



INSTITUTE FOR ANIMAL HEALTH
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Surrey,
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FMD Genotyping Report

Lab Reference WRL Batch Number: WRLFMD/2012/00025

Sender Details:



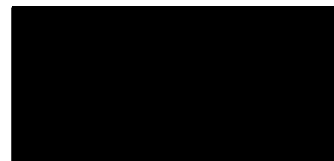
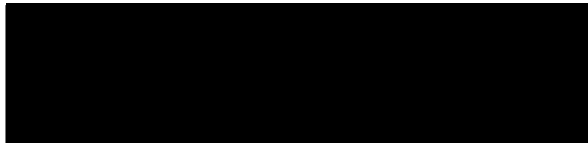
Date Received: 12th July 2012
Country of Origin: Saudi Arabia
Date Reported: 27th July 2012

Dear Scott Waight

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/>

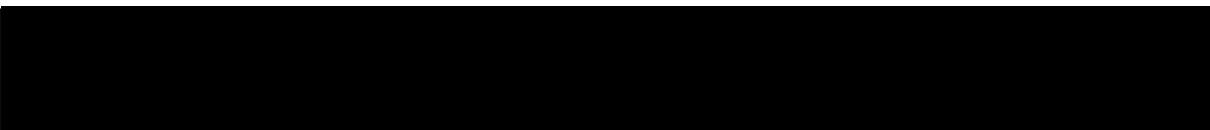
Results Approved By:

Official Stamp:



Date:

27/7/12



A UKAS accredited testing laboratory No. 4025.

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: gareth.shimmon@iah.ac.uk. IAH actively seeks and appreciates feedback, if you would like to offer feedback please complete the WRLFMD survey here: <http://www.surveymonkey.com/s/WRLFMD>

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

Genotyping Report

Report Date for this Batch: 26 July 2012

FMDV type O

Country: Saudi Arabia

Period: 2012

No. of samples: 4

BATCH: WRLFMD/2012/00025



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FAO World Reference Laboratory for FMD Genotyping Report

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Serotype: O WRLFMD Ref No: SAU/1/2012 Batch No: WRLFMD/2012/00025 Sender Ref: 4-NAK/07/12 Location: Durma, Durma, Riyadh, Saudi Arabia Date collected: 02/07/2012 Date received by WRLFMD: 12/07/2012 Date received for sequencing: 18/07/2012 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 26/07/2012 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ME-SA Genotype/strain: PanAsia-2 ^{ANT-10} Sequence filename: SAU12-01.SEQ Date sequence last updated: 26/07/2012 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 3306 Min. no. of nt for comparison: 600 Total turn-around time: 14 days Sequencing time: 8 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/SAU/2/2012	SAU12-02	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/SAU/3/2012	SAU12-03	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/SAU/4/2012	SAU12-04	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/KUW/2/2012	KUW12-02	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
5	O/KUW/3/2012	KUW12-03	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
6	O/BAR/4/2012	BAR12-04	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
7	O/BAR/5/2012	BAR12-05	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
8	O/KUW/1/2012	KUW12-01	639	629	0	98.44	1.56	ME-SA	PanAsia-2 ^{ANT-10}
9	O/KUW/10/2011	KUW11-10	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
10	O/KUW/11/2011	KUW11-11	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
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	O/IRN/88/2009	IRN09-88	639	619	0	96.87	3.13	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/8/2005	IRN05-08	639	600	0	93.90	6.10	ME-SA	PanAsia-2
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	599	0	93.74	6.26	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/31/2009	IRN09-31	639	597	0	93.43	6.57	ME-SA	PanAsia-2 ^{FAR-09}
5	O/TUR/264/2009* (FMDI)	TUR09-AK	639	596	0	93.27	6.73	ME-SA	PanAsia-2 ^{SAN-09}
6	O/PAK/16/2010	PAK10-16	639	595	0	93.11	6.89	ME-SA	PanAsia-2 ^{PUN-10}
7	O/IRN/18/2010	IRN10-18	639	594	0	92.96	7.04	ME-SA	PanAsia-2 ^{BAL-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	581	0	90.92	9.08	ME-SA	PanAsia
9	O/IRN/61/2001 (DQ164896)	IRN01-61	638	570	1	89.34	10.66	ME-SA	Irn-2001
10	O/KUW/3/97 (DQ164904)	KUW97-03	639	570	0	89.20	10.80	ME-SA	Ind-2001a

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: SAU/2/2012 Batch No: WRLFMD/2012/00025 Sender Ref: 1-NAK/07/12 Location: Durma, Durma, Riyadh, Saudi Arabia Date collected: 07/07/2012 Date received by WRLFMD: 12/07/2012 Date received for sequencing: 18/07/2012 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 26/07/2012 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ME-SA Genotype/strain: PanAsia-2 ^{ANT-10} Sequence filename: SAU12-02.SEQ Date sequence last updated: 26/07/2012 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 3306 Min. no. of nt for comparison: 600 Total turn-around time: 14 days Sequencing time: 8 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/SAU/1/2012	SAU12-01	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/SAU/3/2012	SAU12-03	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/SAU/4/2012	SAU12-04	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/KUW/2/2012	KUW12-02	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
5	O/KUW/3/2012	KUW12-03	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
6	O/BAR/4/2012	BAR12-04	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
7	O/BAR/5/2012	BAR12-05	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
8	O/KUW/1/2012	KUW12-01	639	629	0	98.44	1.56	ME-SA	PanAsia-2 ^{ANT-10}
9	O/KUW/10/2011	KUW11-10	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
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2	O/IRN/8/2005	IRN05-08	639	600	0	93.90	6.10	ME-SA	PanAsia-2
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	599	0	93.74	6.26	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/31/2009	IRN09-31	639	597	0	93.43	6.57	ME-SA	PanAsia-2 ^{FAR-09}
5	O/TUR/264/2009* (FMDI)	TUR09-AK	639	596	0	93.27	6.73	ME-SA	PanAsia-2 ^{SAN-09}
6	O/PAK/16/2010	PAK10-16	639	595	0	93.11	6.89	ME-SA	PanAsia-2 ^{PUN-10}
7	O/IRN/18/2010	IRN10-18	639	594	0	92.96	7.04	ME-SA	PanAsia-2 ^{BAL-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	581	0	90.92	9.08	ME-SA	PanAsia
9	O/IRN/61/2001 (DQ164896)	IRN01-61	638	570	1	89.34	10.66	ME-SA	Irn-2001
10	O/KUW/3/97 (DQ164904)	KUW97-03	639	570	0	89.20	10.80	ME-SA	Ind-2001a

nt, nucleotides

* , not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: SAU/3/2012 Batch No: WRLFMD/2012/00025 Sender Ref: 2-NAK/07/12 Location: Durma, Durma, Riyadh, Saudi Arabia Date collected: 07/07/2012 Date received by WRLFMD: 12/07/2012 Date received for sequencing: 18/07/2012 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 26/07/2012 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ME-SA Genotype/strain: PanAsia-2 ^{ANT-10} Sequence filename: SAU12-03.SEQ Date sequence last updated: 26/07/2012 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 3306 Min. no. of nt for comparison: 600 Total turn-around time: 14 days Sequencing time: 8 days
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1	O/SAU/1/2012	SAU12-01	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/SAU/2/2012	SAU12-02	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/SAU/4/2012	SAU12-04	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/KUW/2/2012	KUW12-02	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
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8	O/KUW/1/2012	KUW12-01	639	629	0	98.44	1.56	ME-SA	PanAsia-2 ^{ANT-10}
9	O/KUW/10/2011	KUW11-10	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
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6	O/PAK/16/2010	PAK10-16	639	595	0	93.11	6.89	ME-SA	PanAsia-2 ^{PUN-10}
7	O/IRN/18/2010	IRN10-18	639	594	0	92.96	7.04	ME-SA	PanAsia-2 ^{BAL-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	581	0	90.92	9.08	ME-SA	PanAsia
9	O/IRN/61/2001 (DQ164896)	IRN01-61	638	570	1	89.34	10.66	ME-SA	Irn-2001
10	O/KUW/3/97 (DQ164904)	KUW97-03	639	570	0	89.20	10.80	ME-SA	Ind-2001a

nt, nucleotides

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Serotype: O WRLFMD Ref No: SAU/4/2012 Batch No: WRLFMD/2012/00025 Sender Ref: 3-NAK/07/12 Location: Durma, Durma, Riyadh, Saudi Arabia Date collected: 07/07/2012 Date received by WRLFMD: 12/07/2012 Date received for sequencing: 18/07/2012 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 26/07/2012 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ME-SA Genotype/strain: PanAsia-2 ^{ANT-10} Sequence filename: SAU12-04.SEQ Date sequence last updated: 26/07/2012 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 3306 Min. no. of nt for comparison: 600 Total turn-around time: 14 days Sequencing time: 8 days
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2	O/SAU/2/2012	SAU12-02	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/SAU/3/2012	SAU12-03	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/KUW/2/2012	KUW12-02	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
5	O/KUW/3/2012	KUW12-03	639	634	0	99.22	0.78	ME-SA	PanAsia-2 ^{ANT-10}
6	O/BAR/4/2012	BAR12-04	639	633	0	99.06	0.94	ME-SA	PanAsia-2 ^{ANT-10}
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9	O/KUW/10/2011	KUW11-10	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
10	O/KUW/11/2011	KUW11-11	639	628	0	98.28	1.72	ME-SA	PanAsia-2 ^{ANT-10}
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2	O/IRN/8/2005	IRN05-08	639	600	0	93.90	6.10	ME-SA	PanAsia-2
3	O/TUR/257/2008* (FMDI)	TUR08-AD	639	599	0	93.74	6.26	ME-SA	PanAsia-2 ^{TER-08}
4	O/IRN/31/2009	IRN09-31	639	597	0	93.43	6.57	ME-SA	PanAsia-2 ^{FAR-09}
5	O/TUR/264/2009* (FMDI)	TUR09-AK	639	596	0	93.27	6.73	ME-SA	PanAsia-2 ^{SAN-09}
6	O/PAK/16/2010	PAK10-16	639	595	0	93.11	6.89	ME-SA	PanAsia-2 ^{PUN-10}
7	O/IRN/18/2010	IRN10-18	639	594	0	92.96	7.04	ME-SA	PanAsia-2 ^{BAL-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	581	0	90.92	9.08	ME-SA	PanAsia
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10	O/KUW/3/97 (DQ164904)	KUW97-03	639	570	0	89.20	10.80	ME-SA	Ind-2001a

nt, nucleotides

*, not a WRLFMD reference number

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Report on FMDV O in Saudi Arabia in 2012

Batch: WRLFMD/2012/00025

◆ indicates viruses in this batch

Software: MEGA 5.0

Analysis

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 : 642

No Of Bootstrap Reps = 1000

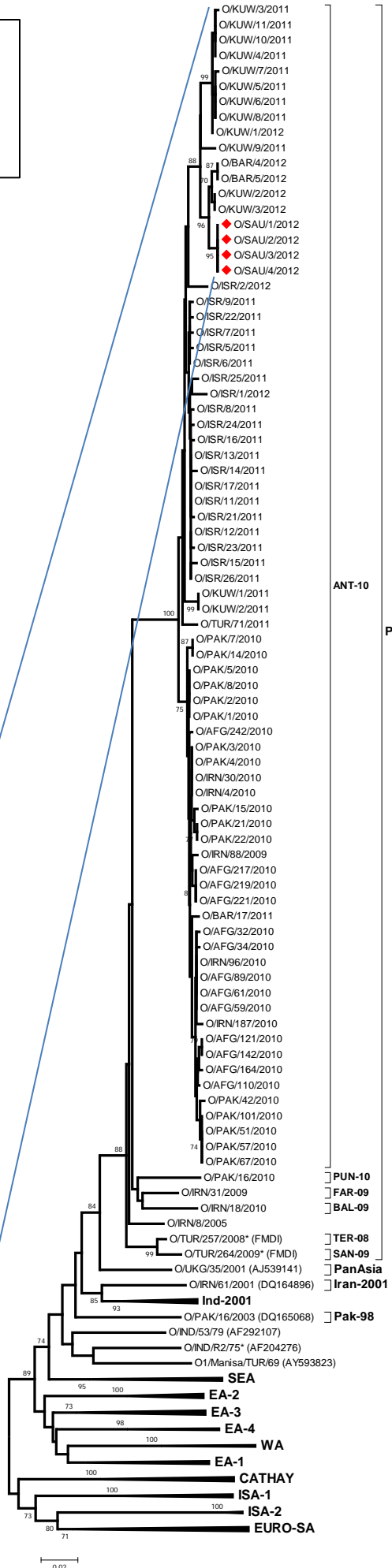
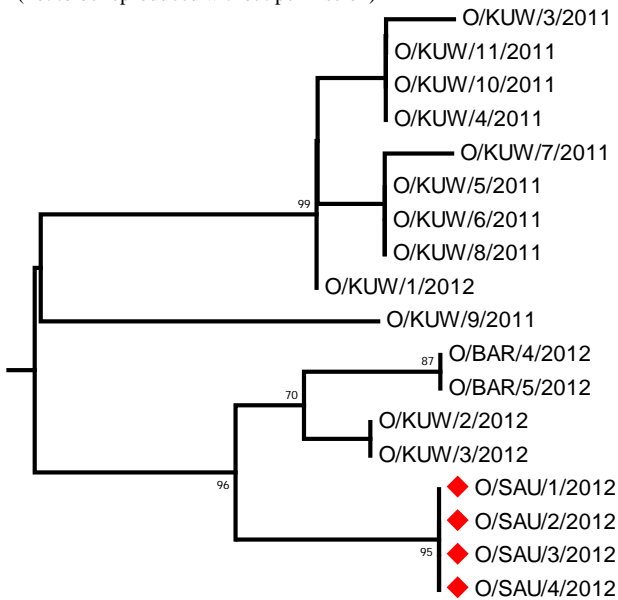
Only bootstrap values of 70% and above are shown

*, not a WRLFMD Ref. No.

N.J. Knowles & J. Wadsworth, 26 July 2012

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ANT-10

PanAsia-2

ME-SA

PUN-10

FAR-09

BAL-09

TER-08

SAN-09

PanAsia

Iran-2001

Pak-98

SEA

EA-2

EA-3

EA-4

WA

EA-1

CATHAY

ISA-1

ISA-2

EURO-SA