

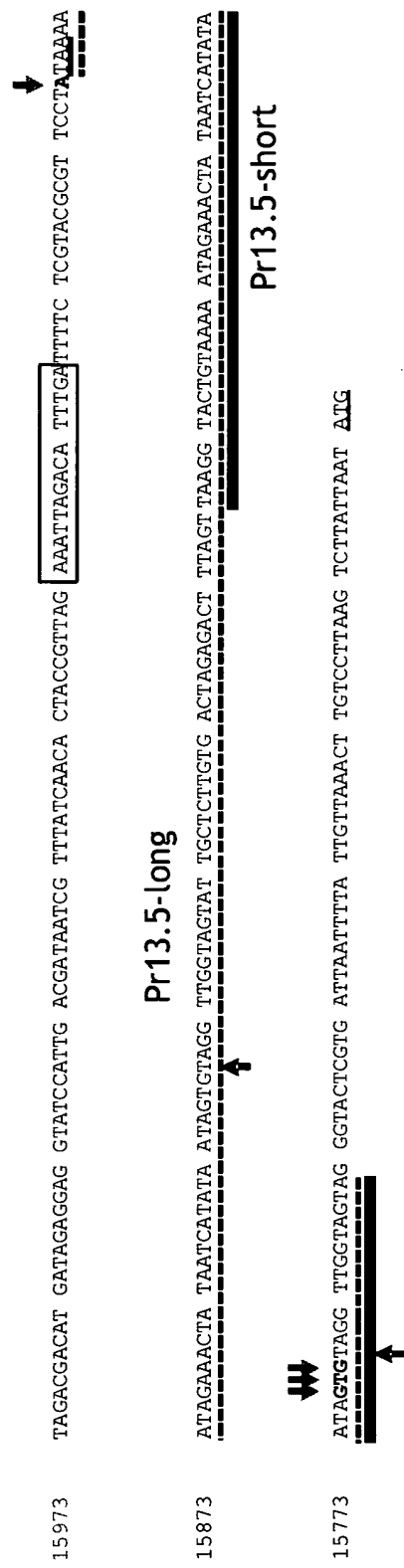


Figure 1

15973	TAGACGACAT GATAGAGGAG GATCCATTG ACGATAATCG TTTATCAACA CTACCGTTAG AAATTAGACA TTTGATTTTC TCGTACGCCG TCCCTA	AAAA
15873	ATAGAAACTA TAATCATATA ATAGTGTAGG TTGGTAGTAT TGCTCTTGTG ACTAGAGACT TTAGT TAAGG TACTG	AAAA ATAGAACTA TAATCATATA
15773	ATAGTGTAGG TTGGTAGTAT GGTACTCGTG ATTAATTTTA TTGTAAACT TGTCCCTTAAG TCTTATTAT ATG	

Pr13.5-long

Pr13.5-short

Figure 2

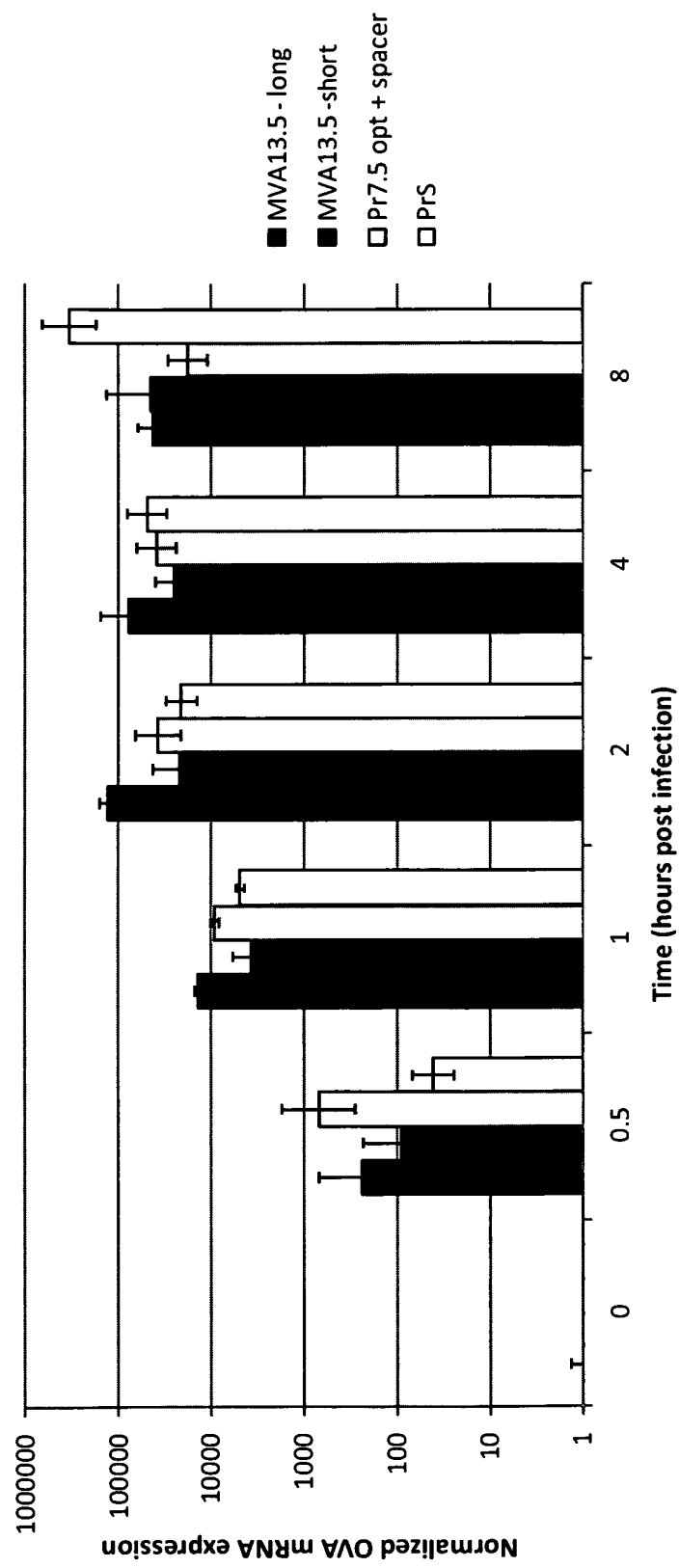


Figure 3

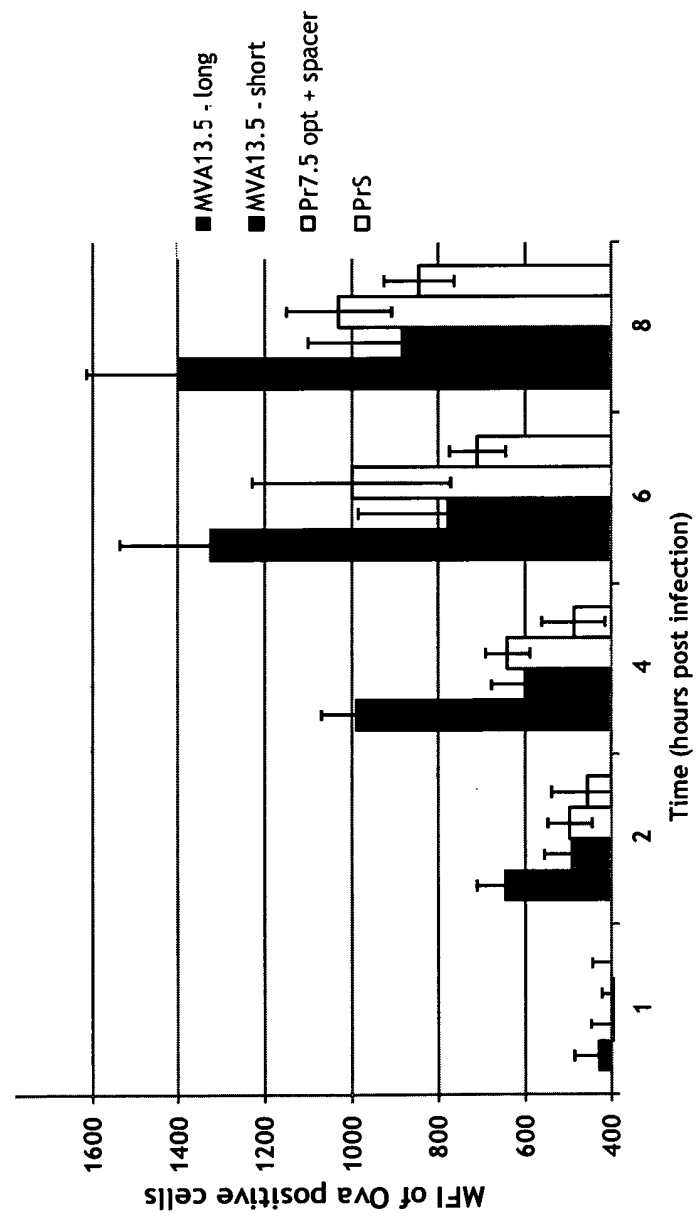


Figure 4

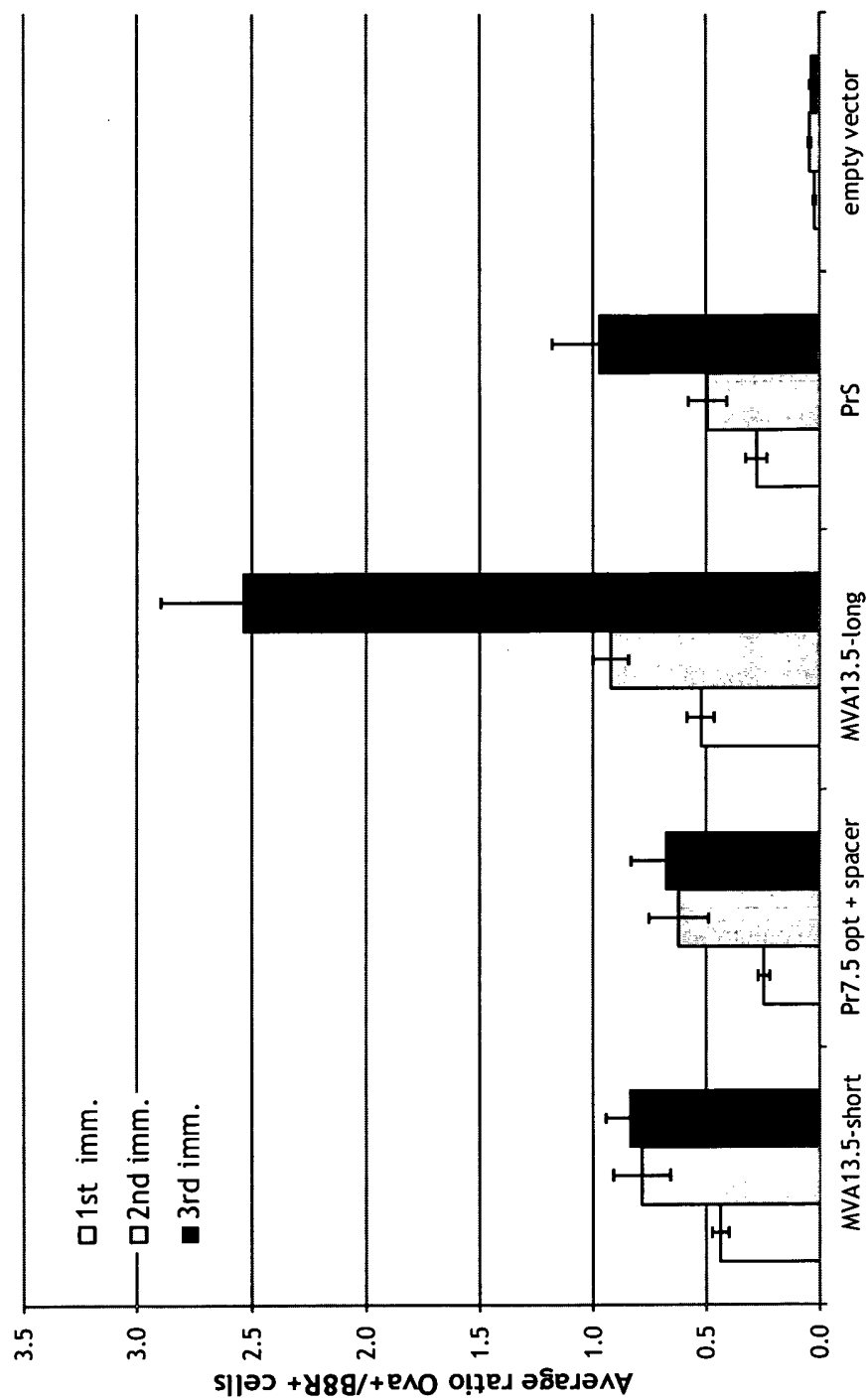


Figure 5

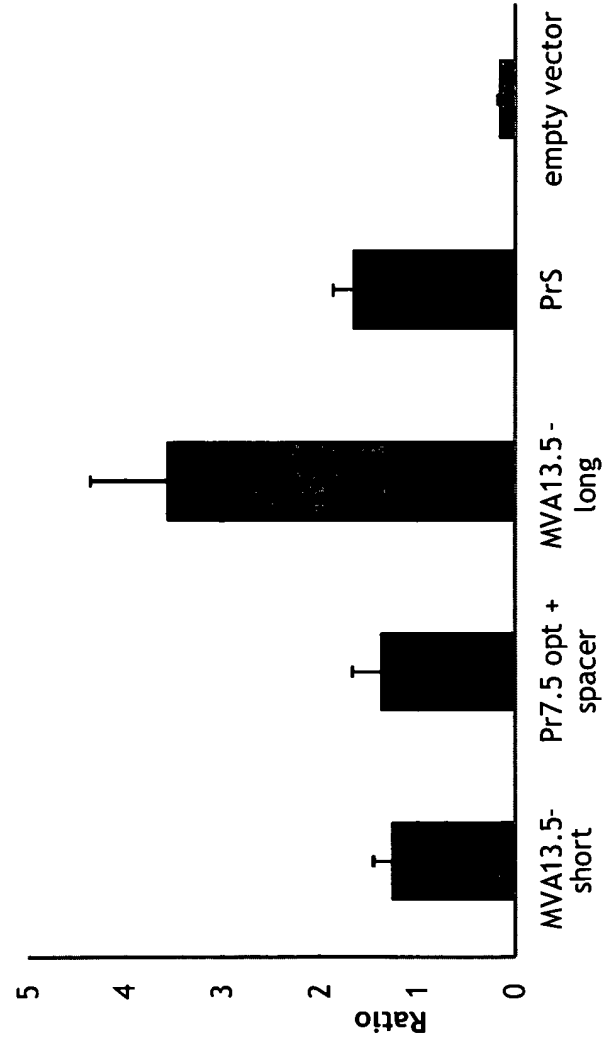


Figure 6

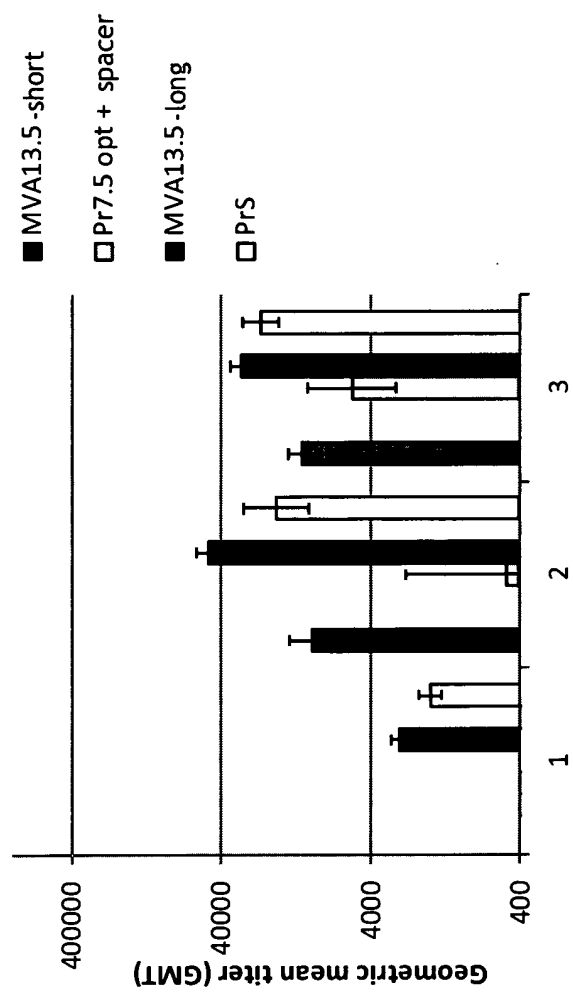


Figure 7A

Promoter	Fold over PrS		
	1 st immunization	2 st immunization	3 st immunization
PrS	1.0	1.0	1.0
Pr13.5-short	0.1	0.6	0.5
Pr13.5-long	1.6	2.8	1.3
Pr7.5 opt + spacer	0.0	0.0	0.2
MVA50L + PrSSL	0.1	0.2	0.1
MVA170 + PrSSL	0.0	0.8	0.5

Figure 7B

Query	1	TAAAAATAGAACTATAATCATATAATAGTGTAGGTTGGTAGTA	44
<u>383866716</u>	20492	.....	20449
<u>383866716</u>	20410	-	20369
<u>373449558</u>	15874	.....	15831
<u>373449558</u>	15954	.....	15911
<u>373449318</u>	15878	.....	15835
<u>373449318</u>	15958	.....	15915
<u>373449318</u>	182742	.....	182785
<u>373449318</u>	182822	.....	182865
<u>373449076</u>	15864	.....	15821
<u>373449076</u>	15944	.....	15901
<u>373449076</u>	182666	.....	182709
<u>373449076</u>	182746	.....	182789
<u>373448847</u>	15961	.....	15918
<u>373448847</u>	16041	.....	15998
<u>373448604</u>	15956	.....	15913
<u>373448604</u>	16036	.....	15993
<u>373448604</u>	182785	.....	182828
<u>373448604</u>	182865	.....	182908
<u>373448367</u>	15865	.....	15822
<u>373448367</u>	15945	.....	15902
<u>373448367</u>	182603	.....	182646
<u>373448367</u>	182683	.....	182726
<u>373448133</u>	15832	.....	15789
<u>373448133</u>	15912	.....	15869
<u>373447891</u>	15957	.....	15914
<u>373447891</u>	16037	.....	15994
<u>373447891</u>	182788	.....	182831
<u>373447891</u>	182868	.....	182911
<u>373447653</u>	15866	.....	15823
<u>373447653</u>	15946	.....	15903
<u>373447653</u>	182609	.....	182652
<u>373447653</u>	182689	.....	182732
<u>373447414</u>	15833	.....	15790
<u>373447414</u>	15913	.....	15870
<u>373447414</u>	182552	.....	182595
<u>373447414</u>	182632	.....	182675
<u>373447175</u>	15860	.....	15817
<u>373447175</u>	15940	.....	15897
<u>373447175</u>	182579	.....	182622
<u>373447175</u>	182659	.....	182702
<u>325558812</u>	28969	.....	28926
<u>325558812</u>	28889	T.....	28847
<u>325558595</u>	30006	.....	29963
<u>325558595</u>	29924	.....	29884
<u>325558381</u>	27900	.....	27857
<u>325558381</u>	27817	C.....	27777
<u>325558165</u>	30228	.....	30185
<u>325558165</u>	30148	T.....	30106
<u>325557951</u>	27554	.....	27511
<u>325557951</u>	27472	C.....	27432
<u>167412463</u>	12323	.....	12280
<u>167412463</u>	12403	.....	12360

FIGURE 8A

<u>160857876</u>	13468	.....	13425
<u>160857876</u>	13548	.....	13505
<u>149786253</u>	9445	.....	9402
<u>149786253</u>	9525	.....	9482
<u>119352440</u>	15780	.....	15737
<u>119352440</u>	15860	.....	15817
<u>90819652</u>	18373	.....	18330
<u>90819652</u>	18453	.....	18410
<u>115607420</u>	9159	.....	9116
<u>115607420</u>	9239	.....	9196
<u>115607419</u>	9159	.....	9116
<u>115607419</u>	9239	.....	9196
<u>115607418</u>	9359	.....	9316
<u>115607418</u>	9439	.....	9396
<u>115607417</u>	9359	.....	9316
<u>115607417</u>	9439	.....	9396
<u>111184167</u>	24167	.....	24124
<u>111184167</u>	24247	T.....	24204
<u>109726482</u>	7441	.....	7398
<u>109726482</u>	7517	.....	7474
<u>109726279</u>	7443	.....	7400
<u>109726279</u>	7519	.....	7476
<u>109726076</u>	7652	.....	7609
<u>109726076</u>	7728	.....	7685
<u>109725872</u>	7441	.....	7398
<u>109725872</u>	7517	.....	7474
<u>109725669</u>	7441	.....	7398
<u>109725669</u>	7517	.....	7474
<u>109725465</u>	7441	.....	7398
<u>109725465</u>	7517	.....	7474
<u>109725262</u>	7511	.....	7468
<u>109725262</u>	7587	.....	7544
<u>109725056</u>	7650	.....	7607
<u>109725056</u>	7726	.....	7683
<u>109724854</u>	7371	.....	7328
<u>109724854</u>	7447	.....	7404
<u>109724650</u>	7785	.....	7742
<u>109724650</u>	7861	.....	7818
<u>109724445</u>	7649	.....	7606
<u>109724445</u>	7725	.....	7682
<u>109724243</u>	7579	.....	7536
<u>109724243</u>	7655	.....	7612
<u>109724039</u>	7441	.....	7398
<u>109724039</u>	7517	.....	7474
<u>94490104</u>	7441	.....	7398
<u>94490104</u>	7517	.....	7474
<u>94489896</u>	7422	.....	7379
<u>94489896</u>	7498	.....	7455
<u>94489695</u>	7441	.....	7398
<u>94489695</u>	7517	.....	7474
<u>94489496</u>	7441	.....	7398
<u>94489496</u>	7517	.....	7474

FIGURE 8B

<u>94489293</u>	7372	.....	7329
<u>94489293</u>	7448	.....	7405
<u>94489094</u>	7581	.....	7538
<u>94489094</u>	7657	.....	7614
<u>94488894</u>	7443	.....	7400
<u>94488894</u>	7519	.....	7476
<u>94488693</u>	7722	.....	7679
<u>94488693</u>	7798	.....	7755
<u>94488492</u>	7653	.....	7610
<u>94488492</u>	7729	.....	7686
<u>94488292</u>	6666	.....	6623
<u>94488292</u>	6742	.....	6699
<u>94488092</u>	6666	.....	6623
<u>94488092</u>	6742	.....	6699
<u>94487887</u>	7441	.....	7398
<u>94487887</u>	7517	.....	7474
<u>94487685</u>	7444	.....	7401
<u>94487685</u>	7520	.....	7477
<u>94487484</u>	7443	.....	7400
<u>94487484</u>	7519	.....	7476
<u>94487278</u>	7449	.....	7406
<u>94487278</u>	7373	A.....	7330
<u>94487078</u>	7442	.....	7399
<u>94487078</u>	7518	.....	7475
<u>94486875</u>	7579	.....	7536
<u>94486875</u>	7655	.....	7612
<u>94486673</u>	7430	.....	7387
<u>94486673</u>	7507	\	7463
			
		A	
<u>94486471</u>	7431	.....	7388
<u>94486471</u>	7508	\	7464
			
		A	
<u>94486268</u>	7442	.....	7399
<u>94486268</u>	7519	\	7475
			
		A	
<u>94486065</u>	7442	.....	7399
<u>94486065</u>	7519	\	7475
			
		A	
<u>94485863</u>	7441	.....	7398
<u>94485863</u>	7517	.....	7474
<u>94485659</u>	7441	.....	7398
<u>94485659</u>	7517	.....	7474
<u>94485457</u>	7863	.....	7820
<u>94485457</u>	7939	.....	7896

FIGURE 8C

<u>94485254</u>	7863	.....	7820
<u>94485254</u>	7939	.....	7896
<u>94485053</u>	7648	.....	7605
<u>94485053</u>	7724	.....	7681
<u>94484855</u>	7648	.....	7605
<u>94484855</u>	7724	.....	7681
<u>94484657</u>	7648	.....	7605
<u>94484657</u>	7724	.....	7681
<u>94484460</u>	7648	.....	7605
<u>94484460</u>	7724	.....	7681
<u>94484252</u>	7422	.....	7379
<u>94484252</u>	7498	.....	7455
<u>94484050</u>	7450	.....	7407
<u>94484050</u>	7526	.....	7483
<u>94483847</u>	7450	.....	7407
<u>94483847</u>	7526	.....	7483
<u>94483641</u>	7510	.....	7467
<u>94483641</u>	7586	.....	7543
<u>90660453</u>	12795	.....	12752
<u>90660453</u>	12719	-.....T.....	12677
<u>90660233</u>	28919	.....	28876
<u>90660233</u>	28837	.....	28797
<u>38348858</u>	16052	.....	16009
<u>38348858</u>	16132	.....	16089
<u>38348858</u>	182942	.....	182985
<u>38348858</u>	183022	.....	183065
<u>37551435</u>	16065	.....	16022
<u>37551435</u>	16145	.....	16102
<u>88900616</u>	18618	.....	18575
<u>88900616</u>	18698	.....	18655
<u>88900616</u>	185511	.....	185554
<u>88900616</u>	185591	.....	185634
<u>44971363</u>	17722	.....	17679
<u>44971363</u>	17802	.....	17759
<u>47088326</u>	10008	.....	9965
<u>47088326</u>	10088	.....	10045
<u>56713341</u>	15689	.....	15646
<u>56713341</u>	15769	.....	15726
<u>56713625</u>	15689	.....	15646
<u>56713625</u>	15769	.....	15726
<u>56713624</u>	15612	.....	15569
<u>56713624</u>	15692	.....	15649
<u>18482913</u>	15989	.....	15946
<u>18482913</u>	15911	T.....	15869
<u>22123748</u>	22960	.....	22917
<u>22123748</u>	22878	-G.....	22837
<u>19717929</u>	14304	.....	14261
<u>19717929</u>	14226	T.....	14184
<u>2772662</u>	15798	.....	15755
<u>2772662</u>	15878	.....	15835
<u>29692106</u>	13086	.....	13043
<u>29692106</u>	13166	.....	13123

FIGURE 8D

<u>5830555</u>	6996	.....	6953
<u>5830555</u>	7072	.....	7029
<u>885796</u>	7223	.....	7180
<u>885796</u>	7299	.....	7256
<u>885724</u>	6996	.....	6953
<u>885724</u>	7072	.....	7029
<u>885686</u>	7012	.....	6969
<u>885686</u>	7088	.....	7045
<u>456758</u>	6964	.....	6921
<u>456758</u>	7040	.....	6997
<u>6969640</u>	12632	.....	12589
<u>6969640</u>	12712	.....	12669
<u>623595</u>	7664	.....	7621
<u>623595</u>	7740	.....	7697
<u>335691</u>	3950	.....	3907
<u>335691</u>	4030	.....	3987
<u>335317</u>	16234	.....	16191
<u>335317</u>	16154	.....	16119
<u>325559026</u>	27934	A.....	27891
<u>325559026</u>	27854	.....	27813
<u>325514012</u>	27520	C.....	27477
<u>325514012</u>	27600	.....	27559
<u>325559238</u>	28458	.....	28418
<u>325559238</u>	28540	A.....	28500
<u>30795158</u>	29579	.....	29539
<u>30795158</u>	29661	A.....	29621
<u>325557737</u>	28302	C.....	28260
<u>325557737</u>	28382	.....	28343
<u>68449479</u>	15249	C.....	15206
<u>68449479</u>	15169	.....	15154
<u>68449280</u>	15746	C.....	15703
<u>68449280</u>	15666	.....	15651
<u>68448677</u>	15249	C.....	15206
<u>68448677</u>	15169	.....	15154
<u>59858806</u>	15322	C.....	15279
<u>59858806</u>	15242	.....	15227
<u>58220470</u>	14913	C.....	14870
<u>58220470</u>	14833	.....	14818
<u>51342166</u>	15076	C.....	15033
<u>51342166</u>	14996	.....	14981
<u>30519405</u>	29201	C.....	29159
<u>30519405</u>	29282	.....	29243
<u>323098609</u>	13319	.....	13289
<u>323098609</u>	13398	.....	13356
<u>323098410</u>	13348	.....	13318
<u>323098410</u>	13427	-	13385
<u>300872625</u>	13482	.....	13452
<u>300872625</u>	13561	-	13519
<u>56236951</u>	7856	.....	7826
<u>56236951</u>	7935	-	7893
<u>68449077</u>	13480	.....	13450
<u>68449077</u>	13559	-	13517

FIGURE 8E

<u>68448876</u>	13500	.....	13470
<u>68448876</u>	13579	-	13537
<u>17529780</u>	13356	.....	13326
<u>17529780</u>	13435	-	13393

FIGURE 8F

<u>gi|383866716|JQ410350.1</u>	Ectromelia virus culture-collection ATCC:VR-1431, complete genome
<u>gi|373449558|JN654986.1</u>	Vaccinia virus strain Dryvax clone DPP21, complete genome
<u>gi|373449318|JN654985.1</u>	Vaccinia virus strain Dryvax clone DPP20, complete genome
<u>gi|373449076|JN654984.1</u>	Vaccinia virus strain Dryvax clone DPP19, complete genome
<u>gi|373448847|JN654983.1</u>	Vaccinia virus strain Dryvax clone DPP17, complete genome
<u>gi|373448604|JN654982.1</u>	Vaccinia virus strain Dryvax clone DPP16, complete genome
<u>gi|373448367|JN654981.1</u>	Vaccinia virus strain Dryvax clone DPP15, complete genome
<u>gi|373448133|JN654980.1</u>	Vaccinia virus strain Dryvax clone DPP13, complete genome
<u>gi|373447891|JN654979.1</u>	Vaccinia virus strain Dryvax clone DPP12, complete genome
<u>gi|373447653|JN654978.1</u>	Vaccinia virus strain Dryvax clone DPP11, complete genome
<u>gi|373447414|JN654977.1</u>	Vaccinia virus strain Dryvax clone DPP10, complete genome
<u>gi|373447175|JN654976.1</u>	Vaccinia virus strain Dryvax clone DPP9, complete genome
<u>gi|325558812|HQ420898.1</u>	Cowpox virus strain Germany_2002_MK Y, complete genome
<u>gi|325558595|HQ420897.1</u>	Cowpox virus strain Germany_1998_2, complete genome
<u>gi|325558381|HQ420896.1</u>	Cowpox virus strain Germany_1990_2, complete genome
<u>gi|325558165|HQ420895.1</u>	Cowpox virus strain Germany_1980_EP4, complete genome
<u>gi|325557951|HQ420894.1</u>	Cowpox virus strain France_2001_Nancy, complete genome
<u>gi|167412463|EU410304.1</u>	Vaccinia virus GLV-1h68, complete genome
<u>gi|160857876|AM501482.1</u>	Vaccinia virus Ankara strain chorioallantois vaccinia virus Ankara (CVA), complete coding genome
<u>gi|149786253|EF675191.1</u>	Vaccinia virus strain MVATGN33.1 Modified Virus Ankara, complete genome
<u>gi|119352440|DQ121394.1</u>	Vaccinia virus strain Lister clone VACV107, complete genome
<u>gi|90819652|DQ439815.1</u>	Vaccinia virus strain DUKE, complete genome
<u>gi|115607420|DQ983239.1</u>	Vaccinia virus strain AGR-MVA-572pre genomic sequence
<u>gi|115607419|DQ983238.1</u>	Vaccinia virus strain MVA-BN genomic sequence
<u>gi|115607418|DQ983237.1</u>	Vaccinia virus strain MVA-572 genomic sequence
<u>gi|115607417|DQ983236.1</u>	Vaccinia virus strain MVA-I721 genomic sequence
<u>gi|111184167|DQ792504.1</u>	Horsepox virus isolate MNR-76, complete genome
<u>gi|109726482|DQ437592.1</u>	Variola virus strain Syria 1972 V72-199, complete genome
<u>gi|109726279|DQ437591.1</u>	Variola virus strain Sumatra 1970 V70-222, complete genome
<u>gi|109726076|DQ437590.1</u>	Variola virus strain Somalia 1977, complete genome
<u>gi|109725872|DQ437589.1</u>	Variola virus strain Pakistan 1969 (Rafiq Lahore), complete sequence
<u>gi|109725669|DQ437588.1</u>	Variola virus strain Nepal 1973, complete genome
<u>gi|109725465|DQ437587.1</u>	Variola virus strain Iran 1972 2602 Tabriz, complete genome
<u>gi|109725262|DQ437586.1</u>	Variola virus strain India 1964 7125 Vellore, complete genome

FIGURE 9A

[gi|109725056|DQ437585.1](#) Variola virus strain India 1964 7124 Vellore, complete genome
[gi|109724854|DQ437584.1](#) Variola virus strain Germany 1958 Heidelberg, complete genome
[gi|109724650|DQ437583.1](#) Variola virus strain Congo 1970, complete genome
[gi|109724445|DQ437582.1](#) Variola virus strain China Horn 1948, complete genome
[gi|109724243|DQ437581.1](#) Variola virus strain Bangladesh 1975 v75-550 Banu, complete genome
[gi|109724039|DQ437580.1](#) Variola virus strain Afghanistan 1970 Variolator 4, complete genome
[gi|94490104|DQ441448.1](#) Variola virus strain Yugoslavia 1972 V72-164, complete genome
[gi|94489896|DQ441447.1](#) Variola virus strain United Kingdom 1952 Butler, complete genome
[gi|94489695|DQ441446.1](#) Variola virus strain United Kingdom 1947 Higgins (Staffordshire), complete genome
[gi|94489496|DQ441445.1](#) Variola virus strain United Kingdom 1946 Hinden (Middlesex), complete genome
[gi|94489293|DQ441444.1](#) Variola virus strain United Kingdom 1946 Harvey, complete genome
[gi|94489094|DQ441443.1](#) Variola virus strain Tanzania 1965 kembula, complete genome
[gi|94488894|DQ441442.1](#) Variola virus strain Sumatra 1970 V70-228, complete genome
[gi|94488693|DQ441441.1](#) Variola virus strain Sudan 1947 (Rumbec), complete genome
[gi|94488492|DQ441440.1](#) Variola virus strain Sudan 1947 (Juba), complete genome
[gi|94488292|DQ441439.1](#) Variola virus strain Somalia 1977 (V77-1605), complete genome
[gi|94488092|DQ441438.1](#) Variola virus strain Somalia 1977 (V77-1252), complete genome
[gi|94487887|DQ441437.1](#) Variola virus strain Sierra Leone 1969 (V68-258), complete genome
[gi|94487685|DQ441436.1](#) Variola virus strain South Africa 1965 (103 T'vaal, Nelspruit), complete genome
[gi|94487484|DQ441435.1](#) Variola virus strain South Africa 1965 (102 Natal, Ingwavuma), complete genome
[gi|94487278|DQ441434.1](#) Variola virus strain Niger 1969 (001, importation from Nigeria), complete genome
[gi|94487078|DQ441433.1](#) Variola virus strain Kuwait 1967 (K1629), complete genome
[gi|94486875|DQ441432.1](#) Variola virus strain Korea 1947 (Lee, Masterseed), complete genome
[gi|94486673|DQ441431.1](#) Variola virus strain Japan 1951 (Stillwell, Masterseed), complete genome
[gi|94486471|DQ441430.1](#) Variola virus strain Japan 1951 (Harper, Masterseed), complete genome
[gi|94486268|DQ441429.1](#) Variola virus strain Japan 1946 (Yamada MS-2(A) Tokyo), complete genome
[gi|94486065|DQ441428.1](#) Variola virus strain India 1953 (New Delhi), complete genome
[gi|94485863|DQ441427.1](#) Variola virus strain India 1953 (Kali-Muthu-M50 Madras), complete genome

FIGURE 9B

<u>gi|94485659|DQ441426.1</u>	Variola virus strain Guinea 1969 (005), complete genome
<u>gi|94485457|DQ441425.1</u>	Variola virus strain Ethiopia 1972 (Eth17 R14-1X-72 Addis), complete genome
<u>gi|94485254|DQ441424.1</u>	Variola virus strain Ethiopia 1972 (Eth16 R14-1X-72 Addis), complete genome
<u>gi|94485053|DQ441423.1</u>	Variola virus strain Congo 9 1970 (v74-227 Gispén), complete genome
<u>gi|94484855|DQ441422.1</u>	Variola virus strain Bangladesh 1974 (Solaiman), complete genome
<u>gi|94484657|DQ441421.1</u>	Variola virus strain Bangladesh 1974 (Shahzaman), complete genome
<u>gi|94484460|DQ441420.1</u>	Variola virus strain Bangladesh 1974 (nur islam), complete genome
<u>gi|94484252|DQ441419.1</u>	Variola virus strain Brazil 1966 (v66-39 Sao Paulo), complete genome
<u>gi|94484050|DQ441418.1</u>	Variola virus strain Botswana 1973 (v73-225), complete genome
<u>gi|94483847|DQ441417.1</u>	Variola virus strain Botswana 1972 (v72-143), complete genome
<u>gi|94483641|DQ441416.1</u>	Variola virus strain Benin, Dahomey 1968 (v68-59), complete genome
<u>gi|90660453|DQ437594.1</u>	Taterapox virus strain Dahomey 1968, complete genome
<u>gi|90660233|DQ437593.1</u>	Cowpox virus strain Germany 91-3, complete genome
<u>gi|38348858|AY313847.1</u>	Vaccinia virus strain Acambis clone 2000, complete genome
<u>gi|37551435|AY313848.1</u>	Vaccinia virus strain Acambis clone 3, complete genome
<u>gi|88900616|DQ377945.1</u>	Vaccinia virus strain 3737, complete genome
<u>gi|44971363|AY484669.1</u>	Rabbitpox virus, complete genome
<u>gi|47088326|AY603355.1</u>	Vaccinia virus strain Acambis 3000 Modified Virus Ankara (MVA), complete genome
<u>gi|56713341|AY678275.1</u>	Vaccinia virus strain LC16m8, complete genome
<u>gi|56713625|AY678277.1</u>	Vaccinia virus strain LC16mO, complete genome
<u>gi|56713624|AY678276.1</u>	Vaccinia virus strain Lister, complete genome
<u>gi|18482913|AF438165.1</u>	Camelpox virus M-96 from Kazakhstan, complete genome
<u>gi|22123748|AF012825.2</u>	Ectromelia virus strain Moscow, complete genome
<u>gi|19717929|AY009089.1</u>	Camelpox virus CMS, complete genome
<u>gi|2772662|U94848.1</u>	Vaccinia virus strain Ankara, complete genomic sequence
<u>gi|29692106|AY243312.1</u>	Vaccinia virus WR, complete genome
<u>gi|5830555|Y16780.1</u>	variola minor virus complete genome
<u>gi|885796|U18340.1</u>	Variola virus Somalia-1977 left variable region
<u>gi|885724|U18338.1</u>	Variola virus Garcia-1966 left near-terminal region
<u>gi|885686|U18337.1</u>	Variola virus Congo-1965 left near-terminal region
<u>gi|456758|X69198.1</u>	Variola virus DNA complete genome
<u>gi|6969640|AF095689.1</u>	Vaccinia virus (strain Tian Tan) complete genome
<u>gi|623595|L22579.1</u>	Variola major virus (strain Bangladesh-1975) complete genome

FIGURE 9C

<u>gi|335691|M22812.1</u>	Vaccinia virus genome, left end
<u>gi|335317|M35027.1</u>	Vaccinia virus Copenhagen, complete genome
<u>gi|325559026|HQ420899.1</u>	Cowpox virus strain Norway_1994_MAN, complete genome
<u>gi|325514012|HQ407377.1</u>	Cowpox virus strain Austria 1999, complete genome
<u>gi|325559238|HQ420900.1</u>	Cowpox virus strain UK2000_K2984, complete genome
<u>gi|30795158|AF482758.2</u>	Cowpox virus strain Brighton Red, complete genome
<u>gi|325557737|HQ420893.1</u>	Cowpox virus strain Finland_2000_MAN, complete genome
<u>gi|68449479|DQ011157.1</u>	Monkeypox virus strain USA_2003_039, complete genome
<u>gi|68449280|DQ011156.1</u>	Monkeypox virus strain Liberia_1970_184, complete genome
<u>gi|68448677|DQ011153.1</u>	Monkeypox virus strain USA_2003_044, complete genome
<u>gi|59858806|AY753185.1</u>	Monkeypox virus strain COP-58, complete genome
<u>gi|58220470|AY741551.1</u>	Monkeypox virus isolate Sierra Leone, complete genome
<u>gi|51342166|AY603973.1</u>	Monkeypox virus strain MPXV-WRAIR7-61, complete genome
<u>gi|30519405|X94355.2</u>	Cowpox virus strain GRI-90, complete genome
<u>gi|323098609|HQ857563.1</u>	Monkeypox virus strain D14L knockout, complete genome
<u>gi|323098410|HQ857562.1</u>	Monkeypox virus strain V79-I-005, complete genome
<u>gi|300872625|HM172544.1</u>	Monkeypox virus strain Zaire 1979-005, complete genome
<u>gi|56236951|AY743598.1</u>	Monkeypox virus strain Congo-8, partial
<u>gi|68449077|DQ011155.1</u>	Monkeypox virus strain Zaire_1979-005, complete genome
<u>gi|68448876|DQ011154.1</u>	Monkeypox virus strain Congo_2003_358, complete genome
<u>gi|17529780|AF380138.1</u>	Monkeypox virus strain Zaire-96-I-16, complete genome

FIGURE 9D