

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

## Genotyping Report

FMDV serotype: O  
Country: Jordan  
Year: 2021  
Batch: WRLMEG/2021/00015  
No. of sequences: 2  
Report date: 1st December 2021  
Report generated by: Nick Knowles  
Report checked by: Jemma Wadsworth

This report is prepared on behalf of the Jordan University of Science and Technology (JUST) and covers VP1 sequences submitted to the WRLFMD on 30th November 2021. Note that the sequences are not full length (614 of 633 nt) and were only determined on the forward DNA strand.



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

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Virus sample name:	JOR/15/2021
Sender reference:	15
Location of origin:	n/a
Country of origin:	Jordan
Date of collection:	2021
Host species:	sheep
Serotype:	O
Topotype:	ME-SA
Lineage:	PanAsia-2
Sublineage:	ANT-10
Sequence length:	614
Ambiguities:	0
Material submitted for sequencing:	n/a
Harvest date of material:	n/a
Primers:	n/a
Received for sequencing:	n/a
Created:	01/12/2021
Last updated:	01/12/2021
VIBASys IDs: sample 49049, genome 49050, sequence viba_49051, sequencing info 49052	

### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_49055	JOR/16/2021	sheep	99.7	1	O	ME-SA	PanAsia-2	ANT-10
viba_42488	PAK/8/2019	cattle	93.2	0	O	ME-SA	PanAsia-2	ANT-10
viba_34937	PAK/7/2016	cattle	91.9	0	O	ME-SA	PanAsia-2	ANT-10
viba_39040	NIAB/PUN/PAK/205/2017	water buffalo	91.8	0	O	ME-SA	PanAsia-2	ANT-10
viba_39743	VRI/CAMB/Faislabad1/PUN/PAK	cattle	91.8	0	O	ME-SA	PanAsia-2	ANT-10
viba_33639	IRN/8/2017	cattle	91.8	0	O	ME-SA	PanAsia-2	ANT-10
viba_33635	IRN/5/2017	cattle	91.6	0	O	ME-SA	PanAsia-2	ANT-10
viba_33623	IRN/36/2016	sheep	91.6	0	O	ME-SA	PanAsia-2	ANT-10
viba_33631	IRN/3/2017	sheep	91.6	0	O	ME-SA	PanAsia-2	ANT-10
viba_39763	NIAB/PUN/PAK/218/2017		91.6	0	O	ME-SA	PanAsia-2	ANT-10

### Most Closely Related Prototype Sequences

see <http://www.wrlfmd.org/fmdv-genome/fmd-prototype-strains>

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_719	IRN/88/2009		89.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_766	IRN/31/2009	cattle	87.2	0	O	ME-SA	PanAsia-2	FAR-09
viba_650	IRN/8/2005	ovine	86.9	0	O	ME-SA	PanAsia-2	
viba_293	BHU/3/2009	cattle	86.8	0	O	ME-SA	Ind-2001	d
viba_491	TUR/257/2008		86.7	0	O	ME-SA	PanAsia-2	TER-08
viba_666	IRN/18/2010	cattle	86.6	0	O	ME-SA	PanAsia-2	BAL-09
viba_860	IRN/6/2015	cattle	86.3	0	O	ME-SA	PanAsia-2	QOM-15
viba_505	TUR/264/2009		86.1	0	O	ME-SA	PanAsia-2	SAN-09
viba_354	PAK/16/2010	cattle	86.1	0	O	ME-SA	PanAsia-2	PUN-10
viba_285	UKG/35/2001	porcine	86.1	0	O	ME-SA	PanAsia	

Virus sample name:	JOR/16/2021
Sender reference:	16
Location of origin:	n/a
Country of origin:	Jordan
Date of collection:	2021
Host species:	sheep
Serotype:	O
Topotype:	ME-SA
Lineage:	PanAsia-2
Sublineage:	ANT-10
Sequence length:	614
Ambiguities:	1
Material submitted for sequencing:	n/a
Harvest date of material:	n/a
Primers:	n/a
Received for sequencing:	n/a
Created:	01/12/2021
Last updated:	01/12/2021
VIBASys IDs: sample 49053, genome 49054, sequence viba_49055, sequencing info 49056	

### Most Closely Related Sequences

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viba_49051	JOR/15/2021	sheep	99.7	0	O	ME-SA	PanAsia-2	ANT-10
viba_42488	PAK/8/2019	cattle	92.9	0	O	ME-SA	PanAsia-2	ANT-10
viba_34937	PAK/7/2016	cattle	91.6	0	O	ME-SA	PanAsia-2	ANT-10
viba_39040	NIAB/PUN/PAK/205/2017	water buffalo	91.5	0	O	ME-SA	PanAsia-2	ANT-10
viba_39743	VRI/CAMB/Faislabad1/PUN/PAK	cattle	91.5	0	O	ME-SA	PanAsia-2	ANT-10
viba_33639	IRN/8/2017	cattle	91.5	0	O	ME-SA	PanAsia-2	ANT-10
viba_33635	IRN/5/2017	cattle	91.3	0	O	ME-SA	PanAsia-2	ANT-10
viba_33623	IRN/36/2016	sheep	91.3	0	O	ME-SA	PanAsia-2	ANT-10
viba_33631	IRN/3/2017	sheep	91.3	0	O	ME-SA	PanAsia-2	ANT-10
viba_39763	NIAB/PUN/PAK/218/2017		91.3	0	O	ME-SA	PanAsia-2	ANT-10

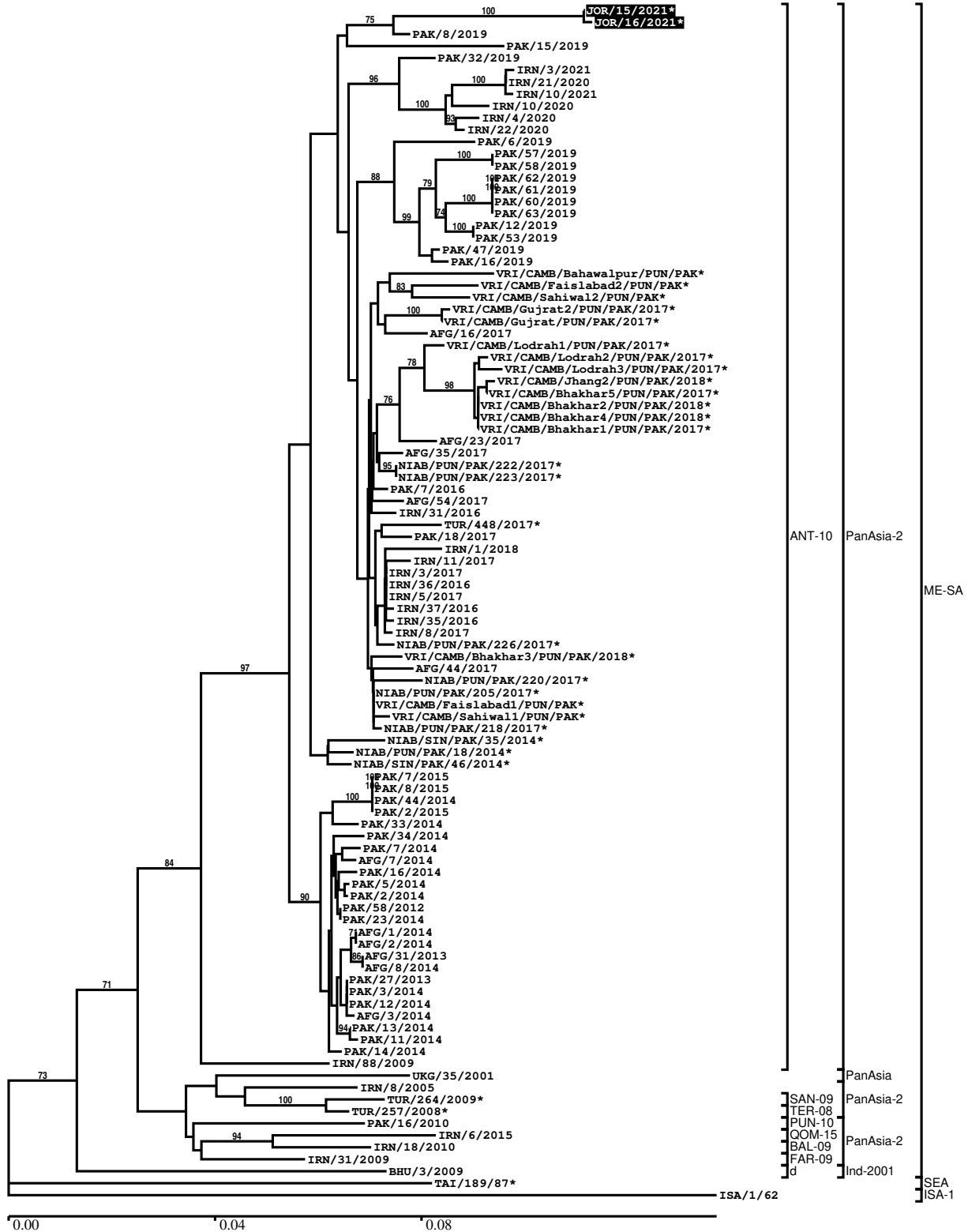
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see <http://www.wrlfmd.org/fmdv-genome/fmd-prototype-strains>

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viba_719	IRN/88/2009		89.1	0	O	ME-SA	PanAsia-2	ANT-10
viba_766	IRN/31/2009	cattle	87.1	0	O	ME-SA	PanAsia-2	FAR-09
viba_650	IRN/8/2005	ovine	86.7	0	O	ME-SA	PanAsia-2	
viba_293	BHU/3/2009	cattle	86.6	0	O	ME-SA	Ind-2001	d
viba_491	TUR/257/2008		86.6	0	O	ME-SA	PanAsia-2	TER-08
viba_666	IRN/18/2010	cattle	86.4	0	O	ME-SA	PanAsia-2	BAL-09
viba_860	IRN/6/2015	cattle	86.1	0	O	ME-SA	PanAsia-2	QOM-15
viba_354	PAK/16/2010	cattle	86.0	0	O	ME-SA	PanAsia-2	PUN-10
viba_285	UKG/35/2001	porcine	86.0	0	O	ME-SA	PanAsia	
viba_505	TUR/264/2009		85.9	0	O	ME-SA	PanAsia-2	SAN-09

Report on FMDV O in Jordan in 2021

Batch: WRLMEG/2021/00015



\*, not a WRLFMD Reference Number

## Analysis Parameters

VP1 subsequence extractor:	vp1_O
Query sequence set:	WRLMEG/2021/00015-Jordan-O (2 sequences)
Sequence database set:	allseqs_O (5363 sequences)
Prototype sequence set:	!prototypes_O (49 sequences)
Number of related sequences reported:	10
Minimal VP1 subsequence match length	600
Sequence alignment method:	muscle (default parameters)
Sequence alignment length:	636
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/O

label	accession	host(s)	lab	country	taxonomic information
JOR/15/2021*	n/a	sheep	JUST	Jordan	ME-SA/PanAsia-2/ANT-10
JOR/16/2021*	n/a	sheep	JUST	Jordan	ME-SA/PanAsia-2/ANT-10
PAK/8/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/15/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/32/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
IRN/3/2021	n/a	bovine	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/21/2020	n/a	bovine	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/10/2021	n/a	sheep	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/10/2020	n/a	bovine	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/4/2020	n/a	bovine	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/22/2020	n/a	bovine	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
PAK/6/2019	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/57/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/58/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/62/2019	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/61/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/60/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/63/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/12/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10

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label	accession	host(s)	lab	country	taxonomic information
PAK/53/2019	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/47/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/16/2019	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Bahawalpur/PUN/PAK*	MK292141	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Faisalabad2/PUN/PAK*	MK292144	water buffalo	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Sahiwal2/PUN/PAK*	MK292146	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Gujrat2/PUN/PAK/2017*	MK342183	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Gujrat/PUN/PAK/2017*	MK342182	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/16/2017	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Lodrah1/PUN/PAK/2017*	MK342179	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Lodrah2/PUN/PAK/2017*	MK342180	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Lodrah3/PUN/PAK/2017*	MK342181	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Jhang2/PUN/PAK/2018*	MK342190	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Bhakhar5/PUN/PAK/2017*	MK342188	water buffalo	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Bhakhar2/PUN/PAK/2018*	MK342185	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Bhakhar4/PUN/PAK/2018*	MK342187	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Bhakhar1/PUN/PAK/2017*	MK342184	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/23/2017	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/35/2017	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
NIAB/PUN/PAK/222/2017*	MH085206	n/a	NIAB	Pakistan	ME-SA/PanAsia-2/ANT-10
NIAB/PUN/PAK/223/2017*	MH085207	n/a	NIAB	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/7/2016	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/54/2017	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
IRN/31/2016	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
TUR/448/2017*	n/a	sheep	FMDI	Turkey	ME-SA/PanAsia-2/ANT-10
PAK/18/2017	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
IRN/1/2018	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/11/2017	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/3/2017	n/a	sheep	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/36/2016	n/a	sheep	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/5/2017	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/37/2016	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/35/2016	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/8/2017	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
NIAB/PUN/PAK/226/2017*	MH085208	n/a	NIAB	Pakistan	ME-SA/PanAsia-2/ANT-10

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label	accession	host(s)	lab	country	taxonomic information
VRI/CAMB/Bhakhar3/PUN/PAK/2018*	MK342186	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/44/2017	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
NIAB/PUN/PAK/220/2017*	MH085205	n/a	NIAB	Pakistan	ME-SA/PanAsia-2/ANT-10
NIAB/PUN/PAK/205/2017*	MF140436	water buffalo	NIAB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Faisalabad1/PUN/PAK*	MK292142	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
VRI/CAMB/Sahiwal1/PUN/PAK*	MK292143	cattle	VRI-CAMB	Pakistan	ME-SA/PanAsia-2/ANT-10
NIAB/PUN/PAK/218/2017*	MH085204	n/a	NIAB	Pakistan	ME-SA/PanAsia-2/ANT-10
NIAB/SIN/PAK/35/2014*	MF374990	cattle	NIAB	Pakistan	ME-SA/PanAsia-2/ANT-10
NIAB/PUN/PAK/18/2014*	MF374991	cattle	NIAB	Pakistan	ME-SA/PanAsia-2/ANT-10
NIAB/SIN/PAK/46/2014*	MF374989	cattle	NIAB	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/7/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/8/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/44/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/2/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/33/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/34/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/7/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/7/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/16/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/5/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/2/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/58/2012	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/23/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/1/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/2/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/31/2013	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/8/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/27/2013	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/3/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/12/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/3/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/13/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/11/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/14/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
IRN/88/2009	KY091282	n/a	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10

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label	accession	host(s)	lab	country	taxonomic information
UKG/35/2001	AJ539141	porcine	PIADC	United Kingdom	ME-SA/PanAsia
IRN/8/2005	KY091281	ovine	WRLFMD	Iran	ME-SA/PanAsia-2
TUR/264/2009*	n/a	n/a	FMDI-Ankara	Turkey	ME-SA/PanAsia-2/SAN-09
TUR/257/2008*	n/a	n/a	FMDI-Ankara	Turkey	ME-SA/PanAsia-2/TER-08
PAK/16/2010	KY091285	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/PUN-10
IRN/6/2015	MN276044	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/QOM-15
IRN/18/2010	KY091283	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/BAL-09
IRN/31/2009	KY091284	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/FAR-09
BHU/3/2009	KM921814	cattle	WRLFMD	Bhutan	ME-SA/Ind-2001/d
TAI/189/87*	KY091288	bovine	TRRL	Thailand	SEA
ISA/1/62	AJ303500	n/a	WRLFMD	Indonesia	ISA-1

\*, not a WRLFMD Reference Number

n/a, not available