



INSTITUTE FOR ANIMAL HEALTH
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FMD Sequencing Report

Lab Reference WRL Batch Number: WRLFMD/2011/00004
Sender Details:



Date Received: 18th January 2011
Country of Origin: Afghanistan
Date Reported: 20th May 2011

Dear Dr. E Ul Haq Khan,

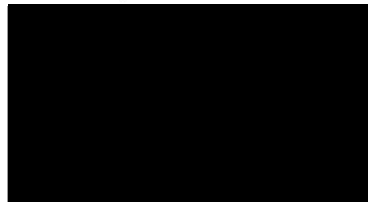
Re.: Serotype A

Sequencing work has now been completed in respect of the samples you submitted and the details are as attached. Please note that all of our phylogenetic trees can be accessed via the internet at: <http://www.wrlfmd.org/>

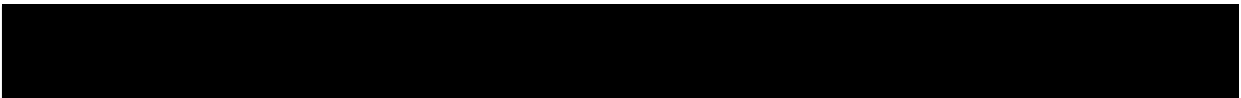
Results Approved By:



Official Stamp:



Date: 20/05/2011



Testing carried out by WRLFMD is UKAS ISO/IEC 17025 accredited. Please see link for scope of accreditation:

http://www.ukas.org/testing/lab_detail.asp?lab_id=2811&location_id=&vMenuOption=3 . To help us improve the quality of our service, please send any suggestions or requests to the Reference Laboratory by fax (+44 (0) 1483 232621 or email: elizabeth.wilson@bbsrc.ac.uk)

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

Genotyping Report

Report Date for this Batch: 20 May 2011

FMDV type A

Country: Afghanistan

Period: 2010

No. of samples: 5

BATCH: WRLFMD/2011/00004



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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: 22/04/2011
WRLFMD Ref No: AFG/125/2010	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00004	Checked by: D.P. King
Sender Ref: 289	
Location: Zearatja, Gzara, Hirat, Afghanistan	Topotype: ASIA
Date collected: 20/06/2010	Genotype/strain: Iran-05 ^{AFG-07}
Date received by WRLFMD: 18/01/2011	Sequence filename: AFG10125.SEQ
Date received for sequencing: 16/03/2011	Date sequence last updated: 18/03/2011
Species: Cattle	No. of Nt determined: 639
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: A-1C562F/EUR-2B52R	Total no. of comparisons: 1229
A-1C612F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 94 days
	Sequencing time: 37 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/AFG/128/2010	AFG10128	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
2	A/AFG/140/2010	AFG10140	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
3	A/AFG/163/2010	AFG10163	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
4	A/IRN/125/2010	IRN10125	639	638	0	99.84	0.16	ASIA	Iran-05 ^{AFG-07}
5	A/IRN/151/2010	IRN10151	639	636	0	99.53	0.47	ASIA	Iran-05 ^{AFG-07}
6	A/PAK/37/2010	PAK10-37	639	636	0	99.53	0.47	ASIA	Iran-05 ^{AFG-07}
7	A/IRN/4/2011	IRN11-04	639	635	0	99.37	0.63	ASIA	Iran-05 ^{AFG-07}
8	A/TUR/5/2011	TUR11-05	639	635	0	99.37	0.63	ASIA	Iran-05 ^{AFG-07}
9	A/IRN/5/2011	IRN11-05	639	634	0	99.22	0.78	ASIA	Iran-05 ^{AFG-07}
10	A/TUR/10/2011	TUR11-10	639	634	0	99.22	0.78	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	AFG07-06	639	608	0	95.15	4.85	ASIA	Iran-05 ^{AFG-07}
2	A/BAR/6/2008	BAR08-06	639	600	0	93.90	6.10	ASIA	Iran-05 ^{BAR-08}
3	A/IRN/1/2005 (EF208769)	IRN05-01	639	598	0	93.58	6.42	ASIA	Iran-05
4	A/TUR/1/2008	TUR08-01	639	596	0	93.27	6.73	ASIA	Iran-05 ^{ARD-07}
5	A/TUR/33/2008	TUR08-33	639	595	0	93.11	6.89	ASIA	Iran-05 ^{EZM-07}
6	A/IRN/22/99 (EF208772)	IRN99-22	636	537	0	84.43	15.57	ASIA	Iran-99
7	A/IRN/2/87 (EF208770)	IRN87-02	636	532	0	83.65	16.35	ASIA	Iran-87
8	A/TAI/118/87* (EF208777)	TAI87-AD	636	529	0	83.18	16.82	ASIA	Thai-87
9	A15/Bangkok/TAI/60 (AY593755)	TAI60--D	639	525	0	82.16	17.84	ASIA	A ₁₅
10	A22/IRQ/64 (AY593763)	IRQ64--A	639	525	0	82.16	17.84	ASIA	A ₂₂

nt, nucleotides

*, not a WRLFMD reference number

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

Page 1 of 1

Serotype: A	Report date: 22/04/2011
WRLFMD Ref No: AFG/128/2010	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00004	Checked by: D.P. King
Sender Ref: 290	
Location: Ghoran, Gzara, Hirat, Afghanistan	Topotype: ASIA
Date collected: 21/06/2010	Genotype/strain: Iran-05 ^{AFG-07}
Date received by WRLFMD: 18/01/2011	Sequence filename: AFG10128.SEQ
Date received for sequencing: 16/03/2011	Date sequence last updated: 18/03/2011
Species: Cattle	No. of Nt determined: 639
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: A-1C562F/EUR-2B52R	Total no. of comparisons: 1229
A-1C612F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 94 days
	Sequencing time: 37 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/AFG/125/2010	AFG10125	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
2	A/AFG/140/2010	AFG10140	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
3	A/AFG/163/2010	AFG10163	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
4	A/IRN/125/2010	IRN10125	639	638	0	99.84	0.16	ASIA	Iran-05 ^{AFG-07}
5	A/IRN/151/2010	IRN10151	639	636	0	99.53	0.47	ASIA	Iran-05 ^{AFG-07}
6	A/PAK/37/2010	PAK10-37	639	636	0	99.53	0.47	ASIA	Iran-05 ^{AFG-07}
7	A/IRN/4/2011	IRN11-04	639	635	0	99.37	0.63	ASIA	Iran-05 ^{AFG-07}
8	A/TUR/5/2011	TUR11-05	639	635	0	99.37	0.63	ASIA	Iran-05 ^{AFG-07}
9	A/IRN/5/2011	IRN11-05	639	634	0	99.22	0.78	ASIA	Iran-05 ^{AFG-07}
10	A/TUR/10/2011	TUR11-10	639	634	0	99.22	0.78	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	AFG07-06	639	608	0	95.15	4.85	ASIA	Iran-05 ^{AFG-07}
2	A/BAR/6/2008	BAR08-06	639	600	0	93.90	6.10	ASIA	Iran-05 ^{BAR-08}
3	A/IRN/1/2005 (EF208769)	IRN05-01	639	598	0	93.58	6.42	ASIA	Iran-05
4	A/TUR/1/2008	TUR08-01	639	596	0	93.27	6.73	ASIA	Iran-05 ^{ARD-07}
5	A/TUR/33/2008	TUR08-33	639	595	0	93.11	6.89	ASIA	Iran-05 ^{EZM-07}
6	A/IRN/22/99 (EF208772)	IRN99-22	636	537	0	84.43	15.57	ASIA	Iran-99
7	A/IRN/2/87 (EF208770)	IRN87-02	636	532	0	83.65	16.35	ASIA	Iran-87
8	A/TAI/118/87* (EF208777)	TAI87-AD	636	529	0	83.18	16.82	ASIA	Thai-87
9	A15/Bangkok/TAI/60 (AY593755)	TAI60--D	639	525	0	82.16	17.84	ASIA	A15
10	A22/IRQ/64 (AY593763)	IRQ64--A	639	525	0	82.16	17.84	ASIA	A22

nt, nucleotides

*, not a WRLFMD reference number

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

Page 1 of 1

Serotype: A	Report date: 22/04/2011
WRLFMD Ref No: AFG/140/2010	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00004	Checked by: D.P. King
Sender Ref: 291	
Location: Malan, Gzara, Hirat, Afghanistan	Topotype: ASIA
Date collected: 29/06/2010	Genotype/strain: Iran-05 ^{AFG-07}
Date received by WRLFMD: 18/01/2011	Sequence filename: AFG10140.SEQ
Date received for sequencing: 21/03/2011	Date sequence last updated: 23/03/2011
Species: Cattle	No. of Nt determined: 639
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: A-1C562F/EUR-2B52R	Total no. of comparisons: 1229
A-1C612F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 94 days
	Sequencing time: 32 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/AFG/125/2010	AFG10125	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
2	A/AFG/128/2010	AFG10128	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
3	A/AFG/163/2010	AFG10163	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
4	A/IRN/125/2010	IRN10125	639	638	0	99.84	0.16	ASIA	Iran-05 ^{AFG-07}
5	A/IRN/151/2010	IRN10151	639	636	0	99.53	0.47	ASIA	Iran-05 ^{AFG-07}
6	A/PAK/37/2010	PAK10-37	639	636	0	99.53	0.47	ASIA	Iran-05 ^{AFG-07}
7	A/IRN/4/2011	IRN11-04	639	635	0	99.37	0.63	ASIA	Iran-05 ^{AFG-07}
8	A/TUR/5/2011	TUR11-05	639	635	0	99.37	0.63	ASIA	Iran-05 ^{AFG-07}
9	A/IRN/5/2011	IRN11-05	639	634	0	99.22	0.78	ASIA	Iran-05 ^{AFG-07}
10	A/TUR/10/2011	TUR11-10	639	634	0	99.22	0.78	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	AFG07-06	639	608	0	95.15	4.85	ASIA	Iran-05 ^{AFG-07}
2	A/BAR/6/2008	BAR08-06	639	600	0	93.90	6.10	ASIA	Iran-05 ^{BAR-08}
3	A/IRN/1/2005 (EF208769)	IRN05-01	639	598	0	93.58	6.42	ASIA	Iran-05
4	A/TUR/1/2008	TUR08-01	639	596	0	93.27	6.73	ASIA	Iran-05 ^{ARD-07}
5	A/TUR/33/2008	TUR08-33	639	595	0	93.11	6.89	ASIA	Iran-05 ^{EZM-07}
6	A/IRN/22/99 (EF208772)	IRN99-22	636	537	0	84.43	15.57	ASIA	Iran-99
7	A/IRN/2/87 (EF208770)	IRN87-02	636	532	0	83.65	16.35	ASIA	Iran-87
8	A/TAI/118/87* (EF208777)	TAI87-AD	636	529	0	83.18	16.82	ASIA	Thai-87
9	A15/Bangkok/TAI/60 (AY593755)	TAI60--D	639	525	0	82.16	17.84	ASIA	A15
10	A22/IRQ/64 (AY593763)	IRQ64--A	639	525	0	82.16	17.84	ASIA	A22

nt, nucleotides

*, not a WRLFMD reference number

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

Page 1 of 1

Serotype: A WRLFMD Ref No: AFG/163/2010 Batch No: WRLFMD/2011/00004 Sender Ref: 294 Location: Shengana, Center, Panjsher, Afghanistan Date collected: 27/07/2010 Date received by WRLFMD: 18/01/2011 Date received for sequencing: 25/03/2011 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: A-1C562F/EUR-2B52R A-1C612F/EUR-2B52R	Report date: 22/04/2011 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ASIA Genotype/strain: Iran-05 ^{AFG-07} Sequence filename: AFG10163.SEQ Date sequence last updated: 30/03/2011 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 1229 Min. no. of nt for comparison: 600 Total turn-around time: 94 days Sequencing time: 28 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/AFG/125/2010	AFG10125	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
2	A/AFG/128/2010	AFG10128	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
3	A/AFG/140/2010	AFG10140	639	639	0	100.00	0.00	ASIA	Iran-05 ^{AFG-07}
4	A/IRN/125/2010	IRN10125	639	638	0	99.84	0.16	ASIA	Iran-05 ^{AFG-07}
5	A/IRN/151/2010	IRN10151	639	636	0	99.53	0.47	ASIA	Iran-05 ^{AFG-07}
6	A/PAK/37/2010	PAK10-37	639	636	0	99.53	0.47	ASIA	Iran-05 ^{AFG-07}
7	A/IRN/4/2011	IRN11-04	639	635	0	99.37	0.63	ASIA	Iran-05 ^{AFG-07}
8	A/TUR/5/2011	TUR11-05	639	635	0	99.37	0.63	ASIA	Iran-05 ^{AFG-07}
9	A/IRN/5/2011	IRN11-05	639	634	0	99.22	0.78	ASIA	Iran-05 ^{AFG-07}
10	A/TUR/10/2011	TUR11-10	639	634	0	99.22	0.78	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	AFG07-06	639	608	0	95.15	4.85	ASIA	Iran-05 ^{AFG-07}
2	A/BAR/6/2008	BAR08-06	639	600	0	93.90	6.10	ASIA	Iran-05 ^{BAR-08}
3	A/IRN/1/2005 (EF208769)	IRN05-01	639	598	0	93.58	6.42	ASIA	Iran-05
4	A/TUR/1/2008	TUR08-01	639	596	0	93.27	6.73	ASIA	Iran-05 ^{ARD-07}
5	A/TUR/33/2008	TUR08-33	639	595	0	93.11	6.89	ASIA	Iran-05 ^{EZM-07}
6	A/IRN/22/99 (EF208772)	IRN99-22	636	537	0	84.43	15.57	ASIA	Iran-99
7	A/IRN/2/87 (EF208770)	IRN87-02	636	532	0	83.65	16.35	ASIA	Iran-87
8	A/TAI/118/87* (EF208777)	TAI87-AD	636	529	0	83.18	16.82	ASIA	Thai-87
9	A15/Bangkok/TAI/60 (AY593755)	TAI60--D	639	525	0	82.16	17.84	ASIA	A15
10	A22/IRQ/64 (AY593763)	IRQ64--A	639	525	0	82.16	17.84	ASIA	A22

nt, nucleotides

*, not a WRLFMD reference number

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Page 1 of 1

Serotype: A	Report date: 22/04/2011
WRLFMD Ref No: AFG/232/2010	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00004	Checked by: D.P. King
Sender Ref: 386	
Location: Fazelbek, 5, Kabul, Afghanistan	Topotype: ASIA
Date collected: 13/10/2010	Genotype/strain: Iran-05 ^{AFG-07}
Date received by WRLFMD: 18/01/2011	Sequence filename: AFG10232.SEQ
Date received for sequencing: 08/04/2011	Date sequence last updated: 13/04/2011
Species: Cattle	No. of Nt determined: 639
Material used: BTy2	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: A-1C562F/EUR-2B52R	Total no. of comparisons: 1229
A-1C612F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 94 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/23/2010	PAK10-23	639	636	0	99.53	0.47	ASIA	Iran-05 ^{AFG-07}
2	A/PAK/12/2010	PAK10-12	639	635	0	99.37	0.63	ASIA	Iran-05 ^{AFG-07}
3	A/PAK/13/2008	PAK08-13	639	634	0	99.22	0.78	ASIA	Iran-05 ^{AFG-07}
4	A/AFG/13/2009	AFG09-13	639	633	0	99.06	0.94	ASIA	Iran-05 ^{AFG-07}
5	A/AFG/14/2009	AFG09-14	639	633	0	99.06	0.94	ASIA	Iran-05 ^{AFG-07}
6	A/AFG/15/2009	AFG09-15	639	633	0	99.06	0.94	ASIA	Iran-05 ^{AFG-07}
7	A/AFG/8/2009	AFG09-08	639	633	0	99.06	0.94	ASIA	Iran-05 ^{AFG-07}
8	A/PAK/1/2009	PAK09-01	639	631	0	98.75	1.25	ASIA	Iran-05 ^{AFG-07}
9	A/PAK/2/2009	PAK09-02	639	631	0	98.75	1.25	ASIA	Iran-05 ^{AFG-07}
10	A/PAK/24/2009	PAK09-24	639	631	0	98.75	1.25	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	AFG07-06	639	618	0	96.71	3.29	ASIA	Iran-05 ^{AFG-07}
2	A/IRN/1/2005 (EF208769)	IRN05-01	639	608	0	95.15	4.85	ASIA	Iran-05
3	A/BAR/6/2008	BAR08-06	639	604	0	94.52	5.48	ASIA	Iran-05 ^{BAR-08}
4	A/TUR/1/2008	TUR08-01	639	600	0	93.90	6.10	ASIA	Iran-05 ^{ARD-07}
5	A/TUR/33/2008	TUR08-33	639	597	0	93.43	6.57	ASIA	Iran-05 ^{EZM-07}
6	A/IRN/2/87 (EF208770)	IRN87-02	636	539	0	84.75	15.25	ASIA	Iran-87
7	A/TAI/118/87* (EF208777)	TAI87-AD	636	536	0	84.28	15.72	ASIA	Thai-87
8	A/TAI/2/97 (EF208778)	TAI97-02	636	529	0	83.18	16.82	ASIA	Thai-97
9	A22/IRQ/64 (AY593763)	IRQ64--A	639	530	0	82.94	17.06	ASIA	A ₂₂
10	A/IRN/22/99 (EF208772)	IRN99-22	636	527	0	82.86	17.14	ASIA	Iran-99

nt, nucleotides

*, not a WRLFMD reference number

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Report on FMDV A in Afghanistan in 2010

Batch: WRLFMD/2011/00004

◆ indicates viruses in this batch

Software: MEGA 5.0

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 : 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, 20 May 2011

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