

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

## Genotyping Report

FMDV serotype: A  
Country: Mongolia  
Year: 2016  
Batch: WRLMEG/2016/00022  
No. of sequences: 3  
Report date: 2nd 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](mailto:reporting@pirbright.ac.uk)

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Virus sample name:	MOG/11/2016
Sender reference:	A/MOG/11/2016
Location of origin:	Muu Khoot, 6 Bag, Sumber soum, Govi-Sumber
Country of origin:	Mongolia
Date of collection:	17/07/2016
Host species:	cattle
Serotype:	A
Topotype:	ASIA
Lineage:	Sea-97
Sublineage:	
Sequence length:	630
Ambiguities:	0
Material submitted for sequencing:	n/a
Harvest date of material:	n/a
Primers:	n/a
Received for sequencing:	n/a
Created:	02/11/2016
Last updated:	02/11/2016
VIBASys IDs: sample 30438, genome 30439, sequence viba_30440, sequencing info 30441	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_30448	MOG/15/2016	cattle	100.0	0	A	ASIA	Sea-97	
viba_30444	MOG/14/2016	cattle	99.8	0	A	ASIA	Sea-97	
viba_25175	MYA/3/2015	bovine	98.6	0	A	ASIA	Sea-97	
viba_25179	MYA/4/2015	bovine	98.6	0	A	ASIA	Sea-97	
viba_25171	MYA/2/2015	bovine	98.6	0	A	ASIA	Sea-97	
viba_20812	GZ-HX/CHA/2013	cattle	98.4	0	A	ASIA	Sea-97	
viba_21156	Amur/4/RUS/2013	cattle	98.4	0	A	ASIA	Sea-97	
viba_26004	TAI/24/2015	cattle	98.4	0	A	ASIA	Sea-97	
viba_21117	Zabaikalsky/RUS/2013	cattle	98.4	0	A	ASIA	Sea-97	
viba_20799	GDMM-CHA-2013-S	porcine	98.4	0	A	ASIA	Sea-97	

#### 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_122	TAI/7/2003	bovine	93.2	0	A	ASIA	Sea-97	
viba_625	TAI/2/97		89.3	0	A	ASIA	Sea-97	
viba_630	TAI/118/87		86.7	0	A	ASIA	Thai-87	
viba_677	IRQ/24/64	bovine	81.6	0	A	ASIA	A22	
viba_682	IRN/2/87	bovine	81.2	0	A	ASIA	Iran-87	
viba_843	SAU/16/95		80.4	0	A	ASIA	G-VII	
viba_173	UGA/13/66	bovine	80.2	0	A	AFRICA	G-VII	
viba_403	TUR/1/2008	cattle	80.1	0	A	ASIA	Iran-05	ARD-07
viba_594	IRN/1/2011	bovine	80.1	0	A	ASIA	Iran-05	FAR-11
viba_336	IRN/1/96	bovine	80.0	1	A	ASIA	Iran-96	

Virus sample name:	MOG/14/2016
Sender reference:	A/MOG/14/2016
Location of origin:	Muu Khoot, 6 Bag, Sumber soum, Govi-Sumber
Country of origin:	Mongolia
Date of collection:	17/07/2016
Host species:	cattle
Serotype:	A
Topotype:	ASIA
Lineage:	Sea-97
Sublineage:	
Sequence length:	630
Ambiguities:	0
Material submitted for sequencing:	n/a
Harvest date of material:	n/a
Primers:	n/a
Received for sequencing:	n/a
Created:	02/11/2016
Last updated:	02/11/2016
VIBASys IDs: sample 30442, genome 30443, sequence viba_30444, sequencing info 30445	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_30440	MOG/11/2016	cattle	99.8	0	A	ASIA	Sea-97	
viba_30448	MOG/15/2016	cattle	99.8	0	A	ASIA	Sea-97	
viba_25175	MYA/3/2015	bovine	98.4	0	A	ASIA	Sea-97	
viba_25179	MYA/4/2015	bovine	98.4	0	A	ASIA	Sea-97	
viba_25171	MYA/2/2015	bovine	98.4	0	A	ASIA	Sea-97	
viba_20812	GZ-HX/CHA/2013	cattle	98.3	0	A	ASIA	Sea-97	
viba_21156	Amur/4/RUS/2013	cattle	98.3	0	A	ASIA	Sea-97	
viba_26004	TAI/24/2015	cattle	98.3	0	A	ASIA	Sea-97	
viba_22528	TAI/21/2014	cattle	98.3	0	A	ASIA	Sea-97	
viba_21117	Zabaikalsky/RUS/2013	cattle	98.3	0	A	ASIA	Sea-97	

#### 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_122	TAI/7/2003	bovine	93.0	0	A	ASIA	Sea-97	
viba_625	TAI/2/97		89.1	0	A	ASIA	Sea-97	
viba_630	TAI/118/87		86.5	0	A	ASIA	Thai-87	
viba_677	IRQ/24/64	bovine	81.5	0	A	ASIA	A22	
viba_682	IRN/2/87	bovine	81.0	0	A	ASIA	Iran-87	
viba_843	SAU/16/95		80.3	0	A	ASIA	G-VII	
viba_336	IRN/1/96	bovine	80.0	1	A	ASIA	Iran-96	
viba_785	KEN/3/64		80.0	0	A	AFRICA	G-III	
viba_173	UGA/13/66	bovine	80.0	0	A	AFRICA	G-VII	
viba_609	GHA/16/73	bovine	79.9	0	A	AFRICA	G-VI	

Virus sample name:	MOG/15/2016
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Host species:	cattle
Serotype:	A
Topotype:	ASIA
Lineage:	Sea-97
Sublineage:	
Sequence length:	630
Ambiguities:	0
Material submitted for sequencing:	n/a
Harvest date of material:	n/a
Primers:	n/a
Received for sequencing:	n/a
Created:	02/11/2016
Last updated:	02/11/2016
VIBASys IDs: sample 30446, genome 30447, sequence viba_30448, sequencing info 30449	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_30440	MOG/11/2016	cattle	100.0	0	A	ASIA	Sea-97	
viba_30444	MOG/14/2016	cattle	99.8	0	A	ASIA	Sea-97	
viba_25175	MYA/3/2015	bovine	98.6	0	A	ASIA	Sea-97	
viba_25179	MYA/4/2015	bovine	98.6	0	A	ASIA	Sea-97	
viba_25171	MYA/2/2015	bovine	98.6	0	A	ASIA	Sea-97	
viba_20812	GZ-HX/CHA/2013	cattle	98.4	0	A	ASIA	Sea-97	
viba_21156	Amur/4/RUS/2013	cattle	98.4	0	A	ASIA	Sea-97	
viba_26004	TAI/24/2015	cattle	98.4	0	A	ASIA	Sea-97	
viba_21117	Zabaikalsky/RUS/2013	cattle	98.4	0	A	ASIA	Sea-97	
viba_20799	GDMM-CHA-2013-S	porcine	98.4	0	A	ASIA	Sea-97	

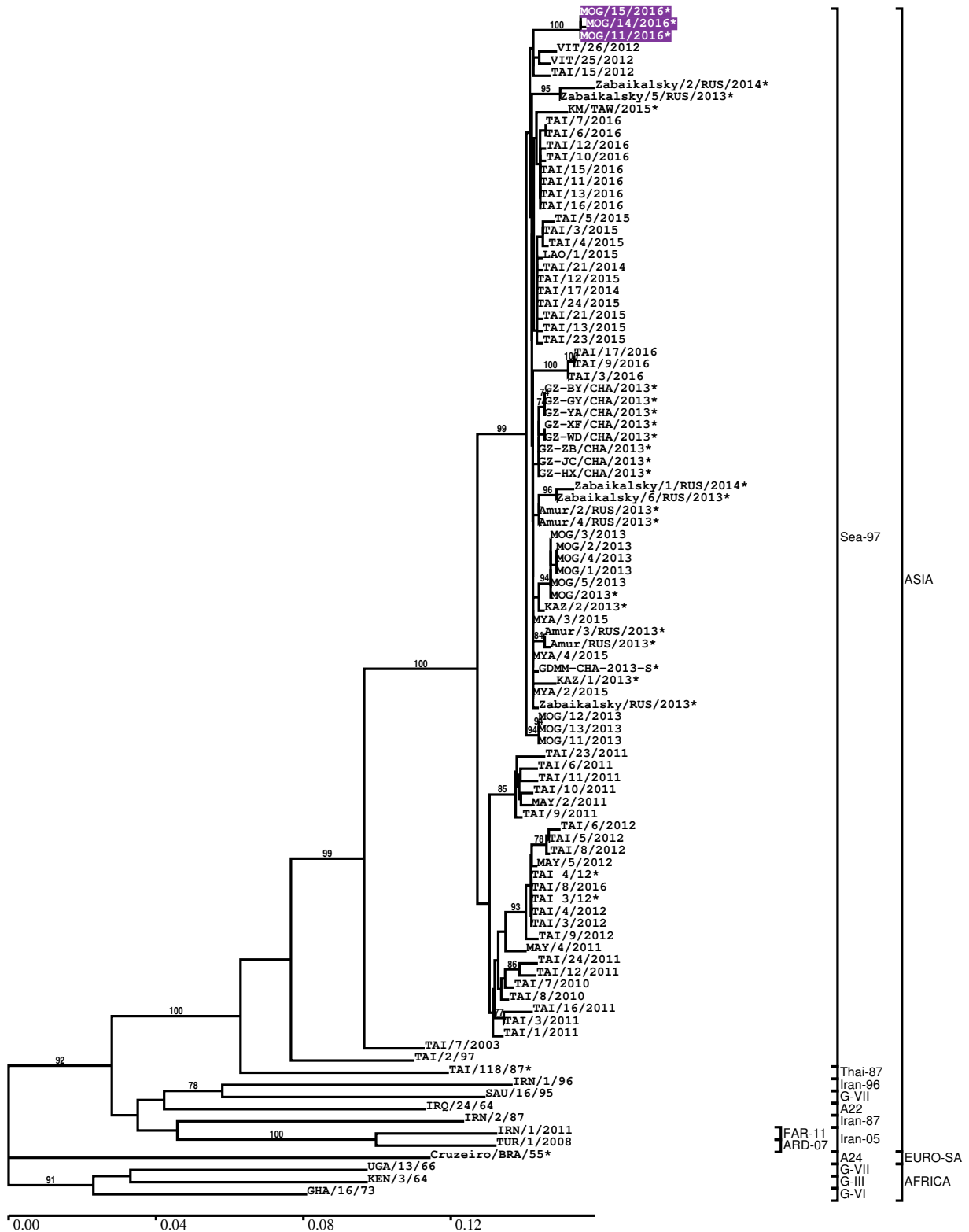
#### Most Closely Related Prototype Sequences

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_122	TAI/7/2003	bovine	93.2	0	A	ASIA	Sea-97	
viba_625	TAI/2/97		89.3	0	A	ASIA	Sea-97	
viba_630	TAI/118/87		86.7	0	A	ASIA	Thai-87	
viba_677	IRQ/24/64	bovine	81.6	0	A	ASIA	A22	
viba_682	IRN/2/87	bovine	81.2	0	A	ASIA	Iran-87	
viba_843	SAU/16/95		80.4	0	A	ASIA	G-VII	
viba_173	UGA/13/66	bovine	80.2	0	A	AFRICA	G-VII	
viba_403	TUR/1/2008	cattle	80.1	0	A	ASIA	Iran-05	ARD-07
viba_594	IRN/1/2011	bovine	80.1	0	A	ASIA	Iran-05	FAR-11
viba_336	IRN/1/96	bovine	80.0	1	A	ASIA	Iran-96	

Report on FMDV A in Mongolia in 2016

Batch: WRLMEG/2016/00022



\*, not a WRLFMD Reference Number

## Analysis Parameters

VP1 subsequence extractor:	vp1_A
Query sequence set:	WRLMEG/2016/00022-Mongolia-A (3 sequences)
Sequence database set:	allseqs_A (1539 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:	12
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
MOG/15/2016*	n/a	cattle	ARRIAH	Mongolia	ASIA/Sea-97
MOG/14/2016*	n/a	cattle	ARRIAH	Mongolia	ASIA/Sea-97
MOG/11/2016*	n/a	cattle	ARRIAH	Mongolia	ASIA/Sea-97
VIT/26/2012	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/25/2012	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
TAI/15/2012	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
Zabaikalsky/2/RUS/2014*	n/a	cattle	ARRIAH	Russia	ASIA/Sea-97
Zabaikalsky/5/RUS/2013*	n/a	cattle	ARRIAH	Russia	ASIA/Sea-97
KM/TAW/2015*	n/a	cattle	NVRI	Taiwan	ASIA/Sea-97
TAI/7/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/6/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/12/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/10/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/15/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/11/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/13/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/16/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/5/2015	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/3/2015	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/4/2015	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
LAO/1/2015	n/a	cattle	WRLFMD	Laos	ASIA/Sea-97
TAI/21/2014	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/12/2015	n/a	porcine	WRLFMD	Thailand	ASIA/Sea-97
TAI/17/2014	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/24/2015	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/21/2015	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/13/2015	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/23/2015	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/17/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/9/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/3/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
GZ-BY/CHA/2013*	KJ646645	cattle	Guizhou University	China	ASIA/Sea-97
GZ-GY/CHA/2013*	KJ646651	cattle	Guizhou University	China	ASIA/Sea-97
GZ-YA/CHA/2013*	KJ646646	cattle	Guizhou University	China	ASIA/Sea-97

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label	accession	host(s)	lab	country	taxonomic information
GZ-XF/CHA/2013*	KJ646657	cattle	Guizhou University	China	ASIA/Sea-97
GZ-WD/CHA/2013*	KJ646648	cattle	Guizhou University	China	ASIA/Sea-97
GZ-ZB/CHA/2013*	KJ646649	cattle	Guizhou University	China	ASIA/Sea-97
GZ-JC/CHA/2013*	KJ646650	cattle	Guizhou University	China	ASIA/Sea-97
GZ-HX/CHA/2013*	KJ646647	cattle	Guizhou University	China	ASIA/Sea-97
Zabaikalsky/1/RUS/2014*	n/a	cattle	ARRIAH	Russia	ASIA/Sea-97
Zabaikalsky/6/RUS/2013*	n/a	cattle	ARRIAH	Russia	ASIA/Sea-97
Amur/2/RUS/2013*	n/a	cattle	ARRIAH	Russia	ASIA/Sea-97
Amur/4/RUS/2013*	n/a	cattle	ARRIAH	Russia	ASIA/Sea-97
MOG/3/2013	n/a	yak	WRLFMD	Mongolia	ASIA/Sea-97
MOG/2/2013	n/a	yak	WRLFMD	Mongolia	ASIA/Sea-97
MOG/4/2013	n/a	yak	WRLFMD	Mongolia	ASIA/Sea-97
MOG/1/2013	n/a	yak	WRLFMD	Mongolia	ASIA/Sea-97
MOG/5/2013	n/a	yak	WRLFMD	Mongolia	ASIA/Sea-97
MOG/2013*	n/a	cattle	ARRIAH	Mongolia	ASIA/Sea-97
KAZ/2/2013*	n/a	cattle	ARRIAH	Kazakhstan	ASIA/Sea-97
MYA/3/2015	n/a	bovine	WRLFMD	Myanmar	ASIA/Sea-97
Amur/3/RUS/2013*	n/a	cattle	ARRIAH	Russia	ASIA/Sea-97
Amur/RUS/2013*	n/a	cattle	ARRIAH	Russia	ASIA/Sea-97
MYA/4/2015	n/a	bovine	WRLFMD	Myanmar	ASIA/Sea-97
GDMM-CHA-2013-S*	KF450794	porcine	n/a	China	ASIA/Sea-97
KAZ/1/2013*	n/a	cattle	ARRIAH	Kazakhstan	ASIA/Sea-97
MYA/2/2015	n/a	bovine	WRLFMD	Myanmar	ASIA/Sea-97
Zabaikalsky/RUS/2013*	n/a	cattle	n/a	Russia	ASIA/Sea-97
MOG/12/2013	n/a	cattle	WRLFMD	Mongolia	ASIA/Sea-97
MOG/13/2013	n/a	cattle	WRLFMD	Mongolia	ASIA/Sea-97
MOG/11/2013	n/a	cattle	WRLFMD	Mongolia	ASIA/Sea-97
TAI/23/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/6/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/11/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/10/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
MAY/2/2011	n/a	cattle	WRLFMD	Malaysia	ASIA/Sea-97
TAI/9/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/6/2012	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/5/2012	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/8/2012	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
MAY/5/2012	n/a	cattle	WRLFMD	Malaysia	ASIA/Sea-97
TAI 4/12*	n/a	n/a	TRRL	Thailand	ASIA/Sea-97
TAI/8/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI 3/12*	n/a	n/a	TRRL	Thailand	ASIA/Sea-97
TAI/4/2012	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/3/2012	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/9/2012	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
MAY/4/2011	n/a	cattle	WRLFMD	Malaysia	ASIA/Sea-97
TAI/24/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/12/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/7/2010	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/8/2010	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/16/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/3/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/1/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/7/2003	HQ116312	bovine	WRLFMD	Thailand	ASIA/Sea-97
TAI/2/97	EF208778	n/a	WRLFMD	Thailand	ASIA/Sea-97
TAI/118/87*	EF208777	n/a	WRLFMD	Thailand	ASIA/Thai-87
IRN/1/96	EF208771	bovine	WRLFMD	Iran	ASIA/Iran-96
SAU/16/95	EU553874	n/a	WRLFMD	Saudi Arabia	ASIA/G-VII
IRQ/24/64	AY593763	bovine	PIADC	Iraq	ASIA/A22
IRN/2/87	EF208770	bovine	WRLFMD	Iran	ASIA/Iran-87
IRN/1/2011	n/a	bovine	WRLFMD	Iran	ASIA/Iran-05/FAR-11
TUR/1/2008	FJ755133	cattle	WRLFMD	Turkey	ASIA/Iran-05/ARD-07
Cruzeiro/BRA/55*	AY593768	bovine	PIADC	Brazil	EURO-SA/A24
UGA/13/66	KF561705	bovine	WRLFMD	Uganda	AFRICA/G-VII

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label	accession	host(s)	lab	country	taxonomic information
KEN/3/64	AY593761	n/a	PIADC	Kenya	AFRICA/G-III
GHA/16/73	KF561698	bovine	WRLFMD	Ghana	AFRICA/G-VI

\*, not a WRLFMD Reference Number

n/a, not available