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Page 1 of 10

To:

Email:

To:

Email:

From:

Dr. Jef Hammond

Date:

20th April 2009

Subject:

Sequencing Report

No. Of Pages:

10

Email

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Thank you.

Dear [REDACTED]

Virus isolates: A PAK/7/2008, A PAK/9/2008, A PAK/10/2008, A PAK/12/2008, A PAK/13/2008, A PAK/1/2009, A PAK/2/2009 and A PAK/4/2009

Sequencing work has now been completed in respect of the above virus isolates received at IAH Pirbright on 27th 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

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

Serotype: A WRL RefNo: PAK/7/2008 Sender Ref: PKS1 Date collected: 24/12/2008 Date received by WRLFMD: 27/03/2009 Date received for sequencing: 07/04/2009 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: 17/04/2009 Reported by: N.J. Knowles Checked by: J.M. Hammond Topotype: ASIA Genotype/strain: Iran-05 ^{AFG-07} Sequence filename: PAK08-07.SEQ Date sequence last updated: 15/04/2009 Total no. of comparisons: 1121 Min. no. of nt for comparison: 300 Total turn-around time: 21 days Sequencing time: 10 days																																																																																								
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IAH-P-EP-MEG-FOR-005-1

Page 1 of 1

Serotype: A WRL Ref No: PAK/9/2008 Sender Ref: PKS3 Date collected: 24/12/2008 Date received by WRLFMD: 27/03/2009 Date received for sequencing: 07/04/2009 Species: Buffalo Material used: BTy1 Region sequenced: VPI 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: 17/04/2009 Reported by: N.J. Knowles Checked by: J.M. Hammond Topotype: ASIA Genotype/strain: Iran-05 ^{AFG-07} Sequence filename: PAK08-09.SEQ Date sequence last updated: 15/04/2009 Total no. of comparisons: 1121 Min. no. of nt for comparison: 300 Total turn-around time: 21 days Sequencing time: 10 days																																																																																								
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IAH-P-EP-MEG-FOR-005-1

Page 1 of 1

Serotype: A WRL RefNo: PAK/10/2008 Sender Ref: PKS4 Date collected: 24/12/2008 Date received by WRLFMD: 27/03/2009 Date received for sequencing: 07/04/2009 Species: Buffalo 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: 17/04/2009 Reported by: N.J. Knowles Checked by: J.M. Hammond Topotype: ASIA Genotype/strain: Iran-05 ^{AFG-07} Sequence filename: PAK08-10.SEQ Date sequence last updated: 09/04/2009 Total no. of comparisons: 1121 Min. no. of nt for comparison: 300 Total turn-around time: 21 days Sequencing time: 10 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/PAK/12/2008	PAK08-12	639	639	0	100	0
2	A/PAK/7/2008	PAK08-07	639	639	0	100	0
3	A/PAK/9/2008	PAK08-09	639	639	0	100	0
4	A/AFG/44/2007	AFG07-44	639	626	0	97.97	2.03
5	A/IRN/9/2009	IRN09-09	639	626	0	97.97	2.03
6	A/AFG/6/2007	AFG07-06	639	625	0	97.81	2.19
7	A/IRN/26/2009	IRN09-26	639	625	0	97.81	2.19
8	A/IRN/15/2009	IRN09-15	639	623	0	97.5	2.5
9	A/IRN/20/2009	IRN09-20	639	623	0	97.5	2.5
10	A/IRN/4/2009	IRN09-04	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	609	0	95.31	4.69
2	A/IRN/2/87 (EF208770)	IRN87-02	636	543	0	85.38	14.62
3	A/SAU/41/91	SAU91-41	636	541	0	85.06	14.94
4	A/TAI/118/87* (EF208777)	TAI87-AD	636	537	0	84.43	15.57
5	A/IRN/22/99 (EF208772)	IRN99-22	636	530	0	83.33	16.67
6	A/SAU/23/86 (EU414536)	SAU86-23	639	531	0	83.1	16.9
7	A/TAI/2/97 (EF208778)	TAI97-02	636	528	0	83.02	16.98
8	A22/IRQ/24/64 (AJ251474)	IRQ64-24	639	530	0	82.94	17.06
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

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: PAK/12/2008 Sender Ref: PKS6 Date collected: 26/12/2008 Date received by WRLFMD: 27/03/2009 Date received for sequencing: 07/04/2009 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: 17/04/2009 Reported by: N.J. Knowles Checked by: J.M. Hammond Topotype: ASIA Genotype/strain: Iran-05 ^{AFG-07} Sequence filename: PAK08-12.SEQ Date sequence last updated: 09/04/2009 Total no. of comparisons: 1121 Min. no. of nt for comparison: 300 Total turn-around time: 21 days Sequencing time: 10 days																																																																																								
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5	A/TAI/2/97 (EF208778)	TAI97-02	636	532	0	83.65	16.35																																																																																		
6	A/SAU/23/86 (EU414536)	SAU86-23	639	534	0	83.57	16.43																																																																																		
7	A22/IRQ/24/64 (AJ251474)	IRQ64-24	639	534	0	83.57	16.43																																																																																		
8	A/IRN/22/99 (EF208772)	IRN99-22	636	528	0	83.02	16.98																																																																																		
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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Molecular Epidemiology Report Form

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

Page 1 of 1

<p>Serotype: A WRL Ref No: PAK/1/2009 Sender Ref: PK P11 Date collected: 13/02/2009 Date received by WRLFMD: 27/03/2009 Date received for sequencing: 07/04/2009 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</p>	<p>Report date: 17/04/2009 Reported by: N.J. Knowles Checked by: J.M. Hammond Topotype: ASIA Genotype/strain: Iran-05^{AFG-07} Sequence filename: PAK09-01.SEQ Date sequence last updated: 09/04/2009 Total no. of comparisons: 1121 Min. no. of nt for comparison: 300 Total turn-around time: 21 days Sequencing time: 10 days</p>																																																																																								
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Molecular Epidemiology Report Form

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

Page 1 of 1

Serotype: A WRL RefNo: PAK/2/2009 Sender Ref: PK P12 Date collected: 13/03/2009 Date received by WRLFMD: 27/03/2009 Date received for sequencing: 07/04/2009 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: A-1C612F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 17/04/2009 Reported by: N.J. Knowles Checked by: J.M. Hammond Topotype: ASIA Genotype/strain: Iran-05 ^{AFG-07} Sequence filename: PAK09-02.SEQ Date sequence last updated: 09/04/2009 Total no. of comparisons: 1121 Min. no. of nt for comparison: 300 Total turn-around time: 21 days Sequencing time: 10 days																																																																																								
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Molecular Epidemiology Report Form

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

Page 1 of 1

<p>Serotype: A WRL RefNo: PAK/4/2009 Sender Ref: PK P10 Date collected: 12/03/2009 Date received by WRLFMD: 27/03/2009 Date received for sequencing: 07/04/2009 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</p>	<p>Report date: 17/04/2009 Reported by: N.J. Knowles Checked by: J.M. Hammond Topotype: ASIA Genotype/strain: Iran-05^{BAR-08} Sequence filename: PAK09-04.SEQ Date sequence last updated: 15/04/2009 Total no. of comparisons: 1121 Min. no. of nt for comparison: 300 Total turn-around time: 21 days Sequencing time: 10 days</p>																																																																																								
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<p>nt, nucleotides *, not a WRLFMD reference number</p>																																																																																									

Report on FMDV A from Pakistan in 2008-2009

Batch: WRLFMD/2009/00014

Software: MEGA 4.0
No. of Taxa : 251
Data File : n:\evd\meg\ldb\fm\da\PAK2009a.meg
Data Title : A Pakistan 2008-2009
Data Type : Nucleotide (Coding)
Analysis : Phylogeny reconstruction
Tree Inference : =====
->Method : Neighbor-Joining
->Phylogeny Test and options : Bootstrap (1000 replicates; seed=64130)
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 and J. Wadsworth, 17 April 2009

