

FAO World Reference Laboratory for Foot-and-Mouth Disease

Genotyping Report

Report date for this batch: 03-Apr-2014

FMDV type: O

Country: MONGOLIA

Year: 2014

WRL BATCH: WRLFMD/2014/00011



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Genotyping Results

WRL Batch: WRLFMD/2014/00011

Batch: IAHB/2014/00137

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

Genotyping Report

Report Date for this Batch: 31 March 2014

FMDV type O

Country: Mongolia

Period: 2014

No. of samples: 5

BATCH: WRLFMD/2014/00011



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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: 31/03/2014
WRLFMD Ref No: MOG/1/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00011	Checked by: K. Bachanek-Bankowska
Sender Ref: MOG/1/2014	
Location: Ongon, Sukhbaatar, Mongolia	Topotype: ME-SA
Date collected: 30/01/2014	Genotype/strain: PanAsia
Date received by WRLFMD: 17/03/2014	Sequence filename: MOG14-01.SEQ
Date received for sequencing: 27/03/2014	Date sequence last updated: 31/03/2014
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 18/03/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 3816
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 14 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/MOG/2/2014	MOG14-02	639	638	0	99.84	0.16	ME-SA	PanAsia
2	O/MOG/3/2014	MOG14-03	639	638	0	99.84	0.16	ME-SA	PanAsia
3	O/MOG/5/2014	MOG14-05	639	638	0	99.84	0.16	ME-SA	PanAsia
4	O/MOG/4/2014	MOG14-04	639	637	0	99.69	0.31	ME-SA	PanAsia
5	O/VIT/13/2013	VIT13-13	639	636	0	99.53	0.47	ME-SA	PanAsia
6	O/VIT/15/2013	VIT13-15	639	636	0	99.53	0.47	ME-SA	PanAsia
7	O/VIT/32/2013	VIT13-32	639	635	0	99.37	0.63	ME-SA	PanAsia
8	O/VIT/33/2013	VIT13-33	639	635	0	99.37	0.63	ME-SA	PanAsia
9	O/VIT/40/2013	VIT13-40	639	635	0	99.37	0.63	ME-SA	PanAsia
10	O/VIT/11/2013	VIT13-11	639	634	0	99.22	0.78	ME-SA	PanAsia
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/UKG/35/2001 (AJ539141)	UKG01-35	639	593	0	92.80	7.20	ME-SA	PanAsia
2	O/KUW/3/97 (DQ164904)	KUW97-03	639	585	0	91.55	8.45	ME-SA	Ind-2001a
3	O/OMN/7/2001 (DQ164941)	OMN01-07	639	581	0	90.92	9.08	ME-SA	Ind-2001b
4	O/IRN/8/2005	IRN05-08	639	580	0	90.77	9.23	ME-SA	PanAsia-2
5	O/UAE/4/2008	UAE08-04	636	577	0	90.72	9.28	ME-SA	Ind-2001c
6	O/BHU/3/2009	BHU09-03	639	579	0	90.61	9.39	ME-SA	Ind-2001d
7	O/IRN/61/2001 (DQ164896)	IRN01-61	638	574	1	89.97	10.03	ME-SA	Irn-2001
8	O/IRN/31/2009	IRN09-31	639	574	0	89.83	10.17	ME-SA	PanAsia-2 ^{FAR-09}
9	O/PAK/16/2010	PAK10-16	639	571	0	89.36	10.64	ME-SA	PanAsia-2 ^{PUN-10}
10	O/TUR/257/2008* (FMDI)	TUR08-AD	639	571	0	89.36	10.64	ME-SA	PanAsia-2 ^{TER-08}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 31/03/2014
WRLFMD Ref No: MOG/2/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00011	Checked by: K. Bachanek-Bankowska
Sender Ref: MOG/41/2014	
Location: Dariganga, Sukhbaatar, Mongolia	Topotype: ME-SA
Date collected: 10/02/2014	Genotype/strain: PanAsia
Date received by WRLFMD: 17/03/2014	Sequence filename: MOG14-02.SEQ
Date received for sequencing: 27/03/2014	Date sequence last updated: 31/03/2014
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 19/03/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 3816
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 14 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/MOG/1/2014	MOG14-01	639	638	0	99.84	0.16	ME-SA	PanAsia
2	O/MOG/3/2014	MOG14-03	639	637	0	99.69	0.31	ME-SA	PanAsia
3	O/MOG/5/2014	MOG14-05	639	637	0	99.69	0.31	ME-SA	PanAsia
4	O/MOG/4/2014	MOG14-04	639	636	0	99.53	0.47	ME-SA	PanAsia
5	O/VIT/13/2013	VIT13-13	639	635	0	99.37	0.63	ME-SA	PanAsia
6	O/VIT/15/2013	VIT13-15	639	635	0	99.37	0.63	ME-SA	PanAsia
7	O/VIT/32/2013	VIT13-32	639	634	0	99.22	0.78	ME-SA	PanAsia
8	O/VIT/33/2013	VIT13-33	639	634	0	99.22	0.78	ME-SA	PanAsia
9	O/VIT/40/2013	VIT13-40	639	634	0	99.22	0.78	ME-SA	PanAsia
10	O/VIT/11/2013	VIT13-11	639	633	0	99.06	0.94	ME-SA	PanAsia
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/UKG/35/2001 (AJ539141)	UKG01-35	639	594	0	92.96	7.04	ME-SA	PanAsia
2	O/KUW/3/97 (DQ164904)	KUW97-03	639	584	0	91.39	8.61	ME-SA	Ind-2001a
3	O/IRN/8/2005	IRN05-08	639	581	0	90.92	9.08	ME-SA	PanAsia-2
4	O/OMN/7/2001 (DQ164941)	OMN01-07	639	580	0	90.77	9.23	ME-SA	Ind-2001b
5	O/UAE/4/2008	UAE08-04	636	576	0	90.57	9.43	ME-SA	Ind-2001c
6	O/BHU/3/2009	BHU09-03	639	578	0	90.45	9.55	ME-SA	Ind-2001d
7	O/IRN/61/2001 (DQ164896)	IRN01-61	638	573	1	89.81	10.19	ME-SA	Irn-2001
8	O/IRN/31/2009	IRN09-31	639	573	0	89.67	10.33	ME-SA	PanAsia-2 ^{FAR-09}
9	O/PAK/16/2010	PAK10-16	639	570	0	89.20	10.80	ME-SA	PanAsia-2 ^{PUN-10}
10	O/TUR/257/2008* (FMDI)	TUR08-AD	639	570	0	89.20	10.80	ME-SA	PanAsia-2 ^{TER-08}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 31/03/2014
WRLFMD Ref No: MOG/3/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00011	Checked by: K. Bachanek-Bankowska
Sender Ref: MOG/52/2014	
Location: Ihhet, Dornogovi, Mongolia	Topotype: ME-SA
Date collected: 12/02/2014	Genotype/strain: PanAsia
Date received by WRLFMD: 17/03/2014	Sequence filename: MOG14-03.SEQ
Date received for sequencing: 27/03/2014	Date sequence last updated: 31/03/2014
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 19/03/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 3816
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 14 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/MOG/1/2014	MOG14-01	639	638	0	99.84	0.16	ME-SA	PanAsia
2	O/MOG/2/2014	MOG14-02	639	637	0	99.69	0.31	ME-SA	PanAsia
3	O/MOG/5/2014	MOG14-05	639	637	0	99.69	0.31	ME-SA	PanAsia
4	O/MOG/4/2014	MOG14-04	639	636	0	99.53	0.47	ME-SA	PanAsia
5	O/VIT/13/2013	VIT13-13	639	635	0	99.37	0.63	ME-SA	PanAsia
6	O/VIT/15/2013	VIT13-15	639	635	0	99.37	0.63	ME-SA	PanAsia
7	O/VIT/32/2013	VIT13-32	639	634	0	99.22	0.78	ME-SA	PanAsia
8	O/VIT/33/2013	VIT13-33	639	634	0	99.22	0.78	ME-SA	PanAsia
9	O/VIT/40/2013	VIT13-40	639	634	0	99.22	0.78	ME-SA	PanAsia
10	O/VIT/11/2013	VIT13-11	639	633	0	99.06	0.94	ME-SA	PanAsia
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/UKG/35/2001 (AJ539141)	UKG01-35	639	592	0	92.64	7.36	ME-SA	PanAsia
2	O/KUW/3/97 (DQ164904)	KUW97-03	639	584	0	91.39	8.61	ME-SA	Ind-2001a
3	O/OMN/7/2001 (DQ164941)	OMN01-07	639	580	0	90.77	9.23	ME-SA	Ind-2001b
4	O/IRN/8/2005	IRN05-08	639	579	0	90.61	9.39	ME-SA	PanAsia-2
5	O/UAE/4/2008	UAE08-04	636	576	0	90.57	9.43	ME-SA	Ind-2001c
6	O/BHU/3/2009	BHU09-03	639	578	0	90.45	9.55	ME-SA	Ind-2001d
7	O/IRN/61/2001 (DQ164896)	IRN01-61	638	573	1	89.81	10.19	ME-SA	Irn-2001
8	O/IRN/31/2009	IRN09-31	639	573	0	89.67	10.33	ME-SA	PanAsia-2 ^{FAR-09}
9	O/PAK/16/2003 (DQ165068)	PAK03-16	639	570	0	89.20	10.80	ME-SA	Pak-98
10	O/PAK/16/2010	PAK10-16	639	570	0	89.20	10.80	ME-SA	PanAsia-2 ^{PUN-10}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 31/03/2014
WRLFMD Ref No: MOG/4/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00011	Checked by: K. Bachanek-Bankowska
Sender Ref: MOG/56/2014	
Location: Sainshand, Dornogovi, Mongolia	Topotype: ME-SA
Date collected: 13/02/2014	Genotype/strain: PanAsia
Date received by WRLFMD: 17/03/2014	Sequence filename: MOG14-04.SEQ
Date received for sequencing: 27/03/2014	Date sequence last updated: 31/03/2014
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 21/03/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 3816
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 14 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/MOG/1/2014	MOG14-01	639	637	0	99.69	0.31	ME-SA	PanAsia
2	O/MOG/2/2014	MOG14-02	639	636	0	99.53	0.47	ME-SA	PanAsia
3	O/MOG/3/2014	MOG14-03	639	636	0	99.53	0.47	ME-SA	PanAsia
4	O/MOG/5/2014	MOG14-05	639	636	0	99.53	0.47	ME-SA	PanAsia
5	O/VIT/13/2013	VIT13-13	639	636	0	99.53	0.47	ME-SA	PanAsia
6	O/VIT/15/2013	VIT13-15	639	636	0	99.53	0.47	ME-SA	PanAsia
7	O/VIT/40/2013	VIT13-40	639	635	0	99.37	0.63	ME-SA	PanAsia
8	O/VIT/11/2013	VIT13-11	639	634	0	99.22	0.78	ME-SA	PanAsia
9	O/VIT/12/2013	VIT13-12	639	634	0	99.22	0.78	ME-SA	PanAsia
10	O/VIT/38/2013	VIT13-38	639	634	0	99.22	0.78	ME-SA	PanAsia
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/UKG/35/2001 (AJ539141)	UKG01-35	639	593	0	92.80	7.20	ME-SA	PanAsia
2	O/KUW/3/97 (DQ164904)	KUW97-03	639	585	0	91.55	8.45	ME-SA	Ind-2001a
3	O/OMN/7/2001 (DQ164941)	OMN01-07	639	582	0	91.08	8.92	ME-SA	Ind-2001b
4	O/IRN/8/2005	IRN05-08	639	580	0	90.77	9.23	ME-SA	PanAsia-2
5	O/BHU/3/2009	BHU09-03	639	579	0	90.61	9.39	ME-SA	Ind-2001d
6	O/UAE/4/2008	UAE08-04	636	575	0	90.41	9.59	ME-SA	Ind-2001c
7	O/IRN/61/2001 (DQ164896)	IRN01-61	638	574	1	89.97	10.03	ME-SA	Irn-2001
8	O/IRN/31/2009	IRN09-31	639	574	0	89.83	10.17	ME-SA	PanAsia-2 ^{FAR-09}
9	O/IRN/18/2010	IRN10-18	639	571	0	89.36	10.64	ME-SA	PanAsia-2 ^{BAL-09}
10	O/PAK/16/2010	PAK10-16	639	571	0	89.36	10.64	ME-SA	PanAsia-2 ^{PUN-10}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 31/03/2014
WRLFMD Ref No: MOG/5/2014	Reported by: N.J. Knowles
Batch No: WRLFMD/2014/00011	Checked by: K. Bachanek-Bankowska
Sender Ref: MOG/57/2014	
Location: Galshar, Khentii, Mongolia	Topotype: ME-SA
Date collected: 17/02/2014	Genotype/strain: PanAsia
Date received by WRLFMD: 17/03/2014	Sequence filename: MOG14-05.SEQ
Date received for sequencing: 27/03/2014	Date sequence last updated: 31/03/2014
Species: Cattle	No. of Nt determined: 639
Material used: BTy1 19/03/2014	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 3816
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 14 days
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Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	O/MOG/1/2014	MOG14-01	639	638	0	99.84	0.16	ME-SA	PanAsia
2	O/MOG/2/2014	MOG14-02	639	637	0	99.69	0.31	ME-SA	PanAsia
3	O/MOG/3/2014	MOG14-03	639	637	0	99.69	0.31	ME-SA	PanAsia
4	O/MOG/4/2014	MOG14-04	639	636	0	99.53	0.47	ME-SA	PanAsia
5	O/VIT/13/2013	VIT13-13	639	635	0	99.37	0.63	ME-SA	PanAsia
6	O/VIT/15/2013	VIT13-15	639	635	0	99.37	0.63	ME-SA	PanAsia
7	O/VIT/32/2013	VIT13-32	639	634	0	99.22	0.78	ME-SA	PanAsia
8	O/VIT/33/2013	VIT13-33	639	634	0	99.22	0.78	ME-SA	PanAsia
9	O/VIT/40/2013	VIT13-40	639	634	0	99.22	0.78	ME-SA	PanAsia
10	O/VIT/11/2013	VIT13-11	639	633	0	99.06	0.94	ME-SA	PanAsia
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2	O/KUW/3/97 (DQ164904)	KUW97-03	639	584	0	91.39	8.61	ME-SA	Ind-2001a
3	O/IRN/8/2005	IRN05-08	639	581	0	90.92	9.08	ME-SA	PanAsia-2
4	O/OMN/7/2001 (DQ164941)	OMN01-07	639	580	0	90.77	9.23	ME-SA	Ind-2001b
5	O/UAE/4/2008	UAE08-04	636	576	0	90.57	9.43	ME-SA	Ind-2001c
6	O/BHU/3/2009	BHU09-03	639	578	0	90.45	9.55	ME-SA	Ind-2001d
7	O/IRN/31/2009	IRN09-31	639	575	0	89.98	10.02	ME-SA	PanAsia-2 ^{FAR-09}
8	O/IRN/61/2001 (DQ164896)	IRN01-61	638	573	1	89.81	10.19	ME-SA	Irn-2001
9	O/TUR/257/2008* (FMDI)	TUR08-AD	639	572	0	89.51	10.49	ME-SA	PanAsia-2 ^{TER-08}
10	O/IRN/18/2010	IRN10-18	639	571	0	89.36	10.64	ME-SA	PanAsia-2 ^{BAL-09}

nt, nucleotides

*, not a WRLFMD reference number

Assembled with Report Generator v4.1

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Report on FMDV O in Mongolia in 2104

Batch: WRLFMD/2014/00011

◆ indicates viruses in this batch

Software: MEGA 6.06

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

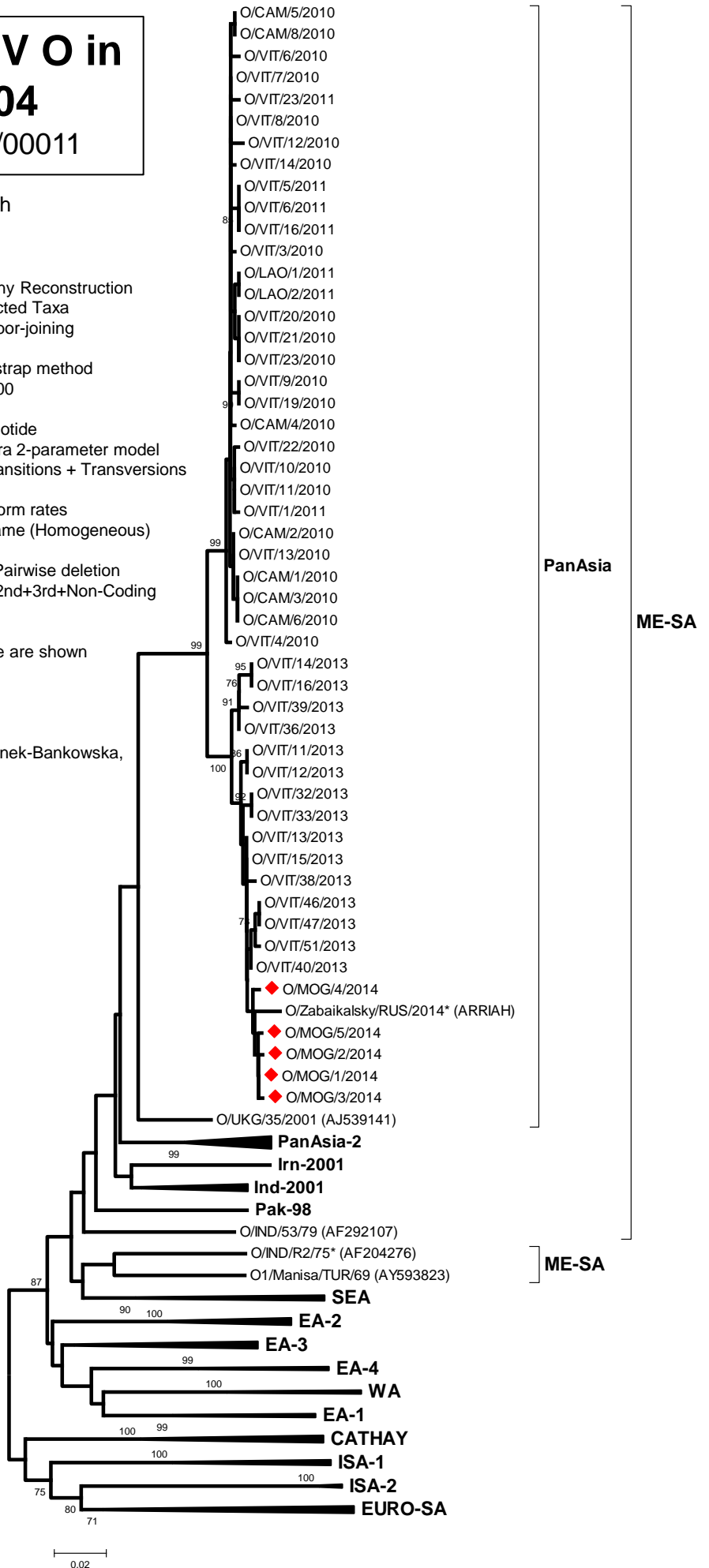
Only bootstrap values of 70% and above are shown

*, not a WRLFMD Ref. No.

N.J. Knowles, J. Wadsworth & K. Bachanek-Bankowska,
31 March 2014

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PanAsia

ME-SA

ME-SA

0.02