



WRLFMD

INSTITUTE FOR ANIMAL HEALTH

Director: Professor Martin W. Shirley, PhD

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FMD Sequencing Report

Lab Reference WRL Batch Number: WRLFMD/2009/00022

Sender Details:

Date Received:

30th April 2009

Country of Origin:

Kenya

Date Reported:

17th August 2009

Dear Dr. Eunice,

Sequencing work has now been completed in respect of the samples you submitted and the details are as attached. Please note that all of our phylogenetic trees can be accessed via the internet at:

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

Results Approved By:

Official Stamp:

Date:

17/08/09

To help us improve the quality of our service, please send any suggestions or requests to the Reference Laboratory by fax (+44 (0) 1483 232621 or email: elizabeth.byrom@bbsrc.ac.uk)

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<p>Serotype: SAT2 WRL Ref No: KEN/18/2008 Sender Ref: K43/08 Date collected: 01/06/2008 Date received by WRLFMD: 30/04/2009 Date received for sequencing: 01/06/2009 Species: CATTLE Material used: BTy2 Region sequenced: VP1 RT-PCR primers: SAT2-1C445F/SAT-2B208R; SAT2-P1-1223F/SAT-2B208R No. of Nt determined: 648 No. of ambiguities: 0 Gene length: 648</p>	<p>Report date: 14/08/2009 Reported by: N.J. Knowles Checked by: D.P. King Topotype: IV Genotype/strain: none designated Sequence filename: KEN08-18.SEQ Date sequence last updated: 07/08/2009 Total no. of comparisons: 460 Min. no. of nt for comparison: 300 Total turn-around time: 106 days Sequencing time: 74 days</p>
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Comments:

Ten Most Closely Related Viruses

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	SAT2/KEN/21/2008	KEN08-21	648	648	0	100	0
2	SAT2/KEN/14/2007	KEN07-14	648	637	0	98.3	1.7
3	SAT2/KEN/10/2007	KEN07-10	648	635	0	97.99	2.01
4	SAT2/KEN/5/2007	KEN07-05	648	635	0	97.99	2.01
5	SAT2/KEN/11/2007	KEN07-11	648	634	0	97.84	2.16
6	SAT2/KEN/22/2007	KEN07-22	648	634	0	97.84	2.16
7	SAT2/KEN/2/2007	KEN07-02	648	633	0	97.69	2.31
8	SAT2/KEN/13/2007	KEN07-13	648	632	0	97.53	2.47
9	SAT2/KEN/19/2007	KEN07-19	648	632	0	97.53	2.47
10	SAT2/KEN/19/2008	KEN08-19	648	632	0	97.53	2.47

Relationships to Reference Virus Strains

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	SAT2/K52/84 (Kenya)	KEN84K52	648	569	0	87.81	12.19
2	SAT2/K183/74 (Kenya)	KEN74183	648	566	0	87.35	12.65
3	SAT2/RHO/1/48 [AJ251475]	ZAM48A01	648	514	0	79.32	20.68
4	SAT2/SA/106/59 (AY593848)	RSA59-A	648	510	0	78.7	21.3
5	SAT2/ZIM/7/83 [AF136607]	ZIM83A07	648	486	0	75	25
6	SAT2/GHA/2/90 (AF479415)	GHA90A02	648	476	0	73.46	26.54
7	SAT2/SAU/6/2000 [AF367135]	SAU00A06	647	473	1	73.11	26.89
8	SAT2/GAM/8/79 [AF479410]	GAM79-08	648	464	0	71.6	28.4
9	SAT2/ANG/4/74 [AF479417]	ANG74-04	648	462	0	71.3	28.7
10	SAT2/KEN/3/57	KEN57-03	648	458	0	70.68	29.32

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2 WRL Ref No: KEN/21/2008 Sender Ref: K53/08 Date collected: 01/06/2008 Date received by WRLFMD: 30/04/2009 Date received for sequencing: 01/06/2009 Species: CATTLE Material used: BTy2 Region sequenced: VP1 RT-PCR primers: SAT2-1C445F/SAT-2B208R; SAT2-P1-1223F/SAT-2B208R No. of Nt determined: 648 No. of ambiguities: 0 Gene length: 648	Report date: 14/08/2009 Reported by: N.J. Knowles Checked by: D.P. King Topotype: IV Genotype/strain: none designated Sequence filename: KEN08-21.SEQ Date sequence last updated: 07/08/2009 Total no. of comparisons: 460 Min. no. of nt for comparison: 300 Total turn-around time: 106 days Sequencing time: 74 days
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Comments:

Ten Most Closely Related Viruses

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	SAT2/KEN/18/2008	KEN08-18	648	648	0	100	0
2	SAT2/KEN/14/2007	KEN07-14	648	637	0	98.3	1.7
3	SAT2/KEN/10/2007	KEN07-10	648	635	0	97.99	2.01
4	SAT2/KEN/5/2007	KEN07-05	648	635	0	97.99	2.01
5	SAT2/KEN/11/2007	KEN07-11	648	634	0	97.84	2.16
6	SAT2/KEN/22/2007	KEN07-22	648	634	0	97.84	2.16
7	SAT2/KEN/2/2007	KEN07-02	648	633	0	97.69	2.31
8	SAT2/KEN/13/2007	KEN07-13	648	632	0	97.53	2.47
9	SAT2/KEN/19/2007	KEN07-19	648	632	0	97.53	2.47
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3	SAT2/RHO/1/48 [AJ251475]	ZAM48A01	648	514	0	79.32	20.68
4	SAT2/SA/106/59 (AY593848)	RSA59-A	648	510	0	78.7	21.3
5	SAT2/ZIM/7/83 [AF136607]	ZIM83A07	648	486	0	75	25
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7	SAT2/SAU/6/2000 [AF367135]	SAU00A06	647	473	1	73.11	26.89
8	SAT2/GAM/8/79 [AF479410]	GAM79-08	648	464	0	71.6	28.4
9	SAT2/ANG/4/74 [AF479417]	ANG74-04	648	462	0	71.3	28.7
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nt, nucleotides

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Serotype: SAT2 WRL Ref No: KEN/31/2008 Sender Ref: K81/08 Date collected: 01/09/2008 Date received by WRLFMD: 30/04/2009 Date received for sequencing: 01/06/2009 Species: CATTLE Material used: BTy1 Region sequenced: VP1 RT-PCR primers: SAT2-1C445F/SAT-2B208R; SAT2-P1-1223F/SAT-2B208R No. of Nt determined: 648 No. of ambiguities: 0 Gene length: 648	Report date: 14/08/2009 Reported by: N.J. Knowles Checked by: D.P. King Topotype: IV Genotype/strain: none designated Sequence filename: KEN08-31.SEQ Date sequence last updated: 07/08/2009 Total no. of comparisons: 460 Min. no. of nt for comparison: 300 Total turn-around time: 106 days Sequencing time: 74 days																																																																																								
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7	SAT2/K65/82 (Kenya)	KEN82K65	648	565	0	87.19	12.81																																																																																		
8	SAT2/K52/84 (B)	KEN84-BB	648	564	0	87.04	12.96																																																																																		
9	SAT2/K52/84 (Kenya)	KEN84K52	648	564	0	87.04	12.96																																																																																		
10	SAT2/KEN/19/2008	KEN08-19	648	564	0	87.04	12.96																																																																																		
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<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Pos.</th> <th>Virus name</th> <th>Filename</th> <th>No. nt compared</th> <th>No. nt matched</th> <th>No. of ambiguities</th> <th>% Identity</th> <th>% Difference</th> </tr> </thead> <tbody> <tr><td>1</td><td>SAT2/K52/84 (Kenya)</td><td>KEN84K52</td><td>648</td><td>564</td><td>0</td><td>87.04</td><td>12.96</td></tr> <tr><td>2</td><td>SAT2/K183/74 (Kenya)</td><td>KEN74183</td><td>648</td><td>554</td><td>0</td><td>85.49</td><td>14.51</td></tr> <tr><td>3</td><td>SAT2/RHO/1/48 [AJ251475]</td><td>ZAM48A01</td><td>648</td><td>519</td><td>0</td><td>80.09</td><td>19.91</td></tr> <tr><td>4</td><td>SAT2/SA/106/59 (AY593848)</td><td>RSA59-A</td><td>648</td><td>514</td><td>0</td><td>79.32</td><td>20.68</td></tr> <tr><td>5</td><td>SAT2/ZIM/7/83 [AF136607]</td><td>ZIM83A07</td><td>648</td><td>501</td><td>0</td><td>77.31</td><td>22.69</td></tr> <tr><td>6</td><td>SAT2/GHA/2/90 (AF479415)</td><td>GHA90A02</td><td>648</td><td>480</td><td>0</td><td>74.07</td><td>25.93</td></tr> <tr><td>7</td><td>SAT2/ANG/4/74 [AF479417]</td><td>ANG74-04</td><td>648</td><td>472</td><td>0</td><td>72.84</td><td>27.16</td></tr> <tr><td>8</td><td>SAT2/KEN/3/57</td><td>KEN57-03</td><td>648</td><td>461</td><td>0</td><td>71.14</td><td>28.86</td></tr> <tr><td>9</td><td>SAT2/GAM/8/79 [AF479410]</td><td>GAM79-08</td><td>648</td><td>460</td><td>0</td><td>70.99</td><td>29.01</td></tr> <tr><td>10</td><td>SAT2/SAU/6/2000 [AF367135]</td><td>SAU00A06</td><td>647</td><td>457</td><td>1</td><td>70.63</td><td>29.37</td></tr> </tbody> </table>		Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference	1	SAT2/K52/84 (Kenya)	KEN84K52	648	564	0	87.04	12.96	2	SAT2/K183/74 (Kenya)	KEN74183	648	554	0	85.49	14.51	3	SAT2/RHO/1/48 [AJ251475]	ZAM48A01	648	519	0	80.09	19.91	4	SAT2/SA/106/59 (AY593848)	RSA59-A	648	514	0	79.32	20.68	5	SAT2/ZIM/7/83 [AF136607]	ZIM83A07	648	501	0	77.31	22.69	6	SAT2/GHA/2/90 (AF479415)	GHA90A02	648	480	0	74.07	25.93	7	SAT2/ANG/4/74 [AF479417]	ANG74-04	648	472	0	72.84	27.16	8	SAT2/KEN/3/57	KEN57-03	648	461	0	71.14	28.86	9	SAT2/GAM/8/79 [AF479410]	GAM79-08	648	460	0	70.99	29.01	10	SAT2/SAU/6/2000 [AF367135]	SAU00A06	647	457	1	70.63	29.37
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nt, nucleotides *, not a WRLFMD reference number																																																																																									

Molecular Epidemiology Report Form

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Page 1 of 1

Serotype: SAT2 WRL Ref No: KEN/13/2009 Sender Ref: K33/09 Date collected: 01/02/2009 Date received by WRLFMD: 30/04/2009 Date received for sequencing: 01/06/2009 Species: CATTLE Material used: BTy1 Region sequenced: VP1 RT-PCR primers: SAT2-1C445F/SAT-2B208R; SAT2-P1-1223F/SAT-2B208R No. of Nt determined: 648 No. of ambiguities: 0 Gene length: 648	Report date: 14/08/2009 Reported by: N.J. Knowles Checked by: D.P. King Topotype: IV Genotype/strain: none designated Sequence filename: KEN09-13.SEQ Date sequence last updated: 07/08/2009 Total no. of comparisons: 460 Min. no. of nt for comparison: 300 Total turn-around time: 106 days Sequencing time: 74 days						
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	SAT2/KEN/11/2009	KEN09-11	648	640	0	98.77	1.23
2	SAT2/ETH/2/90 (1989)(AY343936)	ETH90-AB	647	569	1	87.94	12.06
3	SAT2/MAL/1/2004 (OVI)	MAL04-01	384	337	0	87.76	12.24
4	SAT2/TAN/1/86 (AY343971)	TAN86-AA	648	568	0	87.65	12.35
5	SAT2/ETH/1/91 (AY343937)	ETH91-AA	648	567	0	87.5	12.5
6	SAT2/ETH/1/90 (1989)(AY343935)	ETH90-AA	648	566	0	87.35	12.65
7	SAT2/K65/82 (Kenya)	KEN82K65	648	566	0	87.35	12.65
8	SAT2/K52/84 (B)	KEN84-BB	648	565	0	87.19	12.81
9	SAT2/K52/84 (Kenya)	KEN84K52	648	565	0	87.19	12.81
10	SAT2/KEN/1/86 (AY343943)	KEN86-AA	648	564	0	87.04	12.96
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	SAT2/K52/84 (Kenya)	KEN84K52	648	565	0	87.19	12.81
2	SAT2/K183/74 (Kenya)	KEN74183	648	553	0	85.34	14.66
3	SAT2/RHO/1/48 [AJ251475]	ZAM48A01	648	517	0	79.78	20.22
4	SAT2/SA/106/59 (AY593848)	RSA59-A	648	513	0	79.17	20.83
5	SAT2/ZIM/7/83 [AF136607]	ZIM83A07	648	503	0	77.62	22.38
6	SAT2/GHA/2/90 (AF479415)	GHA90A02	648	480	0	74.07	25.93
7	SAT2/ANG/4/74 [AF479417]	ANG74-04	648	474	0	73.15	26.85
8	SAT2/KEN/3/57	KEN57-03	648	462	0	71.3	28.7
9	SAT2/GAM/8/79 [AF479410]	GAM79-08	648	457	0	70.52	29.48
10	SAT2/SAU/6/2000 [AF367135]	SAU00A06	647	454	1	70.17	29.83
nt, nucleotides *, not a WRLFMD reference number							

Report on FMDV SAT 2 in Kenya in 2008-2009

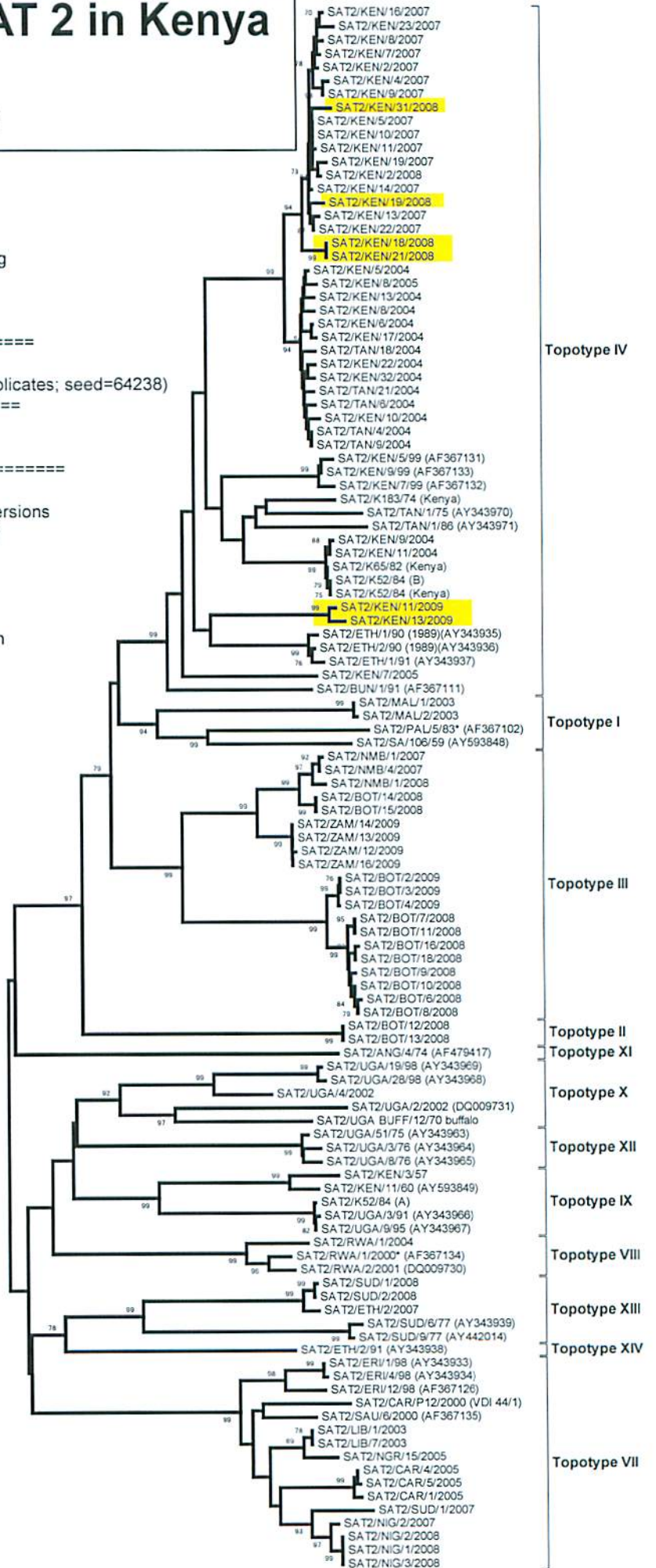
Batch: WRLFMD/2009/00022

Software: MEGA 4.0
 No. of Taxa : 116
 Data File : n:\evd\meg\db\fmdv\sat2\KEN2009a.meg
 Data Title : SAT 2 Kenya 2008-2009
 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 : 648
 No Of Bootstrap Reps = 1000

Only bootstrap values of 70% and above are shown

*, not a WRLFMD Ref. No.

N.J. Knowles & J. Wadsworth, 14 August 2009



0.05