

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

## Genotyping Report

FMDV serotype: A  
Country: Afghanistan  
Year: 2016  
Batch: WRLFMD/2016/00029  
No. of sequences: 1  
Report date: 20th October 2016  
Report generated by: Kasia Bankowska  
Report checked by: Nick Knowles



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

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Virus sample name:	AFG/5/2016
Sender reference:	5436
Location of origin:	Kundoz, North
Country of origin:	Afghanistan
Date of collection:	04/05/2016
Host species:	bovine
Serotype:	A
Topotype:	ASIA
Lineage:	Iran-05
Sublineage:	FAR-11
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	18/09/2016
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R
Received for sequencing:	29/09/2016
Created:	04/10/2016
Last updated:	04/10/2016
VIBASys IDs: sample 30274, genome 30275, sequence viba_30276, sequencing info 30277	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_22439	PAK/41/2014	cattle	98.3	0	A	ASIA	Iran-05	FAR-11
viba_22447	PAK/43/2014	cattle	98.3	0	A	ASIA	Iran-05	FAR-11
viba_25216	PAK/17/2015	water buffalo	98.1	0	A	ASIA	Iran-05	FAR-11
viba_25220	PAK/20/2015	cattle	98.1	0	A	ASIA	Iran-05	FAR-11
viba_25208	PAK/15/2015	water buffalo	97.9	0	A	ASIA	Iran-05	FAR-11
viba_25195	PAK/10/2015	cattle	97.9	0	A	ASIA	Iran-05	FAR-11
viba_25212	PAK/16/2015	cattle	97.9	0	A	ASIA	Iran-05	FAR-11
viba_22431	PAK/33/2014	cattle	97.9	0	A	ASIA	Iran-05	FAR-11
viba_25204	PAK/13/2015	cattle	97.9	0	A	ASIA	Iran-05	FAR-11
viba_25224	PAK/21/2015	cattle	97.8	0	A	ASIA	Iran-05	FAR-11

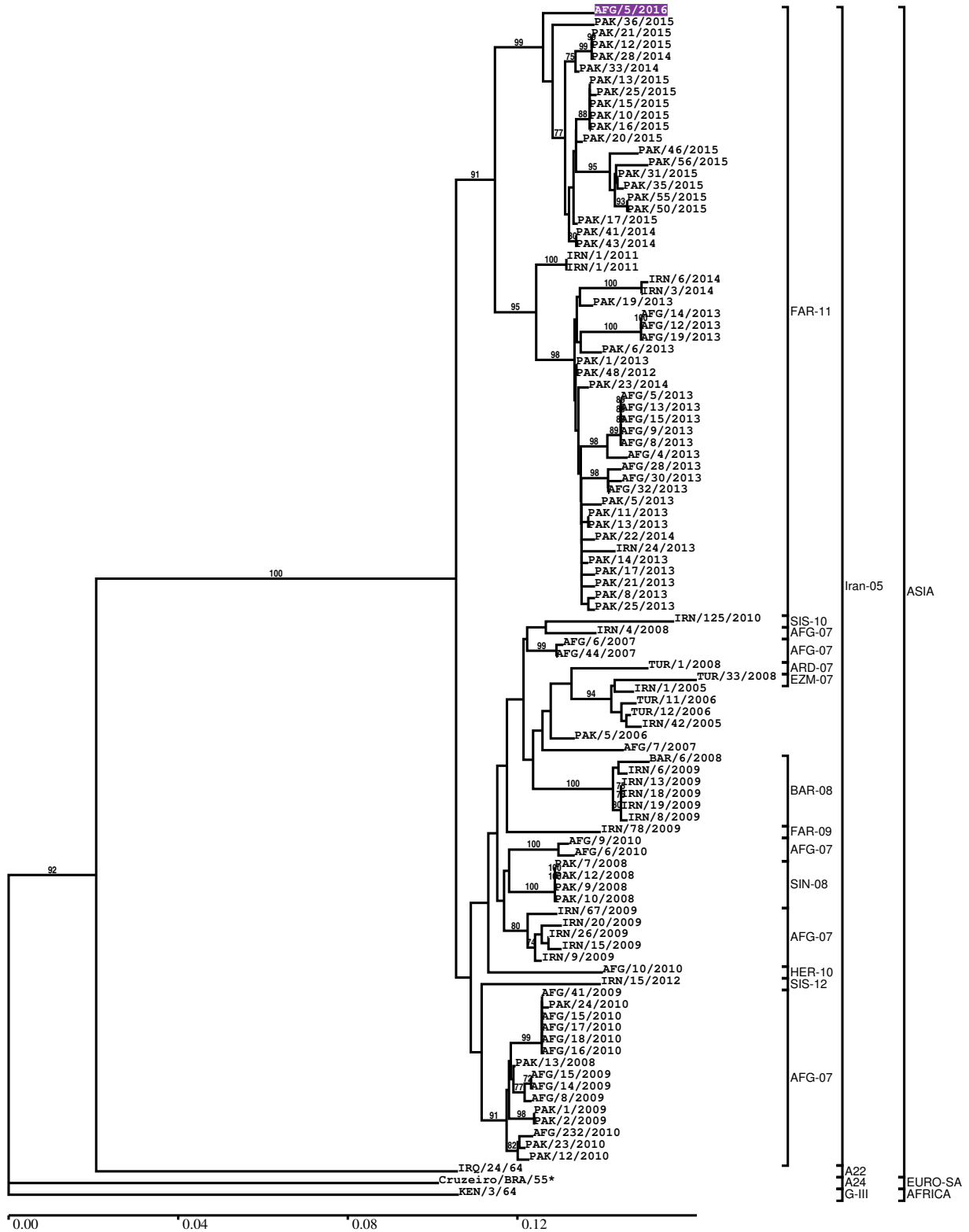
#### Most Closely Related Prototype Sequences

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_594	IRN/1/2011	bovine	95.7	0	A	ASIA	Iran-05	FAR-11
viba_414	AFG/6/2007	bovine	94.3	0	A	ASIA	Iran-05	AFG-07
viba_636	IRN/78/2009		93.4	0	A	ASIA	Iran-05	FAR-09
viba_403	TUR/1/2008	cattle	93.2	0	A	ASIA	Iran-05	ARD-07
viba_331	AFG/10/2010		93.2	0	A	ASIA	Iran-05	HER-10
viba_791	IRN/125/2010	bovine	93.2	0	A	ASIA	Iran-05	SIS-10
viba_557	IRN/15/2012	bovine	93.2	0	A	ASIA	Iran-05	SIS-12
viba_319	BAR/6/2008	bovine	93.0	0	A	ASIA	Iran-05	BAR-08
viba_133	IRN/1/2005	cattle	92.9	0	A	ASIA	Iran-05	
viba_429	TUR/33/2008	cattle	92.1	0	A	ASIA	Iran-05	EZM-07

Report on FMDV A in Afghanistan in 2016

Batch: WRLFMD/2016/00029



\*, not a WRLFMD Reference Number

## Analysis Parameters

VP1 subsequence extractor: vp1\_A  
 Query sequence set: WRLFMD/2016/00029-Afghanistan-A (1 sequences)  
 Sequence database set: allseqs\_A (1531 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: 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
AFG/5/2016	n/a	bovine	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
PAK/36/2015	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/21/2015	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/12/2015	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/28/2014	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/33/2014	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/13/2015	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/25/2015	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/15/2015	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/10/2015	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/16/2015	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/20/2015	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/46/2015	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/56/2015	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/31/2015	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/35/2015	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/55/2015	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/50/2015	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/17/2015	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/41/2014	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/43/2014	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
IRN/1/2011	n/a	bovine	WRLFMD	Iran	ASIA/Iran-05/FAR-11
IRN/1/2011	n/a	bovine	WRLFMD	Iran	ASIA/Iran-05/FAR-11
IRN/6/2014	n/a	bovine	WRLFMD	Iran	ASIA/Iran-05/FAR-11
IRN/3/2014	n/a	cattle	WRLFMD	Iran	ASIA/Iran-05/FAR-11
PAK/19/2013	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
AFG/14/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
AFG/12/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
AFG/19/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
PAK/6/2013	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/1/2013	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/48/2012	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/23/2014	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
AFG/5/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
AFG/13/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
AFG/15/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11

*continued on next page*

label	accession	host(s)	lab	country	taxonomic information
AFG/9/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
AFG/8/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
AFG/4/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
AFG/28/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
AFG/30/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
AFG/32/2013	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/FAR-11
PAK/5/2013	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/11/2013	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/13/2013	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/22/2014	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
IRN/24/2013	n/a	goats	WRLFMD	Iran	ASIA/Iran-05/FAR-11
PAK/14/2013	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/17/2013	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/21/2013	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/8/2013	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
PAK/25/2013	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/FAR-11
IRN/125/2010	n/a	bovine	WRLFMD	Iran	ASIA/Iran-05/SIS-10
IRN/4/2008	FJ755067	n/a	WRLFMD	Iran	ASIA/Iran-05/AFG-07
AFG/6/2007	FJ755007	bovine	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
AFG/44/2007	FJ755009	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
TUR/1/2008	FJ755133	cattle	WRLFMD	Turkey	ASIA/Iran-05/ARD-07
TUR/33/2008	FJ755155	cattle	WRLFMD	Turkey	ASIA/Iran-05/EZM-07
IRN/1/2005	EF208769	cattle	WRLFMD	Iran	ASIA/Iran-05
TUR/11/2006	FJ755109	cattle	WRLFMD	Turkey	ASIA/Iran-05
TUR/12/2006	FJ755110	cattle	WRLFMD	Turkey	ASIA/Iran-05
IRN/42/2005	FJ755048	cattle	WRLFMD	Iran	ASIA/Iran-05
PAK/5/2006	FJ755084	cattle	n/a	Pakistan	ASIA/Iran-05
AFG/7/2007	FJ755008	cattle	WRLFMD	Afghanistan	ASIA/Iran-05
BAR/6/2008	FJ755010	bovine	WRLFMD	Bahrain	ASIA/Iran-05/BAR-08
IRN/6/2009	n/a	n/a	WRLFMD	Iran	ASIA/Iran-05/BAR-08
IRN/13/2009	n/a	n/a	WRLFMD	Iran	ASIA/Iran-05/BAR-08
IRN/18/2009	n/a	n/a	WRLFMD	Iran	ASIA/Iran-05/BAR-08
IRN/19/2009	n/a	n/a	WRLFMD	Iran	ASIA/Iran-05/BAR-08
IRN/8/2009	n/a	n/a	WRLFMD	Iran	ASIA/Iran-05/BAR-08
IRN/78/2009	n/a	n/a	WRLFMD	Iran	ASIA/Iran-05/FAR-09
AFG/9/2010	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
AFG/6/2010	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
PAK/7/2008	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/SIN-08
PAK/12/2008	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/SIN-08
PAK/9/2008	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/SIN-08
PAK/10/2008	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/SIN-08
IRN/67/2009	n/a	sheep	WRLFMD	Iran	ASIA/Iran-05/AFG-07
IRN/20/2009	n/a	n/a	WRLFMD	Iran	ASIA/Iran-05/AFG-07
IRN/26/2009	n/a	n/a	WRLFMD	Iran	ASIA/Iran-05/AFG-07
IRN/15/2009	n/a	n/a	WRLFMD	Iran	ASIA/Iran-05/AFG-07
IRN/9/2009	n/a	n/a	WRLFMD	Iran	ASIA/Iran-05/AFG-07
AFG/10/2010	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/HER-10
IRN/15/2012	n/a	bovine	WRLFMD	Iran	ASIA/Iran-05/SIS-12
AFG/41/2009	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
PAK/24/2010	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/AFG-07
AFG/15/2010	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
AFG/17/2010	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
AFG/18/2010	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
AFG/16/2010	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
PAK/13/2008	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/AFG-07
AFG/15/2009	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
AFG/14/2009	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
AFG/8/2009	n/a	n/a	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
PAK/1/2009	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/AFG-07
PAK/2/2009	n/a	cattle	WRLFMD	Pakistan	ASIA/Iran-05/AFG-07
AFG/232/2010	n/a	cattle	WRLFMD	Afghanistan	ASIA/Iran-05/AFG-07
PAK/23/2010	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/AFG-07
PAK/12/2010	n/a	water buffalo	WRLFMD	Pakistan	ASIA/Iran-05/AFG-07
IRQ/24/64	AY593763	bovine	PIADC	Iraq	ASIA/A22
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