

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

Genotyping Report

Report Date for this Batch: 9 December 2013

FMDV type Asia 1

Country: Pakistan

Period: 2012-2013

No. of samples: 9

BATCH: WRLFMD/2013/00024



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FAO World Reference Laboratory for FMD Genotyping Report

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Serotype: ASIA1	Report date: 06/12/2013
WRLFMD Ref No: PAK/42/2012	Reported by: N.J. Knowles
Batch No: WRLFMD/2013/00024	Checked by: K. Bachanek-Bankowska
Sender Ref: FMD-452	
Location: Sialkot district, Punjab province, Pakistan	Topotype: ASIA
Date collected: 15/09/2012	Genotype/strain: Sindh-08
Date received by WRLFMD: 07/11/2013	Sequence filename: PAK12-42.SEQ
Date received for sequencing: 03/12/2013	Date sequence last updated: 05/12/2013
Species: Water Buffalo	No. of Nt determined: 633
Material used: BTy1 12/11/2013	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 633
RT-PCR primers: As1-1C530F/EUR-2B52R	Total no. of comparisons: 490
As1-1C613F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 29 days
	Sequencing time: 3 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/91/2011	PAK11-91	633	624	0	98.58	1.42	ASIA	Sindh-08
2	Asia1/PAK/92/2011	PAK11-92	633	623	0	98.42	1.58	ASIA	Sindh-08
3	Asia1/PAK/11/2012	PAK12-11	633	622	0	98.26	1.74	ASIA	Sindh-08
4	Asia1/IRN/49/2011	IRN11-49	633	621	0	98.10	1.90	ASIA	Sindh-08
5	Asia1/PAK/1/2012	PAK12-01	633	621	0	98.10	1.90	ASIA	Sindh-08
6	Asia1/PAK/106/2010	PAK10106	633	621	0	98.10	1.90	ASIA	Sindh-08
7	Asia1/PAK/108/2010	PAK10108	633	621	0	98.10	1.90	ASIA	Sindh-08
8	Asia1/PAK/11/2011	PAK11-11	633	621	0	98.10	1.90	ASIA	Sindh-08
9	Asia1/PAK/110/2010	PAK10110	633	621	0	98.10	1.90	ASIA	Sindh-08
10	Asia1/PAK/111/2010	PAK10111	633	621	0	98.10	1.90	ASIA	Sindh-08
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/8/2008	PAK08-08	633	604	0	95.42	4.58	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	575	0	90.84	9.16	ASIA	Group I
3	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	536	0	84.68	15.32	ASIA	Group III
4	Asia1/IND/63/72* (AY304994)	IND72C63	630	530	0	84.13	15.87	ASIA	Unnamed
5	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	532	0	84.04	15.96	ASIA	Unnamed
6	Asia1/HKN/19/74	HKN74-19	633	531	0	83.89	16.11	ASIA	Unnamed
7	Asia1/IND/14/95* (AF390678)	IND95-AA	633	530	0	83.73	16.27	ASIA	Unnamed
8	Asia1/Shamir/ISR/89	ISR89--A	633	530	0	83.73	16.27	ASIA	Unnamed
9	Asia1/IND/18/80 (DQ121116)	IND80-18	633	528	0	83.41	16.59	ASIA	Group V
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	523	0	82.62	17.38	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: ASIA1 WRLFMD Ref No: PAK/45/2012 Batch No: WRLFMD/2013/00024 Sender Ref: FMD-559 Location: Sargodha district, Punjab province, Pakistan Date collected: 02/11/2012 Date received by WRLFMD: 07/11/2013 Date received for sequencing: 03/12/2013 Species: Water Buffalo Material used: BTy1 12/11/2013 Region sequenced: VP1 RT-PCR primers: As1-1C530F/EUR-2B52R As1-1C613F/EUR-2B52R	Report date: 06/12/2013 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ASIA Genotype/strain: Sindh-08 Sequence filename: PAK12-45.SEQ Date sequence last updated: 05/12/2013 No. of Nt determined: 633 No. of ambiguities: 0 Gene length: 633 Total no. of comparisons: 490 Min. no. of nt for comparison: 600 Total turn-around time: 29 days Sequencing time: 3 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/46/2012	PAK12-46	633	633	0	100.00	0.00	ASIA	Sindh-08
2	Asia1/PAK/10/2013	PAK13-10	633	625	0	98.74	1.26	ASIA	Sindh-08
3	Asia1/AFG/40/2011	AFG11-40	633	620	0	97.95	2.05	ASIA	Sindh-08
4	Asia1/IRN/47/2011	IRN11-47	633	620	0	97.95	2.05	ASIA	Sindh-08
5	Asia1/IRN/49/2011	IRN11-49	633	620	0	97.95	2.05	ASIA	Sindh-08
6	Asia1/PAK/106/2010	PAK10106	633	620	0	97.95	2.05	ASIA	Sindh-08
7	Asia1/PAK/108/2010	PAK10108	633	620	0	97.95	2.05	ASIA	Sindh-08
8	Asia1/PAK/11/2011	PAK11-11	633	620	0	97.95	2.05	ASIA	Sindh-08
9	Asia1/PAK/110/2010	PAK10110	633	620	0	97.95	2.05	ASIA	Sindh-08
10	Asia1/PAK/111/2010	PAK10111	633	620	0	97.95	2.05	ASIA	Sindh-08
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/8/2008	PAK08-08	633	606	0	95.73	4.27	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	574	0	90.68	9.32	ASIA	Group I
3	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	543	0	85.78	14.22	ASIA	Group III
4	Asia1/IND/18/80 (DQ121116)	IND80-18	633	537	0	84.83	15.17	ASIA	Group V
5	Asia1/IND/63/72* (AY304994)	IND72C63	630	534	0	84.76	15.24	ASIA	Unnamed
6	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	536	0	84.68	15.32	ASIA	Unnamed
7	Asia1/Shamir/ISR/89	ISR89--A	633	533	0	84.20	15.80	ASIA	Unnamed
8	Asia1/IND/14/95* (AF390678)	IND95-AA	633	532	0	84.04	15.96	ASIA	Unnamed
9	Asia1/HKN/19/74	HKN74-19	633	531	0	83.89	16.11	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	525	0	82.94	17.06	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: ASIA1 WRLFMD Ref No: PAK/46/2012 Batch No: WRLFMD/2013/00024 Sender Ref: FMD -566 Location: Sargodha district, Punjab province, Pakistan Date collected: 07/11/2012 Date received by WRLFMD: 07/11/2013 Date received for sequencing: 03/12/2013 Species: Cattle Material used: BTy1 12/11/2013 Region sequenced: VP1 RT-PCR primers: As1-1C530F/EUR-2B52R As1-1C613F/EUR-2B52R	Report date: 06/12/2013 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ASIA Genotype/strain: Sindh-08 Sequence filename: PAK12-46.SEQ Date sequence last updated: 05/12/2013 No. of Nt determined: 633 No. of ambiguities: 0 Gene length: 633 Total no. of comparisons: 490 Min. no. of nt for comparison: 600 Total turn-around time: 29 days Sequencing time: 3 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/45/2012	PAK12-45	633	633	0	100.00	0.00	ASIA	Sindh-08
2	Asia1/PAK/10/2013	PAK13-10	633	625	0	98.74	1.26	ASIA	Sindh-08
3	Asia1/AFG/40/2011	AFG11-40	633	620	0	97.95	2.05	ASIA	Sindh-08
4	Asia1/IRN/47/2011	IRN11-47	633	620	0	97.95	2.05	ASIA	Sindh-08
5	Asia1/IRN/49/2011	IRN11-49	633	620	0	97.95	2.05	ASIA	Sindh-08
6	Asia1/PAK/106/2010	PAK10106	633	620	0	97.95	2.05	ASIA	Sindh-08
7	Asia1/PAK/108/2010	PAK10108	633	620	0	97.95	2.05	ASIA	Sindh-08
8	Asia1/PAK/11/2011	PAK11-11	633	620	0	97.95	2.05	ASIA	Sindh-08
9	Asia1/PAK/110/2010	PAK10110	633	620	0	97.95	2.05	ASIA	Sindh-08
10	Asia1/PAK/111/2010	PAK10111	633	620	0	97.95	2.05	ASIA	Sindh-08
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/8/2008	PAK08-08	633	606	0	95.73	4.27	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	574	0	90.68	9.32	ASIA	Group I
3	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	543	0	85.78	14.22	ASIA	Group III
4	Asia1/IND/18/80 (DQ121116)	IND80-18	633	537	0	84.83	15.17	ASIA	Group V
5	Asia1/IND/63/72* (AY304994)	IND72C63	630	534	0	84.76	15.24	ASIA	Unnamed
6	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	536	0	84.68	15.32	ASIA	Unnamed
7	Asia1/Shamir/ISR/89	ISR89--A	633	533	0	84.20	15.80	ASIA	Unnamed
8	Asia1/IND/14/95* (AF390678)	IND95-AA	633	532	0	84.04	15.96	ASIA	Unnamed
9	Asia1/HKN/19/74	HKN74-19	633	531	0	83.89	16.11	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	525	0	82.94	17.06	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: ASIA1 WRLFMD Ref No: PAK/7/2013 Batch No: WRLFMD/2013/00024 Sender Ref: FMD-941 Location: Okara district, Punjab province, Pakistan Date collected: 28/02/2013 Date received by WRLFMD: 07/11/2013 Date received for sequencing: 03/12/2013 Species: Water Buffalo Material used: BTy1 15/11/2013 Region sequenced: VP1 RT-PCR primers: As1-1C530F/EUR-2B52R As1-1C613F/EUR-2B52R	Report date: 06/12/2013 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ASIA Genotype/strain: Sindh-08 Sequence filename: PAK13-07.SEQ Date sequence last updated: 05/12/2013 No. of Nt determined: 633 No. of ambiguities: 0 Gene length: 633 Total no. of comparisons: 490 Min. no. of nt for comparison: 600 Total turn-around time: 29 days Sequencing time: 3 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/14/2013	PAK13-14	633	633	0	100.00	0.00	ASIA	Sindh-08
2	Asia1/PAK/8/2013	PAK13-08	633	633	0	100.00	0.00	ASIA	Sindh-08
3	Asia1/PAK/9/2013	PAK13-09	633	633	0	100.00	0.00	ASIA	Sindh-08
4	Asia1/IRN/47/2011	IRN11-47	633	618	0	97.63	2.37	ASIA	Sindh-08
5	Asia1/IRN/49/2011	IRN11-49	633	617	0	97.47	2.53	ASIA	Sindh-08
6	Asia1/PAK/106/2010	PAK10106	633	617	0	97.47	2.53	ASIA	Sindh-08
7	Asia1/PAK/108/2010	PAK10108	633	617	0	97.47	2.53	ASIA	Sindh-08
8	Asia1/PAK/11/2011	PAK11-11	633	617	0	97.47	2.53	ASIA	Sindh-08
9	Asia1/PAK/110/2010	PAK10110	633	617	0	97.47	2.53	ASIA	Sindh-08
10	Asia1/PAK/111/2010	PAK10111	633	617	0	97.47	2.53	ASIA	Sindh-08
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/8/2008	PAK08-08	633	598	0	94.47	5.53	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	576	0	91.00	9.00	ASIA	Group I
3	Asia1/IND/18/80 (DQ121116)	IND80-18	633	538	0	84.99	15.01	ASIA	Group V
4	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	538	0	84.99	15.01	ASIA	Group III
5	Asia1/IND/63/72* (AY304994)	IND72C63	630	533	0	84.60	15.40	ASIA	Unnamed
6	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	533	0	84.20	15.80	ASIA	Unnamed
7	Asia1/IND/14/95* (AF390678)	IND95-AA	633	531	0	83.89	16.11	ASIA	Unnamed
8	Asia1/Shamir/ISR/89	ISR89--A	633	530	0	83.73	16.27	ASIA	Unnamed
9	Asia1/HKN/19/74	HKN74-19	633	529	0	83.57	16.43	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	526	0	83.10	16.90	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: ASIA1 WRLFMD Ref No: PAK/8/2013 Batch No: WRLFMD/2013/00024 Sender Ref: FMD-1006 Location: Rahim Yar Khan district, Punjab province, Pakistan Date collected: 06/03/2013 Date received by WRLFMD: 07/11/2013 Date received for sequencing: 03/12/2013 Species: Cattle Material used: BTy2 28/11/2013 Region sequenced: VP1 RT-PCR primers: As1-1C530F/EUR-2B52R As1-1C613F/EUR-2B52R	Report date: 06/12/2013 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ASIA Genotype/strain: Sindh-08 Sequence filename: PAK13-08.SEQ Date sequence last updated: 05/12/2013 No. of Nt determined: 633 No. of ambiguities: 0 Gene length: 633 Total no. of comparisons: 490 Min. no. of nt for comparison: 600 Total turn-around time: 29 days Sequencing time: 3 days
Comments: FMDV type A was also identified in this sample.	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/14/2013	PAK13-14	633	633	0	100.00	0.00	ASIA	Sindh-08
2	Asia1/PAK/7/2013	PAK13-07	633	633	0	100.00	0.00	ASIA	Sindh-08
3	Asia1/PAK/9/2013	PAK13-09	633	633	0	100.00	0.00	ASIA	Sindh-08
4	Asia1/IRN/47/2011	IRN11-47	633	618	0	97.63	2.37	ASIA	Sindh-08
5	Asia1/IRN/49/2011	IRN11-49	633	617	0	97.47	2.53	ASIA	Sindh-08
6	Asia1/PAK/106/2010	PAK10106	633	617	0	97.47	2.53	ASIA	Sindh-08
7	Asia1/PAK/108/2010	PAK10108	633	617	0	97.47	2.53	ASIA	Sindh-08
8	Asia1/PAK/11/2011	PAK11-11	633	617	0	97.47	2.53	ASIA	Sindh-08
9	Asia1/PAK/110/2010	PAK10110	633	617	0	97.47	2.53	ASIA	Sindh-08
10	Asia1/PAK/111/2010	PAK10111	633	617	0	97.47	2.53	ASIA	Sindh-08
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/8/2008	PAK08-08	633	598	0	94.47	5.53	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	576	0	91.00	9.00	ASIA	Group I
3	Asia1/IND/18/80 (DQ121116)	IND80-18	633	538	0	84.99	15.01	ASIA	Group V
4	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	538	0	84.99	15.01	ASIA	Group III
5	Asia1/IND/63/72* (AY304994)	IND72C63	630	533	0	84.60	15.40	ASIA	Unnamed
6	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	533	0	84.20	15.80	ASIA	Unnamed
7	Asia1/IND/14/95* (AF390678)	IND95-AA	633	531	0	83.89	16.11	ASIA	Unnamed
8	Asia1/Shamir/ISR/89	ISR89--A	633	530	0	83.73	16.27	ASIA	Unnamed
9	Asia1/HKN/19/74	HKN74-19	633	529	0	83.57	16.43	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	526	0	83.10	16.90	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: ASIA1 WRLFMD Ref No: PAK/9/2013 Batch No: WRLFMD/2013/00024 Sender Ref: FMD-1001 Location: Okara district, Punjab province, Pakistan Date collected: 14/03/2013 Date received by WRLFMD: 07/11/2013 Date received for sequencing: 03/12/2013 Species: Water Buffalo Material used: BTy1 19/11/2013 Region sequenced: VP1 RT-PCR primers: As1-1C530F/EUR-2B52R As1-1C613F/EUR-2B52R	Report date: 06/12/2013 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ASIA Genotype/strain: Sindh-08 Sequence filename: PAK13-09.SEQ Date sequence last updated: 05/12/2013 No. of Nt determined: 633 No. of ambiguities: 0 Gene length: 633 Total no. of comparisons: 490 Min. no. of nt for comparison: 600 Total turn-around time: 29 days Sequencing time: 3 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/14/2013	PAK13-14	633	633	0	100.00	0.00	ASIA	Sindh-08
2	Asia1/PAK/7/2013	PAK13-07	633	633	0	100.00	0.00	ASIA	Sindh-08
3	Asia1/PAK/8/2013	PAK13-08	633	633	0	100.00	0.00	ASIA	Sindh-08
4	Asia1/IRN/47/2011	IRN11-47	633	618	0	97.63	2.37	ASIA	Sindh-08
5	Asia1/IRN/49/2011	IRN11-49	633	617	0	97.47	2.53	ASIA	Sindh-08
6	Asia1/PAK/106/2010	PAK10106	633	617	0	97.47	2.53	ASIA	Sindh-08
7	Asia1/PAK/108/2010	PAK10108	633	617	0	97.47	2.53	ASIA	Sindh-08
8	Asia1/PAK/11/2011	PAK11-11	633	617	0	97.47	2.53	ASIA	Sindh-08
9	Asia1/PAK/110/2010	PAK10110	633	617	0	97.47	2.53	ASIA	Sindh-08
10	Asia1/PAK/111/2010	PAK10111	633	617	0	97.47	2.53	ASIA	Sindh-08
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/8/2008	PAK08-08	633	598	0	94.47	5.53	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	576	0	91.00	9.00	ASIA	Group I
3	Asia1/IND/18/80 (DQ121116)	IND80-18	633	538	0	84.99	15.01	ASIA	Group V
4	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	538	0	84.99	15.01	ASIA	Group III
5	Asia1/IND/63/72* (AY304994)	IND72C63	630	533	0	84.60	15.40	ASIA	Unnamed
6	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	533	0	84.20	15.80	ASIA	Unnamed
7	Asia1/IND/14/95* (AF390678)	IND95-AA	633	531	0	83.89	16.11	ASIA	Unnamed
8	Asia1/Shamir/ISR/89	ISR89--A	633	530	0	83.73	16.27	ASIA	Unnamed
9	Asia1/HKN/19/74	HKN74-19	633	529	0	83.57	16.43	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	526	0	83.10	16.90	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: ASIA1 WRLFMD Ref No: PAK/10/2013 Batch No: WRLFMD/2013/00024 Sender Ref: FMD-1023 Location: Jhang district, Punjab province, Pakistan Date collected: 14/03/2013 Date received by WRLFMD: 07/11/2013 Date received for sequencing: 03/12/2013 Species: Cattle Material used: BTy1 19/11/2013 Region sequenced: VP1 RT-PCR primers: As1-1C530F/EUR-2B52R As1-1C613F/EUR-2B52R	Report date: 06/12/2013 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ASIA Genotype/strain: Sindh-08 Sequence filename: PAK13-10.SEQ Date sequence last updated: 05/12/2013 No. of Nt determined: 633 No. of ambiguities: 0 Gene length: 633 Total no. of comparisons: 490 Min. no. of nt for comparison: 600 Total turn-around time: 29 days Sequencing time: 3 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/45/2012	PAK12-45	633	625	0	98.74	1.26	ASIA	Sindh-08
2	Asia1/PAK/46/2012	PAK12-46	633	625	0	98.74	1.26	ASIA	Sindh-08
3	Asia1/IRN/47/2011	IRN11-47	633	620	0	97.95	2.05	ASIA	Sindh-08
4	Asia1/IRN/49/2011	IRN11-49	633	620	0	97.95	2.05	ASIA	Sindh-08
5	Asia1/PAK/106/2010	PAK10106	633	620	0	97.95	2.05	ASIA	Sindh-08
6	Asia1/PAK/108/2010	PAK10108	633	620	0	97.95	2.05	ASIA	Sindh-08
7	Asia1/PAK/11/2011	PAK11-11	633	620	0	97.95	2.05	ASIA	Sindh-08
8	Asia1/PAK/110/2010	PAK10110	633	620	0	97.95	2.05	ASIA	Sindh-08
9	Asia1/PAK/111/2010	PAK10111	633	620	0	97.95	2.05	ASIA	Sindh-08
10	Asia1/PAK/12/2011	PAK11-12	633	620	0	97.95	2.05	ASIA	Sindh-08
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/8/2008	PAK08-08	633	610	0	96.37	3.63	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	572	0	90.36	9.64	ASIA	Group I
3	Asia1/IND/63/72* (AY304994)	IND72C63	630	534	0	84.76	15.24	ASIA	Unnamed
4	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	535	0	84.52	15.48	ASIA	Group III
5	Asia1/IND/18/80 (DQ121116)	IND80-18	633	533	0	84.20	15.80	ASIA	Group V
6	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	530	0	83.73	16.27	ASIA	Unnamed
7	Asia1/HKN/19/74	HKN74-19	633	527	0	83.25	16.75	ASIA	Unnamed
8	Asia1/IND/14/95* (AF390678)	IND95-AA	633	526	0	83.10	16.90	ASIA	Unnamed
9	Asia1/Shamir/ISR/89	ISR89--A	633	525	0	82.94	17.06	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	517	0	81.67	18.33	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: ASIA1 WRLFMD Ref No: PAK/14/2013 Batch No: WRLFMD/2013/00024 Sender Ref: FMD-1051 Location: Bhakkar district, Punjab province, Pakistan Date collected: 01/04/2013 Date received by WRLFMD: 07/11/2013 Date received for sequencing: 03/12/2013 Species: Cattle Material used: BTy1 20/11/2013 Region sequenced: VP1 RT-PCR primers: As1-1C530F/EUR-2B52R As1-1C613F/EUR-2B52R	Report date: 06/12/2013 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ASIA Genotype/strain: Sindh-08 Sequence filename: PAK13-14.SEQ Date sequence last updated: 05/12/2013 No. of Nt determined: 633 No. of ambiguities: 0 Gene length: 633 Total no. of comparisons: 490 Min. no. of nt for comparison: 600 Total turn-around time: 29 days Sequencing time: 3 days
Comments: FMDV type A was also identified in this sample.	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/7/2013	PAK13-07	633	633	0	100.00	0.00	ASIA	Sindh-08
2	Asia1/PAK/8/2013	PAK13-08	633	633	0	100.00	0.00	ASIA	Sindh-08
3	Asia1/PAK/9/2013	PAK13-09	633	633	0	100.00	0.00	ASIA	Sindh-08
4	Asia1/IRN/47/2011	IRN11-47	633	618	0	97.63	2.37	ASIA	Sindh-08
5	Asia1/IRN/49/2011	IRN11-49	633	617	0	97.47	2.53	ASIA	Sindh-08
6	Asia1/PAK/106/2010	PAK10106	633	617	0	97.47	2.53	ASIA	Sindh-08
7	Asia1/PAK/108/2010	PAK10108	633	617	0	97.47	2.53	ASIA	Sindh-08
8	Asia1/PAK/11/2011	PAK11-11	633	617	0	97.47	2.53	ASIA	Sindh-08
9	Asia1/PAK/110/2010	PAK10110	633	617	0	97.47	2.53	ASIA	Sindh-08
10	Asia1/PAK/111/2010	PAK10111	633	617	0	97.47	2.53	ASIA	Sindh-08
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/8/2008	PAK08-08	633	598	0	94.47	5.53	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	576	0	91.00	9.00	ASIA	Group I
3	Asia1/IND/18/80 (DQ121116)	IND80-18	633	538	0	84.99	15.01	ASIA	Group V
4	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	538	0	84.99	15.01	ASIA	Group III
5	Asia1/IND/63/72* (AY304994)	IND72C63	630	533	0	84.60	15.40	ASIA	Unnamed
6	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	533	0	84.20	15.80	ASIA	Unnamed
7	Asia1/IND/14/95* (AF390678)	IND95-AA	633	531	0	83.89	16.11	ASIA	Unnamed
8	Asia1/Shamir/ISR/89	ISR89--A	633	530	0	83.73	16.27	ASIA	Unnamed
9	Asia1/HKN/19/74	HKN74-19	633	529	0	83.57	16.43	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	526	0	83.10	16.90	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: ASIA1	Report date: 06/12/2013
WRLFMD Ref No: PAK/23/2013	Reported by: N.J. Knowles
Batch No: WRLFMD/2013/00024	Checked by: K. Bachanek-Bankowska
Sender Ref: FMD-1394	
Location: Karachi, Sindh province, Pakistan	Topotype: ASIA
Date collected: 04/06/2013	Genotype/strain: Sindh-08
Date received by WRLFMD: 07/11/2013	Sequence filename: PAK13-23.SEQ
Date received for sequencing: 03/12/2013	Date sequence last updated: 05/12/2013
Species: Water Buffalo	No. of Nt determined: 633
Material used: BTy1 20/11/2013	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 633
RT-PCR primers: As1-1C530F/EUR-2B52R	Total no. of comparisons: 490
As1-1C613F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 29 days
	Sequencing time: 3 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/10/2012	PAK12-10	633	618	0	97.63	2.37	ASIA	Sindh-08
2	Asia1/IRN/49/2011	IRN11-49	633	617	0	97.47	2.53	ASIA	Sindh-08
3	Asia1/PAK/106/2010	PAK10106	633	617	0	97.47	2.53	ASIA	Sindh-08
4	Asia1/PAK/108/2010	PAK10108	633	617	0	97.47	2.53	ASIA	Sindh-08
5	Asia1/PAK/11/2011	PAK11-11	633	617	0	97.47	2.53	ASIA	Sindh-08
6	Asia1/PAK/110/2010	PAK10110	633	617	0	97.47	2.53	ASIA	Sindh-08
7	Asia1/PAK/111/2010	PAK10111	633	617	0	97.47	2.53	ASIA	Sindh-08
8	Asia1/PAK/12/2011	PAK11-12	633	617	0	97.47	2.53	ASIA	Sindh-08
9	Asia1/PAK/13/2011	PAK11-13	633	617	0	97.47	2.53	ASIA	Sindh-08
10	Asia1/PAK/14/2011	PAK11-14	633	617	0	97.47	2.53	ASIA	Sindh-08
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	Asia1/PAK/8/2008	PAK08-08	633	602	0	95.10	4.90	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	581	0	91.79	8.21	ASIA	Group I
3	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	538	0	84.99	15.01	ASIA	Group III
4	Asia1/IND/63/72* (AY304994)	IND72C63	630	530	0	84.13	15.87	ASIA	Unnamed
5	Asia1/IND/18/80 (DQ121116)	IND80-18	633	532	0	84.04	15.96	ASIA	Group V
6	Asia1/HKN/19/74	HKN74-19	633	529	0	83.57	16.43	ASIA	Unnamed
7	Asia1/Shamir/ISR/89	ISR89--A	633	529	0	83.57	16.43	ASIA	Unnamed
8	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	529	0	83.57	16.43	ASIA	Unnamed
9	Asia1/IND/14/95* (AF390678)	IND95-AA	633	527	0	83.25	16.75	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	521	0	82.31	17.69	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Report on FMDV Asia 1 in Pakistan in 2012-2013

Batch: WRLFMD/2013/00024

◆ indicates viruses in this batch

Software: MEGA 5.2

Analysis

Analysis ----- Phylogeny Reconstruction

Scope ----- All Selected Taxa

Statistical Method ----- Neighbor-joining

Phylogeny Test

Test of Phylogeny ----- Bootstrap method

No. of Bootstrap Replications ----- 1000

Substitution Model

Substitutions Type ----- Nucleotide

Model/Method ----- Kimura 2-parameter model

Substitutions to Include ----- d: Transitions + Transversions

Rates and Patterns

Rates among Sites ----- Uniform rates

Pattern among Lineages ----- Same (Homogeneous)

Data Subset to Use

Gaps/Missing Data Treatment ----- Pairwise deletion

Codons Included ----- 1st+2nd+3rd+Non-Coding

No. of Sites : 633

No Of Bootstrap Reps = 1000

Only bootstrap values of 70% and above are shown

*, not a WRLFMD Ref. No.

N.J. Knowles, K. Bachanek-Bankowska & J. Wadsworth,
09 December 2013

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