

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

Genotyping Report

FMDV serotype: Asia1
Country: Iran
Year: 2018
Batch: WRLFMD/2018/00007
No. of sequences: 4
Report date: 9th April 2018
Report generated by: Nick Knowles
Report checked by: Jemma Wadsworth



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

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Virus sample name:	IRN/7/2018
Sender reference:	IR-96-78
Location of origin:	Heris, West Azerbaijan
Country of origin:	Iran
Date of collection:	21/01/2018
Host species:	cattle
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	13/03/2018
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	03/04/2018
Created:	05/04/2018
Last updated:	05/04/2018
VIBASys IDs: sample 36106, genome 36107, sequence viba_36108, sequencing info 36109	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36116	IRN/17/2018	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_36120	IRN/19/2018	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_36112	IRN/14/2018	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	97.3	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	97.1	0	Asia1	ASIA	Sindh-08	
viba_22673	PAK/37/2014	cattle	97.1	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	97.0	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	96.8	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	96.8	0	Asia1	ASIA	Sindh-08	
viba_26028	PAK/38/2015	cattle	96.8	0	Asia1	ASIA	Sindh-08	

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_206	PAK/8/2008	water buffalo	94.3	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.3	0	Asia1	ASIA	G- I	
viba_385	IND/762/2003	bovine	85.9	0	Asia1	ASIA	G-III	
viba_12154	BAR/8/2009	cattle	85.6	0	Asia1	ASIA	G-VIII	
viba_146	Shamir/ISR/89	bovine	84.9	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.8	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	84.8	0	Asia1	ASIA		
viba_737	IND/18/80	bovine	84.7	0	Asia1	ASIA	G-V	
viba_297	IND/63/72		84.7	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		

Virus sample name:	IRN/14/2018
Sender reference:	IR-96-76
Location of origin:	Garmsar, Semnan
Country of origin:	Iran
Date of collection:	29/01/2018
Host species:	cattle
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	14/03/2018
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	03/04/2018
Created:	05/04/2018
Last updated:	05/04/2018
VIBASys IDs: sample 36110, genome 36111, sequence viba_36112, sequencing info 36113	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36120	IRN/19/2018	cattle	99.0	0	Asia1	ASIA	Sindh-08	
viba_36108	IRN/7/2018	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_36116	IRN/17/2018	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	96.7	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	96.5	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	96.5	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	96.3	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	96.3	0	Asia1	ASIA	Sindh-08	
viba_26028	PAK/38/2015	cattle	96.3	0	Asia1	ASIA	Sindh-08	
viba_22673	PAK/37/2014	cattle	96.3	0	Asia1	ASIA	Sindh-08	

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_206	PAK/8/2008	water buffalo	93.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.1	0	Asia1	ASIA	G- I	
viba_385	IND/762/2003	bovine	85.2	0	Asia1	ASIA	G-III	
viba_737	IND/18/80	bovine	84.6	0	Asia1	ASIA	G-V	
viba_297	IND/63/72		84.6	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.3	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	84.2	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.1	0	Asia1	ASIA	G-VIII	
viba_146	Shamir/ISR/89	bovine	83.9	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	83.8	0	Asia1	ASIA		

Virus sample name:	IRN/17/2018
Sender reference:	IR-96-70
Location of origin:	Nazarabad, Alborz
Country of origin:	Iran
Date of collection:	01/02/2018
Host species:	cattle
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	14/03/2018
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	03/04/2018
Created:	05/04/2018
Last updated:	05/04/2018
VIBASys IDs: sample 36114, genome 36115, sequence viba_36116, sequencing info 36117	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36108	IRN/7/2018	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_36120	IRN/19/2018	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_36112	IRN/14/2018	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	97.1	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	97.0	0	Asia1	ASIA	Sindh-08	
viba_22673	PAK/37/2014	cattle	97.0	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	96.8	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	96.8	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	96.8	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	96.7	0	Asia1	ASIA	Sindh-08	

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_206	PAK/8/2008	water buffalo	93.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	89.8	0	Asia1	ASIA	G- I	
viba_385	IND/762/2003	bovine	85.6	0	Asia1	ASIA	G-III	
viba_161	IND/14/95	bovine	84.8	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.7	0	Asia1	ASIA	G-VIII	
viba_146	Shamir/ISR/89	bovine	84.1	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	84.0	0	Asia1	ASIA		
viba_737	IND/18/80	bovine	83.9	0	Asia1	ASIA	G-V	
viba_297	IND/63/72		83.9	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	83.8	0	Asia1	ASIA		

Virus sample name:	IRN/19/2018
Sender reference:	IR-96-63
Location of origin:	Jafariyeh, Qom
Country of origin:	Iran
Date of collection:	04/02/2018
Host species:	cattle
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	15/03/2018
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	03/04/2018
Created:	05/04/2018
Last updated:	05/04/2018
VIBASys IDs: sample 36118, genome 36119, sequence viba_36120, sequencing info 36121	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36112	IRN/14/2018	cattle	99.0	0	Asia1	ASIA	Sindh-08	
viba_36108	IRN/7/2018	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_36116	IRN/17/2018	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	96.7	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	96.5	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	96.5	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	96.3	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	96.3	0	Asia1	ASIA	Sindh-08	
viba_26028	PAK/38/2015	cattle	96.3	0	Asia1	ASIA	Sindh-08	
viba_22673	PAK/37/2014	cattle	96.3	0	Asia1	ASIA	Sindh-08	

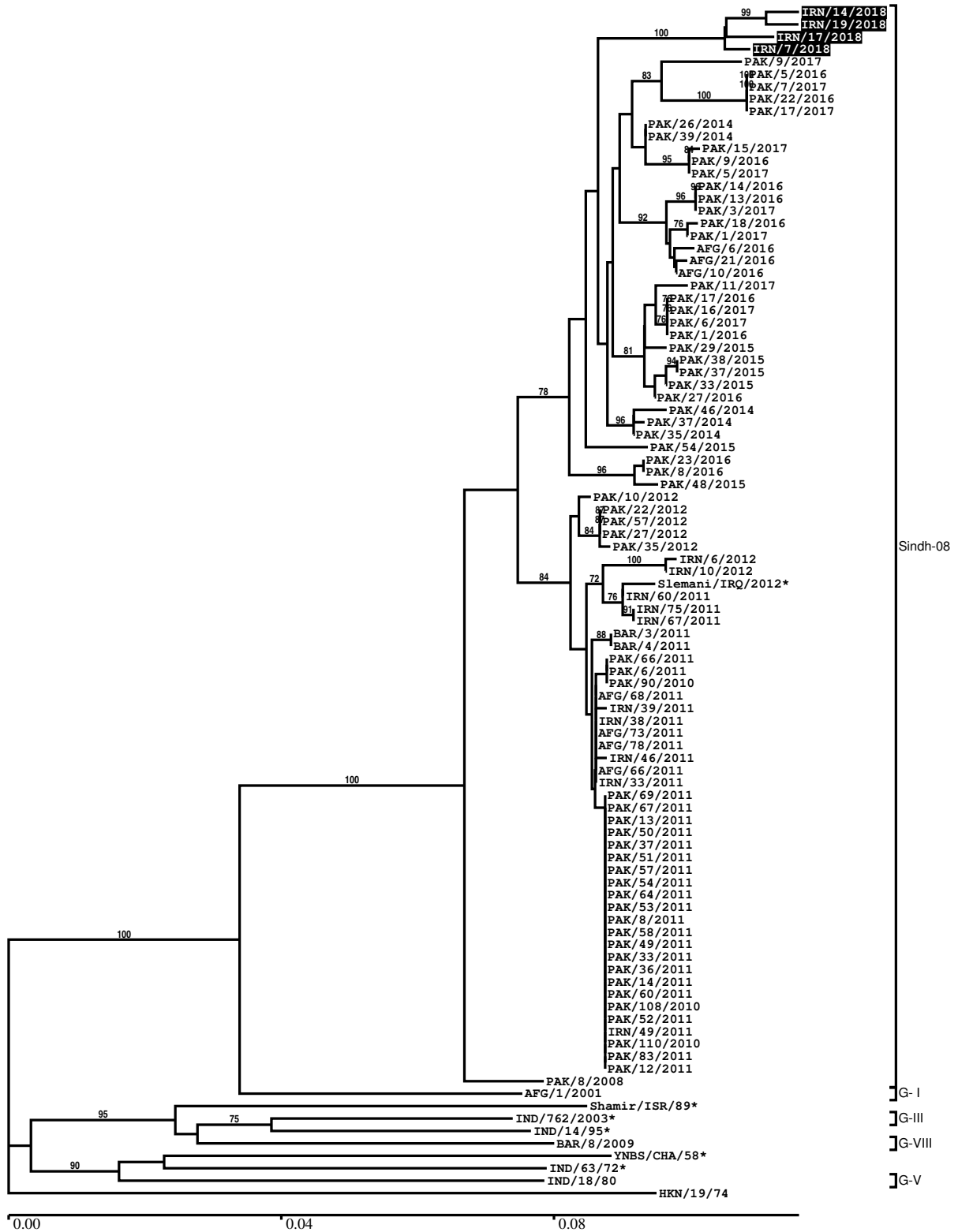
Most Closely Related Prototype Sequences

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

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_206	PAK/8/2008	water buffalo	93.5	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.4	0	Asia1	ASIA	G- I	
viba_385	IND/762/2003	bovine	85.0	0	Asia1	ASIA	G-III	
viba_737	IND/18/80	bovine	84.9	0	Asia1	ASIA	G-V	
viba_161	IND/14/95	bovine	84.5	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	84.4	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.3	0	Asia1	ASIA	G-VIII	
viba_297	IND/63/72		84.3	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.1	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	83.9	0	Asia1	ASIA		

Report on FMDV Asia1 in Iran in 2018

Batch: WRLFMD/2018/00007



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor:	vp1_Asia1
Query sequence set:	WRLFMD/2018/00007-Iran-Asia1 (4 sequences)
Sequence database set:	allseqs_Asia1 (553 sequences)
Prototype sequence set:	!prototypes_Asia1 (12 sequences)
Number of related sequences reported:	10
Minimal VP1 subsequence match length	600
Sequence alignment method:	muscle (default parameters)
Sequence alignment length:	627
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-1.1.2

Sequences in the Phylogenetic Tree

All sequences in the tree are in taxonomic group FMDV/Asia1/ASIA

label	accession	host(s)	lab	country	taxonomic information
IRN/14/2018	n/a	cattle	WRLFMD	Iran	Sindh-08
IRN/19/2018	n/a	cattle	WRLFMD	Iran	Sindh-08
IRN/17/2018	n/a	cattle	WRLFMD	Iran	Sindh-08
IRN/7/2018	n/a	cattle	WRLFMD	Iran	Sindh-08
PAK/9/2017	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/5/2016	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/7/2017	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/22/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/17/2017	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/26/2014	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/39/2014	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/15/2017	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/9/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/5/2017	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/14/2016	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/13/2016	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/3/2017	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/18/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/1/2017	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
AFG/6/2016	n/a	bovine	WRLFMD	Afghanistan	Sindh-08
AFG/21/2016	n/a	bovine	WRLFMD	Afghanistan	Sindh-08
AFG/10/2016	n/a	bovine	WRLFMD	Afghanistan	Sindh-08
PAK/11/2017	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/17/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/16/2017	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/6/2017	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/1/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/29/2015	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/38/2015	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/37/2015	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/33/2015	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/27/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/46/2014	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/37/2014	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/35/2014	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/54/2015	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08

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label	accession	host(s)	lab	country	taxonomic information
PAK/23/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/8/2016	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/48/2015	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/10/2012	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/22/2012	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/57/2012	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/27/2012	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/35/2012	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
IRN/6/2012	n/a	cattle	WRLFMD	Iran	Sindh-08
IRN/10/2012	n/a	cattle	WRLFMD	Iran	Sindh-08
Slemani/IRQ/2012*	JX455113	cattle	Directorate of Veterinary in Slemani	Iraq	Sindh-08
IRN/60/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
IRN/75/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
IRN/67/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
BAR/3/2011	n/a	n/a	WRLFMD	Bahrain	Sindh-08
BAR/4/2011	n/a	n/a	WRLFMD	Bahrain	Sindh-08
PAK/66/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/6/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/90/2010	n/a	cattle	WRLFMD	Pakistan	Sindh-08
AFG/68/2011	n/a	cattle	WRLFMD	Afghanistan	Sindh-08
IRN/39/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
IRN/38/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
AFG/73/2011	n/a	cattle	WRLFMD	Afghanistan	Sindh-08
AFG/78/2011	n/a	cattle	WRLFMD	Afghanistan	Sindh-08
IRN/46/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
AFG/66/2011	n/a	cattle	WRLFMD	Afghanistan	Sindh-08
IRN/33/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
PAK/69/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/67/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/13/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/50/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/37/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/51/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/57/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/54/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/64/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/53/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/8/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/58/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/49/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/33/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/36/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/14/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/60/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/108/2010	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/52/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
IRN/49/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
PAK/110/2010	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/83/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/12/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/8/2008	KY091304	water buffalo	WRLFMD	Pakistan	Sindh-08
AFG/1/2001	DQ121109	bovine	WRLFMD	Afghanistan	G- I
Shamir/ISR/89*	n/a	bovine	BFAV	Israel	
IND/762/2003*	DQ101240	bovine	PD-FMD	India	G-III
IND/14/95*	AF390678	bovine	PD-FMD	India	
BAR/8/2009	MG603264	cattle	WRLFMD	Bahrain	G-VIII
YNBS/CHA/58*	AY390432	bovine	LVRI	China	
IND/63/72*	AY304994	n/a	IVRI-Bangalore	India	
IND/18/80	DQ121116	bovine	WRLFMD	India	G-V
HKN/19/74	n/a	bovine	WRLFMD	Hong Kong SAR	

*, not a WRLFMD Reference Number

n/a, not available