

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

Genotyping Report

Report Date for this Batch: 6 May 2015

FMDV type O

Country: Pakistan

Period: 2014-2015

No. of samples: 17

BATCH: WRLFMD/2015/00002



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FAO World Reference Laboratory for FMD Genotyping Report

IAH-P-EP-MEG-FOR-005-3

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/27/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK32	
Location: Karachi, Sindh, Pakistan	Topotype: ME-SA
Date collected: 25/01/2014	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK14-27.SEQ
Date received for sequencing: 19/03/2015	Date sequence last updated: 24/03/2015
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 04/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/41/2014	PAK14-41	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/33/2014	PAK14-33	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/11/2015	PAK15-11	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/39/2014	PAK14-39	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/12/2014	PAK14-12	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/27/2013	PAK13-27	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/3/2014	PAK14-03	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/16/2014	PAK14-16	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/23/2014	PAK14-23	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/58/2012	PAK12-58	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	608	0	95.15	4.85	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	593	0	92.80	7.20	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	587	0	91.86	8.14	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	586	0	91.71	8.29	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{BAL-09}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{SAN-09}
7	O/PAK/16/2010	PAK10-16	639	581	0	90.92	9.08	ME-SA	PanAsia-2 ^{PUN-10}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	575	0	89.98	10.02	ME-SA	PanAsia
9	O/BHU/3/2009 (KM921814)	BHU09-03	639	565	0	88.42	11.58	ME-SA	Ind-2001d
10	O/OMN/7/2001 (DQ164941)	OMN01-07	639	564	0	88.26	11.74	ME-SA	Ind-2001b

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: PAK/29/2014 Batch No: WRLFMD/2015/00002 Sender Ref: PK08 Location: Sialrot, Punjab, Pakistan Date collected: 28/02/2014 Date received by WRLFMD: 24/02/2015 Date received for sequencing: 19/03/2015 Species: Water Buffalo Material used: BTy1 06/03/2015 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 06/05/2015 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ME-SA Genotype/strain: PanAsia-2 ^{ANT-10} Sequence filename: PAK14-29.SEQ Date sequence last updated: 24/03/2015 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 4103 Min. no. of nt for comparison: 600 Total turn-around time: 71 days Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/23/2014	PAK14-23	639	637	0	99.69	0.31	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/58/2012	PAK12-58	639	637	0	99.69	0.31	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/12/2014	PAK14-12	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/2/2014	PAK14-02	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/26/2013	PAK13-26	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/27/2013	PAK13-27	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/3/2014	PAK14-03	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/14/2014	PAK14C14	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/14/2014	PAK14D14	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/18/2014	PAK14-18	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	607	0	94.99	5.01	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	592	0	92.64	7.36	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	586	0	91.71	8.29	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	585	0	91.55	8.45	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{BAL-09}
6	O/PAK/16/2010	PAK10-16	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{PUN-10}
7	O/TUR/264/2009* (FMDI)	TUR09-AK	639	581	0	90.92	9.08	ME-SA	PanAsia-2 ^{SAN-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	580	0	90.77	9.23	ME-SA	PanAsia
9	O/OMN/7/2001 (DQ164941)	OMN01-07	639	570	0	89.20	10.80	ME-SA	Ind-2001b
10	O/UAE/4/2008 (KM921876)	UAE08-04	636	565	0	88.84	11.16	ME-SA	Ind-2001c

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/30/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK01	
Location: Gilgit, Gilgit-Baltistan, Pakistan	Topotype: ME-SA
Date collected: 02/04/2014	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK14-30.SEQ
Date received for sequencing: 19/03/2015	Date sequence last updated: 24/03/2015
Species: Cattle	No. of Nt determined: 639
Material used: BTy2 10/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/6/2014	PAK14-06	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/7/2014	PAK14-07	639	638	0	99.84	0.16	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/14/2014	PAK14C14	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/14/2014	PAK14D14	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/23/2014	PAK14-23	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/58/2012	PAK12-58	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/12/2014	PAK14-12	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/13/2014	PAK14-13	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/2/2014	PAK14-02	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/26/2013	PAK13-26	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	604	0	94.52	5.48	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	589	0	92.18	7.82	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	583	0	91.24	8.76	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	582	0	91.08	8.92	ME-SA	PanAsia-2
5	O/PAK/16/2010	PAK10-16	639	581	0	90.92	9.08	ME-SA	PanAsia-2 ^{PUN-10}
6	O/IRN/18/2010	IRN10-18	639	580	0	90.77	9.23	ME-SA	PanAsia-2 ^{BAL-09}
7	O/TUR/264/2009* (FMDI)	TUR09-AK	639	580	0	90.77	9.23	ME-SA	PanAsia-2 ^{SAN-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	579	0	90.61	9.39	ME-SA	PanAsia
9	O/UAE/4/2008 (KM921876)	UAE08-04	636	566	0	88.99	11.01	ME-SA	Ind-2001c
10	O/OMN/7/2001 (DQ164941)	OMN01-07	639	568	0	88.89	11.11	ME-SA	Ind-2001b

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/31/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK03	
Location: Jhang, Punjab, Pakistan	Topotype: ME-SA
Date collected: 06/05/2014	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK14-31.SEQ
Date received for sequencing: 19/03/2015	Date sequence last updated: 24/03/2015
Species: Water Buffalo	No. of Nt determined: 639
Material used: BTy1 07/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/23/2014	PAK14-23	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/58/2012	PAK12-58	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/12/2014	PAK14-12	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/2/2014	PAK14-02	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/26/2013	PAK13-26	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/27/2013	PAK13-27	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/3/2014	PAK14-03	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/14/2014	PAK14C14	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/14/2014	PAK14D14	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/18/2014	PAK14-18	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	608	0	95.15	4.85	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	593	0	92.80	7.20	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	587	0	91.86	8.14	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	586	0	91.71	8.29	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{BAL-09}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{SAN-09}
7	O/PAK/16/2010	PAK10-16	639	583	0	91.24	8.76	ME-SA	PanAsia-2 ^{PUN-10}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	583	0	91.24	8.76	ME-SA	PanAsia
9	O/OMN/7/2001 (DQ164941)	OMN01-07	639	570	0	89.20	10.80	ME-SA	Ind-2001b
10	O/UAE/4/2008 (KM921876)	UAE08-04	636	566	0	88.99	11.01	ME-SA	Ind-2001c

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/33/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK17	
Location: Karachi, Sindh, Pakistan	Topotype: ME-SA
Date collected: 22/10/2014	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK14-33.SEQ
Date received for sequencing: 19/03/2015	Date sequence last updated: 24/03/2015
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 07/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/39/2014	PAK14-39	639	638	0	99.84	0.16	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/41/2014	PAK14-41	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/11/2015	PAK15-11	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/12/2014	PAK14-12	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/27/2013	PAK13-27	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/27/2014	PAK14-27	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/3/2014	PAK14-03	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/23/2014	PAK14-23	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/58/2012	PAK12-58	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/13/2014	PAK14-13	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	609	0	95.31	4.69	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	596	0	93.27	6.73	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	588	0	92.02	7.98	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	587	0	91.86	8.14	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	583	0	91.24	8.76	ME-SA	PanAsia-2 ^{BAL-09}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	583	0	91.24	8.76	ME-SA	PanAsia-2 ^{SAN-09}
7	O/PAK/16/2010	PAK10-16	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{PUN-10}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	578	0	90.45	9.55	ME-SA	PanAsia
9	O/OMN/7/2001 (DQ164941)	OMN01-07	639	567	0	88.73	11.27	ME-SA	Ind-2001b
10	O/UAE/4/2008 (KM921876)	UAE08-04	636	563	0	88.52	11.48	ME-SA	Ind-2001c

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/34/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK18	
Location: Karachi, Sindh, Pakistan	Topotype: ME-SA
Date collected: 01/11/2014	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK14-34.SEQ
Date received for sequencing: 19/03/2015	Date sequence last updated: 24/03/2015
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 11/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/23/2014	PAK14-23	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/58/2012	PAK12-58	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/12/2014	PAK14-12	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/2/2014	PAK14-02	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/26/2013	PAK13-26	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/27/2013	PAK13-27	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/3/2014	PAK14-03	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/14/2014	PAK14C14	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/14/2014	PAK14D14	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/18/2014	PAK14-18	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	607	0	94.99	5.01	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	592	0	92.64	7.36	ME-SA	PanAsia-2 ^{FAR-09}
3	O/IRN/8/2005	IRN05-08	639	587	0	91.86	8.14	ME-SA	PanAsia-2
4	O/IRN/18/2010	IRN10-18	639	586	0	91.71	8.29	ME-SA	PanAsia-2 ^{BAL-09}
5	O/TUR/257/2008* (FMDI)	TUR08-AD	639	586	0	91.71	8.29	ME-SA	PanAsia-2 ^{TER-08}
6	O/PAK/16/2010	PAK10-16	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{PUN-10}
7	O/TUR/264/2009* (FMDI)	TUR09-AK	639	581	0	90.92	9.08	ME-SA	PanAsia-2 ^{SAN-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	580	0	90.77	9.23	ME-SA	PanAsia
9	O/OMN/7/2001 (DQ164941)	OMN01-07	639	569	0	89.05	10.95	ME-SA	Ind-2001b
10	O/BHU/3/2009 (KM921814)	BHU09-03	639	568	0	88.89	11.11	ME-SA	Ind-2001d

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: PAK/36/2014 Batch No: WRLFMD/2015/00002 Sender Ref: PK11 Location: Kotli, Azad Jammu and Kashmir, Pakistan Date collected: 16/11/2014 Date received by WRLFMD: 24/02/2015 Date received for sequencing: 19/03/2015 Species: Water Buffalo Material used: BTy1 11/03/2015 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 06/05/2015 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ME-SA Genotype/strain: PanAsia-2 ^{ANT-10} Sequence filename: PAK14-36.SEQ Date sequence last updated: 24/03/2015 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 4103 Min. no. of nt for comparison: 600 Total turn-around time: 71 days Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/45/2014	PAK14-45	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/5/2014	PAK14-05	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/2/2014	PAK14-02	639	629	0	98.44	1.56	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/23/2014	PAK14-23	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/58/2012	PAK12-58	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/12/2014	PAK14-12	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/16/2014	PAK14-16	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/24/2014	PAK14-24	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/26/2013	PAK13-26	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/27/2013	PAK13-27	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	601	0	94.05	5.95	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	586	0	91.71	8.29	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/18/2010	IRN10-18	639	577	0	90.30	9.70	ME-SA	PanAsia-2 ^{BAL-09}
5	O/IRN/8/2005	IRN05-08	639	577	0	90.30	9.70	ME-SA	PanAsia-2
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	577	0	90.30	9.70	ME-SA	PanAsia-2 ^{SAN-09}
7	O/UKG/35/2001 (AJ539141)	UKG01-35	639	576	0	90.14	9.86	ME-SA	PanAsia
8	O/PAK/16/2010	PAK10-16	639	574	0	89.83	10.17	ME-SA	PanAsia-2 ^{PUN-10}
9	O/KUW/3/97 (DQ164904)	KUW97-03	639	564	0	88.26	11.74	ME-SA	Ind-2001a
10	O/OMN/7/2001 (DQ164941)	OMN01-07	639	564	0	88.26	11.74	ME-SA	Ind-2001b

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: PAK/39/2014 Batch No: WRLFMD/2015/00002 Sender Ref: PK21 Location: Karachi, Sindh, Pakistan Date collected: 02/12/2014 Date received by WRLFMD: 24/02/2015 Date received for sequencing: 17/04/2015 Species: Cattle Material used: BTy1 11/03/2015 & BTy2 17/03/2015 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 06/05/2015 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ME-SA Genotype/strain: PanAsia-2 ^{ANT-10} Sequence filename: PAK14-39.SEQ Date sequence last updated: 22/04/2015 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 4103 Min. no. of nt for comparison: 600 Total turn-around time: 71 days Sequencing time: 19 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/33/2014	PAK14-33	639	638	0	99.84	0.16	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/41/2014	PAK14-41	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/11/2015	PAK15-11	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/12/2014	PAK14-12	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/27/2013	PAK13-27	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/27/2014	PAK14-27	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/3/2014	PAK14-03	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/23/2014	PAK14-23	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/58/2012	PAK12-58	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/13/2014	PAK14-13	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	608	0	95.15	4.85	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	595	0	93.11	6.89	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	587	0	91.86	8.14	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	586	0	91.71	8.29	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{BAL-09}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{SAN-09}
7	O/PAK/16/2010	PAK10-16	639	581	0	90.92	9.08	ME-SA	PanAsia-2 ^{PUN-10}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	577	0	90.30	9.70	ME-SA	PanAsia
9	O/OMN/7/2001 (DQ164941)	OMN01-07	639	566	0	88.58	11.42	ME-SA	Ind-2001b
10	O/BHU/3/2009 (KM921814)	BHU09-03	639	565	0	88.42	11.58	ME-SA	Ind-2001d

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: PAK/40/2014 Batch No: WRLFMD/2015/00002 Sender Ref: PK14 Location: Islamabad, Islamabad Capital Territory, Pakistan Date collected: 05/12/2014 Date received by WRLFMD: 24/02/2015 Date received for sequencing: 19/03/2015 Species: Water Buffalo Material used: BTy1 12/03/2015 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 06/05/2015 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ME-SA Genotype/strain: PanAsia-2 ^{ANT-10} Sequence filename: PAK14-40.SEQ Date sequence last updated: 24/03/2015 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 4103 Min. no. of nt for comparison: 600 Total turn-around time: 71 days Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/23/2014	PAK14-23	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/58/2012	PAK12-58	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/12/2014	PAK14-12	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/2/2014	PAK14-02	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/26/2013	PAK13-26	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/27/2013	PAK13-27	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/3/2014	PAK14-03	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/14/2014	PAK14C14	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/14/2014	PAK14D14	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/18/2014	PAK14-18	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	608	0	95.15	4.85	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	595	0	93.11	6.89	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	587	0	91.86	8.14	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	586	0	91.71	8.29	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	585	0	91.55	8.45	ME-SA	PanAsia-2 ^{BAL-09}
6	O/PAK/16/2010	PAK10-16	639	583	0	91.24	8.76	ME-SA	PanAsia-2 ^{PUN-10}
7	O/TUR/264/2009* (FMDI)	TUR09-AK	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{SAN-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	581	0	90.92	9.08	ME-SA	PanAsia
9	O/OMN/7/2001 (DQ164941)	OMN01-07	639	572	0	89.51	10.49	ME-SA	Ind-2001b
10	O/KUW/3/97 (DQ164904)	KUW97-03	639	570	0	89.20	10.80	ME-SA	Ind-2001a

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/41/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK20	
Location: Karachi, Sindh, Pakistan	Topotype: ME-SA
Date collected: 05/12/2014	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK14-41.SEQ
Date received for sequencing: 19/03/2015	Date sequence last updated: 24/03/2015
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 12/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/27/2014	PAK14-27	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/33/2014	PAK14-33	639	635	0	99.37	0.63	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/11/2015	PAK15-11	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/39/2014	PAK14-39	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/12/2014	PAK14-12	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/27/2013	PAK13-27	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/3/2014	PAK14-03	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/16/2014	PAK14-16	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/23/2014	PAK14-23	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/58/2012	PAK12-58	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	609	0	95.31	4.69	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	594	0	92.96	7.04	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	588	0	92.02	7.98	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	587	0	91.86	8.14	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	583	0	91.24	8.76	ME-SA	PanAsia-2 ^{BAL-09}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	583	0	91.24	8.76	ME-SA	PanAsia-2 ^{SAN-09}
7	O/PAK/16/2010	PAK10-16	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{PUN-10}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	576	0	90.14	9.86	ME-SA	PanAsia
9	O/OMN/7/2001 (DQ164941)	OMN01-07	639	565	0	88.42	11.58	ME-SA	Ind-2001b
10	O/UAE/4/2008 (KM921876)	UAE08-04	636	561	0	88.21	11.79	ME-SA	Ind-2001c

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: PAK/44/2014 Batch No: WRLFMD/2015/00002 Sender Ref: PK12 Location: Bagh, Azad Jammu and Kashmir, Pakistan Date collected: 22/12/2014 Date received by WRLFMD: 24/02/2015 Date received for sequencing: 13/04/2015 Species: Water Buffalo Material used: BTy1 12/03/2015 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 06/05/2015 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ME-SA Genotype/strain: PanAsia-2 ^{ANT-10} Sequence filename: PAK14-44.SEQ Date sequence last updated: 16/04/2015 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 4103 Min. no. of nt for comparison: 600 Total turn-around time: 71 days Sequencing time: 23 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/2/2015	PAK15-02	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/7/2015	PAK15-07	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/8/2015	PAK15-08	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/12/2014	PAK14-12	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/27/2013	PAK13-27	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/3/2014	PAK14-03	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/23/2014	PAK14-23	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/33/2014	PAK14-33	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/58/2012	PAK12-58	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/11/2015	PAK15-11	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	605	0	94.68	5.32	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	594	0	92.96	7.04	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	589	0	92.18	7.82	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	588	0	92.02	7.98	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{BAL-09}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{SAN-09}
7	O/PAK/16/2010	PAK10-16	639	581	0	90.92	9.08	ME-SA	PanAsia-2 ^{PUN-10}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	580	0	90.77	9.23	ME-SA	PanAsia
9	O/BHU/3/2009 (KM921814)	BHU09-03	639	569	0	89.05	10.95	ME-SA	Ind-2001d
10	O/UAE/4/2008 (KM921876)	UAE08-04	636	566	0	88.99	11.01	ME-SA	Ind-2001c

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/45/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK06	
Location: Chakwal, Punjab, Pakistan	Topotype: ME-SA
Date collected: 29/12/2014	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK14-45.SEQ
Date received for sequencing: 13/04/2015	Date sequence last updated: 16/04/2015
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 13/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 23 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/36/2014	PAK14-36	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/5/2014	PAK14-05	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/2/2014	PAK14-02	639	629	0	98.44	1.56	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/23/2014	PAK14-23	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/58/2012	PAK12-58	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/12/2014	PAK14-12	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/16/2014	PAK14-16	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/24/2014	PAK14-24	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/26/2013	PAK13-26	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/27/2013	PAK13-27	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	601	0	94.05	5.95	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	586	0	91.71	8.29	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/18/2010	IRN10-18	639	577	0	90.30	9.70	ME-SA	PanAsia-2 ^{BAL-09}
5	O/IRN/8/2005	IRN05-08	639	577	0	90.30	9.70	ME-SA	PanAsia-2
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	577	0	90.30	9.70	ME-SA	PanAsia-2 ^{SAN-09}
7	O/UKG/35/2001 (AJ539141)	UKG01-35	639	576	0	90.14	9.86	ME-SA	PanAsia
8	O/PAK/16/2010	PAK10-16	639	574	0	89.83	10.17	ME-SA	PanAsia-2 ^{PUN-10}
9	O/KUW/3/97 (DQ164904)	KUW97-03	639	564	0	88.26	11.74	ME-SA	Ind-2001a
10	O/OMN/7/2001 (DQ164941)	OMN01-07	639	564	0	88.26	11.74	ME-SA	Ind-2001b

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/2/2015	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK07	
Location: Faisalabad, Punjab, Pakistan	Topotype: ME-SA
Date collected: 11/01/2015	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK15-02.SEQ
Date received for sequencing: 19/03/2015	Date sequence last updated: 24/03/2015
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 13/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/44/2014	PAK14-44	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/7/2015	PAK15-07	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/8/2015	PAK15-08	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/12/2014	PAK14-12	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/27/2013	PAK13-27	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/3/2014	PAK14-03	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/23/2014	PAK14-23	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/33/2014	PAK14-33	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/58/2012	PAK12-58	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/11/2015	PAK15-11	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	605	0	94.68	5.32	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	594	0	92.96	7.04	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	589	0	92.18	7.82	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	588	0	92.02	7.98	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{BAL-09}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{SAN-09}
7	O/PAK/16/2010	PAK10-16	639	581	0	90.92	9.08	ME-SA	PanAsia-2 ^{PUN-10}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	580	0	90.77	9.23	ME-SA	PanAsia
9	O/BHU/3/2009 (KM921814)	BHU09-03	639	569	0	89.05	10.95	ME-SA	Ind-2001d
10	O/UAE/4/2008 (KM921876)	UAE08-04	636	566	0	88.99	11.01	ME-SA	Ind-2001c

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: PAK/5/2015 Batch No: WRLFMD/2015/00002 Sender Ref: PK23 Location: Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan Date collected: 26/01/2015 Date received by WRLFMD: 24/02/2015 Date received for sequencing: 13/04/2015 Species: Cattle Material used: BTy1 14/03/2015 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 06/05/2015 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: ME-SA Genotype/strain: PanAsia-2 ^{ANT-10} Sequence filename: PAK15-05.SEQ Date sequence last updated: 22/04/2015 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 4103 Min. no. of nt for comparison: 600 Total turn-around time: 71 days Sequencing time: 23 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/23/2014	PAK14-23	639	629	0	98.44	1.56	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/58/2012	PAK12-58	639	629	0	98.44	1.56	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/12/2014	PAK14-12	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/2/2014	PAK14-02	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/26/2013	PAK13-26	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/27/2013	PAK13-27	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/3/2014	PAK14-03	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/11/2014	PAK14-11	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/14/2014	PAK14C14	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/14/2014	PAK14D14	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	599	0	93.74	6.26	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	586	0	91.71	8.29	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	580	0	90.77	9.23	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	577	0	90.30	9.70	ME-SA	PanAsia-2
5	O/TUR/264/2009* (FMDI)	TUR09-AK	639	577	0	90.30	9.70	ME-SA	PanAsia-2 ^{SAN-09}
6	O/PAK/16/2010	PAK10-16	639	576	0	90.14	9.86	ME-SA	PanAsia-2 ^{PUN-10}
7	O/IRN/18/2010	IRN10-18	639	575	0	89.98	10.02	ME-SA	PanAsia-2 ^{BAL-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	572	0	89.51	10.49	ME-SA	PanAsia
9	O/KUW/3/97 (DQ164904)	KUW97-03	639	565	0	88.42	11.58	ME-SA	Ind-2001a
10	O/OMN/7/2001 (DQ164941)	OMN01-07	639	565	0	88.42	11.58	ME-SA	Ind-2001b

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/7/2015	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK09	
Location: Khanewal, Punjab, Pakistan	Topotype: ME-SA
Date collected: 28/01/2015	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK15-07.SEQ
Date received for sequencing: 13/04/2015	Date sequence last updated: 16/04/2015
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 17/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 23 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/2/2015	PAK15-02	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/44/2014	PAK14-44	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/8/2015	PAK15-08	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/12/2014	PAK14-12	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/27/2013	PAK13-27	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/3/2014	PAK14-03	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/23/2014	PAK14-23	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/33/2014	PAK14-33	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/58/2012	PAK12-58	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/11/2015	PAK15-11	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	605	0	94.68	5.32	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	594	0	92.96	7.04	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	589	0	92.18	7.82	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	588	0	92.02	7.98	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{BAL-09}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{SAN-09}
7	O/PAK/16/2010	PAK10-16	639	581	0	90.92	9.08	ME-SA	PanAsia-2 ^{PUN-10}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	580	0	90.77	9.23	ME-SA	PanAsia
9	O/BHU/3/2009 (KM921814)	BHU09-03	639	569	0	89.05	10.95	ME-SA	Ind-2001d
10	O/UAE/4/2008 (KM921876)	UAE08-04	636	566	0	88.99	11.01	ME-SA	Ind-2001c

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/8/2015	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK10	
Location: Sargedha, Punjab, Pakistan	Topotype: ME-SA
Date collected: 29/01/2015	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK15-08.SEQ
Date received for sequencing: 13/04/2015	Date sequence last updated: 16/04/2015
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 17/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 23 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/2/2015	PAK15-02	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/44/2014	PAK14-44	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/7/2015	PAK15-07	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/12/2014	PAK14-12	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/27/2013	PAK13-27	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/3/2014	PAK14-03	639	632	0	98.90	1.10	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/23/2014	PAK14-23	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/33/2014	PAK14-33	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/58/2012	PAK12-58	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/11/2015	PAK15-11	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	605	0	94.68	5.32	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	594	0	92.96	7.04	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	589	0	92.18	7.82	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	588	0	92.02	7.98	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{BAL-09}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	584	0	91.39	8.61	ME-SA	PanAsia-2 ^{SAN-09}
7	O/PAK/16/2010	PAK10-16	639	581	0	90.92	9.08	ME-SA	PanAsia-2 ^{PUN-10}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	580	0	90.77	9.23	ME-SA	PanAsia
9	O/BHU/3/2009 (KM921814)	BHU09-03	639	569	0	89.05	10.95	ME-SA	Ind-2001d
10	O/UAE/4/2008 (KM921876)	UAE08-04	636	566	0	88.99	11.01	ME-SA	Ind-2001c

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 06/05/2015
WRLFMD Ref No: PAK/11/2015	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00002	Checked by: K. Bachanek-Bankowska
Sender Ref: PK28	
Location: Bhakkar, Punjab, Pakistan	Topotype: ME-SA
Date collected: 09/02/2015	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 24/02/2015	Sequence filename: PAK15-11.SEQ
Date received for sequencing: 19/03/2015	Date sequence last updated: 24/03/2015
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 05/03/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 4103
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 71 days
	Sequencing time: 48 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/PAK/33/2014	PAK14-33	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
2	O/PAK/41/2014	PAK14-41	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
3	O/PAK/27/2014	PAK14-27	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
4	O/PAK/39/2014	PAK14-39	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
5	O/PAK/12/2014	PAK14-12	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
6	O/PAK/27/2013	PAK13-27	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
7	O/PAK/3/2014	PAK14-03	639	631	0	98.75	1.25	ME-SA	PanAsia-2 ^{ANT-10}
8	O/PAK/16/2014	PAK14-16	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
9	O/PAK/2/2015	PAK15-02	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
10	O/PAK/23/2014	PAK14-23	639	630	0	98.59	1.41	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	608	0	95.15	4.85	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	593	0	92.80	7.20	ME-SA	PanAsia-2 ^{FAR-09}
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	587	0	91.86	8.14	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/8/2005	IRN05-08	639	586	0	91.71	8.29	ME-SA	PanAsia-2
5	O/IRN/18/2010	IRN10-18	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{BAL-09}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	582	0	91.08	8.92	ME-SA	PanAsia-2 ^{SAN-09}
7	O/PAK/16/2010	PAK10-16	639	581	0	90.92	9.08	ME-SA	PanAsia-2 ^{PUN-10}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	575	0	89.98	10.02	ME-SA	PanAsia
9	O/OMN/7/2001 (DQ164941)	OMN01-07	639	564	0	88.26	11.74	ME-SA	Ind-2001b
10	O/UAE/4/2008 (KM921876)	UAE08-04	636	560	0	88.05	11.95	ME-SA	Ind-2001c

nt, nucleotides

*, not a WRLFMD reference number

Assembled with Report Generator v4.3

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Report on FMDV O in Pakistan in 2014-2015

Batch: WRLFMD/2015/00002

◆ indicates viruses in this batch

Software: MEGA 6.06

Analysis

----- Phylogeny Reconstruction

Scope ----- All Selected Taxa

Statistical Method ----- Neighbor-joining

Phylogeny Test

----- Bootstrap method

No. of Bootstrap Replications ----- 1000

Substitution Model

----- Nucleotide

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

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

Rates and Patterns

----- Uniform rates

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

Data Subset to Use

----- Pairwise deletion

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

No. of Sites : 642

No Of Bootstrap Reps = 1000

Only bootstrap values of 70% and above are shown

*, not a WRLFMD Ref. No.

N.J. Knowles, J. Wadsworth & K. Bachanek-Bankowska,
06 May 2015

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