



INSTITUTE FOR ANIMAL HEALTH  
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Ash Road,  
Pirbright,  
Surrey,  
GU24 0NF  
Intn Tel: 00 44 1483 232441  
Tel: 01483 232441 Fax: 01483 232621

## FMD Sequencing Report

Lab Reference WRL Batch Number: WRLFMD/2009/00043

Sender Details:

[REDACTED]

Date Received: 3<sup>rd</sup> September 2009

Country of Origin: Ethiopia

Date Reported: 21<sup>st</sup> September 2009

Dear [REDACTED]

Re.: Serotype O

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:

[REDACTED]

Official Stamp:

[REDACTED]

Date: 22/9/2009

[REDACTED]

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](mailto:elizabeth.byrom@bbsrc.ac.uk))

# Molecular Epidemiology Report Form

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

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Serotype: O WRL Ref No: ETH/39/2009 Sender Ref: Eth/1/09/ES Date collected: 26/03/2009 Date received by WRLFMD: 03/09/2009 Date received for sequencing: 10/09/2009 Species: Not known Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 18/09/2009 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: EA-3 Genotype/strain: none designated Sequence filename: ETH09-39.SEQ Date sequence last updated: 18/09/2009 Total no. of comparisons: 2110 Min. no. of nt for comparison: 300 Total turn-around time: 15 days Sequencing time: 8 days																																																																																								
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Serotype: O WRL Ref No: ETH/44/2009 Sender Ref: ETH/4/09/ EWE Date collected: 19/06/2009 Date received by WRLFMD: 03/09/2009 Date received for sequencing: 10/09/2009 Species: Not known Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 18/09/2009 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: EA-3 Genotype/strain: none designated Sequence filename: ETH09-44.SEQ Date sequence last updated: 18/09/2009 Total no. of comparisons: 2110 Min. no. of nt for comparison: 300 Total turn-around time: 15 days Sequencing time: 8 days																																																																																								
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Serotype: O WRL Ref No: ETH/45/2009 Sender Ref: Eth/2/09/ Ar Date collected: 20/06/2009 Date received by WRLFMD: 03/09/2009 Date received for sequencing: 10/09/2009 Species: Not known Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 18/09/2009 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: EA-3 Genotype/strain: none designated Sequence filename: ETH09-45.SEQ Date sequence last updated: 18/09/2009 Total no. of comparisons: 2110 Min. no. of nt for comparison: 300 Total turn-around time: 15 days Sequencing time: 8 days																																																																																								
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# Molecular Epidemiology Report Form

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Serotype: O WRL Ref No: ETH/46/2009 Sender Ref: Eth/3/09/ UWE Date collected: 23/06/2009 Date received by WRLFMD: 03/09/2009 Date received for sequencing: 10/09/2009 Species: Not known Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 18/09/2009 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: EA-3 Genotype/strain: none designated Sequence filename: ETH09-46.SEQ Date sequence last updated: 18/09/2009 Total no. of comparisons: 2110 Min. no. of nt for comparison: 300 Total turn-around time: 15 days Sequencing time: 8 days
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Comments: This sequence had ambiguous readings at nucleotide positions 42, 114, 142, 144, 276, 285, 317, 477, 498 and 618 suggesting it may be a mixture of two type O viruses.

### Ten Most Closely Related Viruses

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/ETH/49/2009	ETH09-49	639	635	0	99.37	0.63
2	O/ETH/6/2009	ETH09-06	639	635	0	99.37	0.63
3	O/ETH/7/2009	ETH09-07	639	635	0	99.37	0.63
4	O/ETH/10/2009	ETH09-10	639	634	0	99.22	0.78
5	O/ETH/3/2009	ETH09-03	639	634	0	99.22	0.78
6	O/ETH/9/2009	ETH09-09	639	634	0	99.22	0.78
7	O/ETH/1/2009	ETH09-01	639	633	0	99.06	0.94
8	O/ETH/47/2009	ETH09-47	639	633	0	99.06	0.94
9	O/ETH/11/2009	ETH09-11	639	632	0	98.9	1.1
10	O/ETH/4/2009	ETH09-04	639	632	0	98.9	1.1

### Relationships to Reference Virus Strains

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99 (AJ294927)	TAW99-02	639	548	0	85.76	14.24
2	O/IND/53/79 [AF292107]	IND79A53	639	545	0	85.29	14.71
3	O1/Manisa/TUR/69 (AJ251477)	TUR69--E	639	544	0	85.13	14.87
4	O/IND/R2/75* (AF204276)	IND75--A	639	543	0	84.98	15.02
5	O/MOR/1/91	MOR91-01	639	540	0	84.51	15.49
6	O/ISR/2/88 (DQ164899)	ISR88-02	639	538	0	84.19	15.81
7	O/TAI/189/87* [TRRL]	TAI87-AC	639	537	0	84.04	15.96
8	O/HKN/6/83 (AJ294919)	HKN83-06	637	509	2	79.91	20.09
9	O/PHI/5/95 (DQ164946)	PHI95-05	639	507	0	79.34	20.66
10	O1/BFS 1860/UK/67 (J02185)	UKG67--A	639	506	0	79.19	20.81

nt, nucleotides

\*, not a WRLFMD reference number

# Molecular Epidemiology Report Form

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Serotype: O WRL Ref No: ETH/47/2009 Sender Ref: Eth/5/09/ KWE Date collected: 25/06/2009 Date received by WRLFMD: 03/09/2009 Date received for sequencing: 10/09/2009 Species: Not known Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 18/09/2009 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: EA-3 Genotype/strain: none designated Sequence filename: ETH09-47.SEQ Date sequence last updated: 18/09/2009 Total no. of comparisons: 2110 Min. no. of nt for comparison: 300 Total turn-around time: 15 days Sequencing time: 8 days																																																																																								
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4	O/IND/R2/75* (AF204276)	IND75--A	639	542	0	84.82	15.18																																																																																		
5	O/MOR/1/91	MOR91-01	639	539	0	84.35	15.65																																																																																		
6	O/ISR/2/88 (DQ164899)	ISR88-02	639	537	0	84.04	15.96																																																																																		
7	O/TAI/189/87* [TRRL]	TAI87-AC	639	535	0	83.72	16.28																																																																																		
8	O/HKN/6/83 (AJ294919)	HKN83-06	637	509	2	79.91	20.09																																																																																		
9	O/PHI/5/95 (DQ164946)	PHI95-05	639	509	0	79.66	20.34																																																																																		
10	O1/BFS 1860/UK/67 (J02185)	UKG67--A	639	503	0	78.72	21.28																																																																																		
nt, nucleotides *, not a WRLFMD reference number																																																																																									

# Molecular Epidemiology Report Form

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

Page 1 of 1

Serotype: O WRL Ref No: ETH/49/2009 Sender Ref: Not Given Date collected: 01/01/2009 Date received by WRLFMD: 03/09/2009 Date received for sequencing: 10/09/2009 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639	Report date: 18/09/2009 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: EA-3 Genotype/strain: none designated Sequence filename: ETH09-49.SEQ Date sequence last updated: 18/09/2009 Total no. of comparisons: 2110 Min. no. of nt for comparison: 300 Total turn-around time: 15 days Sequencing time: 8 days						
Comments:							
<b>Ten Most Closely Related Viruses</b>							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/ETH/6/2009	ETH09-06	639	637	0	99.69	0.31
2	O/ETH/7/2009	ETH09-07	639	637	0	99.69	0.31
3	O/ETH/10/2009	ETH09-10	639	636	0	99.53	0.47
4	O/ETH/3/2009	ETH09-03	639	636	0	99.53	0.47
5	O/ETH/9/2009	ETH09-09	639	636	0	99.53	0.47
6	O/ETH/1/2009	ETH09-01	639	635	0	99.37	0.63
7	O/ETH/46/2009	ETH09-46	639	635	0	99.37	0.63
8	O/ETH/47/2009	ETH09-47	639	635	0	99.37	0.63
9	O/ETH/11/2009	ETH09-11	639	634	0	99.22	0.78
10	O/ETH/4/2009	ETH09-04	639	634	0	99.22	0.78
<b>Relationships to Reference Virus Strains</b>							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99 (AJ294927)	TAW99-02	639	546	0	85.45	14.55
2	O/IND/53/79 [AF292107]	IND79A53	639	545	0	85.29	14.71
3	O1/Manisa/TUR/69 (AJ251477)	TUR69--E	639	544	0	85.13	14.87
4	O/IND/R2/75* (AF204276)	IND75--A	639	541	0	84.66	15.34
5	O/MOR/1/91	MOR91-01	639	538	0	84.19	15.81
6	O/ISR/2/88 (DQ164899)	ISR88-02	639	536	0	83.88	16.12
7	O/TAI/189/87* [TRRL]	TAI87-AC	639	535	0	83.72	16.28
8	O/HKN/6/83 (AJ294919)	HKN83-06	637	508	2	79.75	20.25
9	O/PHI/5/95 (DQ164946)	PHI95-05	639	508	0	79.5	20.5
10	O1/BFS 1860/UK/67 (J02185)	UKG67--A	639	502	0	78.56	21.44
nt, nucleotides *, not a WRLFMD reference number							

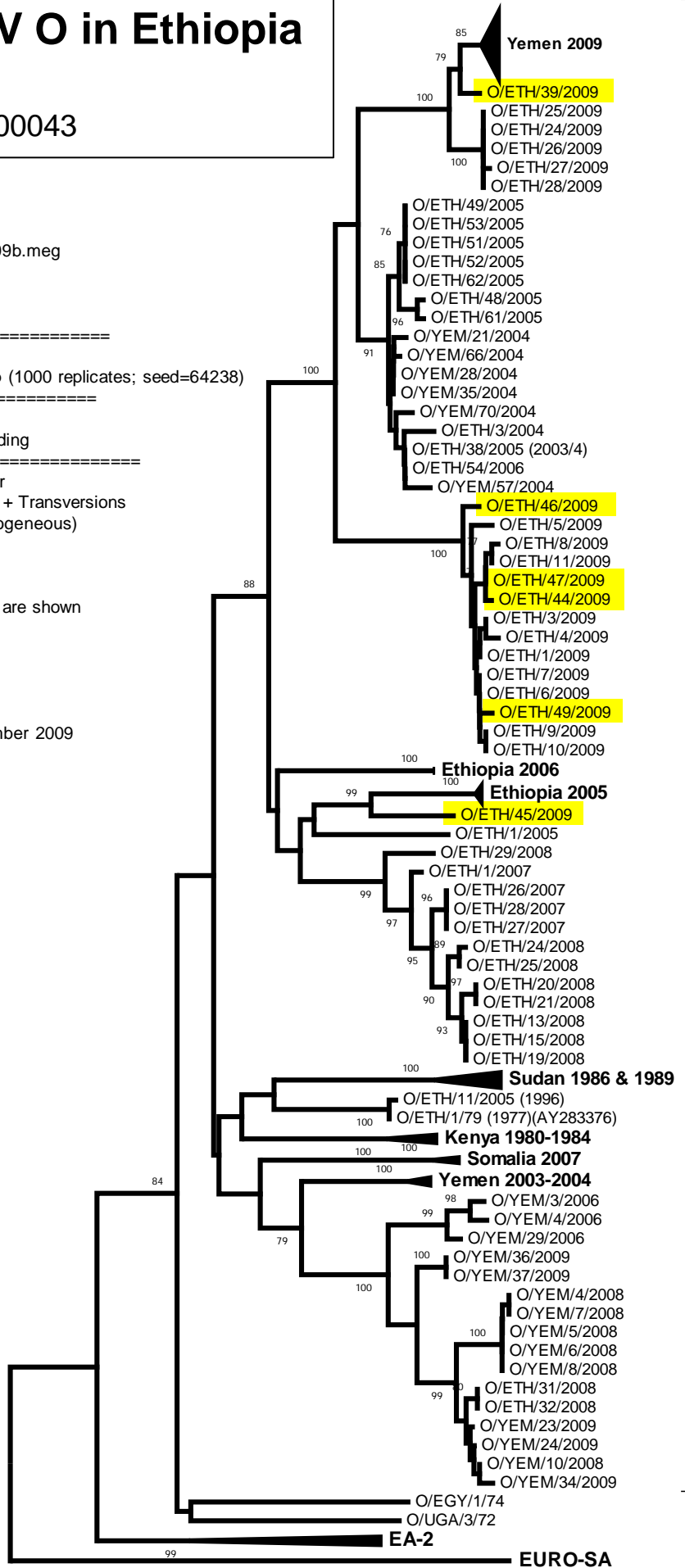
# Report on FMDV O in Ethiopia in 2009

Batch: WRLFMD/2009/00043

Software: MEGA 4.0  
 No. of Taxa : 135  
 Data File : n:\evd\meg\db\fmdv\o\ETH2009b.meg  
 Data Title : O Ethiopia 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 : 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, 21 September 2009



EA-3

0.02

EURO-SA