

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

## Genotyping Report

FMDV serotype: O  
Country: Ethiopia  
Year: 2018  
Batch: WRLFMD/2019/00001  
No. of sequences: 10  
Report date: 6th March 2019  
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](mailto:reporting@pirbright.ac.uk)

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Virus sample name:	ETH/18/2018
Sender reference:	ETH/04/2018
Location of origin:	Asgede Tsimbila Woreda, North West Zone, Tigray Region
Country of origin:	Ethiopia
Date of collection:	29/08/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-3
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	14/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	28/02/2019
Created:	06/03/2019
Last updated:	06/03/2019
VIBASys IDs: sample 40437, genome 40438, sequence viba_40439, sequencing info 40440	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_40459	ETH/23/2018	cattle	100.0	0	O	EA-3		
viba_40463	ETH/24/2018	cattle	100.0	0	O	EA-3		
viba_40471	ETH/26/2018	cattle	100.0	0	O	EA-3		
viba_40443	ETH/19/2018	cattle	100.0	0	O	EA-3		
viba_40474	ETH/37/2018	cattle	100.0	0	O	EA-3		
viba_40467	ETH/25/2018	cattle	100.0	0	O	EA-3		
viba_40455	ETH/22/2018	cattle	100.0	0	O	EA-3		
viba_40451	ETH/21/2018	cattle	99.4	0	O	EA-3		
viba_40447	ETH/20/2018	cattle	99.4	0	O	EA-3		
viba_18083	ERI/16/2011	porcine	95.4	0	O	EA-3		

#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_116	SUD/2/86	bovine	88.6	0	O	EA-3		
viba_408	ETH/3/2004	cattle	86.5	0	O	EA-3		
viba_854	ETH/1/2007	cattle	85.6	0	O	EA-3		
viba_85	UGA/3/2002		84.9	0	O	EA-2		
viba_576	IND/R2/75		84.9	0	O	ME-SA		
viba_523	K83/79		84.7	0	O	EA-1		
viba_617	IND/53/79	bovine	84.7	0	O	ME-SA		
viba_354	PAK/16/2010	cattle	84.7	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	84.6	0	O	ME-SA	PanAsia-2	BAL-09
viba_766	IRN/31/2009	cattle	84.6	0	O	ME-SA	PanAsia-2	FAR-09

Virus sample name:	ETH/19/2018
Sender reference:	ETH/05/2018
Location of origin:	Asgede Tsimbila Woreda, North West Zone, Tigray Region
Country of origin:	Ethiopia
Date of collection:	29/08/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-3
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	14/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	28/02/2019
Created:	06/03/2019
Last updated:	06/03/2019
VIBASys IDs: sample 40441, genome 40442, sequence viba_40443, sequencing info 40444	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_40459	ETH/23/2018	cattle	100.0	0	O	EA-3		
viba_40463	ETH/24/2018	cattle	100.0	0	O	EA-3		
viba_40471	ETH/26/2018	cattle	100.0	0	O	EA-3		
viba_40439	ETH/18/2018	cattle	100.0	0	O	EA-3		
viba_40474	ETH/37/2018	cattle	100.0	0	O	EA-3		
viba_40467	ETH/25/2018	cattle	100.0	0	O	EA-3		
viba_40455	ETH/22/2018	cattle	100.0	0	O	EA-3		
viba_40451	ETH/21/2018	cattle	99.4	0	O	EA-3		
viba_40447	ETH/20/2018	cattle	99.4	0	O	EA-3		
viba_18083	ERI/16/2011	porcine	95.4	0	O	EA-3		

#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_116	SUD/2/86	bovine	88.6	0	O	EA-3		
viba_408	ETH/3/2004	cattle	86.5	0	O	EA-3		
viba_854	ETH/1/2007	cattle	85.6	0	O	EA-3		
viba_85	UGA/3/2002		84.9	0	O	EA-2		
viba_576	IND/R2/75		84.9	0	O	ME-SA		
viba_523	K83/79		84.7	0	O	EA-1		
viba_617	IND/53/79	bovine	84.7	0	O	ME-SA		
viba_354	PAK/16/2010	cattle	84.7	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	84.6	0	O	ME-SA	PanAsia-2	BAL-09
viba_766	IRN/31/2009	cattle	84.6	0	O	ME-SA	PanAsia-2	FAR-09

Virus sample name:	ETH/20/2018
Sender reference:	ETH/10/2018
Location of origin:	Hintalo Wajirat Woreda, South East Zone, Tigray Region
Country of origin:	Ethiopia
Date of collection:	11/09/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-3
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	14/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	28/02/2019
Created:	06/03/2019
Last updated:	06/03/2019

VIBASys IDs: sample 40445, genome 40446, sequence viba\_40447, sequencing info 40448

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_40451	ETH/21/2018	cattle	100.0	0	O	EA-3		
viba_40459	ETH/23/2018	cattle	99.4	0	O	EA-3		
viba_40463	ETH/24/2018	cattle	99.4	0	O	EA-3		
viba_40471	ETH/26/2018	cattle	99.4	0	O	EA-3		
viba_40439	ETH/18/2018	cattle	99.4	0	O	EA-3		
viba_40443	ETH/19/2018	cattle	99.4	0	O	EA-3		
viba_40474	ETH/37/2018	cattle	99.4	0	O	EA-3		
viba_40467	ETH/25/2018	cattle	99.4	0	O	EA-3		
viba_40455	ETH/22/2018	cattle	99.4	0	O	EA-3		
viba_18083	ERI/16/2011	porcine	95.4	0	O	EA-3		

#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_116	SUD/2/86	bovine	88.3	0	O	EA-3		
viba_408	ETH/3/2004	cattle	86.5	0	O	EA-3		
viba_854	ETH/1/2007	cattle	85.9	0	O	EA-3		
viba_354	PAK/16/2010	cattle	85.0	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	84.9	0	O	ME-SA	PanAsia-2	BAL-09
viba_576	IND/R/75		84.9	0	O	ME-SA		
viba_766	IRN/31/2009	cattle	84.9	0	O	ME-SA	PanAsia-2	FAR-09
viba_85	UGA/3/2002		84.7	0	O	EA-2		
viba_617	IND/53/79	bovine	84.7	0	O	ME-SA		
viba_505	TUR/264/2009		84.4	0	O	ME-SA	PanAsia-2	SAN-09

Virus sample name:	ETH/21/2018
Sender reference:	ETH/11/2018
Location of origin:	Hintalo Wajirat Woreda, South East Zone, Tigray Region
Country of origin:	Ethiopia
Date of collection:	11/09/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-3
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	14/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	28/02/2019
Created:	06/03/2019
Last updated:	06/03/2019
VIBASys IDs: sample 40449, genome 40450, sequence viba_40451, sequencing info 40452	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_40447	ETH/20/2018	cattle	100.0	0	O	EA-3		
viba_40459	ETH/23/2018	cattle	99.4	0	O	EA-3		
viba_40463	ETH/24/2018	cattle	99.4	0	O	EA-3		
viba_40471	ETH/26/2018	cattle	99.4	0	O	EA-3		
viba_40439	ETH/18/2018	cattle	99.4	0	O	EA-3		
viba_40443	ETH/19/2018	cattle	99.4	0	O	EA-3		
viba_40474	ETH/37/2018	cattle	99.4	0	O	EA-3		
viba_40467	ETH/25/2018	cattle	99.4	0	O	EA-3		
viba_40455	ETH/22/2018	cattle	99.4	0	O	EA-3		
viba_18083	ERI/16/2011	porcine	95.4	0	O	EA-3		

#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_116	SUD/2/86	bovine	88.3	0	O	EA-3		
viba_408	ETH/3/2004	cattle	86.5	0	O	EA-3		
viba_854	ETH/1/2007	cattle	85.9	0	O	EA-3		
viba_354	PAK/16/2010	cattle	85.0	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	84.9	0	O	ME-SA	PanAsia-2	BAL-09
viba_576	IND/R/75		84.9	0	O	ME-SA		
viba_766	IRN/31/2009	cattle	84.9	0	O	ME-SA	PanAsia-2	FAR-09
viba_85	UGA/3/2002		84.7	0	O	EA-2		
viba_617	IND/53/79	bovine	84.7	0	O	ME-SA		
viba_505	TUR/264/2009		84.4	0	O	ME-SA	PanAsia-2	SAN-09

Virus sample name:	ETH/22/2018
Sender reference:	ETH/06/2018
Location of origin:	Kilte Awulaelo Woreda, East Zone, Tigray Region
Country of origin:	Ethiopia
Date of collection:	17/09/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-3
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	14/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	28/02/2019
Created:	06/03/2019
Last updated:	06/03/2019
VIBASys IDs: sample 40453, genome 40454, sequence viba_40455, sequencing info 40456	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_40459	ETH/23/2018	cattle	100.0	0	O	EA-3		
viba_40463	ETH/24/2018	cattle	100.0	0	O	EA-3		
viba_40471	ETH/26/2018	cattle	100.0	0	O	EA-3		
viba_40439	ETH/18/2018	cattle	100.0	0	O	EA-3		
viba_40443	ETH/19/2018	cattle	100.0	0	O	EA-3		
viba_40474	ETH/37/2018	cattle	100.0	0	O	EA-3		
viba_40467	ETH/25/2018	cattle	100.0	0	O	EA-3		
viba_40451	ETH/21/2018	cattle	99.4	0	O	EA-3		
viba_40447	ETH/20/2018	cattle	99.4	0	O	EA-3		
viba_18083	ERI/16/2011	porcine	95.4	0	O	EA-3		

#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_116	SUD/2/86	bovine	88.6	0	O	EA-3		
viba_408	ETH/3/2004	cattle	86.5	0	O	EA-3		
viba_854	ETH/1/2007	cattle	85.6	0	O	EA-3		
viba_85	UGA/3/2002		84.9	0	O	EA-2		
viba_576	IND/R2/75		84.9	0	O	ME-SA		
viba_523	K83/79		84.7	0	O	EA-1		
viba_617	IND/53/79	bovine	84.7	0	O	ME-SA		
viba_354	PAK/16/2010	cattle	84.7	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	84.6	0	O	ME-SA	PanAsia-2	BAL-09
viba_766	IRN/31/2009	cattle	84.6	0	O	ME-SA	PanAsia-2	FAR-09

Virus sample name:	ETH/23/2018
Sender reference:	ETH/07/2018
Location of origin:	Kilte Awulaelo Woreda, East Zone, Tigray Region
Country of origin:	Ethiopia
Date of collection:	17/09/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-3
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	14/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	28/02/2019
Created:	06/03/2019
Last updated:	06/03/2019

VIBASys IDs: sample 40457, genome 40458, sequence viba\_40459, sequencing info 40460

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_40463	ETH/24/2018	cattle	100.0	0	O	EA-3		
viba_40471	ETH/26/2018	cattle	100.0	0	O	EA-3		
viba_40439	ETH/18/2018	cattle	100.0	0	O	EA-3		
viba_40443	ETH/19/2018	cattle	100.0	0	O	EA-3		
viba_40474	ETH/37/2018	cattle	100.0	0	O	EA-3		
viba_40467	ETH/25/2018	cattle	100.0	0	O	EA-3		
viba_40455	ETH/22/2018	cattle	100.0	0	O	EA-3		
viba_40451	ETH/21/2018	cattle	99.4	0	O	EA-3		
viba_40447	ETH/20/2018	cattle	99.4	0	O	EA-3		
viba_18083	ERI/16/2011	porcine	95.4	0	O	EA-3		

#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_116	SUD/2/86	bovine	88.6	0	O	EA-3		
viba_408	ETH/3/2004	cattle	86.5	0	O	EA-3		
viba_854	ETH/1/2007	cattle	85.6	0	O	EA-3		
viba_85	UGA/3/2002		84.9	0	O	EA-2		
viba_576	IND/R2/75		84.9	0	O	ME-SA		
viba_523	K83/79		84.7	0	O	EA-1		
viba_617	IND/53/79	bovine	84.7	0	O	ME-SA		
viba_354	PAK/16/2010	cattle	84.7	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	84.6	0	O	ME-SA	PanAsia-2	BAL-09
viba_766	IRN/31/2009	cattle	84.6	0	O	ME-SA	PanAsia-2	FAR-09

Virus sample name:	ETH/24/2018
Sender reference:	ETH/08/2018
Location of origin:	Kilte Awulaelo Woreda, East Zone, Tigray Region
Country of origin:	Ethiopia
Date of collection:	18/09/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-3
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	14/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	28/02/2019
Created:	06/03/2019
Last updated:	06/03/2019

VIBASys IDs: sample 40461, genome 40462, sequence viba\_40463, sequencing info 40464

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_40459	ETH/23/2018	cattle	100.0	0	O	EA-3		
viba_40471	ETH/26/2018	cattle	100.0	0	O	EA-3		
viba_40439	ETH/18/2018	cattle	100.0	0	O	EA-3		
viba_40443	ETH/19/2018	cattle	100.0	0	O	EA-3		
viba_40474	ETH/37/2018	cattle	100.0	0	O	EA-3		
viba_40467	ETH/25/2018	cattle	100.0	0	O	EA-3		
viba_40455	ETH/22/2018	cattle	100.0	0	O	EA-3		
viba_40451	ETH/21/2018	cattle	99.4	0	O	EA-3		
viba_40447	ETH/20/2018	cattle	99.4	0	O	EA-3		
viba_18083	ERI/16/2011	porcine	95.4	0	O	EA-3		

#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_116	SUD/2/86	bovine	88.6	0	O	EA-3		
viba_408	ETH/3/2004	cattle	86.5	0	O	EA-3		
viba_854	ETH/1/2007	cattle	85.6	0	O	EA-3		
viba_85	UGA/3/2002		84.9	0	O	EA-2		
viba_576	IND/R2/75		84.9	0	O	ME-SA		
viba_523	K83/79		84.7	0	O	EA-1		
viba_617	IND/53/79	bovine	84.7	0	O	ME-SA		
viba_354	PAK/16/2010	cattle	84.7	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	84.6	0	O	ME-SA	PanAsia-2	BAL-09
viba_766	IRN/31/2009	cattle	84.6	0	O	ME-SA	PanAsia-2	FAR-09



Virus sample name:	ETH/25/2018
Sender reference:	ETH/09/2018
Location of origin:	Kilte Awulaelo Woreda, East Zone, Tigray Region
Country of origin:	Ethiopia
Date of collection:	18/09/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-3
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	15/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	28/02/2019
Created:	06/03/2019
Last updated:	06/03/2019
VIBASys IDs: sample 40465, genome 40466, sequence viba_40467, sequencing info 40468	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_40459	ETH/23/2018	cattle	100.0	0	O	EA-3		
viba_40463	ETH/24/2018	cattle	100.0	0	O	EA-3		
viba_40471	ETH/26/2018	cattle	100.0	0	O	EA-3		
viba_40439	ETH/18/2018	cattle	100.0	0	O	EA-3		
viba_40443	ETH/19/2018	cattle	100.0	0	O	EA-3		
viba_40474	ETH/37/2018	cattle	100.0	0	O	EA-3		
viba_40455	ETH/22/2018	cattle	100.0	0	O	EA-3		
viba_40451	ETH/21/2018	cattle	99.4	0	O	EA-3		
viba_40447	ETH/20/2018	cattle	99.4	0	O	EA-3		
viba_18083	ERI/16/2011	porcine	95.4	0	O	EA-3		

#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_116	SUD/2/86	bovine	88.6	0	O	EA-3		
viba_408	ETH/3/2004	cattle	86.5	0	O	EA-3		
viba_854	ETH/1/2007	cattle	85.6	0	O	EA-3		
viba_85	UGA/3/2002		84.9	0	O	EA-2		
viba_576	IND/R2/75		84.9	0	O	ME-SA		
viba_523	K83/79		84.7	0	O	EA-1		
viba_617	IND/53/79	bovine	84.7	0	O	ME-SA		
viba_354	PAK/16/2010	cattle	84.7	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	84.6	0	O	ME-SA	PanAsia-2	BAL-09
viba_766	IRN/31/2009	cattle	84.6	0	O	ME-SA	PanAsia-2	FAR-09

Virus sample name:	ETH/26/2018
Sender reference:	ETH/09/2018
Location of origin:	Kilte Awulaelo Woreda, East Zone, Tigray Region
Country of origin:	Ethiopia
Date of collection:	18/09/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-3
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	15/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	28/02/2019
Created:	06/03/2019
Last updated:	06/03/2019

VIBASys IDs: sample 40469, genome 40470, sequence viba\_40471, sequencing info 40472

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_40459	ETH/23/2018	cattle	100.0	0	O	EA-3		
viba_40463	ETH/24/2018	cattle	100.0	0	O	EA-3		
viba_40439	ETH/18/2018	cattle	100.0	0	O	EA-3		
viba_40443	ETH/19/2018	cattle	100.0	0	O	EA-3		
viba_40474	ETH/37/2018	cattle	100.0	0	O	EA-3		
viba_40467	ETH/25/2018	cattle	100.0	0	O	EA-3		
viba_40455	ETH/22/2018	cattle	100.0	0	O	EA-3		
viba_40451	ETH/21/2018	cattle	99.4	0	O	EA-3		
viba_40447	ETH/20/2018	cattle	99.4	0	O	EA-3		
viba_18083	ERI/16/2011	porcine	95.4	0	O	EA-3		

#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_116	SUD/2/86	bovine	88.6	0	O	EA-3		
viba_408	ETH/3/2004	cattle	86.5	0	O	EA-3		
viba_854	ETH/1/2007	cattle	85.6	0	O	EA-3		
viba_85	UGA/3/2002		84.9	0	O	EA-2		
viba_576	IND/R2/75		84.9	0	O	ME-SA		
viba_523	K83/79		84.7	0	O	EA-1		
viba_617	IND/53/79	bovine	84.7	0	O	ME-SA		
viba_354	PAK/16/2010	cattle	84.7	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	84.6	0	O	ME-SA	PanAsia-2	BAL-09
viba_766	IRN/31/2009	cattle	84.6	0	O	ME-SA	PanAsia-2	FAR-09

Virus sample name:	ETH/37/2018
Sender reference:	ETH/17/2018
Location of origin:	Jida Woreda, North Showa Zone, Oromia Region
Country of origin:	Ethiopia
Date of collection:	22/10/2018
Host species:	cattle
Serotype:	O
Topotype:	EA-3
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1 17/02/2019; BTy2
Harvest date of material:	21/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	28/02/2019
Created:	06/03/2019
Last updated:	06/03/2019
VIBASys IDs: sample 40341, genome 40473, sequence viba_40474, sequencing info 40475	

#### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_40459	ETH/23/2018	cattle	100.0	0	O	EA-3		
viba_40463	ETH/24/2018	cattle	100.0	0	O	EA-3		
viba_40471	ETH/26/2018	cattle	100.0	0	O	EA-3		
viba_40439	ETH/18/2018	cattle	100.0	0	O	EA-3		
viba_40443	ETH/19/2018	cattle	100.0	0	O	EA-3		
viba_40467	ETH/25/2018	cattle	100.0	0	O	EA-3		
viba_40455	ETH/22/2018	cattle	100.0	0	O	EA-3		
viba_40451	ETH/21/2018	cattle	99.4	0	O	EA-3		
viba_40447	ETH/20/2018	cattle	99.4	0	O	EA-3		
viba_18083	ERI/16/2011	porcine	95.4	0	O	EA-3		

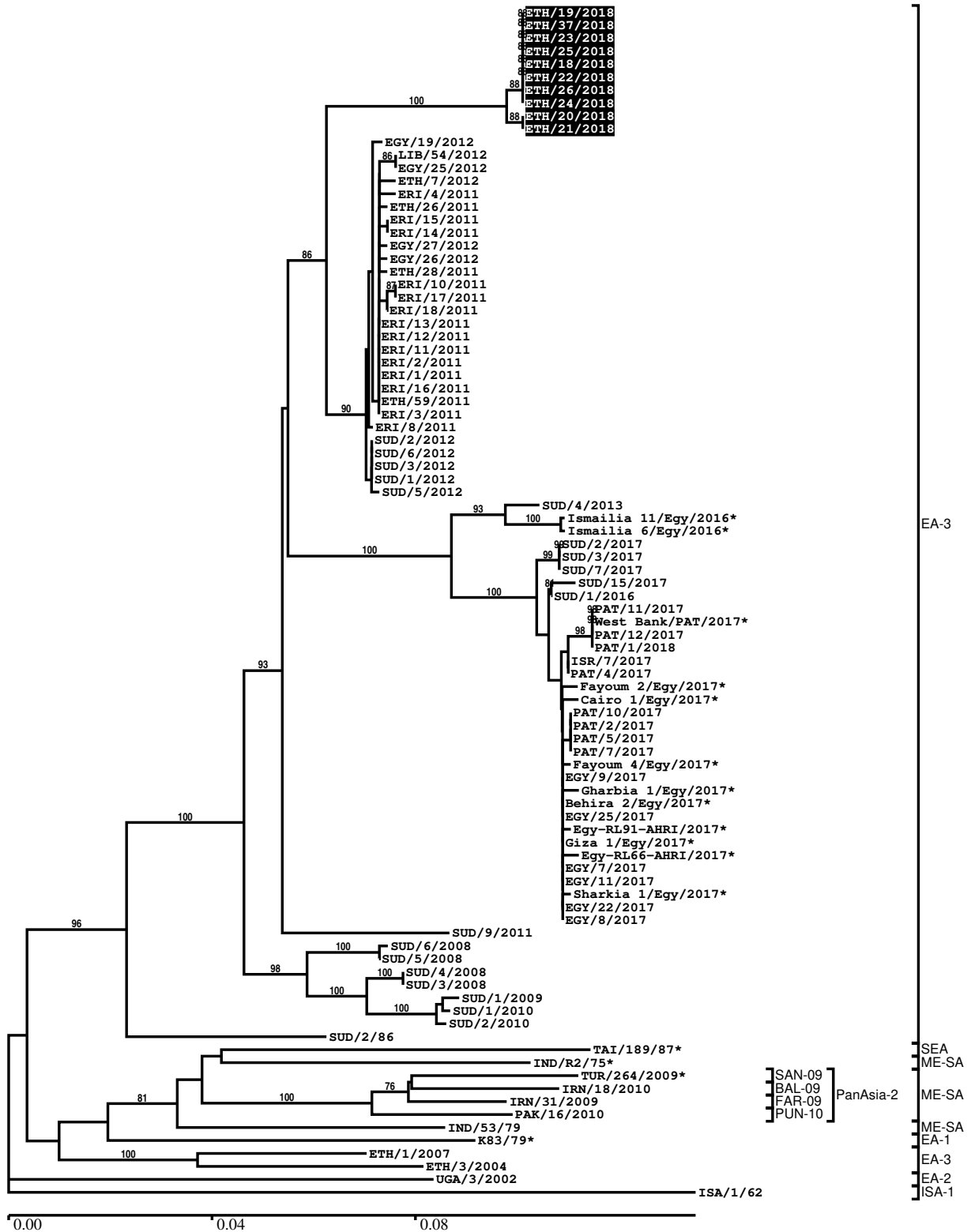
#### Most Closely Related Prototype Sequences

see [http://www.wrlfmd.org/fmd\\_genotyping/prototypes.htm](http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_116	SUD/2/86	bovine	88.6	0	O	EA-3		
viba_408	ETH/3/2004	cattle	86.5	0	O	EA-3		
viba_854	ETH/1/2007	cattle	85.6	0	O	EA-3		
viba_85	UGA/3/2002		84.9	0	O	EA-2		
viba_576	IND/R2/75		84.9	0	O	ME-SA		
viba_523	K83/79		84.7	0	O	EA-1		
viba_617	IND/53/79	bovine	84.7	0	O	ME-SA		
viba_354	PAK/16/2010	cattle	84.7	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	84.6	0	O	ME-SA	PanAsia-2	BAL-09
viba_766	IRN/31/2009	cattle	84.6	0	O	ME-SA	PanAsia-2	FAR-09

Report on FMDV O in Ethiopia in 2018

Batch: WRLFMD/2019/00001



\*, not a WRLFMD Reference Number

## Analysis Parameters

VP1 subsequence extractor:	vp1_O
Query sequence set:	WRLFMD/2019/00001-Ethiopia-O (10 sequences)
Sequence database set:	allseqs_O (4328 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:	11
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
ETH/19/2018	n/a	cattle	WRLFMD	Ethiopia	EA-3
ETH/37/2018	n/a	cattle	WRLFMD	Ethiopia	EA-3
ETH/23/2018	n/a	cattle	WRLFMD	Ethiopia	EA-3
ETH/25/2018	n/a	cattle	WRLFMD	Ethiopia	EA-3
ETH/18/2018	n/a	cattle	WRLFMD	Ethiopia	EA-3
ETH/22/2018	n/a	cattle	WRLFMD	Ethiopia	EA-3
ETH/26/2018	n/a	cattle	WRLFMD	Ethiopia	EA-3
ETH/24/2018	n/a	cattle	WRLFMD	Ethiopia	EA-3
ETH/20/2018	n/a	cattle	WRLFMD	Ethiopia	EA-3
ETH/21/2018	n/a	cattle	WRLFMD	Ethiopia	EA-3
EGY/19/2012	MK422548	cattle	WRLFMD	Egypt	EA-3
LIB/54/2012	n/a	goat	WRLFMD	Libya	EA-3
EGY/25/2012	MK422549	sheep	WRLFMD	Egypt	EA-3
ETH/7/2011	n/a	cattle	WRLFMD	Ethiopia	EA-3
ERI/4/2011	n/a	cattle	WRLFMD	Eritrea	EA-3
ETH/26/2011	n/a	cattle	WRLFMD	Ethiopia	EA-3
ERI/15/2011	n/a	porcine	WRLFMD	Eritrea	EA-3
ERI/14/2011	n/a	porcine	WRLFMD	Eritrea	EA-3
EGY/27/2012	n/a	cattle	WRLFMD	Egypt	EA-3
EGY/26/2012	n/a	sheep	WRLFMD	Egypt	EA-3
ETH/28/2011	n/a	cattle	WRLFMD	Ethiopia	EA-3
ERI/10/2011	n/a	porcine	WRLFMD	Eritrea	EA-3
ERI/17/2011	n/a	cattle	WRLFMD	Eritrea	EA-3
ERI/18/2011	n/a	cattle	WRLFMD	Eritrea	EA-3
ERI/13/2011	n/a	porcine	WRLFMD	Eritrea	EA-3
ERI/12/2011	n/a	porcine	WRLFMD	Eritrea	EA-3
ERI/11/2011	n/a	porcine	WRLFMD	Eritrea	EA-3
ERI/2/2011	n/a	cattle	WRLFMD	Eritrea	EA-3
ERI/1/2011	n/a	cattle	WRLFMD	Eritrea	EA-3
ERI/16/2011	n/a	porcine	WRLFMD	Eritrea	EA-3
ETH/59/2011	n/a	cattle	WRLFMD	Ethiopia	EA-3
ERI/3/2011	MK422550	cattle	WRLFMD	Eritrea	EA-3
ERI/8/2011	n/a	porcine	WRLFMD	Eritrea	EA-3
SUD/2/2012	MK422558	cattle	WRLFMD	Sudan	EA-3
SUD/6/2012	MK422561	cattle	WRLFMD	Sudan	EA-3
SUD/3/2012	MK422559	cattle	WRLFMD	Sudan	EA-3

*continued on next page*

label	accession	host(s)	lab	country	taxonomic information
SUD/1/2012	MK422557	cattle	WRLFMD	Sudan	EA-3
SUD/5/2012	MK422560	cattle	WRLFMD	Sudan	EA-3
SUD/4/2013	MK422562	cattle	WRLFMD	Sudan	EA-3
Ismailia 11/Egy/2016*	KX447138	cattle	Suez Canal Univ	Egypt	EA-3
Ismailia 6/Egy/2016*	KX447129	cattle	Suez Canal Univ	Egypt	EA-3
SUD/2/2017	MK422564	cattle	WRLFMD	Sudan	EA-3
SUD/3/2017	MK422565	cattle	WRLFMD	Sudan	EA-3
SUD/7/2017	MK422568	cattle	WRLFMD	Sudan	EA-3
SUD/15/2017	MK422569	cattle	WRLFMD	Sudan	EA-3
SUD/1/2016	MK422563	cattle	WRLFMD	Sudan	EA-3
PAT/11/2017	n/a	sheep	WRLFMD	Palestinian AT	EA-3
West Bank/PAT/2017*	n/a	sheep	KVI	Palestinian AT	EA-3
PAT/12/2017	n/a	sheep	WRLFMD	Palestinian AT	EA-3
PAT/1/2018	n/a	sheep	WRLFMD	Palestinian AT	EA-3
ISR/7/2017	n/a	cattle	WRLFMD	Israel	EA-3
PAT/4/2017	n/a	cattle	WRLFMD	Palestinian AT	EA-3
Fayoum 2/Egy/2017*	MF322689	n/a	MEVAC	Egypt	EA-3
Cairo 1/Egy/2017*	MF322683	n/a	MEVAC	Egypt	EA-3
PAT/10/2017	n/a	cattle	WRLFMD	Palestinian AT	EA-3
PAT/2/2017	n/a	cattle	WRLFMD	Palestinian AT	EA-3
PAT/5/2017	n/a	cattle	WRLFMD	Palestinian AT	EA-3
PAT/7/2017	n/a	cattle	WRLFMD	Palestinian AT	EA-3
Fayoum 4/Egy/2017*	MF322691	n/a	MEVAC	Egypt	EA-3
EGY/9/2017	n/a	cattle	WRLFMD	Egypt	EA-3
Gharbia 1/Egy/2017*	MF322685	n/a	MEVAC	Egypt	EA-3
Behira 2/Egy/2017*	MF322687	n/a	MEVAC	Egypt	EA-3
EGY/25/2017	n/a	cattle	WRLFMD	Egypt	EA-3
Egy-RL91-AHRI/2017*	MH729320	cattle	AHRI	Egypt	EA-3
Giza 1/Egy/2017*	MF322682	n/a	MEVAC	Egypt	EA-3
Egy-RL66-AHRI/2017*	MH729317	cattle	AHRI	Egypt	EA-3
EGY/7/2017	n/a	cattle	WRLFMD	Egypt	EA-3
EGY/11/2017	n/a	water buffalo	WRLFMD	Egypt	EA-3
Sharkia 1/Egy/2017*	MF322684	n/a	MEVAC	Egypt	EA-3
EGY/22/2017	n/a	water buffalo	WRLFMD	Egypt	EA-3
EGY/8/2017	n/a	cattle	WRLFMD	Egypt	EA-3
SUD/9/2011	MK422556	cattle	WRLFMD	Sudan	EA-3
SUD/6/2008	GU566062	cattle	WRLFMD	Sudan	EA-3
SUD/5/2008	GU566061	cattle	WRLFMD	Sudan	EA-3
SUD/4/2008	GU566060	cattle	WRLFMD	Sudan	EA-3
SUD/3/2008	GU566059	cattle	WRLFMD	Sudan	EA-3
SUD/1/2009	KX258033	cattle	WRLFMD	Sudan	EA-3
SUD/1/2010	KX258034	cattle	WRLFMD	Sudan	EA-3
SUD/2/2010	KX258035	cattle	WRLFMD	Sudan	EA-3
SUD/2/86	DQ165075	bovine	WRLFMD	Sudan	EA-3
TAI/189/87*	KY091288	bovine	TRRL	Thailand	SEA
IND/R2/75*	AF204276	n/a	PD-FMD	India	ME-SA
TUR/264/2009*	n/a	n/a	FMDI-Ankara	Turkey	ME-SA/PanAsia-2/SAN-09
IRN/18/2010	KY091283	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/BAL-09
IRN/31/2009	KY091284	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/FAR-09
PAK/16/2010	KY091285	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/PUN-10
IND/53/79	AF292107	bovine	PD-FMD	India	ME-SA
K83/79*	AJ303511	n/a	WRLFMD	Kenya	EA-1
ETH/1/2007	FJ798137	cattle	WRLFMD	Ethiopia	EA-3
ETH/3/2004	FJ798109	cattle	WRLFMD	Ethiopia	EA-3
UGA/3/2002	DQ165077	n/a	WRLFMD	Uganda	EA-2
ISA/1/62	AJ303500	n/a	WRLFMD	Indonesia	ISA-1

\*, not a WRLFMD Reference Number

n/a, not available