

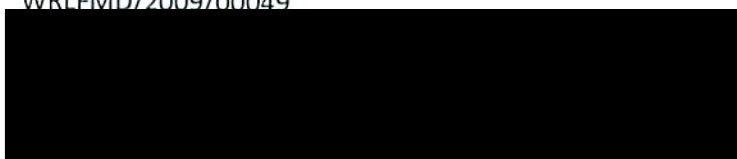


INSTITUTE FOR ANIMAL HEALTH
Director: Professor Martin W. Shirley, PhD
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Pirbright,
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GU24 0NF
Intn Tel: 00 44 1483 232441
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FMD Sequencing Report

Lab Reference WRL Batch Number: WRLFMD/2009/00049

Sender Details:



Date Received: 28th September 2009

Country of Origin: Pakistan

Date Reported: 15th October 2009

Dear Dr. Khan,

Re.: Serotype A

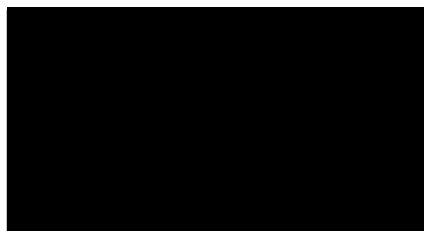
Sequencing work has now been completed in respect of the samples you submitted and the details are as attached. Please note that all of our phylogenetic trees can be accessed via the internet at:

<http://www.wrlfmd.org/>

Results Approved By:



Official Stamp:



Date:

16/10/09



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.byrom@bbsrc.ac.uk)

Molecular Epidemiology Report Form

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Serotype: A WRL Ref No: PAK/23/2009 Sender Ref: PKGT2 Date collected: 30/06/2009 Date received by WRLFMD: 28/09/2009 Date received for sequencing: 07/10/2009 Species: Buffalo Material used: RS2 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: 14/10/2009 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ASIA Genotype/strain: Iran-05 Sequence filename: PAK09-23.SEQ Date sequence last updated: 14/10/2009 Total no. of comparisons: 1191 Min. no. of nt for comparison: 300 Total turn-around time: 16 days Sequencing time: 7 days																																																																																								
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Serotype: A WRL Ref No: PAK/24/2009 Sender Ref: PKGT3 Date collected: 30/06/2009 Date received by WRLFMD: 28/09/2009 Date received for sequencing: 07/10/2009 Species: Buffalo 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: 14/10/2009 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ASIA Genotype/strain: Iran-05 ^{AFG-07} Sequence filename: PAK09-24.SEQ Date sequence last updated: 14/10/2009 Total no. of comparisons: 1191 Min. no. of nt for comparison: 300 Total turn-around time: 16 days Sequencing time: 7 days																																																																																								
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nt, nucleotides *, not a WRLFMD reference number																																																																																									

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Serotype: A WRL Ref No: PAK/25/2009 Sender Ref: PKGT4 Date collected: 30/06/2009 Date received by WRLFMD: 28/09/2009 Date received for sequencing: 07/10/2009 Species: Buffalo 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: 14/10/2009 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ASIA Genotype/strain: Iran-05 Sequence filename: PAK09-25.SEQ Date sequence last updated: 14/10/2009 Total no. of comparisons: 1191 Min. no. of nt for comparison: 300 Total turn-around time: 16 days Sequencing time: 7 days																																																																																								
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Serotype: A WRL Ref No: PAK/31/2009 Sender Ref: PK SL Date collected: 15/07/2009 Date received by WRLFMD: 28/09/2009 Date received for sequencing: 07/10/2009 Species: Buffalo 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: 14/10/2009 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ASIA Genotype/strain: Iran-05 ^{AFG-07} Sequence filename: PAK09-31.SEQ Date sequence last updated: 14/10/2009 Total no. of comparisons: 1191 Min. no. of nt for comparison: 300 Total turn-around time: 16 days Sequencing time: 7 days																																																																																								
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5	A/IRN/9/2009	IRN09-09	639	623	0	97.5	2.5																																																																																		
6	A/IRN/26/2009	IRN09-26	639	622	0	97.34	2.66																																																																																		
7	A/IRN/15/2009	IRN09-15	639	620	0	97.03	2.97																																																																																		
8	A/IRN/20/2009	IRN09-20	639	620	0	97.03	2.97																																																																																		
9	A/IRN/4/2009	IRN09-04	639	620	0	97.03	2.97																																																																																		
10	A/AFG/44/2007	AFG07-44	639	619	0	96.87	3.13																																																																																		
Relationships to Reference Virus Strains																																																																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Pos.</th> <th style="text-align: left;">Virus name</th> <th style="text-align: left;">Filename</th> <th style="text-align: center;">No. nt compared</th> <th style="text-align: center;">No. nt matched</th> <th style="text-align: center;">No. of ambiguities</th> <th style="text-align: center;">% Identity</th> <th style="text-align: center;">% Difference</th> </tr> </thead> <tbody> <tr><td>1</td><td>A/IRN/1/2005 (EF208769)</td><td>IRN05-01</td><td style="text-align: center;">639</td><td style="text-align: center;">606</td><td style="text-align: center;">0</td><td style="text-align: center;">94.84</td><td style="text-align: center;">5.16</td></tr> <tr><td>2</td><td>A/IRN/2/87 (EF208770)</td><td>IRN87-02</td><td style="text-align: center;">636</td><td style="text-align: center;">540</td><td style="text-align: center;">0</td><td style="text-align: center;">84.91</td><td style="text-align: center;">15.09</td></tr> <tr><td>3</td><td>A/SAU/41/91</td><td>SAU91-41</td><td style="text-align: center;">636</td><td style="text-align: center;">538</td><td style="text-align: center;">0</td><td style="text-align: center;">84.59</td><td style="text-align: center;">15.41</td></tr> <tr><td>4</td><td>A/TAI/118/87* (EF208777)</td><td>TAI87-AD</td><td style="text-align: center;">636</td><td style="text-align: center;">537</td><td style="text-align: center;">0</td><td style="text-align: center;">84.43</td><td style="text-align: center;">15.57</td></tr> <tr><td>5</td><td>A/TAI/2/97 (EF208778)</td><td>TAI97-02</td><td style="text-align: center;">636</td><td style="text-align: center;">532</td><td style="text-align: center;">0</td><td style="text-align: center;">83.65</td><td style="text-align: center;">16.35</td></tr> <tr><td>6</td><td>A22/IRQ/24/64 (AJ251474)</td><td>IRQ64-24</td><td style="text-align: center;">639</td><td style="text-align: center;">534</td><td style="text-align: center;">0</td><td style="text-align: center;">83.57</td><td style="text-align: center;">16.43</td></tr> <tr><td>7</td><td>A/SAU/23/86 (EU414536)</td><td>SAU86-23</td><td style="text-align: center;">639</td><td style="text-align: center;">531</td><td style="text-align: center;">0</td><td style="text-align: center;">83.1</td><td style="text-align: center;">16.9</td></tr> <tr><td>8</td><td>A/IRN/22/99 (EF208772)</td><td>IRN99-22</td><td style="text-align: center;">636</td><td style="text-align: center;">525</td><td style="text-align: center;">0</td><td style="text-align: center;">82.55</td><td style="text-align: center;">17.45</td></tr> <tr><td>9</td><td>A/IRN/1/96 (EF208771)</td><td>IRN96-01</td><td style="text-align: center;">638</td><td style="text-align: center;">526</td><td style="text-align: center;">1</td><td style="text-align: center;">82.45</td><td style="text-align: center;">17.55</td></tr> <tr><td>10</td><td>A24/Cruzeiro/BRA/55 (AJ251476)</td><td>BRA55--C</td><td style="text-align: center;">639</td><td style="text-align: center;">515</td><td style="text-align: center;">0</td><td style="text-align: center;">80.59</td><td style="text-align: center;">19.41</td></tr> </tbody> </table>		Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference	1	A/IRN/1/2005 (EF208769)	IRN05-01	639	606	0	94.84	5.16	2	A/IRN/2/87 (EF208770)	IRN87-02	636	540	0	84.91	15.09	3	A/SAU/41/91	SAU91-41	636	538	0	84.59	15.41	4	A/TAI/118/87* (EF208777)	TAI87-AD	636	537	0	84.43	15.57	5	A/TAI/2/97 (EF208778)	TAI97-02	636	532	0	83.65	16.35	6	A22/IRQ/24/64 (AJ251474)	IRQ64-24	639	534	0	83.57	16.43	7	A/SAU/23/86 (EU414536)	SAU86-23	639	531	0	83.1	16.9	8	A/IRN/22/99 (EF208772)	IRN99-22	636	525	0	82.55	17.45	9	A/IRN/1/96 (EF208771)	IRN96-01	638	526	1	82.45	17.55	10	A24/Cruzeiro/BRA/55 (AJ251476)	BRA55--C	639	515	0	80.59	19.41
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nt, nucleotides *, not a WRLFMD reference number																																																																																									

Report on FMDV A in Pakistan in 2009

Batch: WRLFMD/2009/00049

Software: MEGA 4.0

No. of Taxa : 287

Data File : n:\evd\meg\db\fmv\la\PAK2009c.meg

Data Title : A Pakistan 2009

Data Type : Nucleotide (Coding)

Analysis : Phylogeny reconstruction

Tree Inference : =====

->Method : Neighbor-Joining

->Phylogeny Test and options : Bootstrap (1000 replicates; seed=43139)

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

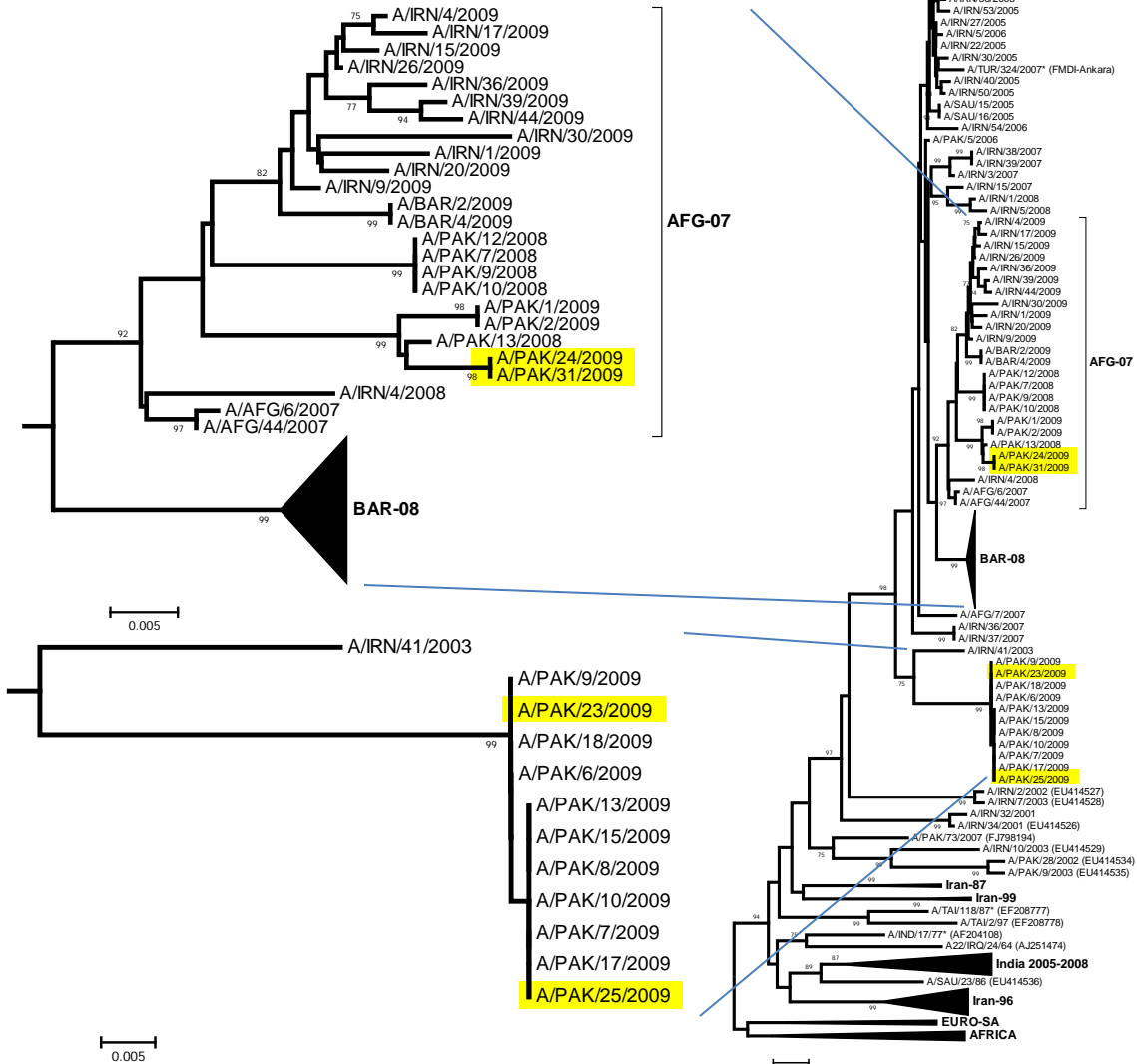
No. of Sites : 642

No Of Bootstrap Reps = 1000

Only bootstrap values of 70% and above are shown

*, not a WRLFMD Ref. No.

N.J. Knowles & J. Wadsworth, 14 October 2009



Iran-05

ASIA

AFG-07

BAR-08

Iran-87

Iran-99

India 2005-2008

Iran-96

EURO-SA

AFRICA