

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

Genotyping Report

FMDV serotype: A
Country: Bhutan
Year: 2017
Batch: WRLFMD/2017/00019
No. of sequences: 1
Report date: 25th August 2017
Report generated by: Nick Knowles
Report checked by: Kasia Bankowska



Copyright © 2017 The Pirbright Institute, Ash Road, Pirbright, Woking GU24 0NF, United Kingdom.

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

email: reporting@pirbright.ac.uk

The contents of this report should not be reproduced without permission.

Virus sample name:	BHU/3/2017
Sender reference:	190-2
Location of origin:	Samdrupjongkhar, Samdrupjongkhar, Trashigang, Eastern
Country of origin:	Bhutan
Date of collection:	01/04/2017
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:	16/08/2017
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R
Received for sequencing:	23/08/2017
Created:	24/08/2017
Last updated:	24/08/2017

VIBASys IDs: sample 34315, genome 34316, sequence viba_34317, sequencing info 34318

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_34114	NEP/12/2017	cattle	100.0	0	A	ASIA	G-VII	
viba_34118	NEP/13/2017	cattle	100.0	0	A	ASIA	G-VII	
viba_34122	NEP/14/2017	cattle	99.8	0	A	ASIA	G-VII	
viba_25161	PD78/IND/2015		97.9	0	A	ASIA	G-VII	
viba_25233	SAU/2/2015	cattle	97.8	0	A	ASIA	G-VII	
viba_25959	SAU/9/2015	bovine	97.8	0	A	ASIA	G-VII	
viba_25229	SAU/1/2015	cattle	97.8	0	A	ASIA	G-VII	
viba_25247	SAU/5/2015	cattle	97.5	0	A	ASIA	G-VII	
viba_25251	SAU/6/2015	cattle	97.5	0	A	ASIA	G-VII	
viba_25140	ARM/2/2015	cattle	97.5	0	A	ASIA	G-VII	

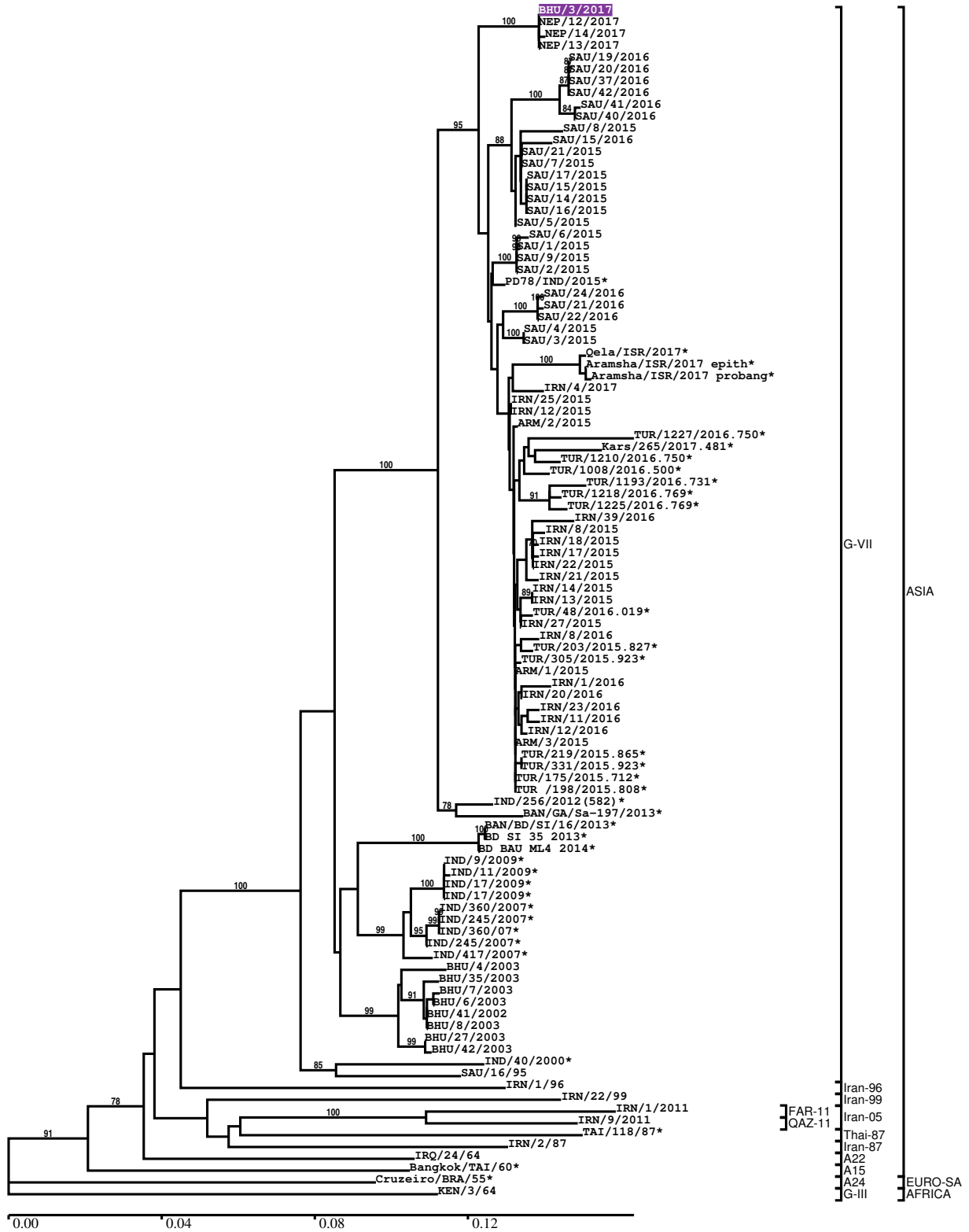
Most Closely Related Prototype Sequences

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	90.9	0	A	ASIA	G-VII	
viba_843	SAU/16/95		90.4	0	A	ASIA	G-VII	
viba_336	IRN/1/96	bovine	84.5	1	A	ASIA	Iran-96	
viba_677	IRQ/24/64	bovine	84.3	0	A	ASIA	A22	
viba_682	IRN/2/87	bovine	83.6	0	A	ASIA	Iran-87	
viba_589	Bangkok/TAI/60		82.5	0	A	ASIA	A15	
viba_630	TAI/118/87		82.2	0	A	ASIA	Thai-87	
viba_475	IRN/22/99		82.2	0	A	ASIA	Iran-99	
viba_594	IRN/1/2011	bovine	82.0	0	A	ASIA	Iran-05	FAR-11
viba_308	IRN/9/2011	bovine	81.9	0	A	ASIA	Iran-05	QAZ-11

Report on FMDV A in Bhutan in 2017

Batch: WRLFMD/2017/00019



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor:	vp1_A
Query sequence set:	WRLFMD/2017/00019-Bhutan-A (1 sequences)
Sequence database set:	allseqs_A (1676 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:	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
BHU/3/2017	n/a	cattle	WRLFMD	Bhutan	ASIA/G-VII
NEP/12/2017	n/a	cattle	WRLFMD	Nepal	ASIA/G-VII
NEP/14/2017	n/a	cattle	WRLFMD	Nepal	ASIA/G-VII
NEP/13/2017	n/a	cattle	WRLFMD	Nepal	ASIA/G-VII
SAU/19/2016	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/20/2016	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/37/2016	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/42/2016	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/41/2016	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/40/2016	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/21/2015	n/a	bovine	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/7/2015	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/17/2015	n/a	ovine	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/15/2015	n/a	ovine	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/14/2015	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/9/2015	n/a	bovine	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/2/2015	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
PD78/IND/2015*	n/a	n/a	PD-FMD	India	ASIA/G-VII
SAU/24/2016	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/21/2016	n/a	cattle	WRLFMD	Saudi Arabia	ASIA/G-VII
SAU/22/2016	n/a	cattle	WRLFMD	Saudi Arabia	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
Qela/ISR/2017*	n/a	cattle	KVI	Israel	ASIA/G-VII
Aramsha/ISR/2017 epith*	n/a	cattle	KVI	Israel	ASIA/G-VII
Aramsha/ISR/2017 probang*	n/a	cattle	KVI	Israel	ASIA/G-VII
IRN/4/2017	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/25/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/12/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
ARM/2/2015	n/a	cattle	ARRIAH	Armenia	ASIA/G-VII

continued on next page

label	accession	host(s)	lab	country	taxonomic information
TUR/1227/2016.750*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
Kars/265/2017.481*	n/a	n/a	FMDI	Turkey	ASIA/G-VII
TUR/1210/2016.750*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
TUR/1008/2016.500*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
TUR/1193/2016.731*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
TUR/1218/2016.769*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
TUR/1225/2016.769*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
IRN/39/2016	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
IRN/21/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/14/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/13/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
TUR/48/2016.019*	n/a	sheep	FMDI	Turkey	ASIA/G-VII
IRN/27/2015	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/8/2016	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
TUR/203/2015.827*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
TUR/305/2015.923*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
ARM/1/2015	n/a	cattle	ARRIAH	Armenia	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/23/2016	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/11/2016	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
IRN/12/2016	n/a	cattle	WRLFMD	Iran	ASIA/G-VII
ARM/3/2015	n/a	cattle	ARRIAH	Armenia	ASIA/G-VII
TUR/219/2015.865*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
TUR/331/2015.923*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
TUR/175/2015.712*	n/a	cattle	FMDI	Turkey	ASIA/G-VII
TUR /198/2015.808*	n/a	cattle	FMDI	Turkey	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
BD SI 35 2013*	KU684494	cattle	BAU	Bangladesh	ASIA/G-VII
BD BAU ML4 2014*	KT982205	cattle	BAU	Bangladesh	ASIA/G-VII
IND/9/2009*	HQ127716	cattle	PD-FMD	India	ASIA/G-VII
IND/11/2009*	HQ127717	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/360/2007*	HQ127705	cattle	PD-FMD	India	ASIA/G-VII
IND/245/2007*	HQ832590	cattle	PD-FMD	India	ASIA/G-VII
IND/360/07*	FJ617243	bovine	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
BHU/4/2003	n/a	n/a	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/41/2002	EU414525	bovine	WRLFMD	Bhutan	ASIA/G-VII
BHU/8/2003	n/a	n/a	WRLFMD	Bhutan	ASIA/G-VII
BHU/27/2003	FJ755013	cattle	WRLFMD	Bhutan	ASIA/G-VII
BHU/42/2003	n/a	n/a	WRLFMD	Bhutan	ASIA/G-VII
IND/40/2000*	AF390646	cattle	PD-FMD	India	ASIA/G-VII
SAU/16/95	EU553874	n/a	WRLFMD	Saudi Arabia	ASIA/G-VII
IRN/1/96	EF208771	bovine	WRLFMD	Iran	ASIA/Iran-96
IRN/22/99	EF208772	n/a	WRLFMD	Iran	ASIA/Iran-99
IRN/1/2011	KY091292	bovine	WRLFMD	Iran	ASIA/Iran-05/FAR-11
IRN/9/2011	KY091295	bovine	WRLFMD	Iran	ASIA/Iran-05/QAZ-11
TAI/118/87*	EF208777	n/a	WRLFMD	Thailand	ASIA/Thai-87
IRN/2/87	EF208770	bovine	WRLFMD	Iran	ASIA/Iran-87
IRQ/24/64	AY593763	bovine	PIADC	Iraq	ASIA/A22
Bangkok/TAI/60*	AY593755	n/a	PIADC	Thailand	ASIA/A15
Cruzeiro/BRA/55*	AY593768	bovine	PIADC	Brazil	EURO-SA/A24
KEN/3/64	AY593761	n/a	PIADC	Kenya	AFRICA/G-III

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