

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

Genotyping Report

FMDV serotype: O
Country: Zambia
Year: 2018
Batch: WRLFMD/2018/00013
No. of sequences: 3
Report date: 2nd May 2018
Report generated by: Nick Knowles
Report checked by: Kasia Bankowska



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

email: reporting@pirbright.ac.uk

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Virus sample name:	ZAM/1/2018
Sender reference:	Chisa 16-380
Location of origin:	Chisamba, Central
Country of origin:	Zambia
Date of collection:	24/03/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-2
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	19/04/2018
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	24/04/2018
Created:	02/05/2018
Last updated:	02/05/2018
VIBASys IDs: sample 36366, genome 36367, sequence viba_36368, sequencing info 36369	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36343	ZAM10/2018	bovine	99.8	0	O	EA-2		
viba_36347	ZAM12/2018	bovine	99.8	0	O	EA-2		
viba_36372	ZAM/2/2018	cattle	99.8	0	O	EA-2		
viba_36376	ZAM/3/2018	cattle	99.8	0	O	EA-2		
viba_33182	TAN-CVL-2012-0321	bovine	96.2	0	O	EA-2		
viba_33178	TAN-CVL-2012-0318	bovine	96.1	0	O	EA-2		
viba_22016	TAN-CVL-2013-0364	cattle	95.6	0	O	EA-2		
viba_22012	TAN-CVL-2013-0362	cattle	95.4	0	O	EA-2		
viba_22020	TAN-CVL-2013-0366	cattle	95.4	0	O	EA-2		
viba_33174	TAN-CVL-2011-0106	cattle	95.3	0	O	EA-2		

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_85	UGA/3/2002		89.6	0	O	EA-2		
viba_74	KEN/5/2002	bovine	89.1	0	O	EA-2		
viba_221	MAL/1/98		85.8	0	O	EA-2		
viba_263	TAN/2/2004	bovine	85.5	0	O	EA-2		
viba_354	PAK/16/2010	cattle	83.5	0	O	ME-SA	PanAsia-2	PUN-10
viba_766	IRN/31/2009	cattle	83.2	0	O	ME-SA	PanAsia-2	FAR-09
viba_541	OMN/7/2001	bovine	83.2	0	O	ME-SA	Ind-2001	b
viba_650	IRN/8/2005	ovine	83.0	0	O	ME-SA	PanAsia-2	
viba_719	IRN/88/2009		83.0	0	O	ME-SA	PanAsia-2	ANT-10
viba_285	UKG/35/2001	porcine	82.9	0	O	ME-SA	PanAsia	

Virus sample name:	ZAM/2/2018
Sender reference:	Chisa 16-169
Location of origin:	Chisamba, Central
Country of origin:	Zambia
Date of collection:	24/03/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-2
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	19/04/2018
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	24/04/2018
Created:	02/05/2018
Last updated:	02/05/2018
VIBASys IDs: sample 36370, genome 36371, sequence viba_36372, sequencing info 36373	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36343	ZAM10/2018	bovine	100.0	0	O	EA-2		
viba_36347	ZAM12/2018	bovine	100.0	0	O	EA-2		
viba_36376	ZAM/3/2018	cattle	100.0	0	O	EA-2		
viba_36368	ZAM/1/2018	cattle	99.8	0	O	EA-2		
viba_33182	TAN-CVL-2012-0321	bovine	96.4	0	O	EA-2		
viba_33178	TAN-CVL-2012-0318	bovine	96.2	0	O	EA-2		
viba_22016	TAN-CVL-2013-0364	cattle	95.7	0	O	EA-2		
viba_22012	TAN-CVL-2013-0362	cattle	95.6	0	O	EA-2		
viba_22020	TAN-CVL-2013-0366	cattle	95.6	0	O	EA-2		
viba_33174	TAN-CVL-2011-0106	cattle	95.4	0	O	EA-2		

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_85	UGA/3/2002		89.7	0	O	EA-2		
viba_74	KEN/5/2002	bovine	89.3	0	O	EA-2		
viba_221	MAL/1/98		85.9	0	O	EA-2		
viba_263	TAN/2/2004	bovine	85.6	0	O	EA-2		
viba_354	PAK/16/2010	cattle	83.7	0	O	ME-SA	PanAsia-2	PUN-10
viba_541	OMN/7/2001	bovine	83.3	0	O	ME-SA	Ind-2001	b
viba_650	IRN/8/2005	ovine	83.2	0	O	ME-SA	PanAsia-2	
viba_719	IRN/88/2009		83.2	0	O	ME-SA	PanAsia-2	ANT-10
viba_766	IRN/31/2009	cattle	83.0	0	O	ME-SA	PanAsia-2	FAR-09
viba_285	UKG/35/2001	porcine	83.0	0	O	ME-SA	PanAsia	

Virus sample name:	ZAM/3/2018
Sender reference:	Chisa BBR 1
Location of origin:	Chisamba, Central
Country of origin:	Zambia
Date of collection:	02/04/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-2
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	19/04/2018
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	24/04/2018
Created:	02/05/2018
Last updated:	02/05/2018
VIBASys IDs: sample 36374, genome 36375, sequence viba_36376, sequencing info 36377	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36343	ZAM10/2018	bovine	100.0	0	O	EA-2		
viba_36347	ZAM12/2018	bovine	100.0	0	O	EA-2		
viba_36372	ZAM/2/2018	cattle	100.0	0	O	EA-2		
viba_36368	ZAM/1/2018	cattle	99.8	0	O	EA-2		
viba_33182	TAN-CVL-2012-0321	bovine	96.4	0	O	EA-2		
viba_33178	TAN-CVL-2012-0318	bovine	96.2	0	O	EA-2		
viba_22016	TAN-CVL-2013-0364	cattle	95.7	0	O	EA-2		
viba_22012	TAN-CVL-2013-0362	cattle	95.6	0	O	EA-2		
viba_22020	TAN-CVL-2013-0366	cattle	95.6	0	O	EA-2		
viba_33174	TAN-CVL-2011-0106	cattle	95.4	0	O	EA-2		

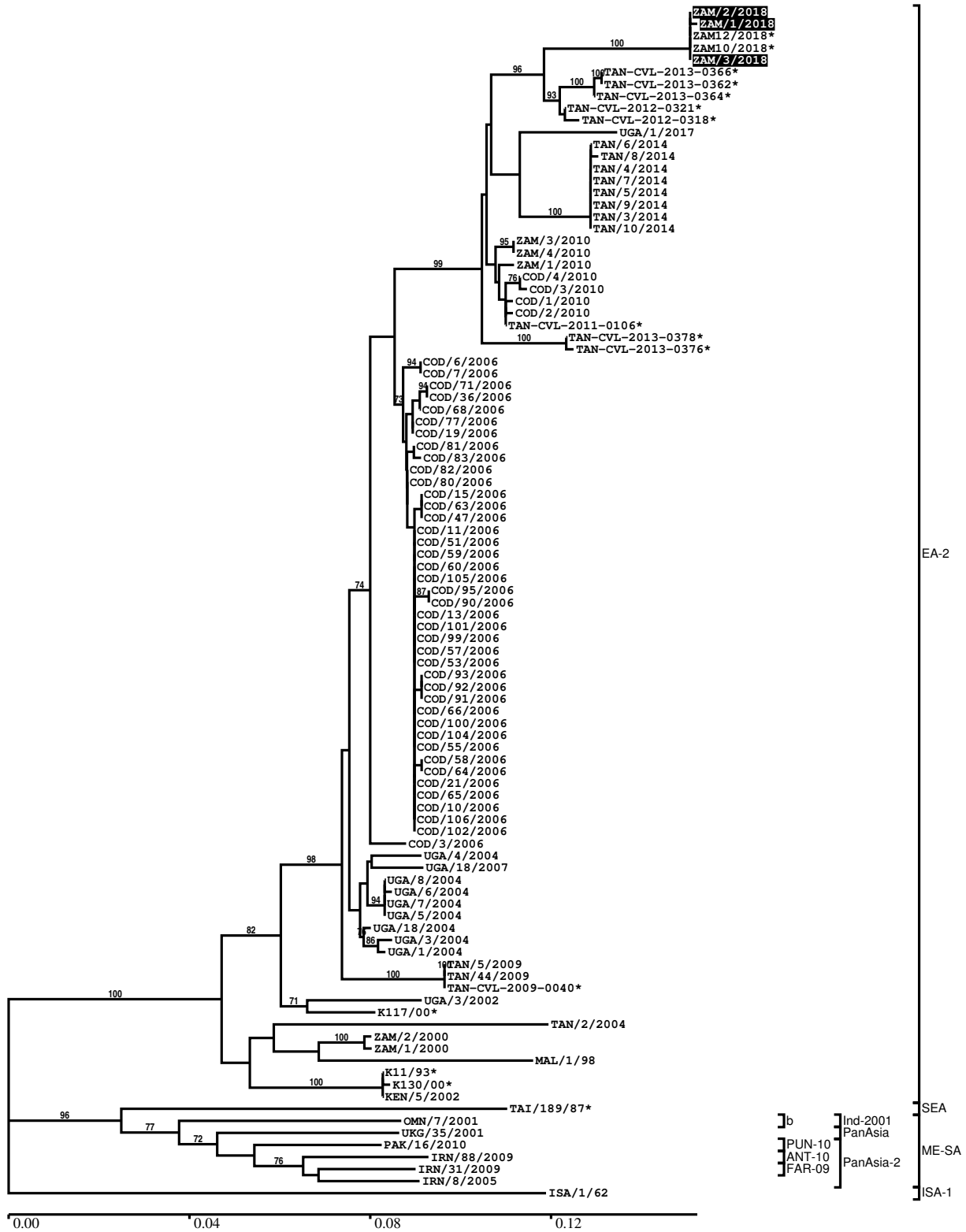
Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_85	UGA/3/2002		89.7	0	O	EA-2		
viba_74	KEN/5/2002	bovine	89.3	0	O	EA-2		
viba_221	MAL/1/98		85.9	0	O	EA-2		
viba_263	TAN/2/2004	bovine	85.6	0	O	EA-2		
viba_354	PAK/16/2010	cattle	83.7	0	O	ME-SA	PanAsia-2	PUN-10
viba_541	OMN/7/2001	bovine	83.3	0	O	ME-SA	Ind-2001	b
viba_650	IRN/8/2005	ovine	83.2	0	O	ME-SA	PanAsia-2	
viba_719	IRN/88/2009		83.2	0	O	ME-SA	PanAsia-2	ANT-10
viba_766	IRN/31/2009	cattle	83.0	0	O	ME-SA	PanAsia-2	FAR-09
viba_285	UKG/35/2001	porcine	83.0	0	O	ME-SA	PanAsia	

Report on FMDV O in Zambia in 2018

Batch: WRLFMD/2018/00013



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor:	vp1_O
Query sequence set:	WRLFMD/2018/00013-Zambia-O (3 sequences)
Sequence database set:	allseqs_O (3758 sequences)
Prototype sequence set:	!prototypes_O (48 sequences)
Number of related sequences reported:	10
Minimal VP1 subsequence match length	600
Sequence alignment method:	muscle (default parameters)
Sequence alignment length:	636
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:	10
VIBASys version:	reflabs-1.1.2

Sequences in the Phylogenetic Tree

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

label	accession	host(s)	lab	country	taxonomic information
ZAM/2/2018	n/a	cattle	WRLFMD	Zambia	EA-2
ZAM/1/2018	n/a	cattle	WRLFMD	Zambia	EA-2
ZAM12/2018*	n/a	bovine	BVI	Zambia	EA-2
ZAM10/2018*	n/a	bovine	BVI	Zambia	EA-2
ZAM/3/2018	n/a	cattle	WRLFMD	Zambia	EA-2
TAN-CVL-2013-0366*	n/a	cattle	CVL, Tanzania	Tanzania	EA-2
TAN-CVL-2013-0362*	n/a	cattle	CVL, Tanzania	Tanzania	EA-2
TAN-CVL-2013-0364*	n/a	cattle	CVL, Tanzania	Tanzania	EA-2
TAN-CVL-2012-0321*	n/a	bovine	CVL	Tanzania	EA-2
TAN-CVL-2012-0318*	n/a	bovine	CVL	Tanzania	EA-2
UGA/1/2017	n/a	cattle	WRLFMD	Uganda	EA-2
TAN/6/2014	MF592667	bovine	WRLFMD	Tanzania	EA-2
TAN/8/2014	MF592669	bovine	WRLFMD	Tanzania	EA-2
TAN/4/2014	MF592666	bovine	WRLFMD	Tanzania	EA-2
TAN/7/2014	MF592668	bovine	WRLFMD	Tanzania	EA-2
TAN/5/2014	n/a	bovine	WRLFMD	Tanzania	EA-2
TAN/9/2014	MF592670	bovine	WRLFMD	Tanzania	EA-2
TAN/3/2014	MF592665	bovine	WRLFMD	Tanzania	EA-2
TAN/10/2014	MF592671	bovine	WRLFMD	Tanzania	EA-2
ZAM/3/2010	n/a	cattle	WRLFMD	Zambia	EA-2
ZAM/4/2010	n/a	cattle	WRLFMD	Zambia	EA-2
ZAM/1/2010	n/a	cattle	WRLFMD	Zambia	EA-2
COD/4/2010	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/3/2010	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/1/2010	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/2/2010	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
TAN-CVL-2011-0106*	n/a	cattle	CVL, Tanzania	Tanzania	EA-2
TAN-CVL-2013-0378*	n/a	cattle	CVL, Tanzania	Tanzania	EA-2
TAN-CVL-2013-0376*	n/a	cattle	CVL, Tanzania	Tanzania	EA-2

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label	accession	host(s)	lab	country	taxonomic information
COD/6/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/7/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/71/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/36/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/68/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/77/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/19/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/81/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/83/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/82/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/80/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/15/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/63/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/47/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/11/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/51/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/59/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/60/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/105/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/95/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/90/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/13/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/101/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2

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label	accession	host(s)	lab	country	taxonomic information
COD/99/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/57/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/53/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/93/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/92/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/91/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/66/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/100/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/104/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/55/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/58/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/64/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/21/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/65/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/10/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/106/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/102/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/3/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
UGA/4/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/18/2007	n/a	cattle	WRLFMD	Uganda	EA-2
UGA/8/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/6/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/7/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/5/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/18/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/3/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/1/2004	n/a	bovine	WRLFMD	Uganda	EA-2
TAN/5/2009	KF561685	cattle	WRLFMD	Tanzania	EA-2
TAN/44/2009	KF561686	cattle	WRLFMD	Tanzania	EA-2
TAN-CVL-2009-0040*	n/a	bovine	CVL	Tanzania	EA-2
UGA/3/2002	DQ165077	n/a	WRLFMD	Uganda	EA-2

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label	accession	host(s)	lab	country	taxonomic information
K117/00*	HM756607	bovine	Makerere University	Kenya	EA-2
TAN/2/2004	KF561679	bovine	WRLFMD	Tanzania	EA-2
ZAM/2/2000	n/a	bovine	WRLFMD	Zambia	EA-2
ZAM/1/2000	n/a	bovine	WRLFMD	Zambia	EA-2
MAL/1/98	DQ165074	n/a	WRLFMD	Malawi	EA-2
K11/93*	HM756598	bovine	Makerere University	Kenya	EA-2
K130/00*	HM756608	bovine	Makerere University	Kenya	EA-2
KEN/5/2002	DQ165073	bovine	WRLFMD	Kenya	EA-2
TAI/189/87*	KY091288	bovine	TRRL	Thailand	SEA
OMN/7/2001	DQ164941	bovine	WRLFMD	Oman	ME-SA/Ind-2001/b
UKG/35/2001	AJ539141	porcine	PIADC	United Kingdom	ME-SA/PanAsia
PAK/16/2010	KY091285	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/PUN-10
IRN/88/2009	KY091282	n/a	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/31/2009	KY091284	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/FAR-09
IRN/8/2005	KY091281	ovine	WRLFMD	Iran	ME-SA/PanAsia-2
ISA/1/62	AJ303500	n/a	WRLFMD	Indonesia	ISA-1

*, not a WRLFMD Reference Number

n/a, not available