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## FMD Sequencing Report

Lab Reference WRL Batch Number: WRLFMD/2009/00057

Sender Details:



Date Received: 22<sup>nd</sup> December 2009

Country of Origin: Bhutan

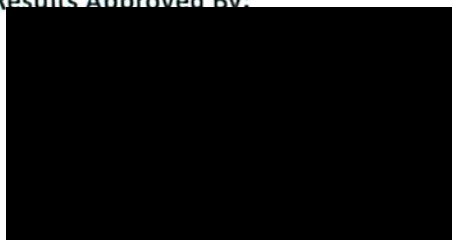
Date Reported: 2<sup>nd</sup> February 2010

Dear Dr. Dahal,

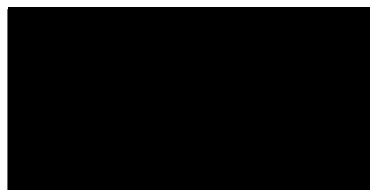
Sequencing work has now been completed in respect of the samples you submitted and the details are as attached. Please note that all of our phylogenetic trees can be accessed via the internet at:

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

Results Approved By:

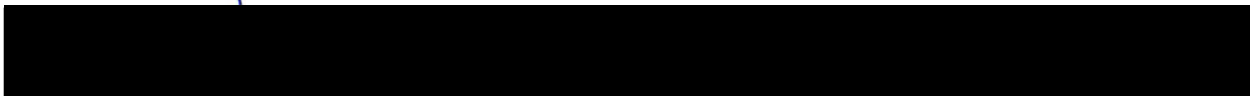


Official Stamp:



Date:

2/2/10



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

# WRLFMD Genotyping Report Form

Serotype: O	Report date: 21/01/2010
WRLFMD Ref No: BHU/37/2009	Reported by: N.J. Knowles
Batch No: WRLFMD/2009/00057	Checked by: D.P. King
Sender Ref: 677-5	
Location: Taranidi Sharma, Chukha, Bhutan	Topotype: ME-SA
Date collected: 04/12/2009	Genotype/strain: Unnamed
Date received by WRLFMD: 22/12/2009	Sequence filename: BHU09-37.SEQ
Date received for sequencing: 12/01/2010	Date sequence last updated: 20/01/2010
Species: Cattle	No. of Nt determined: 639
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 2224
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 300
	Total turn-around time: 30 days
	Sequencing time: 9 days
Comments:	

<b>Most Closely Related Viruses</b>									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/BHU/40/2009	BHU09-40	639	636	0	99.53	0.47	ME-SA	unnamed
2	O/BHU/41/2009	BHU09-41	639	636	0	99.53	0.47	ME-SA	unnamed
3	O/BHU/18/2009	BHU09-18	639	634	0	99.22	0.78	ME-SA	unnamed
4	O/BHU/2/2009	BHU09-02	639	634	0	99.22	0.78	ME-SA	unnamed
5	O/BHU/4/2009	BHU09-04	639	634	0	99.22	0.78	ME-SA	unnamed
6	O/BHU/5/2009	BHU09-05	639	634	0	99.22	0.78	ME-SA	unnamed
7	O/BHU/6/2009	BHU09-06	639	634	0	99.22	0.78	ME-SA	unnamed
8	O/BAN/26/2009	BAN09-26	639	633	0	99.06	0.94	ME-SA	unnamed
9	O/BAN/27/2009	BAN09-27	639	633	0	99.06	0.94	ME-SA	unnamed
10	O/BAN/9/2009	BAN09-09	639	633	0	99.06	0.94	ME-SA	unnamed
<b>Most Closely Related Reference Viruses</b>									
(see <a href="http://www.wrlfmd.org/fmd_genotyping/prototypes.htm">http://www.wrlfmd.org/fmd_genotyping/prototypes.htm</a> )									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/IND/53/79 (AF292107)	IND79A53	639	567	0	88.73	11.27	ME-SA	unnamed
2	O/UKG/35/2001 (AJ539141)	UKG01-35	639	567	0	88.73	11.27	ME-SA	PanAsia
3	O/IRN/8/2005	IRN05-08	639	565	0	88.42	11.58	ME-SA	PanAsia-2
4	O1/Manisa/TUR/69 (AY593823)	TUR69--G	639	562	0	87.95	12.05	ME-SA	unnamed
5	O/IND/R2/75* (AF204276)	IND75--A	639	556	0	87.01	12.99	ME-SA	unnamed
6	O/ETH/1/2007 (FJ798137)	ETH07-01	639	552	0	86.38	13.62	EA-3	unnamed
7	O/SUD/2/86 (DQ165075)	SUD86-02	639	552	0	86.38	13.62	EA-3	unnamed
8	O/K40/84*	KEN84-40	639	551	0	86.23	13.77	EA-1	unnamed
9	O/TAI/189/87* (TRRL)	TAI87-AC	639	545	0	85.29	14.71	SEA	unnamed
10	O/K83/79* (AJ303511)	KEN79B83	638	541	1	84.8	15.2	EA-1	unnamed
nt, nucleotides									
*, not a WRLFMD reference number									

# WRLFMD Genotyping Report Form

Serotype: O WRLFMD Ref No: BHU/40/2009 Batch No: WRLFMD/2009/00057 Sender Ref: 677-8 Location: Harka Chetri, Chukha, Bhutan Date collected: 04/12/2009 Date received by WRLFMD: 22/12/2009 Date received for sequencing: 12/01/2010 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 21/01/2010 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: ME-SA Genotype/strain: Unnamed Sequence filename: BHU09-40.SEQ Date sequence last updated: 19/01/2010 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 2224 Min. no. of nt for comparison: 300 Total turn-around time: 30 days Sequencing time: 9 days
Comments:	

<b>Most Closely Related Viruses</b>									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/BHU/41/2009	BHU09-41	639	637	0	99.69	0.31	ME-SA	unnamed
2	O/BHU/37/2009	BHU09-37	639	636	0	99.53	0.47	ME-SA	unnamed
3	O/BHU/18/2009	BHU09-18	639	635	0	99.37	0.63	ME-SA	unnamed
4	O/BHU/2/2009	BHU09-02	639	635	0	99.37	0.63	ME-SA	unnamed
5	O/BHU/4/2009	BHU09-04	639	635	0	99.37	0.63	ME-SA	unnamed
6	O/BHU/5/2009	BHU09-05	639	635	0	99.37	0.63	ME-SA	unnamed
7	O/BHU/6/2009	BHU09-06	639	635	0	99.37	0.63	ME-SA	unnamed
8	O/BAN/26/2009	BAN09-26	639	634	0	99.22	0.78	ME-SA	unnamed
9	O/BAN/27/2009	BAN09-27	639	634	0	99.22	0.78	ME-SA	unnamed
10	O/BAN/9/2009	BAN09-09	639	634	0	99.22	0.78	ME-SA	unnamed
<b>Most Closely Related Reference Viruses</b>									
(see <a href="http://www.wrlfmd.org/fmd_genotyping/prototypes.htm">http://www.wrlfmd.org/fmd_genotyping/prototypes.htm</a> )									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/UKG/35/2001 (AJ539141)	UKG01-35	639	570	0	89.2	10.8	ME-SA	PanAsia
2	O/IRN/8/2005	IRN05-08	639	566	0	88.58	11.42	ME-SA	PanAsia-2
3	O/IND/53/79 (AF292107)	IND79A53	639	564	0	88.26	11.74	ME-SA	unnamed
4	O1/Manisa/TUR/69 (AY593823)	TUR69--G	639	561	0	87.79	12.21	ME-SA	unnamed
5	O/IND/R2/75* (AF204276)	IND75--A	639	553	0	86.54	13.46	ME-SA	unnamed
6	O/ETH/1/2007 (FJ798137)	ETH07-01	639	552	0	86.38	13.62	EA-3	unnamed
7	O/SUD/2/86 (DQ165075)	SUD86-02	639	552	0	86.38	13.62	EA-3	unnamed
8	O/K40/84*	KEN84-40	639	550	0	86.07	13.93	EA-1	unnamed
9	O/TAI/189/87* (TRRL)	TAI87-AC	639	546	0	85.45	14.55	SEA	unnamed
10	O/ETH/3/2004 (FJ798109)	ETH04-03	639	539	0	84.35	15.65	EA-3	unnamed
nt, nucleotides *, not a WRLFMD reference number									

# WRLFMD Genotyping Report Form

Serotype: O WRLFMD Ref No: BHU/41/2009 Batch No: WRLFMD/2009/00057 Sender Ref: 677-9 Location: Rohit Chhetri, Chukha, Bhutan Date collected: 04/12/2009 Date received by WRLFMD: 22/12/2009 Date received for sequencing: 12/01/2010 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 21/01/2010 Reported by: N.J. Knowles Checked by: D.P. King  Topotype: ME-SA Genotype/strain: Unnamed Sequence filename: BHU09-41.SEQ Date sequence last updated: 19/01/2010 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 2224 Min. no. of nt for comparison: 300 Total turn-around time: 30 days Sequencing time: 9 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/BHU/40/2009	BHU09-40	639	637	0	99.69	0.31	ME-SA	unnamed
2	O/BHU/37/2009	BHU09-37	639	636	0	99.53	0.47	ME-SA	unnamed
3	O/BHU/18/2009	BHU09-18	639	635	0	99.37	0.63	ME-SA	unnamed
4	O/BHU/2/2009	BHU09-02	639	635	0	99.37	0.63	ME-SA	unnamed
5	O/BHU/4/2009	BHU09-04	639	635	0	99.37	0.63	ME-SA	unnamed
6	O/BHU/5/2009	BHU09-05	639	635	0	99.37	0.63	ME-SA	unnamed
7	O/BHU/6/2009	BHU09-06	639	635	0	99.37	0.63	ME-SA	unnamed
8	O/BAN/26/2009	BAN09-26	639	634	0	99.22	0.78	ME-SA	unnamed
9	O/BAN/27/2009	BAN09-27	639	634	0	99.22	0.78	ME-SA	unnamed
10	O/BAN/9/2009	BAN09-09	639	634	0	99.22	0.78	ME-SA	unnamed
Most Closely Related Reference Viruses									
(see <a href="http://www.wrlfmd.org/fmd_genotyping/prototypes.htm">http://www.wrlfmd.org/fmd_genotyping/prototypes.htm</a> )									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/UKG/35/2001 (AJ539141)	UKG01-35	639	568	0	88.89	11.11	ME-SA	PanAsia
2	O/IRN/8/2005	IRN05-08	639	566	0	88.58	11.42	ME-SA	PanAsia-2
3	O/IND/53/79 (AF292107)	IND79A53	639	564	0	88.26	11.74	ME-SA	unnamed
4	O1/Manisa/TUR/69 (AY593823)	TUR69--G	639	559	0	87.48	12.52	ME-SA	unnamed
5	O/IND/R2/75* (AF204276)	IND75--A	639	553	0	86.54	13.46	ME-SA	unnamed
6	O/ETH/1/2007 (FJ798137)	ETH07-01	639	551	0	86.23	13.77	EA-3	unnamed
7	O/SUD/2/86 (DQ165075)	SUD86-02	639	551	0	86.23	13.77	EA-3	unnamed
8	O/K40/84*	KEN84-40	639	550	0	86.07	13.93	EA-1	unnamed
9	O/TAI/189/87* (TRRL)	TAI87-AC	639	544	0	85.13	14.87	SEA	unnamed
10	O/ETH/3/2004 (FJ798109)	ETH04-03	639	539	0	84.35	15.65	EA-3	unnamed
nt, nucleotides *, not a WRLFMD reference number									

# Report on FMDV O in Bhutan in 2009

Batches: WRLFMD/2009/00057

Software: MEGA 4.0  
 No. of Taxa : 293  
 Data File : n:\evd\meg\db\fmdv\o\BHU2009a.meg  
 Data Title : O Bhutan 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, 25 January 2010

