

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

Genotyping Report

FMDV serotype: Asia1
Country: Pakistan
Year: 2019
Batch: WRLFMD/2019/00028
No. of sequences: 19
Report date: 12th August 2019
Report generated by: Nick Knowles
Report checked by: Antonello Di Nardo



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

email: reporting@pirbright.ac.uk

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Virus sample name:	PAK/3/2019
Sender reference:	35
Location of origin:	Quetta, Balochistan
Country of origin:	Pakistan
Date of collection:	16/01/2019
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:	01/08/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42529, genome 42530, sequence viba_42531, sequencing info 42532	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42551	PAK/13/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_42559	PAK/18/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	99.4	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	93.0	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.6	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.1	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	84.9	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.3	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.0	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		83.9	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	83.8	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.3	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.2	0	Asia1	ASIA		

Virus sample name:	PAK/4/2019
Sender reference:	19
Location of origin:	Swat, Khyber Pakhtunkhwa
Country of origin:	Pakistan
Date of collection:	24/01/2019
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:	30/07/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42533, genome 42534, sequence viba_42535, sequencing info 42536	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42571	PAK/21/2019	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_42531	PAK/3/2019	cattle	99.0	0	Asia1	ASIA	Sindh-08	
viba_42559	PAK/18/2019	cattle	99.0	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	98.7	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	98.7	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	98.7	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	93.0	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.4	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.2	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.3	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.3	0	Asia1	ASIA	G-VIb	
viba_161	IND/14/95	bovine	84.0	0	Asia1	ASIA		
viba_297	IND/63/72		83.9	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.6	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.5	0	Asia1	ASIA		

Virus sample name:	PAK/7/2019
Sender reference:	27
Location of origin:	Karachi, Sindh
Country of origin:	Pakistan
Date of collection:	31/01/2019
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:	30/07/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42537, genome 42538, sequence viba_42539, sequencing info 42540	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42583	PAK/26/2019	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	99.8	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	99.8	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42591	PAK/30/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42595	PAK/31/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.5	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	93.1	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	91.1	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.6	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.4	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.7	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		84.4	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.3	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.8	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.6	0	Asia1	ASIA		

Virus sample name:	PAK/10/2019
Sender reference:	30
Location of origin:	Karachi, Sindh
Country of origin:	Pakistan
Date of collection:	03/02/2019
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:	30/07/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42541, genome 42542, sequence viba_42543, sequencing info 42544	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_26040	PAK/54/2015	water buffalo	96.5	0	Asia1	ASIA	Sindh-08	
viba_39731	VRI/CAMB/Kasur1/PUN/PAK	cattle	96.5	0	Asia1	ASIA	Sindh-08	
viba_39727	VRI/CAMB/Kasur2/PUN/PAK	cattle	96.3	0	Asia1	ASIA	Sindh-08	
viba_38820	NIAB/PUN/PAK/181/2016	cattle	96.2	0	Asia1	ASIA	Sindh-08	
viba_38872	NIAB/PUN/PAK/207/2017	cattle	95.9	0	Asia1	ASIA	Sindh-08	
viba_39735	VRI/CAMB/Faisalabad/PUN/PAK	cattle	95.7	0	Asia1	ASIA	Sindh-08	
viba_38880	NIAB/PUN/PAK/203/2017	cattle	95.7	0	Asia1	ASIA	Sindh-08	
viba_22669	PAK/35/2014	water buffalo	95.5	0	Asia1	ASIA	Sindh-08	
viba_22665	PAK/26/2014	cattle	95.4	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	95.4	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	89.2	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	84.8	0	Asia1	ASIA	G-VIII	
viba_646	HKN/19/74	bovine	84.8	0	Asia1	ASIA		
viba_737	IND/18/80	bovine	84.5	0	Asia1	ASIA	G-V	
viba_385	IND/762/2003	bovine	84.0	0	Asia1	ASIA	G-III	
viba_551	YNBS/CHA/58	bovine	83.9	0	Asia1	ASIA		
viba_297	IND/63/72		83.9	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	83.6	0	Asia1	ASIA	G-VIb	
viba_146	Shamir/ISR/89	bovine	83.4	0	Asia1	ASIA		

Virus sample name:	PAK/11/2019
Sender reference:	31
Location of origin:	Karachi, Sindh
Country of origin:	Pakistan
Date of collection:	04/02/2019
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:	30/07/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42545, genome 42546, sequence viba_42547, sequencing info 42548	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42531	PAK/3/2019	cattle	97.9	0	Asia1	ASIA	Sindh-08	
viba_42559	PAK/18/2019	cattle	97.9	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	97.8	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	97.8	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	97.8	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	97.8	0	Asia1	ASIA	Sindh-08	
viba_42571	PAK/21/2019	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	97.6	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	97.6	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	97.6	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	90.9	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	85.4	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.1	0	Asia1	ASIA	G-V	
viba_297	IND/63/72		84.9	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	84.9	0	Asia1	ASIA	G-III	
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.5	0	Asia1	ASIA		
viba_146	Shamir/ISR/89	bovine	84.4	0	Asia1	ASIA		
viba_646	HKN/19/74	bovine	84.3	0	Asia1	ASIA		

Virus sample name:	PAK/13/2019
Sender reference:	32
Location of origin:	Karachi, Sindh
Country of origin:	Pakistan
Date of collection:	06/02/2019
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:	31/07/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42549, genome 42550, sequence viba_42551, sequencing info 42552	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42575	PAK/22/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42531	PAK/3/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	99.5	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	99.5	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42591	PAK/30/2019	cattle	99.4	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	93.1	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.2	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.1	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.4	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.2	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		84.0	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.0	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.5	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.3	0	Asia1	ASIA		

Virus sample name:	PAK/14/2019
Sender reference:	20
Location of origin:	Swat, Khyber Pakhtunkhwa
Country of origin:	Pakistan
Date of collection:	07/02/2019
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:	31/07/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42553, genome 42554, sequence viba_42555, sequencing info 42556	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_22665	PAK/26/2014	cattle	96.0	0	Asia1	ASIA	Sindh-08	
viba_22677	PAK/39/2014	cattle	96.0	0	Asia1	ASIA	Sindh-08	
viba_38828	NIAB/PUN/PAK/190/2016	water buffalo	95.7	0	Asia1	ASIA	Sindh-08	
viba_38864	NIAB/PUN/PAK/148/2016	cattle	95.7	0	Asia1	ASIA	Sindh-08	
viba_38844	NIAB/PUN/PAK/197/2016	dromedary	95.5	0	Asia1	ASIA	Sindh-08	
viba_26028	PAK/38/2015	cattle	95.5	0	Asia1	ASIA	Sindh-08	
viba_26024	PAK/37/2015	cattle	95.5	0	Asia1	ASIA	Sindh-08	
viba_35143	PAK/27/2016	cattle	95.5	0	Asia1	ASIA	Sindh-08	
viba_38852	NIAB/PUN/PAK/144/2016	cattle	95.4	0	Asia1	ASIA	Sindh-08	
viba_26016	PAK/29/2015	water buffalo	95.4	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	92.2	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	89.0	0	Asia1	ASIA	G- I	
viba_385	IND/762/2003	bovine	85.2	0	Asia1	ASIA	G-III	
viba_737	IND/18/80	bovine	85.2	0	Asia1	ASIA	G-V	
viba_146	Shamir/ISR/89	bovine	84.4	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.4	0	Asia1	ASIA		
viba_551	YNBS/CHA/58	bovine	84.2	0	Asia1	ASIA		
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_12154	BAR/8/2009	cattle	84.2	0	Asia1	ASIA	G-VIII	
viba_775	IRN/10/2004	cattle	84.0	0	Asia1	ASIA	G-VIb	

Virus sample name:	PAK/18/2019
Sender reference:	34
Location of origin:	Lasbela, Balochistan
Country of origin:	Pakistan
Date of collection:	14/02/2019
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:	31/07/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42557, genome 42558, sequence viba_42559, sequencing info 42560	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42583	PAK/26/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42531	PAK/3/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_42591	PAK/30/2019	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.2	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	93.0	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.4	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.2	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.9	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.3	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.1	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.6	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.5	0	Asia1	ASIA		

Virus sample name:	PAK/19/2019
Sender reference:	6
Location of origin:	Rawalpindi, Punjab
Country of origin:	Pakistan
Date of collection:	19/02/2019
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:	31/07/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42561, genome 42562, sequence viba_42563, sequencing info 42564	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42599	PAK/33/2019	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42591	PAK/30/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42595	PAK/31/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.4	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	93.0	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.4	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.2	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.3	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.1	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.6	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.5	0	Asia1	ASIA		

Virus sample name:	PAK/20/2019
Sender reference:	7
Location of origin:	Rawalpindi, Punjab
Country of origin:	Pakistan
Date of collection:	19/02/2019
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:	31/07/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42565, genome 42566, sequence viba_42567, sequencing info 42568	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42563	PAK/19/2019	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42591	PAK/30/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42595	PAK/31/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.4	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	93.0	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.4	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.2	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.3	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.1	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.6	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.5	0	Asia1	ASIA		

Virus sample name:	PAK/21/2019
Sender reference:	23
Location of origin:	Charsadda, Khyber Pakhtunkhwa
Country of origin:	Pakistan
Date of collection:	19/02/2019
Host species:	water buffalo
Serotype:	Asia1
Topotype:	ASIA
Lineage:	Sindh-08
Sublineage:	
Sequence length:	627
Ambiguities:	0
Material submitted for sequencing:	BTy2
Harvest date of material:	02/08/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42569, genome 42570, sequence viba_42571, sequencing info 42572	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42535	PAK/4/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42531	PAK/3/2019	cattle	99.0	0	Asia1	ASIA	Sindh-08	
viba_42559	PAK/18/2019	cattle	99.0	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	98.9	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	98.7	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	98.7	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	98.7	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	93.3	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	85.2	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.3	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.0	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		83.9	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	83.7	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.3	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.2	0	Asia1	ASIA		

Virus sample name:	PAK/22/2019
Sender reference:	2
Location of origin:	Attock, Punjab
Country of origin:	Pakistan
Date of collection:	26/02/2019
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:	01/08/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42573, genome 42574, sequence viba_42575, sequencing info 42576	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42551	PAK/13/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42531	PAK/3/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	99.5	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	99.5	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42591	PAK/30/2019	cattle	99.4	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	93.2	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	91.1	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.2	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.2	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		
viba_146	Shamir/ISR/89	bovine	84.4	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.2	0	Asia1	ASIA	G-VIb	
viba_161	IND/14/95	bovine	84.0	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.5	0	Asia1	ASIA	G-III	

Virus sample name:	PAK/25/2019
Sender reference:	15
Location of origin:	Multan, Punjab
Country of origin:	Pakistan
Date of collection:	07/03/2019
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:	01/08/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42577, genome 42578, sequence viba_42579, sequencing info 42580	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42551	PAK/13/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42531	PAK/3/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	99.4	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42591	PAK/30/2019	cattle	99.2	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	93.0	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.1	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	84.9	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.3	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.0	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		83.9	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	83.8	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.3	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.2	0	Asia1	ASIA		

Virus sample name:	PAK/26/2019
Sender reference:	4
Location of origin:	Jhelum, Punjab
Country of origin:	Pakistan
Date of collection:	13/03/2019
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:	01/08/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42581, genome 42582, sequence viba_42583, sequencing info 42584	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42539	PAK/7/2019	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	99.8	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	99.8	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42591	PAK/30/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42595	PAK/31/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.5	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	93.1	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	91.1	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.6	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.4	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.7	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		84.4	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.3	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.8	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.6	0	Asia1	ASIA		

Virus sample name:	PAK/27/2019
Sender reference:	17
Location of origin:	Islamabad Capital Territory
Country of origin:	Pakistan
Date of collection:	14/03/2019
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:	01/08/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42585, genome 42586, sequence viba_42587, sequencing info 42588	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42563	PAK/19/2019	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42591	PAK/30/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42595	PAK/31/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.4	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	93.0	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.4	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.2	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.3	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.1	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.6	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.5	0	Asia1	ASIA		

Virus sample name:	PAK/30/2019
Sender reference:	21
Location of origin:	Swat, Khyber Pakhtunkhwa
Country of origin:	Pakistan
Date of collection:	19/03/2019
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:	01/08/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42589, genome 42590, sequence viba_42591, sequencing info 42592	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42595	PAK/31/2019	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	99.5	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	99.5	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.2	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	92.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.7	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.2	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.1	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.6	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.5	0	Asia1	ASIA		

Virus sample name:	PAK/31/2019
Sender reference:	22
Location of origin:	Swat, Khyber Pakhtunkhwa
Country of origin:	Pakistan
Date of collection:	19/03/2019
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:	01/08/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42593, genome 42594, sequence viba_42595, sequencing info 42596	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42591	PAK/30/2019	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.7	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	99.5	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	99.5	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.2	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	92.8	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.7	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.7	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.2	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.5	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.1	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.6	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.5	0	Asia1	ASIA		

Virus sample name:	PAK/33/2019
Sender reference:	8
Location of origin:	Rawalpindi, Punjab
Country of origin:	Pakistan
Date of collection:	26/03/2019
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:	01/08/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42597, genome 42598, sequence viba_42599, sequencing info 42600	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42563	PAK/19/2019	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	100.0	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	100.0	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.8	0	Asia1	ASIA	Sindh-08	
viba_42551	PAK/13/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42591	PAK/30/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42595	PAK/31/2019	cattle	99.5	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.4	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	93.0	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.9	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	86.4	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.2	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	84.3	0	Asia1	ASIA	G-VIb	
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.1	0	Asia1	ASIA		
viba_385	IND/762/2003	bovine	83.6	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.5	0	Asia1	ASIA		

Virus sample name:	PAK/34/2019
Sender reference:	16
Location of origin:	Multan, Punjab
Country of origin:	Pakistan
Date of collection:	16/04/2019
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:	01/08/2019
Primers:	As1-1C530F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	08/08/2019
Created:	12/08/2019
Last updated:	12/08/2019
VIBASys IDs: sample 42601, genome 42602, sequence viba_42603, sequencing info 42604	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42551	PAK/13/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42575	PAK/22/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42583	PAK/26/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42539	PAK/7/2019	cattle	99.4	0	Asia1	ASIA	Sindh-08	
viba_42579	PAK/25/2019	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_42531	PAK/3/2019	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_42563	PAK/19/2019	water buffalo	99.2	0	Asia1	ASIA	Sindh-08	
viba_42599	PAK/33/2019	cattle	99.2	0	Asia1	ASIA	Sindh-08	
viba_42567	PAK/20/2019	water buffalo	99.2	0	Asia1	ASIA	Sindh-08	
viba_42587	PAK/27/2019	cattle	99.2	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	93.1	0	Asia1	ASIA	Sindh-08	
viba_167	AFG/1/2001	bovine	90.4	0	Asia1	ASIA	G- I	
viba_12154	BAR/8/2009	cattle	85.9	0	Asia1	ASIA	G-VIII	
viba_737	IND/18/80	bovine	85.2	0	Asia1	ASIA	G-V	
viba_551	YNBS/CHA/58	bovine	84.6	0	Asia1	ASIA		
viba_161	IND/14/95	bovine	84.4	0	Asia1	ASIA		
viba_297	IND/63/72		84.2	0	Asia1	ASIA		
viba_775	IRN/10/2004	cattle	83.5	0	Asia1	ASIA	G-VIb	
viba_385	IND/762/2003	bovine	83.2	0	Asia1	ASIA	G-III	
viba_146	Shamir/ISR/89	bovine	83.0	0	Asia1	ASIA		

Analysis Parameters

VP1 subsequence extractor:	vp1_Asia1
Query sequence set:	WRLFMD/2019/00028-Pakistan-Asia1 (19 sequences)
Sequence database set:	allseqs_Asia1 (689 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/11/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/21/2019	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/4/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/34/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/13/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/25/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/31/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/30/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/7/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/26/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/33/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/20/2019	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/27/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/19/2019	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/3/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/18/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/22/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/10/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
VRI/CAMB/Faisalabad/PUN/PAK*	MK241889	cattle	VRI-CAMB	Pakistan	Sindh-08
NIAB/PUN/PAK/203/2017*	MF115990	cattle	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/207/2017*	MF140437	cattle	NIAB	Pakistan	Sindh-08
VRI/CAMB/Kasur2/PUN/PAK*	MK241890	cattle	VRI-CAMB	Pakistan	Sindh-08
VRI/CAMB/Kasur1/PUN/PAK*	MK241888	cattle	VRI-CAMB	Pakistan	Sindh-08
NIAB/PUN/PAK/181/2016*	MF140441	cattle	NIAB	Pakistan	Sindh-08
PAK/54/2015	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
PAK/14/2019	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/9/2017	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
NIAB/PUN/PAK/148/2016*	MF115988	cattle	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/190/2016*	MF140438	water buffalo	NIAB	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
NIAB/PUN/PAK/192/2016*	MF140442	cattle	NIAB	Pakistan	Sindh-08
PAK/39/2014	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/26/2014	n/a	cattle	WRLFMD	Pakistan	Sindh-08

continued on next page

label	accession	host(s)	lab	country	taxonomic information
PAK/9/2016	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/15/2017	n/a	cattle	WRLFMD	Pakistan	Sindh-08
PAK/5/2017	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/14/2016	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
AFG/21/2016	n/a	bovine	WRLFMD	Afghanistan	Sindh-08
AFG/10/2016	n/a	bovine	WRLFMD	Afghanistan	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
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/29/2015	n/a	water buffalo	WRLFMD	Pakistan	Sindh-08
NIAB/PUN/PAK/197/2016*	MF167435	dromedary	NIAB	Pakistan	Sindh-08
PAK/6/2017	n/a	cattle	WRLFMD	Pakistan	Sindh-08
NIAB/PUN/PAK/160/2016*	MF140439	water buffalo	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/152/2016*	MF115989	cattle	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/156/2016*	MF115991	cattle	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/149/2016*	KY659574	cattle	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/145/2016*	KY659571	cattle	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/147/2016*	KY659573	cattle	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/144/2016*	KY659570	cattle	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/195/2016*	MF140443	dromedary	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/146/2016*	KY659572	cattle	NIAB	Pakistan	Sindh-08
NIAB/PUN/PAK/154/2016*	KY659575	cattle	NIAB	Pakistan	Sindh-08
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/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/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	MG603264	cattle	WRLFMD	Bahrain	G-VIII
IND/762/2003*	DQ101240	bovine	PD-FMD	India	G-III
IND/14/95*	AF390678	bovine	PD-FMD	India	
IRN/10/2004	DQ121119	cattle	WRLFMD	Iran	G-VIb
YNBS/CHA/58*	AY390432	bovine	LVRI	China	
IND/63/72*	AY304994	n/a	IVRI-	India	
			Bangalore		
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