

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

Genotyping Report

Report Date for this Batch: 30 July 2014

FMDV type Asia 1
Country: Pakistan
Period: 2012 & 2014
No. of samples: 4

BATCH: WRLFMD/2014/00021



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FAO World Reference Laboratory for FMD Genotyping Report

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Serotype: ASIA1	Report date: 28/07/2014
WRLFMD Ref No: PAK/57/2012	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00021	Checked by: J. Wadsworth
Sender Ref: PK24	
Location: Rahim Yar Khan, Pakistan	Topotype: ASIA
Date collected: 08/05/2012	Genotype/strain: Sindh-08
Date received by WRLFMD: 22/05/2014	Sequence filename: PAK12-57.SEQ
Date received for sequencing: 23/07/2014	Date sequence last updated: 28/07/2014
Species: Water Buffalo	No. of Nt determined: 633
Material used: BTy1 25/06/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 633
RT-PCR primers: As1-1C530F/EUR-2B52R	Total no. of comparisons: 559
As1-1C613F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 67 days
	Sequencing time: 5 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/22/2012	PAK12-22	633	633	0	100.00	0.00	ASIA	Sindh-08
2	Asia1/PAK/27/2012	PAK12-27	633	633	0	100.00	0.00	ASIA	Sindh-08
3	Asia1/PAK/35/2012	PAK12-35	633	632	0	99.84	0.16	ASIA	Sindh-08
4	Asia1/PAK/10/2012	PAK12-10	633	630	0	99.53	0.47	ASIA	Sindh-08
5	Asia1/AFG/66/2011	AFG11-66	633	628	0	99.21	0.79	ASIA	Sindh-08
6	Asia1/AFG/68/2011	AFG11-68	633	628	0	99.21	0.79	ASIA	Sindh-08
7	Asia1/AFG/73/2011	AFG11-73	633	628	0	99.21	0.79	ASIA	Sindh-08
8	Asia1/AFG/78/2011	AFG11-78	633	628	0	99.21	0.79	ASIA	Sindh-08
9	Asia1/BAR/1/2011	BAR11-01	633	628	0	99.21	0.79	ASIA	Sindh-08
10	Asia1/BAR/2/2011	BAR11-02	633	628	0	99.21	0.79	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	608	0	96.05	3.95	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	580	0	91.63	8.37	ASIA	Group I
3	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	541	0	85.47	14.53	ASIA	Group III
4	Asia1/IND/18/80 (DQ121116)	IND80-18	633	536	0	84.68	15.32	ASIA	Group V
5	Asia1/IND/63/72* (AY304994)	IND72C63	630	532	0	84.44	15.56	ASIA	Unnamed
6	Asia1/Shamir/ISR/89	ISR89--A	633	533	0	84.20	15.80	ASIA	Unnamed
7	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	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	530	0	83.73	16.27	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	529	0	83.57	16.43	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: ASIA1	Report date: 28/07/2014
WRLFMD Ref No: PAK/19/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00021	Checked by: J. Wadsworth
Sender Ref: PK11	
Location: Multan, Pakistan	Topotype: ASIA
Date collected: 22/01/2014	Genotype/strain: Sindh-08
Date received by WRLFMD: 22/05/2014	Sequence filename: PAK14-19.SEQ
Date received for sequencing: 16/07/2014	Date sequence last updated: 28/07/2014
Species: Cattle	No. of Nt determined: 633
Material used: BTy1 12/07/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 633
RT-PCR primers: As1-1C530F/EUR-2B52R	Total no. of comparisons: 559
As1-1C613F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 67 days
	Sequencing time: 12 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/20/2014	PAK14-20	633	632	0	99.84	0.16	ASIA	Sindh-08
2	Asia1/IRN/49/2011	IRN11-49	633	616	0	97.31	2.69	ASIA	Sindh-08
3	Asia1/PAK/106/2010	PAK10106	633	616	0	97.31	2.69	ASIA	Sindh-08
4	Asia1/PAK/108/2010	PAK10108	633	616	0	97.31	2.69	ASIA	Sindh-08
5	Asia1/PAK/11/2011	PAK11-11	633	616	0	97.31	2.69	ASIA	Sindh-08
6	Asia1/PAK/110/2010	PAK10110	633	616	0	97.31	2.69	ASIA	Sindh-08
7	Asia1/PAK/111/2010	PAK10111	633	616	0	97.31	2.69	ASIA	Sindh-08
8	Asia1/PAK/12/2011	PAK11-12	633	616	0	97.31	2.69	ASIA	Sindh-08
9	Asia1/PAK/13/2011	PAK11-13	633	616	0	97.31	2.69	ASIA	Sindh-08
10	Asia1/PAK/14/2011	PAK11-14	633	616	0	97.31	2.69	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	603	0	95.26	4.74	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	537	0	84.83	15.17	ASIA	Group III
4	Asia1/IND/63/72* (AY304994)	IND72C63	630	532	0	84.44	15.56	ASIA	Unnamed
5	Asia1/IND/18/80 (DQ121116)	IND80-18	633	530	0	83.73	16.27	ASIA	Group V
6	Asia1/Shamir/ISR/89	ISR89--A	633	530	0	83.73	16.27	ASIA	Unnamed
7	Asia1/IND/14/95* (AF390678)	IND95-AA	633	529	0	83.57	16.43	ASIA	Unnamed
8	Asia1/HKN/19/74	HKN74-19	633	527	0	83.25	16.75	ASIA	Unnamed
9	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	526	0	83.10	16.90	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	524	0	82.78	17.22	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: ASIA1	Report date: 28/07/2014
WRLFMD Ref No: PAK/20/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00021	Checked by: J. Wadsworth
Sender Ref: PK15	
Location: Multan, Pakistan	Topotype: ASIA
Date collected: 24/03/2014	Genotype/strain: Sindh-08
Date received by WRLFMD: 22/05/2014	Sequence filename: PAK14-20.SEQ
Date received for sequencing: 23/07/2014	Date sequence last updated: 28/07/2014
Species: Water Buffalo	No. of Nt determined: 633
Material used: BTy1 12/07/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 633
RT-PCR primers: As1-1C530F/EUR-2B52R	Total no. of comparisons: 559
As1-1C613F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 67 days
	Sequencing time: 5 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/19/2014	PAK14-19	633	632	0	99.84	0.16	ASIA	Sindh-08
2	Asia1/IRN/49/2011	IRN11-49	633	615	0	97.16	2.84	ASIA	Sindh-08
3	Asia1/PAK/106/2010	PAK10106	633	615	0	97.16	2.84	ASIA	Sindh-08
4	Asia1/PAK/108/2010	PAK10108	633	615	0	97.16	2.84	ASIA	Sindh-08
5	Asia1/PAK/11/2011	PAK11-11	633	615	0	97.16	2.84	ASIA	Sindh-08
6	Asia1/PAK/110/2010	PAK10110	633	615	0	97.16	2.84	ASIA	Sindh-08
7	Asia1/PAK/111/2010	PAK10111	633	615	0	97.16	2.84	ASIA	Sindh-08
8	Asia1/PAK/12/2011	PAK11-12	633	615	0	97.16	2.84	ASIA	Sindh-08
9	Asia1/PAK/13/2011	PAK11-13	633	615	0	97.16	2.84	ASIA	Sindh-08
10	Asia1/PAK/14/2011	PAK11-14	633	615	0	97.16	2.84	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	574	0	90.68	9.32	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	531	0	84.29	15.71	ASIA	Unnamed
5	Asia1/IND/18/80 (DQ121116)	IND80-18	633	529	0	83.57	16.43	ASIA	Group V
6	Asia1/Shamir/ISR/89	ISR89--A	633	529	0	83.57	16.43	ASIA	Unnamed
7	Asia1/IND/14/95* (AF390678)	IND95-AA	633	528	0	83.41	16.59	ASIA	Unnamed
8	Asia1/HKN/19/74	HKN74-19	633	526	0	83.10	16.90	ASIA	Unnamed
9	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	525	0	82.94	17.06	ASIA	Unnamed
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	Report date: 28/07/2014
WRLFMD Ref No: PAK/25/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00021	Checked by: J. Wadsworth
Sender Ref: PK30	
Location: Lahore, Pakistan	Topotype: ASIA
Date collected: 15/04/2014	Genotype/strain: Sindh-08
Date received by WRLFMD: 22/05/2014	Sequence filename: PAK14-25.SEQ
Date received for sequencing: 16/07/2014	Date sequence last updated: 28/07/2014
Species: Cattle	No. of Nt determined: 633
Material used: BTy1 12/07/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 633
RT-PCR primers: As1-1C530F/EUR-2B52R	Total no. of comparisons: 559
As1-1C613F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 67 days
	Sequencing time: 12 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	617	0	97.47	2.53	ASIA	Sindh-08
2	Asia1/PAK/46/2012	PAK12-46	633	617	0	97.47	2.53	ASIA	Sindh-08
3	Asia1/PAK/10/2013	PAK13-10	633	611	0	96.52	3.48	ASIA	Sindh-08
4	Asia1/IRN/47/2011	IRN11-47	633	610	0	96.37	3.63	ASIA	Sindh-08
5	Asia1/IRN/49/2011	IRN11-49	633	610	0	96.37	3.63	ASIA	Sindh-08
6	Asia1/PAK/106/2010	PAK10106	633	610	0	96.37	3.63	ASIA	Sindh-08
7	Asia1/PAK/108/2010	PAK10108	633	610	0	96.37	3.63	ASIA	Sindh-08
8	Asia1/PAK/11/2011	PAK11-11	633	610	0	96.37	3.63	ASIA	Sindh-08
9	Asia1/PAK/110/2010	PAK10110	633	610	0	96.37	3.63	ASIA	Sindh-08
10	Asia1/PAK/111/2010	PAK10111	633	610	0	96.37	3.63	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	600	0	94.79	5.21	ASIA	Sindh-08
2	Asia1/AFG/1/2001 (DQ121109)	AFG01-01	633	572	0	90.36	9.64	ASIA	Group I
3	Asia1/IND/762/2003* (DQ101240)	IND03-AB	633	541	0	85.47	14.53	ASIA	Group III
4	Asia1/IND/18/80 (DQ121116)	IND80-18	633	533	0	84.20	15.80	ASIA	Group V
5	Asia1/IND/63/72* (AY304994)	IND72C63	630	530	0	84.13	15.87	ASIA	Unnamed
6	Asia1/IND/14/95* (AF390678)	IND95-AA	633	531	0	83.89	16.11	ASIA	Unnamed
7	Asia1/Shamir/ISR/89	ISR89--A	633	530	0	83.73	16.27	ASIA	Unnamed
8	Asia1/YNBS/CHA/58 (AY390432)	CHA58-AA	633	530	0	83.73	16.27	ASIA	Unnamed
9	Asia1/HKN/19/74	HKN74-19	633	525	0	82.94	17.06	ASIA	Unnamed
10	Asia1/IRN/10/2004 (DQ121119)	IRN04-10	633	524	0	82.78	17.22	ASIA	Group VIb

nt, nucleotides

*, not a WRLFMD reference number

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Report on FMDV Asia 1 in Pakistan in 2012 & 2014

Batch: WRLFMD/2014/00021

◆ indicates viruses in this batch

Software: MEGA 6.06

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, J. Wadsworth & K. Bachanek-Bankowska,
30 July 2014

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