



INSTITUTE FOR ANIMAL HEALTH

Acting Director: Professor David Paton MA, VetMB, PhD, MRCVS

PIRBRIGHT LABORATORY

Ash Road,

Pirbright,

Surrey,

GU24 0NF

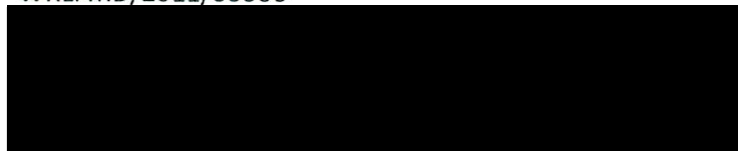
Intn Tel: 00 44 1483 232441

Tel: 01483 232441 Fax: 01483 232621

FMD Sequencing Report

Lab Reference WRL Batch Number: WRLFMD/2011/00006

Sender Details:



Date Received: 7th February 2011

Country of Origin: South Korea

Date Reported: 16th February 2011

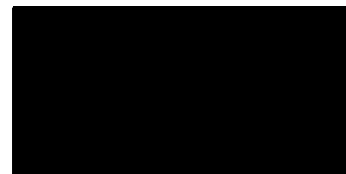
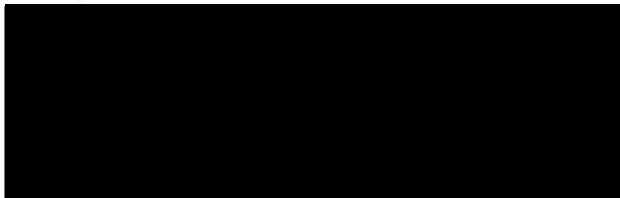
Dear Dr. In-So Cho,

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:

16 / 2 / 11

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: 16 February 2011

FMDV type O

Country: South Korea (Republic of Korea)

Period: 2010-2011

No. of samples: 5

BATCH: WRLFMD/2011/00006



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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: 15/02/2011
WRLFMD Ref No: SKR/5/2010	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00006	Checked by: D.P. King
Sender Ref: 1 1-4	
Location: Andong, Gyeongbuk, South Korea	Topotype: SEA
Date collected: 28/11/2010	Genotype/strain: Mya-98
Date received by WRLFMD: 07/02/2011	Sequence filename: SKR10-05.SEQ
Date received for sequencing: 14/02/2011	Date sequence last updated: 15/02/2011
Species: Pig	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: 2626
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 8 days
	Sequencing time: 1 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/Andong 1/SKR/2010 (NVRQS)	SKR10-AC	639	639	0	100	0	SEA	Mya-98
2	O/SKR/6/2010	SKR10-06	639	639	0	100	0	SEA	Mya-98
3	O/Paju/SKR/2010 (NVRQS)	SKR10-AF	639	634	0	99.22	0.78	SEA	Mya-98
4	O/SKR/3/2011	SKR11-03	639	634	0	99.22	0.78	SEA	Mya-98
5	O/SKR/7/2010	SKR10-07	639	634	0	99.22	0.78	SEA	Mya-98
6	O/Yeoncheon/SKR/2010 (NVRQS)	SKR10-AE	639	634	0	99.22	0.78	SEA	Mya-98
7	O/HKN/13/2010	HKN10-13	639	633	0	99.06	0.94	SEA	Mya-98
8	O/HKN/14/2010	HKN10-14	639	633	0	99.06	0.94	SEA	Mya-98
9	O/HKN/15/2010	HKN10-15	639	633	0	99.06	0.94	SEA	Mya-98
10	O/HKN/7/2010	HKN10-07	639	633	0	99.06	0.94	SEA	Mya-98
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/MYA/7/98 (DQ164925)	MYA98-07	639	593	0	92.80	7.20	SEA	Mya-98
2	O/TAI/189/87* (TRRL)	TAI87-AC	639	569	0	89.05	10.95	SEA	unnamed
3	O/CAM/3/98 (AJ294910)	CAM98-03	639	543	0	84.98	15.02	SEA	Cam-94
4	O/IND/R2/75* (AF204276)	IND75--A	639	543	0	84.98	15.02	ME-SA	unnamed
5	O/IRN/8/2005	IRN05-08	639	539	0	84.35	15.65	ME-SA	PanAsia-2
6	O/PAK/16/2010	PAK10-16	639	538	0	84.19	15.81	ME-SA	PanAsia-2 ^{PUN-10}
7	O/ETH/3/2004 (FJ798109)	ETH04-03	639	536	0	83.88	16.12	EA-3	unnamed
8	O/IRN/88/2009	IRN09-88	639	536	0	83.88	16.12	ME-SA	PanAsia-2 ^{ANT-10}
9	O/IRN/31/2009	IRN09-31	639	535	0	83.72	16.28	ME-SA	PanAsia-2 ^{FAR-09}
10	O/TUR/257/2008* (FMDI)	TUR08-AD	639	535	0	83.72	16.28	ME-SA	PanAsia-2 ^{TER-08}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 15/02/2011
WRLFMD Ref No: SKR/6/2010	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00006	Checked by: D.P. King
Sender Ref: 2 1-6	
Location: Andong, Gyeongbuk, South Korea	Topotype: SEA
Date collected: 28/11/2010	Genotype/strain: Mya-98
Date received by WRLFMD: 07/02/2011	Sequence filename: SKR10-06.SEQ
Date received for sequencing: 14/02/2011	Date sequence last updated: 15/02/2011
Species: Pig	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: 2626
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 8 days
	Sequencing time: 1 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/Andong 1/SKR/2010 (NVRQS)	SKR10-AC	639	639	0	100	0	SEA	Mya-98
2	O/SKR/5/2010	SKR10-05	639	639	0	100	0	SEA	Mya-98
3	O/Paju/SKR/2010 (NVRQS)	SKR10-AF	639	634	0	99.22	0.78	SEA	Mya-98
4	O/SKR/3/2011	SKR11-03	639	634	0	99.22	0.78	SEA	Mya-98
5	O/SKR/7/2010	SKR10-07	639	634	0	99.22	0.78	SEA	Mya-98
6	O/Yeoncheon/SKR/2010 (NVRQS)	SKR10-AE	639	634	0	99.22	0.78	SEA	Mya-98
7	O/HKN/13/2010	HKN10-13	639	633	0	99.06	0.94	SEA	Mya-98
8	O/HKN/14/2010	HKN10-14	639	633	0	99.06	0.94	SEA	Mya-98
9	O/HKN/15/2010	HKN10-15	639	633	0	99.06	0.94	SEA	Mya-98
10	O/HKN/7/2010	HKN10-07	639	633	0	99.06	0.94	SEA	Mya-98
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/MYA/7/98 (DQ164925)	MYA98-07	639	593	0	92.80	7.20	SEA	Mya-98
2	O/TAI/189/87* (TRRL)	TAI87-AC	639	569	0	89.05	10.95	SEA	unnamed
3	O/CAM/3/98 (AJ294910)	CAM98-03	639	543	0	84.98	15.02	SEA	Cam-94
4	O/IND/R2/75* (AF204276)	IND75--A	639	543	0	84.98	15.02	ME-SA	unnamed
5	O/IRN/8/2005	IRN05-08	639	539	0	84.35	15.65	ME-SA	PanAsia-2
6	O/PAK/16/2010	PAK10-16	639	538	0	84.19	15.81	ME-SA	PanAsia-2 ^{PUN-10}
7	O/ETH/3/2004 (FJ798109)	ETH04-03	639	536	0	83.88	16.12	EA-3	unnamed
8	O/IRN/88/2009	IRN09-88	639	536	0	83.88	16.12	ME-SA	PanAsia-2 ^{ANT-10}
9	O/IRN/31/2009	IRN09-31	639	535	0	83.72	16.28	ME-SA	PanAsia-2 ^{FAR-09}
10	O/TUR/257/2008* (FMDI)	TUR08-AD	639	535	0	83.72	16.28	ME-SA	PanAsia-2 ^{TER-08}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O	Report date: 15/02/2011
WRLFMD Ref No: SKR/7/2010	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00006	Checked by: D.P. King
Sender Ref: 8 9402	
Location: Paju, Gyeonggi, South Korea	Topotype: SEA
Date collected: 15/12/2010	Genotype/strain: Mya-98
Date received by WRLFMD: 07/02/2011	Sequence filename: SKR10-07.SEQ
Date received for sequencing: 14/02/2011	Date sequence last updated: 15/02/2011
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: 2626
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 8 days
	Sequencing time: 1 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/Paju/SKR/2010 (NVRQS)	SKR10-AF	639	639	0	100	0	SEA	Mya-98
2	O/SKR/3/2011	SKR11-03	639	639	0	100	0	SEA	Mya-98
3	O/SKR/1/2011	SKR11-01	639	638	0	99.84	0.16	SEA	Mya-98
4	O/Yeoncheon/SKR/2010 (NVRQS)	SKR10-AE	639	635	0	99.37	0.63	SEA	Mya-98
5	O/Andong 1/SKR/2010 (NVRQS)	SKR10-AC	639	634	0	99.22	0.78	SEA	Mya-98
6	O/HKN/13/2010	HKN10-13	639	634	0	99.22	0.78	SEA	Mya-98
7	O/HKN/14/2010	HKN10-14	639	634	0	99.22	0.78	SEA	Mya-98
8	O/HKN/15/2010	HKN10-15	639	634	0	99.22	0.78	SEA	Mya-98
9	O/HKN/7/2010	HKN10-07	639	634	0	99.22	0.78	SEA	Mya-98
10	O/HKN/8/2010	HKN10-08	639	634	0	99.22	0.78	SEA	Mya-98
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/MYA/7/98 (DQ164925)	MYA98-07	639	596	0	93.27	6.73	SEA	Mya-98
2	O/TAI/189/87* (TRRL)	TAI87-AC	639	572	0	89.51	10.49	SEA	unnamed
3	O/CAM/3/98 (AJ294910)	CAM98-03	639	544	0	85.13	14.87	SEA	Cam-94
4	O/IND/R2/75* (AF204276)	IND75--A	639	544	0	85.13	14.87	ME-SA	unnamed
5	O/IRN/8/2005	IRN05-08	639	542	0	84.82	15.18	ME-SA	PanAsia-2
6	O/PAK/16/2010	PAK10-16	639	541	0	84.66	15.34	ME-SA	PanAsia-2 ^{PUN-10}
7	O/ETH/3/2004 (FJ798109)	ETH04-03	639	539	0	84.35	15.65	EA-3	unnamed
8	O/TUR/257/2008* (FMDI)	TUR08-AD	639	538	0	84.19	15.81	ME-SA	PanAsia-2 ^{TER-08}
9	O/UKG/35/2001 (AJ539141)	UKG01-35	639	538	0	84.19	15.81	ME-SA	PanAsia
10	O/IRN/88/2009	IRN09-88	639	537	0	84.04	15.96	ME-SA	PanAsia-2 ^{ANT-10}

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: O WRLFMD Ref No: SKR/1/2011 Batch No: WRLFMD/2011/00006 Sender Ref: 5 101-4 Location: Yeongcheon, Gyeongbuk, South Korea Date collected: 01/01/2011 Date received by WRLFMD: 07/02/2011 Date received for sequencing: 14/02/2011 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: O-1C244F/EUR-2B52R O-1C272F/EUR-2B52R	Report date: 15/02/2011 Reported by: N.J. Knowles Checked by: D.P. King Topotype: SEA Genotype/strain: Mya-98 Sequence filename: SKR11-01.SEQ Date sequence last updated: 15/02/2011 No. of Nt determined: 639 No. of ambiguities: 0 Gene length: 639 Total no. of comparisons: 2626 Min. no. of nt for comparison: 600 Total turn-around time: 8 days Sequencing time: 1 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/Paju/SKR/2010 (NVRQS)	SKR10-AF	639	638	0	99.84	0.16	SEA	Mya-98
2	O/SKR/3/2011	SKR11-03	639	638	0	99.84	0.16	SEA	Mya-98
3	O/SKR/7/2010	SKR10-07	639	638	0	99.84	0.16	SEA	Mya-98
4	O/Yeongcheon/SKR/2010 (NVRQS)	SKR10-AE	639	634	0	99.22	0.78	SEA	Mya-98
5	O/Andong 1/SKR/2010 (NVRQS)	SKR10-AC	639	633	0	99.06	0.94	SEA	Mya-98
6	O/HKN/13/2010	HKN10-13	639	633	0	99.06	0.94	SEA	Mya-98
7	O/HKN/14/2010	HKN10-14	639	633	0	99.06	0.94	SEA	Mya-98
8	O/HKN/15/2010	HKN10-15	639	633	0	99.06	0.94	SEA	Mya-98
9	O/HKN/7/2010	HKN10-07	639	633	0	99.06	0.94	SEA	Mya-98
10	O/HKN/8/2010	HKN10-08	639	633	0	99.06	0.94	SEA	Mya-98
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/MYA/7/98 (DQ164925)	MYA98-07	639	595	0	93.11	6.89	SEA	Mya-98
2	O/TAI/189/87* (TRRL)	TAI87-AC	639	571	0	89.36	10.64	SEA	unnamed
3	O/CAM/3/98 (AJ294910)	CAM98-03	639	545	0	85.29	14.71	SEA	Cam-94
4	O/IND/R2/75* (AF204276)	IND75--A	639	543	0	84.98	15.02	ME-SA	unnamed
5	O/IRN/8/2005	IRN05-08	639	543	0	84.98	15.02	ME-SA	PanAsia-2
6	O/PAK/16/2010	PAK10-16	639	540	0	84.51	15.49	ME-SA	PanAsia-2 ^{PUN-10}
7	O/TUR/257/2008* (FMDI)	TUR08-AD	639	539	0	84.35	15.65	ME-SA	PanAsia-2 ^{TER-08}
8	O/ETH/3/2004 (FJ798109)	ETH04-03	639	538	0	84.19	15.81	EA-3	unnamed
9	O/IRN/88/2009	IRN09-88	639	538	0	84.19	15.81	ME-SA	PanAsia-2 ^{ANT-10}
10	O/TUR/264/2009* (FMDI)	TUR09-AK	639	538	0	84.19	15.81	ME-SA	PanAsia-2 ^{SAN-09}

nt, nucleotides

*, not a WRLFMD reference number

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FAO World Reference Laboratory for FMD Genotyping Report

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Serotype: O	Report date: 15/02/2011
WRLFMD Ref No: SKR/3/2011	Reported by: N.J. Knowles
Batch No: WRLFMD/2011/00006	Checked by: D.P. King
Sender Ref: 7 108-1	
Location: Boryeong, Chungnam, South Korea	Topotype: SEA
Date collected: 02/01/2011	Genotype/strain: Mya-98
Date received by WRLFMD: 07/02/2011	Sequence filename: SKR11-03.SEQ
Date received for sequencing: 14/02/2011	Date sequence last updated: 15/02/2011
Species: Pig	No. of Nt determined: 639
Material used: RS1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 639
RT-PCR primers: O-1C244F/EUR-2B52R	Total no. of comparisons: 2626
O-1C272F/EUR-2B52R	Min. no. of nt for comparison: 600
	Total turn-around time: 8 days
	Sequencing time: 1 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/Paju/SKR/2010 (NVRQS)	SKR10-AF	639	639	0	100	0	SEA	Mya-98
2	O/SKR/7/2010	SKR10-07	639	639	0	100	0	SEA	Mya-98
3	O/SKR/1/2011	SKR11-01	639	638	0	99.84	0.16	SEA	Mya-98
4	O/Yeoncheon/SKR/2010 (NVRQS)	SKR10-AE	639	635	0	99.37	0.63	SEA	Mya-98
5	O/Andong 1/SKR/2010 (NVRQS)	SKR10-AC	639	634	0	99.22	0.78	SEA	Mya-98
6	O/HKN/13/2010	HKN10-13	639	634	0	99.22	0.78	SEA	Mya-98
7	O/HKN/14/2010	HKN10-14	639	634	0	99.22	0.78	SEA	Mya-98
8	O/HKN/15/2010	HKN10-15	639	634	0	99.22	0.78	SEA	Mya-98
9	O/HKN/7/2010	HKN10-07	639	634	0	99.22	0.78	SEA	Mya-98
10	O/HKN/8/2010	HKN10-08	639	634	0	99.22	0.78	SEA	Mya-98
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/MYA/7/98 (DQ164925)	MYA98-07	639	596	0	93.27	6.73	SEA	Mya-98
2	O/TAI/189/87* (TRRL)	TAI87-AC	639	572	0	89.51	10.49	SEA	unnamed
3	O/CAM/3/98 (AJ294910)	CAM98-03	639	544	0	85.13	14.87	SEA	Cam-94
4	O/IND/R2/75* (AF204276)	IND75--A	639	544	0	85.13	14.87	ME-SA	unnamed
5	O/IRN/8/2005	IRN05-08	639	542	0	84.82	15.18	ME-SA	PanAsia-2
6	O/PAK/16/2010	PAK10-16	639	541	0	84.66	15.34	ME-SA	PanAsia-2 ^{PUN-10}
7	O/ETH/3/2004 (FJ798109)	ETH04-03	639	539	0	84.35	15.65	EA-3	unnamed
8	O/TUR/257/2008* (FMDI)	TUR08-AD	639	538	0	84.19	15.81	ME-SA	PanAsia-2 ^{TER-08}
9	O/UKG/35/2001 (AJ539141)	UKG01-35	639	538	0	84.19	15.81	ME-SA	PanAsia
10	O/IRN/88/2009	IRN09-88	639	537	0	84.04	15.96	ME-SA	PanAsia-2 ^{ANT-10}

nt, nucleotides

*, not a WRLFMD reference number

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Report on FMDV O in South Korea in 2010-2011

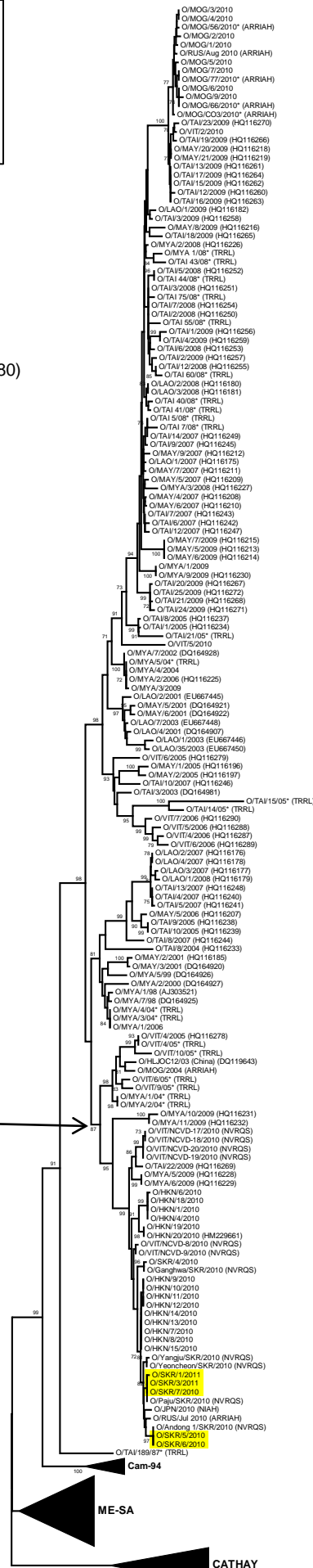
Batch: WRLFMD/2011/00006

Software: MEGA 4.0
 No. of Taxa : 273
 Data File : n:\evd\meg\db\fmdv\o\SKR2010f.meg
 Data Title : O SKR 2010-2011
 Data Type : Nucleotide (Coding)
 Analysis : Phylogeny reconstruction
 Tree Inference : =====
 ->Method : Neighbor-Joining
 ->Phylogeny Test and options : Bootstrap (1000 replicates; seed=46980)
 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

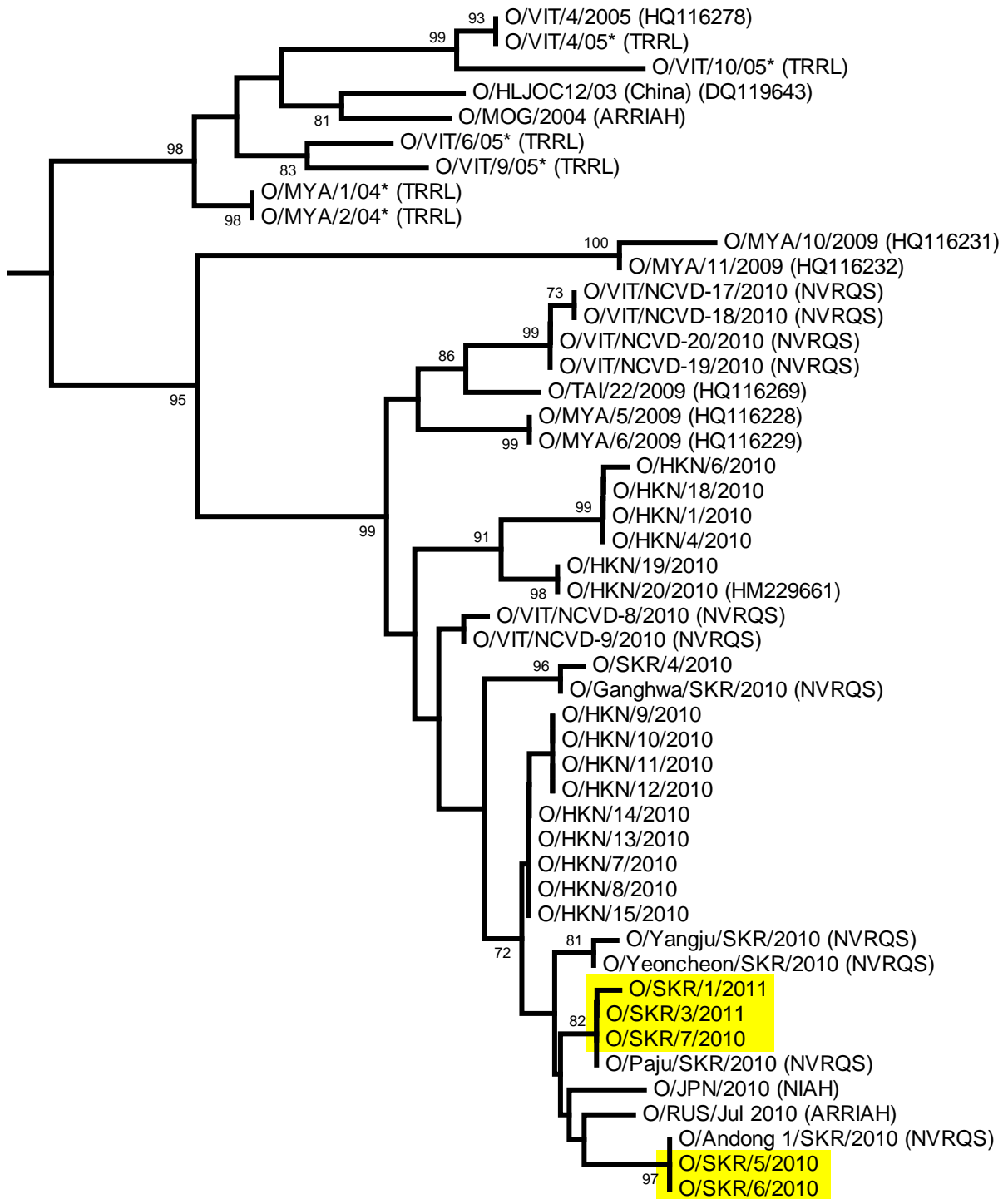
* , not a WRLFMD Ref. No.

N.J. Knowles & J. Wadsworth, 16 February 2011

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Sub-tree on next page



0.005