

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

## Genotyping Report

FMDV serotype: Asia1  
Country: Pakistan  
Year: 2016, 2017  
Batch: WRLFMD/2017/00021  
No. of sequences: 21  
Report date: 30th October 2017  
Report generated by: Nick Knowles  
Report checked by: Kasia Bankowska

### Remarks:

The following samples contained both FMD type A and type Asia 1 viruses:

PAK/8/2016, PAK/13/2016, PAK/20/2016, PAK/22/2016, PAK/3/2017 & PAK/5/2017.

FMDV type Asia 1 VP1 sequences were assembled in all cases, except for PAK/20/2016, where only poor quality data was obtained.



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email: [reporting@pirbright.ac.uk](mailto:reporting@pirbright.ac.uk)

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Virus sample name:	PAK/1/2016
Sender reference:	PK15
Location of origin:	Layyah, Punjab
Country of origin:	Pakistan
Date of collection:	10/01/2016
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:	03/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017

VIBASys IDs: sample 35100, genome 35101, sequence viba\_35102, sequencing info 35103

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35158	PAK/6/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35124	PAK/17/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35178	PAK/16/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_35170	PAK/11/2017	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_26028	PAK/38/2015	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	98.9	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	95.4	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	91.1	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.9	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.8	0	Asia1	ASIA	G-III	
viba_12154	BAR/8/2009	cattle	85.6	0	Asia1	ASIA	G-VIII	
viba_551	YNBS/CHA/58	bovine	85.2	0	Asia1	ASIA		
viba_297	IND/63/72		85.0	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.7	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	
viba_646	HKN/19/74	bovine	84.3	0	Asia1	ASIA		

Virus sample name:	PAK/5/2016
Sender reference:	PK7
Location of origin:	Jhang, Punjab
Country of origin:	Pakistan
Date of collection:	12/02/2016
Host species:	water buffalo
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	03/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35104, genome 35105, sequence viba_35106, sequencing info 35107	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35162	PAK/7/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35135	PAK/22/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35182	PAK/17/2017	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_35174	PAK/15/2017	cattle	97.8	0	Asia1	ASIA	Sindh-08	
viba_35166	PAK/9/2017	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_35154	PAK/5/2017	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_35113	PAK/9/2016	cattle	97.6	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	97.4	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	93.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_551	YNBS/CHA/58	bovine	84.7	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	84.7	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	84.6	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.5	0	Asia1	ASIA	G-VIII	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_737	IND/18/80	bovine	83.9	0	Asia1	ASIA	G-V	
viba_775	IRN/10/2004	cattle	83.9	0	Asia1	ASIA	G-VIb	
viba_161	IND/14/95	bovine	83.6	0	Asia1	ASIA		

Virus sample name:	PAK/8/2016
Sender reference:	PK34
Location of origin:	Gharo, Thatta, Sindh
Country of origin:	Pakistan
Date of collection:	06/05/2016
Host species:	water buffalo
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1 04/10/2017 & BTy2
Harvest date of material:	05/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35068, genome 35108, sequence viba_35109, sequencing info 35110	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35139	PAK/23/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_26036	PAK/48/2015	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	99.0	0	Asia1	ASIA	Sindh-08	
viba_22673	PAK/37/2014	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_22681	PAK/46/2014	water buffalo	98.6	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.4	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.4	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	98.1	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	98.1	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	95.2	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.1	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.9	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.7	0	Asia1	ASIA	G-III	
viba_551	YNBS/CHA/58	bovine	85.4	0	Asia1	ASIA		
viba_297	IND/63/72		85.1	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.8	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	84.7	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.6	0	Asia1	ASIA		

Virus sample name:	PAK/9/2016
Sender reference:	PK22
Location of origin:	Lower Dir, Khyber Pakhtunkhwa
Country of origin:	Pakistan
Date of collection:	08/05/2016
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:	03/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35111, genome 35112, sequence viba_35113, sequencing info 35114	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35154	PAK/5/2017	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_35174	PAK/15/2017	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_30284	AFG/10/2016	bovine	98.7	0	Asia1	ASIA	Sindh-08	
viba_35147	PAK/1/2017	water buffalo	98.6	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_30288	AFG/21/2016	bovine	98.6	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	98.6	0	Asia1	ASIA	Sindh-08	
viba_22673	PAK/37/2014	cattle	98.4	0	Asia1	ASIA	Sindh-08	

#### Most Closely Related Prototype Sequences

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sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_206	PAK/8/2008	water buffalo	94.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.5	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.5	0	Asia1	ASIA	G-III	
viba_12154	BAR/8/2009	cattle	85.3	0	Asia1	ASIA	G-VIII	
viba_146	Shamir/ISR/89	bovine	84.7	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.6	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	84.5	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	

Virus sample name:	PAK/13/2016
Sender reference:	PK36
Location of origin:	Karachi, Sindh
Country of origin:	Pakistan
Date of collection:	11/08/2016
Host species:	water buffalo
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	04/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35072, genome 35115, sequence viba_35116, sequencing info 35117	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35120	PAK/14/2016	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_35150	PAK/3/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_30284	AFG/10/2016	bovine	99.5	0	Asia1	ASIA	Sindh-08	
viba_30288	AFG/21/2016	bovine	99.4	0	Asia1	ASIA	Sindh-08	
viba_35128	PAK/18/2016	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_30280	AFG/6/2016	bovine	99.2	0	Asia1	ASIA	Sindh-08	
viba_35147	PAK/1/2017	water buffalo	99.0	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_35154	PAK/5/2017	water buffalo	98.2	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	94.9	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.9	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.5	0	Asia1	ASIA	G-III	
viba_646	HKN/19/74	bovine	84.9	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	84.9	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.9	0	Asia1	ASIA		
viba_297	IND/63/72		84.4	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.2	0	Asia1	ASIA	G-VIII	
viba_161	IND/14/95	bovine	83.8	0	Asia1	ASIA		

Virus sample name:	PAK/14/2016
Sender reference:	PK31
Location of origin:	Karachi, Sindh
Country of origin:	Pakistan
Date of collection:	06/09/2016
Host species:	water buffalo
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	05/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017

VIBASys IDs: sample 35118, genome 35119, sequence viba\_35120, sequencing info 35121

### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35150	PAK/3/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35116	PAK/13/2016	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_30284	AFG/10/2016	bovine	99.5	0	Asia1	ASIA	Sindh-08	
viba_30288	AFG/21/2016	bovine	99.4	0	Asia1	ASIA	Sindh-08	
viba_35128	PAK/18/2016	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_30280	AFG/6/2016	bovine	99.2	0	Asia1	ASIA	Sindh-08	
viba_35147	PAK/1/2017	water buffalo	99.0	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_35154	PAK/5/2017	water buffalo	98.2	0	Asia1	ASIA	Sindh-08	

### 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_206	PAK/8/2008	water buffalo	94.9	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.9	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.5	0	Asia1	ASIA	G-III	
viba_646	HKN/19/74	bovine	84.9	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	84.9	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.9	0	Asia1	ASIA		
viba_297	IND/63/72		84.4	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.2	0	Asia1	ASIA	G-VIII	
viba_161	IND/14/95	bovine	83.8	0	Asia1	ASIA		

Virus sample name:	PAK/17/2016
Sender reference:	PK13
Location of origin:	Rawalpindi, Punjab
Country of origin:	Pakistan
Date of collection:	12/09/2016
Host species:	cattle
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy2
Harvest date of material:	07/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35122, genome 35123, sequence viba_35124, sequencing info 35125	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35158	PAK/6/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35178	PAK/16/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35102	PAK/1/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_35170	PAK/11/2017	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_26028	PAK/38/2015	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	98.9	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	95.4	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	91.1	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.9	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.8	0	Asia1	ASIA	G-III	
viba_12154	BAR/8/2009	cattle	85.6	0	Asia1	ASIA	G-VIII	
viba_551	YNBS/CHA/58	bovine	85.2	0	Asia1	ASIA		
viba_297	IND/63/72		85.0	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.7	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	
viba_646	HKN/19/74	bovine	84.3	0	Asia1	ASIA		



Virus sample name:	PAK/18/2016
Sender reference:	PK24
Location of origin:	Lower Dir, Khyber Pakhtunkhwa
Country of origin:	Pakistan
Date of collection:	10/10/2016
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:	06/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35126, genome 35127, sequence viba_35128, sequencing info 35129	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35147	PAK/1/2017	water buffalo	99.8	0	Asia1	ASIA	Sindh-08	
viba_30284	AFG/10/2016	bovine	99.7	0	Asia1	ASIA	Sindh-08	
viba_30288	AFG/21/2016	bovine	99.5	0	Asia1	ASIA	Sindh-08	
viba_30280	AFG/6/2016	bovine	99.4	0	Asia1	ASIA	Sindh-08	
viba_35120	PAK/14/2016	water buffalo	99.2	0	Asia1	ASIA	Sindh-08	
viba_35150	PAK/3/2017	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_35116	PAK/13/2016	water buffalo	99.2	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.7	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.7	0	Asia1	ASIA	Sindh-08	
viba_35154	PAK/5/2017	water buffalo	98.4	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	94.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	91.1	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	86.0	0	Asia1	ASIA	G-V	
viba_12154	BAR/8/2009	cattle	85.6	0	Asia1	ASIA	G-VIII	
viba_385	IND/762/2003	bovine	85.1	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	85.0	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	84.9	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.8	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	84.7	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.7	0	Asia1	ASIA	G-VIb	

Virus sample name:	PAK/22/2016
Sender reference:	PK11
Location of origin:	Kasur, Punjab
Country of origin:	Pakistan
Date of collection:	11/11/2016
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:	06/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	25/10/2017
Last updated:	25/10/2017
VIBASys IDs: sample 35080, genome 35134, sequence viba_35135, sequencing info 35136	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35162	PAK/7/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35182	PAK/17/2017	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_35106	PAK/5/2016	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_35174	PAK/15/2017	cattle	97.8	0	Asia1	ASIA	Sindh-08	
viba_35166	PAK/9/2017	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_35154	PAK/5/2017	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_35113	PAK/9/2016	cattle	97.6	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	97.4	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	93.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_551	YNBS/CHA/58	bovine	84.7	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	84.7	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	84.6	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.5	0	Asia1	ASIA	G-VIII	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_737	IND/18/80	bovine	83.9	0	Asia1	ASIA	G-V	
viba_775	IRN/10/2004	cattle	83.9	0	Asia1	ASIA	G-VIb	
viba_161	IND/14/95	bovine	83.6	0	Asia1	ASIA		

Virus sample name:	PAK/23/2016
Sender reference:	PK33
Location of origin:	Karachi, Sindh
Country of origin:	Pakistan
Date of collection:	09/12/2016
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:	06/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35137, genome 35138, sequence viba_35139, sequencing info 35140	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35109	PAK/8/2016	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_26036	PAK/48/2015	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	99.0	0	Asia1	ASIA	Sindh-08	
viba_22673	PAK/37/2014	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_22681	PAK/46/2014	water buffalo	98.6	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.4	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.4	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	98.1	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	98.1	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	95.2	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.1	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.9	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.7	0	Asia1	ASIA	G-III	
viba_551	YNBS/CHA/58	bovine	85.4	0	Asia1	ASIA		
viba_297	IND/63/72		85.1	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.8	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	84.7	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.6	0	Asia1	ASIA		

Virus sample name:	PAK/27/2016
Sender reference:	PK37
Location of origin:	Karachi, Sindh
Country of origin:	Pakistan
Date of collection:	12/12/2016
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:	06/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35141, genome 35142, sequence viba_35143, sequencing info 35144	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_26020	PAK/33/2015	water buffalo	99.8	0	Asia1	ASIA	Sindh-08	
viba_26028	PAK/38/2015	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	99.5	0	Asia1	ASIA	Sindh-08	
viba_35158	PAK/6/2017	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_35124	PAK/17/2016	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_35178	PAK/16/2017	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_35102	PAK/1/2016	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_35170	PAK/11/2017	water buffalo	99.2	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	99.0	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	95.9	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	91.5	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	86.3	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	86.3	0	Asia1	ASIA	G-III	
viba_12154	BAR/8/2009	cattle	86.1	0	Asia1	ASIA	G-VIII	
viba_551	YNBS/CHA/58	bovine	85.4	0	Asia1	ASIA		
viba_297	IND/63/72		85.2	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	85.2	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	85.2	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	85.0	0	Asia1	ASIA	G-VIb	

Virus sample name:	PAK/1/2017
Sender reference:	PK26
Location of origin:	L.C.C Mor
Country of origin:	Pakistan
Date of collection:	12/01/2017
Host species:	water buffalo
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	07/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017

VIBASys IDs: sample 35145, genome 35146, sequence viba\_35147, sequencing info 35148

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35128	PAK/18/2016	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_30284	AFG/10/2016	bovine	99.5	0	Asia1	ASIA	Sindh-08	
viba_30288	AFG/21/2016	bovine	99.4	0	Asia1	ASIA	Sindh-08	
viba_30280	AFG/6/2016	bovine	99.2	0	Asia1	ASIA	Sindh-08	
viba_35120	PAK/14/2016	water buffalo	99.0	0	Asia1	ASIA	Sindh-08	
viba_35150	PAK/3/2017	cattle	99.0	0	Asia1	ASIA	Sindh-08	
viba_35116	PAK/13/2016	water buffalo	99.0	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_35154	PAK/5/2017	water buffalo	98.6	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	94.9	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	91.2	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	86.0	0	Asia1	ASIA	G-V	
viba_12154	BAR/8/2009	cattle	85.8	0	Asia1	ASIA	G-VIII	
viba_385	IND/762/2003	bovine	85.3	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	85.2	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	85.0	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	85.0	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	84.9	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.8	0	Asia1	ASIA	G-VIb	

Virus sample name:	PAK/3/2017
Sender reference:	PK32
Location of origin:	Karachi, Sindh
Country of origin:	Pakistan
Date of collection:	01/02/2017
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:	10/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35092, genome 35149, sequence viba_35150, sequencing info 35151	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35120	PAK/14/2016	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_35116	PAK/13/2016	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_30284	AFG/10/2016	bovine	99.5	0	Asia1	ASIA	Sindh-08	
viba_30288	AFG/21/2016	bovine	99.4	0	Asia1	ASIA	Sindh-08	
viba_35128	PAK/18/2016	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_30280	AFG/6/2016	bovine	99.2	0	Asia1	ASIA	Sindh-08	
viba_35147	PAK/1/2017	water buffalo	99.0	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_35154	PAK/5/2017	water buffalo	98.2	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	94.9	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.9	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.5	0	Asia1	ASIA	G-III	
viba_646	HKN/19/74	bovine	84.9	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	84.9	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.9	0	Asia1	ASIA		
viba_297	IND/63/72		84.4	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.2	0	Asia1	ASIA	G-VIII	
viba_161	IND/14/95	bovine	83.8	0	Asia1	ASIA		

Virus sample name:	PAK/5/2017
Sender reference:	PK20
Location of origin:	Islamabad Capital Territory
Country of origin:	Pakistan
Date of collection:	02/02/2017
Host species:	water buffalo
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	10/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35152, genome 35153, sequence viba_35154, sequencing info 35155	

### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35113	PAK/9/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35174	PAK/15/2017	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_30284	AFG/10/2016	bovine	98.7	0	Asia1	ASIA	Sindh-08	
viba_35147	PAK/1/2017	water buffalo	98.6	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	98.6	0	Asia1	ASIA	Sindh-08	
viba_30288	AFG/21/2016	bovine	98.6	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	98.6	0	Asia1	ASIA	Sindh-08	
viba_22673	PAK/37/2014	cattle	98.4	0	Asia1	ASIA	Sindh-08	

### 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_206	PAK/8/2008	water buffalo	94.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.5	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.5	0	Asia1	ASIA	G-III	
viba_12154	BAR/8/2009	cattle	85.3	0	Asia1	ASIA	G-VIII	
viba_146	Shamir/ISR/89	bovine	84.7	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.6	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	84.5	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	

Virus sample name:	PAK/6/2017
Sender reference:	PK14
Location of origin:	Rawalpindi, Punjab
Country of origin:	Pakistan
Date of collection:	03/02/2017
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:	10/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	24/10/2017
Last updated:	24/10/2017
VIBASys IDs: sample 35156, genome 35157, sequence viba_35158, sequencing info 35159	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35124	PAK/17/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35178	PAK/16/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35102	PAK/1/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_35170	PAK/11/2017	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_26028	PAK/38/2015	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	98.9	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	95.4	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	91.1	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.9	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.8	0	Asia1	ASIA	G-III	
viba_12154	BAR/8/2009	cattle	85.6	0	Asia1	ASIA	G-VIII	
viba_551	YNBS/CHA/58	bovine	85.2	0	Asia1	ASIA		
viba_297	IND/63/72		85.0	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.7	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	
viba_646	HKN/19/74	bovine	84.3	0	Asia1	ASIA		



Virus sample name:	PAK/7/2017
Sender reference:	PK16
Location of origin:	Islamabad Capital Territory
Country of origin:	Pakistan
Date of collection:	03/02/2017
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:	10/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	25/10/2017
Last updated:	25/10/2017

VIBASys IDs: sample 35160, genome 35161, sequence viba\_35162, sequencing info 35163

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35135	PAK/22/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35182	PAK/17/2017	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_35106	PAK/5/2016	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_35174	PAK/15/2017	cattle	97.8	0	Asia1	ASIA	Sindh-08	
viba_35166	PAK/9/2017	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_35154	PAK/5/2017	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_35113	PAK/9/2016	cattle	97.6	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	97.4	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	93.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_551	YNBS/CHA/58	bovine	84.7	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	84.7	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	84.6	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.5	0	Asia1	ASIA	G-VIII	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_737	IND/18/80	bovine	83.9	0	Asia1	ASIA	G-V	
viba_775	IRN/10/2004	cattle	83.9	0	Asia1	ASIA	G-VIb	
viba_161	IND/14/95	bovine	83.6	0	Asia1	ASIA		

Virus sample name:	PAK/9/2017
Sender reference:	PK45
Location of origin:	Multan, Punjab
Country of origin:	Pakistan
Date of collection:	03/02/2017
Host species:	water buffalo
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	04/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	25/10/2017
Last updated:	25/10/2017
VIBASys IDs: sample 35164, genome 35165, sequence viba_35166, sequencing info 35167	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_22677	PAK/39/2014	cattle	98.1	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.1	0	Asia1	ASIA	Sindh-08	
viba_35162	PAK/7/2017	cattle	97.6	0	Asia1	ASIA	Sindh-08	
viba_35135	PAK/22/2016	cattle	97.6	0	Asia1	ASIA	Sindh-08	
viba_35182	PAK/17/2017	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_35106	PAK/5/2016	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_35154	PAK/5/2017	water buffalo	97.4	0	Asia1	ASIA	Sindh-08	
viba_35113	PAK/9/2016	cattle	97.4	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	97.3	0	Asia1	ASIA	Sindh-08	
viba_35174	PAK/15/2017	cattle	97.3	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	94.3	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.1	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.9	0	Asia1	ASIA	G-V	
viba_161	IND/14/95	bovine	85.4	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	85.1	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	85.0	0	Asia1	ASIA	G-VIII	
viba_385	IND/762/2003	bovine	85.0	0	Asia1	ASIA	G-III	
viba_551	YNBS/CHA/58	bovine	84.9	0	Asia1	ASIA		
viba_297	IND/63/72		83.9	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	83.7	0	Asia1	ASIA		

Virus sample name:	PAK/11/2017
Sender reference:	PK4
Location of origin:	Pakpattan, Punjab
Country of origin:	Pakistan
Date of collection:	15/02/2017
Host species:	water buffalo
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	10/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	25/10/2017
Last updated:	25/10/2017
VIBASys IDs: sample 35168, genome 35169, sequence viba_35170, sequencing info 35171	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35158	PAK/6/2017	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_35124	PAK/17/2016	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_35178	PAK/16/2017	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_35102	PAK/1/2016	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	99.0	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	99.0	0	Asia1	ASIA	Sindh-08	
viba_26028	PAK/38/2015	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.7	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	95.1	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_385	IND/762/2003	bovine	85.8	0	Asia1	ASIA	G-III	
viba_12154	BAR/8/2009	cattle	85.6	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.5	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.9	0	Asia1	ASIA		
viba_297	IND/63/72		84.7	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.7	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	
viba_646	HKN/19/74	bovine	84.3	0	Asia1	ASIA		

Virus sample name:	PAK/15/2017
Sender reference:	PK21
Location of origin:	Dera Allah Yar, Jafarabad, Balochistan
Country of origin:	Pakistan
Date of collection:	05/04/2017
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:	10/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	25/10/2017
Last updated:	25/10/2017
VIBASys IDs: sample 35172, genome 35173, sequence viba_35174, sequencing info 35175	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35154	PAK/5/2017	water buffalo	99.8	0	Asia1	ASIA	Sindh-08	
viba_35113	PAK/9/2016	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_30284	AFG/10/2016	bovine	98.6	0	Asia1	ASIA	Sindh-08	
viba_35147	PAK/1/2017	water buffalo	98.4	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	98.4	0	Asia1	ASIA	Sindh-08	
viba_30288	AFG/21/2016	bovine	98.4	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	98.4	0	Asia1	ASIA	Sindh-08	
viba_22673	PAK/37/2014	cattle	98.2	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	94.6	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.6	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.4	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.4	0	Asia1	ASIA	G-III	
viba_12154	BAR/8/2009	cattle	85.1	0	Asia1	ASIA	G-VIII	
viba_146	Shamir/ISR/89	bovine	84.6	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.5	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.4	0	Asia1	ASIA	G-VIb	
viba_551	YNBS/CHA/58	bovine	84.4	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	84.3	0	Asia1	ASIA		

Virus sample name:	PAK/16/2017
Sender reference:	PK12
Location of origin:	Rawalpindi, Punjab
Country of origin:	Pakistan
Date of collection:	02/08/2017
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:	10/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	25/10/2017
Last updated:	25/10/2017
VIBASys IDs: sample 35176, genome 35177, sequence viba_35178, sequencing info 35179	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35158	PAK/6/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35124	PAK/17/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35102	PAK/1/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_26020	PAK/33/2015	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_35170	PAK/11/2017	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_26028	PAK/38/2015	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	98.9	0	Asia1	ASIA	Sindh-08	

#### 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_206	PAK/8/2008	water buffalo	95.4	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	91.1	0	Asia1	ASIA	G- I	
viba_737	IND/18/80	bovine	85.9	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	85.8	0	Asia1	ASIA	G-III	
viba_12154	BAR/8/2009	cattle	85.6	0	Asia1	ASIA	G-VIII	
viba_551	YNBS/CHA/58	bovine	85.2	0	Asia1	ASIA		
viba_297	IND/63/72		85.0	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.7	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	
viba_646	HKN/19/74	bovine	84.3	0	Asia1	ASIA		

Virus sample name:	PAK/17/2017
Sender reference:	PK8
Location of origin:	Jhang, Punjab
Country of origin:	Pakistan
Date of collection:	02/09/2017
Host species:	water buffalo
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	10/10/2017
Primers:	As1-1C530F/EUR-2B52R; As1-1C613F/EUR-2B52R
Received for sequencing:	18/10/2017
Created:	25/10/2017
Last updated:	25/10/2017

VIBASys IDs: sample 35180, genome 35181, sequence viba\_35182, sequencing info 35183

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35162	PAK/7/2017	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35135	PAK/22/2016	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_35106	PAK/5/2016	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	98.2	0	Asia1	ASIA	Sindh-08	
viba_35174	PAK/15/2017	cattle	97.8	0	Asia1	ASIA	Sindh-08	
viba_35166	PAK/9/2017	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_35154	PAK/5/2017	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_35113	PAK/9/2016	cattle	97.6	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	97.4	0	Asia1	ASIA	Sindh-08	

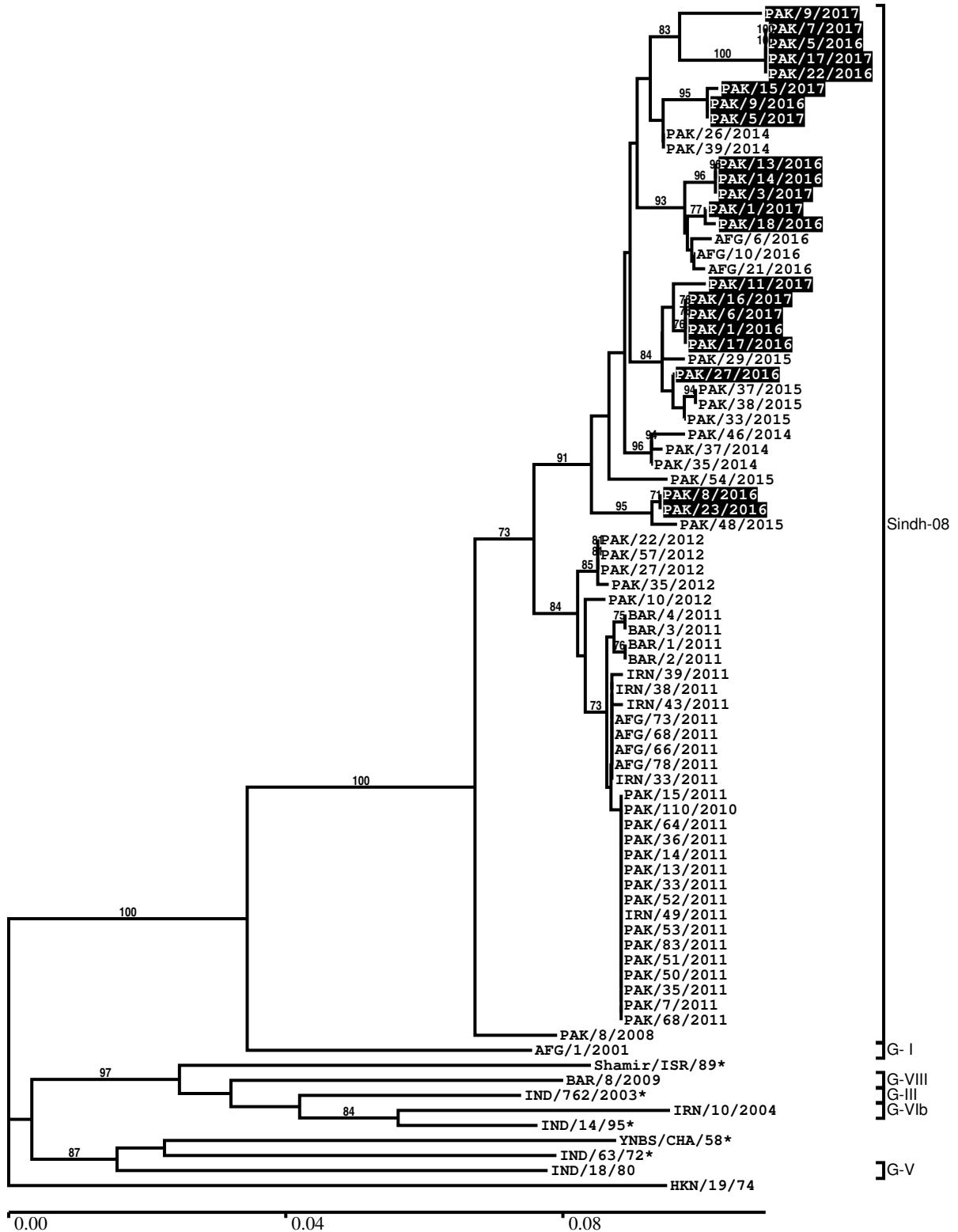
#### Most Closely Related Prototype Sequences

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_206	PAK/8/2008	water buffalo	93.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_551	YNBS/CHA/58	bovine	84.7	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	84.7	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	84.6	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.5	0	Asia1	ASIA	G-VIII	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_737	IND/18/80	bovine	83.9	0	Asia1	ASIA	G-V	
viba_775	IRN/10/2004	cattle	83.9	0	Asia1	ASIA	G-VIb	
viba_161	IND/14/95	bovine	83.6	0	Asia1	ASIA		

Report on FMDV Asia1 in Pakistan in 2016, 2017

Batch: WRLFMD/2017/00021



\*, not a WRLFMD Reference Number

## Analysis Parameters

VP1 subsequence extractor:	vp1_Asia1
Query sequence set:	WRLFMD/2017/00021-Pakistan-Asia1 (21 sequences)
Sequence database set:	allseqs_Asia1 (540 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:	11
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
PAK/9/2017	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/7/2017	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/5/2016	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/17/2017	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/22/2016	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/26/2014	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/39/2014	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/13/2016	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/14/2016	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/3/2017	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/1/2017	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/18/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
AFG/6/2016	n/a	bovine	WRLFMD	Afghanistan	Sindh-08
AFG/10/2016	n/a	bovine	WRLFMD	Afghanistan	Sindh-08
AFG/21/2016	n/a	bovine	WRLFMD	Afghanistan	Sindh-08
PAK/11/2017	n/a	water buffalo	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/17/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/29/2015	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/27/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/37/2015	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/38/2015	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/33/2015	n/a	water buffalo	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
PAK/8/2016	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/23/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/48/2015	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/22/2012	n/a	cattle	WRLFMD	Pakistan	Sindh-08

*continued on next page*



label	accession	host(s)	lab	country	taxonomic information
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
PAK/10/2012	n/a	cattle	WRLFMD	Pakistan	Sindh-08
BAR/4/2011	n/a	n/a	WRLFMD	Bahrain	Sindh-08
BAR/3/2011	n/a	n/a	WRLFMD	Bahrain	Sindh-08
BAR/1/2011	n/a	n/a	WRLFMD	Bahrain	Sindh-08
BAR/2/2011	n/a	n/a	WRLFMD	Bahrain	Sindh-08
IRN/39/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
IRN/38/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
IRN/43/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
AFG/73/2011	n/a	cattle	WRLFMD	Afghanistan	Sindh-08
AFG/68/2011	n/a	cattle	WRLFMD	Afghanistan	Sindh-08
AFG/66/2011	n/a	cattle	WRLFMD	Afghanistan	Sindh-08
AFG/78/2011	n/a	cattle	WRLFMD	Afghanistan	Sindh-08
IRN/33/2011	n/a	cattle	WRLFMD	Iran	Sindh-08
PAK/15/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/110/2010	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/64/2011	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/13/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/33/2011	n/a	water buffalo	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/53/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/83/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/51/2011	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/50/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/35/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/7/2011	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/68/2011	n/a	water buffalo	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	
BAR/8/2009	n/a	cattle	WRLFMD	Bahrain	G-VIII
IND/762/2003*	DQ101240	bovine	PD-FMD	India	G-III
IRN/10/2004	DQ121119	cattle	WRLFMD	Iran	G-VIb
IND/14/95*	AF390678	bovine	PD-FMD	India	
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