

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

Genotyping Report

Report Date for this Batch: 10 June 2013

FMDV type O

Country: Ethiopia

Period: 2012-2013

No. of samples: 5

BATCH: WRLFMD/2013/00007



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FAO World Reference Laboratory for FMD Genotyping Report

IAH-P-EP-MEG-FOR-005-3

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Serotype: O	Report date: 07/06/2013
WRLFMD Ref No: ETH/16/2012	Reported by: N.J. Knowles
Batch No: WRLFMD/2013/00007	Checked by: D.P. King
Sender Ref: ETH 27/oro/2012	
Location: Horo, East Welega, Oromia, Ethiopia	Topotype: EA-3
Date collected: 14/08/2012	Genotype/strain: unnamed
Date received by WRLFMD: 18/04/2013	Sequence filename: ETH12-16.SEQ
Date received for sequencing: 03/06/2013	Date sequence last updated: 07/06/2013
Species: Bovine	No. of Nt determined: 639
Material used: BTy2 14/05/2013	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 3517
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 50 days
	Sequencing time: 4 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/ETH/15/2012	ETH12-15	639	634	0	99.22	0.78	EA-3	unnamed
2	O/ETH/17/2012	ETH12-17	639	634	0	99.22	0.78	EA-3	unnamed
3	O/ETH/18/2012	ETH12-18	639	634	0	99.22	0.78	EA-3	unnamed
4	O/ETH/19/2012	ETH12-19	639	634	0	99.22	0.78	EA-3	unnamed
5	O/ETH/11/2011	ETH11-11	639	633	0	99.06	0.94	EA-3	unnamed
6	O/ETH/12/2012	ETH12-12	639	633	0	99.06	0.94	EA-3	unnamed
7	O/ETH/9/2011	ETH11-09	639	633	0	99.06	0.94	EA-3	unnamed
8	O/ETH/10/2011	ETH11-10	639	632	0	98.90	1.10	EA-3	unnamed
9	O/ETH/11/2012	ETH12-11	639	632	0	98.90	1.10	EA-3	unnamed
10	O/ETH/13/2011	ETH11-13	639	632	0	98.90	1.10	EA-3	unnamed
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/ETH/1/2007 (FJ798137)	ETH07-01	639	593	0	92.80	7.20	EA-3	unnamed
2	O/ETH/3/2004 (FJ798109)	ETH04-03	639	587	0	91.86	8.14	EA-3	unnamed
3	O/SUD/2/86 (DQ165075)	SUD86-02	639	556	0	87.01	12.99	EA-3	unnamed
4	O/IND/R2/75* (AF204276)	IND75--A	639	547	0	85.60	14.40	ME-SA	unnamed
5	O/K83/79* (AJ303511)	KEN79B83	638	545	1	85.42	14.58	EA-1	unnamed
6	O/ETH/2/2006 (FJ798127)	ETH06-02	639	542	0	84.82	15.18	EA-3	unnamed
7	O/IND/53/79 (AF292107)	IND79A53	639	542	0	84.82	15.18	ME-SA	unnamed
8	O/UGA/5/96 (AJ296327)	UGA96-05	639	541	0	84.66	15.34	EA-1	unnamed
9	O/TAN/2/2004	TAN04-02	639	540	0	84.51	15.49	EA-2	unnamed
10	O/BHU/3/2009	BHU09-03	639	539	0	84.35	15.65	ME-SA	Ind-2001d

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 07/06/2013
WRLFMD Ref No: ETH/17/2012	Reported by: N.J. Knowles
Batch No: WRLFMD/2013/00007	Checked by: D.P. King
Sender Ref: ETH 28/oro/2012	
Location: Horo, East Welega, Oromia, Ethiopia	Topotype: EA-3
Date collected: 14/08/2012	Genotype/strain: unnamed
Date received by WRLFMD: 18/04/2013	Sequence filename: ETH12-17.SEQ
Date received for sequencing: 03/06/2013	Date sequence last updated: 07/06/2013
Species: Bovine	No. of Nt determined: 639
Material used: BTy1 10/05/2013	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 3517
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 50 days
	Sequencing time: 4 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/ETH/15/2012	ETH12-15	639	635	0	99.37	0.63	EA-3	unnamed
2	O/ETH/18/2012	ETH12-18	639	635	0	99.37	0.63	EA-3	unnamed
3	O/ETH/19/2012	ETH12-19	639	635	0	99.37	0.63	EA-3	unnamed
4	O/ETH/11/2011	ETH11-11	639	634	0	99.22	0.78	EA-3	unnamed
5	O/ETH/12/2012	ETH12-12	639	634	0	99.22	0.78	EA-3	unnamed
6	O/ETH/16/2012	ETH12-16	639	634	0	99.22	0.78	EA-3	unnamed
7	O/ETH/9/2011	ETH11-09	639	634	0	99.22	0.78	EA-3	unnamed
8	O/ETH/10/2011	ETH11-10	639	633	0	99.06	0.94	EA-3	unnamed
9	O/ETH/11/2012	ETH12-11	639	633	0	99.06	0.94	EA-3	unnamed
10	O/ETH/13/2011	ETH11-13	639	633	0	99.06	0.94	EA-3	unnamed

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/ETH/1/2007 (FJ798137)	ETH07-01	639	594	0	92.96	7.04	EA-3	unnamed
2	O/ETH/3/2004 (FJ798109)	ETH04-03	639	588	0	92.02	7.98	EA-3	unnamed
3	O/SUD/2/86 (DQ165075)	SUD86-02	639	557	0	87.17	12.83	EA-3	unnamed
4	O/IND/R2/75* (AF204276)	IND75--A	639	550	0	86.07	13.93	ME-SA	unnamed
5	O/K83/79* (AJ303511)	KEN79B83	638	548	1	85.89	14.11	EA-1	unnamed
6	O/IND/53/79 (AF292107)	IND79A53	639	545	0	85.29	14.71	ME-SA	unnamed
7	O/ETH/2/2006 (FJ798127)	ETH06-02	639	543	0	84.98	15.02	EA-3	unnamed
8	O/BHU/3/2009	BHU09-03	639	542	0	84.82	15.18	ME-SA	Ind-2001d
9	O/UGA/5/96 (AJ296327)	UGA96-05	639	542	0	84.82	15.18	EA-1	unnamed
10	O/ETH/58/2005 (FJ798141)	ETH05-58	639	539	0	84.35	15.65	EA-4	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: ETH/18/2012 Batch No: WRLFMD/2013/00007 Sender Ref: ETH 29/Amh/2012 Location: Kombolicha, North Shewa, Amhara, Ethiopia Date collected: 19/11/2012 Date received by WRLFMD: 18/04/2013 Date received for sequencing: 03/06/2013 Species: Bovine Material used: BTy1 10/05/2013 Region sequenced: VPI RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 07/06/2013 Reported by: N.J. Knowles Checked by: D.P. King Topotype: EA-3 Genotype/strain: unnamed Sequence filename: ETH12-18.SEQ Date sequence last updated: 07/06/2013 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 3517 Min. no. of nt for comparison: 600 Total turn-around time: 50 days Sequencing time: 4 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/ETH/19/2012	ETH12-19	639	639	0	100.00	0.00	EA-3	unnamed
2	O/ETH/15/2012	ETH12-15	639	637	0	99.69	0.31	EA-3	unnamed
3	O/ETH/17/2012	ETH12-17	639	635	0	99.37	0.63	EA-3	unnamed
4	O/ETH/11/2011	ETH11-11	639	634	0	99.22	0.78	EA-3	unnamed
5	O/ETH/12/2012	ETH12-12	639	634	0	99.22	0.78	EA-3	unnamed
6	O/ETH/16/2012	ETH12-16	639	634	0	99.22	0.78	EA-3	unnamed
7	O/ETH/9/2011	ETH11-09	639	634	0	99.22	0.78	EA-3	unnamed
8	O/ETH/10/2011	ETH11-10	639	633	0	99.06	0.94	EA-3	unnamed
9	O/ETH/11/2012	ETH12-11	639	633	0	99.06	0.94	EA-3	unnamed
10	O/ETH/13/2011	ETH11-13	639	633	0	99.06	0.94	EA-3	unnamed

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/ETH/1/2007 (FJ798137)	ETH07-01	639	594	0	92.96	7.04	EA-3	unnamed
2	O/ETH/3/2004 (FJ798109)	ETH04-03	639	590	0	92.33	7.67	EA-3	unnamed
3	O/SUD/2/86 (DQ165075)	SUD86-02	639	559	0	87.48	12.52	EA-3	unnamed
4	O/IND/R2/75* (AF204276)	IND75--A	639	550	0	86.07	13.93	ME-SA	unnamed
5	O/K83/79* (AJ303511)	KEN79B83	638	548	1	85.89	14.11	EA-1	unnamed
6	O/UGA/5/96 (AJ296327)	UGA96-05	639	546	0	85.45	14.55	EA-1	unnamed
7	O/ETH/2/2006 (FJ798127)	ETH06-02	639	545	0	85.29	14.71	EA-3	unnamed
8	O/IND/53/79 (AF292107)	IND79A53	639	545	0	85.29	14.71	ME-SA	unnamed
9	O/BHU/3/2009	BHU09-03	639	542	0	84.82	15.18	ME-SA	Ind-2001d
10	O/ETH/58/2005 (FJ798141)	ETH05-58	639	539	0	84.35	15.65	EA-4	unnamed

nt, nucleotides

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Serotype: O WRLFMD Ref No: ETH/19/2012 Batch No: WRLFMD/2013/00007 Sender Ref: ETH 30/Amh/2012 Location: Kombolicha, North Shewa, Amhra, Ethiopia Date collected: 19/11/2012 Date received by WRLFMD: 18/04/2013 Date received for sequencing: 03/06/2013 Species: Bovine Material used: BTy1 09/05/2013 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 07/06/2013 Reported by: N.J. Knowles Checked by: D.P. King Topotype: EA-3 Genotype/strain: unnamed Sequence filename: ETH12-19.SEQ Date sequence last updated: 07/06/2013 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 3517 Min. no. of nt for comparison: 600 Total turn-around time: 50 days Sequencing time: 4 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/ETH/18/2012	ETH12-18	639	639	0	100.00	0.00	EA-3	unnamed
2	O/ETH/15/2012	ETH12-15	639	637	0	99.69	0.31	EA-3	unnamed
3	O/ETH/17/2012	ETH12-17	639	635	0	99.37	0.63	EA-3	unnamed
4	O/ETH/11/2011	ETH11-11	639	634	0	99.22	0.78	EA-3	unnamed
5	O/ETH/12/2012	ETH12-12	639	634	0	99.22	0.78	EA-3	unnamed
6	O/ETH/16/2012	ETH12-16	639	634	0	99.22	0.78	EA-3	unnamed
7	O/ETH/9/2011	ETH11-09	639	634	0	99.22	0.78	EA-3	unnamed
8	O/ETH/10/2011	ETH11-10	639	633	0	99.06	0.94	EA-3	unnamed
9	O/ETH/11/2012	ETH12-11	639	633	0	99.06	0.94	EA-3	unnamed
10	O/ETH/13/2011	ETH11-13	639	633	0	99.06	0.94	EA-3	unnamed
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/ETH/1/2007 (FJ798137)	ETH07-01	639	594	0	92.96	7.04	EA-3	unnamed
2	O/ETH/3/2004 (FJ798109)	ETH04-03	639	590	0	92.33	7.67	EA-3	unnamed
3	O/SUD/2/86 (DQ165075)	SUD86-02	639	559	0	87.48	12.52	EA-3	unnamed
4	O/IND/R2/75* (AF204276)	IND75--A	639	550	0	86.07	13.93	ME-SA	unnamed
5	O/K83/79* (AJ303511)	KEN79B83	638	548	1	85.89	14.11	EA-1	unnamed
6	O/UGA/5/96 (AJ296327)	UGA96-05	639	546	0	85.45	14.55	EA-1	unnamed
7	O/ETH/2/2006 (FJ798127)	ETH06-02	639	545	0	85.29	14.71	EA-3	unnamed
8	O/IND/53/79 (AF292107)	IND79A53	639	545	0	85.29	14.71	ME-SA	unnamed
9	O/BHU/3/2009	BHU09-03	639	542	0	84.82	15.18	ME-SA	Ind-2001d
10	O/ETH/58/2005 (FJ798141)	ETH05-58	639	539	0	84.35	15.65	EA-4	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: ETH/4/2013 Batch No: WRLFMD/2013/00007 Sender Ref: ETH 34/Snn/2013 Location: Mizan, Bench Maji, SNNP, Ethiopia Date collected: 16/03/2013 Date received by WRLFMD: 18/04/2013 Date received for sequencing: 03/06/2013 Species: Bovine Material used: BTy1 15/05/2013 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 07/06/2013 Reported by: N.J. Knowles Checked by: D.P. King Topotype: EA-4 Genotype/strain: unnamed Sequence filename: ETH13-04.SEQ Date sequence last updated: 07/06/2013 No. of Nt determined: 642 No. of ambiguities: 0 Gene length: 642 Total no. of comparisons: 3517 Min. no. of nt for comparison: 600 Total turn-around time: 50 days Sequencing time: 4 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/KEN/100/2010 (KF135281)	KEN10100	642	610	0	95.02	4.98	EA-4	unnamed
2	O/ETH/59/2005 (FJ798142)	ETH05-59	642	574	0	89.41	10.59	EA-4	unnamed
3	O/ETH/60/2005 (FJ798143)	ETH05-60	642	574	0	89.41	10.59	EA-4	unnamed
4	O/UGA/9/98 (HM211072)	UGA98-09	642	574	0	89.41	10.59	EA-4	unnamed
5	O/ETH/58/2005 (FJ798141)	ETH05-58	642	573	0	89.25	10.75	EA-4	unnamed
6	O/U97/99* (HM756604)	UGA99-AA	642	571	0	88.94	11.06	EA-4	Unnamed
7	O/UGA/10/98 (HM211073)	UGA98-10	642	571	0	88.94	11.06	EA-4	unnamed
8	O/UGA/17/98 (HM211075)	UGA98-17	642	571	0	88.94	11.06	EA-4	unnamed
9	O/UGA/17/98 (EU919245)	UGA98M17	616	547	0	88.80	11.20	EA-4	unnamed
10	O/UGA/15/98 (HM211074)	UGA98-15	642	569	0	88.63	11.37	EA-4	unnamed
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/ETH/58/2005 (FJ798141)	ETH05-58	642	573	0	89.25	10.75	EA-4	unnamed
2	O/UGA/17/98 (HM211075)	UGA98-17	642	571	0	88.94	11.06	EA-4	unnamed
3	O/ETH/3/2004 (FJ798109)	ETH04-03	639	546	0	85.45	14.55	EA-3	unnamed
4	O/SUD/2/86 (DQ165075)	SUD86-02	639	544	0	85.13	14.87	EA-3	unnamed
5	O/ETH/1/2007 (FJ798137)	ETH07-01	639	543	0	84.98	15.02	EA-3	unnamed
6	O/KEN/5/2002 (DQ165073)	KEN02-05	639	543	0	84.98	15.02	EA-2	Unnamed
7	O/UKG/35/2001 (AJ539141)	UKG01-35	639	543	0	84.98	15.02	ME-SA	PanAsia
8	O/K83/79* (AJ303511)	KEN79B83	638	538	1	84.33	15.67	EA-1	unnamed
9	O/ETH/2/2006 (FJ798127)	ETH06-02	639	538	0	84.19	15.81	EA-3	unnamed
10	O/PAK/16/2010	PAK10-16	639	538	0	84.19	15.81	ME-SA	PanAsia-2 ^{PUN-10}

nt, nucleotides

*, not a WRLFMD reference number

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Report on FMDV O in Ethiopia in 2012-2013

Batch: WRLFMD/2013/00007

◆ indicates viruses in this batch

Software: MEGA 5.2

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, K. Bachanek-Bankowska & J. Wadsworth,
10 June 2013

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