

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

## Genotyping Report

FMDV serotype: O  
Country: Myanmar  
Year: 2017  
Batch: WRLFMD/2017/00012  
No. of sequences: 3  
Report date: 9th June 2017  
Report generated by: Nick Knowles  
Report checked by: Kasia Bankowska



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Virus sample name:	MYA/1/2017
Sender reference:	MYA 9/17R3
Location of origin:	Sarlingyi, Sagaing
Country of origin:	Myanmar
Date of collection:	27/01/2017
Host species:	cattle
Serotype:	O
Topotype:	ME-SA
Lineage:	Ind-2001
Sublineage:	d
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	01/06/2017
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	07/06/2017
Created:	08/06/2017
Last updated:	08/06/2017
VIBASys IDs: sample 33783, genome 33784, sequence viba_33785, sequencing info 33786	

### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_32441	MYA/9/2017	cattle	99.8	0	O	ME-SA	Ind-2001	d
viba_31595	Zabaikalskiy/3/RUS/2016	cattle	99.7	0	O	ME-SA	Ind-2001	d
viba_31135	BAN/NL/Lo-245/2015	cattle	99.5	0	O	ME-SA	Ind-2001	d
viba_32437	MYA/8/2017	water buffalo	99.5	0	O	ME-SA	Ind-2001	d
viba_31082	BAN/GKa-236(pig)/2015	porcine	99.5	0	O	ME-SA	Ind-2001	d
viba_30855	Zabaikalskiy/1/RUS/2016	cattle	99.5	0	O	ME-SA	Ind-2001	d
viba_31573	170206/SKR/2017	cattle	99.5	0	O	ME-SA	Ind-2001	d
viba_31541	BHU/2/2016	cattle	99.5	0	O	ME-SA	Ind-2001	d
viba_30859	Zabaikalskiy/2/RUS/2016	cattle	99.5	0	O	ME-SA	Ind-2001	d
viba_31492	VIT/20/2016	cattle	99.4	0	O	ME-SA	Ind-2001	d

### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_293	BHU/3/2009	cattle	94.2	0	O	ME-SA	Ind-2001	d
viba_541	OMN/7/2001	bovine	92.6	0	O	ME-SA	Ind-2001	b
viba_705	KUW/3/97	bovine	91.6	0	O	ME-SA	Ind-2001	a
viba_397	UAE/4/2008	gazelle	90.1	0	O	ME-SA	Ind-2001	c
viba_285	UKG/35/2001	porcine	88.8	0	O	ME-SA	PanAsia	
viba_766	IRN/31/2009	cattle	88.2	0	O	ME-SA	PanAsia-2	FAR-09
viba_359	Manisa/TUR/69		88.0	0	O	ME-SA		
viba_650	IRN/8/2005	ovine	88.0	0	O	ME-SA	PanAsia-2	
viba_666	IRN/18/2010	cattle	87.8	0	O	ME-SA	PanAsia-2	BAL-09
viba_719	IRN/88/2009		87.7	0	O	ME-SA	PanAsia-2	ANT-10

Virus sample name:	MYA/2/2017
Sender reference:	MYA 6/17R3
Location of origin:	Mingaladon, Yangon
Country of origin:	Myanmar
Date of collection:	27/01/2017
Host species:	cattle
Serotype:	O
Topotype:	ME-SA
Lineage:	Ind-2001
Sublineage:	d
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	01/06/2017
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	07/06/2017
Created:	08/06/2017
Last updated:	08/06/2017

VIBASys IDs: sample 33787, genome 33788, sequence viba\_33789, sequencing info 33790

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_32433	MYA/6/2017	cattle	99.5	0	O	ME-SA	Ind-2001	d
viba_31595	Zabaikalskiy/3/RUS/2016	cattle	99.4	0	O	ME-SA	Ind-2001	d
viba_31082	BAN/GKa-236(pig)/2015	porcine	99.2	0	O	ME-SA	Ind-2001	d
viba_30855	Zabaikalskiy/1/RUS/2016	cattle	99.2	0	O	ME-SA	Ind-2001	d
viba_31573	170206/SKR/2017	cattle	99.2	0	O	ME-SA	Ind-2001	d
viba_30859	Zabaikalskiy/2/RUS/2016	cattle	99.2	0	O	ME-SA	Ind-2001	d
viba_33785	MYA/1/2017	cattle	99.1	0	O	ME-SA	Ind-2001	d
viba_31492	VIT/20/2016	cattle	99.1	0	O	ME-SA	Ind-2001	d
viba_32124	XJBC/CHA/2017		99.1	0	O	ME-SA	Ind-2001	d
viba_31599	Zabaikalskiy/4/RUS/2016	cattle	99.1	0	O	ME-SA	Ind-2001	d

#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_293	BHU/3/2009	cattle	93.5	0	O	ME-SA	Ind-2001	d
viba_541	OMN/7/2001	bovine	92.6	0	O	ME-SA	Ind-2001	b
viba_705	KUW/3/97	bovine	91.3	0	O	ME-SA	Ind-2001	a
viba_397	UAE/4/2008	gazelle	90.1	0	O	ME-SA	Ind-2001	c
viba_285	UKG/35/2001	porcine	88.7	0	O	ME-SA	PanAsia	
viba_359	Manisa/TUR/69		88.2	0	O	ME-SA		
viba_766	IRN/31/2009	cattle	88.0	0	O	ME-SA	PanAsia-2	FAR-09
viba_650	IRN/8/2005	ovine	87.9	0	O	ME-SA	PanAsia-2	
viba_719	IRN/88/2009		87.5	0	O	ME-SA	PanAsia-2	ANT-10
viba_666	IRN/18/2010	cattle	87.5	0	O	ME-SA	PanAsia-2	BAL-09

Virus sample name:	MYA/5/2017
Sender reference:	MYA 19/17R3
Location of origin:	Aung Pin, Wyntho, Sagaing
Country of origin:	Myanmar
Date of collection:	08/04/2017
Host species:	cattle
Serotype:	O
Topotype:	ME-SA
Lineage:	Ind-2001
Sublineage:	d
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	02/06/2017
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	07/06/2017
Created:	08/06/2017
Last updated:	08/06/2017
VIBASys IDs: sample 33791, genome 33792, sequence viba_33793, sequencing info 33794	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_33109	MYA/19/2017	cattle	100.0	0	O	ME-SA	Ind-2001	d
viba_29907	NEP/28/2015	cattle	98.7	0	O	ME-SA	Ind-2001	d
viba_29927	NEP/6/2016	cattle	98.7	0	O	ME-SA	Ind-2001	d
viba_26117	NEP/17/2015	cattle	98.7	0	O	ME-SA	Ind-2001	d
viba_26125	NEP/19/2015	cattle	98.7	0	O	ME-SA	Ind-2001	d
viba_31557	BHU/10/2016	cattle	98.6	0	O	ME-SA	Ind-2001	d
viba_29923	NEP/5/2016	cattle	98.6	0	O	ME-SA	Ind-2001	d
viba_29955	NEP/13/2016	cattle	98.4	0	O	ME-SA	Ind-2001	d
viba_29943	NEP/10/2016	goats	98.4	0	O	ME-SA	Ind-2001	d
viba_29947	NEP/11/2016	goats	98.4	0	O	ME-SA	Ind-2001	d

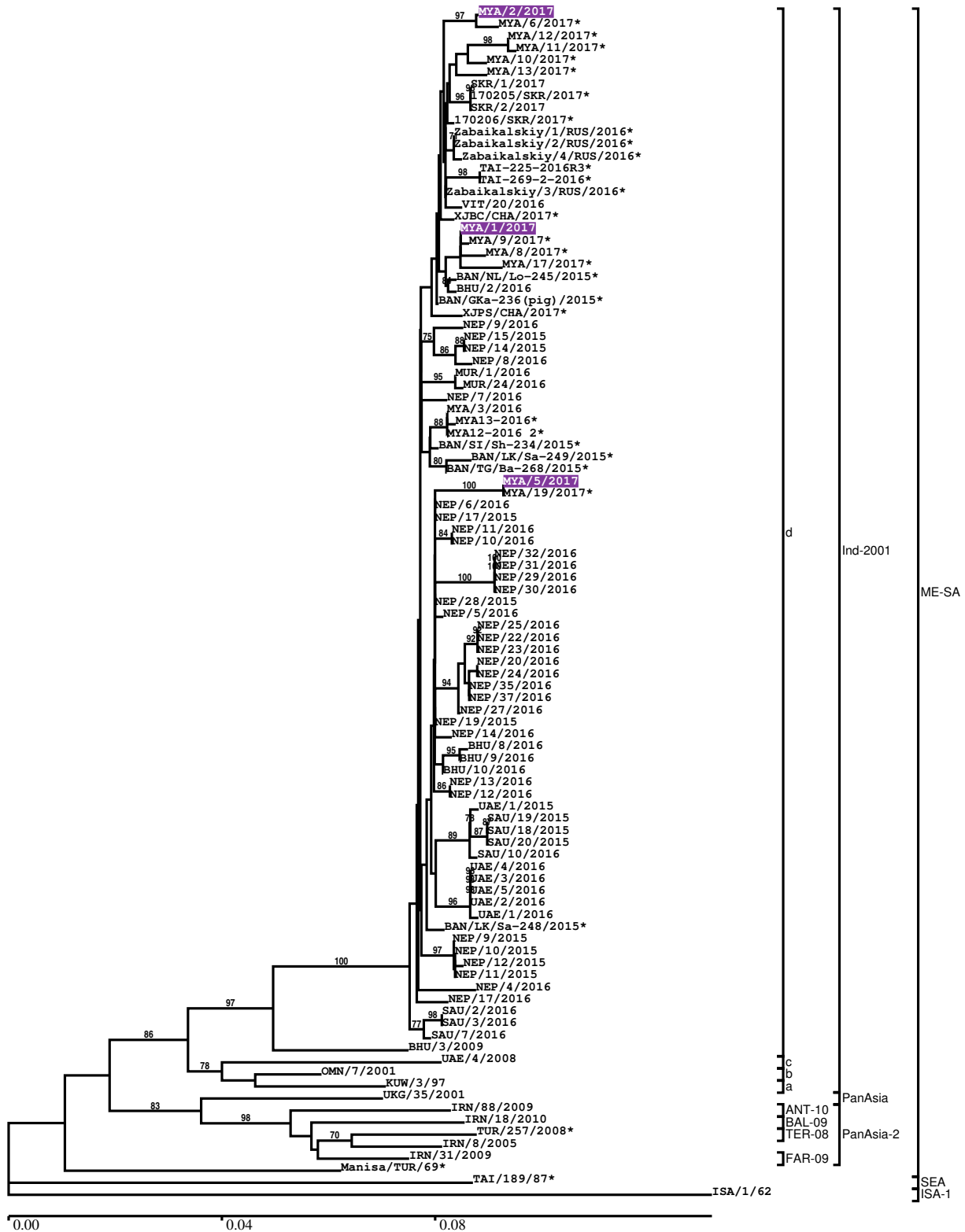
#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_293	BHU/3/2009	cattle	94.0	0	O	ME-SA	Ind-2001	d
viba_541	OMN/7/2001	bovine	92.6	0	O	ME-SA	Ind-2001	b
viba_705	KUW/3/97	bovine	91.3	0	O	ME-SA	Ind-2001	a
viba_397	UAE/4/2008	gazelle	90.1	0	O	ME-SA	Ind-2001	c
viba_285	UKG/35/2001	porcine	88.6	0	O	ME-SA	PanAsia	
viba_766	IRN/31/2009	cattle	88.3	0	O	ME-SA	PanAsia-2	FAR-09
viba_359	Manisa/TUR/69		88.0	0	O	ME-SA		
viba_719	IRN/88/2009		87.7	0	O	ME-SA	PanAsia-2	ANT-10
viba_650	IRN/8/2005	ovine	87.7	0	O	ME-SA	PanAsia-2	
viba_491	TUR/257/2008		87.2	0	O	ME-SA	PanAsia-2	TER-08

Report on FMDV O in Myanmar in 2017

Batch: WRLFMD/2017/00012



\*, not a WRLFMD Reference Number

## Analysis Parameters

VP1 subsequence extractor:	vp1_O
Query sequence set:	WRLFMD/2017/00012-Myanmar-O (3 sequences)
Sequence database set:	allseqs_O (3509 sequences)
Prototype sequence set:	!prototypes_O (47 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:	11
VIBASys version:	master-1.1.0-17-gf69a4d1

## Sequences in the Phylogenetic Tree

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

label	accession	host(s)	lab	country	taxonomic information
MYA/2/2017	n/a	cattle	WRLFMD	Myanmar	ME-SA/Ind-2001/d
MYA/6/2017*	n/a	cattle	TRRL	Myanmar	ME-SA/Ind-2001/d
MYA/12/2017*	n/a	cattle	TRRL	Myanmar	ME-SA/Ind-2001/d
MYA/11/2017*	n/a	cattle	TRRL	Myanmar	ME-SA/Ind-2001/d
MYA/10/2017*	n/a	cattle	TRRL	Myanmar	ME-SA/Ind-2001/d
MYA/13/2017*	n/a	cattle	TRRL	Myanmar	ME-SA/Ind-2001/d
SKR/1/2017	n/a	cattle	WRLFMD	South Korea, Republic of	ME-SA/Ind-2001/d
170205/SKR/2017*	n/a	cattle	QIA	South Korea, Republic of	ME-SA/Ind-2001/d
SKR/2/2017	n/a	cattle	WRLFMD	South Korea, Republic of	ME-SA/Ind-2001/d
170206/SKR/2017*	n/a	cattle	QIA	South Korea, Republic of	ME-SA/Ind-2001/d
Zabaikalskiy/1/RUS/2016*	n/a	cattle	ARRIAH	Russia	ME-SA/Ind-2001/d
Zabaikalskiy/2/RUS/2016*	n/a	cattle	ARRIAH	Russia	ME-SA/Ind-2001/d
Zabaikalskiy/4/RUS/2016*	n/a	cattle	ARRIAH	Russia	ME-SA/Ind-2001/d
TAI-225-2016R3*	n/a	cattle	TRRL	Thailand	ME-SA/Ind-2001/d
TAI-269-2-2016*	n/a	cattle	TRRL	Thailand	ME-SA/Ind-2001/d
Zabaikalskiy/3/RUS/2016*	n/a	cattle	ARRIAH	Russia	ME-SA/Ind-2001/d
VIT/20/2016	n/a	cattle	WRLFMD	Vietnam	ME-SA/Ind-2001/d
XJBC/CHA/2017*	n/a	n/a	LVRI	China	ME-SA/Ind-2001/d
MYA/1/2017	n/a	cattle	WRLFMD	Myanmar	ME-SA/Ind-2001/d
MYA/9/2017*	n/a	cattle	TRRL	Myanmar	ME-SA/Ind-2001/d
MYA/8/2017*	n/a	water buffalo	TRRL	Myanmar	ME-SA/Ind-2001/d
MYA/17/2017*	n/a	cattle	TRRL	Myanmar	ME-SA/Ind-2001/d
BAN/NL/Lo-245/2015*	KY077611	cattle	Univ Dhaka	Bangladesh	ME-SA/Ind-2001/d
BHU/2/2016	n/a	cattle	WRLFMD	Bhutan	ME-SA/Ind-2001/d
BAN/GKa-236(pig)/2015*	KX712091	porcine	Univ Dhaka	Bangladesh	ME-SA/Ind-2001/d
XJPS/CHA/2017*	n/a	n/a	LVRI	China	ME-SA/Ind-2001/d
NEP/9/2016	n/a	porcine	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/15/2015	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/14/2015	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/8/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
MUR/1/2016	n/a	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/d
MUR/24/2016	n/a	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/d
NEP/7/2016	KY449055	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d

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label	accession	host(s)	lab	country	taxonomic information
MYA/3/2016	n/a	cattle	WRLFMD	Myanmar	ME-SA/Ind-2001/d
MYA13-2016*	n/a	n/a	TRRL	Myanmar	ME-SA/Ind-2001/d
MYA12-2016 2*	n/a	n/a	TRRL	Myanmar	ME-SA/Ind-2001/d
BAN/SI/Sh-234/2015*	KY077610	cattle	Univ Dhaka	Bangladesh	ME-SA/Ind-2001/d
BAN/LK/Sa-249/2015*	KY077613	cattle	Univ Dhaka	Bangladesh	ME-SA/Ind-2001/d
BAN/TG/Ba-268/2015*	KY077621	cattle	Univ Dhaka	Bangladesh	ME-SA/Ind-2001/d
MYA/5/2017	n/a	cattle	WRLFMD	Myanmar	ME-SA/Ind-2001/d
MYA/19/2017*	n/a	cattle	TRRL	Myanmar	ME-SA/Ind-2001/d
NEP/6/2016	KY449054	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/17/2015	KY449050	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/11/2016	n/a	goats	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/10/2016	n/a	goats	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/32/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/31/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/29/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/30/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/28/2015	KY449052	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/5/2016	KY449053	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/25/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/22/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/23/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/20/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/24/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/35/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/37/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/27/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/19/2015	KY449051	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/14/2016	n/a	water buffalo	WRLFMD	Nepal	ME-SA/Ind-2001/d
BHU/8/2016	n/a	cattle	WRLFMD	Bhutan	ME-SA/Ind-2001/d
BHU/9/2016	n/a	cattle	WRLFMD	Bhutan	ME-SA/Ind-2001/d
BHU/10/2016	n/a	cattle	WRLFMD	Bhutan	ME-SA/Ind-2001/d
NEP/13/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/12/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
UAE/1/2015	n/a	gazelle	WRLFMD	United Arab Emirates	ME-SA/Ind-2001/d
SAU/19/2015	n/a	bovine	WRLFMD	Saudi Arabia	ME-SA/Ind-2001/d
SAU/18/2015	n/a	bovine	WRLFMD	Saudi Arabia	ME-SA/Ind-2001/d
SAU/20/2015	n/a	bovine	WRLFMD	Saudi Arabia	ME-SA/Ind-2001/d
SAU/10/2016	n/a	bovine	WRLFMD	Saudi Arabia	ME-SA/Ind-2001/d
UAE/4/2016	n/a	cattle	WRLFMD	United Arab Emirates	ME-SA/Ind-2001/d
UAE/3/2016	n/a	cattle	WRLFMD	United Arab Emirates	ME-SA/Ind-2001/d
UAE/5/2016	n/a	cattle	WRLFMD	United Arab Emirates	ME-SA/Ind-2001/d
UAE/2/2016	n/a	cattle	WRLFMD	United Arab Emirates	ME-SA/Ind-2001/d
UAE/1/2016	n/a	cattle	WRLFMD	United Arab Emirates	ME-SA/Ind-2001/d
BAN/LK/Sa-248/2015*	KY077612	cattle	Univ Dhaka	Bangladesh	ME-SA/Ind-2001/d
NEP/9/2015	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/10/2015	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/12/2015	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/11/2015	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/4/2016	n/a	water buffalo	WRLFMD	Nepal	ME-SA/Ind-2001/d
NEP/17/2016	n/a	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/d
SAU/2/2016	n/a	bovine	WRLFMD	Saudi Arabia	ME-SA/Ind-2001/d
SAU/3/2016	n/a	bovine	WRLFMD	Saudi Arabia	ME-SA/Ind-2001/d
SAU/7/2016	n/a	bovine	WRLFMD	Saudi Arabia	ME-SA/Ind-2001/d
BHU/3/2009	KM921814	cattle	WRLFMD	Bhutan	ME-SA/Ind-2001/d
UAE/4/2008	KM921876	gazelle	WRLFMD	United Arab Emirates	ME-SA/Ind-2001/c
OMN/7/2001	DQ164941	bovine	WRLFMD	Oman	ME-SA/Ind-2001/b
KUW/3/97	DQ164904	bovine	WRLFMD	Kuwait	ME-SA/Ind-2001/a
UKG/35/2001	AJ539141	porcine	PIADC	United Kingdom	ME-SA/PanAsia
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
IRN/18/2010	KY091283	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/BAL-09
TUR/257/2008*	n/a	n/a	FMDI-Ankara	Turkey	ME-SA/PanAsia-2/TER-08
IRN/8/2005	KY091281	ovine	WRLFMD	Iran	ME-SA/PanAsia-2
IRN/31/2009	KY091284	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/FAR-09
Manisa/TUR/69*	AY593823	n/a	PIADC	Turkey	ME-SA
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