



# Institute for Animal Health

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Page 1 of 6

To:

Fax Number:

To:

Fax Number:

From:

Date: 30<sup>th</sup> March 2009

Subject: Sequencing Report

No. Of Pages: 6

FAX

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Thank you.

Dear [REDACTED]

Virus isolates: A TUR/7/2009, A TUR/37/2008, A TUR/39/2008, A TUR/40/2008

Sequencing work has now been completed in respect of the above virus isolates received at IAH Pirbright on 9<sup>th</sup> of March 2009 and the details are as attached. Please note all of our phylogenetic trees can be accessed via the internet at:

[http://www.iah.bbsrc.ac.uk/primary\\_index/current\\_research/virus/Picornaviridae/Aphthovirus/index.html](http://www.iah.bbsrc.ac.uk/primary_index/current_research/virus/Picornaviridae/Aphthovirus/index.html)

Yours sincerely

[REDACTED]  
Head: World Reference Laboratory for FMD

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The Institute is sponsored by the Biotechnology and Biological Sciences Research Council. An Associated Institute of the University of Reading.

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# Molecular Epidemiology Report Form

IAH-P-EP-MEG-FOR-005-1

Page 1 of 1

Serotype: A WRL Ref No: TUR/7/2009 Sender Ref: 31/2009 Date collected: 01/02/2009 Date received by WRLFMD: 09/03/2009 Date received for sequencing: 19/03/2009 Species: Cattle Material used: BTyl Region sequenced: VP1 RT-PCR primers: A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 27/03/2009 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: ASIA Genotype/strain: Iran-05 Sequence filename: TUR09-07.SEQ Date sequence last updated: 27/03/2009 Total no. of comparisons: 1034 Min. no. of nt for comparison: 300 Total turn-around time: 18 days Sequencing time: 8 days
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Comments:

### Ten Most Closely Related Viruses

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	A/TUR/2/2008	TUR08-02	639	627	0	98.12	1.88
2	A/TUR/13/2008	TUR08-13	639	625	0	97.81	2.19
3	A/TUR/100/2008* (FMDI-Ankara)	TUR08-AE	639	624	0	97.65	2.35
4	A/TUR/145/2008* (FMDI-Ankara)	TUR08-AG	639	624	0	97.65	2.35
5	A/TUR/1009/2007* (FMDI-Ankara)	TUR07-AG	639	624	0	97.65	2.35
6	A/TUR/17/2008	TUR08-17	639	624	0	97.65	2.35
7	A/TUR/96/2008* (FMDI-Ankara)	TUR08-AD	639	623	0	97.5	2.5
8	A/TUR/130/2008* (FMDI-Ankara)	TUR08-AF	639	623	0	97.5	2.5
9	A/TUR/23/2008	TUR08-23	639	623	0	97.5	2.5
10	A/TUR/925/2007* (FMDI-Ankara)	TUR07-AD	639	623	0	97.5	2.5

### Relationships to Reference Virus Strains

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	A/IRN/1/2005 (EF208769)	IRN05-01	639	602	0	94.21	5.79
2	A/IRN/2/87 (EF208770)	IRN87-02	636	540	0	84.91	15.09
3	A/SAU/41/91	SAU91-41	636	540	0	84.91	15.09
4	A/IRN/22/99 (EF208772)	IRN99-22	636	531	0	83.49	16.51
5	A/TAI/118/87* (EF208777)	TAI87-AD	636	531	0	83.49	16.51
6	A22/IRQ/24/64 (AJ251474)	IRQ64-24	639	530	0	82.94	17.06
7	A/SAU/23/86 (EU414536)	SAU86-23	639	527	0	82.47	17.53
8	A/TAI/2/97 (EF208778)	TAI97-02	636	524	0	82.39	17.61
9	A/IRN/1/96 (EF208771)	IRN96-01	638	525	1	82.29	17.71
10	A24/Cruzeiro/BRA/55 (AJ251476)	BRA55-C	639	505	0	79.03	20.97

nt, nucleotides

\*. not a WRLFMD reference number

# Molecular Epidemiology Report Form

IAH-P-EP-MEG-FOR-005-1

Page 1 of 1

Serotype: A WRL Ref No: TUR/37/2008 Sender Ref: 310/2008 Date collected: 01/11/2008 Date received by WRLFMD: 09/03/2009 Date received for sequencing: 19/03/2009 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 27/03/2009 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: ASIA Genotype/strain: Iran-05 Sequence filename: TUR08-37.SEQ Date sequence last updated: 27/03/2009 Total no. of comparisons: 1034 Min. no. of nt for comparison: 300 Total turn-around time: 18 days Sequencing time: 8 days																																																																																								
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# Molecular Epidemiology Report Form

IAH-P-EP-MEG-FOR-005-1

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Serotype: A WRL Ref No: TUR/39/2008 Sender Ref: 314/2008 Date collected: 01/12/2008 Date received by WRLFMD: 09/03/2009 Date received for sequencing: 19/03/2009 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 27/03/2009 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: ASIA Genotype/strain: Iran-05 Sequence filename: TUR08-39.SEQ Date sequence last updated: 27/03/2009 Total no. of comparisons: 1034 Min. no. of nt for comparison: 300 Total turn-around time: 18 days Sequencing time: 8 days
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Comments:

### Ten Most Closely Related Viruses

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	A/TUR/96/2008* (FMDI-Ankara)	TUR08-AD	639	630	0	98.59	1.41
2	A/TUR/130/2008* (FMDI-Ankara)	TUR08-AF	639	630	0	98.59	1.41
3	A/TUR/925/2007* (FMDI-Ankara)	TUR07-AD	639	630	0	98.59	1.41
4	A/TUR/981/2007* (FMDI-Ankara)	TUR07-AE	639	630	0	98.59	1.41
5	A/TUR/53/2008* (FMDI-Ankara)	TUR08-AC	639	629	0	98.44	1.56
6	A/TUR/145/2008* (FMDI-Ankara)	TUR08-AG	639	629	0	98.44	1.56
7	A/TUR/1/2008	TUR08-01	639	629	0	98.44	1.56
8	A/TUR/1009/2007* (FMDI-Ankara)	TUR07-AG	639	629	0	98.44	1.56
9	A/TUR/1018/2007* (FMDI-Ankara)	TUR07-AF	639	629	0	98.44	1.56
10	A/TUR/28/2008	TUR08-28	639	629	0	98.44	1.56

### Relationships to Reference Virus Strains

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	A/IRN/1/2005 (EF208769)	IRN05-01	639	611	0	95.62	4.38
2	A/SAU/41/91	SAU91-41	636	544	0	85.53	14.47
3	A/IRN/2/87 (EF208770)	IRN87-02	636	542	0	85.22	14.78
4	A/TAI/118/87* (EF208777)	TAI87-AD	636	533	0	83.81	16.19
5	A/TAI/2/97 (EF208778)	TAI97-02	636	533	0	83.81	16.19
6	A/IRN/22/99 (EF208772)	IRN99-22	636	532	0	83.65	16.35
7	A/SAU/23/86 (EU414536)	SAU86-23	639	532	0	83.26	16.74
8	A22/IRQ/24/64 (AJ251474)	IRQ64-24	639	532	0	83.26	16.74
9	A/IRN/1/96 (EF208771)	IRN96-01	638	528	1	82.76	17.24
10	A24/Cruzeiro/BRA/55 (AJ251476)	BRA55-C	639	509	0	79.66	20.34

nt, nucleotides

\*, not a WRLFMD reference number

# Molecular Epidemiology Report Form

IAH-P-EP-MEG-FOR-005-1

Page 1 of 1

Serotype: A WRL Ref No: TUR/40/2008 Sender Ref: 2/2009 Date collected: 01/12/2008 Date received by WRLFMD: 09/03/2009 Date received for sequencing: 19/03/2009 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 27/03/2009 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: ASIA Genotype/strain: Iran-05 Sequence filename: TUR08-40.SEQ Date sequence last updated: 27/03/2009 Total no. of comparisons: 1034 Min. no. of nt for comparison: 300 Total turn-around time: 18 days Sequencing time: 8 days
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Comments:

### Ten Most Closely Related Viruses

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	A/TUR/6/2009* (FMDI-Ankara)	TUR09-AA	639	639	0	100	0
2	A/TUR/859/2007* (FMDI-Ankara)	TUR07-AC	639	627	0	98.12	1.88
3	A/TUR/1045/2007* (FMDI-Ankara)	TUR07-AH	639	625	0	97.81	2.19
4	A/TUR/195/2008* (FMDI-Ankara)	TUR08-AH	639	623	0	97.5	2.5
5	A/TUR/33/2008	TUR08-33	639	623	0	97.5	2.5
6	A/TUR/20/2006	TUR06-20	639	618	0	96.71	3.29
7	A/IRN/31/2005	IRN05-31	639	617	0	96.56	3.44
8	A/TUR/1/2006 (EU553878)	TUR06-01	639	617	0	96.56	3.44
9	A/TUR/3/2006	TUR06-03	639	617	0	96.56	3.44
10	A/TUR/9/2005	TUR05-09	639	617	0	96.56	3.44

### Relationships to Reference Virus Strains

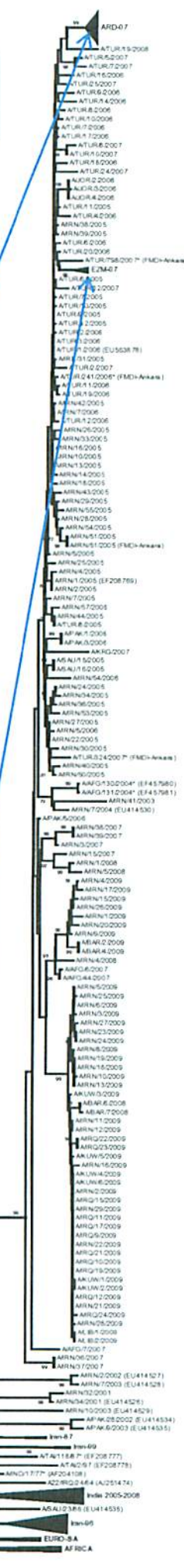
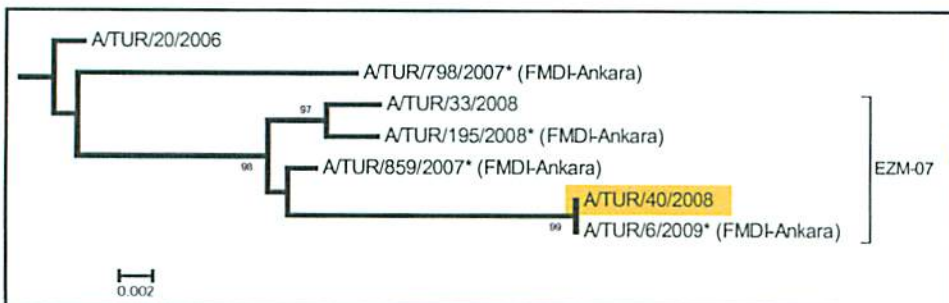
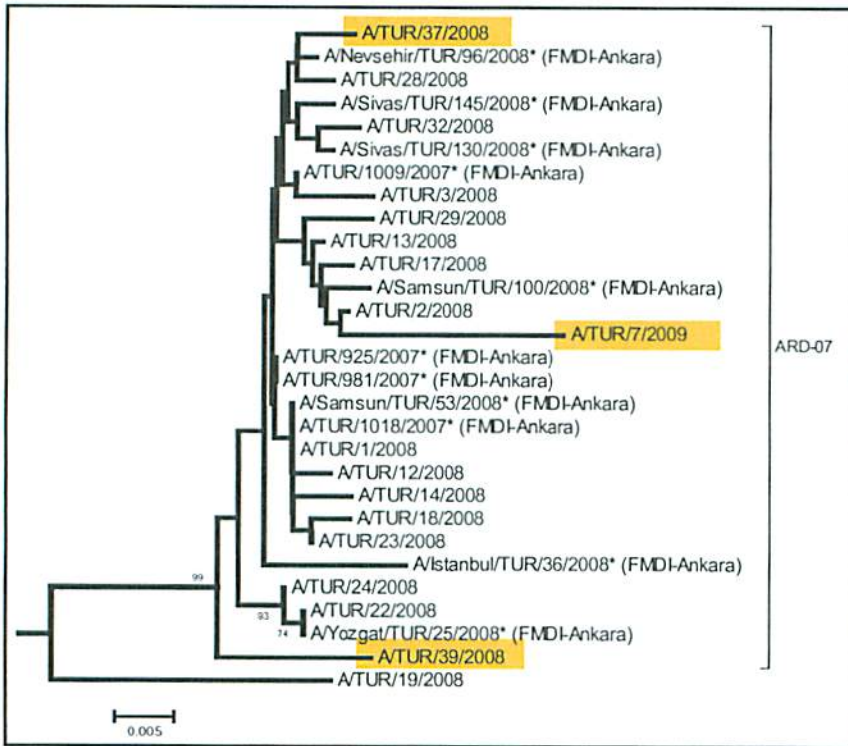
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
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2	A/SAU/41/91	SAU91-41	636	540	0	84.91	15.09
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7	A22/IRQ/24/64 (AJ251474)	IRQ64-24	639	525	0	82.16	17.84
8	A/IRN/1/96 (EF208771)	IRN96-01	638	522	1	81.82	18.18
9	A/SAU/23/86 (EU414536)	SAU86-23	639	522	0	81.69	18.31
10	A24/Cruzeiro/BRA/55 (AJ251476)	BRA55-C	639	511	0	79.97	20.03

nt, nucleotides

\*, not a WRLFMD reference number

# Report on FMDV A from Turkey in 2008-9

Batch: WRLFMD/2009/00009



Software: MEGA 4.0

No. of Taxa : 237

Data File : n:\evd\meg\db\fmv\al\IRN2009a.meg

Data Title : A Iran & Turkey 2009

Data Type : Nucleotide (Coding)

Analysis : Phylogeny reconstruction

Tree Inference : =====

->Method : Neighbor-Joining

->Phylogeny Test and options : Bootstrap (1000 replicates; seed=64238)

Include Sites : =====

->Gaps/Missing Data : Pairwise Deletion

->Codon Positions : 1st+2nd+3rd+Noncoding

Substitution Model : =====

->Model : Nucleotide: Kimura 2-parameter

->Substitutions to Include : d: Transitions + Transversions

->Pattern among Lineages : Same (Homogeneous)

->Rates among sites : Uniform rates

No. of Sites : 645

No Of Bootstrap Reps = 1000

Only bootstrap values of 70% and above are shown

\*, not a WRLFMD Ref. No.

N.J. Knowles and J. Wadsworth, 29 March 2009