

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

## Genotyping Report

FMDV serotype: O  
Country: Uganda  
Year: 2017  
Batch: WRLMEG/2020/00003B  
No. of sequences: 2  
Report date: 20th January 2020  
Report generated by: Nick Knowles  
Report checked by: Antonello Di Nardo



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Virus sample name:	ADJ-309-P/UGA/2017
Sender reference:	O/ADJ-309-P
Location of origin:	Adjumani, Northern Region
Country of origin:	Uganda
Date of collection:	2017
Host species:	cattle
Serotype:	O
Topotype:	EA-4
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	n/a
Harvest date of material:	n/a
Primers:	n/a
Received for sequencing:	n/a
Created:	18/01/2020
Last updated:	18/01/2020
VIBASys IDs: sample 43663, genome 43664, sequence viba_43665, sequencing info 43666	

### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_43669	AMU-200-P/UGA/2017	cattle	97.9	0	O	EA-4		
viba_15517	KEN/100/2010	cattle	92.0	0	O	EA-4		
viba_33499	ETH/13/2016	cattle	90.3	0	O	EA-4		
viba_33848	ETH/37/2016	bovine	90.1	0	O	EA-4		
viba_33463	ETH/2/2016	cattle	90.1	0	O	EA-4		
viba_33475	ETH/6/2016	cattle	90.1	0	O	EA-4		
viba_33820	ETH/25/2016	bovine	90.1	0	O	EA-4		
viba_33852	ETH/48/2016	bovine	90.1	0	O	EA-4		
viba_33511	ETH/22/2016	cattle	89.9	0	O	EA-4		
viba_33840	ETH/35/2016	bovine	89.8	0	O	EA-4		

### 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_50	UGA/17/98		87.8	0	O	EA-4		
viba_621	ETH/58/2005	bovine	87.1	0	O	EA-4		
viba_523	K83/79		87.0	0	O	EA-1		
viba_116	SUD/2/86	bovine	86.7	0	O	EA-3		
viba_576	IND/R2/75		85.2	0	O	ME-SA		
viba_359	Manisa/TUR/69		85.2	0	O	ME-SA		
viba_30238	MUR/19/2016	cattle	85.0	0	O	ME-SA	Ind-2001	e
viba_541	OMN/7/2001	bovine	84.8	0	O	ME-SA	Ind-2001	b
viba_766	IRN/31/2009	cattle	84.6	0	O	ME-SA	PanAsia-2	FAR-09
viba_408	ETH/3/2004	cattle	84.5	0	O	EA-3		

Virus sample name:	AMU-200-P/UGA/2017
Sender reference:	O/AMU-200-P
Location of origin:	Amuru, Northern Region
Country of origin:	Uganda
Date of collection:	2017
Host species:	cattle
Serotype:	O
Topotype:	EA-4
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	n/a
Harvest date of material:	n/a
Primers:	n/a
Received for sequencing:	n/a
Created:	18/01/2020
Last updated:	18/01/2020
VIBASys IDs: sample 43667, genome 43668, sequence viba_43669, sequencing info 43670	

### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_43665	ADJ-309-P/UGA/2017	cattle	97.9	0	O	EA-4		
viba_15517	KEN/100/2010	cattle	93.4	0	O	EA-4		
viba_33499	ETH/13/2016	cattle	91.5	0	O	EA-4		
viba_33848	ETH/37/2016	bovine	91.4	0	O	EA-4		
viba_33463	ETH/2/2016	cattle	91.4	0	O	EA-4		
viba_33475	ETH/6/2016	cattle	91.4	0	O	EA-4		
viba_33820	ETH/25/2016	bovine	91.4	0	O	EA-4		
viba_33852	ETH/48/2016	bovine	91.4	0	O	EA-4		
viba_33511	ETH/22/2016	cattle	91.2	0	O	EA-4		
viba_33840	ETH/35/2016	bovine	91.0	0	O	EA-4		

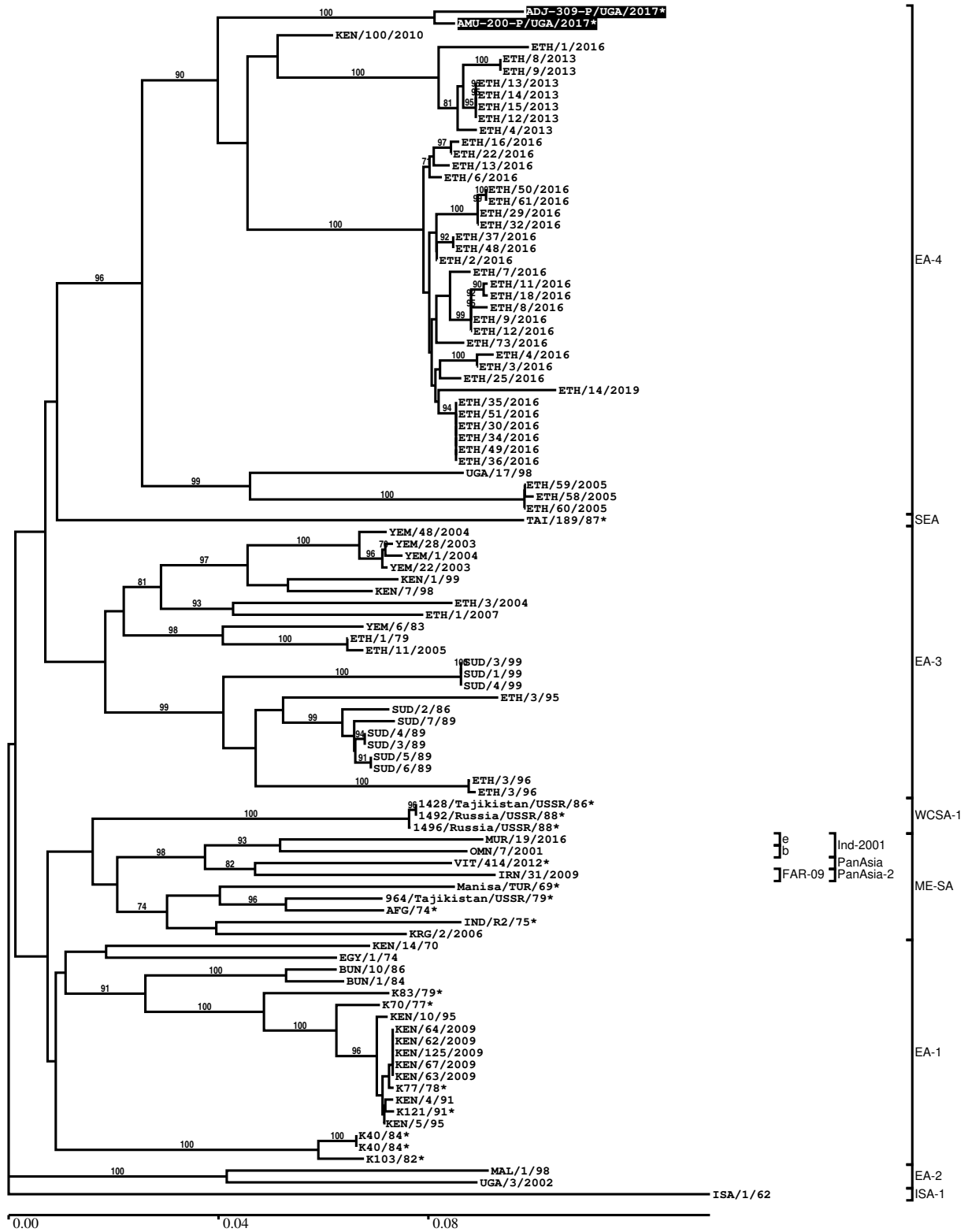
### Most Closely Related Prototype Sequences

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

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_50	UGA/17/98		87.9	0	O	EA-4		
viba_523	K83/79		87.5	0	O	EA-1		
viba_116	SUD/2/86	bovine	87.4	0	O	EA-3		
viba_621	ETH/58/2005	bovine	87.1	0	O	EA-4		
viba_85	UGA/3/2002		86.0	0	O	EA-2		
viba_221	MAL/1/98		85.8	0	O	EA-2		
viba_854	ETH/1/2007	cattle	85.8	0	O	EA-3		
viba_576	IND/R2/75		85.5	0	O	ME-SA		
viba_408	ETH/3/2004	cattle	85.5	0	O	EA-3		
viba_766	IRN/31/2009	cattle	85.5	0	O	ME-SA	PanAsia-2	FAR-09

Report on FMDV O in Uganda in 2017

Batch: WRLMEG/2020/00003B



\*, not a WRLFMD Reference Number

## Analysis Parameters

VP1 subsequence extractor:	vp1_O
Query sequence set:	WRLMEG/2020/00003B-Uganda-O (2 sequences)
Sequence database set:	allseqs_O (4688 sequences)
Prototype sequence set:	!prototypes_O (49 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:	13
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
ADJ-309-P/UGA/2017*	MH367379	cattle	PIADC	Uganda	EA-4
AMU-200-P/UGA/2017*	MH367380	cattle	PIADC	Uganda	EA-4
KEN/100/2010	KF135281	cattle	WRLFMD	Kenya	EA-4
ETH/1/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/8/2013	MN529584	bovine	WRLFMD	Ethiopia	EA-4
ETH/9/2013	MN518152	bovine	WRLFMD	Ethiopia	EA-4
ETH/13/2013	MN518153	bovine	WRLFMD	Ethiopia	EA-4
ETH/14/2013	MN529586	bovine	WRLFMD	Ethiopia	EA-4
ETH/15/2013	MN518154	bovine	WRLFMD	Ethiopia	EA-4
ETH/12/2013	MN529585	bovine	WRLFMD	Ethiopia	EA-4
ETH/4/2013	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/16/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/22/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/13/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/6/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/50/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/61/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/29/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/32/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/37/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/48/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/2/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/7/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/11/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/18/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/8/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/9/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/12/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/73/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/4/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/3/2016	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/25/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/14/2019	n/a	cattle	WRLFMD	Ethiopia	EA-4
ETH/35/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/51/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/30/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4

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label	accession	host(s)	lab	country	taxonomic information
ETH/34/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/49/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
ETH/36/2016	n/a	bovine	WRLFMD	Ethiopia	EA-4
UGA/17/98	HM211075	n/a	WRLFMD	Uganda	EA-4
ETH/59/2005	FJ798142	bovine	WRLFMD	Ethiopia	EA-4
ETH/58/2005	FJ798141	bovine	WRLFMD	Ethiopia	EA-4
ETH/60/2005	FJ798143	bovine	WRLFMD	Ethiopia	EA-4
TAI/189/87*	KY091288	bovine	TRRL	Thailand	SEA
YEM/48/2004	n/a	cattle	WRLFMD	Yemen	EA-3
YEM/28/2003	n/a	cattle	WRLFMD	Yemen	EA-3
YEM/1/2004	n/a	cattle	WRLFMD	Yemen	EA-3
YEM/22/2003	n/a	cattle	WRLFMD	Yemen	EA-3
KEN/1/99	KF135267	bovine	WRLFMD	Kenya	EA-3
KEN/7/98	KF135266	bovine	WRLFMD	Kenya	EA-3
ETH/3/2004	FJ798109	cattle	WRLFMD	Ethiopia	EA-3
ETH/1/2007	FJ798137	cattle	WRLFMD	Ethiopia	EA-3
YEM/6/83	n/a	ovine	WRLFMD	Yemen	EA-3
ETH/1/79	HM211077	cattle	WRLFMD	Ethiopia	EA-3
ETH/11/2005	FJ798107	bovine	WRLFMD	Ethiopia	EA-3
SUD/3/99	GU566043	n/a	WRLFMD	Sudan	EA-3
SUD/1/99	DQ165076	n/a	WRLFMD	Sudan	EA-3
SUD/4/99	GU566044	n/a	WRLFMD	Sudan	EA-3
ETH/3/95	n/a	bovine	WRLFMD	Ethiopia	EA-3
SUD/2/86	DQ165075	bovine	WRLFMD	Sudan	EA-3
SUD/7/89	GU566042	n/a	WRLFMD	Sudan	EA-3
SUD/4/89	GU566039	n/a	WRLFMD	Sudan	EA-3
SUD/3/89	GU566038	n/a	WRLFMD	Sudan	EA-3
SUD/5/89	GU566040	n/a	WRLFMD	Sudan	EA-3
SUD/6/89	GU566041	n/a	WRLFMD	Sudan	EA-3
ETH/3/96	HM211079	bovine	WRLFMD	Ethiopia	EA-3
ETH/3/96	EU919240	bovine	OVI	Ethiopia	EA-3
1428/Tajikistan/USSR/86*	n/a	porcine	ARRIAH	USSR	WCSEA-1
1492/Russia/USSR/88*	n/a	porcine	ARRIAH	USSR	WCSEA-1
1496/Russia/USSR/88*	n/a	porcine	ARRIAH	USSR	WCSEA-1
MUR/19/2016	MG972510	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
OMN/7/2001	DQ164941	bovine	WRLFMD	Oman	ME-SA/Ind-2001/b
VIT/414/2012*	MF143575	cattle	PIADC	Vietnam	ME-SA/PanAsia
IRN/31/2009	KY091284	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/FAR-09
Manisa/TUR/69*	AY593823	n/a	PIADC	Turkey	ME-SA
964/Tajikistan/USSR/79*	n/a	n/a	ARRIAH	USSR	ME-SA
AFG/74*	n/a	n/a	ARRIAH	Afghanistan	ME-SA
IND/R2/75*	AF204276	n/a	PD-FMD	India	ME-SA
KRG/2/2006	n/a	n/a	WRLFMD	Kyrgyzstan	ME-SA
KEN/14/70	n/a	n/a	WRLFMD	Kenya	EA-1
EGY/1/74	n/a	n/a	WRLFMD	Egypt	EA-1
BUN/10/86	n/a	n/a	WRLFMD	Burundi	EA-1
BUN/1/84	n/a	n/a	WRLFMD	Burundi	EA-1
K83/79*	AJ303511	n/a	WRLFMD	Kenya	EA-1
K70/77*	n/a	n/a	WRLFMD	Kenya	EA-1
KEN/10/95	EU919242	n/a	OVI	Kenya	EA-1
KEN/64/2009	n/a	cattle	WRLFMD	Kenya	EA-1
KEN/62/2009	n/a	cattle	WRLFMD	Kenya	EA-1
KEN/125/2009	n/a	cattle	WRLFMD	Kenya	EA-1
KEN/67/2009	n/a	cattle	WRLFMD	Kenya	EA-1
KEN/63/2009	n/a	cattle	WRLFMD	Kenya	EA-1
K77/78*	DQ165072	bovine	WRLFMD	Kenya	EA-1
KEN/4/91	n/a	bovine	WRLFMD	Kenya	EA-1
K121/91*	HM756595	bovine	Makerere University	Kenya	EA-1
KEN/5/95	AJ303516	n/a	WRLFMD	Kenya	EA-1
K40/84*	KY091280	bovine	WRLFMD	Kenya	EA-1
K40/84*	HM756592	bovine	Makerere University	Kenya	EA-1
K103/82*	HM756590	bovine	Makerere University	Kenya	EA-1
MAL/1/98	DQ165074	n/a	WRLFMD	Malawi	EA-2
UGA/3/2002	DQ165077	n/a	WRLFMD	Uganda	EA-2

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<b>label</b>	<b>accession</b>	<b>host(s)</b>	<b>lab</b>	<b>country</b>	<b>taxonomic information</b>
ISA/1/62	AJ303500	n/a	WRLFMD	Indonesia	ISA-1

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