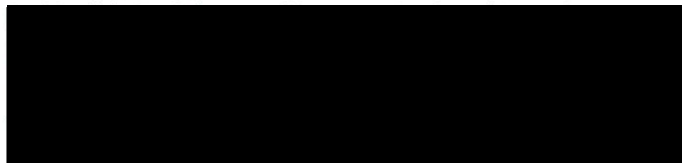




INSTITUTE FOR ANIMAL HEALTH
Director: Professor John Fazakerley BSc, MBA, PhD, FRCPath
PIRBRIGHT LABORATORY
Ash Road,
Pirbright,
Surrey,
GU24 0NF
Intn Tel: 00 44 1483 232441
Tel: 01483 232441, Fax: 01483 232621

FMD Genotyping Report

Lab Reference WRL Batch Number: WRLFMD/2012/00019
Sender Details:



Date Received: 11th May 2012
Country of Origin: MALAYSIA
Date Reported: 28th May 2012

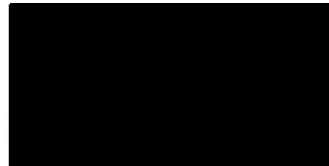
Dear Dr Norlida Bt Othman,

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: 1

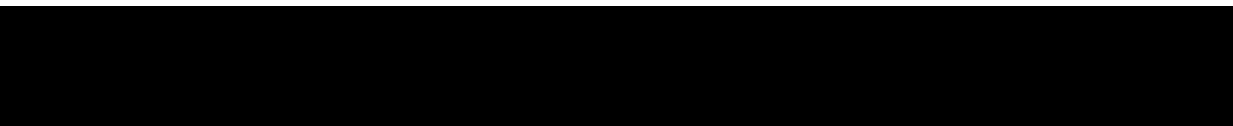


Official Stamp:



Date:

28/5/12



A UKAS accredited testing laboratory No. 4025.

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: gareth.shimmon@iah.ac.uk. IAH actively seeks and appreciates feedback, if you would like to offer feedback please complete the WRLFMD survey here: <http://www.surveymonkey.com/s/WRLFMD>

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

Genotyping Report

Report Date for this Batch: 25 May 2012

FMDV type A

Country: Malaysia

Period: 2012

No. of samples: 5

BATCH: WRLFMD/2012/000019



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FAO World Reference Laboratory for FMD Genotyping Report

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Page 1 of 1

Serotype: A WRLFMD Ref No: MAY/1/2012 Batch No: WRLFMD/2012/00019 Sender Ref: MVKKB 324/12 Location: KG Telok Berembang, Alor Gajar, Melaka, Malaysia Date collected: 31/01/2012 Date received by WRLFMD: 11/05/2012 Date received for sequencing: 21/05/2012 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: A-1C562F/EUR-2B52R A-1C612F/EUR-2B52R	Report date: 25/05/2012 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ASIA Genotype/strain: Sea-97 Sequence filename: MAY12-01.SEQ Date sequence last updated: 25/05/2012 No. of Nt determined: 636 No. of ambiguities: 0 Gene length: 636 Total no. of comparisons: 1403 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	A/THA 66-1/10* (TRRL)	TAI10-AA	633	619	0	97.79	2.21	ASIA	Sea-97
2	A/TAI/7/2010	TAI10-07	633	618	0	97.63	2.37	ASIA	Sea-97
3	A/TAI/8/2010	TAI10-08	633	618	0	97.63	2.37	ASIA	Sea-97
4	A/THA 67-3/10* (TRRL)	TAI10-AB	633	618	0	97.63	2.37	ASIA	Sea-97
5	A/THA 69-6/10* (TRRL)	TAI10-AC	633	618	0	97.63	2.37	ASIA	Sea-97
6	A/TAI/1/2011	TAI11-01	633	617	0	97.47	2.53	ASIA	Sea-97
7	A/TAI/3/2011	TAI11-03	633	617	0	97.47	2.53	ASIA	Sea-97
8	A/TAI/12/2011	TAI11-12	633	616	0	97.31	2.69	ASIA	Sea-97
9	A/MAY/2/2011	MAY11-02	633	615	0	97.16	2.84	ASIA	Sea-97
10	A/TAI/10/2011	TAI11-10	633	615	0	97.16	2.84	ASIA	Sea-97
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	A/TAI/7/2003 (HQ116312)	TAI03-07	633	596	0	94.15	5.85	ASIA	Sea-97
2	A/TAI/2/97 (EF208778)	TAI97-02	633	576	0	91.00	9.00	ASIA	Sea-97
3	A/TAI/118/87* (EF208777)	TAI87-AD	633	550	0	86.89	13.11	ASIA	Thai-87
4	A22/IRQ/64 (AY593763)	IRQ64--A	636	521	0	81.92	18.08	ASIA	A ₂₂
5	A/IRN/2/87 (EF208770)	IRN87-02	633	518	0	81.83	18.17	ASIA	Iran-87
6	A/BAR/6/2008	BAR08-06	636	517	0	81.29	18.71	ASIA	Iran-05 ^{BAR-08}
7	A/TUR/1/2008	TUR08-01	636	517	0	81.29	18.71	ASIA	Iran-05 ^{ARD-07}
8	A15/Bangkok/TAI/60 (AY593755)	TAI60--D	636	517	0	81.29	18.71	ASIA	A15
9	A/IRN/1/2005 (EF208769)	IRN05-01	636	515	0	80.97	19.03	ASIA	Iran-05
10	A/IRN/125/2010	IRN10125	636	515	0	80.97	19.03	ASIA	Iran-05 ^{SIS-10}

nt, nucleotides

*, not a WRLFMD reference number

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FAO World Reference Laboratory for FMD Genotyping Report

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Page 1 of 1

Serotype: A WRLFMD Ref No: MAY/3/2012 Batch No: WRLFMD/2012/00019 Sender Ref: MVKKB 345/12 Location: Batu 6 Jun TG Tualang, Batu Gajah, Perak, Malaysia Date collected: 31/01/2012 Date received by WRLFMD: 11/05/2012 Date received for sequencing: 17/05/2012 Species: Buffalo Material used: Epi susp in Trizol Region sequenced: VP1 RT-PCR primers: A-1C562F/EUR-2B52R A-1C612F/EUR-2B52R	Report date: 25/05/2012 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ASIA Genotype/strain: Sea-97 Sequence filename: MAY12-03.SEQ Date sequence last updated: 25/05/2012 No. of Nt determined: 636 No. of ambiguities: 0 Gene length: 636 Total no. of comparisons: 1403 Min. no. of nt for comparison: 600 Total turn-around time: 14 days Sequencing time: 8 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	A/MAY/4/2012	MAY12-04	636	633	0	99.53	0.47	ASIA	Sea-97
2	A/THA 66-1/10* (TRRL)	TAI10-AA	633	622	0	98.26	1.74	ASIA	Sea-97
3	A/TAI/7/2010	TAI10-07	633	621	0	98.10	1.90	ASIA	Sea-97
4	A/TAI/8/2010	TAI10-08	633	621	0	98.10	1.90	ASIA	Sea-97
5	A/THA 67-3/10* (TRRL)	TAI10-AB	633	621	0	98.10	1.90	ASIA	Sea-97
6	A/THA 69-6/10* (TRRL)	TAI10-AC	633	621	0	98.10	1.90	ASIA	Sea-97
7	A/TAI/1/2011	TAI11-01	633	620	0	97.95	2.05	ASIA	Sea-97
8	A/TAI/3/2011	TAI11-03	633	620	0	97.95	2.05	ASIA	Sea-97
9	A/TAI/12/2011	TAI11-12	633	619	0	97.79	2.21	ASIA	Sea-97
10	A/MAY/4/2011	MAY11-04	633	618	0	97.63	2.37	ASIA	Sea-97
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	A/TAI/7/2003 (HQ116312)	TAI03-07	633	593	0	93.68	6.32	ASIA	Sea-97
2	A/TAI/2/97 (EF208778)	TAI97-02	633	577	0	91.15	8.85	ASIA	Sea-97
3	A/TAI/118/87* (EF208777)	TAI87-AD	633	552	0	87.20	12.80	ASIA	Thai-87
4	A22/IRQ/64 (AY593763)	IRQ64--A	636	524	0	82.39	17.61	ASIA	A ₂₂
5	A/IRN/78/2009	IRN09-78	636	522	0	82.08	17.92	ASIA	Iran-05 ^{FAR-09}
6	A/IRN/2/87 (EF208770)	IRN87-02	633	517	0	81.67	18.33	ASIA	Iran-87
7	A/IRN/125/2010	IRN10125	636	519	0	81.60	18.40	ASIA	Iran-05 ^{SIS-10}
8	A/TUR/1/2008	TUR08-01	636	518	0	81.45	18.55	ASIA	Iran-05 ^{ARD-07}
9	A/TUR/33/2008	TUR08-33	636	518	0	81.45	18.55	ASIA	Iran-05 ^{EZM-07}
10	A15/Bangkok/TAI/60 (AY593755)	TAI60--D	636	518	0	81.45	18.55	ASIA	A15

nt, nucleotides

*, not a WRLFMD reference number

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FAO World Reference Laboratory for FMD Genotyping Report

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Serotype: A	Report date: 25/05/2012
WRLFMD Ref No: MAY/4/2012	Reported by: N.J. Knowles
Batch No: WRLFMD/2012/00019	Checked by: D.P. King
Sender Ref: MVKKB 358/12	
Location: Kampong Sikh, Tanjung Tualong, Batu Gajah, Perak, Malaysia	Topotype: ASIA
Date collected: 05/02/2012	Genotype/strain: Sea-97
Date received by WRLFMD: 11/05/2012	Sequence filename: MAY12-04.SEQ
Date received for sequencing: 21/05/2012	Date sequence last updated: 23/05/2012
Species: Cattle	No. of Nt determined: 636
Material used: BTy2	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 636
RT-PCR primers: A-1C562F/EUR-2B52R A-1C612F/EUR-2B52R	Total no. of comparisons: 1403
	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	A/MAY/3/2012	MAY12-03	636	633	0	99.53	0.47	ASIA	Sea-97
2	A/THA 66-1/10* (TRRL)	TAI10-AA	633	621	0	98.10	1.90	ASIA	Sea-97
3	A/TAI/7/2010	TAI10-07	633	620	0	97.95	2.05	ASIA	Sea-97
4	A/TAI/8/2010	TAI10-08	633	620	0	97.95	2.05	ASIA	Sea-97
5	A/THA 67-3/10* (TRRL)	TAI10-AB	633	620	0	97.95	2.05	ASIA	Sea-97
6	A/THA 69-6/10* (TRRL)	TAI10-AC	633	620	0	97.95	2.05	ASIA	Sea-97
7	A/TAI/1/2011	TAI11-01	633	619	0	97.79	2.21	ASIA	Sea-97
8	A/TAI/3/2011	TAI11-03	633	619	0	97.79	2.21	ASIA	Sea-97
9	A/TAI/12/2011	TAI11-12	633	618	0	97.63	2.37	ASIA	Sea-97
10	A/MAY/4/2011	MAY11-04	633	617	0	97.47	2.53	ASIA	Sea-97
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	A/TAI/7/2003 (HQ116312)	TAI03-07	633	592	0	93.52	6.48	ASIA	Sea-97
2	A/TAI/2/97 (EF208778)	TAI97-02	633	574	0	90.68	9.32	ASIA	Sea-97
3	A/TAI/118/87* (EF208777)	TAI87-AD	633	549	0	86.73	13.27	ASIA	Thai-87
4	A22/IRQ/64 (AY593763)	IRQ64--A	636	522	0	82.08	17.92	ASIA	A ₂₂
5	A/IRN/78/2009	IRN09-78	636	520	0	81.76	18.24	ASIA	Iran-05 ^{FAR-09}
6	A/IRN/2/87 (EF208770)	IRN87-02	633	515	0	81.36	18.64	ASIA	Iran-87
7	A/IRN/125/2010	IRN10125	636	517	0	81.29	18.71	ASIA	Iran-05 ^{SIS-10}
8	A/IRN/1/96 (EF208771)	IRN96-01	635	516	1	81.26	18.74	ASIA	Iran-96
9	A/TUR/1/2008	TUR08-01	636	516	0	81.13	18.87	ASIA	Iran-05 ^{ARD-07}
10	A/TUR/33/2008	TUR08-33	636	516	0	81.13	18.87	ASIA	Iran-05 ^{EZM-07}

nt, nucleotides

*, not a WRLFMD reference number

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FAO World Reference Laboratory for FMD Genotyping Report

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Page 1 of 1

Serotype: A	Report date: 25/05/2012
WRLFMD Ref No: MAY/5/2012	Reported by: N.J. Knowles
Batch No: WRLFMD/2012/00019	Checked by: D.P. King
Sender Ref: MVKKB 685/12	
Location: Baling, Kedah, Malaysia	Topotype: ASIA
Date collected: 21/02/2012	Genotype/strain: Sea-97
Date received by WRLFMD: 11/05/2012	Sequence filename: MAY12-05.SEQ
Date received for sequencing: 17/05/2012	Date sequence last updated: 25/05/2012
Species: Cattle	No. of Nt determined: 636
Material used: Epi susp in Trizol	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 636
RT-PCR primers: A-1C612F/EUR-2B52R	Total no. of comparisons: 1403
	Min. no. of nt for comparison: 600
	Total turn-around time: 14 days
	Sequencing time: 8 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	A/TAI 3/12*	TAI12-AA	633	630	0	99.53	0.47	ASIA	Sea-97
2	A/TAI 4/12*	TAI12-AB	633	630	0	99.53	0.47	ASIA	Sea-97
3	A/MAY/20/2011	MAY11-20	633	627	0	99.05	0.95	ASIA	Sea-97
4	A/THA 66-1/10* (TRRL)	TAI10-AA	633	626	0	98.89	1.11	ASIA	Sea-97
5	A/MAY/4/2011	MAY11-04	633	625	0	98.74	1.26	ASIA	Sea-97
6	A/TAI/7/2010	TAI10-07	633	625	0	98.74	1.26	ASIA	Sea-97
7	A/TAI/8/2010	TAI10-08	633	625	0	98.74	1.26	ASIA	Sea-97
8	A/THA 67-3/10* (TRRL)	TAI10-AB	633	625	0	98.74	1.26	ASIA	Sea-97
9	A/THA 69-6/10* (TRRL)	TAI10-AC	633	625	0	98.74	1.26	ASIA	Sea-97
10	A/TAI/1/2011	TAI11-01	633	624	0	98.58	1.42	ASIA	Sea-97
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	A/TAI/7/2003 (HQ116312)	TAI03-07	633	599	0	94.63	5.37	ASIA	Sea-97
2	A/TAI/2/97 (EF208778)	TAI97-02	633	580	0	91.63	8.37	ASIA	Sea-97
3	A/TAI/118/87* (EF208777)	TAI87-AD	633	558	0	88.15	11.85	ASIA	Thai-87
4	A22/IRQ/64 (AY593763)	IRQ64--A	636	526	0	82.70	17.30	ASIA	A ₂₂
5	A/IRN/2/87 (EF208770)	IRN87-02	633	523	0	82.62	17.38	ASIA	Iran-87
6	A15/Bangkok/TAI/60 (AY593755)	TAI60--D	636	524	0	82.39	17.61	ASIA	A15
7	A/IRN/1/2005 (EF208769)	IRN05-01	636	521	0	81.92	18.08	ASIA	Iran-05
8	A/TUR/1/2008	TUR08-01	636	521	0	81.92	18.08	ASIA	Iran-05 ^{ARD-07}
9	A/TUR/33/2008	TUR08-33	636	521	0	81.92	18.08	ASIA	Iran-05 ^{EZM-07}
10	A/AFG/10/2010	AFG10-10	636	520	0	81.76	18.24	ASIA	Iran-05 ^{HER-10}

nt, nucleotides

*, not a WRLFMD reference number

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FAO World Reference Laboratory for FMD Genotyping Report

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Page 1 of 1

Serotype: A WRLFMD Ref No: MAY/7/2012 Batch No: WRLFMD/2012/00019 Sender Ref: MVKKB 1684/12 Location: Pason 2, Pertang, Jembl, Negeri Sembilan, Malaysia Date collected: 02/04/2012 Date received by WRLFMD: 11/05/2012 Date received for sequencing: 21/05/2012 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: A-1C562F/EUR-2B52R A-1C612F/EUR-2B52R	Report date: 25/05/2012 Reported by: N.J. Knowles Checked by: D.P. King Topotype: ASIA Genotype/strain: Sea-97 Sequence filename: MAY12-07.SEQ Date sequence last updated: 23/05/2012 No. of Nt determined: 636 No. of ambiguities: 0 Gene length: 636 Total no. of comparisons: 1403 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	A/VIT/3/2008 (HQ116371)	VIT08-03	633	611	0	96.52	3.48	ASIA	Sea-97
2	A/VIT/5/2008 (HQ116373)	VIT08-05	633	611	0	96.52	3.48	ASIA	Sea-97
3	A/VIT/6/2008 (HQ116374)	VIT08-06	633	611	0	96.52	3.48	ASIA	Sea-97
4	A/VIT/8/2008 (HQ116376)	VIT08-08	633	611	0	96.52	3.48	ASIA	Sea-97
5	A/VN/02/2009* (GQ406248)	VIT09-AA	633	611	0	96.52	3.48	ASIA	Sea-97
6	A/VN/03/2009* (GQ406249)	VIT09-AB	633	611	0	96.52	3.48	ASIA	Sea-97
7	A/LAO/4/2008 (HQ116295)	LAO08-04	633	610	0	96.37	3.63	ASIA	Sea-97
8	A/TAI/10/2008 (HQ116339)	TAI08-10	633	610	0	96.37	3.63	ASIA	Sea-97
9	A/TAI/10/2009 (HQ116353)	TAI09-10	633	610	0	96.37	3.63	ASIA	Sea-97
10	A/TAI/15/2008 (HQ116343)	TAI08-15	633	610	0	96.37	3.63	ASIA	Sea-97
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	A/TAI/7/2003 (HQ116312)	TAI03-07	633	588	0	92.89	7.11	ASIA	Sea-97
2	A/TAI/2/97 (EF208778)	TAI97-02	633	567	0	89.57	10.43	ASIA	Sea-97
3	A/TAI/118/87* (EF208777)	TAI87-AD	633	552	0	87.20	12.80	ASIA	Thai-87
4	A22/IRQ/64 (AY593763)	IRQ64--A	636	522	0	82.08	17.92	ASIA	A ₂₂
5	A/IRN/2/87 (EF208770)	IRN87-02	633	513	0	81.04	18.96	ASIA	Iran-87
6	A/IRN/1/96 (EF208771)	IRN96-01	635	513	1	80.79	19.21	ASIA	Iran-96
7	A/GHA/16/73	GHA73-16	633	511	0	80.73	19.27	AFRICA	G-VI
8	A/SUD/3/77 (GU566064)	SUD77-03	636	513	0	80.66	19.34	AFRICA	G-IV
9	A15/Bangkok/TAI/60 (AY593755)	TAI60--D	636	513	0	80.66	19.34	ASIA	A15
10	A/AFG/10/2010	AFG10-10	636	512	0	80.50	19.50	ASIA	Iran-05 ^{HER-10}

nt, nucleotides

*, not a WRLFMD reference number

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Report on FMDV A in Malaysia in 2012

Batch: WRLFMD/2012/00019

◆ indicates viruses in this batch

Software: MEGA 5.0

Analysis

----- Phylogeny Reconstruction

Scope ----- All Selected Taxa

Statistical Method ----- Neighbor-joining

Phylogeny Test

----- Bootstrap method

No. of Bootstrap Replications ----- 1000

Substitution Model

----- Nucleotide

Model/Method ----- Kimura 2-parameter model

Substitutions to Include ----- d: Transitions + Transversions

Rates and Patterns

----- Uniform rates

Pattern among Lineages ----- Same (Homogeneous)

Data Subset to Use

----- Pairwise deletion

Codons Included ----- 1st+2nd+3rd+Non-Coding

No. of Sites : 639

No Of Bootstrap Reps = 1000

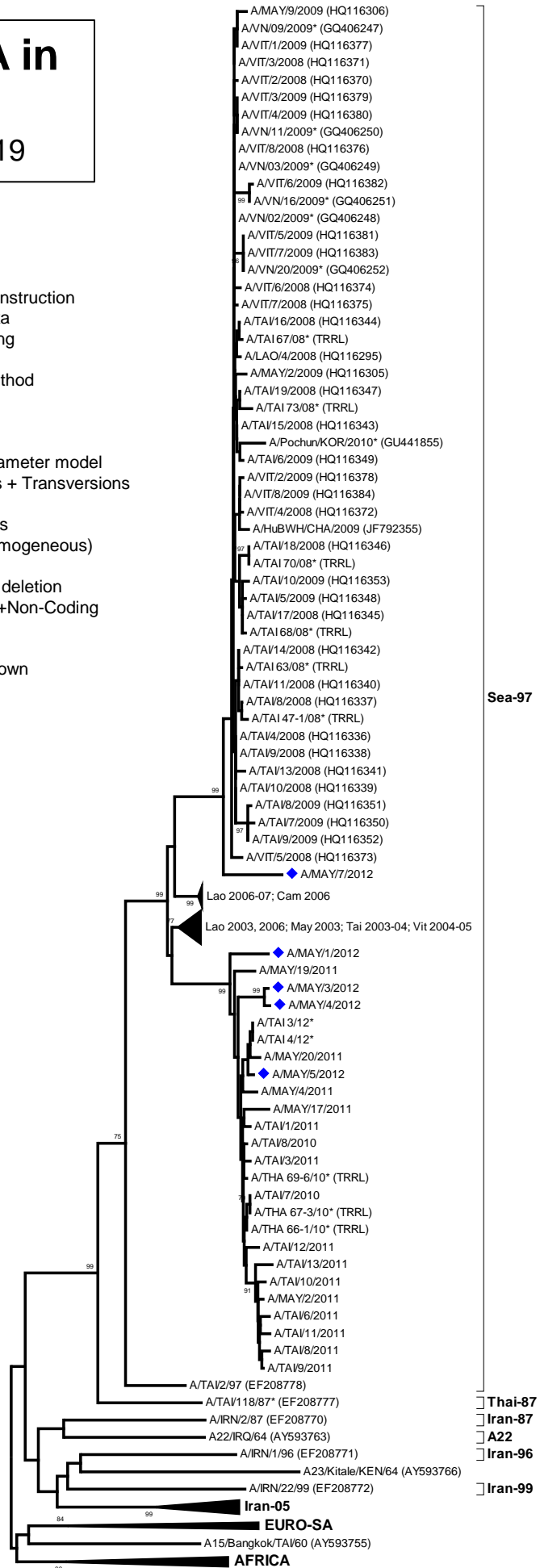
Only bootstrap values of 70% and above are shown

*, not a WRLFMD Ref. No.

N.J. Knowles & J. Wadsworth, 25 May 2012

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0.02