.3	0	A	ASIA	G-VII	
viba_25963	SAU/14/2015	ovine	98.3	0	A	ASIA	G-VII	
viba_25975	SAU/17/2015	ovine	98.3	0	A	ASIA	G-VII	
viba_25971	SAU/16/2015	ovine	98.3	0	A	ASIA	G-VII	
viba_27517	SAU/15/2016	cattle	97.6	0	A	ASIA	G-VII	
viba_25161	PD78/IND/2015		97.5	0	A	ASIA	G-VII	

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_864	IND/40/2000	cattle	89.5	0	A	ASIA	G-VII	
viba_843	SAU/16/95		89.2	0	A	ASIA	G-VII	
viba_677	IRQ/24/64	bovine	84.1	0	A	ASIA	A22	
viba_589	Bangkok/TAI/60		83.3	0	A	ASIA	A15	
viba_336	IRN/1/96	bovine	83.0	1	A	ASIA	Iran-96	
viba_308	IRN/9/2011	bovine	82.3	0	A	ASIA	Iran-05	QAZ-11
viba_682	IRN/2/87	bovine	82.0	0	A	ASIA	Iran-87	
viba_331	AFG/10/2010		81.8	0	A	ASIA	Iran-05	HER-10
viba_403	TUR/1/2008	cattle	81.8	0	A	ASIA	Iran-05	ARD-07
viba_699	UKG/119/32		81.8	0	A	EURO-SA	A12	

Virus sample name:	SAU/20/2016
Sender reference:	Fanar 15784
Location of origin:	Almarai Company, Haradh Rd, Al Kharj, Central Region
Country of origin:	Saudi Arabia
Date of collection:	14/10/2016
Host species:	cattle
Serotype:	A
Topotype:	ASIA
Lineage:	G-VII
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	27/10/2016
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R
Received for sequencing:	07/11/2016
Created:	08/11/2016
Last updated:	08/11/2016

VIBASys IDs: sample 30458, genome 30459, sequence viba_30460, sequencing info 30461

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_30456	SAU/19/2016	cattle	100.0	0	A	ASIA	G-VII	
viba_25979	SAU/21/2015	bovine	98.4	0	A	ASIA	G-VII	
viba_25863	SAU/7/2015	cattle	98.4	0	A	ASIA	G-VII	
viba_25247	SAU/5/2015	cattle	98.3	0	A	ASIA	G-VII	
viba_25967	SAU/15/2015	ovine	98.3	0	A	ASIA	G-VII	
viba_25963	SAU/14/2015	ovine	98.3	0	A	ASIA	G-VII	
viba_25975	SAU/17/2015	ovine	98.3	0	A	ASIA	G-VII	
viba_25971	SAU/16/2015	ovine	98.3	0	A	ASIA	G-VII	
viba_27517	SAU/15/2016	cattle	97.6	0	A	ASIA	G-VII	
viba_25161	PD78/IND/2015		97.5	0	A	ASIA	G-VII	

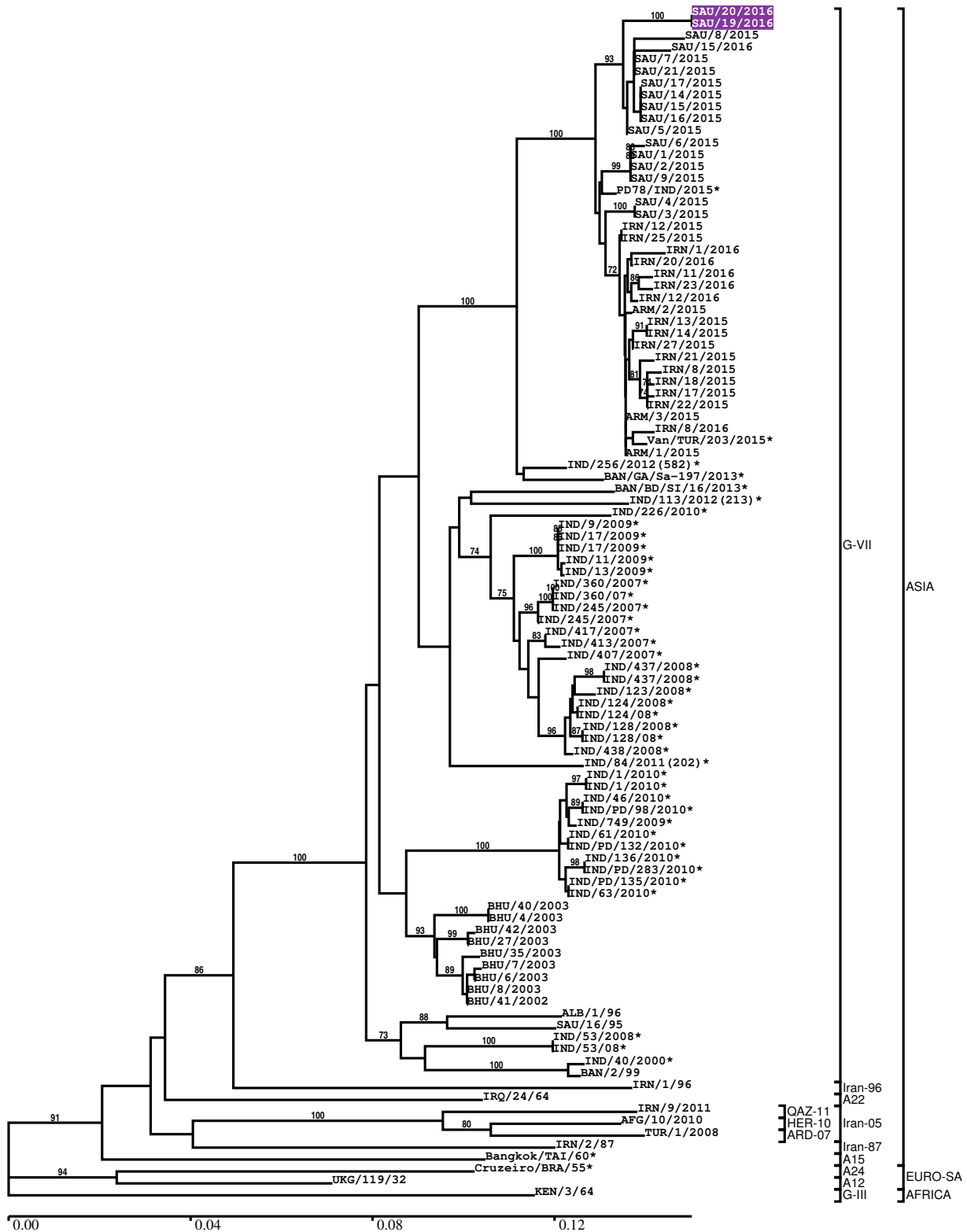
Most Closely Related Prototype Sequences

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

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_864	IND/40/2000	cattle	89.5	0	A	ASIA	G-VII	
viba_843	SAU/16/95		89.2	0	A	ASIA	G-VII	
viba_677	IRQ/24/64	bovine	84.1	0	A	ASIA	A22	
viba_589	Bangkok/TAI/60		83.3	0	A	ASIA	A15	
viba_336	IRN/1/96	bovine	83.0	1	A	ASIA	Iran-96	
viba_308	IRN/9/2011	bovine	82.3	0	A	ASIA	Iran-05	QAZ-11
viba_682	IRN/2/87	bovine	82.0	0	A	ASIA	Iran-87	
viba_331	AFG/10/2010		81.8	0	A	ASIA	Iran-05	HER-10
viba_403	TUR/1/2008	cattle	81.8	0	A	ASIA	Iran-05	ARD-07
viba_699	UKG/119/32		81.8	0	A	EURO-SA	A12	

Report on FMDV A in Saudi Arabia in 2016

Batch: WRLFMD/2016/00035



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor:	vp1_A
Query sequence set:	WRLFMD/2016/00035-Saudi Arabia-A (2 sequences)
Sequence database set:	allseqs_A (1546 sequences)
Prototype sequence set:	!prototypes_A (34 sequences)
Number of related sequences reported:	10
Minimal VP1 subsequence match length	600
Sequence alignment method:	muscle (default parameters)
Sequence alignment length:	633
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-1.1.0

Sequences in the Phylogenetic Tree

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

label	accession	host(s)	lab	country	taxonomic information
SAU/20/2016	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/19/2016	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/8/2015	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/15/2016	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/7/2015	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/21/2015	n/a	bovine	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/17/2015	n/a	ovine	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/14/2015	n/a	ovine	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/15/2015	n/a	ovine	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/16/2015	n/a	ovine	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/5/2015	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/6/2015	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/1/2015	KU127247	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/2/2015	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/9/2015	n/a	bovine	WRLFMD	Saudi Arabia	ASIA/G-VII
PD78/IND/2015*	n/a	n/a	PD-FMD	India	ASIA/G-VII
SAU/4/2015	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/3/2015	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
IRN/12/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/25/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/1/2016	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/20/2016	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/11/2016	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/23/2016	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/12/2016	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
ARM/2/2015	n/a	n/a	ARRIAH	Armenia	ASIA/G-VII
IRN/13/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/14/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/27/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/21/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/8/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/18/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/17/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/22/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
ARM/3/2015	n/a	n/a	ARRIAH	Armenia	ASIA/G-VII
IRN/8/2016	n/a	cattle	WRLFMD	Iran	ASIA/G-VII

continued on next page

label	accession	host(s)	lab	country	taxonomic information
Van/TUR/203/2015*	n/a	n/a	FMDI	Turkey	ASIA/G-VII
ARM/1/2015	n/a	n/a	ARRIAH	Armenia	ASIA/G-VII
IND/256/2012(582)*	n/a	n/a	PD-FMD	India	ASIA/G-VII
BAN/GA/Sa-197/2013*	KJ754939	cattle	University of Dhaka	Bangladesh	ASIA/G-VII
BAN/BD/SI/16/2013*	KR869773	cattle	University of Dhaka	Bangladesh	ASIA/G-VII
IND/113/2012(213)*	n/a	n/a	PD-FMD	India	ASIA/G-VII
IND/226/2010*	HQ666873	cattle	PD-FMD	India	ASIA/G-VII
IND/9/2009*	HQ127716	cattle	PD-FMD	India	ASIA/G-VII
IND/17/2009*	HQ832592	cattle	PD-FMD	India	ASIA/G-VII
IND/17/2009*	HQ127719	cattle	PD-FMD	India	ASIA/G-VII
IND/11/2009*	HQ127717	cattle	PD-FMD	India	ASIA/G-VII
IND/13/2009*	HQ127718	cattle	PD-FMD	India	ASIA/G-VII
IND/360/2007*	HQ127705	cattle	PD-FMD	India	ASIA/G-VII
IND/360/07*	FJ617243	bovine	PD-FMD	India	ASIA/G-VII
IND/245/2007*	HQ832590	cattle	PD-FMD	India	ASIA/G-VII
IND/245/2007*	HQ127704	cattle	PD-FMD	India	ASIA/G-VII
IND/417/2007*	HQ127708	cattle	PD-FMD	India	ASIA/G-VII
IND/413/2007*	HQ127707	cattle	PD-FMD	India	ASIA/G-VII
IND/407/2007*	HQ127706	cattle	PD-FMD	India	ASIA/G-VII
IND/437/2008*	HQ832591	cattle	PD-FMD	India	ASIA/G-VII
IND/437/2008*	HQ127714	cattle	PD-FMD	India	ASIA/G-VII
IND/123/2008*	HQ127710	cattle	PD-FMD	India	ASIA/G-VII
IND/124/2008*	HQ127711	cattle	PD-FMD	India	ASIA/G-VII
IND/124/08*	FJ617244	bovine	PD-FMD	India	ASIA/G-VII
IND/128/2008*	HQ127712	cattle	PD-FMD	India	ASIA/G-VII
IND/128/08*	FJ617246	bovine	PD-FMD	India	ASIA/G-VII
IND/438/2008*	HQ127715	cattle	PD-FMD	India	ASIA/G-VII
IND/84/2011(202)*	n/a	n/a	PD-FMD	India	ASIA/G-VII
IND/1/2010*	HQ127726	cattle	PD-FMD	India	ASIA/G-VII
IND/1/2010*	HQ666886	cattle	PD-FMD	India	ASIA/G-VII
IND/46/2010*	HQ666879	cattle	PD-FMD	India	ASIA/G-VII
IND/PD/98/2010*	HQ127728	cattle	PD-FMD	India	ASIA/G-VII
IND/749/2009*	HQ127724	cattle	PD-FMD	India	ASIA/G-VII
IND/61/2010*	HQ666881	cattle	PD-FMD	India	ASIA/G-VII
IND/PD/132/2010*	HQ127729	cattle	PD-FMD	India	ASIA/G-VII
IND/136/2010*	HQ666878	cattle	PD-FMD	India	ASIA/G-VII
IND/PD/283/2010*	HQ127731	cattle	PD-FMD	India	ASIA/G-VII
IND/PD/135/2010*	HQ127730	cattle	PD-FMD	India	ASIA/G-VII
IND/63/2010*	HQ666887	cattle	PD-FMD	India	ASIA/G-VII
BHU/40/2003	n/a	n/a	WRLFMD	Bhutan	ASIA/G-VII
BHU/4/2003	n/a	n/a	WRLFMD	Bhutan	ASIA/G-VII
BHU/42/2003	n/a	n/a	WRLFMD	Bhutan	ASIA/G-VII
BHU/27/2003	FJ755013	cattle	WRLFMD	Bhutan	ASIA/G-VII
BHU/35/2003	n/a	n/a	WRLFMD	Bhutan	ASIA/G-VII
BHU/7/2003	FJ755012	cattle	WRLFMD	Bhutan	ASIA/G-VII
BHU/6/2003	n/a	n/a	WRLFMD	Bhutan	ASIA/G-VII
BHU/8/2003	n/a	n/a	WRLFMD	Bhutan	ASIA/G-VII
BHU/41/2002	EU414525	bovine	WRLFMD	Bhutan	ASIA/G-VII
ALB/1/96	EU553850	n/a	WRLFMD	Albania	ASIA/G-VII
SAU/16/95	EU553874	n/a	WRLFMD	Saudi Arabia	ASIA/G-VII
IND/53/2008*	HQ127709	cattle	PD-FMD	India	ASIA/G-VII
IND/53/08*	FJ617241	bovine	PD-FMD	India	ASIA/G-VII
IND/40/2000*	AF390646	cattle	PD-FMD	India	ASIA/G-VII
BAN/2/99	n/a	n/a	WRLFMD	Bangladesh	ASIA/G-VII
IRN/1/96	EF208771	bovine	WRLFMD	Iran	ASIA/Iran-96
IRQ/24/64	AY593763	bovine	PIADC	Iraq	ASIA/A22
IRN/9/2011	n/a	bovine	WRLFMD	Iran	ASIA/Iran-05/QAZ-11
AFG/10/2010	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/HER-10
TUR/1/2008	FJ755133	cattle	WRLFMD	Turkey	ASIA/Iran-05/ARD-07
IRN/2/87	EF208770	bovine	WRLFMD	Iran	ASIA/Iran-87
Bangkok/TAI/60*	AY593755	n/a	PIADC	Thailand	ASIA/A15
Cruzeiro/BRA/55*	AY593768	bovine	PIADC	Brazil	EURO-SA/A24
UKG/119/32	M10975	n/a	PIADC	United Kingdom	EURO-SA/A12
KEN/3/64	AY593761	n/a	PIADC	Kenya	AFRICA/G-III

*, not a WRLFMD Reference Number
n/a, not available