

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

Genotyping Report

FMDV serotype: A
Country: Sudan
Year: 2014, 2018
Batch: WRLFMD/2018/00020
No. of sequences: 13
Report date: 6th August 2018
Report generated by: Nick Knowles
Report checked by: Antonello Di Nardo



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

email: reporting@pirbright.ac.uk

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Virus sample name:	SUD/18/2014
Sender reference:	2/2015
Location of origin:	Khartoum-Al Tibna
Country of origin:	Sudan
Date of collection:	24/12/2014
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	24/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	03/08/2018
Last updated:	03/08/2018
VIBASys IDs: sample 36952, genome 36953, sequence viba_36954, sequencing info 36955	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36966	SUD/22/2014	cattle	100.0	0	A	AFRICA	G-IV	
viba_36958	SUD/20/2014	cattle	100.0	0	A	AFRICA	G-IV	
viba_36962	SUD/21/2014	cattle	99.8	0	A	AFRICA	G-IV	
viba_29803	SUD/12/2013	cattle	98.7	0	A	AFRICA	G-IV	
viba_29807	SUD/13/2013	cattle	98.7	0	A	AFRICA	G-IV	
viba_29799	SUD/11/2013	cattle	98.6	0	A	AFRICA	G-IV	
viba_29795	SUD/10/2013	cattle	98.6	0	A	AFRICA	G-IV	
viba_36974	SUD/4/2018	cattle	95.4	0	A	AFRICA	G-IV	
viba_36970	SUD/3/2018	cattle	95.3	0	A	AFRICA	G-IV	
viba_36994	SUD/10/2018	cattle	94.9	0	A	AFRICA	G-IV	

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_178	SUD/3/77		84.7	0	A	AFRICA	G-IV	
viba_347	KEN/42/66		83.4	0	A	AFRICA	G-I	
viba_785	KEN/3/64		83.1	0	A	AFRICA	G-III	
viba_535	NGR/2/73	bovine	82.8	0	A	AFRICA	G-V	
viba_609	GHA/16/73	bovine	81.9	0	A	AFRICA	G-VI	
viba_699	UKG/119/32		81.0	0	A	EURO-SA	A12	
viba_173	UGA/13/66	bovine	80.6	0	A	AFRICA	G-VII	
viba_688	EGY/1/72	bovine	80.4	0	A	AFRICA	G-II	
viba_98	Alem/ARG/81		80.3	0	A	EURO-SA	A81	
viba_682	IRN/2/87	bovine	80.0	0	A	ASIA	Iran-87	

Virus sample name:	SUD/20/2014
Sender reference:	4/2015
Location of origin:	Khartoum-Al Tibna
Country of origin:	Sudan
Date of collection:	24/12/2014
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy2
Harvest date of material:	26/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	03/08/2018
Last updated:	03/08/2018
VIBASys IDs: sample 36956, genome 36957, sequence viba_36958, sequencing info 36959	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36966	SUD/22/2014	cattle	100.0	0	A	AFRICA	G-IV	
viba_36954	SUD/18/2014	cattle	100.0	0	A	AFRICA	G-IV	
viba_36962	SUD/21/2014	cattle	99.8	0	A	AFRICA	G-IV	
viba_29803	SUD/12/2013	cattle	98.7	0	A	AFRICA	G-IV	
viba_29807	SUD/13/2013	cattle	98.7	0	A	AFRICA	G-IV	
viba_29799	SUD/11/2013	cattle	98.6	0	A	AFRICA	G-IV	
viba_29795	SUD/10/2013	cattle	98.6	0	A	AFRICA	G-IV	
viba_36974	SUD/4/2018	cattle	95.4	0	A	AFRICA	G-IV	
viba_36970	SUD/3/2018	cattle	95.3	0	A	AFRICA	G-IV	
viba_36994	SUD/10/2018	cattle	94.9	0	A	AFRICA	G-IV	

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_178	SUD/3/77		84.7	0	A	AFRICA	G-IV	
viba_347	KEN/42/66		83.4	0	A	AFRICA	G-I	
viba_785	KEN/3/64		83.1	0	A	AFRICA	G-III	
viba_535	NGR/2/73	bovine	82.8	0	A	AFRICA	G-V	
viba_609	GHA/16/73	bovine	81.9	0	A	AFRICA	G-VI	
viba_699	UKG/119/32		81.0	0	A	EURO-SA	A12	
viba_173	UGA/13/66	bovine	80.6	0	A	AFRICA	G-VII	
viba_688	EGY/1/72	bovine	80.4	0	A	AFRICA	G-II	
viba_98	Alem/ARG/81		80.3	0	A	EURO-SA	A81	
viba_682	IRN/2/87	bovine	80.0	0	A	ASIA	Iran-87	

Virus sample name:	SUD/21/2014
Sender reference:	5/2015
Location of origin:	Khartoum-Al Tibna
Country of origin:	Sudan
Date of collection:	24/12/2014
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy2
Harvest date of material:	26/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	03/08/2018
Last updated:	03/08/2018
VIBASys IDs: sample 36960, genome 36961, sequence viba_36962, sequencing info 36963	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36966	SUD/22/2014	cattle	99.8	0	A	AFRICA	G-IV	
viba_36954	SUD/18/2014	cattle	99.8	0	A	AFRICA	G-IV	
viba_36958	SUD/20/2014	cattle	99.8	0	A	AFRICA	G-IV	
viba_29803	SUD/12/2013	cattle	98.6	0	A	AFRICA	G-IV	
viba_29807	SUD/13/2013	cattle	98.6	0	A	AFRICA	G-IV	
viba_29799	SUD/11/2013	cattle	98.4	0	A	AFRICA	G-IV	
viba_29795	SUD/10/2013	cattle	98.4	0	A	AFRICA	G-IV	
viba_36974	SUD/4/2018	cattle	95.3	0	A	AFRICA	G-IV	
viba_36970	SUD/3/2018	cattle	95.1	0	A	AFRICA	G-IV	
viba_36994	SUD/10/2018	cattle	94.8	0	A	AFRICA	G-IV	

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_178	SUD/3/77		84.5	0	A	AFRICA	G-IV	
viba_347	KEN/42/66		83.2	0	A	AFRICA	G-I	
viba_785	KEN/3/64		82.9	0	A	AFRICA	G-III	
viba_535	NGR/2/73	bovine	82.6	0	A	AFRICA	G-V	
viba_609	GHA/16/73	bovine	81.7	0	A	AFRICA	G-VI	
viba_699	UKG/119/32		81.0	0	A	EURO-SA	A12	
viba_173	UGA/13/66	bovine	80.4	0	A	AFRICA	G-VII	
viba_98	Alem/ARG/81		80.3	0	A	EURO-SA	A81	
viba_688	EGY/1/72	bovine	80.2	0	A	AFRICA	G-II	
viba_682	IRN/2/87	bovine	79.8	0	A	ASIA	Iran-87	

Virus sample name:	SUD/22/2014
Sender reference:	6/2015
Location of origin:	Khartoum-Al Tibna
Country of origin:	Sudan
Date of collection:	24/12/2014
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	25/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	04/08/2018
Last updated:	04/08/2018
VIBASys IDs: sample 36964, genome 36965, sequence viba_36966, sequencing info 36967	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36954	SUD/18/2014	cattle	100.0	0	A	AFRICA	G-IV	
viba_36958	SUD/20/2014	cattle	100.0	0	A	AFRICA	G-IV	
viba_36962	SUD/21/2014	cattle	99.8	0	A	AFRICA	G-IV	
viba_29803	SUD/12/2013	cattle	98.7	0	A	AFRICA	G-IV	
viba_29807	SUD/13/2013	cattle	98.7	0	A	AFRICA	G-IV	
viba_29799	SUD/11/2013	cattle	98.6	0	A	AFRICA	G-IV	
viba_29795	SUD/10/2013	cattle	98.6	0	A	AFRICA	G-IV	
viba_36974	SUD/4/2018	cattle	95.4	0	A	AFRICA	G-IV	
viba_36970	SUD/3/2018	cattle	95.3	0	A	AFRICA	G-IV	
viba_36994	SUD/10/2018	cattle	94.9	0	A	AFRICA	G-IV	

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_178	SUD/3/77		84.7	0	A	AFRICA	G-IV	
viba_347	KEN/42/66		83.4	0	A	AFRICA	G-I	
viba_785	KEN/3/64		83.1	0	A	AFRICA	G-III	
viba_535	NGR/2/73	bovine	82.8	0	A	AFRICA	G-V	
viba_609	GHA/16/73	bovine	81.9	0	A	AFRICA	G-VI	
viba_699	UKG/119/32		81.0	0	A	EURO-SA	A12	
viba_173	UGA/13/66	bovine	80.6	0	A	AFRICA	G-VII	
viba_688	EGY/1/72	bovine	80.4	0	A	AFRICA	G-II	
viba_98	Alem/ARG/81		80.3	0	A	EURO-SA	A81	
viba_682	IRN/2/87	bovine	80.0	0	A	ASIA	Iran-87	

Virus sample name:	SUD/3/2018
Sender reference:	1/2018
Location of origin:	Khartoum-Al Shigla
Country of origin:	Sudan
Date of collection:	06/02/2018
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	26/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	04/08/2018
Last updated:	04/08/2018
VIBASys IDs: sample 36968, genome 36969, sequence viba_36970, sequencing info 36971	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36974	SUD/4/2018	cattle	99.8	0	A	AFRICA	G-IV	
viba_36994	SUD/10/2018	cattle	99.1	0	A	AFRICA	G-IV	
viba_36998	SUD/11/2018	cattle	98.9	0	A	AFRICA	G-IV	
viba_37002	SUD/12/2018	cattle	98.9	0	A	AFRICA	G-IV	
viba_29803	SUD/12/2013	cattle	96.2	0	A	AFRICA	G-IV	
viba_29807	SUD/13/2013	cattle	96.2	0	A	AFRICA	G-IV	
viba_29799	SUD/11/2013	cattle	96.1	0	A	AFRICA	G-IV	
viba_29795	SUD/10/2013	cattle	96.1	0	A	AFRICA	G-IV	
viba_36966	SUD/22/2014	cattle	95.3	0	A	AFRICA	G-IV	
viba_36954	SUD/18/2014	cattle	95.3	0	A	AFRICA	G-IV	

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_178	SUD/3/77		85.6	0	A	AFRICA	G-IV	
viba_785	KEN/3/64		84.0	0	A	AFRICA	G-III	
viba_535	NGR/2/73	bovine	83.7	0	A	AFRICA	G-V	
viba_347	KEN/42/66		83.3	0	A	AFRICA	G-I	
viba_609	GHA/16/73	bovine	82.5	0	A	AFRICA	G-VI	
viba_173	UGA/13/66	bovine	81.7	0	A	AFRICA	G-VII	
viba_699	UKG/119/32		81.1	0	A	EURO-SA	A12	
viba_98	Alem/ARG/81		80.8	0	A	EURO-SA	A81	
viba_688	EGY/1/72	bovine	80.3	0	A	AFRICA	G-II	
viba_677	IRQ/24/64	bovine	80.3	0	A	ASIA	A22	

Virus sample name:	SUD/4/2018
Sender reference:	2/2018
Location of origin:	Khartoum-Al Shigla
Country of origin:	Sudan
Date of collection:	07/02/2018
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	27/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	04/08/2018
Last updated:	04/08/2018
VIBASys IDs: sample 36972, genome 36973, sequence viba_36974, sequencing info 36975	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36970	SUD/3/2018	cattle	99.8	0	A	AFRICA	G-IV	
viba_36994	SUD/10/2018	cattle	99.2	0	A	AFRICA	G-IV	
viba_36998	SUD/11/2018	cattle	99.1	0	A	AFRICA	G-IV	
viba_37002	SUD/12/2018	cattle	99.1	0	A	AFRICA	G-IV	
viba_29803	SUD/12/2013	cattle	96.4	0	A	AFRICA	G-IV	
viba_29807	SUD/13/2013	cattle	96.4	0	A	AFRICA	G-IV	
viba_29799	SUD/11/2013	cattle	96.2	0	A	AFRICA	G-IV	
viba_29795	SUD/10/2013	cattle	96.2	0	A	AFRICA	G-IV	
viba_36966	SUD/22/2014	cattle	95.4	0	A	AFRICA	G-IV	
viba_36954	SUD/18/2014	cattle	95.4	0	A	AFRICA	G-IV	

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_178	SUD/3/77		85.5	0	A	AFRICA	G-IV	
viba_785	KEN/3/64		84.2	0	A	AFRICA	G-III	
viba_535	NGR/2/73	bovine	83.5	0	A	AFRICA	G-V	
viba_347	KEN/42/66		83.4	0	A	AFRICA	G-I	
viba_609	GHA/16/73	bovine	82.6	0	A	AFRICA	G-VI	
viba_173	UGA/13/66	bovine	81.8	0	A	AFRICA	G-VII	
viba_699	UKG/119/32		81.0	0	A	EURO-SA	A12	
viba_98	Alem/ARG/81		80.9	0	A	EURO-SA	A81	
viba_677	IRQ/24/64	bovine	80.4	0	A	ASIA	A22	
viba_688	EGY/1/72	bovine	80.2	0	A	AFRICA	G-II	

Virus sample name:	SUD/6/2018
Sender reference:	5/2018
Location of origin:	Khartoum-Kuku (Mahlab 2)
Country of origin:	Sudan
Date of collection:	20/03/2018
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	26/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	04/08/2018
Last updated:	04/08/2018
VIBASys IDs: sample 36976, genome 36977, sequence viba_36978, sequencing info 36979	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36982	SUD/7/2018	cattle	100.0	0	A	AFRICA	G-IV	
viba_36986	SUD/8/2018	cattle	100.0	0	A	AFRICA	G-IV	
viba_29562	EGY/3/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_29558	EGY/8/2015	cattle	95.6	0	A	AFRICA	G-IV	
viba_30350	Ismailia 2/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30362	Giza 1/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30358	Ismailia 4/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30354	Ismailia 3/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30346	Ismailia 1/Egy/2016	cattle	95.4	0	A	AFRICA	G-IV	
viba_25918	ETH/19/2015	bovine	95.3	0	A	AFRICA	G-IV	

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_178	SUD/3/77		84.7	0	A	AFRICA	G-IV	
viba_347	KEN/42/66		83.4	0	A	AFRICA	G-I	
viba_535	NGR/2/73	bovine	82.6	0	A	AFRICA	G-V	
viba_609	GHA/16/73	bovine	82.0	0	A	AFRICA	G-VI	
viba_785	KEN/3/64		81.3	0	A	AFRICA	G-III	
viba_688	EGY/1/72	bovine	80.8	0	A	AFRICA	G-II	
viba_173	UGA/13/66	bovine	80.0	0	A	AFRICA	G-VII	
viba_699	UKG/119/32		80.0	0	A	EURO-SA	A12	
viba_435	Allier/FRA/60		79.8	0	A	EURO-SA	A5	
viba_475	IRN/22/99		79.8	0	A	ASIA	Iran-99	

Virus sample name:	SUD/7/2018
Sender reference:	5-a/2018
Location of origin:	Khartoum-Kuku (Mahlab 2)
Country of origin:	Sudan
Date of collection:	20/03/2018
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	26/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	04/08/2018
Last updated:	04/08/2018
VIBASys IDs: sample 36980, genome 36981, sequence viba_36982, sequencing info 36983	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36986	SUD/8/2018	cattle	100.0	0	A	AFRICA	G-IV	
viba_36978	SUD/6/2018	cattle	100.0	0	A	AFRICA	G-IV	
viba_29562	EGY/3/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_29558	EGY/8/2015	cattle	95.6	0	A	AFRICA	G-IV	
viba_30350	Ismailia 2/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30362	Giza 1/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30358	Ismailia 4/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30354	Ismailia 3/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30346	Ismailia 1/Egy/2016	cattle	95.4	0	A	AFRICA	G-IV	
viba_25918	ETH/19/2015	bovine	95.3	0	A	AFRICA	G-IV	

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_178	SUD/3/77		84.7	0	A	AFRICA	G-IV	
viba_347	KEN/42/66		83.4	0	A	AFRICA	G-I	
viba_535	NGR/2/73	bovine	82.6	0	A	AFRICA	G-V	
viba_609	GHA/16/73	bovine	82.0	0	A	AFRICA	G-VI	
viba_785	KEN/3/64		81.3	0	A	AFRICA	G-III	
viba_688	EGY/1/72	bovine	80.8	0	A	AFRICA	G-II	
viba_173	UGA/13/66	bovine	80.0	0	A	AFRICA	G-VII	
viba_699	UKG/119/32		80.0	0	A	EURO-SA	A12	
viba_435	Allier/FRA/60		79.8	0	A	EURO-SA	A5	
viba_475	IRN/22/99		79.8	0	A	ASIA	Iran-99	

Virus sample name:	SUD/8/2018
Sender reference:	6/2018
Location of origin:	Khartoum-Kuku (Mahlab 2)
Country of origin:	Sudan
Date of collection:	20/03/2018
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	26/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	04/08/2018
Last updated:	04/08/2018
VIBASys IDs: sample 36984, genome 36985, sequence viba_36986, sequencing info 36987	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36982	SUD/7/2018	cattle	100.0	0	A	AFRICA	G-IV	
viba_36978	SUD/6/2018	cattle	100.0	0	A	AFRICA	G-IV	
viba_29562	EGY/3/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_29558	EGY/8/2015	cattle	95.6	0	A	AFRICA	G-IV	
viba_30350	Ismailia 2/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30362	Giza 1/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30358	Ismailia 4/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30354	Ismailia 3/Egy/2016	cattle	95.6	0	A	AFRICA	G-IV	
viba_30346	Ismailia 1/Egy/2016	cattle	95.4	0	A	AFRICA	G-IV	
viba_25918	ETH/19/2015	bovine	95.3	0	A	AFRICA	G-IV	

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_178	SUD/3/77		84.7	0	A	AFRICA	G-IV	
viba_347	KEN/42/66		83.4	0	A	AFRICA	G-I	
viba_535	NGR/2/73	bovine	82.6	0	A	AFRICA	G-V	
viba_609	GHA/16/73	bovine	82.0	0	A	AFRICA	G-VI	
viba_785	KEN/3/64		81.3	0	A	AFRICA	G-III	
viba_688	EGY/1/72	bovine	80.8	0	A	AFRICA	G-II	
viba_173	UGA/13/66	bovine	80.0	0	A	AFRICA	G-VII	
viba_699	UKG/119/32		80.0	0	A	EURO-SA	A12	
viba_435	Allier/FRA/60		79.8	0	A	EURO-SA	A5	
viba_475	IRN/22/99		79.8	0	A	ASIA	Iran-99	

Virus sample name:	SUD/9/2018
Sender reference:	9/2018
Location of origin:	Khartoum-Safola
Country of origin:	Sudan
Date of collection:	22/03/2018
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	27/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	04/08/2018
Last updated:	04/08/2018
VIBASys IDs: sample 36988, genome 36989, sequence viba_36990, sequencing info 36991	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_29562	EGY/3/2016	cattle	97.8	0	A	AFRICA	G-IV	
viba_29558	EGY/8/2015	cattle	97.8	0	A	AFRICA	G-IV	
viba_30350	Ismailia 2/Egy/2016	cattle	97.8	0	A	AFRICA	G-IV	
viba_30362	Giza 1/Egy/2016	cattle	97.8	0	A	AFRICA	G-IV	
viba_30358	Ismailia 4/Egy/2016	cattle	97.8	0	A	AFRICA	G-IV	
viba_30354	Ismailia 3/Egy/2016	cattle	97.8	0	A	AFRICA	G-IV	
viba_30346	Ismailia 1/Egy/2016	cattle	97.6	0	A	AFRICA	G-IV	
viba_34155	EGY/19/2016	cattle	97.6	0	A	AFRICA	G-IV	
viba_35473	Beni-suef 1/Egy/2017		97.2	0	A	AFRICA	G-IV	
viba_25918	ETH/19/2015	bovine	96.1	0	A	AFRICA	G-IV	

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_178	SUD/3/77		84.4	0	A	AFRICA	G-IV	
viba_347	KEN/42/66		83.2	0	A	AFRICA	G-I	
viba_535	NGR/2/73	bovine	82.7	0	A	AFRICA	G-V	
viba_688	EGY/1/72	bovine	81.8	0	A	AFRICA	G-II	
viba_609	GHA/16/73	bovine	81.5	0	A	AFRICA	G-VI	
viba_173	UGA/13/66	bovine	80.3	0	A	AFRICA	G-VII	
viba_677	IRQ/24/64	bovine	80.1	0	A	ASIA	A22	
viba_785	KEN/3/64		79.4	0	A	AFRICA	G-III	
viba_699	UKG/119/32		79.3	0	A	EURO-SA	A12	
viba_217	Cruzeiro/BRA/55	bovine	79.1	0	A	EURO-SA	A24	

Virus sample name:	SUD/10/2018
Sender reference:	11/2018
Location of origin:	Khartoum- Al Shigla
Country of origin:	Sudan
Date of collection:	28/03/2018
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	27/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	04/08/2018
Last updated:	04/08/2018
VIBASys IDs: sample 36992, genome 36993, sequence viba_36994, sequencing info 36995	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36998	SUD/11/2018	cattle	99.8	0	A	AFRICA	G-IV	
viba_37002	SUD/12/2018	cattle	99.8	0	A	AFRICA	G-IV	
viba_36974	SUD/4/2018	cattle	99.2	0	A	AFRICA	G-IV	
viba_36970	SUD/3/2018	cattle	99.1	0	A	AFRICA	G-IV	
viba_29803	SUD/12/2013	cattle	95.9	0	A	AFRICA	G-IV	
viba_29807	SUD/13/2013	cattle	95.9	0	A	AFRICA	G-IV	
viba_29799	SUD/11/2013	cattle	95.7	0	A	AFRICA	G-IV	
viba_29795	SUD/10/2013	cattle	95.7	0	A	AFRICA	G-IV	
viba_36966	SUD/22/2014	cattle	94.9	0	A	AFRICA	G-IV	
viba_36954	SUD/18/2014	cattle	94.9	0	A	AFRICA	G-IV	

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_178	SUD/3/77		85.3	0	A	AFRICA	G-IV	
viba_785	KEN/3/64		83.9	0	A	AFRICA	G-III	
viba_535	NGR/2/73	bovine	82.9	0	A	AFRICA	G-V	
viba_347	KEN/42/66		82.8	0	A	AFRICA	G-I	
viba_609	GHA/16/73	bovine	82.0	0	A	AFRICA	G-VI	
viba_173	UGA/13/66	bovine	81.4	0	A	AFRICA	G-VII	
viba_98	Alem/ARG/81		80.6	0	A	EURO-SA	A81	
viba_699	UKG/119/32		80.3	0	A	EURO-SA	A12	
viba_677	IRQ/24/64	bovine	79.9	0	A	ASIA	A22	
viba_688	EGY/1/72	bovine	79.4	0	A	AFRICA	G-II	

Virus sample name:	SUD/11/2018
Sender reference:	12/2018
Location of origin:	Khartoum- Al Shigla
Country of origin:	Sudan
Date of collection:	28/03/2018
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	27/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	04/08/2018
Last updated:	04/08/2018
VIBASys IDs: sample 36996, genome 36997, sequence viba_36998, sequencing info 36999	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_37002	SUD/12/2018	cattle	100.0	0	A	AFRICA	G-IV	
viba_36994	SUD/10/2018	cattle	99.8	0	A	AFRICA	G-IV	
viba_36974	SUD/4/2018	cattle	99.1	0	A	AFRICA	G-IV	
viba_36970	SUD/3/2018	cattle	98.9	0	A	AFRICA	G-IV	
viba_29803	SUD/12/2013	cattle	95.7	0	A	AFRICA	G-IV	
viba_29807	SUD/13/2013	cattle	95.7	0	A	AFRICA	G-IV	
viba_29799	SUD/11/2013	cattle	95.6	0	A	AFRICA	G-IV	
viba_29795	SUD/10/2013	cattle	95.6	0	A	AFRICA	G-IV	
viba_36966	SUD/22/2014	cattle	94.8	0	A	AFRICA	G-IV	
viba_36954	SUD/18/2014	cattle	94.8	0	A	AFRICA	G-IV	

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_178	SUD/3/77		85.2	0	A	AFRICA	G-IV	
viba_785	KEN/3/64		83.7	0	A	AFRICA	G-III	
viba_535	NGR/2/73	bovine	82.9	0	A	AFRICA	G-V	
viba_347	KEN/42/66		82.6	0	A	AFRICA	G-I	
viba_609	GHA/16/73	bovine	81.8	0	A	AFRICA	G-VI	
viba_173	UGA/13/66	bovine	81.4	0	A	AFRICA	G-VII	
viba_98	Alem/ARG/81		80.5	0	A	EURO-SA	A81	
viba_699	UKG/119/32		80.2	0	A	EURO-SA	A12	
viba_677	IRQ/24/64	bovine	79.8	0	A	ASIA	A22	
viba_688	EGY/1/72	bovine	79.3	0	A	AFRICA	G-II	

Virus sample name:	SUD/12/2018
Sender reference:	13/2018
Location of origin:	Khartoum- Al Shigla
Country of origin:	Sudan
Date of collection:	28/03/2018
Host species:	cattle
Serotype:	A
Topotype:	AFRICA
Lineage:	G-IV
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	27/07/2018
Primers:	A-1C562F/EUR-2B52R; A-1C612F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	02/08/2018
Created:	04/08/2018
Last updated:	04/08/2018
VIBASys IDs: sample 37000, genome 37001, sequence viba_37002, sequencing info 37003	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_36998	SUD/11/2018	cattle	100.0	0	A	AFRICA	G-IV	
viba_36994	SUD/10/2018	cattle	99.8	0	A	AFRICA	G-IV	
viba_36974	SUD/4/2018	cattle	99.1	0	A	AFRICA	G-IV	
viba_36970	SUD/3/2018	cattle	98.9	0	A	AFRICA	G-IV	
viba_29803	SUD/12/2013	cattle	95.7	0	A	AFRICA	G-IV	
viba_29807	SUD/13/2013	cattle	95.7	0	A	AFRICA	G-IV	
viba_29799	SUD/11/2013	cattle	95.6	0	A	AFRICA	G-IV	
viba_29795	SUD/10/2013	cattle	95.6	0	A	AFRICA	G-IV	
viba_36966	SUD/22/2014	cattle	94.8	0	A	AFRICA	G-IV	
viba_36954	SUD/18/2014	cattle	94.8	0	A	AFRICA	G-IV	

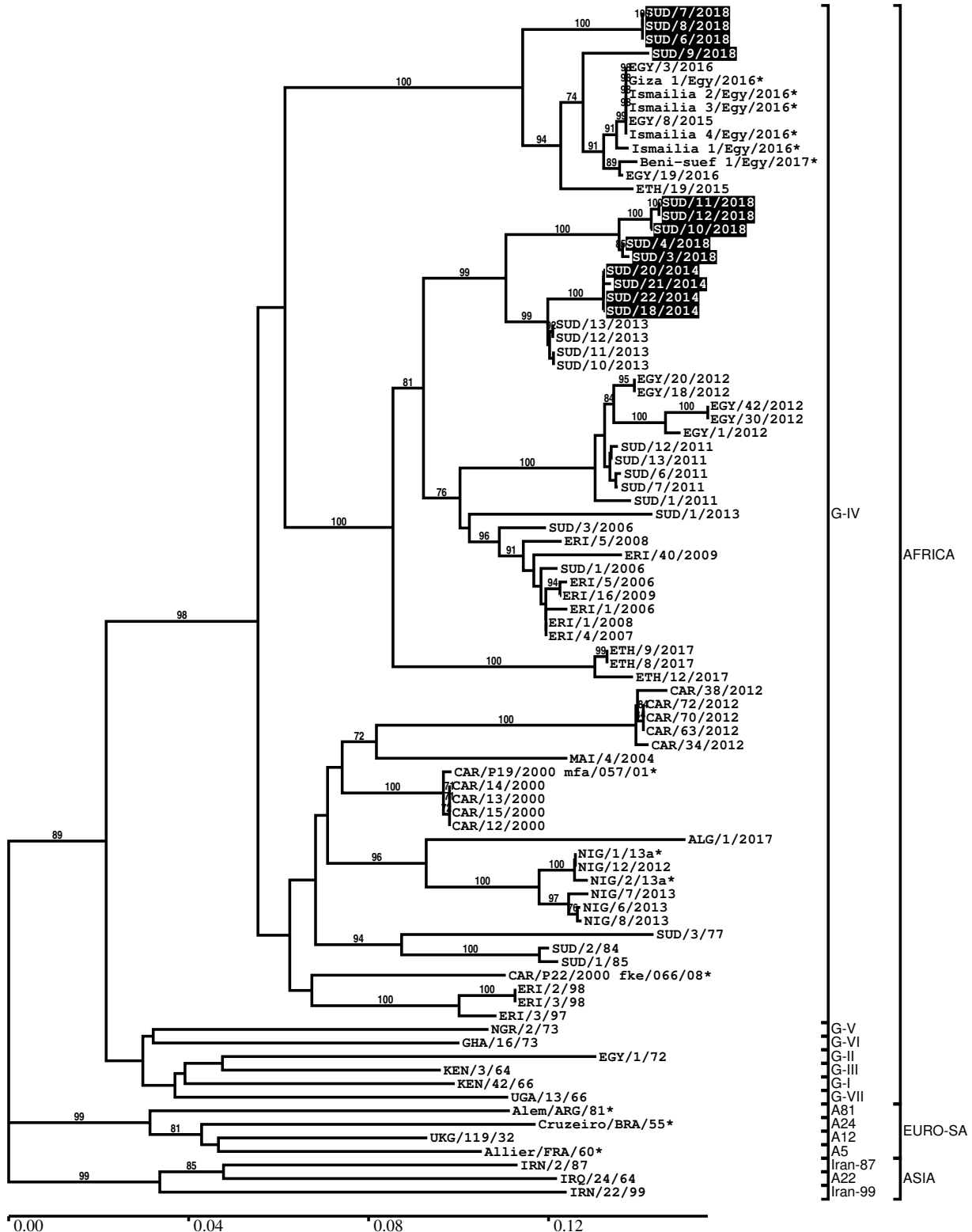
Most Closely Related Prototype Sequences

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

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_178	SUD/3/77		85.2	0	A	AFRICA	G-IV	
viba_785	KEN/3/64		83.7	0	A	AFRICA	G-III	
viba_535	NGR/2/73	bovine	82.9	0	A	AFRICA	G-V	
viba_347	KEN/42/66		82.6	0	A	AFRICA	G-I	
viba_609	GHA/16/73	bovine	81.8	0	A	AFRICA	G-VI	
viba_173	UGA/13/66	bovine	81.4	0	A	AFRICA	G-VII	
viba_98	Alem/ARG/81		80.5	0	A	EURO-SA	A81	
viba_699	UKG/119/32		80.2	0	A	EURO-SA	A12	
viba_677	IRQ/24/64	bovine	79.8	0	A	ASIA	A22	
viba_688	EGY/1/72	bovine	79.3	0	A	AFRICA	G-II	

Report on FMDV A in Sudan in 2014, 2018

Batch: WRLFMD/2018/00020



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor:	vp1_A
Query sequence set:	WRLFMD/2018/00020-Sudan-A (13 sequences)
Sequence database set:	allseqs_A (1877 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:	630
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:	14
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
SUD/7/2018	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/8/2018	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/6/2018	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/9/2018	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
EGY/3/2016	n/a	cattle	WRLFMD	Egypt	AFRICA/G-IV
Giza 1/Egy/2016*	KX447000	cattle	Suez Canal Univ	Egypt	AFRICA/G-IV
Ismailia 2/Egy/2016*	KX446997	cattle	Suez Canal Univ	Egypt	AFRICA/G-IV
Ismailia 3/Egy/2016*	KX446998	cattle	Suez Canal Univ	Egypt	AFRICA/G-IV
EGY/8/2015	n/a	cattle	WRLFMD	Egypt	AFRICA/G-IV
Ismailia 4/Egy/2016*	KX446999	cattle	Suez Canal Univ	Egypt	AFRICA/G-IV
Ismailia 1/Egy/2016*	KX446996	cattle	Suez Canal Univ	Egypt	AFRICA/G-IV
Beni-suef 1/Egy/2017*	MF322693	n/a	MEVAC	Egypt	AFRICA/G-IV
EGY/19/2016	n/a	cattle	WRLFMD	Egypt	AFRICA/G-IV
ETH/19/2015	n/a	bovine	WRLFMD	Ethiopia	AFRICA/G-IV
SUD/11/2018	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/12/2018	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/10/2018	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/4/2018	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/3/2018	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/20/2014	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/21/2014	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/22/2014	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/18/2014	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/13/2013	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/12/2013	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/11/2013	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/10/2013	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
EGY/20/2012	n/a	cattle	WRLFMD	Egypt	AFRICA/G-IV
EGY/18/2012	n/a	cattle	WRLFMD	Egypt	AFRICA/G-IV
EGY/42/2012	n/a	cattle	WRLFMD	Egypt	AFRICA/G-IV
EGY/30/2012	n/a	cattle	WRLFMD	Egypt	AFRICA/G-IV
EGY/1/2012	n/a	n/a	WRLFMD	Egypt	AFRICA/G-IV

continued on next page

label	accession	host(s)	lab	country	taxonomic information
SUD/12/2011	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/13/2011	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/6/2011	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/7/2011	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/1/2011	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/1/2013	n/a	cattle	WRLFMD	Sudan	AFRICA/G-IV
SUD/3/2006	GU566070	cattle	WRLFMD	Sudan	AFRICA/G-IV
ERI/5/2008	n/a	cattle	WRLFMD	Eritrea	AFRICA/G-IV
ERI/40/2009	n/a	cattle	WRLFMD	Eritrea	AFRICA/G-IV
SUD/1/2006	GU566069	cattle	WRLFMD	Sudan	AFRICA/G-IV
ERI/5/2006	n/a	cattle	WRLFMD	Eritrea	AFRICA/G-IV
ERI/16/2009	n/a	cattle	WRLFMD	Eritrea	AFRICA/G-IV
ERI/1/2006	KX258046	cattle	WRLFMD	Eritrea	AFRICA/G-IV
ERI/1/2008	n/a	cattle	WRLFMD	Eritrea	AFRICA/G-IV
ERI/4/2007	n/a	cattle	WRLFMD	Eritrea	AFRICA/G-IV
ETH/9/2017	n/a	cattle	WRLFMD	Ethiopia	AFRICA/G-IV
ETH/8/2017	n/a	cattle	WRLFMD	Ethiopia	AFRICA/G-IV
ETH/12/2017	n/a	cattle	WRLFMD	Ethiopia	AFRICA/G-IV
CAR/38/2012	KX266276	bovine	WRLFMD	Cameroon	AFRICA/G-IV
CAR/72/2012	KX266282	bovine	WRLFMD	Cameroon	AFRICA/G-IV
CAR/70/2012	KX266281	bovine	WRLFMD	Cameroon	AFRICA/G-IV
CAR/63/2012	KX266280	bovine	WRLFMD	Cameroon	AFRICA/G-IV
CAR/34/2012	KX266275	bovine	WRLFMD	Cameroon	AFRICA/G-IV
MAI/4/2004	KX258047	cattle	WRLFMD	Mali	AFRICA/G-IV
CAR/P19/2000 mfa/057/01*	n/a	n/a	WRLFMD	Cameroon	AFRICA/G-IV
CAR/14/2000	KX258132	n/a	WRLFMD	Cameroon	AFRICA/G-IV
CAR/13/2000	KX258131	n/a	WRLFMD	Cameroon	AFRICA/G-IV
CAR/15/2000	EF208755	n/a	WRLFMD	Cameroon	AFRICA/G-IV
CAR/12/2000	KX258130	n/a	WRLFMD	Cameroon	AFRICA/G-IV
ALG/1/2017	MG913340	cattle	WRLFMD	Algeria	AFRICA/G-IV
NIG/1/13a*	KY584070	bovine	CODA-CERVA	Nigeria	AFRICA/G-IV
NIG/12/2012	KX258057	bovine	WRLFMD	Nigeria	AFRICA/G-IV
NIG/2/13a*	KY584071	bovine	CODA-CERVA	Nigeria	AFRICA/G-IV
NIG/7/2013	KX258060	bovine	WRLFMD	Nigeria	AFRICA/G-IV
NIG/6/2013	KX258059	bovine	WRLFMD	Nigeria	AFRICA/G-IV
NIG/8/2013	KX258061	bovine	WRLFMD	Nigeria	AFRICA/G-IV
SUD/3/77	GU566064	n/a	WRLFMD	Sudan	AFRICA/G-IV
SUD/2/84	GU566067	n/a	WRLFMD	Sudan	AFRICA/G-IV
SUD/1/85	GU566068	n/a	WRLFMD	Sudan	AFRICA/G-IV
CAR/P22/2000 fke/066/08*	n/a	n/a	WRLFMD	Cameroon	AFRICA/G-IV
ERI/2/98	KX258044	n/a	WRLFMD	Eritrea	AFRICA/G-IV
ERI/3/98	KX258045	n/a	WRLFMD	Eritrea	AFRICA/G-IV
ERI/3/97	KX258043	n/a	WRLFMD	Eritrea	AFRICA/G-IV
NGR/2/73	KF561704	bovine	WRLFMD	Niger	AFRICA/G-V
GHA/16/73	KF561698	bovine	WRLFMD	Ghana	AFRICA/G-VI
EGY/1/72	EF208756	bovine	WRLFMD	Egypt	AFRICA/G-II
KEN/3/64	AY593761	n/a	PIADC	Kenya	AFRICA/G-III
KEN/42/66	KF561699	n/a	WRLFMD	Kenya	AFRICA/G-I
UGA/13/66	KF561705	bovine	WRLFMD	Uganda	AFRICA/G-VII
Alem/ARG/81*	AJ306219	n/a	INTA-Argentina	Argentina	EURO-SA/A81
Cruzeiro/BRA/55*	AY593768	bovine	PIADC	Brazil	EURO-SA/A24
UKG/119/32	M10975	n/a	PIADC	United Kingdom	EURO-SA/A12
Allier/FRA/60*	AY593780	n/a	PIADC	France	EURO-SA/A5
IRN/2/87	EF208770	bovine	WRLFMD	Iran	ASIA/Iran-87
IRQ/24/64	AY593763	bovine	PIADC	Iraq	ASIA/A22
IRN/22/99	EF208772	n/a	WRLFMD	Iran	ASIA/Iran-99

*, not a WRLFMD Reference Number

n/a, not available