

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

Genotyping Report

Date: 16 March 2010

FMDV type SAT 2

Country: Ethiopia

Period: 2009-2010

No. of isolates: 13

BATCH: WRLFMD/2010/00008



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FAO World Reference Laboratory for FMD Genotyping Report

IAH-P-EP-MEG-FOR-005-3

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Serotype: SAT2	Report date: 15/03/2010
WRLFMD Ref No: ETH/64/2009	Reported by: N.J. Knowles
Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 11/10	
Location: Debre Birhan, Ethiopia	Topotype: XIII
Date collected: 19/11/2009	Genotype/strain: unnamed
Date received by WRLFMD: 20/02/2010	Sequence filename: ETH09-64.SEQ
Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Cattle	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 300
	Total turn-around time: 23 days
	Sequencing time: 4 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/65/2009	ETH09-65	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/67/2009	ETH09-67	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/68/2009	ETH09-68	648	648	0	100.00	0.00	XIII	unnamed
4	SAT2/ETH/69/2009	ETH09-69	648	648	0	100.00	0.00	XIII	unnamed
5	SAT2/ETH/70/2009	ETH09-70	648	648	0	100.00	0.00	XIII	unnamed
6	SAT2/ETH/72/2009	ETH09-72	648	648	0	100.00	0.00	XIII	unnamed
7	SAT2/ETH/73/2009	ETH09-73	648	648	0	100.00	0.00	XIII	unnamed
8	SAT2/ETH/74/2009	ETH09-74	648	648	0	100.00	0.00	XIII	unnamed
9	SAT2/ETH/48/2009	ETH09-48	648	646	0	99.69	0.31	XIII	unnamed
10	SAT2/ETH/52/2009	ETH09-52	648	646	0	99.69	0.31	XIII	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/2/2007 (FJ798161)	ETH07-02	648	633	0	97.69	2.31	XIII	unnamed
2	SAT2/SUD/6/77 (AY343939)	SUD77-AA	648	526	0	81.17	18.83	XIII	unnamed
3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	497	0	76.70	23.30	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	488	0	76.01	23.99	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	491	0	75.77	24.23	VIII	unnamed
6	SAT2/UGA/51/75 (AY343963)	UGA75-AA	648	477	0	73.61	26.39	XII	unnamed
7	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	476	0	73.46	26.54	IX	unnamed
8	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	474	1	73.26	26.74	VII	unnamed
9	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	473	0	72.99	27.01	X	unnamed
10	SAT2/NIG/2/75 (AF367139)	NIG75-02	648	470	0	72.53	27.47	V	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2	Report date: 15/03/2010
WRLFMD Ref No: ETH/65/2009	Reported by: N.J. Knowles
Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 12/10	
Location: Debre Birhan, Ethiopia	Topotype: XIII
Date collected: 19/11/2009	Genotype/strain: unnamed
Date received by WRLFMD: 20/02/2010	Sequence filename: ETH09-65.SEQ
Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Cattle	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 300
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1	SAT2/ETH/64/2009	ETH09-64	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/67/2009	ETH09-67	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/68/2009	ETH09-68	648	648	0	100.00	0.00	XIII	unnamed
4	SAT2/ETH/69/2009	ETH09-69	648	648	0	100.00	0.00	XIII	unnamed
5	SAT2/ETH/70/2009	ETH09-70	648	648	0	100.00	0.00	XIII	unnamed
6	SAT2/ETH/72/2009	ETH09-72	648	648	0	100.00	0.00	XIII	unnamed
7	SAT2/ETH/73/2009	ETH09-73	648	648	0	100.00	0.00	XIII	unnamed
8	SAT2/ETH/74/2009	ETH09-74	648	648	0	100.00	0.00	XIII	unnamed
9	SAT2/ETH/48/2009	ETH09-48	648	646	0	99.69	0.31	XIII	unnamed
10	SAT2/ETH/52/2009	ETH09-52	648	646	0	99.69	0.31	XIII	unnamed
Most Closely Related Reference Viruses									
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3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	497	0	76.70	23.30	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	488	0	76.01	23.99	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	491	0	75.77	24.23	VIII	unnamed
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7	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	476	0	73.46	26.54	IX	unnamed
8	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	474	1	73.26	26.74	VII	unnamed
9	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	473	0	72.99	27.01	X	unnamed
10	SAT2/NIG/2/75 (AF367139)	NIG75-02	648	470	0	72.53	27.47	V	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2	Report date: 15/03/2010
WRLFMD Ref No: ETH/67/2009	Reported by: N.J. Knowles
Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 14/10	
Location: Debre Birhan, Ethiopia	Topotype: XIII
Date collected: 19/11/2009	Genotype/strain: unnamed
Date received by WRLFMD: 20/02/2010	Sequence filename: ETH09-67.SEQ
Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Cattle	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 300
	Total turn-around time: 23 days
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Comments:	

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Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/64/2009	ETH09-64	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/65/2009	ETH09-65	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/68/2009	ETH09-68	648	648	0	100.00	0.00	XIII	unnamed
4	SAT2/ETH/69/2009	ETH09-69	648	648	0	100.00	0.00	XIII	unnamed
5	SAT2/ETH/70/2009	ETH09-70	648	648	0	100.00	0.00	XIII	unnamed
6	SAT2/ETH/72/2009	ETH09-72	648	648	0	100.00	0.00	XIII	unnamed
7	SAT2/ETH/73/2009	ETH09-73	648	648	0	100.00	0.00	XIII	unnamed
8	SAT2/ETH/74/2009	ETH09-74	648	648	0	100.00	0.00	XIII	unnamed
9	SAT2/ETH/48/2009	ETH09-48	648	646	0	99.69	0.31	XIII	unnamed
10	SAT2/ETH/52/2009	ETH09-52	648	646	0	99.69	0.31	XIII	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
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2	SAT2/SUD/6/77 (AY343939)	SUD77-AA	648	526	0	81.17	18.83	XIII	unnamed
3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	497	0	76.70	23.30	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	488	0	76.01	23.99	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	491	0	75.77	24.23	VIII	unnamed
6	SAT2/UGA/51/75 (AY343963)	UGA75-AA	648	477	0	73.61	26.39	XII	unnamed
7	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	476	0	73.46	26.54	IX	unnamed
8	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	474	1	73.26	26.74	VII	unnamed
9	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	473	0	72.99	27.01	X	unnamed
10	SAT2/NIG/2/75 (AF367139)	NIG75-02	648	470	0	72.53	27.47	V	unnamed

nt, nucleotides

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Serotype: SAT2	Report date: 15/03/2010
WRLFMD Ref No: ETH/68/2009	Reported by: N.J. Knowles
Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 15/10	
Location: Debre Birhan, Ethiopia	Topotype: XIII
Date collected: 19/11/2009	Genotype/strain: unnamed
Date received by WRLFMD: 20/02/2010	Sequence filename: ETH09-68.SEQ
Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Cattle	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 300
	Total turn-around time: 23 days
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Comments:	

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Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/64/2009	ETH09-64	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/65/2009	ETH09-65	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/67/2009	ETH09-67	648	648	0	100.00	0.00	XIII	unnamed
4	SAT2/ETH/69/2009	ETH09-69	648	648	0	100.00	0.00	XIII	unnamed
5	SAT2/ETH/70/2009	ETH09-70	648	648	0	100.00	0.00	XIII	unnamed
6	SAT2/ETH/72/2009	ETH09-72	648	648	0	100.00	0.00	XIII	unnamed
7	SAT2/ETH/73/2009	ETH09-73	648	648	0	100.00	0.00	XIII	unnamed
8	SAT2/ETH/74/2009	ETH09-74	648	648	0	100.00	0.00	XIII	unnamed
9	SAT2/ETH/48/2009	ETH09-48	648	646	0	99.69	0.31	XIII	unnamed
10	SAT2/ETH/52/2009	ETH09-52	648	646	0	99.69	0.31	XIII	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
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1	SAT2/ETH/2/2007 (FJ798161)	ETH07-02	648	633	0	97.69	2.31	XIII	unnamed
2	SAT2/SUD/6/77 (AY343939)	SUD77-AA	648	526	0	81.17	18.83	XIII	unnamed
3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	497	0	76.70	23.30	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	488	0	76.01	23.99	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	491	0	75.77	24.23	VIII	unnamed
6	SAT2/UGA/51/75 (AY343963)	UGA75-AA	648	477	0	73.61	26.39	XII	unnamed
7	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	476	0	73.46	26.54	IX	unnamed
8	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	474	1	73.26	26.74	VII	unnamed
9	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	473	0	72.99	27.01	X	unnamed
10	SAT2/NIG/2/75 (AF367139)	NIG75-02	648	470	0	72.53	27.47	V	unnamed

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Serotype: SAT2 WRLFMD Ref No: ETH/69/2009 Batch No: WRLFMD/2010/00008 Sender Ref: ETH 16/10 Location: Debre Birhan, Ethiopia Date collected: 19/11/2009 Date received by WRLFMD: 20/02/2010 Date received for sequencing: 11/03/2010 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: SAT2-1C445F/SAT-2B208R SAT2-P1-1223F/SAT-2B208R	Report date: 15/03/2010 Reported by: N.J. Knowles Checked by: J.M. Hammond Topotype: XIII Genotype/strain: unnamed Sequence filename: ETH09-69.SEQ Date sequence last updated: 15/03/2010 No. of Nt determined: 648 No. of ambiguities: 0 Gene length: 648 Total no. of comparisons: 518 Min. no. of nt for comparison: 300 Total turn-around time: 23 days Sequencing time: 4 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/64/2009	ETH09-64	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/65/2009	ETH09-65	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/67/2009	ETH09-67	648	648	0	100.00	0.00	XIII	unnamed
4	SAT2/ETH/68/2009	ETH09-68	648	648	0	100.00	0.00	XIII	unnamed
5	SAT2/ETH/70/2009	ETH09-70	648	648	0	100.00	0.00	XIII	unnamed
6	SAT2/ETH/72/2009	ETH09-72	648	648	0	100.00	0.00	XIII	unnamed
7	SAT2/ETH/73/2009	ETH09-73	648	648	0	100.00	0.00	XIII	unnamed
8	SAT2/ETH/74/2009	ETH09-74	648	648	0	100.00	0.00	XIII	unnamed
9	SAT2/ETH/48/2009	ETH09-48	648	646	0	99.69	0.31	XIII	unnamed
10	SAT2/ETH/52/2009	ETH09-52	648	646	0	99.69	0.31	XIII	unnamed
Most Closely Related Reference Viruses									
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Serotype: SAT2	Report date: 15/03/2010
WRLFMD Ref No: ETH/70/2009	Reported by: N.J. Knowles
Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 17/10	
Location: Debre Birhan, Ethiopia	Topotype: XIII
Date collected: 19/11/2009	Genotype/strain: unnamed
Date received by WRLFMD: 20/02/2010	Sequence filename: ETH09-70.SEQ
Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Cattle	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
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4	SAT2/ETH/68/2009	ETH09-68	648	648	0	100.00	0.00	XIII	unnamed
5	SAT2/ETH/69/2009	ETH09-69	648	648	0	100.00	0.00	XIII	unnamed
6	SAT2/ETH/72/2009	ETH09-72	648	648	0	100.00	0.00	XIII	unnamed
7	SAT2/ETH/73/2009	ETH09-73	648	648	0	100.00	0.00	XIII	unnamed
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Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 19/10	
Location: Debre Birhan, Ethiopia	Topotype: XIII
Date collected: 19/11/2009	Genotype/strain: unnamed
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Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Pig	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 300
	Total turn-around time: 23 days
	Sequencing time: 4 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/64/2009	ETH09-64	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/65/2009	ETH09-65	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/67/2009	ETH09-67	648	648	0	100.00	0.00	XIII	unnamed
4	SAT2/ETH/68/2009	ETH09-68	648	648	0	100.00	0.00	XIII	unnamed
5	SAT2/ETH/69/2009	ETH09-69	648	648	0	100.00	0.00	XIII	unnamed
6	SAT2/ETH/70/2009	ETH09-70	648	648	0	100.00	0.00	XIII	unnamed
7	SAT2/ETH/73/2009	ETH09-73	648	648	0	100.00	0.00	XIII	unnamed
8	SAT2/ETH/74/2009	ETH09-74	648	648	0	100.00	0.00	XIII	unnamed
9	SAT2/ETH/48/2009	ETH09-48	648	646	0	99.69	0.31	XIII	unnamed
10	SAT2/ETH/52/2009	ETH09-52	648	646	0	99.69	0.31	XIII	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/2/2007 (FJ798161)	ETH07-02	648	633	0	97.69	2.31	XIII	unnamed
2	SAT2/SUD/6/77 (AY343939)	SUD77-AA	648	526	0	81.17	18.83	XIII	unnamed
3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	497	0	76.70	23.30	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	488	0	76.01	23.99	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	491	0	75.77	24.23	VIII	unnamed
6	SAT2/UGA/51/75 (AY343963)	UGA75-AA	648	477	0	73.61	26.39	XII	unnamed
7	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	476	0	73.46	26.54	IX	unnamed
8	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	474	1	73.26	26.74	VII	unnamed
9	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	473	0	72.99	27.01	X	unnamed
10	SAT2/NIG/2/75 (AF367139)	NIG75-02	648	470	0	72.53	27.47	V	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2	Report date: 15/03/2010
WRLFMD Ref No: ETH/73/2009	Reported by: N.J. Knowles
Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 20/10	
Location: Debre Birhan, Ethiopia	Topotype: XIII
Date collected: 19/11/2009	Genotype/strain: unnamed
Date received by WRLFMD: 20/02/2010	Sequence filename: ETH09-73.SEQ
Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Cattle	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 300
	Total turn-around time: 23 days
	Sequencing time: 4 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/64/2009	ETH09-64	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/65/2009	ETH09-65	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/67/2009	ETH09-67	648	648	0	100.00	0.00	XIII	unnamed
4	SAT2/ETH/68/2009	ETH09-68	648	648	0	100.00	0.00	XIII	unnamed
5	SAT2/ETH/69/2009	ETH09-69	648	648	0	100.00	0.00	XIII	unnamed
6	SAT2/ETH/70/2009	ETH09-70	648	648	0	100.00	0.00	XIII	unnamed
7	SAT2/ETH/72/2009	ETH09-72	648	648	0	100.00	0.00	XIII	unnamed
8	SAT2/ETH/74/2009	ETH09-74	648	648	0	100.00	0.00	XIII	unnamed
9	SAT2/ETH/48/2009	ETH09-48	648	646	0	99.69	0.31	XIII	unnamed
10	SAT2/ETH/52/2009	ETH09-52	648	646	0	99.69	0.31	XIII	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/2/2007 (FJ798161)	ETH07-02	648	633	0	97.69	2.31	XIII	unnamed
2	SAT2/SUD/6/77 (AY343939)	SUD77-AA	648	526	0	81.17	18.83	XIII	unnamed
3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	497	0	76.70	23.30	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	488	0	76.01	23.99	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	491	0	75.77	24.23	VIII	unnamed
6	SAT2/UGA/51/75 (AY343963)	UGA75-AA	648	477	0	73.61	26.39	XII	unnamed
7	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	476	0	73.46	26.54	IX	unnamed
8	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	474	1	73.26	26.74	VII	unnamed
9	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	473	0	72.99	27.01	X	unnamed
10	SAT2/NIG/2/75 (AF367139)	NIG75-02	648	470	0	72.53	27.47	V	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2	Report date: 15/03/2010
WRLFMD Ref No: ETH/74/2009	Reported by: N.J. Knowles
Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 21/10	
Location: Debre Birhan, Ethiopia	Topotype: XIII
Date collected: 19/11/2009	Genotype/strain: unnamed
Date received by WRLFMD: 20/02/2010	Sequence filename: ETH09-74.SEQ
Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Cattle	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 300
	Total turn-around time: 23 days
	Sequencing time: 4 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/64/2009	ETH09-64	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/65/2009	ETH09-65	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/67/2009	ETH09-67	648	648	0	100.00	0.00	XIII	unnamed
4	SAT2/ETH/68/2009	ETH09-68	648	648	0	100.00	0.00	XIII	unnamed
5	SAT2/ETH/69/2009	ETH09-69	648	648	0	100.00	0.00	XIII	unnamed
6	SAT2/ETH/70/2009	ETH09-70	648	648	0	100.00	0.00	XIII	unnamed
7	SAT2/ETH/72/2009	ETH09-72	648	648	0	100.00	0.00	XIII	unnamed
8	SAT2/ETH/73/2009	ETH09-73	648	648	0	100.00	0.00	XIII	unnamed
9	SAT2/ETH/48/2009	ETH09-48	648	646	0	99.69	0.31	XIII	unnamed
10	SAT2/ETH/52/2009	ETH09-52	648	646	0	99.69	0.31	XIII	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/2/2007 (FJ798161)	ETH07-02	648	633	0	97.69	2.31	XIII	unnamed
2	SAT2/SUD/6/77 (AY343939)	SUD77-AA	648	526	0	81.17	18.83	XIII	unnamed
3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	497	0	76.70	23.30	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	488	0	76.01	23.99	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	491	0	75.77	24.23	VIII	unnamed
6	SAT2/UGA/51/75 (AY343963)	UGA75-AA	648	477	0	73.61	26.39	XII	unnamed
7	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	476	0	73.46	26.54	IX	unnamed
8	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	474	1	73.26	26.74	VII	unnamed
9	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	473	0	72.99	27.01	X	unnamed
10	SAT2/NIG/2/75 (AF367139)	NIG75-02	648	470	0	72.53	27.47	V	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2	Report date: 16/03/2010
WRLFMD Ref No: ETH/75/2009	Reported by: N.J. Knowles
Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 22/10	
Location: Sululta, Ethiopia	Topotype: XIII
Date collected: 29/12/2009	Genotype/strain: unnamed
Date received by WRLFMD: 20/02/2010	Sequence filename: ETH09-75.SEQ
Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Cattle	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 300
	Total turn-around time: 24 days
	Sequencing time: 5 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/76/2009	ETH09-76	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/77/2009	ETH09-77	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/48/2009	ETH09-48	648	645	0	99.54	0.46	XIII	unnamed
4	SAT2/ETH/52/2009	ETH09-52	648	645	0	99.54	0.46	XIII	unnamed
5	SAT2/ETH/53/2009	ETH09-53	648	645	0	99.54	0.46	XIII	unnamed
6	SAT2/ETH/64/2009	ETH09-64	648	645	0	99.54	0.46	XIII	unnamed
7	SAT2/ETH/65/2009	ETH09-65	648	645	0	99.54	0.46	XIII	unnamed
8	SAT2/ETH/67/2009	ETH09-67	648	645	0	99.54	0.46	XIII	unnamed
9	SAT2/ETH/68/2009	ETH09-68	648	645	0	99.54	0.46	XIII	unnamed
10	SAT2/ETH/69/2009	ETH09-69	648	645	0	99.54	0.46	XIII	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/2/2007 (FJ798161)	ETH07-02	648	632	0	97.53	2.47	XIII	unnamed
2	SAT2/SUD/6/77 (AY343939)	SUD77-AA	648	527	0	81.33	18.67	XIII	unnamed
3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	497	0	76.70	23.30	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	489	0	76.17	23.83	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	491	0	75.77	24.23	VIII	unnamed
6	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	478	0	73.77	26.23	IX	unnamed
7	SAT2/UGA/51/75 (AY343963)	UGA75-AA	648	477	0	73.61	26.39	XII	unnamed
8	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	475	1	73.42	26.58	VII	unnamed
9	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	473	0	72.99	27.01	X	unnamed
10	SAT2/ZAI/1/82 (AF367100)	ZAI82-01	647	470	1	72.64	27.36	X	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2 WRLFMD Ref No: ETH/76/2009 Batch No: WRLFMD/2010/00008 Sender Ref: ETH 23/10 Location: Sululta, Ethiopia Date collected: 29/12/2009 Date received by WRLFMD: 20/02/2010 Date received for sequencing: 11/03/2010 Species: Cattle Material used: BTy1 Region sequenced: VP1 RT-PCR primers: SAT2-1C445F/SAT-2B208R SAT2-P1-1223F/SAT-2B208R	Report date: 16/03/2010 Reported by: N.J. Knowles Checked by: J.M. Hammond Topotype: XIII Genotype/strain: unnamed Sequence filename: ETH09-76.SEQ Date sequence last updated: 15/03/2010 No. of Nt determined: 648 No. of ambiguities: 0 Gene length: 648 Total no. of comparisons: 518 Min. no. of nt for comparison: 300 Total turn-around time: 24 days Sequencing time: 5 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/75/2009	ETH09-75	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/77/2009	ETH09-77	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/48/2009	ETH09-48	648	645	0	99.54	0.46	XIII	unnamed
4	SAT2/ETH/52/2009	ETH09-52	648	645	0	99.54	0.46	XIII	unnamed
5	SAT2/ETH/53/2009	ETH09-53	648	645	0	99.54	0.46	XIII	unnamed
6	SAT2/ETH/64/2009	ETH09-64	648	645	0	99.54	0.46	XIII	unnamed
7	SAT2/ETH/65/2009	ETH09-65	648	645	0	99.54	0.46	XIII	unnamed
8	SAT2/ETH/67/2009	ETH09-67	648	645	0	99.54	0.46	XIII	unnamed
9	SAT2/ETH/68/2009	ETH09-68	648	645	0	99.54	0.46	XIII	unnamed
10	SAT2/ETH/69/2009	ETH09-69	648	645	0	99.54	0.46	XIII	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/2/2007 (FJ798161)	ETH07-02	648	632	0	97.53	2.47	XIII	unnamed
2	SAT2/SUD/6/77 (AY343939)	SUD77-AA	648	527	0	81.33	18.67	XIII	unnamed
3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	497	0	76.70	23.30	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	489	0	76.17	23.83	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	491	0	75.77	24.23	VIII	unnamed
6	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	478	0	73.77	26.23	IX	unnamed
7	SAT2/UGA/51/75 (AY343963)	UGA75-AA	648	477	0	73.61	26.39	XII	unnamed
8	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	475	1	73.42	26.58	VII	unnamed
9	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	473	0	72.99	27.01	X	unnamed
10	SAT2/ZAI/1/82 (AF367100)	ZAI82-01	647	470	1	72.64	27.36	X	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2	Report date: 16/03/2010
WRLFMD Ref No: ETH/77/2009	Reported by: N.J. Knowles
Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 24/10	
Location: Sululta, Ethiopia	Topotype: XIII
Date collected: 29/12/2009	Genotype/strain: unnamed
Date received by WRLFMD: 20/02/2010	Sequence filename: ETH09-77.SEQ
Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Cattle	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 300
	Total turn-around time: 24 days
	Sequencing time: 5 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/75/2009	ETH09-75	648	648	0	100.00	0.00	XIII	unnamed
2	SAT2/ETH/76/2009	ETH09-76	648	648	0	100.00	0.00	XIII	unnamed
3	SAT2/ETH/48/2009	ETH09-48	648	645	0	99.54	0.46	XIII	unnamed
4	SAT2/ETH/52/2009	ETH09-52	648	645	0	99.54	0.46	XIII	unnamed
5	SAT2/ETH/53/2009	ETH09-53	648	645	0	99.54	0.46	XIII	unnamed
6	SAT2/ETH/64/2009	ETH09-64	648	645	0	99.54	0.46	XIII	unnamed
7	SAT2/ETH/65/2009	ETH09-65	648	645	0	99.54	0.46	XIII	unnamed
8	SAT2/ETH/67/2009	ETH09-67	648	645	0	99.54	0.46	XIII	unnamed
9	SAT2/ETH/68/2009	ETH09-68	648	645	0	99.54	0.46	XIII	unnamed
10	SAT2/ETH/69/2009	ETH09-69	648	645	0	99.54	0.46	XIII	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/2/2007 (FJ798161)	ETH07-02	648	632	0	97.53	2.47	XIII	unnamed
2	SAT2/SUD/6/77 (AY343939)	SUD77-AA	648	527	0	81.33	18.67	XIII	unnamed
3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	497	0	76.70	23.30	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	489	0	76.17	23.83	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	491	0	75.77	24.23	VIII	unnamed
6	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	478	0	73.77	26.23	IX	unnamed
7	SAT2/UGA/51/75 (AY343963)	UGA75-AA	648	477	0	73.61	26.39	XII	unnamed
8	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	475	1	73.42	26.58	VII	unnamed
9	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	473	0	72.99	27.01	X	unnamed
10	SAT2/ZAI/1/82 (AF367100)	ZAI82-01	647	470	1	72.64	27.36	X	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2	Report date: 15/03/2010
WRLFMD Ref No: ETH/2/2010	Reported by: N.J. Knowles
Batch No: WRLFMD/2010/00008	Checked by: J.M. Hammond
Sender Ref: ETH 08/10	
Location: Debre Zeit, Ethiopia	Topotype: XIII
Date collected: 25/01/2010	Genotype/strain: unnamed
Date received by WRLFMD: 20/02/2010	Sequence filename: ETH10-02.SEQ
Date received for sequencing: 11/03/2010	Date sequence last updated: 15/03/2010
Species: Cattle	No. of Nt determined: 648
Material used: BTy1	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 518
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 300
	Total turn-around time: 23 days
	Sequencing time: 4 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/48/2009	ETH09-48	648	642	0	99.07	0.93	XIII	unnamed
2	SAT2/ETH/52/2009	ETH09-52	648	642	0	99.07	0.93	XIII	unnamed
3	SAT2/ETH/53/2009	ETH09-53	648	642	0	99.07	0.93	XIII	unnamed
4	SAT2/ETH/64/2009	ETH09-64	648	642	0	99.07	0.93	XIII	unnamed
5	SAT2/ETH/65/2009	ETH09-65	648	642	0	99.07	0.93	XIII	unnamed
6	SAT2/ETH/67/2009	ETH09-67	648	642	0	99.07	0.93	XIII	unnamed
7	SAT2/ETH/68/2009	ETH09-68	648	642	0	99.07	0.93	XIII	unnamed
8	SAT2/ETH/69/2009	ETH09-69	648	642	0	99.07	0.93	XIII	unnamed
9	SAT2/ETH/70/2009	ETH09-70	648	642	0	99.07	0.93	XIII	unnamed
10	SAT2/ETH/72/2009	ETH09-72	648	642	0	99.07	0.93	XIII	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/ETH/2/2007 (FJ798161)	ETH07-02	648	631	0	97.38	2.62	XIII	unnamed
2	SAT2/SUD/6/77 (AY343939)	SUD77-AA	648	526	0	81.17	18.83	XIII	unnamed
3	SAT2/ETH/2/91 (AY343938)	ETH91-AB	648	495	0	76.39	23.61	XIV	unnamed
4	SAT2/ZAI/1/74 (DQ009737)	ZAI74-AA	642	489	0	76.17	23.83	VIII	unnamed
5	SAT2/RWA/1/2000* (AF367134)	RWA00-01	648	489	0	75.46	24.54	VIII	unnamed
6	SAT2/UGA/51/75 (AY343963)	UGA75-AA	648	476	0	73.46	26.54	XII	unnamed
7	SAT2/SAU/6/2000 (AF367135)	SAU00A06	647	474	1	73.26	26.74	VII	unnamed
8	SAT2/KEN/2/84 (AY343941)	KEN84-AC	648	474	0	73.15	26.85	IX	unnamed
9	SAT2/NIG/2/75 (AF367139)	NIG75-02	648	472	0	72.84	27.16	V	unnamed
10	SAT2/UGA/19/98 (AY343969)	UGA98-AA	648	472	0	72.84	27.16	X	unnamed

nt, nucleotides

*, not a WRLFMD reference number

Assembled with Report Generator v3.1

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Report on FMDV SAT2 in Ethiopia in 2009-2010

Batch: WRLFMD/2010/00008

Software: MEGA 4.0

No. of Taxa : 300

Data File : n:\evd\meg\db\fmdv\sat2\ETH2010a.meg

Data Title : SAT2 Ethiopia 2009-2010

Data Type : Nucleotide (Coding)

Analysis : Phylogeny reconstruction

Tree Inference : =====

->Method : Neighbor-Joining

->Phylogeny Test and options : Bootstrap (1000 replicates; seed=64238)

Include Sites : =====

->Gaps/Missing Data : Pairwise Deletion

->Codon Positions : 1st+2nd+3rd+Noncoding

Substitution Model : =====

->Model : Nucleotide: Kimura 2-parameter

->Substitutions to Include : d: Transitions + Transversions

->Pattern among Lineages : Same (Homogeneous)

->Rates among sites : Uniform rates

No. of Sites : 651

No Of Bootstrap Reps = 1000

Only bootstrap values of 70% and above are shown

*, not a WRLFMD Ref. No.

N.J. Knowles & J. Wadsworth, 16 March 2010

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