

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

Genotyping Report

Report Date for this Batch: 30 July 2014

FMDV type A

Country: Pakistan

Period: 2012 & 2014

No. of samples: 7

BATCH: WRLFMD/2014/00021



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FAO World Reference Laboratory for FMD Genotyping Report

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Serotype: A	Report date: 30/07/2014
WRLFMD Ref No: PAK/60/2012	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00021	Checked by: J. Wadsworth
Sender Ref: PK26	
Location: Mirpur, Pakistan	Topotype: ASIA
Date collected: 21/11/2012	Genotype/strain: Iran-05 ^{SIS-12}
Date received by WRLFMD: 22/05/2014	Sequence filename: PAK12-60.SEQ
Date received for sequencing: 23/07/2014	Date sequence last updated: 28/07/2014
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 26/06/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: A-1C562F/EUR-2B52R	Total no. of comparisons: 1962
A-1C612F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 69 days
	Sequencing time: 7 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	A/IRN/15/2012	IRN12-15	639	637	0	99.69	0.31	ASIA	Iran-05 ^{SIS-12}
2	A/IRN/16/2012	IRN12-16	639	637	0	99.69	0.31	ASIA	Iran-05 ^{SIS-12}
3	A/IRN/20/2012	IRN12-20	639	637	0	99.69	0.31	ASIA	Iran-05 ^{SIS-12}
4	A/PAK/38/2012	PAK12-38	639	637	0	99.69	0.31	ASIA	Iran-05 ^{SIS-12}
5	A/PAK/43/2012	PAK12-43	639	637	0	99.69	0.31	ASIA	Iran-05 ^{SIS-12}
6	A/IRN/25/2012	IRN12-25	639	636	0	99.53	0.47	ASIA	Iran-05 ^{SIS-12}
7	A/IRN/35/2012	IRN12-35	639	636	0	99.53	0.47	ASIA	Iran-05 ^{SIS-12}
8	A/PAK/39/2012	PAK12-39	639	636	0	99.53	0.47	ASIA	Iran-05 ^{SIS-12}
9	A/IRN/s-002/2013 (IVO)	IRN13S02	639	635	0	99.37	0.63	ASIA	Iran-05 ^{SIS-12}
10	A/PAK/2/2013	PAK13-02	639	635	0	99.37	0.63	ASIA	Iran-05 ^{SIS-12}
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	A/IRN/15/2012	IRN12-15	639	637	0	99.69	0.31	ASIA	Iran-05 ^{SIS-12}
2	A/AFG/6/2007 (FJ755007)	AFG07-06	639	608	0	95.15	4.85	ASIA	Iran-05 ^{AFG-07}
3	A/AFG/10/2010	AFG10-10	639	604	0	94.52	5.48	ASIA	Iran-05 ^{HER-10}
4	A/IRN/1/2005 (EF208769)	IRN05-01	639	603	0	94.37	5.63	ASIA	Iran-05
5	A/IRN/1/2011	IRN11-01	639	603	0	94.37	5.63	ASIA	Iran-05 ^{FAR-11}
6	A/IRN/78/2009	IRN09-78	639	602	0	94.21	5.79	ASIA	Iran-05 ^{FAR-09}
7	A/BAR/6/2008 (FJ755010)	BAR08-06	639	596	0	93.27	6.73	ASIA	Iran-05 ^{BAR-08}
8	A/TUR/33/2008 (FJ755155)	TUR08-33	639	596	0	93.27	6.73	ASIA	Iran-05 ^{EZM-07}
9	A/TUR/1/2008 (FJ755133)	TUR08-01	639	594	0	92.96	7.04	ASIA	Iran-05 ^{ARD-07}
10	A/IRN/125/2010	IRN10125	639	592	0	92.64	7.36	ASIA	Iran-05 ^{SIS-10}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: A	Report date: 30/07/2014
WRLFMD Ref No: PAK/8/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00021	Checked by: J. Wadsworth
Sender Ref: PK06	
Location: Sialkot, Pakistan	Topotype: ASIA
Date collected: 15/01/2014	Genotype/strain: Iran-05 ^{FAR-09}
Date received by WRLFMD: 22/05/2014	Sequence filename: PAK14-08.SEQ
Date received for sequencing: 16/07/2014	Date sequence last updated: 21/07/2014
Species: Water Buffalo	No. of Nt determined: 639
Material used: BTy1 08/07/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: A-1C562F/EUR-2B52R	Total no. of comparisons: 1962
A-1C612F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 69 days
	Sequencing time: 14 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	A/IRN/27/2013	IRN13-27	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-09}
2	A/IRN/28/2013	IRN13-28	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-09}
3	A/PAK/10/2014	PAK14-10	639	634	0	99.22	0.78	ASIA	Iran-05 ^{FAR-09}
4	A/PAK/14/2014	PAK14B14	639	634	0	99.22	0.78	ASIA	Iran-05 ^{FAR-09}
5	A/SIN/PAK/L574/2009 (HQ439244)	PAK09-AA	639	612	0	95.77	4.23	ASIA	Iran-05 ^{FAR-09}
6	A/HIR/AFG/L1439/2009 (HQ439278)	AFG09-AQ	639	611	0	95.62	4.38	ASIA	Iran-05 ^{FAR-09}
7	A/SIN/PAK/L578/2009 (HQ439245)	PAK09-AB	639	611	0	95.62	4.38	ASIA	Iran-05 ^{FAR-09}
8	A/IRN/9/2009	IRN09-09	639	609	0	95.31	4.69	ASIA	Iran-05 ^{AFG-07}
9	A/IRN/197/2010	IRN10197	639	608	0	95.15	4.85	ASIA	Iran-05 ^{FAR-09}
10	A/IRN/26/2009	IRN09-26	639	608	0	95.15	4.85	ASIA	Iran-05 ^{AFG-07}
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	A/AFG/6/2007 (FJ755007)	AFG07-06	639	604	0	94.52	5.48	ASIA	Iran-05 ^{AFG-07}
2	A/IRN/78/2009	IRN09-78	639	603	0	94.37	5.63	ASIA	Iran-05 ^{FAR-09}
3	A/AFG/10/2010	AFG10-10	639	601	0	94.05	5.95	ASIA	Iran-05 ^{HER-10}
4	A/BAR/6/2008 (FJ755010)	BAR08-06	639	594	0	92.96	7.04	ASIA	Iran-05 ^{BAR-08}
5	A/IRN/1/2005 (EF208769)	IRN05-01	639	592	0	92.64	7.36	ASIA	Iran-05
6	A/IRN/1/2011	IRN11-01	639	590	0	92.33	7.67	ASIA	Iran-05 ^{FAR-11}
7	A/IRN/125/2010	IRN10125	639	588	0	92.02	7.98	ASIA	Iran-05 ^{SIS-10}
8	A/IRN/15/2012	IRN12-15	639	588	0	92.02	7.98	ASIA	Iran-05 ^{SIS-12}
9	A/TUR/1/2008 (FJ755133)	TUR08-01	639	586	0	91.71	8.29	ASIA	Iran-05 ^{ARD-07}
10	A/TUR/33/2008 (FJ755155)	TUR08-33	639	583	0	91.24	8.76	ASIA	Iran-05 ^{EZM-07}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: A	Report date: 30/07/2014
WRLFMD Ref No: PAK/10/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00021	Checked by: J. Wadsworth
Sender Ref: PK10	
Location: Islamabad, Pakistan	Topotype: ASIA
Date collected: 17/01/2014	Genotype/strain: Iran-05 ^{FAR-09}
Date received by WRLFMD: 22/05/2014	Sequence filename: PAK14-10.SEQ
Date received for sequencing: 16/07/2014	Date sequence last updated: 21/07/2014
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 08/07/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: A-1C612F/EUR-2B52R	Total no. of comparisons: 1962
	Min. no. of nt for comparison: 600
	Total turn-around time: 69 days
	Sequencing time: 14 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	A/PAK/14/2014	PAK14B14	639	639	0	100.00	0.00	ASIA	Iran-05 ^{FAR-09}
2	A/IRN/27/2013	IRN13-27	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-09}
3	A/IRN/28/2013	IRN13-28	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-09}
4	A/PAK/8/2014	PAK14-08	639	634	0	99.22	0.78	ASIA	Iran-05 ^{FAR-09}
5	A/SIN/PAK/L574/2009 (HQ439244)	PAK09-AA	639	610	0	95.46	4.54	ASIA	Iran-05 ^{FAR-09}
6	A/HIR/AFG/L1439/2009 (HQ439278)	AFG09-AQ	639	609	0	95.31	4.69	ASIA	Iran-05 ^{FAR-09}
7	A/SIN/PAK/L578/2009 (HQ439245)	PAK09-AB	639	609	0	95.31	4.69	ASIA	Iran-05 ^{FAR-09}
8	A/IRN/9/2009	IRN09-09	639	607	0	94.99	5.01	ASIA	Iran-05 ^{FAR-09}
9	A/IRN/197/2010	IRN10197	639	606	0	94.84	5.16	ASIA	Iran-05 ^{FAR-09}
10	A/IRN/26/2009	IRN09-26	639	606	0	94.84	5.16	ASIA	Iran-05 ^{AFG-07}
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	A/AFG/6/2007 (FJ755007)	AFG07-06	639	602	0	94.21	5.79	ASIA	Iran-05 ^{AFG-07}
2	A/IRN/78/2009	IRN09-78	639	601	0	94.05	5.95	ASIA	Iran-05 ^{FAR-09}
3	A/AFG/10/2010	AFG10-10	639	599	0	93.74	6.26	ASIA	Iran-05 ^{HER-10}
4	A/BAR/6/2008 (FJ755010)	BAR08-06	639	592	0	92.64	7.36	ASIA	Iran-05 ^{BAR-08}
5	A/IRN/1/2011	IRN11-01	639	592	0	92.64	7.36	ASIA	Iran-05 ^{FAR-11}
6	A/IRN/1/2005 (EF208769)	IRN05-01	639	590	0	92.33	7.67	ASIA	Iran-05
7	A/IRN/125/2010	IRN10125	639	588	0	92.02	7.98	ASIA	Iran-05 ^{SIS-10}
8	A/IRN/15/2012	IRN12-15	639	586	0	91.71	8.29	ASIA	Iran-05 ^{SIS-12}
9	A/TUR/1/2008 (FJ755133)	TUR08-01	639	584	0	91.39	8.61	ASIA	Iran-05 ^{ARD-07}
10	A/TUR/33/2008 (FJ755155)	TUR08-33	639	581	0	90.92	9.08	ASIA	Iran-05 ^{EZM-07}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: A WRLFMD Ref No: PAK/14/2014 (A) Batch No: WRLFMD/2014/00021 Sender Ref: PK12 Location: Sargodha, Pakistan Date collected: 20/02/2014 Date received by WRLFMD: 22/05/2014 Date received for sequencing: 23/07/2014 Species: Cattle Material used: RS1 11/07/2014 Region sequenced: VP1 RT-PCR primers: A-1C562F/EUR-2B52R	Report date: 30/07/2014 Reported by: N.J. Knowles Checked by: J. Wadsworth Topotype: ASIA Genotype/strain: Iran-05 ^{FAR-11} Sequence filename: PAK14A14.SEQ Date sequence last updated: 28/07/2014 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 1962 Min. no. of nt for comparison: 600 Total turn-around time: 69 days Sequencing time: 7 days
Comments: FMD type O virus was also detected in this sample. Two different FMD type A Viruses were also detected (labelled A and B).	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	A/IRN/1/2011	IRN11-01	639	612	0	95.77	4.23	ASIA	Iran-05 ^{FAR-11}
2	A/BAL/PAK/iso-2/2011 (JX435106)	PAK11-AB	639	608	0	95.15	4.85	ASIA	Iran-05 ^{FAR-11}
3	A/PAK/1/2013	PAK13-01	639	607	0	94.99	5.01	ASIA	Iran-05 ^{FAR-11}
4	A/PAK/23/2014	PAK14-23	639	607	0	94.99	5.01	ASIA	Iran-05 ^{FAR-11}
5	A/PAK/48/2012	PAK12-48	639	607	0	94.99	5.01	ASIA	Iran-05 ^{FAR-11}
6	A/PAK/11/2013	PAK13-11	639	606	0	94.84	5.16	ASIA	Iran-05 ^{FAR-11}
7	A/PAK/13/2013	PAK13-13	639	606	0	94.84	5.16	ASIA	Iran-05 ^{FAR-11}
8	A/PAK/14/2013	PAK13-14	639	606	0	94.84	5.16	ASIA	Iran-05 ^{FAR-11}
9	A/IRN/24/2013	IRN13-24	639	605	0	94.68	5.32	ASIA	Iran-05 ^{FAR-11}
10	A/PAK/17/2013	PAK13-17	639	605	0	94.68	5.32	ASIA	Iran-05 ^{FAR-11}
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	A/IRN/1/2011	IRN11-01	639	612	0	95.77	4.23	ASIA	Iran-05 ^{FAR-11}
2	A/AFG/6/2007 (FJ755007)	AFG07-06	639	593	0	92.80	7.20	ASIA	Iran-05 ^{AFG-07}
3	A/IRN/78/2009	IRN09-78	639	593	0	92.80	7.20	ASIA	Iran-05 ^{FAR-09}
4	A/BAR/6/2008 (FJ755010)	BAR08-06	639	592	0	92.64	7.36	ASIA	Iran-05 ^{BAR-08}
5	A/AFG/10/2010	AFG10-10	639	588	0	92.02	7.98	ASIA	Iran-05 ^{HER-10}
6	A/IRN/15/2012	IRN12-15	639	588	0	92.02	7.98	ASIA	Iran-05 ^{SIS-12}
7	A/IRN/125/2010	IRN10125	639	587	0	91.86	8.14	ASIA	Iran-05 ^{SIS-10}
8	A/IRN/1/2005 (EF208769)	IRN05-01	639	586	0	91.71	8.29	ASIA	Iran-05
9	A/TUR/1/2008 (FJ755133)	TUR08-01	639	586	0	91.71	8.29	ASIA	Iran-05 ^{ARD-07}
10	A/IRN/9/2010	IRN10-09	639	581	0	90.92	9.08	ASIA	Iran-05 ^{ESF-10}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: A WRLFMD Ref No: PAK/14/2014 (B) Batch No: WRLFMD/2014/00021 Sender Ref: PK12 Location: Sargodha, Pakistan Date collected: 20/02/2014 Date received by WRLFMD: 22/05/2014 Date received for sequencing: 23/07/2014 Species: Cattle Material used: RS1 11/07/2014 Region sequenced: VP1 RT-PCR primers: A-1C612F/EUR-2B52R	Report date: 30/07/2014 Reported by: N.J. Knowles Checked by: J. Wadsworth Topotype: ASIA Genotype/strain: Iran-05 ^{FAR-09} Sequence filename: PAK14B14.SEQ Date sequence last updated: 28/07/2014 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 1962 Min. no. of nt for comparison: 600 Total turn-around time: 69 days Sequencing time: 7 days
Comments: FMD type O virus was also detected in this sample. Two different FMD type A Viruses were also detected (labelled A and B).	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	A/PAK/10/2014	PAK14-10	639	639	0	100.00	0.00	ASIA	Iran-05 ^{FAR-09}
2	A/IRN/27/2013	IRN13-27	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-09}
3	A/IRN/28/2013	IRN13-28	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-09}
4	A/PAK/8/2014	PAK14-08	639	634	0	99.22	0.78	ASIA	Iran-05 ^{FAR-09}
5	A/SIN/PAK/L574/2009 (HQ439244)	PAK09-AA	639	610	0	95.46	4.54	ASIA	Iran-05 ^{FAR-09}
6	A/HIR/AFG/L1439/2009 (HQ439278)	AFG09-AQ	639	609	0	95.31	4.69	ASIA	Iran-05 ^{FAR-09}
7	A/SIN/PAK/L578/2009 (HQ439245)	PAK09-AB	639	609	0	95.31	4.69	ASIA	Iran-05 ^{FAR-09}
8	A/IRN/9/2009	IRN09-09	639	607	0	94.99	5.01	ASIA	Iran-05 ^{AFG-07}
9	A/IRN/197/2010	IRN10197	639	606	0	94.84	5.16	ASIA	Iran-05 ^{FAR-09}
10	A/IRN/26/2009	IRN09-26	639	606	0	94.84	5.16	ASIA	Iran-05 ^{AFG-07}
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(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	A/AFG/6/2007 (FJ755007)	AFG07-06	639	602	0	94.21	5.79	ASIA	Iran-05 ^{AFG-07}
2	A/IRN/78/2009	IRN09-78	639	601	0	94.05	5.95	ASIA	Iran-05 ^{FAR-09}
3	A/AFG/10/2010	AFG10-10	639	599	0	93.74	6.26	ASIA	Iran-05 ^{HER-10}
4	A/BAR/6/2008 (FJ755010)	BAR08-06	639	592	0	92.64	7.36	ASIA	Iran-05 ^{BAR-08}
5	A/IRN/1/2011	IRN11-01	639	592	0	92.64	7.36	ASIA	Iran-05 ^{FAR-11}
6	A/IRN/1/2005 (EF208769)	IRN05-01	639	590	0	92.33	7.67	ASIA	Iran-05
7	A/IRN/125/2010	IRN10125	639	588	0	92.02	7.98	ASIA	Iran-05 ^{SIS-10}
8	A/IRN/15/2012	IRN12-15	639	586	0	91.71	8.29	ASIA	Iran-05 ^{SIS-12}
9	A/TUR/1/2008 (FJ755133)	TUR08-01	639	584	0	91.39	8.61	ASIA	Iran-05 ^{ARD-07}
10	A/TUR/33/2008 (FJ755155)	TUR08-33	639	581	0	90.92	9.08	ASIA	Iran-05 ^{EZM-07}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: A	Report date: 30/07/2014
WRLFMD Ref No: PAK/22/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00021	Checked by: J. Wadsworth
Sender Ref: PK23	
Location: Lower Dir, Pakistan	Topotype: ASIA
Date collected: 09/04/2014	Genotype/strain: Iran-05 ^{FAR-11}
Date received by WRLFMD: 22/05/2014	Sequence filename: PAK14-22.SEQ
Date received for sequencing: 23/07/2014	Date sequence last updated: 28/07/2014
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 15/07/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: A-1C562F/EUR-2B52R	Total no. of comparisons: 1962
A-1C612F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 69 days
	Sequencing time: 7 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	A/PAK/1/2013	PAK13-01	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-11}
2	A/PAK/11/2013	PAK13-11	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-11}
3	A/PAK/13/2013	PAK13-13	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-11}
4	A/PAK/14/2013	PAK13-14	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-11}
5	A/PAK/48/2012	PAK12-48	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-11}
6	A/PAK/17/2013	PAK13-17	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-11}
7	A/PAK/21/2013	PAK13-21	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-11}
8	A/PAK/23/2014	PAK14-23	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-11}
9	A/PAK/25/2013	PAK13-25	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-11}
10	A/PAK/8/2013	PAK13-08	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-11}
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	A/IRN/1/2011	IRN11-01	639	626	0	97.97	2.03	ASIA	Iran-05 ^{FAR-11}
2	A/AFG/6/2007 (FJ755007)	AFG07-06	639	602	0	94.21	5.79	ASIA	Iran-05 ^{AFG-07}
3	A/IRN/78/2009	IRN09-78	639	598	0	93.58	6.42	ASIA	Iran-05 ^{FAR-09}
4	A/AFG/10/2010	AFG10-10	639	597	0	93.43	6.57	ASIA	Iran-05 ^{HER-10}
5	A/IRN/15/2012	IRN12-15	639	597	0	93.43	6.57	ASIA	Iran-05 ^{SIS-12}
6	A/IRN/1/2005 (EF208769)	IRN05-01	639	592	0	92.64	7.36	ASIA	Iran-05
7	A/TUR/1/2008 (FJ755133)	TUR08-01	639	592	0	92.64	7.36	ASIA	Iran-05 ^{ARD-07}
8	A/BAR/6/2008 (FJ755010)	BAR08-06	639	589	0	92.18	7.82	ASIA	Iran-05 ^{BAR-08}
9	A/IRN/125/2010	IRN10125	639	587	0	91.86	8.14	ASIA	Iran-05 ^{SIS-10}
10	A/IRN/9/2010	IRN10-09	639	586	0	91.71	8.29	ASIA	Iran-05 ^{ESF-10}

nt, nucleotides

*, not a WRLFMD reference number

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FAO World Reference Laboratory for FMD Genotyping Report

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

Page 1 of 1

Serotype: A	Report date: 30/07/2014
WRLFMD Ref No: PAK/23/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00021	Checked by: J. Wadsworth
Sender Ref: PK29	
Location: Lahore, Pakistan	Topotype: ASIA
Date collected: 10/04/2014	Genotype/strain: Iran-05 ^{FAR-11}
Date received by WRLFMD: 22/05/2014	Sequence filename: PAK14-23.SEQ
Date received for sequencing: 23/07/2014	Date sequence last updated: 28/07/2014
Species: Water Buffalo	No. of Nt determined: 639
Material used: BTy1 12/07/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: A-1C562F/EUR-2B52R	Total no. of comparisons: 1962
A-1C612F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 69 days
	Sequencing time: 7 days

Comments: FMD type O virus was also detected 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	A/PAK/1/2013	PAK13-01	639	637	0	99.69	0.31	ASIA	Iran-05 ^{FAR-11}
2	A/PAK/48/2012	PAK12-48	639	637	0	99.69	0.31	ASIA	Iran-05 ^{FAR-11}
3	A/PAK/11/2013	PAK13-11	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-11}
4	A/PAK/13/2013	PAK13-13	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-11}
5	A/PAK/14/2013	PAK13-14	639	636	0	99.53	0.47	ASIA	Iran-05 ^{FAR-11}
6	A/PAK/17/2013	PAK13-17	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-11}
7	A/PAK/21/2013	PAK13-21	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-11}
8	A/PAK/22/2014	PAK14-22	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-11}
9	A/PAK/25/2013	PAK13-25	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-11}
10	A/PAK/8/2013	PAK13-08	639	635	0	99.37	0.63	ASIA	Iran-05 ^{FAR-11}
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	A/IRN/1/2011	IRN11-01	639	627	0	98.12	1.88	ASIA	Iran-05 ^{FAR-11}
2	A/AFG/6/2007 (FJ755007)	AFG07-06	639	603	0	94.37	5.63	ASIA	Iran-05 ^{AFG-07}
3	A/IRN/78/2009	IRN09-78	639	599	0	93.74	6.26	ASIA	Iran-05 ^{FAR-09}
4	A/AFG/10/2010	AFG10-10	639	598	0	93.58	6.42	ASIA	Iran-05 ^{HER-10}
5	A/IRN/15/2012	IRN12-15	639	598	0	93.58	6.42	ASIA	Iran-05 ^{SIS-12}
6	A/IRN/1/2005 (EF208769)	IRN05-01	639	593	0	92.80	7.20	ASIA	Iran-05
7	A/TUR/1/2008 (FJ755133)	TUR08-01	639	593	0	92.80	7.20	ASIA	Iran-05 ^{ARD-07}
8	A/BAR/6/2008 (FJ755010)	BAR08-06	639	591	0	92.49	7.51	ASIA	Iran-05 ^{BAR-08}
9	A/IRN/125/2010	IRN10125	639	588	0	92.02	7.98	ASIA	Iran-05 ^{SIS-10}
10	A/IRN/9/2010	IRN10-09	639	585	0	91.55	8.45	ASIA	Iran-05 ^{ESF-10}

nt, nucleotides

*, not a WRLFMD reference number

Assembled with Report Generator v4.3

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Report on FMDV A in Pakistan in 2012 & 2014

Batch: WRLFMD/2014/00021

◆ indicates viruses in this batch

Software: MEGA 6.06

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 : 639

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,
30 July 2014

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