

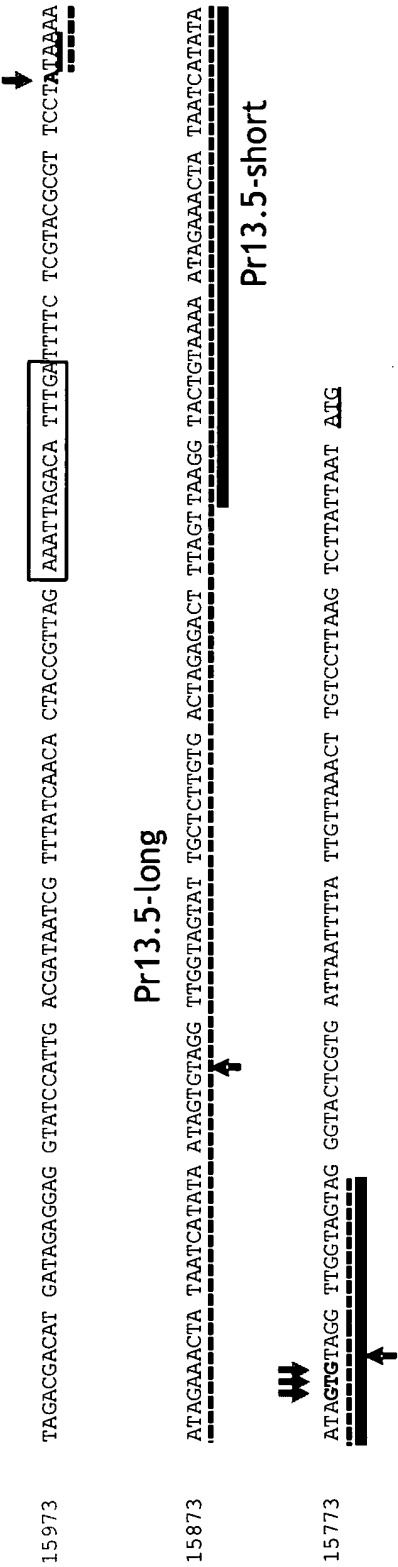


Figure 1

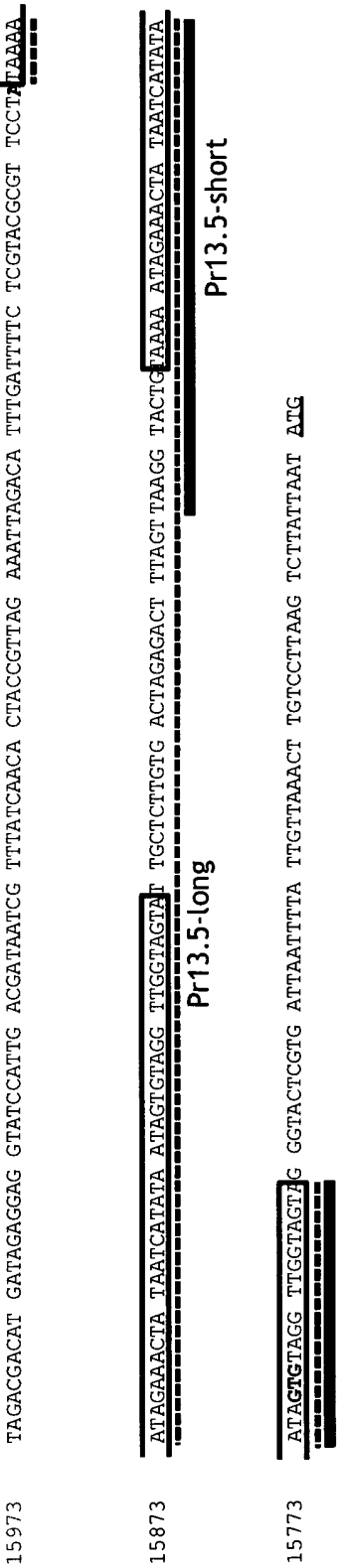


Figure 2

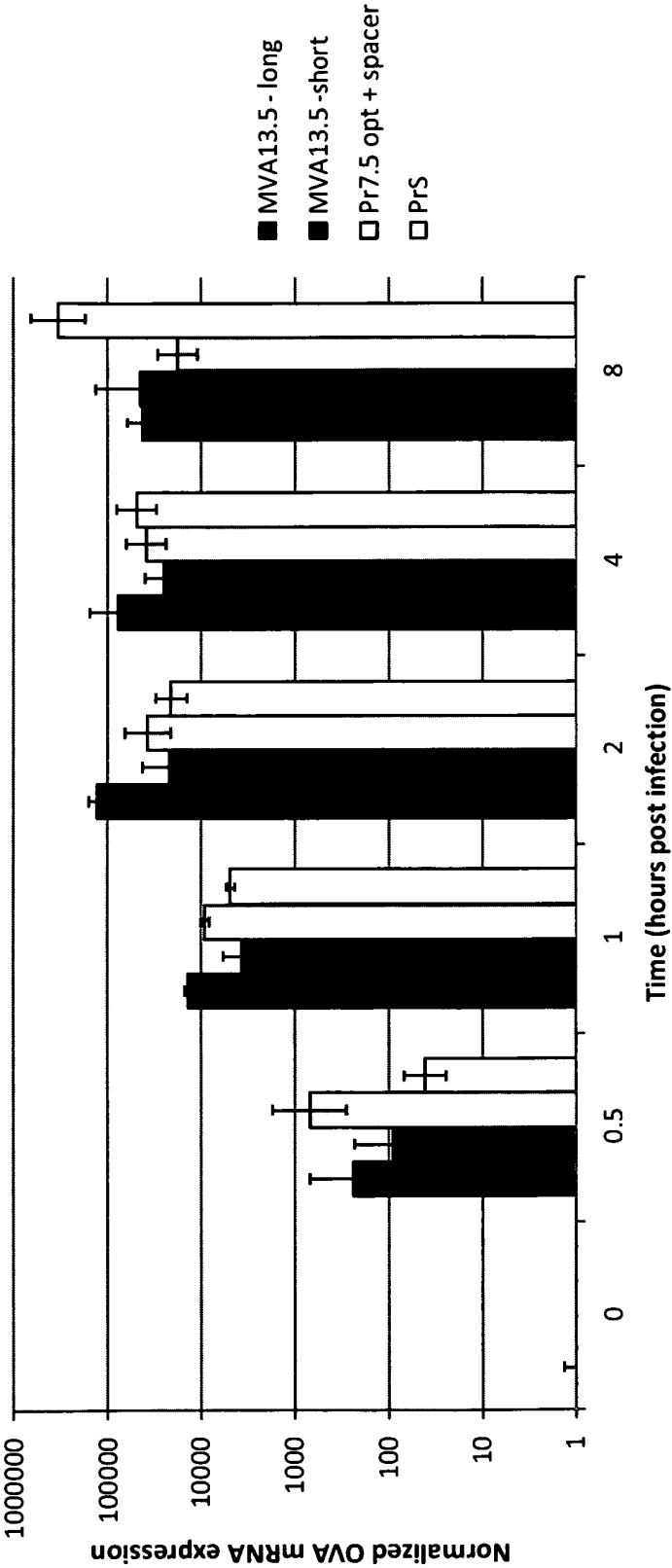


Figure 3

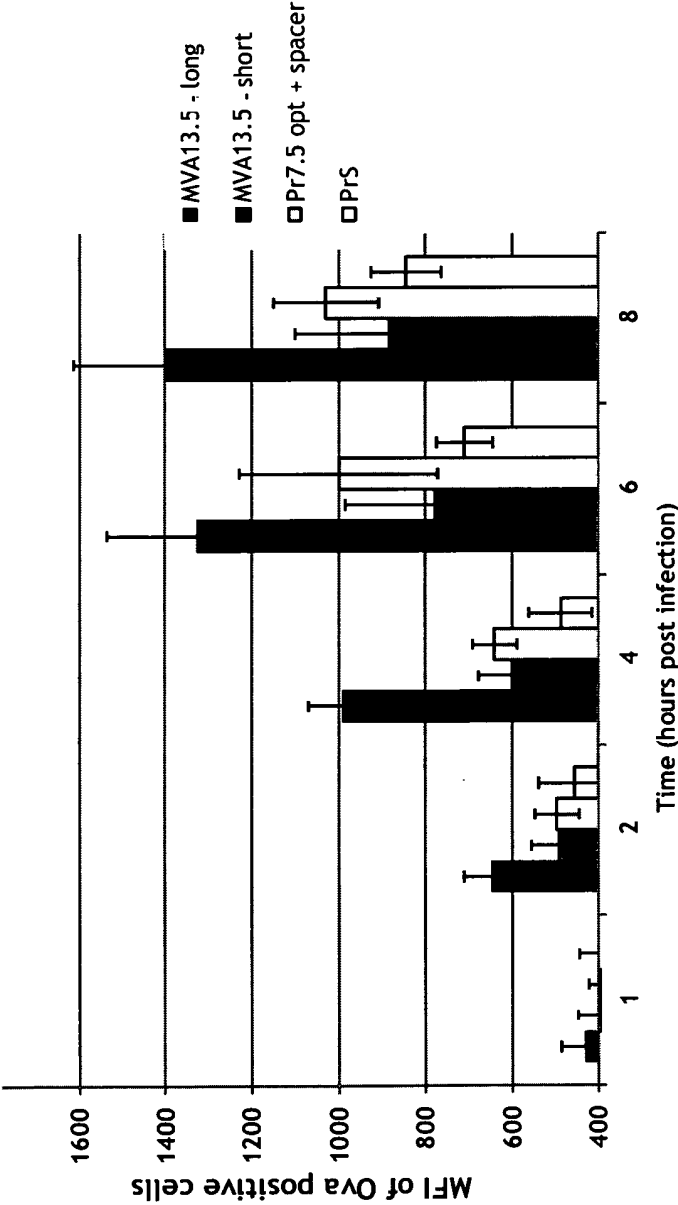


Figure 4

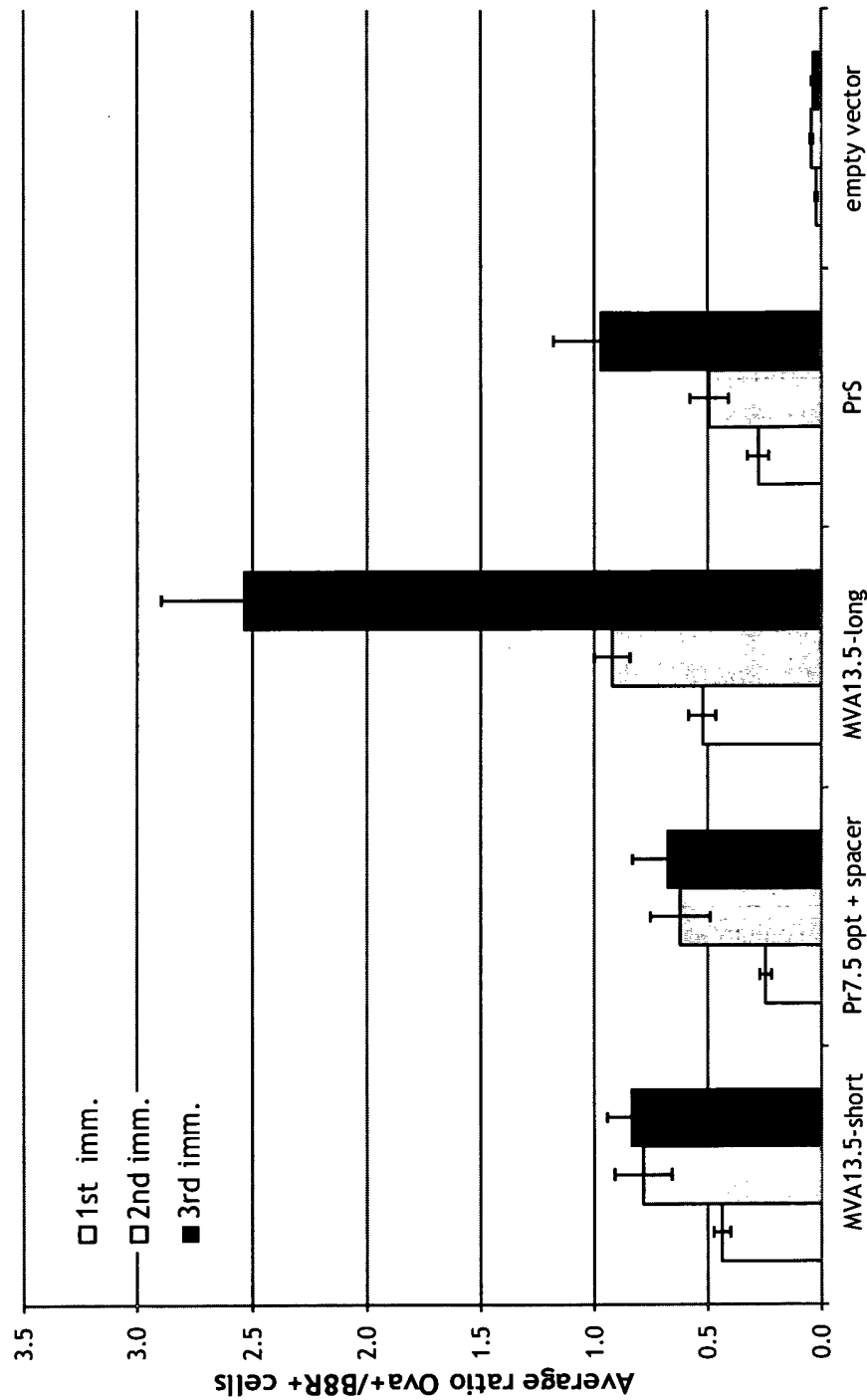


Figure 5

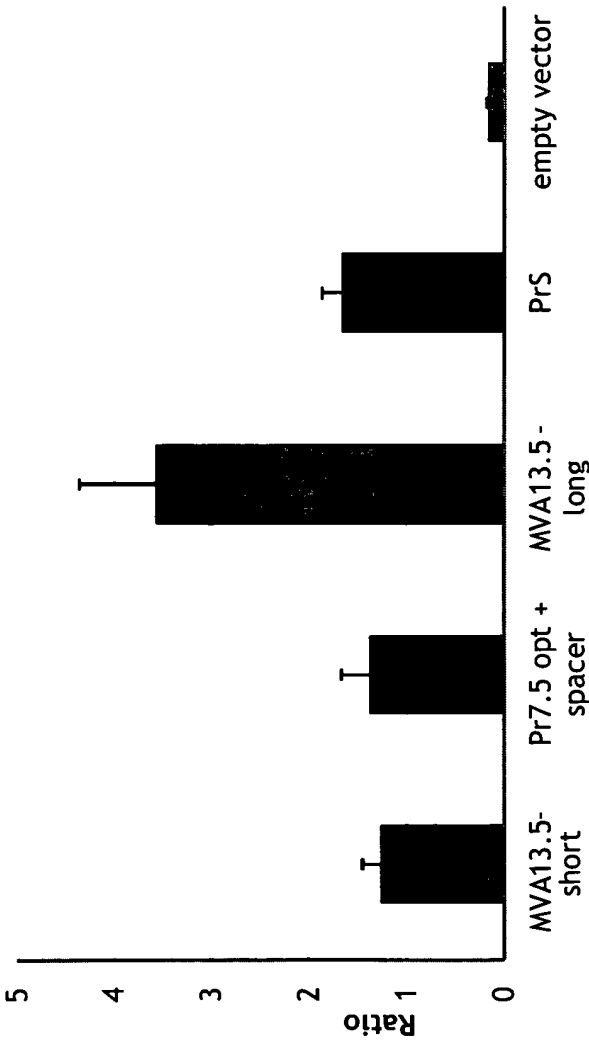


Figure 6

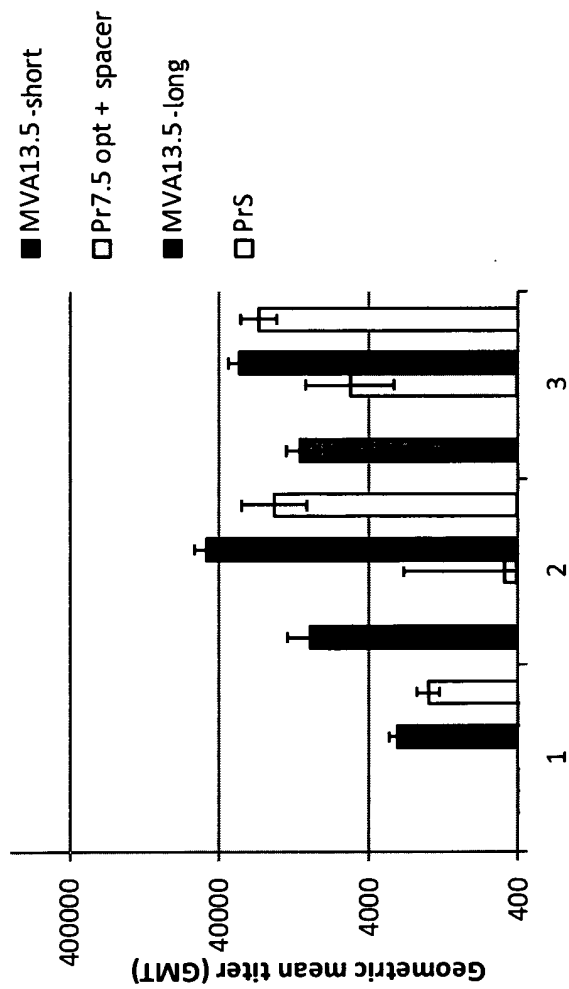


Figure 7A

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

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