

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

Genotyping Report

FMDV serotype: A
Country: Mongolia
Year: 2016
Batch: WRLFMD/2017/00010
No. of sequences: 2
Report date: 8th June 2017
Report generated by: Nick Knowles
Report checked by: Kasia Bankowska



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

email: reporting@pirbright.ac.uk

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Virus sample name:	MOG/1/2016
Sender reference:	O/MOG/9/Tuv/Ca/16
Location of origin:	Ulaanbaatar, Tuv, Baynjargalan
Country of origin:	Mongolia
Date of collection:	29/08/2016
Host species:	cattle
Serotype:	A
Topotype:	ASIA
Lineage:	Sea-97
Sublineage:	
Sequence length:	630
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	23/05/2017
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R
Received for sequencing:	05/06/2017
Created:	08/06/2017
Last updated:	08/06/2017
VIBASys IDs: sample 33731, genome 33732, sequence viba_33733, sequencing info 33734	

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_30444	MOG/14/2016	cattle	99.7	0	A	ASIA	Sea-97	
viba_33737	MOG/2/2016	sheep	99.7	0	A	ASIA	Sea-97	
viba_25171	MYA/2/2015	bovine	98.4	0	A	ASIA	Sea-97	
viba_25179	MYA/4/2015	bovine	98.4	0	A	ASIA	Sea-97	
viba_25175	MYA/3/2015	bovine	98.4	0	A	ASIA	Sea-97	
viba_20799	GDMM-CHA-2013-S	porcine	98.3	0	A	ASIA	Sea-97	
viba_31524	VIT/16/2016	porcine	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

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_173	UGA/13/66	bovine	80.0	0	A	AFRICA	G-VII	
viba_594	IRN/1/2011	bovine	79.9	0	A	ASIA	Iran-05	FAR-11
viba_403	TUR/1/2008	cattle	79.9	0	A	ASIA	Iran-05	ARD-07
viba_785	KEN/3/64		79.9	0	A	AFRICA	G-III	

Virus sample name:	MOG/2/2016
Sender reference:	O/MOG/10/Tuv/Sh/16
Location of origin:	Ulaanbaatar, Tuv, Bayan
Country of origin:	Mongolia
Date of collection:	20/09/2016
Host species:	sheep
Serotype:	A
Topotype:	ASIA
Lineage:	Sea-97
Sublineage:	
Sequence length:	630
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	23/05/2017
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R
Received for sequencing:	05/06/2017
Created:	08/06/2017
Last updated:	08/06/2017
VIBASys IDs: sample 33735, genome 33736, sequence viba_33737, sequencing info 33738	

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_33733	MOG/1/2016	cattle	99.7	0	A	ASIA	Sea-97	
viba_30444	MOG/14/2016	cattle	99.7	0	A	ASIA	Sea-97	
viba_25171	MYA/2/2015	bovine	98.4	0	A	ASIA	Sea-97	
viba_25179	MYA/4/2015	bovine	98.4	0	A	ASIA	Sea-97	
viba_25175	MYA/3/2015	bovine	98.4	0	A	ASIA	Sea-97	
viba_20799	GDMM-CHA-2013-S	porcine	98.3	0	A	ASIA	Sea-97	
viba_31524	VIT/16/2016	porcine	98.3	0	A	ASIA	Sea-97	
viba_21117	Zabaikalsky/RUS/2013	cattle	98.3	0	A	ASIA	Sea-97	

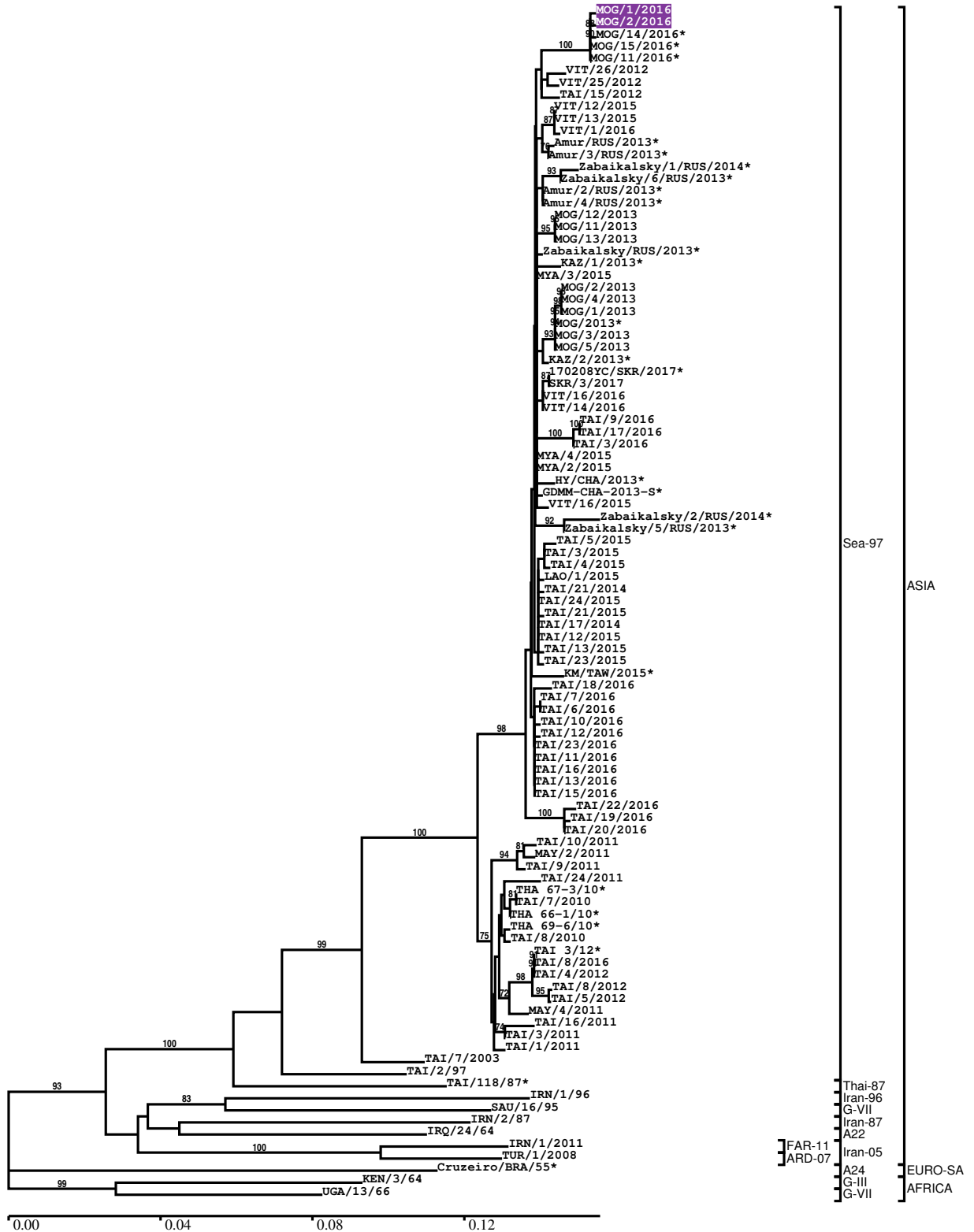
Most Closely Related Prototype Sequences

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

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_173	UGA/13/66	bovine	80.0	0	A	AFRICA	G-VII	
viba_336	IRN/1/96	bovine	80.0	1	A	ASIA	Iran-96	
viba_594	IRN/1/2011	bovine	79.9	0	A	ASIA	Iran-05	FAR-11
viba_403	TUR/1/2008	cattle	79.9	0	A	ASIA	Iran-05	ARD-07

Report on FMDV A in Mongolia in 2016

Batch: WRLFMD/2017/00010



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor: vp1_A
 Query sequence set: WRLFMD/2017/00010-Mongolia-A (2 sequences)
 Sequence database set: allseqs_A (1654 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: 11
 VIBASys version: master-1.1.0-17-gf69a4d1

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/1/2016	n/a	cattle	WRLFMD	Mongolia	ASIA/Sea-97
MOG/2/2016	n/a	sheep	WRLFMD	Mongolia	ASIA/Sea-97
MOG/14/2016*	n/a	cattle	ARRIAH	Mongolia	ASIA/Sea-97
MOG/15/2016*	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
VIT/12/2015	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/13/2015	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/1/2016	n/a	water buffalo	WRLFMD	Vietnam	ASIA/Sea-97
Amur/RUS/2013*	n/a	cattle	ARRIAH	Russia	ASIA/Sea-97
Amur/3/RUS/2013*	n/a	cattle	ARRIAH	Russia	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/12/2013	n/a	cattle	WRLFMD	Mongolia	ASIA/Sea-97
MOG/11/2013	n/a	cattle	WRLFMD	Mongolia	ASIA/Sea-97
MOG/13/2013	n/a	cattle	WRLFMD	Mongolia	ASIA/Sea-97
Zabaikalsky/RUS/2013*	n/a	cattle	n/a	Russia	ASIA/Sea-97
KAZ/1/2013*	n/a	cattle	ARRIAH	Kazakhstan	ASIA/Sea-97
MYA/3/2015	n/a	bovine	WRLFMD	Myanmar	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/2013*	n/a	cattle	ARRIAH	Mongolia	ASIA/Sea-97
MOG/3/2013	n/a	yak	WRLFMD	Mongolia	ASIA/Sea-97
MOG/5/2013	n/a	yak	WRLFMD	Mongolia	ASIA/Sea-97
KAZ/2/2013*	n/a	cattle	ARRIAH	Kazakhstan	ASIA/Sea-97
170208YC/SKR/2017*	n/a	cattle	QIA	South Korea, Republic of	ASIA/Sea-97
SKR/3/2017	n/a	cattle	WRLFMD	South Korea, Republic of	ASIA/Sea-97
VIT/16/2016	n/a	porcine	WRLFMD	Vietnam	ASIA/Sea-97
VIT/14/2016	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97

continued on next page

label	accession	host(s)	lab	country	taxonomic information
TAI/9/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/17/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/3/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
MYA/4/2015	n/a	bovine	WRLFMD	Myanmar	ASIA/Sea-97
MYA/2/2015	n/a	bovine	WRLFMD	Myanmar	ASIA/Sea-97
HY/CHA/2013*	KT968663	yak	Sichuan Univ	China	ASIA/Sea-97
GMMM-CHA-2013-S*	KF450794	porcine	n/a	China	ASIA/Sea-97
VIT/16/2015	n/a	cattle	WRLFMD	Vietnam	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
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/24/2015	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/21/2015	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/17/2014	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/12/2015	n/a	porcine	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
KM/TAW/2015*	n/a	cattle	NVRI	Taiwan	ASIA/Sea-97
TAI/18/2016	n/a	cattle	WRLFMD	Thailand	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/10/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/12/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/23/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/11/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/16/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/13/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/15/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/22/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/19/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/20/2016	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/24/2011	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
THA 67-3/10*	n/a	cattle	TRRL	Thailand	ASIA/Sea-97
TAI/7/2010	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
THA 66-1/10*	n/a	cattle	TRRL	Thailand	ASIA/Sea-97
THA 69-6/10*	n/a	cattle	TRRL	Thailand	ASIA/Sea-97
TAI/8/2010	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI 3/12*	n/a	n/a	TRRL	Thailand	ASIA/Sea-97
TAI/8/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/4/2012	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/8/2012	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/5/2012	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
MAY/4/2011	n/a	cattle	WRLFMD	Malaysia	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
IRN/2/87	EF208770	bovine	WRLFMD	Iran	ASIA/Iran-87
IRQ/24/64	AY593763	bovine	PIADC	Iraq	ASIA/A22
IRN/1/2011	KY091292	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
KEN/3/64	AY593761	n/a	PIADC	Kenya	AFRICA/G-III
UGA/13/66	KF561705	bovine	WRLFMD	Uganda	AFRICA/G-VII

*, not a WRLFMD Reference Number

n/a, not available