

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

## Genotyping Report

Report Date for this Batch: 16 February 2011  
Corrected version: 03 March 2011\*

FMDV type O

Country: South Korea (Republic of Korea)

Period: 2010-2011

No. of samples: 5

BATCH: WRLFMD/2011/00006

\*, the location of O/SKR/1/2011 was originally stated as Yeongcheon, Gyeongbuk; this has now been corrected to Gangrung, Gangwon (according to information supplied by the National Veterinary Research and Quarantine Service, Republic of Korea).



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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:	

<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/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
<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/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 <sup>PUN-10</sup>
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 <sup>ANT-10</sup>
9	O/IRN/31/2009	IRN09-31	639	535	0	83.72	16.28	ME-SA	PanAsia-2 <sup>FAR-09</sup>
10	O/TUR/257/2008* (FMDI)	TUR08-AD	639	535	0	83.72	16.28	ME-SA	PanAsia-2 <sup>TER-08</sup>

nt, nucleotides

\*, not a WRLFMD reference number

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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/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 <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/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 <sup>PUN-10</sup>
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 <sup>ANT-10</sup>
9	O/IRN/31/2009	IRN09-31	639	535	0	83.72	16.28	ME-SA	PanAsia-2 <sup>FAR-09</sup>
10	O/TUR/257/2008* (FMDI)	TUR08-AD	639	535	0	83.72	16.28	ME-SA	PanAsia-2 <sup>TER-08</sup>

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 <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/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 <sup>PUN-10</sup>
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 <sup>TER-08</sup>
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 <sup>ANT-10</sup>

nt, nucleotides

\*, not a WRLFMD reference number

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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 WRLFMD Ref No: SKR/1/2011 Batch No: WRLFMD/2011/00006 Sender Ref: 5 101-4 Location: Gangrung, Gangwon, 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/Yeoncheon/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 <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/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 <sup>PUN-10</sup>
7	O/TUR/257/2008* (FMDI)	TUR08-AD	639	539	0	84.35	15.65	ME-SA	PanAsia-2 <sup>TER-08</sup>
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 <sup>ANT-10</sup>
10	O/TUR/264/2009* (FMDI)	TUR09-AK	639	538	0	84.19	15.81	ME-SA	PanAsia-2 <sup>SAN-09</sup>

nt, nucleotides

\*, not a WRLFMD reference number

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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/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:	

<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/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
<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/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 <sup>PUN-10</sup>
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 <sup>TER-08</sup>
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 <sup>ANT-10</sup>

nt, nucleotides

\*, not a WRLFMD reference number

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# Report on FMDV O in South Korea in 2010-2011

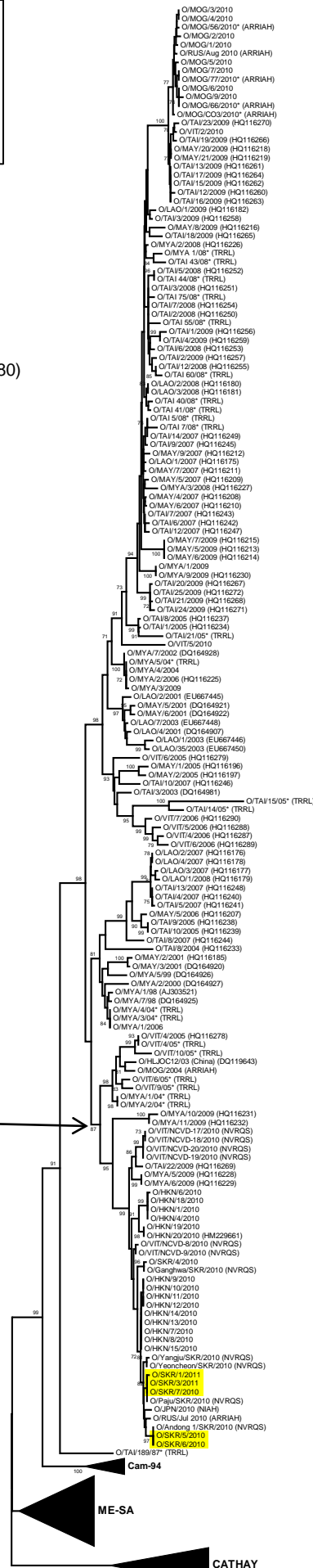
Batch: WRLFMD/2011/00006

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

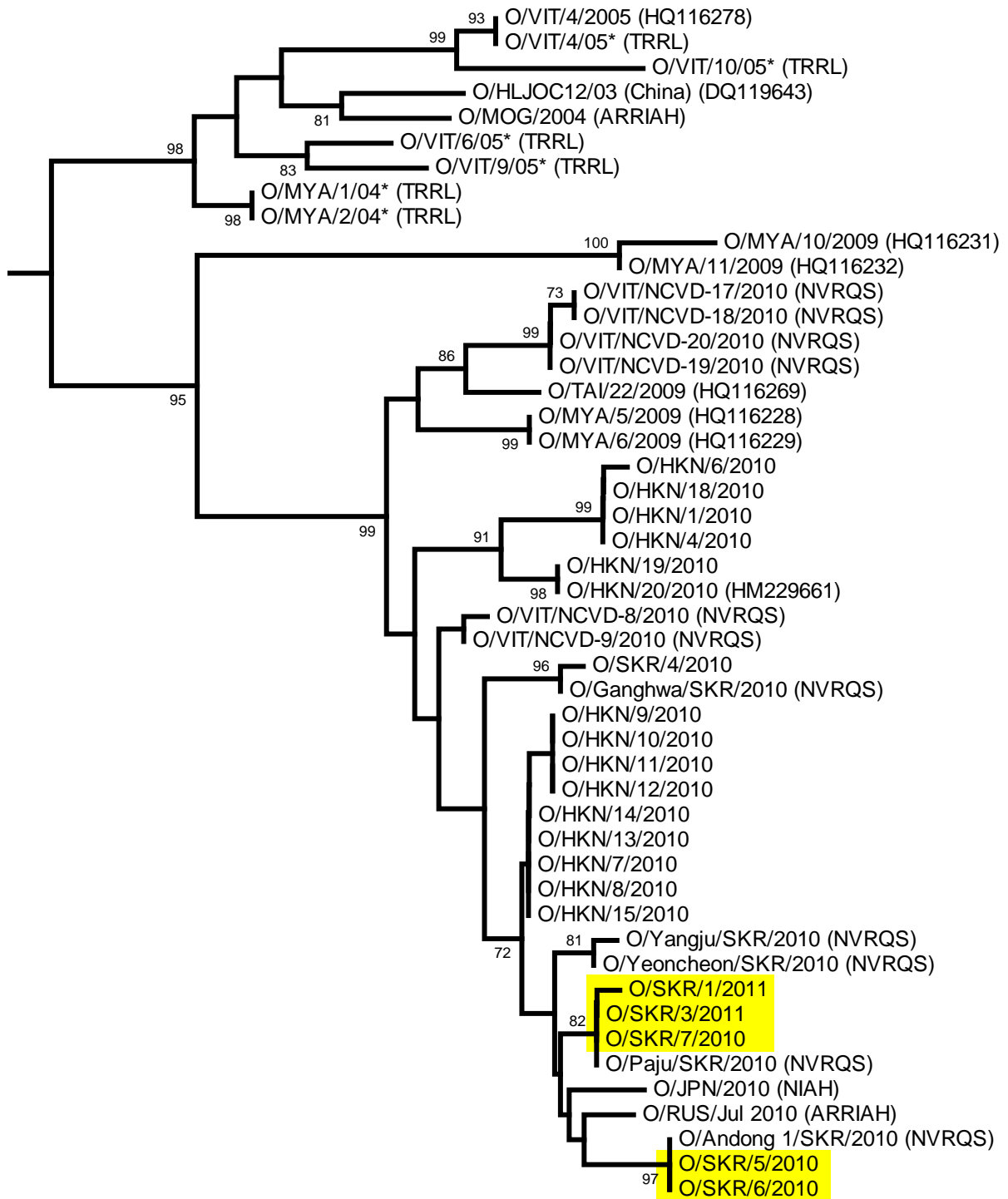
\* , not a WRLFMD Ref. No.

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

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Sub-tree on next page



0.005