



INSTITUTE FOR ANIMAL HEALTH
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FMD Sequencing Report

Lab Reference WRL Batch Number: WRLFMD/2011/00015

Sender Details:

[REDACTED]

Date Received: 23rd March 2011

Country of Origin: Bulgaria

Date Reported: 31st March 2011

Dear Dr. Damyan Illiev,

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/>

Please note that further work is in progress to further clarify the relationships identified in this report.

Results Approved By:

Official Stamp:

[REDACTED]

Date:

31 / 03 / 11

[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.wilson@bbsrc.ac.uk)

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

Genotyping Report

Report Date for this Batch: 31 March 2011

FMDV type O

Country: Bulgaria

Period: 2011

No. of samples: 5

BATCH: WRLFMD/2011/00015



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FAO World Reference Laboratory for FMD Genotyping Report

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Serotype: O	Report date: 31/03/2011
WRLFMD Ref No: BUL/10/2011	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00015	Checked by: V. Mioulet
Sender Ref: 2	
Location: Goliamo Bokovo, Burkas, Bulgaria	Topotype: ME-SA
Date collected: 19/03/2011	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 23/03/2011	Sequence filename: BUL11-10.SEQ
Date received for sequencing: 25/03/2011	Date sequence last updated: 31/03/2011
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: 2697
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 8 days
	Sequencing time: 6 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/BUL/11/2011	BUL11-11	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/BUL/13/2011	BUL11-13	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/BUL/14/2011	BUL11-14	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/BUL/15/2011	BUL11-15	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
5	O/BUL/1/2010	BUL10-01	639	637	0	99.69	0.31	ME-SA	PanAsia-2 ^{ANT-10}
6	O/BUL/5/2011	BUL11-05	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
7	O/BUL/6/2011	BUL11-06	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
8	O/BUL/7/2011	BUL11-07	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
9	O/TUR/1003/2010* (FMDI)	TUR10-BG	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
10	O/TUR/1086/2010* (FMDI)	TUR10-BI	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
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(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
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1	O/IRN/88/2009	IRN09-88	639	627	0	98.12	1.88	ME-SA	PanAsia-2 ^{ANT-10}
2	O/IRN/31/2009	IRN09-31	639	602	0	94.21	5.79	ME-SA	PanAsia-2 ^{FAR-09}
3	O/IRN/8/2005	IRN05-08	639	601	0	94.05	5.95	ME-SA	PanAsia-2
4	O/TUR/257/2008* (FMDI)	TUR08-AD	639	600	0	93.90	6.10	ME-SA	PanAsia-2 ^{TER-08}
5	O/PAK/16/2010	PAK10-16	639	598	0	93.58	6.42	ME-SA	PanAsia-2 ^{PUN-10}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	597	0	93.43	6.57	ME-SA	PanAsia-2 ^{SAN-09}
7	O/IRN/18/2010	IRN10-18	639	595	0	93.11	6.89	ME-SA	PanAsia-2 ^{BAL-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	584	0	91.39	8.61	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	Report date: 31/03/2011
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Batch No: WRLFMD/2011/00015	Checked by: V. Mioulet
Sender Ref: 3	
Location: Goliamo Bokovo, Burkas, Bulgaria	Topotype: ME-SA
Date collected: 19/03/2011	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 23/03/2011	Sequence filename: BUL11-11.SEQ
Date received for sequencing: 25/03/2011	Date sequence last updated: 31/03/2011
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: 2697
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
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2	O/BUL/13/2011	BUL11-13	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/BUL/14/2011	BUL11-14	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/BUL/15/2011	BUL11-15	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
5	O/BUL/1/2010	BUL10-01	639	637	0	99.69	0.31	ME-SA	PanAsia-2 ^{ANT-10}
6	O/BUL/5/2011	BUL11-05	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
7	O/BUL/6/2011	BUL11-06	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
8	O/BUL/7/2011	BUL11-07	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
9	O/TUR/1003/2010* (FMDI)	TUR10-BG	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
10	O/TUR/1086/2010* (FMDI)	TUR10-BI	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
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2	O/IRN/31/2009	IRN09-31	639	602	0	94.21	5.79	ME-SA	PanAsia-2 ^{FAR-09}
3	O/IRN/8/2005	IRN05-08	639	601	0	94.05	5.95	ME-SA	PanAsia-2
4	O/TUR/257/2008* (FMDI)	TUR08-AD	639	600	0	93.90	6.10	ME-SA	PanAsia-2 ^{TER-08}
5	O/PAK/16/2010	PAK10-16	639	598	0	93.58	6.42	ME-SA	PanAsia-2 ^{PUN-10}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	597	0	93.43	6.57	ME-SA	PanAsia-2 ^{SAN-09}
7	O/IRN/18/2010	IRN10-18	639	595	0	93.11	6.89	ME-SA	PanAsia-2 ^{BAL-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	584	0	91.39	8.61	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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WRLFMD Ref No: BUL/13/2011	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00015	Checked by: V. Mioulet
Sender Ref: 5	
Location: Goliamo Bokovo, Burkas, Bulgaria	Topotype: ME-SA
Date collected: 19/03/2011	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 23/03/2011	Sequence filename: BUL11-13.SEQ
Date received for sequencing: 25/03/2011	Date sequence last updated: 31/03/2011
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: 2697
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 8 days
	Sequencing time: 6 days
Comments:	

Most Closely Related Viruses									
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1	O/BUL/10/2011	BUL11-10	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/BUL/11/2011	BUL11-11	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/BUL/14/2011	BUL11-14	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/BUL/15/2011	BUL11-15	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
5	O/BUL/1/2010	BUL10-01	639	637	0	99.69	0.31	ME-SA	PanAsia-2 ^{ANT-10}
6	O/BUL/5/2011	BUL11-05	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
7	O/BUL/6/2011	BUL11-06	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
8	O/BUL/7/2011	BUL11-07	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
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2	O/IRN/31/2009	IRN09-31	639	602	0	94.21	5.79	ME-SA	PanAsia-2 ^{FAR-09}
3	O/IRN/8/2005	IRN05-08	639	601	0	94.05	5.95	ME-SA	PanAsia-2
4	O/TUR/257/2008* (FMDI)	TUR08-AD	639	600	0	93.90	6.10	ME-SA	PanAsia-2 ^{TER-08}
5	O/PAK/16/2010	PAK10-16	639	598	0	93.58	6.42	ME-SA	PanAsia-2 ^{PUN-10}
6	O/TUR/264/2009* (FMDI)	TUR09-AK	639	597	0	93.43	6.57	ME-SA	PanAsia-2 ^{SAN-09}
7	O/IRN/18/2010	IRN10-18	639	595	0	93.11	6.89	ME-SA	PanAsia-2 ^{BAL-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	584	0	91.39	8.61	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	Report date: 31/03/2011
WRLFMD Ref No: BUL/14/2011	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00015	Checked by: V. Mioulet
Sender Ref: 6	
Location: Goliamo Bokovo, Burkas, Bulgaria	Topotype: ME-SA
Date collected: 19/03/2011	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 23/03/2011	Sequence filename: BUL11-14.SEQ
Date received for sequencing: 25/03/2011	Date sequence last updated: 31/03/2011
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: 2697
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 8 days
	Sequencing time: 6 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/BUL/10/2011	BUL11-10	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
2	O/BUL/11/2011	BUL11-11	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/BUL/13/2011	BUL11-13	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/BUL/15/2011	BUL11-15	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
5	O/BUL/1/2010	BUL10-01	639	637	0	99.69	0.31	ME-SA	PanAsia-2 ^{ANT-10}
6	O/BUL/5/2011	BUL11-05	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
7	O/BUL/6/2011	BUL11-06	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
8	O/BUL/7/2011	BUL11-07	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
9	O/TUR/1003/2010* (FMDI)	TUR10-BG	639	636	0	99.53	0.47	ME-SA	PanAsia-2 ^{ANT-10}
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7	O/IRN/18/2010	IRN10-18	639	595	0	93.11	6.89	ME-SA	PanAsia-2 ^{BAL-09}
8	O/UKG/35/2001 (AJ539141)	UKG01-35	639	584	0	91.39	8.61	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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WRLFMD Ref No: BUL/15/2011	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00015	Checked by: V. Mioulet
Sender Ref: 7	
Location: Goliamo Bokovo, Burkas, Bulgaria	Topotype: ME-SA
Date collected: 19/03/2011	Genotype/strain: PanAsia-2 ^{ANT-10}
Date received by WRLFMD: 23/03/2011	Sequence filename: BUL11-15.SEQ
Date received for sequencing: 25/03/2011	Date sequence last updated: 31/03/2011
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: 2697
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2	O/BUL/11/2011	BUL11-11	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
3	O/BUL/13/2011	BUL11-13	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
4	O/BUL/14/2011	BUL11-14	639	639	0	100.00	0.00	ME-SA	PanAsia-2 ^{ANT-10}
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nt, nucleotides

*, not a WRLFMD reference number

Assembled with Report Generator v4.0

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Report on FMDV O in Bulgaria in 2011

Batch: WRLFMD/2011/00015

◆ 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 : 639

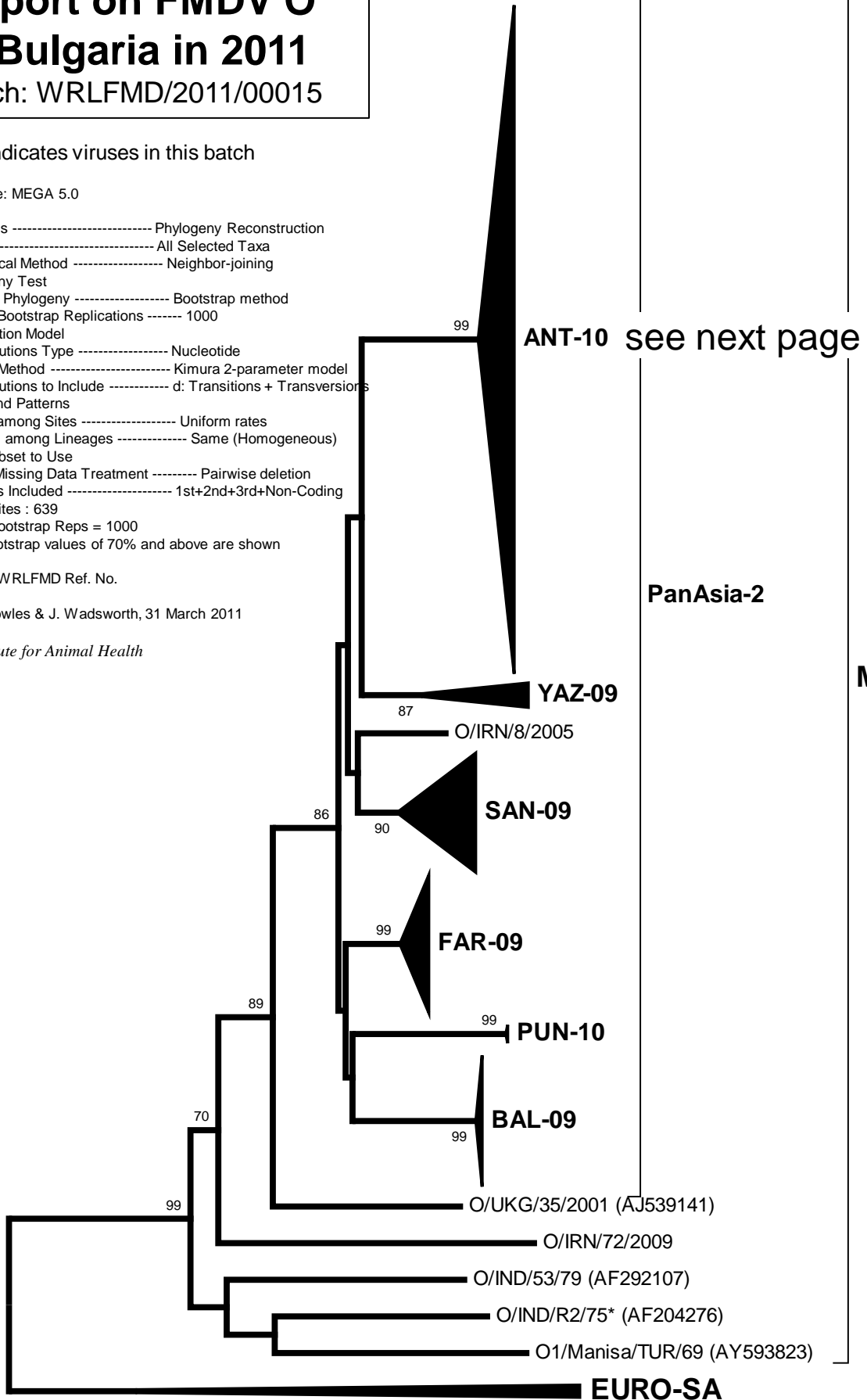
No Of Bootstrap Reps = 1000

Only bootstrap values of 70% and above are shown

*, not a WRLFMD Ref. No.

N.J. Knowles & J. Wadsworth, 31 March 2011

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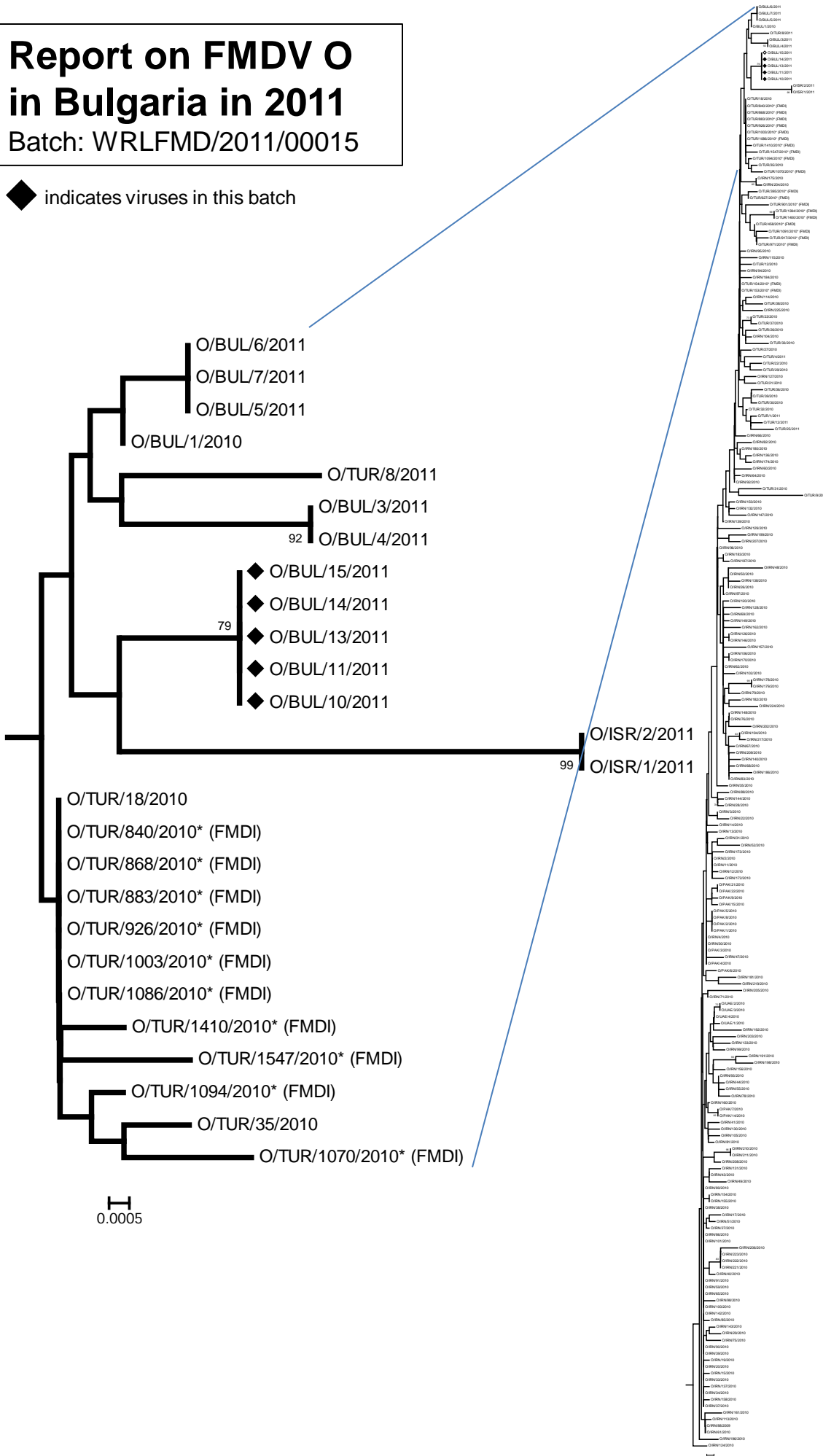


0.02

Report on FMDV O in Bulgaria in 2011

Batch: WRLFMD/2011/00015

◆ indicates viruses in this batch



ME-SA/PanAsia-2-ANT-10

0.0005