

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

Genotyping Report

FMDV serotype: A
Country: Thailand
Year: 2019
Batch: WRLFMD/2020/00007
No. of sequences: 4
Report date: 8th February 2021
Report generated by: Nick Knowles
Report checked by: Jemma Wadsworth



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www: <http://www.wrlfmd.org/>

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Virus sample name:	TAI/9/2019
Sender reference:	38/19
Location of origin:	Chanthuek, Pak Chong, Nakhon Ratchasima
Country of origin:	Thailand
Date of collection:	23/01/2019
Host species:	cattle
Serotype:	A
Topotype:	ASIA
Lineage:	Sea-97
Sublineage:	
Sequence length:	630
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	13/01/2021
Primers:	A-1C562F/EUR-2B52R, FMD-3161F/FMD-4303R
Received for sequencing:	28/01/2021
Created:	08/02/2021
Last updated:	08/02/2021

VIBASys IDs: sample 47350, genome 47351, sequence viba_47352, sequencing info 47353

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42814	TAI/3/2019	cattle	99.8	0	A	ASIA	Sea-97	
viba_42794	TAI/11/2018	cattle	99.8	0	A	ASIA	Sea-97	
viba_42790	TAI/10/2018	cattle	99.8	0	A	ASIA	Sea-97	
viba_42826	TAI/6/2019	cattle	99.8	0	A	ASIA	Sea-97	
viba_42798	TAI/16/2018	cattle	99.8	0	A	ASIA	Sea-97	
viba_42830	TAI/7/2019	cattle	99.8	0	A	ASIA	Sea-97	
viba_42786	TAI/9/2018	cattle	99.8	0	A	ASIA	Sea-97	
viba_42822	TAI/5/2019	cattle	99.8	0	A	ASIA	Sea-97	
viba_42802	TAI/17/2018	cattle	99.8	0	A	ASIA	Sea-97	
viba_42774	TAI/6/2018	cattle	99.8	0	A	ASIA	Sea-97	

Most Closely Related Prototype Sequences

see <http://www.wrlfmd.org/fmdv-genome/fmd-prototype-strains>

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_122	TAI/7/2003	bovine	91.6	0	A	ASIA	Sea-97	
viba_625	TAI/2/97		88.6	0	A	ASIA	Sea-97	
viba_630	TAI/118/87		85.8	0	A	ASIA	Thai-87	
viba_677	IRQ/24/64	bovine	81.7	0	A	ASIA	A22	
viba_864	IND/40/2000	cattle	81.6	0	A	ASIA	G-VII	
viba_682	IRN/2/87	bovine	80.8	0	A	ASIA	Iran-87	
viba_336	IRN/1/96	bovine	80.7	1	A	ASIA	Iran-96	
viba_843	SAU/16/95		80.2	0	A	ASIA	G-VII	
viba_34575	BAD/AFG/L2814/2009	cattle	79.9	0	A	ASIA	Iran-05	BAD-09
viba_34671	BAL/PAK/05/2011	cattle	79.7	0	A	ASIA	Iran-05	BAL-11

Virus sample name:	TAI/10/2019
Sender reference:	65-4/19
Location of origin:	Wang Muang, Wang Muang, Saraburi
Country of origin:	Thailand
Date of collection:	04/03/2019
Host species:	cattle
Serotype:	A
Topotype:	ASIA
Lineage:	Sea-97
Sublineage:	
Sequence length:	630
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	13/01/2021
Primers:	A-1C562F/EUR-2B52R, FMD-3161F/FMD-4303R
Received for sequencing:	28/01/2021
Created:	08/02/2021
Last updated:	08/02/2021

VIBASys IDs: sample 47354, genome 47355, sequence viba_47356, sequencing info 47357

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42814	TAI/3/2019	cattle	98.9	0	A	ASIA	Sea-97	
viba_42794	TAI/11/2018	cattle	98.9	0	A	ASIA	Sea-97	
viba_42790	TAI/10/2018	cattle	98.9	0	A	ASIA	Sea-97	
viba_42826	TAI/6/2019	cattle	98.9	0	A	ASIA	Sea-97	
viba_42798	TAI/16/2018	cattle	98.9	0	A	ASIA	Sea-97	
viba_42830	TAI/7/2019	cattle	98.9	0	A	ASIA	Sea-97	
viba_42786	TAI/9/2018	cattle	98.9	0	A	ASIA	Sea-97	
viba_42822	TAI/5/2019	cattle	98.9	0	A	ASIA	Sea-97	
viba_42802	TAI/17/2018	cattle	98.9	0	A	ASIA	Sea-97	
viba_42774	TAI/6/2018	cattle	98.9	0	A	ASIA	Sea-97	

Most Closely Related Prototype Sequences

see <http://www.wrlfmd.org/fmdv-genome/fmd-prototype-strains>

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_122	TAI/7/2003	bovine	91.1	0	A	ASIA	Sea-97	
viba_625	TAI/2/97		88.7	0	A	ASIA	Sea-97	
viba_630	TAI/118/87		85.9	0	A	ASIA	Thai-87	
viba_864	IND/40/2000	cattle	81.4	0	A	ASIA	G-VII	
viba_677	IRQ/24/64	bovine	80.7	0	A	ASIA	A22	
viba_682	IRN/2/87	bovine	80.6	0	A	ASIA	Iran-87	
viba_336	IRN/1/96	bovine	80.5	1	A	ASIA	Iran-96	
viba_843	SAU/16/95		80.0	0	A	ASIA	G-VII	
viba_34575	BAD/AFG/L2814/2009	cattle	79.9	0	A	ASIA	Iran-05	BAD-09
viba_34671	BAL/PAK/05/2011	cattle	79.7	0	A	ASIA	Iran-05	BAL-11

Virus sample name:	TAI/11/2019
Sender reference:	69-1/19
Location of origin:	Ao Noi, Mueang Prachuap Khiri, Prachuap Khiri
Country of origin:	Thailand
Date of collection:	28/03/2019
Host species:	cattle
Serotype:	A
Topotype:	ASIA
Lineage:	Sea-97
Sublineage:	
Sequence length:	630
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	13/01/2021
Primers:	A-1C562F/EUR-2B52R, FMD-3161F/FMD-4303R
Received for sequencing:	28/01/2021
Created:	08/02/2021
Last updated:	08/02/2021

VIBASys IDs: sample 47358, genome 47359, sequence viba_47360, sequencing info 47361

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_33916	TAI/5/2017	cattle	97.5	0	A	ASIA	Sea-97	
viba_33884	TAI/53/2016	cattle	97.5	0	A	ASIA	Sea-97	
viba_33896	TAI/58/2016	cattle	97.3	0	A	ASIA	Sea-97	
viba_37652	TAI/10/2017	cattle	97.3	0	A	ASIA	Sea-97	
viba_33900	TAI/60/2016	cattle	97.3	0	A	ASIA	Sea-97	
viba_33888	TAI/54/2016	cattle	97.1	0	A	ASIA	Sea-97	
viba_33912	TAI/4/2017	cattle	97.1	0	A	ASIA	Sea-97	
viba_37644	TAI/8/2017	cattle	97.0	0	A	ASIA	Sea-97	
viba_37640	TAI/7/2017	cattle	97.0	0	A	ASIA	Sea-97	
viba_33904	TAI/2/2017	cattle	96.8	0	A	ASIA	Sea-97	

Most Closely Related Prototype Sequences

see <http://www.wrlfmd.org/fmdv-genome/fmd-prototype-strains>

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_122	TAI/7/2003	bovine	91.8	0	A	ASIA	Sea-97	
viba_625	TAI/2/97		89.5	0	A	ASIA	Sea-97	
viba_630	TAI/118/87		86.8	0	A	ASIA	Thai-87	
viba_34575	BAD/AFG/L2814/2009	cattle	81.6	0	A	ASIA	Iran-05	BAD-09
viba_677	IRQ/24/64	bovine	81.6	0	A	ASIA	A22	
viba_594	IRN/1/2011	bovine	80.7	0	A	ASIA	Iran-05	FAR-11
viba_34671	BAL/PAK/05/2011	cattle	80.6	0	A	ASIA	Iran-05	BAL-11
viba_173	UGA/13/66	bovine	80.5	0	A	AFRICA	G-VII	
viba_13615	IRN/134/2010	cattle	80.4	0	A	ASIA	Iran-05	HER-10
viba_609	GHA/16/73	bovine	80.3	0	A	AFRICA	G-VI	

Virus sample name:	TAI/12/2019
Sender reference:	89-1/19
Location of origin:	Huai Yap, Ban Thi, Lamphun
Country of origin:	Thailand
Date of collection:	30/07/2019
Host species:	cattle
Serotype:	A
Topotype:	ASIA
Lineage:	Sea-97
Sublineage:	
Sequence length:	630
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	13/01/2021
Primers:	A-1C562F/EUR-2B52R, FMD-3161F/FMD-4303R
Received for sequencing:	28/01/2021
Created:	08/02/2021
Last updated:	08/02/2021

VIBASys IDs: sample 47362, genome 47363, sequence viba_47364, sequencing info 47365

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_42814	TAI/3/2019	cattle	99.5	0	A	ASIA	Sea-97	
viba_42794	TAI/11/2018	cattle	99.5	0	A	ASIA	Sea-97	
viba_42790	TAI/10/2018	cattle	99.5	0	A	ASIA	Sea-97	
viba_42826	TAI/6/2019	cattle	99.5	0	A	ASIA	Sea-97	
viba_42798	TAI/16/2018	cattle	99.5	0	A	ASIA	Sea-97	
viba_42830	TAI/7/2019	cattle	99.5	0	A	ASIA	Sea-97	
viba_42786	TAI/9/2018	cattle	99.5	0	A	ASIA	Sea-97	
viba_42822	TAI/5/2019	cattle	99.5	0	A	ASIA	Sea-97	
viba_42802	TAI/17/2018	cattle	99.5	0	A	ASIA	Sea-97	
viba_42774	TAI/6/2018	cattle	99.5	0	A	ASIA	Sea-97	

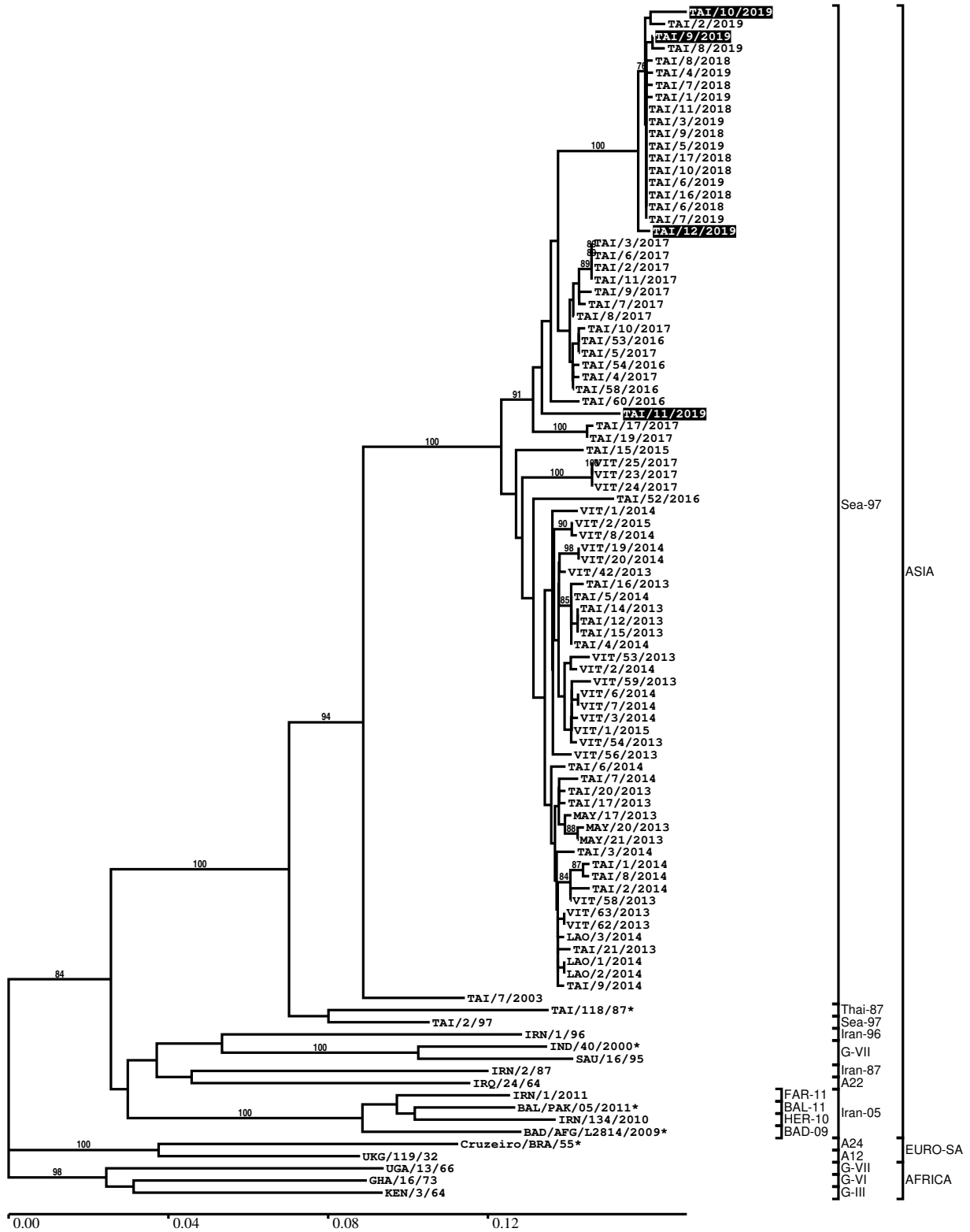
Most Closely Related Prototype Sequences

see <http://www.wrlfmd.org/fmdv-genome/fmd-prototype-strains>

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_122	TAI/7/2003	bovine	91.6	0	A	ASIA	Sea-97	
viba_625	TAI/2/97		88.6	0	A	ASIA	Sea-97	
viba_630	TAI/118/87		85.8	0	A	ASIA	Thai-87	
viba_677	IRQ/24/64	bovine	81.6	0	A	ASIA	A22	
viba_864	IND/40/2000	cattle	81.1	0	A	ASIA	G-VII	
viba_336	IRN/1/96	bovine	80.9	1	A	ASIA	Iran-96	
viba_682	IRN/2/87	bovine	80.8	0	A	ASIA	Iran-87	
viba_699	UKG/119/32		80.2	0	A	EURO-SA	A12	
viba_843	SAU/16/95		80.0	0	A	ASIA	G-VII	
viba_34575	BAD/AFG/L2814/2009	cattle	79.9	0	A	ASIA	Iran-05	BAD-09

Report on FMDV A in Thailand in 2019

Batch: WRLFMD/2020/00007



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor:	vp1_A
Query sequence set:	WRLFMD/2020/00007-Thailand-A (4 sequences)
Sequence database set:	allseqs_A (2225 sequences)
Prototype sequence set:	!prototypes_A (40 sequences)
Number of related sequences reported:	10
Minimal VP1 subsequence match length	600
Sequence alignment method:	muscle (default parameters)
Sequence alignment length:	633
Phylogeny reconstruction method:	fdnadist, fneighbor
Number of bootstrap samples:	1000
Random seed for bootstrapping:	1
Displaying bootstrap values above:	70.0%
Number of sequences in tree capped at:	100
Number of prototype sequences in tree:	15
VIBASys version:	reflabs-1.1.2

Sequences in the Phylogenetic Tree

All sequences in the tree are in taxonomic group FMDV/A

label	accession	host(s)	lab	country	taxonomic information
TAI/10/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/2/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/9/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/8/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/8/2018	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/4/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/7/2018	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/1/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/11/2018	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/3/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/9/2018	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/5/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/17/2018	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/10/2018	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/6/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/16/2018	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/6/2018	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/7/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/12/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/3/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/6/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/2/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/11/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/9/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/7/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/8/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/10/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/53/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/5/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/54/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/4/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/58/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/60/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/11/2019	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/17/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/19/2017	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97

continued on next page

label	accession	host(s)	lab	country	taxonomic information
TAI/15/2015	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
VIT/25/2017	n/a	water buffalo	WRLFMD	Vietnam	ASIA/Sea-97
VIT/23/2017	n/a	water buffalo	WRLFMD	Vietnam	ASIA/Sea-97
VIT/24/2017	n/a	water buffalo	WRLFMD	Vietnam	ASIA/Sea-97
TAI/52/2016	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
VIT/1/2014	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/2/2015	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/8/2014	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/19/2014	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/20/2014	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/42/2013	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
TAI/16/2013	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/5/2014	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/14/2013	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/12/2013	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/15/2013	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/4/2014	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
VIT/53/2013	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/2/2014	n/a	water buffalo	WRLFMD	Vietnam	ASIA/Sea-97
VIT/59/2013	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/6/2014	n/a	porcine	WRLFMD	Vietnam	ASIA/Sea-97
VIT/7/2014	n/a	porcine	WRLFMD	Vietnam	ASIA/Sea-97
VIT/3/2014	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/1/2015	n/a	porcine	WRLFMD	Vietnam	ASIA/Sea-97
VIT/54/2013	n/a	water buffalo	WRLFMD	Vietnam	ASIA/Sea-97
VIT/56/2013	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
TAI/6/2014	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/7/2014	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/20/2013	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/17/2013	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
MAY/17/2013	n/a	cattle	WRLFMD	Malaysia	ASIA/Sea-97
MAY/20/2013	n/a	cattle	WRLFMD	Malaysia	ASIA/Sea-97
MAY/21/2013	n/a	cattle	WRLFMD	Malaysia	ASIA/Sea-97
TAI/3/2014	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/1/2014	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
TAI/8/2014	n/a	water buffalo	WRLFMD	Thailand	ASIA/Sea-97
TAI/2/2014	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
VIT/58/2013	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/63/2013	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
VIT/62/2013	n/a	cattle	WRLFMD	Vietnam	ASIA/Sea-97
LAO/3/2014	n/a	cattle	WRLFMD	Laos	ASIA/Sea-97
TAI/21/2013	n/a	cattle	WRLFMD	Thailand	ASIA/Sea-97
LAO/1/2014	n/a	cattle	WRLFMD	Laos	ASIA/Sea-97
LAO/2/2014	n/a	cattle	WRLFMD	Laos	ASIA/Sea-97
TAI/9/2014	n/a	water buffalo	WRLFMD	Thailand	ASIA/Sea-97
TAI/7/2003	HQ116312	bovine	WRLFMD	Thailand	ASIA/Sea-97
TAI/118/87*	EF208777	n/a	WRLFMD	Thailand	ASIA/Thai-87
TAI/2/97	EF208778	n/a	WRLFMD	Thailand	ASIA/Sea-97
IRN/1/96	EF208771	bovine	WRLFMD	Iran	ASIA/Iran-96
IND/40/2000*	AF390646	cattle	PD-FMD	India	ASIA/G-VII
SAU/16/95	EU553874	n/a	WRLFMD	Saudi Arabia	ASIA/G-VII
IRN/2/87	EF208770	bovine	WRLFMD	Iran	ASIA/Iran-87
IRQ/24/64	AY593763	bovine	PIADC	Iraq	ASIA/A22
IRN/1/2011	KY091292	bovine	WRLFMD	Iran	ASIA/Iran-05/FAR-11
BAL/PAK/05/2011*	KT832824	cattle	Univ Malakand	Pakistan	ASIA/Iran-05/BAL-11
IRN/134/2010	n/a	cattle	WRLFMD	Iran	ASIA/Iran-05/HER-10
BAD/AFG/L2814/2009*	HQ439296	cattle	LINDHOLM	Afghanistan	ASIA/Iran-05/BAD-09
Cruzeiro/BRA/55*	AY593768	bovine	PIADC	Brazil	EURO-SA/A24
UKG/119/32	M10975	n/a	PIADC	United Kingdom	EURO-SA/A12
UGA/13/66	KF561705	bovine	WRLFMD	Uganda	AFRICA/G-VII
GHA/16/73	KF561698	bovine	WRLFMD	Ghana	AFRICA/G-VI
KEN/3/64	AY593761	n/a	PIADC	Kenya	AFRICA/G-III

*, not a WRLFMD Reference Number
n/a, not available