

Figure 1

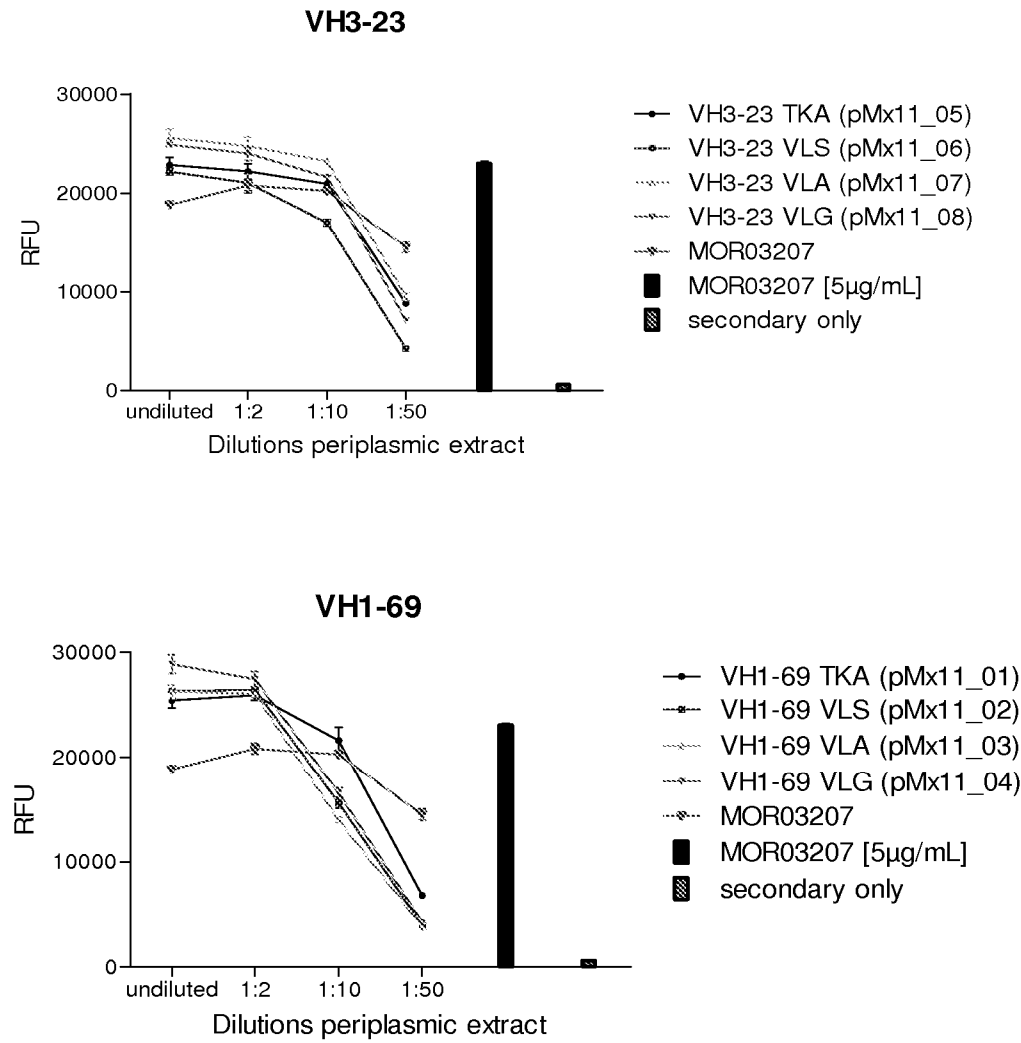


Figure 2

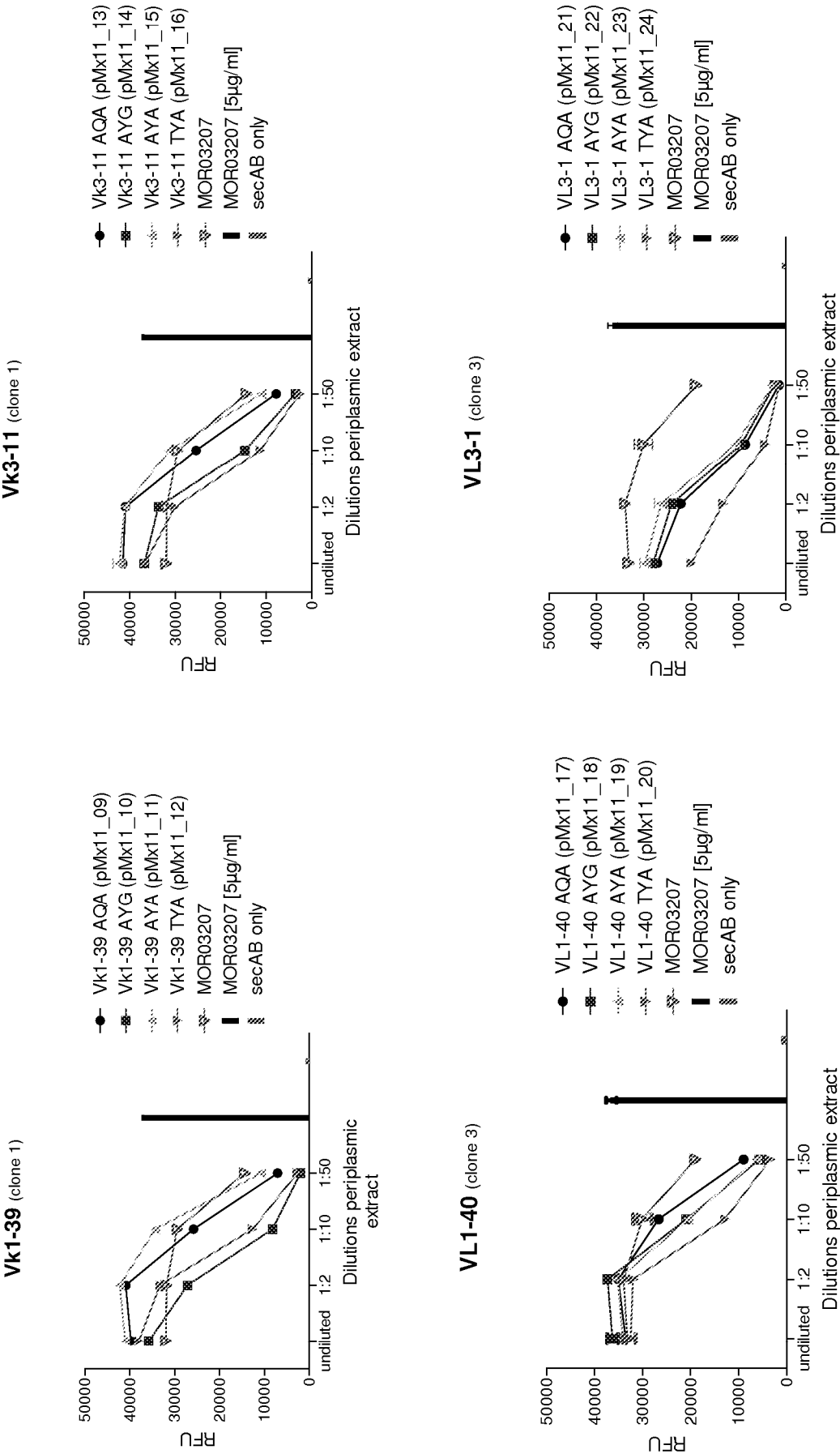


Figure 3

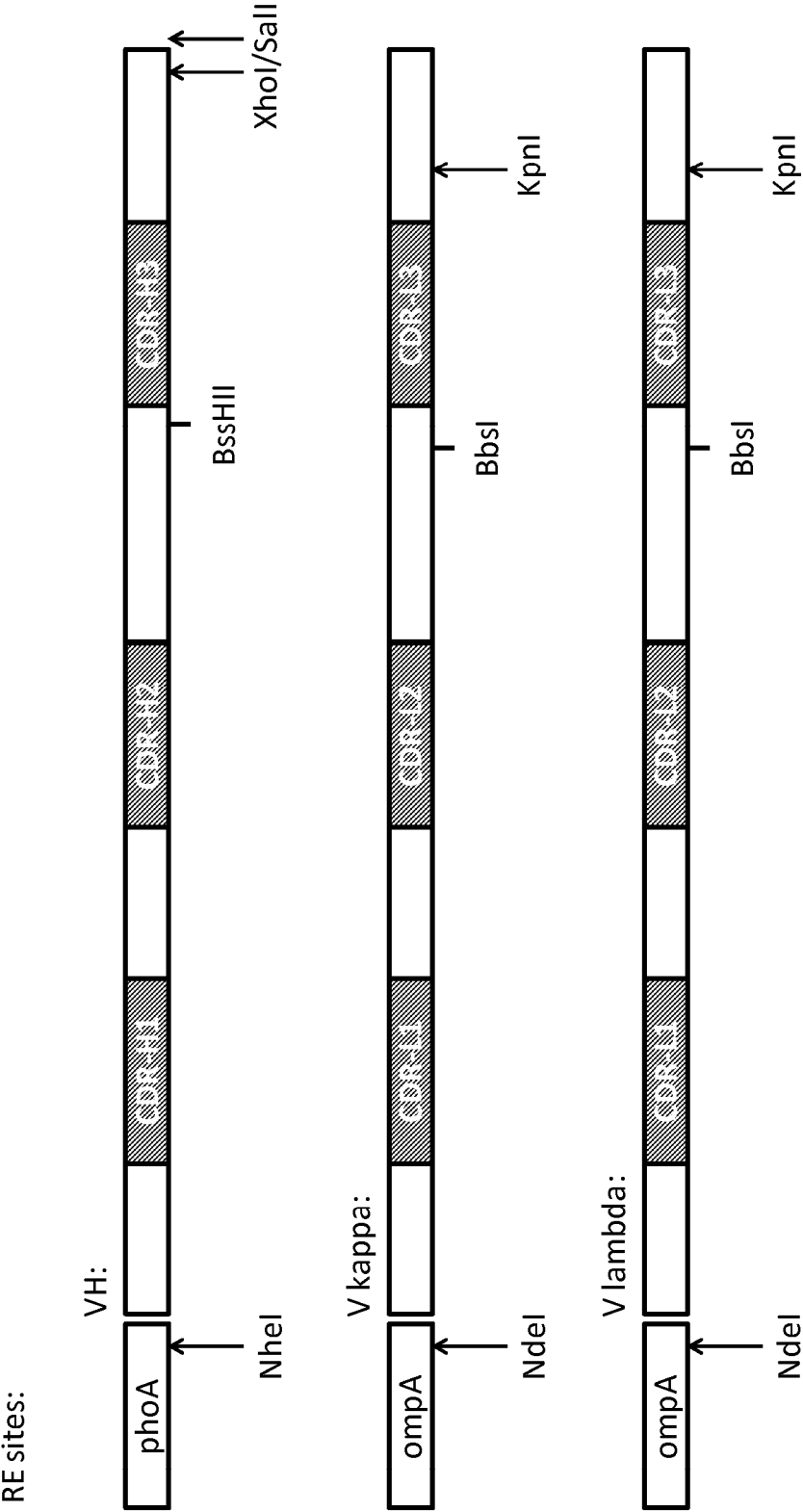


Figure 4

Ig	Heavy	Light
mm-JB	VH	V _K
mm-JB1	3-23	3-20
mm-JB4	3-15	3-20
mm-JB14	3-23	4-1
mm-JB15	4-39*	2(D)-28
mm-JB17	4-59	3-15
mm-JB18#	3-23	3-11
mm-JB19	1-2	3-20
mm-JB23#	3-30	4-1
mm-JB28	3-72	1-16
mm-JB29	3-23	3-20
mm-JB37	3-30	2-24
mm-JB38	3-30*	1(D)-8
mm-JB40	3-23	3-20
mm-JB43#	3-53*	1-27
mm-JB50	4-59	4-1
mm-JB52	3-33	3-11
mm-JB56	3-15	3-20
mm-JB57	4-34	1(D)-33
mm-JB60#	5-51	2-30
mm-JB65#	1-24	3-11
mm-JB68#	3-72	1-5
mm-JB70#	3-30*	1-5*
mm-JB73#	3-7	2-30
mm-JB75	3-30	3-11
mm-JB76#	4-59	3-15
mm-JB77#	3-30*	3-15
mm-JB86	3-33	2-24
mm-JB90+l	3-30*	2-30
mm-JB	VH	V _L
mm-JB13#	3-7*	3-1
mm-JB16	3-11	3-1
mm-JB33	1-3*	2-23
mm-JB48	3-33	1-47*
mm-JB62#	3-15	7-43
mm-JB64	3-15	2-18
mm-JB80	3-72	1-51
mm-JB81#	3-11	2-14
mm-JB82	3-53*	2-14*
mm-JB87	3-11	2-8
mm-JB88	3-30	1-44
mm-JB93	4-39*	2-18*

Figure 5

lg	Heavy	Light
mm-GO	VH	Vk
mm-GO1#	3-30*	1-8
mm-GO12	4-34	1-5
mm-GO14	4-28	1-39
mm-GO15#	3-74	4-1
mm-GO16#	3-21	1-5
mm-GO18	3-21	1-5
mm-GO19#	3-43	3-11
mm-GO26	3-23	1-9*
mm-GO30	4-34	3-15
mm-GO38	4-34	1-5
mm-GO43#	3-23	3-11
mm-GO50	4-39	1-39*
mm-GO68#	3-15	2D28
mm-GO73#	7-81*	4-1
mm-GO75#	3-48	3-20
mm-GO80	3-53*	3-11
mm-GO86	3-30	3(D)-20
mm-GO89#	3-7	1-5
mm-GO93#	3-7*	2-30
mm-5-GO1	3-11	3-15
mm-5-GO2#	3-23	1-5
mm-5-GO14	3-7*	1-5
mm-5-GO20	5-51	1D-39*
mm-5-GO25#	1-3	3-15
mm-5-GO33	3-30*	4-1
mm-5-GO38	3-48	4-1
mm-5-GO39	4-39	1-5
mm-5-GO43	3-53	1-5
mm-5-GO50	4-31*	3-20
mm-5-GO57	5-51	1-5
mm-5-GO65	4-34	1-5
mm-5-GO68#	3-53	3-11
mm-5-GO74	3-23	1(D)-13
mm-5-GO77#	3-23	4-1
mm-5-GO85	4-59	3-20
mm-5-GO86	3-7	3-15
mm-5-GO87	3-30*	1-8
mm-5+GO13#	1-2	1D-39
mm-5+GO18#	1-8	3-15
mm-5+GO26#	1-3	1-6
mm-5+GO43	3-23	3-15
mm-5+GO47#	3-9	3-15
mm-5+GO49#	3-33	3-15
mm-5+GO51#	3-15	4-1
mm-5+GO52#	1-2	3-20
mm-5+GO65#	5-51	1D-39
mm-5+GO66#	3-7	2D-28
mm-5+GO71#	3-23	1-8
mm-5+GO72	3-30	3-20

mm-GO	VH	VI
mm-GO2#	3-23	1-51
mm-GO9	3-7	2-14*
mm-GO61#	4-31*	2-14
mm-GO79	3-11	4-69*
mm-GO85#	3-9	4-60*
mm-GO88#	4-39	2-8
mm-GO90	1-18	1-44
mm-GO91	4-28	1-51
mm-5-GO30	3-11	2-14*
mm-5-GO37	3-11	1-44
mm-5-GO41#	3-48	2-14*
mm-5-GO44	3-74	2-14*
mm-5-GO47	3-48*	2-11
mm-5-GO49	4-31*	2-14*
mm-5-GO61	3-15	7-46*
mm-5-GO64#	3-7	1-47
mm-5-GO84	3-15	1-40
mm-5-GO91	3-23	1-40
mm-5-GO94	3-23	1-36
mm-5+GO3	1-69*	1-44
mm-5+GO25#	4-59	2-14
mm-5+GO27	4-39	2-14*
mm-5+GO39	3-23	1-44
mm-5+GO57	3-23	2-14*

Figure 6

Ig	Heavy	Light
mm-JH	VH	Vk
mmJH.2 A1	4-59	1-27
mmJH.2 A4#	3-23	1-5*
mmJH.2 A9	4-59	1D-39
mmJH.2 C5	3-23	3-20
mmJH.2 C10#	1-2	1D-39
mmJH.2 C12	3-21	1D-39
mmJH.2 D1	3-23	3-20
mmJH.2 D4	7-81*	1-5*
mmJH.2 D9	3-23	3-15
mmJH.2 D11	3-74	1-5*
mmJH.2 E7	3-11	3-11
mmJH.2 F1	7-81	2D-28
mmJH.2 F7	3-23	3-15
mmJH.2 G3	1-3*	1D-39
mmJH.2 H2	3-23	3-15
mmJH.3 A1	3-74	3-11
mmJH.3 A6	3-23	3-20
mmJH.3 B1#	3-23	4-1
mmJH.3 B2	3-7*	1-5
mmJH.3 B3	3-33	3-11
mmJH.3 B4	3-23	2D-28
mmJH.3 D2	3-21	3-11
mmJH.3 D4	1-18	3-11
mmJH.3 D10	3-72	1-9
mmJH.3 F2	4-59	1D-39
mmJH.3 F3#	3-15	1-9
mmJH.3 G9	3-33	4-1
mm-JH	VH	VI
mmJH.2 B2	4-31*	1-47*
mmJH.2 B11	4-59	1-44*
mmJH.2 C3	3-9	2-23
mmJH.2 F2	3-23	2-18*
mmJH.2 F3	3-9	2-23
mmJH.2 H3#	3-15	3-1
mmJH.3 A3	7-81*	2-14*
mmJH.3 A5	3-9	2-8
mmJH.3 D1-k	4-4	3-1
mmJH.3 D3	3-7*	3-27
mmJH.3 D9	3-15	7-43
mmJH.3 E10	3-30	2-8
mmJH.3 F1#	3-23	2-14
mmJH.3 F4#	3-7	3-21*
mmJH.3 F9	4-39	1-47*
mmJH.3 G8	3-53	1-44*

Figure 7

Ig	Heavy	Light
m-JB	VH	Vk
m-JB 39+l	4-39	3-15
m-JB 49	1-2	3-20
m-JB 63	4-39	3-20
m-JB 74	3-48	3-20
m-JB 77	5-51	1-39
m-JB 86	4-39	3-15
m-JB 87	3-30	1-9
m-JB	VH	VI
m-JB 8	1-69	2-8
m-JB 17	3-30	9-49
m-JB 29	4-39	3-1
m-JB 38	3-48	2-14
m-JB 39+k		3-21
m-JB 64	3-9	1-47
m-JB 85	1-18	2-14
m-JB 88	4-39	2-23

Figure 8

Ig	Heavy	Light
m-GO	VH	V _K
m-GO4	3-7	2D-28
m-GO6	4-59	3-20
m-GO13	3-43	1-5
m-GO15	3-53	1-5
m-GO21	3-15	1-5
m-GO26	3-48	3-11
m-GO40	4-34	3-20
m-GO43	4-34	3-20
m-GO53	4-39	3-15
m-GO56	3-15	3-20
m-GO64	3-30	1-39
m-GO66	3-48	1-39
m-GO75	1-18	1-33
m-GO79	3-30	1-9
m-GO86	4-34	3-20
m-GO88	3-23	2D-28
m-GO119	3-49	3-20
m-GO126	1-46	1-39
m-GO132	4-59	1-39
m-GO162	1-69	1-39
m-GO166	4-39	3-15
m-GO186	1-46	1-9
m-GO191	3-15	1-39
m-GO193	3-48	3-15
m-GO	VH	V _λ
m-GO3	4-28	1-44
m-GO16	4-34	2-14
m-GO19	3-74	3-21
m-GO28	3-23	3-1
m-GO67	3-48	2-14
m-GO76	1-69	2-14
m-GO77	4-39	1-40
m-GO102	4-28	1-36
m-GO113	1-2	1-40
m-GO115	5-51	1-40
m-GO152	3-9	1-44
m-GO157	5-51	1-36
m-GO163	4-34	2-23
m-GO173	3-43	1-51
m-GO189	1-8	2-14

Figure 9

Ig	Heavy	Light
m-JH	VH	Vk
m-JH.1 D4	7-81	3-20
m-JH.1 D12#	4-4	3-15
m-JH.1 E3	4-34	3-20
m-JH.1 F5	3-30	3-15
m-JH.1 F8	3-21	2D-28
m-JH.1 G8	3-48	1D-12
m-JH.1 G10	3-23	3-15
m-JH.1 H5	4-59	3-20
m-JH.1 H11	3-33	2D-28
m-JH.2 A2	3-74	1D-39
m-JH.2 A8	3-7	1-8
m-JH.2 A9	4-31	3-11
m-JH.2 A11	4-61	4-1
m-JH.2 A12#	3-9	1D-8
m-JH.2 B5	7-81	3-20
m-JH.2 C3	3-23	3-20
m-JH.2 C6	3-23	1-9
m-JH.2 C10	4-59	3-15
m-JH.2 D6	3-49	1-17
m-JH.2 D7	3-48	3-15
m-JH.2 E3	1-18	3-20
m-JH.2 E5	4-39	1D-39
m-JH.2 E8	3-9	3-15
m-JH.2 E10#	3-48	3-11
m-JH.2 F3	7-81	3-20
m-JH.2 F9	5-51	3-20
m-JH.2 H12#	3-9	2D-28
m-JH	VH	VI
m-JH.1 B11	3-23	2-14
m-JH.1 C12	4-59	1-40
m-JH.1 D2	1-18	2-8
m-JH.1 D10	4-59	2-14
m-JH.1 F6	1-8	2-14
m-JH.1 H6	3-9	2-11
m-JH.1 H12#	4-34	3-25
m-JH.2 B12	3-23	2-14
m-JH.2 C8#	1-3	2-14
m-JH.2 C12	4-4	2-14
m-JH.2 D8	3-21	6-57
m-JH.2 E6	3-33	2-11
m-JH.2 F6	1-2	2-14
m-JH.2 G12	5-51	2-14
m-JH.2 H4	4-59	1-40
m-JH.2 H12#		2-14

Figure 10

Ig	Heavy	Light
gmVB	VH	V _K
VB1	4-59	4-1
VB4	4-39	3-11
VB7#	3-74	3-15
VB10#	4-31*	4-1
VB11#	4-34	2-28
VB23#	4-31*	1-5*
VB26#	3-30	1-13
VB34	3-30	3-20
VB41#	3-15	3-20
VB50	3-11	1-5*
VB52	3-53	1-39
VB54#	3-23	3-20
VB56	3-7*	3-15
VB57	4-31*	3-20
VB58#	4-31*	1-5*
VB60	3-11	3-15
VB65	3-74	1-39
VB68#	5-51	1-5
VB72	3-30	2-28
VB78#	4-31*	3-20
VB83	4-34	1-39
VB86	3-33	1-17
VB92#	1-24	1-39
VB110	4-61	4-1
VB111	3-48	4-1
VB114#	3-74	3-20
VB120#	3-49	1-39
VB121#	3-7*	1-6
VB126	4-39	3D-15
VB129	3-23	1-39
VB132	3-23	1-5*
VB137	3-30	1-5
VB139#	5-51	4-1
VB140	3-21	3-15
VB142	3-33	4-1
VB148	3-33	1-16
VB155	5-51	3-20
VB161	4-61	3-11
VB162	3-48	3-11
VB165	3-30	3-20
VB168	5-51	1-39
VB171#	3-33	3-20
VB174	3-72	1-17
VB176	3-74	3-20
VB179#	3-23	1-17

gmVB	VH	V _L
VB13	5-51	7-43
VB18	1-46	1-51
VB28	3-23	2-11
VB43	1-69*	2-11
VB45	3-21	2-14
VB53	5-51	2-14
VB70	4-59	1-44
VB73#	3-53	7-46*
VB75	3-21	2-14
VB90#	3-21	4-69
VB101	3-23	1-51
VB102	4-31*	2-11
VB107#	5-51	1-47
VB108	3-64	7-43
VB117#	4-28	2-23
VB138	3-7*	7-46*
VB157	3-30	3-1
VB164	3-7*	1-51
VB173	3-21	1-47

Figure 11

Ig	Heavy	Light
gmPN	VH	V _K
PN1	1-46	3-15
PN2#	3-7	1-5*
PN4	5-51	1-9
PN8	4-59	4-1
PN13	3-43	2-28
PN16	4-4	1-39
PN30	1-46	1-5*
PN33	4-34	3-11
PN40#	3-48	1-16
PN46	4-34	3-20
PN49#	3-48	1-39
PN52	3-23	4-1
PN53#	3-23	3-11
PN54	4-59	1-12
PN56	3-23	3-20
PN60	3-7	3-20
PN64	3-23	3-20
PN73	1-18	1-39
PN75	5-51	3-15
PN76#	4-59	1-27
PN79	1-46	1-5*
PN83#	3-23	3-11
PN84	3-23	1-5*
PN87	4-39	1-5*
PN89	3-74	2-30
PN102	3-7	3-20
PN116	4-34	1-39
PN117#	3-33	1-39
PN119	1-69*	1-5*
PN120#	1-69	1-27
PN123	1-46	3-11
PN138	3-7	1-39
PN140#	1-8	3-20
PN147#	4-59	2D-30
PN148	4-34	2-28
PN156	1-69	2-28
PN157	4-39	3-20
PN158	3-9	1-17
PN162	1-69*	3-11
PN164	1-69*	3-11
PN167	1-69*	1-6
PN169	3-13	1-9
PN171	1-2	3-20
PN175	1-46	1-9
PN182	4-4	1-39
PN184	4-39	1-5
PN187	3-9	3-11
PN189	3-11	1-5*
PN191	3-15	1-13

gmPN	VH	V _L
PN7	3-74	7-46
PN14	4-4	1-40
PN18#	3-23	2-14
PN42	3-7	2-8
PN51	5-51	3-21
PN57	4-34	1-40
PN58	4-31*	7-43
PN67	4-59	1-47
PN69	1-8	2-14
PN88	3-15	1-51
PN107	3-7	1-40
PN115	3-7	1-51
PN131	3-21	3-21
PN134#	1-2	1-40
PN139	3-33	3-21
PN153	3-9	1-40
PN161	3-74	3-21
PN192#	3-21	1-44

Figure 12

Ig	Heavy	Light
gmHW	VH	V _K
HW 106#	4-61	4-1
HW 120	4-31	3-15
HW 149	3-21	1-6
HW 154	3-53	3-15
HW 156	3-7	3-15
HW 161	3-74	3-15
HW 168	4-39	3-15
HW 169	1-18	3-15
HW 175	1-18	3-20
HW 209#	4-39	3-15
HW 221	3-74	3-20
HW 224	3-15	4-1
HW 230	3-7	3-15
HW 247	3-9	3-20
HW 266	3-9	1-5*
HW 285	3-33	1D-39
HW 290	3-15	1-5*
HW 307	4-39	1D-39
HW 311	4-59	3-20
HW 326	3-7	1-5*
HW 329	4-34	3-20
HW 337	4-34	3-20
HW 352	1-3*	3-20
HW 376	4-28	3-20
HW 378	1-46	1-27
HW 386#	3-30	1D-39
HW 387	1-46	3-20

gmHW	VH	V _λ
HW 101#	1-18	2-23*
HW 109	3-30	2-11
HW 124	3-7	1-40
HW 157#	3-23	7-43
HW 158	3-11	2-14
HW 174	7-81	2-14*
HW 177	5-51	1-47*
HW 181	1-46	2-14*
HW 182	4-39	2-14*
HW 205	1-69	2-11
HW 225	3-30	1-40
HW 231	3-21	1-51*
HW 237	3-48	1-47*
HW 248	3-21	1-40
HW 251	3-30	1-51
HW 259	1-46	2-11
HW 296	3-21	2-14*
HW 313	3-33	2-23*
HW 327#	3-9	2-14*
HW 330	3-15	1-40
HW 338#	3-21	1-51
HW 345	4-39	1-51*
HW 355	3-73	6-57
HW 357#	3-33	1-51
HW 360	1-46	2-14*

Figure 13

lg	Heavy	Light
gm/gp169	VH	V _k
gm169-3 _κ	3-48	3-20
gm169-15	1-24	3-11
gm169-16 _κ	1-8	1-33
gm169-20 _κ	3-7	4-1
gm169-22 _κ	3-23	3-15
gm169-24 _κ	4-4	2-28
gm169-28 _κ	3-33	1-5
gm169-31 _κ	3-66	1-39
gm169-34 _κ #	4-4	1-39
gm169-38 _κ	3-23	3-15
gm169-42	3-33	1-5
gm169-44	3-48	2-28
gm169-46	4-39	1-39
gm169-57	3-23	1-5
gm169-60	3-43	1-33
gm169-61	4-39	3-20
gm169-64 _κ	3-7	3-20
gm169-68	4-34	1-5
gm169-70 _κ	3-13	1-39
gm169-76 _κ	3-11	2-28
gm169-80 _κ	4-39	2-28
gm169-86	4-4	1-5
gm169-94	3-30	4-1
gm169-95	1-46	1-39
gp169-8	1-24	3-15
gp169-26 _κ	3-33	4-1
gp169-29	4-4	3-20
gp169-53 _κ	4-4	4-1
gp169-64 _κ	3-30	3-11
gp169-66	4-4	3-20
gp169-81	5-51	2-30
gp169-87	4-39	3-15
gp169-103 _κ	4-39	4-1
gp169-108	1-2	2-28
gp169-117#	4-59	1-5
gp169-126	3-23	3-15
gp169-127 _κ	1-69	3-11
gp169-129	5-51	1-12
gp169-144 _κ	4-4	1-6

gm/gp169	VH	V _λ
gm169-3 _λ		1-47
gm169-4	3-11	2-23
gm169-8	4-34	1-47
gm169-11	1-2	1-44
gm169-16 _λ #		2-11
gm169-20 _λ		3-21
gm169-22 _λ		3-21
gm169-24 _λ		9-49
gm169-28 _λ		2-14
gm169-31 _λ		3-25
gm169-33#	4-34	2-14
gm169-34 _λ		1-40
gm169-38 _λ		3-21
gm169-48	4-4	1-44
gm169-64 _λ		1-40
gm169-70 _λ #		1-40
gm169-74	1-46	1-40
gm169-76 _λ		2-11
gm169-80 _λ		3-21
gm169-83	3-74	2-11
gm169-85	3-48	1-47
gm169-88	3-30	3-1
gp169-23#	1-58	2-14
gp169-26 _λ		1-44
gp169-32	4-59	3-21
gp169-43	4-4	1-40
gp169-53 _λ		2-14
gp169-64 _λ		6-57
gp169-65	3-30	3-10
gp169-71#	1-18	1-51
gp169-74	3-23	3-1
gp169-77	3-33	6-57
gp169-82#	3-30	1-47
gp169-83	3-23	2-14
gp169-85	3-43	1-36
gp169-86	3-30	3-10
gp169-103 _λ		6-57
gp169-113	1-69	3-21
gp169-116	3-30	1-40
gp169-122	4-4	2-11
gp169-127 _λ		1-51
gp169-142	5-51	1-44
gp169-144 _λ #		2-8
gp169-148#	1-46	6-57

Figure 14

lg	Heavy	Light
gm174	VH	Vk
174-2	4-39	2-28
174-5	1-69	3-11
174-8	3-11	1-5
174-9	1-2	4-1
174-12#	1-46	1-27
174-17#	3-23	2-29
174-23	5-51	3-11
174-24#	3-30	3-20
174-28	3-23	1-39
174-32	3-49	1-5
174-35	1-46	3-11
174-55#	1-3	3-15
174-60	5-51	1-39
174-67	3-30	1-6
174-79#	3-30	1-39
174-84	4-34	1-39
174-87	3-48	3-20
174-91#	4-31	1-17
174-117#	4-34	1-39
174-119	3-48	3-20
174-120k	1-24	2-30
174-129	3-30	4-1
174-130	4-31	3-11
174-133	1-69	2-28
174-140	4-59	1-39
174-146#	3-72	3-20
174-148#	5-51	1-33
174-154	4-34	1-5
174-156	4-39	1-5
174-157#	3-53	3-15
174-169#	3-23	1-5
174-176	3-23	4-1
174-177	5-51	3-20
174-179#	4-39	1-39
174-184#	4-39	1-5
174-194#	4-31	2-29
174-196	3-7	2-30

gm174	VH	VI
174-1	1-69	3-10
174-16	4-28	2-23
174-18#	5-51	2-14
174-29	3-15	3-1
174-33	3-21	1-40
174-44	3-33	2-23
174-45	3-53	2-11
174-54	4-59	3-12
174-59	3-33	2-23
174-63	3-74	7-43
174-68	3-7	2-23
174-71	1-46	2-23
174-77	3-15	2-8
174-82	5-51	2-14
174-114	1-18	2-14
174-115#	4-39	2-14
174-118	4-59	1-44
174-120l		2-14
174-125#	7-81	1-40
174-127	3-33	6-57
174-131	4-28	1-51
174-151	3-53	3-1
174-162#	5-51	2-14
174-165	3-53	2-14
174-174	4-39	2-23
174-180	5-51	1-40
174-183#	3-11	1-44

Figure 15

lg	Heavy	Light
gm175	VH	Vk
175-19	3-23	1-5
175-29	5-51	3-15
175-39#	3-43	3-15
175-62	4-61	1-13
175-77	3-23	1-5
175-79	3-73	2-28
175-86#	3-23	3-15
175-90	4-4	1-5
175-95#	4-34	1-39
175-107	3-7	1-5
175-108	1-69	3-11
175-113#	3-33	1-33
175-116	4-34	4-1
175-128	3-23	2-28
175-140	4-59	1D-43
175-150#	1-18	3-15
175-153	3-7	3-11
175-157	3-23	1-9
175-162	3-33	1-5
175-217	1-8	4-1
175-229#	3-30	3-20
175-233	3-15	2-30
175-240	1-2	1-39
175-241	4-31	1-27
175-250	1-2	3-20
175-258#	3-23	1-16
175-260#	3-30	4-1
175-263#	1-8	3-15
175-264	3-33	3-15
175-265	3-23	3-11
175-266	3-15	3-20
175-269	1-3	3-20
175-276	1-24	2-40
175-277	3-21	1-5
175-285#	3-9	2D-29
175-292#	1-69	3-20

gm175	VH	VI
175-23	4-39	2-14
175-42	3-74	2-23
175-80	4-34	2-11
175-82#	1-3	1-40
175-101#	4-39	1-47
175-114#	1-3	2-23
175-142#	4-31	2-23
175-146#	4-34	1-51
175-160	3-23	2-11
175-165	3-23	1-44
175-169	1-8	1-47
175-215	4-28	2-23
175-236#	3-49	3-21
175-238	1-2	1-40
175-242	3-11	2-11
175-248#	7-81	3-21
175-249#	3-33	2-23
175-270#	4-34	1-51
175-280	3-48	2-23
175-282	3-74	3-1
175-286	4-61	2-23
175-289	3-11	2-11
175-295	3-9	2-23

Figure 16

lg	Heavy	Light
gm176	VH	Vk
176-10	3-48	1-33
176-62	3-23	3-15
176-66	4-31	1-5
176-91#	3-21	1-5
176-172#	3-21	3-15
176-214	1-69	3-15
176-236#	4-59	3-15
176-256	1-18	3-15
176-267	3-23	3-15
176-270	4-34	3-15
176-301	3-33	2-28
176-337	3-33	2-28
176-435	1-69	3-15
176-514	1-69	1-39
176-534	3-21	3-15
176-548	3-21	1-27
176-585	4-59	3-20
176-592#	4-31	3-11
176-611	3-9	4-1
176-618	1-58	3-11
176-621	4-34	1-9
176-632	4-59	4-1
176-641	3-23	3-15
176-650k	3-9	4-1
176-655	4-39	3-15
176-694	3-48	1-39

gm176	VH	VI
176-29	3-48	2-14
176-130#	4-4	1-44
176-223	4-34	1-40
176-226	1-46	1-51
176-229	3-21	1-44
176-241	3-9	2-14
176-253#	4-39	1-40
176-272	4-39	3-9
176-275	1-8	1-51
176-287#	1-2	1-40
176-290#	4-34	2-14
176-310	3-7	1-47
176-318#	5-51	1-40
176-323	1-69	2-14
176-365	4-31	3-21
176-392	4-4	2-14
176-393#	4-61	2-14
176-395	4-59	3-21
176-428#	1-18	2-14
176-447#	4-59	2-14
176-508#	4-4	2-23
176-523	3-30	1-51
176-535	3-11	2-23
176-536	1-2	2-23
176-540	3-30	1-51
176-558	3-48	1-47
176-614	4-39	1-44
176-616	3-9	1-44
176-620	3-9	2-8
176-627	3-30	1-44
176-650l#		4-69
176-662#	3-30	1-51

Figure 17

lg	Heavy	Light
gmJH	VH	V _k
JH1	1-18	3-20
JH5	3-30	3-20
JH17	4-34	3-11
JH19#	4-59	3-20
JH20	3-33	3-15
JH22#	1-24	1-39
JH23#	1-18	3-20
JH-26#	5-51	3-20
JH35	3-21	1-6
JH38	3-7	1-39
JH39#	3-30	1-39
JH40#	4-31	3-20
JH55	3-30	3-20
JH56#	1-8	3-20
JH57	4-59	1-39
JH60	3-23	3-20
JH65	1-18	1-39
JH66	3-48	1-39
JH69	3-7	4-1
JH76#	4-31	1-39
JH78#	1-8	3-15
JH81#	7-4	1-39
JH82#	3-48	1-9
JH96	3-30	3-15
JH101#	1-69	3-20
JH103	4-31	2-28
JH113	3-33	1-5
JH114#	1-46	3-20
JH117#	3-23	3-20
JH124#	4-39	1-39
JH125#	3-9	1-12
JH129	1-18	1-33
JH131#	3-7	1-5
JH132	4-39	1-39
JH135	1-18	1-39
JH147#	3-30	3-20
JH148	3-23	1-5
JH154	3-33	3-15
JH156	3-7	1-27
JH160#	3-21	3-20
JH162	3-15	1-33
JH165	3-7	4-1
JH167#	4-59	3-20
JH179	3-23	4-1
JH183#	3-11	3-20
JH186	1-2	1-39
JH188	3-30	1-17
JH192	3-48	3-15
JH194	7-4	1-5
JH195	4-34	3-20

gmJH	VH	V _λ
JH16	4-39	1-47
JH21	3-15	1-44
JH28#	3-74	2-23
JH42	7-4	1-51
JH48#	5-51	1-40
JH50	4-31	2-23
JH59#	1-2	1-44
JH63	4-34	1-47
JH75	4-34	3-21
JH79	4-31	2-14
JH88	3-66	1-44
JH91	3-21	2-8
JH93	4-39	3-1
JH95	4-59	1-47
JH105#	4-4	2-8
JH107#	3-23	2-14
JH109#	5-51	2-14
JH128	4-59	6-57
JH143#	5-51	2-23
JH171	4-39	2-23
JH185#	4-59	2-14

Figure 18

S3 preB		S4 ei		S5 imm	
VH	Vk	VH	Vk	VH	Vk
3-9	1-16	3-23	4-1	3-48	1-8
3-30	2D-30	3-23	1-8	3-15	1-9
3-48	1-33	4-34	1-16	4-39	1-39
4-59	1D-17	3-33	1-39	3-7	1-8
3-30	1D-8	3-30	3-20	3-33	1-5
1-2	1-5	4-34	2D-28	1-18	1-5
1-2	1-6	3-74	4-1	3-15	1-9
3-15	1D-43	VH	VL	3-23	1-8
3-30	2-30	3-21	1-47	4-34	1-39
3-30	3-11	3-23	1-36	3-30	1-39
3-11	1-6	3-48	3-25	3-15	1-39
4-59	2-30	4-39	1-44	7-81	1-39
3-30	3-20	1-69	3-1	3-15	1-33
1-3	2-30	4-59	1-40	3-23	3-15
VH	VL	4-34	1-44	4-39	3-11
3-21	1-51			4-34	3-15
3-21	7-46			3-11	1D-8
3-53	1-47			1-2	3-20
1-2	3-27			4-31	3-15
1-69	1-44			3-21	1-39
3-21	2-23			3-33	1-9
				3-15	1-5
				4-39	1-5
				1-69	4-1
				1-58	4-1
				VH	VL
				1-46	1-44
				3-11	4-69
				3-23	3-19
				1-18	2-11
				4-61	7-43
				5-51	2-14
				3-15	1-44
				3-11	3-1
				3-15	3-25
				5-51	2-14
				1-69	1-51
				1-18	2-14
				3-23	3-1

Figure 19

S6 imm		S7 ne		S8 ne	
VH	Vk	VH	Vk	VH	Vk
1-18	2-40	3-53	1-39	3-13	1-39
4-59	3-20	1-69	1-33	3-7	3-11
3-21	1-5	3-21	3-15	1-46	3-15
1-2	1-5	5-51	2D-28	3-48	3-11
1-18	1-33	3-13	1-5	3-48	3-20
4-34	1-39	1-69	1-8	1-46	1-33
1-8	2D-28	3-30	1-27	3-49	1-5
4-34	3-20	4-34	1-27	1-3	1-39
4-34	1-39	3-30	1-9	1-18	3-20
1-2	1-39	1-69	1-39	4-59	1-5
3-30	2-24	3-15	1-5	4-39	3-11
3-15	3-20	4-49	3-20	3-23	1-5
1-24	2-24	3-21	2D-28	4-39	1-33
1-3	1-39	4-39	3-15	1-69	3D-15
3-30	3-20	3-15	1-39	3-33	1-9
4-4	1D-8	3-74	3-20	1-3	3-15
3-21	3-15	3-30	2D-28	1-46	1-8
4-39	3-20	3-30	1-6	3-7	1-39
4-59	1-27	3-23	3D-20	5-51	1-5
3-9	1-8	3-30	3-11	3-33	3-15
3-7	3-15	VH	VL	4-34	1-39
3-33	sD-28	5-51	1-40	3-53	1D-16
1-69	1-39	3-7	1-51	1-18	3-20
3-30	1-5	3-9	2-14	1-2	3-20
1-18	3-11	4-59	1-44	3-7	1-13
3-15	3-20	4-49	2-14	VH	VL
3-21	1-5	1-69	1-40	1-18	3-10
1-2	1-8	4-39	1-51	1-2	3-1
3-74	3-15	4-31	2-14	3-30	3-1
4-4	4-1	3-9	2-14	1-3	3-1
VH	VL	5-51	1-44	3-30	1-51
4-34	1-47	3-49	1-40	3-7	1-40
5-51	1-40	4-39	2-14	5-51	3-21
4-61	2-11	5-51	1-44	1-46	1-44
3-30	2-23			3-21	2-14
3-15	2-23			1-2	1-40
4-31	1-44			4-59	2-11
3-13	1-47			4-34	2-14
4-39	1-44			3-48	2-14
5-51	2-14			1-2	2-14
3-33	1-40			3-48	1-51
3-30	1-51			3-48	3-1
4-34	1-51				
3-21	3-1				
3-30	2-14				
4-31	3-21				

Figure 20

S9 mn	
VH	Vk
4-39	3-15
3-7	2D-28
4-59	3-20
3-43	1-5
3-53	1-5
3-15	1-5
1-24	1-39
3-48	3-11
4-39	3-15
4-34	3-20
4-34	3-20
3-43	1-5
4-39	3-15
3-15	3-20
1-3	1-39
3-30	1-39
3-48	1-39
3-48	1-9
1-69	2-30
1-18	1-33
3-30	1-9
3-21	3-11
4-34	3-20
3-23	2D-28
1-24	3-11
3-49	3-20
5-51	2D-28
1-46	1-39
4-59	1-39
1-69	1-39
3-15	1-33
4-34	3-15
3-48	1-39
1-69	1-39
4-39	3-15
3-74	1D-37
3-23	1-39
1-46	1-9
3-23	3-15
3-15	1-39
3-48	3-15

VH	VL
1-24	1-44
4-28	1-44
4-34	2-14
3-74	3-21
5-51	3-21
3-23	3-1
3-15	1-44
4-39	2-14
3-48	2-14
1-69	2-14
4-39	1-40
5-51	3-25
3-64	3-21
4-28	1-36
4-59	3-1
1-2	1-40
5-51	1-40
3-7	3-21
1-69	1-51
3-9	2-14
3-9	1-44
3-33	2-14
5-51	1-36
4-34	2-23
3-30	3-21
1-69	1-40
3-43	1-51
3-11	1-47
4-34	2-8
1-8	2-14

S10 mn	
VH	Vk
1-2	4-1
4-34	3-20
1-18	3-20
3-30	1-39
4-39	1-39
4-59	4-1
4-39	3-15
4-39	3-20
1-24	2-30
1-2	3-20
3-9	1-16
4-59	3-20
4-31	2-28
4-59	1-16
4-39	3-20
3-53	1-17
3-48	3-11
3-48	3-20
4-59	3-20
5-51	1-39
3-9	1-5
4-39	3-15
3-30	1-9
4-34	1-39
VH	VL
1-69	2-8
5-51	1-44
3-30	9-49
5-51	1-44
4-39	3-1
1-69	3-25
4-59	2-23
3-48	2-14
3-21	1-51
5-51	1-40
4-31	4-69
1-69	1-40
1-46	1-47
3-9	1-47
1-18	2-14
4-39	2-23
1-2	3-1

Figure 21

S1 ne		S2 mn	
VH	Vk	VH	Vk
3-23	3-20	3-7	4-1
4-59	1-33	3-73	1-9
1-18	3-20	1-18	1-5
3-48	1-33	3-23	3-15
4-34	3-20	5-51	4-1
3-23	4-1	3-23	1-12
4-4	2D-29	3-9	1-39
3-11	1-5	3-33	4-1
3-53	1-5	3-53	1-12
3-9	1-39	4-39	3-20
3-7	1-27	3-23	3-20
3-48	4-1	3-72	3-15
5-51	4-1	3-48	1-33
3-30	3-20	5-51	3-15
3-53	3-20	5-51	4-1
3-30	1-39	5-51	3-20
3-30	4-1	1-2	3-15
3-7	1-5	3-21	4-1
7-81	1-39	3-11	1-39
3-9	4-1	1-2	3-20
5-51	3-15	3-48	4-1
3-23	4-1	4-39	1-5
1-2	1-39	4-39	1-39
4-59	3-20	1-2	1-27
4-34	4-1	4-31	1-39
3-33	1-8	4-59	1-39
3-48	1-33	4-39	1-33
5-51	3-15	4-39	1-6
3-15	2D-28	3-48	4-1
1-18	1-39	3-23	4-1
1-3	1-33	3-7	3-15
4-59	4-1	3-53	4-1
4-39	1-33	3-7	3-20
3-15	3-11	VH	VL
1-18	2-30	4-39	1-44
4-39	4-1	1-2	1-44
3-48	3D-20	1-69	2-8
VH	VL	4-59	3-1
3-23	2-8	4-39	2-8
4-39	2-14	3-23	1-40
3-23	3-21	4-31	1-51
3-33	3-27	4-34	1-51
5-51	1-40	3-49	2-14
7-81	3-21	4-31	1-47
4-4	1-44	1-18	1-40
1-2	2-14	4-31	2-14
4-4	1-44	4-39	1-51
		4-39	2-14
		3-48	7-46

Figure 22

S3 ne

VH	Vk	VH	VL
3-30	4-1	1-18	1-36
3-49	1-17	3-43	2-14
3-23	1-8	5-51	1-40
3-30	3-15	5-51	1-40
3-64	3-15	4-39	1-51
1-18	3-11	3-23	2-14
3-48	1-5	3-43	3-1
1-24	1-33	4-59	1-40
3-30	1-5	3-7	2-14
1-69	4-1	3-7	1-47
1-8	3-11	1-18	1-40
3-9	2D-29	4-61	3-1
1-18	2-28	3-30	1-44
3-30	3-15	4-61	2-14
3-23	4-1	3-33	2-14
1-8	3-15	1-18	1-40
4-39	1-5	4-59	1-40
4-31	1-6	1-24	2-11
3-23	1-5	5-51	1-47
3-33	3-20	4-34	2-14
3-53	1-8	1-8	9-49
3-53	1-8		
3-7	1D-8		
4-39	1-39		
3-30	1-9		
5-51	4-1		
3-53	1-5		
4-39	1-5		
4-34	3-20		
1-69	1-5		
4-59	3-20		
3-7	1-17		
3-21	1-8		
3-23	1-5		
3-30	1-33		
3-30	1-5		
4-31	3-11		
1-2	1-5		
4-61	3-15		
3-30	1-39		
3-48	3-15		
3-7	1-8		
3-23	1-5		

Figure 23

S4 mn		S5 ne		S6 mn	
VH	Vk	VH	Vk	VH	Vk
3-30	3-11	4-34	1-39	3-13	4-1
4-34	3-11	3-23	3-15	4-34	4-1
3-30	1-5	3-23	3-20	3-15	4-1
1-58	1-5	4-61	1-39	1-18	2-28
3-21	3-15	3-64	3-11	1-69	1-16
4-39	2-30	3-15	3-15	3-23	4-1
3-23	1-33	3-53	2-28	3-23	1-5
3-7	1-9	1-18	3-11	3-30	3-15
3-30	3-11	3-49	1-39	3-48	1-17
3-23	3-20	3-64	2D-29	3-23	1-33
4-34	1-5	3-21	3-15	3-23	1-16
4-34	1-17	4-59	1-33	3-53	3-15
3-53	1-33	3-53	3-11	3-48	2-28
3-21	3-20	3-23	3-15	3-7	1-9
4-31	1-33	3-9	1-27	3-30	3-11
4-34	1-39	3-13	2-30	3-30	4-1
1-18	3-20	4-4	3-11	3-43	3-11
3-53	1-5	3-33	3-20	1-18	2-28
4-61	1-39	5-51	2-28	3-30	4-1
3-21	1-39	3-7	3-20	5-51	3-11
5-51	1-27	3-23	2-40	3-23	2-28
5-51	4-1	4-31	1-39	1-2	3-15
3-30	2D-29	3-23	1-16	3-11	3-20
3-53	1-5	3-48	2-28	4-31	3-11
3-23	1-39	4-31	1-33	1-24	2D-28
5-51	4-1	4-31	1-27	1-46	3-20
3-11	3-20	3-48	3-20	5-51	1-17
VH	VL	3-53	4-1	1-58	3-20
4-59	1-51	4-4	2D-29	4-59	3-20
3-23	2-14	4-31	4-1	3-21	1-5
3-15	2-8	4-34	2-28	1-8	4-1
3-11	3-1	4-34	3-15	3-53	4-1
4-28	2-23	1-69	3-20	3-23	1-39
4-34	1-44	3-15	1-27	3-64	1-5
4-59	3-1	1-24	3-15	4-4	3-15
3-30	1-51	1-2	2D-26	1-46	4-1
3-30	3-27	VH	VL	VH	VL
4-39	2-18	1-3	3-1	3-64	2-14
5-51	1-40	1-69	2-11	3-23	1-40
5-51	1-47	3-33	3-9	3-74	2-8
4-39	2-8	4-31	1-51	4-34	1-40
3-33	1-47	4-59	3-1	5-51	2-14
		1-46	1-44	3-21	1-51
		4-4	2-23	3-11	1-51
		4-39	2-8	1-8	1-47
		1-3	2-14	3-48	1-19
		3-15	1-47	1-69	2-14
		3-48	3-21	3-23	2-11
		3-21	2-14	3-23	1-40
		3-11	3-21		
		3-30	2-14		

Figure 24

S1 mn		S2 mn			
VH	Vk	VH	Vk	VH	VL
4-4	3-11	3-7	3-11	5-51	2-23
1-18	3-20	3-23	3-11	1-46	1-51
3-74	2-30	4-4	4-1	3-48	3-1
5-51	3-11	4-59	1-12	3-30	1-40
3-30	1-5	4-39	1-5	1-46	1-51
3-21	3-20	1-3	1-5	3-30	1-40
3-23	2D-40	5-51	4-1	4-31	1-40
4-39	3-20	4-34	4-1	4-59	1-47
4-31	3-20	4-34	3-20	4-31	3-1
3-15	3-15	4-39	3-11	3-9	2-23
4-39	3-15	3-33	3-15	4-34	1-40
4-4	3-20	3-15	1-39	3-9	2-14
1-18	1-5	1-18	4-1	3-9	2-11
4-39	3-20	4-34	3-15	4-39	2-8
4-59	1D-39	4-31	3-15	1-18	1-51
3-30	3-20	1-2	1-33	4-59	1-51
3-33	1D-39	4-39	1-5	4-31	2-14
4-34	1-5	4-34	1-39	4-61	1-44
3-21	3-20	4-39	1-5	4-31	1-40
1-8	1-9	3-74	1-5	3-9	1-44
4-34	3-20	4-39	3-20	3-30	1-51
4-4	3-11	1-18	3-20	3-11	9-49
1-46	3-20	4-34	3-20	4-4	1-51
1-18	1-8	4-39	1-5	1-18	3-25
4-39	1-39	3-7	1D-17		
4-59	1-8	5-51	2-28		
3-7	3-15	3-53	1-27		
3-53	1D-39	1-69	1D-16		
VH	VL	4-34	3-11		
3-33	1-47	3-53	1-39		
3-30	3-21	1-69	1-5		
4-59	1-51	4-31	3-20		
3-15	6-57	4-31	1-33		
4-39	2-14	3-15	3-20		
3-73	1-51	3-48	3-20		
5-51	3-25	5-51	1-5		
3-53	1-51	4-59	3-11		
3-48	3-1	3-30	1-39		
4-39	7-46	3-11	1-39		
4-39	6-57	3-33	3-15		
1-18	1-40	4-59	3-11		
4-34	2-8	4-34	3-11		
5-51	1-40	3-30	1-5		
4-39	2-8	4-39	1-27		
4-39	1-40	3-30	3-11		
4-39	2-8	4-34	2-28		
1-18	2-8	3-33	3-20		
		3-30	3-11		
		4-34	3-15		
		4-39	1-39		
		3-48	1-27		
		4-34	3-20		
		4-4	3-20		

Figure 25

S3 mn				S4 mn			
VH	Vk	VH	VL	VH	Vk	VH	VL
3-23	3-20	3-15	1-44	1-69	1D-39	3-21	2-11
1-46	1-16	3-23	2-23	3-23	3-15	1-69	2-8
3-30	1-5	4-4	1-44	4-4	3-20	4-34	2-14
3-33	1D-33	3-15	3-21	3-21	1-27	1-24	2-23
3-7	1D-39	1-2	2-8	3-23	1-17	3-23	1-40
1-69	1D-39	3-30	2-11	1-18	1D-39	4-34	1-40
4-34	3-20	4-31	2-23	3-23	3-20	3-48	1-44
3-74	3-11	3-49	2-28	4-4	1D-39	3-48	1-47
3-15	1D-33	1-18	6-57	1-46	1D-39	3-73	1-47
1-3	2D-29	3-11	1-44	3-7	1D-39	4-4	2-14
1-18	1D-33	1-69	2-11	4-34	3-20	3-23	1-40
1-46	1-16	4-39	2-23	3-30	1-16		
3-23	1-5	1-2	2-8	1-69	2D-28		
4-39	3-20	3-49	3-21	1-69	3-20		
3-30	3-11	4-34	2-8	3-53	1D-33		
3-11	2D-28	3-9	2-11	1-69	1D-39		
3-7	4-1			4-31	3-11		
3-23	1-5			3-21	1D-39		
3-15	1-5			4-39	1-27		
3-72	3-15			1-18	3-20		
3-11	3-11			1-24	3-20		
3-21	2D-29			3-23	3-20		
3-23	1-5			3-23	1-27		
1-69	3-20			3-30	3-15		
1-69	1D-39			1-2	2D-28		
1-69	3-20			4-61	3-15		
3-11	1-16			3-15	1D-39		
3-23	1-27			3-7	1D-39		
4-34	2D-28			1-18	1D-39		
3-53	1-9			3-23	3-11		
1-69	2D-30			1-18	1D-39		
1-8	2-29			3-23	2D-28		
3-7	3-15			1-2	1-27		
3-53	1-5			3-53	3-15		
3-23	1D-33			4-34	1-17		
3-48	1D-33			3-15	1D-39		
3-15	3-11			3-53	1D-39		
4-31	2D-28			3-30	2D-28		
3-23	1D-39			3-11	1D-39		
3-23	2D-28			3-23	3-20		
4-61	1-16			3-23	3-15		
3-30	1D-39						
4-34	3-15						
3-33	4-1						
3-21	1-5						
3-49	3-15						
5-51	3-20						
4-31	1-17						
4-34	1D-39						
1-18	2D-28						
3-53	1D-33						
5-51	3-20						
5-51	3-20						
3-53	2-29						

Figure 26

S5 mn				S6 mn			
VH	Vk	VH	VL	VH	Vk	VH	VL
4-39	1D-39	1-69	2-14	1-18	3-20	1-8	2-8
4-34	3-20	3-15	3-22	4-59	1D-39	4-34	1-51
3-21	3-15	5-51	1-40	3-53	3-11	3-11	8-61
3-48	3-20	4-34	1-51	4-4	1-5	1-18	6-57
3-15	3-20	3-23	1-51	3-53	1D-33	4-34	2-14
4-59	1-39	1-2	2-11	3-9	1D-39	4-34	1-47
4-4	3-20	4-59	1-51	5-51	1D-39	1-2	2-14
4-39	1-17	3-49	2-8	3-11	1-9	3-21	4-69
3-49	1-39	1-18	1-44	3-7	3-11	3-74	1-47
4-4	1-5	1-69	1-40	1-18	4-1		
4-34	4-1	3-66	1-47	3-48	1-6		
4-34	1-9	3-48	2-11	4-59	1D-39		
3-15	3-11	4-31	2-14	3-53	4-1		
4-34	1-39	4-28	2-14	3-30	4-1		
3-48	3-11	1-2	2-14	4-59	4-1		
3-30	3-20	3-73	1-40	3-30	1-5		
3-20	1-39	3-48	1-47	4-59	1D-39		
3-48	1-16	4-34	2-14	3-7	2-30		
3-30	1-39	3-23	2-23	4-59	1D-39		
1-69	3-20	1-24	2-23	3-53	3-15		
4-39	3-15			3-23	1-27		
4-31	2-40			4-34	1D-39		
3-33	3-20			1-2	1D-39		
4-59	4-1			3-23	2-29		
4-34	1-39			3-13	1D-33		
4-59	3-11			4-59	3-20		
3-11	3-15			3-21	4-1		
1-18	1-5			3-7	3-20		
3-7	1-39			3-21	3-15		
4-34	4-1			1-8	1D-39		
				3-66	1D-39		
				3-23	3-20		
				3-21	1-8		
				3-13	1D-39		
				3-23	1-27		
				3-23	1-17		
				3-21	1D-39		
				1-18	2-28		
				4-34	1-5		
				4-54	3-11		
				3-49	1D-39		
				4-39	1D-39		
				3-48	2D-29		
				3-21	1D-39		
				3-64	1-9		
				3-23	3-20		
				3-53	3-20		
				4-34	3-20		
				3-23	1-17		
				4-4	1-27		
				4-34	1D-33		
				3-48	1-8		
				1-24	4-1		
				4-4	2-28		

Figure 27

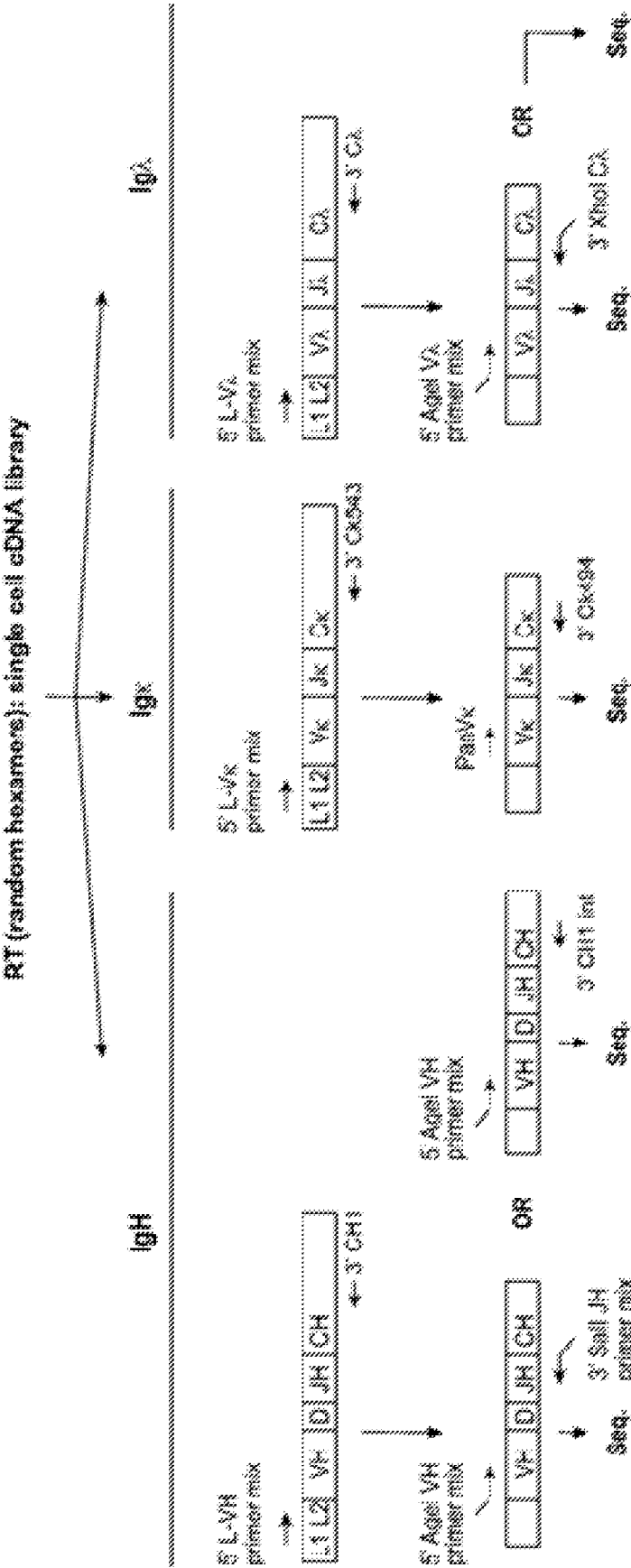


Figure 28

	VH	Vk	VI
ascTT_201	1-02*02		1-44*01
ascTT_65	1-02*02		1-51*01
ascTT_153	1-02*02		2-14*04
ascTT_316	1-02*02		7-46*01
ascTT_294	1-02*04		2-14*03
ascTT_307	1-08*01	1-05*03	
ascTT_350	1-18*01	1-17*01	
ascTT_06	1-18*01	3-20*01	
ascTT_207	1-18*01		1-51*01
ascTT_164	1-58*01	3-20*01	
ascTT_395	1-69*01	3-15*01	
ascTT_138	1-69*01	3-20*01	
ascTT_214	1-69*01	4-01*01	
ascTT_51	1-69*01		1-44*01
ascTT_176	1-69*01		1-44*01
ascTT_212	1-69*01		1-44*01
ascTT_258	1-69*01		1-44*01
ascTT_327	1-69*01		1-44*01
ascTT_08	1-69*01		2-11*01
ascTT_310	1-69*06	1-27*01	
ascTT_255	1-69*06	1-39*01	
ascTT_178	1-69*06	3-11*01	
ascTT_79	1-69*06	3-15*01	
ascTT_334	1-69*06	3-15*01	
ascTT_105	1-69*06	3D-15*01	
ascTT_61	1-69*06	4-01*01	
ascTT_231	1-69*06	4-01*01	
ascTT_265	1-69*06		1-47*01
ascTT_179	1-69*06		6-57*01
ascTT_101	3-07*01	1-05*03	
ascTT_42	3-07*01		1-44*01
ascTT_195	3-07*01		1-44*01
ascTT_390	3-09*01		1-51*01
ascTT_182	3-09*01		
ascTT_188	3-09*01		
ascTT_225	3-09*01		
ascTT_319	3-11*01	1-12*01	
ascTT_29	3-11*01		1-40*01
ascTT_385	3-11*01		7-46*01
ascTT_87	3-11*03	1-39*01	
ascTT_349	3-20*01		2-14*03
ascTT_156	3-21*01		1-51*01
ascTT_344	3-21*01		3-21*01

Figure 29

	VH	Vk	VI
ascTT_31	3-23*01	1-05*03	
ascTT_45	3-23*01	1-05*03	
ascTT_59	3-23*01	1-05*03	
ascTT_78	3-23*01	1-05*03	
ascTT_88	3-23*01	1-05*03	
ascTT_148	3-23*01	1-05*03	
ascTT_292	3-23*01	1-05*03	
ascTT_320	3-23*01	1-05*03	
ascTT_348	3-23*01	1-05*03	
ascTT_358	3-23*01	1-39*01	
ascTT_365	3-23*01	1-39*01	
ascTT_158	3-23*01	3-20*01	
ascTT_204	3-23*01		1-44*01
ascTT_245	3-23*01		1-44*01
ascTT_275	3-23*01		1-44*01
ascTT_56	3-23*01		2-14*04
ascTT_278	3-23*01		2-23*01
ascTT_21	3-30*18	1-09*01	
ascTT_335	3-30*18	3-11*01	
ascTT_159	3-30*18	3-15*01	
ascTT_274	3-30*18	3-15*01	
ascTT_109	3-30*18		1-40*01
ascTT_27	3-30*18		2-14*01
ascTT_394	3-30*18		3-21*03
ascTT_193	3-33*01	3-15*01	
ascTT_144	3-33*05		4-69*02
ascTT_162	3-43*01		2-11*01
ascTT_124	3-43*01		9-49*01
ascTT_57	3-48*01	3-20*01	
ascTT_77	3-48*01	3-20*01	
ascTT_01	3-53*01		1-44*01
ascTT_28	3-53*01		1-44*01
ascTT_36	3-53*01		1-44*01
ascTT_141	3-53*01		1-44*01
ascTT_229	3-53*01		1-44*01
ascTT_304	3-53*01		1-44*01
ascTT_341	3-53*01		1-44*01
ascTT_354	3-53*01		1-44*01
ascTT_134	3-64*05		3-21*01
ascTT_03	3-74*01		2-23*01
ascTT_259	4-30-2*01	4-01*01	
ascTT_328	4-31*03	3-20*01	
ascTT_306	4-31*03		1-51*01

Figure 30

	VH	Vk	VI
ascTT_25	4-31*03		2-08*01
ascTT_85	4-31*03		2-08*01
ascTT_96	4-31*03		2-08*01
ascTT_185	4-31*03		2-08*01
ascTT_187	4-31*03		2-08*01
ascTT_312	4-31*03		2-08*01
ascTT_311	4-31*03		2-08*01
ascTT_313	4-31*03		2-08*01
ascTT_116	4-31*03		2-08*01
ascTT_196	4-39*01	1-06*01	
ascTT_47	4-39*01	2-28*01	
ascTT_295	4-39*01		1-40*01
ascTT_318	4-39*01		1-44*01
ascTT_337	4-39*01		1-44*01
ascTT_35	4-39*01		3-21*03
ascTT_40	4-39*01		3-21*03
ascTT_81	4-39*01		3-21*03
ascTT_93	4-39*01		3-21*03
ascTT_126	4-39*01		3-21*03
ascTT_166	4-39*01		3-21*03
ascTT_210	4-39*01		3-21*03
ascTT_224	4-39*01		3-21*03
ascTT_244	4-39*01		3-21*03
ascTT_370	4-39*01		3-21*03
ascTT_392	4-39*01		3-21*03
ascTT_232	4-39*01		3-21*03
ascTT_263	4-59*01		2-08*01
ascTT_15	4-59*01	1-39*01	
ascTT_122	4-59*01	3-15*01	
ascTT_276	4-59*01	3-15*01	
ascTT_302	4-59*01	3-15*01	
ascTT_110	4-59*03	1-39*01	
ascTT_34	4-59*04	1-39*01	
ascTT_173	4-61*01		2-14*03
ascTT_177	5-51*01	1-13*02	
ascTT_190	5-51*01	1-13*02	
ascTT_233	5-51*01	1-13*02	
ascTT_84	5-51*01	1-13*02	
ascTT_43	5-51*01	1-13*02	
ascTT_147	5-51*01	1-13*02	
ascTT_377	5-51*01	3-11*01	
ascTT_82	5-51*01	3-15*01	

Figure 31

	VH	Vk	VI
mnTT_16	1-02*02	2-30*01	
mnTT_125	1-02*02	3-20*01	
mnTT_436	1-02*02	3-20*01	
mnTT_507	1-02*02	3-20*01	
mnTT_238	1-02*02		1-44*01
mnTT_260	1-02*02		1-51*01
mnTT_451	1-02*02		1-51*01
mnTT_284	1-02*02		2-14*03
mnTT_20	1-02*02		2-23*01
mnTT_278	1-02*02		2-23*01
mnTT_166	1-02*02		3-21*02
mnTT_170	1-02*02		7-46*01
mnTT_548	1-02*03	4-01*01	
mnTT_70	1-02*03		3-01*01
mnTT_75	1-18*01	1-05*03	
mnTT_149	1-18*01	1-12*02	
mnTT_17	1-18*01	1-13*02	
mnTT_06	1-18*01	1-16*02	
mnTT_492	1-18*01	1-33*01	1-44*01
mnTT_490	1-18*01	1-33*01	
mnTT_321	1-18*01	1-39*01	
mnTT_542	1-18*01	2-30*01	
mnTT_318	1-18*01	3-15*01	
mnTT_101	1-18*01	3-20*01	
mnTT_29	1-18*01		1-40*01
mnTT_309	1-24*01	2-28*01	
mnTT_220	1-24*01	3-11*01	
mnTT_311	1-24*01	3-15*01	
mnTT_145	1-24*01		1-40*01
mnTT_217	1-24*01		3-21*02
mnTT_119	1-46*01	1-05*03	
mnTT_76	1-46*01	1-09*01	
mnTT_230	1-46*01	1-39*01	
mnTT_365	1-46*01	3-15*01	
mnTT_328	1-46*01	3-20*01	
mnTT_526	1-46*01	3-20*01	
mnTT_457	1-46*01		2-11*01
mnTT_57	1-46*01		2-14*03
mnTT_88	1-46*01		3-21*02
mnTT_530	1-69*01	1-05*03	
mnTT_263	1-69*01	1-33*01	
mnTT_317	1-69*01	1-33*01	
mnTT_61	1-69*01	1-39*01	
mnTT_331	1-69*01	1-39*01	
mnTT_395	1-69*01	1-39*01	
mnTT_487	1-69*01	2D-29*01	
mnTT_18	1-69*01	3-11*01	
mnTT_234	1-69*01	3-15*01	2-23*01

Figure 32

	VH	Vk	VI
mnTT_379	1-69*01	3-15*01	
mnTT_27	1-69*01	3-20*01	
mnTT_90	1-69*01	3-20*01	
mnTT_209	1-69*01	3-20*01	
mnTT_351	1-69*01	3-20*01	
mnTT_432	1-69*01	4-01*01	
mnTT_545	1-69*01	4-01*01	
mnTT_95	1-69*01		1-40*01
mnTT_279	1-69*01		1-40*01
mnTT_332	1-69*01		1-40*02
mnTT_147	1-69*01		1-44*01
mnTT_183	1-69*01		1-51*01
mnTT_01	1-69*01		2-14*03
mnTT_292	1-69*01		2-14*03
mnTT_244	1-69*01		2-14*04
mnTT_71	1-69*01		2-23*01
mnTT_525	1-69*01		2-23*01
mnTT_250	1-69*01		3-01*01
mnTT_136	1-69*01		1-51*01
mnTT_342	1-69*06	1-05*03	
mnTT_163	1-69*06	1-08*01	
mnTT_48	1-69*06	3-11*01	
mnTT_255	1-69*06	4-01*01	
mnTT_196	1-69*06		1-47*01
mnTT_226	1-69*06		3-21*02
mnTT_168	3-07*01	1-17*01	
mnTT_281	3-07*01	1-39*01	
mnTT_381	3-07*01	1-39*01	
mnTT_518	3-07*01	1-39*01	
mnTT_327	3-07*01		1-44*01
mnTT_64	3-07*02	1-05*03	
mnTT_434	3-07*02	1-13*02	
mnTT_303	3-09*01	1-37*01	
mnTT_419	3-09*01		1-47*01
mnTT_144	3-09*01		2-23*01
mnTT_13	3-09*01		2-23*03
mnTT_39	3-09*01		2-23*03
mnTT_37	3-09*01		3-21*02
mnTT_405	3-09*01		3-21*03
mnTT_131	3-09*01	3-11*01	
mnTT_121	3-11*01	1-05*03	
mnTT_473	3-11*01	1-05*03	
mnTT_385	3-11*01	1-17*01	
mnTT_256	3-11*01	1-33*01	
mnTT_382	3-11*01	3-20*01	
mnTT_66	3-11*01	4-01*01	
mnTT_111	3-11*01		3-25*01
mnTT_127	3-11*01	2-28*01	
mnTT_49	3-11*03	1-39*01	

Figure 33

	VH	Vk	VI
mnTT_537	3-11*03	3-11*01	
mnTT_246	3-11*03	3-15*01	
mnTT_481	3-11*03	4-01*01	
mnTT_272	3-11*03		3-21*01
mnTT_368	3-13*01	4-01*01	
mnTT_252	3-15*01	1-05*03	
mnTT_290	3-15*01	1-05*03	
mnTT_259	3-15*01	2-28*01	
mnTT_228	3-15*01	2D-29*01	
mnTT_326	3-15*01	4-01*01	
mnTT_192	3-15*01		1-51*01
mnTT_59	3-15*01		2-14*04
mnTT_12	3-15*01		7-46*01
mnTT_63	3-15*01		7-46*01
mnTT_233	3-21*01	1-05*03	
mnTT_221	3-21*01	1-39*01	
mnTT_41	3-21*01	3-20*01	
mnTT_56	3-21*01	4-01*01	
mnTT_383	3-21*01	4-01*01	
mnTT_148	3-21*01		1-47*01
mnTT_182	3-21*01		1-51*01
mnTT_215	3-21*01		1-51*01
mnTT_369	3-21*01		1-51*01
mnTT_443	3-21*01		2-11*01
mnTT_350	3-21*01		3-25*01
mnTT_335	3-23*01	1-05*03	
mnTT_15	3-23*01	1-17*01	
mnTT_78	3-23*01	1-33*01	3-21*02
mnTT_418	3-23*01	1-33*01	
mnTT_520	3-23*01	1-33*01	
mnTT_107	3-23*01	1-39*01	
mnTT_466	3-23*01	1-39*01	
mnTT_485	3-23*01	1-39*01	
mnTT_488	3-23*01	1-39*01	
mnTT_34	3-23*01	1D-12*01	
mnTT_158	3-23*01	2-30*01	
mnTT_176	3-23*01	2D-29*01	
mnTT_315	3-23*01	2D-29*01	
mnTT_116	3-23*01	3-11*01	2-23*01
mnTT_87	3-23*01	3-11*01	
mnTT_512	3-23*01	3-15*01	
mnTT_393	3-23*01	3-20*01	
mnTT_539	3-23*01	4-01*01	
mnTT_480	3-23*01		1-47*01
mnTT_322	3-23*01		2-11*01
mnTT_329	3-23*01		2-11*01
mnTT_162	3-23*01		2-14*03
mnTT_258	3-23*01		2-14*03
mnTT_216	3-23*01		2-14*04

Figure 34

	VH	Vk	VI
mnTT_108	3-23*01		3-01*01
mnTT_179	3-23*01		3-21*02
mnTT_195	3-23*01		3-21*02
mnTT_423	3-30*18	1-33*01	
mnTT_468	3-30*18	1D-8*01	
mnTT_153	3-30*18	2-28*01	
mnTT_286	3-30*18	3-11*01	
mnTT_242	3-30*18	4-01*01	
mnTT_185	3-30*18		1-44*01
mnTT_547	3-30*18		1-51*01
mnTT_251	3-30*18		2-14*03
mnTT_126	3-30*18		2-14*04
mnTT_415	3-30*18		2-14*04
mnTT_440	3-30*18		2-14*04
mnTT_72	3-30*18		2-23*01
mnTT_267	3-33*01	1-39*01	
mnTT_123	3-33*01	3-20*01	
mnTT_493	3-33*01	4-01*01	
mnTT_516	3-33*01		1-47*01
mnTT_184	3-33*01		2-14*03
mnTT_44	3-33*01		3-21*01
mnTT_156	3-33*01		3-21*01
mnTT_10	3-33*01		9-49*01
mnTT_140	3-33*01	1-39*01	
mnTT_138	3-33*01		3-01*01
mnTT_81	3-33*01		3-21*01
mnTT_506	3-43*01	4-01*01	
mnTT_08	3-48*01	1-08*01	
mnTT_522	3-48*01	1-39*01	
mnTT_106	3-48*01	4-01*01	
mnTT_91	3-48*01		1-40*01
mnTT_79	3-48*02	1-17*01	
mnTT_194	3-48*02	1-39*01	
mnTT_130	3-48*02	3-15*01	
mnTT_282	3-48*02		9-49*01
mnTT_426	3-49*03	3-11*01	
mnTT_474	3-49*05	1-17*01	
mnTT_270	3-49*05	2-28*01	
mnTT_453	3-53*01	1-33*01	
mnTT_305	3-53*01	3-15*01	
mnTT_137	3-53*01		2-08*01
mnTT_65	3-53*01		2-23*01
mnTT_358	3-64*05	1-05*03	
mnTT_53	3-64*05	3-11*01	
mnTT_447	3-72*01	1-05*03	
mnTT_283	3-72*01		4-69*01
mnTT_82	3-73*01		2-11*01
mnTT_177	3-74*01	1-05*03	
mnTT_09	3-74*01	4-01*01	

Figure 35

	VH	Vk	VI
mnTT 143	3-74*01		2-14*04
mnTT 276	4-04*07	1-17*01	
mnTT 102	4-04*07	3-15*01	
mnTT 191	4-04*07		1-44*01
mnTT 467	4-04*07		1-51*01
mnTT 374	4-04*07		3-25*01
mnTT 132	4-04*07	1-39*01	
mnTT 104	4-30-2*01	1-39*01	
mnTT 408	4-30-2*01		3-21*01
mnTT 319	4-31*01	1-05*03	
mnTT 323	4-31*01	3-15*01	
mnTT 50	4-31*02	1-39*01	
mnTT 188	4-31*02	3-11*01	
mnTT 14	4-31*02		2-14*03
mnTT 77	4-31*02		2-23*01
mnTT 257	4-31*03		1-40*01
mnTT 533	4-31*03		1-47*01
mnTT 546	4-34*01	1-05*03	
mnTT 02	4-34*01	1-08*01	
mnTT 266	4-34*01	1-12*01	
mnTT 380	4-34*01	1-16*01	
mnTT 157	4-34*01	1-33*01	
mnTT 146	4-34*01	1-39*01	
mnTT 384	4-34*01	3-11*01	
mnTT 73	4-34*01	3-20*01	
mnTT 376	4-34*01	3-20*01	
mnTT 236	4-34*01	4-01*01	
mnTT 89	4-34*01		1-36*01
mnTT 68	4-34*01		1-40*02
mnTT 69	4-34*01		1-47*01
mnTT 367	4-34*01		1-47*01
mnTT 32	4-34*01		1-51*01
mnTT 225	4-34*01		1-51*01
mnTT 511	4-34*01		1-51*01
mnTT 441	4-34*01		2-08*01
mnTT 294	4-34*01		2-14*03
mnTT 219	4-34*01		3-21*01
mnTT 165	4-34*01		3-25*01
mnTT 241	4-34*01		7-43*01
mnTT 523	4-34*01		9-49*01
mnTT 273	4-39*01	1-05*03	
mnTT 333	4-39*01	1-05*03	
mnTT 262	4-39*01	1-06*01	
mnTT 459	4-39*01	1-27*01	1-40*01
mnTT 361	4-39*01	1-33*01	
mnTT 84	4-39*01	1-39*01	
mnTT 312	4-39*01	1-39*01	
mnTT 141	4-39*01	2-28*01	
mnTT 455	4-39*01	2-28*01	

Figure 36

	VH	Vk	VI
mnTT_458	4-39*01	2-30*01	
mnTT_360	4-39*01	3-11*01	
mnTT_544	4-39*01	3-11*01	
mnTT_103	4-39*01	3-15*01	
mnTT_110	4-39*01	3-15*01	
mnTT_513	4-39*01	3-15*01	
mnTT_316	4-39*01	3-20*01	
mnTT_271	4-39*01	4-01*01	
mnTT_448	4-39*01	4-01*01	
mnTT_83	4-39*01		1-44*01
mnTT_05	4-39*01		1-51*01
mnTT_74	4-39*01		2-08*01
mnTT_254	4-39*01		2-08*01
mnTT_462	4-39*01		2-18*02
mnTT_171	4-39*01		3-01*01
mnTT_135	4-39*01		2-08*01
mnTT_340	4-59*01	1-05*03	
mnTT_477	4-59*01	1-17*01	
mnTT_28	4-59*01	1-39*01	
mnTT_47	4-59*01	1-39*01	
mnTT_353	4-59*01	3-11*01	
mnTT_269	4-59*01	3-15*01	
mnTT_338	4-59*01	4-01*01	
mnTT_357	4-59*01	4-01*01	
mnTT_118	4-59*01		1-40*01
mnTT_231	4-59*01		1-40*01
mnTT_337	4-59*01		1-40*02
mnTT_427	4-59*01		2-11*01
mnTT_519	4-59*01		2-23*01
mnTT_339	4-59*01		3-01*01
mnTT_442	4-59*01	1-39*01	
mnTT_207	4-61*01	1-12*01	
mnTT_218	4-61*01	1-39*01	
mnTT_159	4-61*01	2-28*01	
mnTT_211	4-61*01		1-44*01
mnTT_253	4-61*01		1-44*01
mnTT_521	4-61*01		1-44*01
mnTT_428	4-61*01		3-21*01
mnTT_151	4-61*07		2-11*01
mnTT_352	4-61*08	4-01*01	
mnTT_407	4-61*08	4-01*01	
mnTT_169	5-51*01	1-33*01	
mnTT_62	5-51*01	3-11*01	
mnTT_430	5-51*01	3-11*01	
mnTT_295	5-51*01	3-15*01	
mnTT_424	5-51*01	3-20*01	
mnTT_444	5-51*01	3-20*01	
mnTT_464	5-a*01	1D-33*01	
mnTT_26	5-a*01		2-14*03
mnTT_210	5-a*01		2-23*03

Figure 37

Summary 20 VH region genes

	CDR lengths			VNTI pl	Ranking pos	PTMs (w/o NxS/T)	NxS/T	Met in CDRs	Cysteine (to be removed)	Epibase check		Aggressive
	Heavy chain germline genes	Kabat CDR-H1	Kabat CDR2-H2							Deviations from germline	Strong T-cell epitope	Theoretical aggregation propensity
1	hVH_1_2	5	17	9.4	14	2	0	1	0	0	0	intermediate
2	hVH_1_18	5	17	9.2	9	2	0	0	0	0	0	high
3	hVH_1_69	5	17	9.3	7	0	0	0	0	0	0	intermediate
4	hVH_1_46	5	17	9.2	21	0	0	1	0	0	0	n.d.
5	hVH_3_7	5	17	8.6	8	4	0	1	0	0	0	low
6	hVH_3_11	5	17	9.0	17	2	0	1	0	0	0	n.d.
7	hVH_3_15	5	19	9.0	12	3	0	1	0	0	0	low
8	hVH_3_21	5	17	9.0	11	3	0	1	0	0	0	intermediate
9	hVH_3_23	5	17	8.7	1	3	0	1	0	0	0	intermediate
10	hVH_3_30	5	17	9.3	2	4	0	1	0	0	0	intermediate
11	hVH_3_33	5	17	9.1	15	4	0	1	0	0	0	n.d.
12	hVH_3_48	5	17	8.9	19	3	0	1	0	0	0	intermediate
13	hVH_3_53	5	16	8.7	16	3	0	1	0	0	0	intermediate
14	hVH_3_73	5	19	9.5	33	3	0	1	0	0	0	n.d.
15	hVH_3_74	5	17	9.1	19	4	0	1	0	0	0	n.d.
16	hVH_4_4	6	16	9.3	20	0	0	0	1	0	0	n.d.
17	hVH_4_31	7	16	9.2	13	0	0	0	0	0	0	n.d.
18	hVH_4_39	7	16	9.0	3	0	0	0	0	0	0	n.d.
19	hVH_5_51	5	17	8.6	6	1	0	0	0	0	0	intermediate
20	hVH_6_1	7	18	9.3	39	3	0	1	0	0	0	n.d.

Figure 38

Summary 20 VL region genes

	Light chain germline genes	Kabat CDR-L1	Kabat CDR-L2	VNTI pl	Ranking pos	PTMs (w/o NxS/T)	NxS/T	Met in CDRs	Cysteine (to be removed)	Deviations from germline	Strong T- cell epitope	Theoretical aggregation propensity
1	hVL_1-40	14	7	4.9	2	1	0	0	0	0	0	intermediate
2	hVL_1-47	13	7	5.0	5	0	0	0	0	0	0	intermediate
3	hVL_1-51	13	7	6.2	4	0	0	0	0	1	0	intermediate
4	hVL_2-11	14	7	6.7	8	0	0	0	0	0	0	n.d.
5	hVL_2-23	14	7	6.7	6	0	0	0	0	0	0	n.d.
6	hVL_2-14	14	7	5.6	1	0	0	0	0	0	0	high
7	hVL_3-1	11	7	4.5	9	2	0	0	1	2	1*	n.d.
8	hVL_3-21	11	7	4.8	7	2	0	0	0	1	1*	n.d.
9	hVK_1-5	11	7	5.0	3	1	0	0	0	0	0	high
10	hVK_1-6	11	7	8.0	16	0	0	0	0	0	0	n.d.
11	hVK_1-9	11	7	8.0	9	0	0	0	0	0	0	n.d.
12	hVK_1-12	11	7	8.0	15	0	0	0	0	0	0	n.d.
13	hVK_1-16	11	7	8.0	14	0	0	0	0	0	0	n.d.
14	hVK_1-17	11	7	8.7	11	0	0	0	0	0	0	n.d.
15	hVK_1-27	11	7	8.7	12	0	0	0	0	0	0	n.d.
16	hVK_1-39	11	7	8.0	2	0	0	0	0	0	0	high
17	hVK_2-30	16	7	8.0	10	2	0	0	0	0	0	n.d.
18	hVK_3-11	11	7	6.3	6	0	0	0	0	0	0	intermediate
19	hVK_3-15	11	7	8.0	4	0	0	0	0	0	0	intermediate
20	hVK_3-20	12	7	6.3	1	0	0	0	0	0	0	low
alt.	hVK_1-8	11	7	8.9	13	0	0	0	1	n.d.	n.d.	n.d.

Figure 39

1358.0	IGKV3-20	IGKV1-39/1D-39	IGKV1-5	IGKV3-15	IGKV4-1	IGKV3-11	IGKV2-28/2D-28	IGKV1-33/1D-33	IGKV1-9	IGKV2-30	IGKV1-17	IGKV1-27	IGKV1-8	IGKV1-16	IGKV1-12	IGKV1-6	IGKV2D-29	IGKV1-13	IGKV2-24	IGKV1D-8	IGKV2-29	IGKV5-2	IGKV3D-20	IGKV1D-12	IGKV2-40/2D-40	IGKV1D-43	IGKV2D-30	IGKV1D-16	IGKV3D-15	IGKV1D-13	IGKV1D-17
>VH3-23	24	12	27	20	19	9	7	6	3	1	5	4	4	3	1	0	2	0	0	0	2	0	1	1	2	0	0	0	0	1	0
>VH3-30	14	12	8	9	11	12	4	2	7	2	1	1	2	1	0	2	1	1	2	2	0	1	0	0	0	0	1	0	0	0	0
>VH4-39	13	16	14	22	5	6	5	4	0	2	1	4	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
>VH4-59	15	19	3	8	19	4	0	2	0	1	1	3	1	1	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
>VH4-34	25	16	8	8	7	6	6	3	2	0	2	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH5-51	10	7	4	7	9	6	4	3	1	2	1	1	0	0	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH1-69	12	12	5	7	8	5	3	3	0	1	0	2	2	1	0	1	1	0	0	0	0	0	0	0	0	0	1	1	2	0	0
>VH3-7	6	19	19	8	5	4	3	0	2	4	2	2	3	0	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	1
>VH1-18	15	8	5	4	2	4	5	7	0	2	1	0	1	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
>VH3-48	12	8	1	6	6	7	3	6	2	0	2	1	3	2	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0
>VH3-21	5	7	4	3	4	2	2	0	0	0	0	2	2	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-15	10	6	6	4	4	3	3	4	3	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0
>VH4-31	7	4	4	4	2	7	4	3	0	0	2	2	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
>VH1-2	12	6	3	2	3	0	2	1	0	1	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-33	6	6	5	8	6	2	4	2	2	0	1	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-53	2	5	8	6	4	4	1	5	1	0	1	2	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
>VH3-11	3	5	6	5	2	3	3	1	1	0	1	0	0	0	1	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
>VH3-9	1	3	3	2	3	2	1	0	0	0	1	1	1	1	2	1	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0
>VH3-74	4	3	3	3	3	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH4-4	6	5	4	3	3	3	2	0	0	0	1	1	0	0	0	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0
>VH1-46	6	5	3	3	1	2	0	1	4	0	0	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH4-61	0	3	0	2	5	1	1	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH1-8	2	1	1	4	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
>VH1-24	1	3	0	3	1	4	2	1	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
>VH1-3	2	4	1	3	0	0	0	1	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-49	2	4	2	1	0	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH4-28	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-43	0	0	3	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-64	0	0	2	1	0	2	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH7-81	3	2	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-13	0	3	1	0	2	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-72	1	0	2	2	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-73	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH1-58	2	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-66	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH4-30.2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH7-4.1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH2-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH6-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH4-30.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>VH3-20	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 45A

		Tomlinson	Protein sequence
	Matsuda et al	et al	
IGHV1-2	VH 1-2	DP-75	QVQLVQSGAEVKKPGASVKVSCKASGYTFTGYIMHWVRQAPGQGLEWMG WINPNSGGTNYAQKFQGRVTMTDRDTSISTAYMELSLRSDDTAVYYCAR
IGHV1-3	VH 1-3	DP-25	QVQLVQSGAEVKKPGASVKVSCKASGYTFTSYAMHWVRQAPGQRLEWMG WSNAGNGNTKYSQEFQGRVTITRDTASTAYMELSSLRSEDMAVYYCAR
IGHV1-8	VH 1-8	DP-15	QVQLVQSGAEVKKPGASVKVSCKASGYTFTSYDINWVRQATGQGLEWMGW MNPNSGNTGYAQKFQGRVTMTNRNTSISTAYMELSSLRSEDTAVYYCARG
IGHV1-18	VH 1-18	DP-14	QVQLVQSGAEVKKPGASVKVSCKASGYTFTSYGISWVRQAPGQGLEWMGW ISAYNGNTNYAQKLQGRVTMTTDTSTSTAYMELSLRSDDTAVYYCAR
IGHV1-24	VH 1-24	DP-5	QVQLVQSGAEVKKPGASVKVSGYTLTELSMHWVRQAPGKGLEWMG GFDPEDGETIYAQKFQGRVTMTEDTSTDTAYMELSSLRSEDTAVYYCAT
IGHV1-45	VH 1-45	--	QMQLVQSGAEVKKTGSSVKVSCKASGYTFTYRYLHWVRQAPGQALEWMG WITPFNGNTNYAQKFQDRVTITRDRSMSTAYMELSSLRSEDTAMYYCAR
IGHV1-46	VH 1-46	DP-7	QVQLVQSGAEVKKPGASVKVSCKASGYTFTSYIMHWVRQAPGQGLEWMGI INPSGGTSYAQKFQGRVTMTDRDTSSTVYMELSSLRSEDTAVYYCAR
IGHV1-58	VH 1-58	DP-2	QMQLVQSGPEVKKPGTSVKVSCKASGFTFTSSAMQWVRQARGQRLEWIGW IVVGSGNTNYAQKFQERVITITRDMSTSTAYMELSSLRSEDTAVYYCAA
IGHV1-69*01	VH 1-69	DP-10	QVQLVQSGAEVKKPGSSVKVSCKASGGTFSSYAISWVRQAPGQGLEWMGG IIPFGTANYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYCAR
IGHV1-69*06, IGHV1-e	VH 1-69	DP-88	QVQLVQSGAEVKKPGSSVKVSCKASGGTFSSYAISWVRQAPGQGLEWMGG IIPFGTANYAQKFQGRVTITADKSTSTAYMELSSLRSEDTAVYYCAR
IGHV1-c	--	--	KSGASVKVSCSFSGFTITSYGIHWVQQSPGQGLEWMGWINPGNGSPSYAKK FQGRFTMTDRMSTTTAYTDLSSLTSEDMAVYYAR
IGHV1-f	--	DP-3	EVQLVQSGAEVKKPGATVKISCKVSGYTFTDYYMHWVQQAPGKGLEWMGL VDPEDGETIYAEKFQGRVTITADTSTDTAYMELSSLRSEDTAVYYCAT
IGHV2-5	VH 2-5	DP-76	QITLKESGPTLVKPTQTLTLTCTFSGFSLSTSGVGVGWIRQPPGKALEWLALI YWDDDKRYSPSLKSRLTITKDTSKNQVLTMTNMDPVDATYYCAHR
IGHV2-26	VH 2-26	DP-26	QVTLKESGPVLVKPTETLTCTVSGFSLSNARMGVSWIRQPPGKALEWLALH IFSNDKSYSTSLKSRLTISKDTSKSQVLTMTNMDPVDATYYCARI
IGHV2-70	VH 2-70	DP-27	QVTLRESGPALVKPTQTLTLTCTFSGFSLSTSGMCSVSWIRQPPGKALEWLALI DWDDDKYYSTSLKTRLTISKDTSKNQVLTMTNMDPVDATYYCARI
IGHV3-7	VH 3-7	DP-54	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSYWMSWVRQAPGKGLEWVA NIKQDGSEKYYVDSVKGRFTISRDNANKNSLYLQMNSLRAEDTAVYYCAR
IGHV3-9	VH 3-9	DP-31	EVQLVESGGGLVQGRSLRLSCAASGFTFDDYAMHWVRQAPGKGLEWVSG ISWNSGSIGYADSVKGRFTISRDNANKNSLYLQMNSLRAEDTALYYCAKD

Figure 45B

IGHV3-11	VH 3-11	DP-35	QVQLVESGGGLVKPGGSLRLSCAASGFTFSDYYMSWIRQAPGKGLEWVSYI SSSGSTIYYADSVKGRFTISRDNKNSLYLQMNSLRAEDTAVYYCAR
IGHV3-13	VH 3-13	DP-48	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSYDMHWVRQATGKGLEWVSA IGTAGDTYYPGSVKGRFTISRDNKNSLYLQMNSLRAGDTAVYYCAR
IGHV3-15	VH 3-15	DP-38	EVQLVESGGGLVKPGGSLRLSCAASGFTFSNAWMSWVRQAPGKGLEWVG RIKSKTDGGTTDYAAPVKGRFTISRDDSKNTLYLQMNSLKTEDTAVYYCTT
IGHV3-16	VH 3-16		EVQLVESGGGLVQPGGSLRLSCAASGFTFSNSDMNWARDKAPGKGLEWVSG VSWNGSRTHYVDSVK.RRFIISRDNSRNSLYLQKNRRRAEDMAVYYCVR
IGHV3-20	VH 3-20	DP-32	EVQLVESGGGVVPRPGGSLRLSCAASGFTFDDYGMWVRQAPGKGLEWVS GINWNGGSTGYADSVKGRFTISRDNKNSLYLQMNSLRAEDTALYHCAR
IGHV3-21	VH 3-21	DP-77	EVQLVESGGGLVKPGGSLRLSCAASGFTFSSYSMNWVRQAPGKGLEWVSSI SSSSSYIYYADSVKGRFTISRDNKNSLYLQMNSLRAEDTAVYYCAR
IGHV3-23	VH 3-23	DP-47	EVQLLESGGGLVQPGGSLRLSCAASGFTFSSYAMSWVRQAPGKGLEWVSAI SGSGGSTYYADSVKGRFTISRDNKNTLYLQMNSLRAEDTAVYYCAK
IGHV3-30	VH 3-30	DP-49	QVQLVESGGGVVQPRSLRLSCAASGFTFSSYGMHWVRQAPGKGLEWVA VISYDGSNKYYADSVKGRFTISRDNKNTLYLQMNSLRAEDTAVYYCAR
IGHV3-30-3	--	DP-46	QVQLVESGGGVVQPRSLRLSCAASGFTFSSYAMHWVRQAPGKGLEWVAV ISYDGSNKYYADSVKGRFTISRDNKNTLYLQMNSLRAEDTAVYYCAR
IGHV3-30-5	--	--	QVQLVESGGGVVQPRSLRLSCAASGFTFSSYGMHWVRQAPGKGLEWVA VISYDGSNKYYADSVKGRFTISRDNKNTLYLQMNSLRAEDTAVYYCAK
IGHV3-33	VH 3-33	DP-50	QVQLVESGGGVVQPRSLRLSCAASGFTFSSYGMHWVRQAPGKGLEWVA VIWYDGSNKYYADSVKGRFTISRDNKNTLYLQMNSLRAEDTAVYYCAR
IGHV3-35	VH 3-35	DP-59	EVQLVESGGGLVQPGGSLRLSCAASGFTFSNSDMNWHQAPGKGLEWVSG VSWNGSRTHYADSVKGRFIISRDNSRNTLYLQTNSLRAEDTAVYYCVR
IGHV3-38	VH 3-38P	--	EVQLVESGGGLVQPRGSLRLSCAASGFTVSSNEMSWIRQAPGKGLEWVSSI SGGSTYYADSRKGRFTISRDNKNTLYLQMNSLRAEDTAVYYCARY
IGHV3-43	VH 3-43	DP-33	EVQLVESGGVVVQPGGSLRLSCAASGFTFDDYTMHWVRQAPGKGLEWVSLI SWDGGSTYYADSVKGRFTISRDNKNSLYLQMNSLRTEDEALYYCAKD
IGHV3-48	VH 3-48	DP-51	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSYSMNWVRQAPGKGLEWVSY ISSSSSTIYYADSVKGRFTISRDNKNSLYLQMNSLRDEDTAVYYCAR
IGHV3-49	VH 3-49	3-49RB	EVQLVESGGGLVQPRSLRLSCTASGFTFGDYAMSWFRQAPGKGLEWVGF IRSKAYGGTTEYAASVKGRFTISRDDSKSIAYLQMNSLKTEDTAVYYCTR
IGHV3-53	VH 3-53	DP-42	EVQLVESGGGLIQPGGSLRLSCAASGFTVSSNYMSWVRQAPGKGLEWVSVI YSGGSTYYADSVKGRFTISRDNKNTLYLQMNSLRAEDTAVYYCAR
IGHV3-64	VH 3-64	DP-61	EVQLVESGGLVQPGGSLRLSCAASGFTFSSYAMHWVRQAPGKGLEYSVAI SSNGGSTYYADSVKGRFTISRDNKNTLYLQMNSLRAEDMAVYYCAR
IGHV3-66	VH 3-66	DP-86	EVQLVESGGGLIQPGGSLRLSCAASGFTVSSNYMSWVRQAPGKGLEWVSVI YSCGSTYYADSVKGRFTISRDNKNTLYLQMNSLRAEDTAVYYCAR
IGHV3-72	VH 3-72	DP-29	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDHYMDWVRQAPGKGLEWVG RTRNKANSYTTTEYAASVKGRFTISRDDSKNSLYLQMNSLKTEDTAVYYCAR
IGHV3-73	VH 3-73	DA-11	EVQLVESGGGLVQPGGSLRLSCAASGFTFSGSAMHWVRQASGKGLEWVGR IRSKANSYATAYAASVKGRFTISRDDSKNTAYLQMNSLKTEDTAVYYCTR
IGHV3-74	VH 3-74	DP-53	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSYWMHWVRQAPGKGLVWVS RINSDGSSTSYADSVKGRFTISRDNKNTLYLQMNSLRAEDTAVYYCAR

Figure 45C

IGHV3-d	--	--	EVQLVESRGVLVQPGGSLRLSCAASGFTVSSNEMSWVRQAPGKGLEWVSSI SGGSTYYADSRKGRFTISRDNSKNTLHLQMNSLRAEDTAVYYCKK
IGHV4-4	VH 4-4	DP-70	QVQLQESGPGLVKPSETLSLTCTVSGGSISSYYWSWIRQPAGKGLEWIGRIY TSGSTNYNPSLKSRTMSVDTSKNQFSLKLSSVTAADTAVYYCAR
IGHV4-28	VH 4-28	DP-68	QVQLQESGPGLVKPSDTLSLTCAVSGYSISSNWWGWIRQPPGKGLEWIGYI YYSGSTYYNPSLKSRTMSVDTSKNQFSLKLSSVTAADTAVYYCAR
IGHV4-30-1	--	--	QVQLQESGPGLVKPSQTLSTCTVSGGSISSGGYYWSWIRQHPGKGLEWIG YIYYSGSTYYNPSLKSRTISVDTSKNQFSLKLSSVTAADTAVYYCAR
IGHV4-30-2	--	DP-64	QLQLQESGSLVKPSQTLSTCAVSGGSISSGGYSWSWIRQPPGKGLEWIG YIYHSGSTYYNPSLKSRTISVDRSKNQFSLKLSSVTAADTAVYYCAR
IGHV4-30-4	--	DP-78	QVQLQESGPGLVKPSQTLSTCTVSGGSISSGDYYWSWIRQPPGKGLEWIG YIYYSGSTYYNPSLKSRTISVDTSKNQFSLKLSSVTAADTAVYYCAR
IGHV4-31	VH 4-31	DP-65	QVQLQESGPGLVKPSQTLSTCTVSGGSISSGGYYWSWIRQHPGKGLEWIG YIYYSGSTYYNPSLKSRTISVDTSKNQFSLKLSSVTAADTAVYYCAR
IGHV4-34	VH 4-34	DP-63	QVQLQQWGAGLLKPSETLSLTCAVYGGSFSGYYWSWIRQPPGKGLEWIGEI NHSGSTNYNPSLKSRTISVDTSKNQFSLKLSSVTAADTAVYYCARG
IGHV4-39	VH 4-39	DP-79	QLQLQESGPGLVKPSETLSLTCTVSGGSISSSSYYWGWRQPPGKGLEWIGS IYYSGSTYYNPSLKSRTISVDTSKNQFSLKLSSVTAADTAVYYCAR
IGHV4-59	VH 4-59	DP-71	QVQLQESGPGLVKPSETLSLTCTVSGGSISSYYWSWIRQPPGKGLEWIGYIY YSGSTNYNPSLKSRTISVDTSKNQFSLKLSSVTAADTAVYYCAR
IGHV4-61	VH 4-61	DP-66	QVQLQESGPGLVKPSETLSLTCTVSGGSVSSGGYYWSWIRQPPGKGLEWIG YIYYSGSTNYNPSLKSRTISVDTSKNQFSLKLSSVTAADTAVYYCAR
IGHV4-b	--	DP-67	QVQLQESGPGLVKPSETLSLTCAVSGYSISSGGYYWGWRQPPGKGLEWIGSI YHSGSTYYNPSLKSRTISVDTSKNQFSLKLSSVTAADTAVYYCAR
IGHV5-51	VH 5-51	DP-73	EVQLVQSGAEVKKPGESLKISCKGSGYSFTSYWIGWVRQMPGKGLEWMGII YPGDS DTRYSPSFQGGVTISADKSISTAYLQWSSLKASDTAMYYCAR
IGHV5-a	--	--	EVQLVQSGAEVKKPGESLRISCKGSGYSFTSYWISWVRQMPGKGLEWMGRI DPDSYTNYSFQGHVTISADKSISTAYLQWSSLKASDTAMYYCAR
IGHV6-1	VH 6-1	DP-74	QVQLQQSGPGLVKPSQTLSTCAISGDSVSSNSAAWNWIRQSPSRGLEWL GRTYYRSKWNNDYAVSVKSRITINPDTSKNQFSLQLNSVTPEDTAVYYCAR
IGHV7-4-1	--	DP-21	QVQLVQSGSELKKPGASVKVSCASGYTFTSYAMNWWVRQAPQGGLW MGWINTNTGNPTYAQGFTGRFVSLDTSVSTAYLQICSLKAEDTAVYYCAR
IGHV7-81	VH 7-81	--	QVQLVQSGHEVKQPGASVKVSCASGYSTFTYGMNWWVRQAPQGGLW MGWFNTYTGNPTYAQGFTGRFVFSMDTSASTAYLQISSLKAEDMAMYYCAR

51 functional

5 open reading frames

Figure 46A

	Zachau	Protein sequence
IGKV1-5	L12	DIQMTQSPSTLSASVGDRVITICRASQSISSWLAWYQQKPGKAPKLLIYDASS LESGVPSRFRSGSGSGTEFTLTISSLQPDDFATYYCQQYNSYS
IGKV1-6	L11	AIQMTQSPSSLSASVGDRVITICRASQGIRNDLGWYQQKPGKAPKLLIYAASS LQSGVPSRFRSGSGSGTDFTLTISSLQPEDFATYYCLQDYNYP
IGKV1-8	L9	AIRMTQSPSSFSASTGDRVITICRASQGISSYLAWYQQKPGKAPKLLIYAASLT QSGVPSRFRSGSGSGTDFTLTISCLQSEDFATYYCQQYYSP
IGKV1-9	L8	DIQLTQSPSFLSASVGDRVITICRASQGISSYLAWYQQKPGKAPKLLIYAASLT QSGVPSRFRSGSGSGTEFTLTISSLQPEDFATYYCQQLNLYP
IGKV1-12	L5	DIQMTQSPSSVSASVGDRVITICRASQGISSWLAWYQQKPGKAPKLLIYAASS LQSGVPSRFRSGSGSGTDFTLTISSLQPEDFATYYCQQANSFP
IGKV1-13	L4/18a	AIQLTQSPSSLSASVGDRVITICRASQGISSALAWYQQKPGKAPKLLIYDASSL ESGVPSRFRSGSGSGTDFTLTISSLQPEDFATYYCQQFNLYP
IGKV1-16	L1	DIQMTQSPSSLSASVGDRVITICRASQGISNYLAWFQQKPGKAPKSLIYAASS LQSGVPSRFRSGSGSGTDFTLTISSLQPEDFATYYCQQYNSYP
IGKV1-17	A30	DIQMTQSPSSLSASVGDRVITICRASQGIRNDLGWYQQKPGKAPKRLIYAASS LQSGVPSRFRSGSGSGTEFTLTISSLQPEDFATYYCLQHNSYP
IGKV1-27	A20	DIQMTQSPSSLSASVGDRVITICRASQGISNYLAWYQQKPGKVPKLLIYAASLT QSGVPSRFRSGSGSGTDFTLTISSLQPEDVATYYCQKYNSAP
IGKV1-33	O18	DIQMTQSPSSLSASVGDRVITICQASQDISNYLNWYQQKPGKAPKLLIYDASN LETGVPSRFRSGSGSGTDFTFTISSLQPEDIATYYCQQYDNLP
IGKV1-37	O14	DIQLTQSPSSLSASVGDRVITICRVSQGISSYLNWYRQKPGKVPKLLIYSASNL QSGVPSRFRSGSGSGTDFTLTISSLQPEDVATYYGQRTYNAPP
IGKV1-39	O12	DIQMTQSPSSLSASVGDRVITICRASQSISSYLNWYQQKPGKAPKLLIYAASSL QSGVPSRFRSGSGSGTDFTLTISSLQPEDFATYYCQQSYSTP
IGKV1D-08	L24	VIWMTQSPSLLSASTGDRVITICRMSQGISSYLAWYQQKPGKAPELLIYAASLT LQSGVPSRFRSGSGSGTDFTLTISCLQSEDFATYYCQQYYSP
IGKV1D-12	L19	DIQMTQSPSSVSASVGDRVITICRASQGISSWLAWYQQKPGKAPKLLIYAASS LQSGVPSRFRSGSGSGTDFTLTISSLQPEDFATYYCQQANSFP
IGKV1D-13	L18	AIQLTQSPSSLSASVGDRVITICRASQGISSALAWYQQKPGKAPKLLIYDASSL ESGVPSRFRSGSGSGTDFTLTISSLQPEDFATYYCQQFNLYP
IGKV1D-16	L15	DIQMTQSPSSLSASVGDRVITICRASQGISSWLAWYQQKPEKAPKSLIYAASS LQSGVPSRFRSGSGSGTDFTLTISSLQPEDFATYYCQQYNSYP
IGKV1D-17	L14	NIQMTQSPSAMSASVGDRVITICRARQGISNYLAWFQQKPGKVPKHLIYAASS LQSGVPSRFRSGSGSGTEFTLTISSLQPEDFATYYCLQHNSYP
IGKV1D-33	O8	DIQMTQSPSSLSASVGDRVITICQASQDISNYLNWYQQKPGKAPKLLIYDASN LETGVPSRFRSGSGSGTDFTFTISSLQPEDIATYYCQQYDNLP
IGKV1D-37	O4	DIQLTQSPSSLSASVGDRVITICRVSQGISSYLNWYRQKPGKVPKLLIYSASNL QSGVPSRFRSGSGSGTDFTLTISSLQPEDVATYYGQRTYNAPP

Figure 46B

IGKV1D-39	O2	DIQMTQSPSSLSASVGDRVITICRASQSISSYLNWYQQKPGKAPKLLIYAASSL QSGVPSRFSGSGSGTDFTLTISLQPEDFATYYCQQSYSTP
IGKV1D-42	L22	DIQMIQSPSFLSASVGDRVSIICWASEGISSNLAWYLQKPGKSPKFLYDAKDL HPGVSSRFSGRGSGTDFTLTIIISLKPEDFAAYYCKQDFSYP
IGKV1D-43	L23	AIRMTQSPFSLASVGDRVITICWASQGISSYLAWYQQKPAKAPKLFIIYASSL QSGVPSRFSGSGSGTDYTLTISLQPEDFATYYCQQYYSTP
IGKV2-24	A23	DIVMTQTPLSSPVTLGQPASISCRSSQSLVHSDGNTYLSWLQQRPGQPPRLLI YKISNRFSGVPDRFSGSGAGTDFTLKISRVEAEDVGVYYCMQATQFP
IGKV2-28	A19	DIVMTQSPLSLPVTGPGEASISCRSSQSLHSDGNTYLDWYLQKPGQSPQLLI YLGSNRASGVDPDRFSGSGSGTDFTLKISRVEAEDVGVYYCMQALQTP
IGKV2-29	A18b	DIVMTQTPLSLSVTPGQPASISCKSSQSLHSDGKTYLYWYLQKPGQSPQLLI YEVSSRFSGVDPDRFSGSGSGTDFTLKISRVEAEDVGVYYCMQGIHLP
IGKV2-30	A17	DVVMTQSPLSLPVTLGQPASISCRSSQSLVYSDGNTYLNWFQQRPGQSPRR LIYKVSNRDSGVDPDRFSGSGSGTDFTLKISRVEAEDVGVYYCMQGTHWP
IGKV2-40	O11	DIVMTQTPLSLPVTGPGEASISCRSSQSLDSDGNTYLDWYLQKPGQSPQLL IYTLSYRASGVDPDRFSGSGSGTDFTLKISRVEAEDVGVYYCMQRIEFP
IGKV2D-24	A7	DIVMTQTPLSSPVTLGQPASISFRSSQSLVHSDGNTYLSWLQQRPGQPPRLLI YKVSNRFSGVPDRFSGSGAGTDFTLKISRVEAEDVGVYYCTQATQFP
IGKV2D-26	A5	EIVMTQTPLSLSITPGEQASISCRSSQSLHSDGYTYLYWFLQKARPVSTLLIYE VSNRFSGVDPDRFSGSGSGTDFTLKISRVEAEDFGVYYCMQDAQDPP
IGKV2D-28	A3	DIVMTQSPLSLPVTGPGEASISCRSSQSLHSDGNTYLDWYLQKPGQSPQLLI YLGSNRASGVDPDRFSGSGSGTDFTLKISRVEAEDVGVYYCMQALQTP
IGKV2D-29	A2	DIVMTQTPLSLSVTPGQPASISCKSSQSLHSDGKTYLYWYLQKPGQPPQLLI YEVSNRFSGVDPDRFSGSGSGTDFTLKISRVEAEDVGVYYCMQSIQLP
IGKV2D-30	A1	DVVMTQSPLSLPVTLGQPASISCRSSQSLVYSDGNTYLNWFQQRPGQSPRR LIYKVSNWDSGVDPDRFSGSGSGTDFTLKISRVEAEDVGVYYCMQGTHWP
IGKV2D-40	O1	DIVMTQTPLSLPVTGPGEASISCRSSQSLDSDGNTYLDWYLQKPGQSPQLL IYTLSYRASGVDPDRFSGSGSGTDFTLKISRVEAEDVGVYYCMQRIEFP
IGKV3-7	L10	EIVMTQSPPTLSLSPGERVTLSCRASQSVSSSYLTWYQQKPGQAPRLLIYGAS TRATSIPARFSGSGSGTDFTLTISLQPEDFAVYYCQQDHNLP
IGKV3-11	L6	EIVLTQSPATLSLSPGERATLSCRASQSVSSYLAWYQQKPGQAPRLLIYDASN RATGIPARFSGSGSGTDFTLTISLQPEDFAVYYCQQRSNWP
IGKV3-15	L2	EIVMTQSPATLSVSPGERATLSCRASQSVSSNLAWYQQKPGQAPRLLIYGAS TRATGIPARFSGSGSGTEFTLTISLQSEDFAVYYCQQYNNWP

Figure 46C

IGKV3-20	A27	EIVLTQSPGTLSSLSPGERATLSCRASQSVSSSYLAWYQQKPGQAPRLLIYGAS SRATGIPDRFSGSGSGTDFTLTISRLEPEDFAVYYCQQYGSSP
IGKV3D-07	L25	EIVMTQSPATLSLSPGERATLSCRASQSVSSSYLSWYQQKPGQAPRLLIYGAS TRATGIPARFSGSGSGTDFTLTISLQPEDFAVYYCQQDYNLP
IGKV3D-11	L20	EIVLTQSPATLSLSPGERATLSCRASQGVSSSYLAWYQQKPGQAPRLLIYDASN RATGIPARFSGSGPGTDFTLTISLQPEDFAVYYCQQRSNWH
IGKV3D-15	L16	EIVMTQSPATLSVSPGERATLSCRASQSVSSNLAWYQQKPGQAPRLLIYGAS TRATGIPARFSGSGSGTEFTLTISLQSEDFAVYYCQQYNNWP
IGKV3D-20	A11	EIVLTQSPATLSLSPGERATLSCGASQSVSSSYLAWYQQKPGQAPRLLIYDAS SRATGIPDRFSGSGSGTDFTLTISRLEPEDFAVYYCQQYGSSP
IGKV4-1	B3	DIVMTQSPDSLAVSLGERATINCKSSQSVLYSSNNKNYLAWYQQKPGQPPKL LIYWASTRESGVPDRFSGSGSGTDFTLTISLQAEDVAVYYCQQYYSTP
IGKV5-2	B2	ETTTLQSPAFMSATPGDKVNISCKASQDIDDDMNWYQQKPGQAPRLIIQEATTL VPGIPPRFSGSGYGTDFLTINNIESEDAAYYFCLQHDNFP
IGKV6-21	A26	EIVLTQSPDFQSVTPKEKVTITCRASQSIGSSLHWYQQKPDQSPKLLIKYASQS FSGVPSRFSGSGSGTDFTLTINSLEAEDAATYYCHQSSSLP
IGKV6D-21	A10	EIVLTQSPDFQSVTPKEKVTITCRASQSIGSSLHWYQQKPDQSPKLLIKYASQS FSGVPSRFSGSGSGTDFTLTINSLEAEDAATYYCHQSSSLP
IGKV6D-41	A14	DVVMTQSPAFLSVTPGEKVTITCQASEGIGNLYWYQQKPDQAPKLLIKYASQ SISGVPSRFSGSGSGTDFTFTISLQSEDAATYYCQQGNKHP

38 functional

8 open reading frames

Figure 47A

	Kawasaki et al	Frippiat et al	Protein sequence
IGLV1-36	VL 1-11	1a	QSVLTQPPSVSEAPRQRTISCSGSSSNIGNNAVNWYQQLPGKAPKLLIYYDD LLPSGVSDRFGSGSKSGTSASLAISGLQSEDEADYYCAAWDDSLNGP
IGLV1-40	VL 1-13	1e	QSVLTQPPSVSGAPGQRTISCTGSSSNIGAGYDVHWYQQLPGTAPKLLIYG NSNRPSGVPDRFGSGSKSGTSASLAITGLQAEDEADYYCQSYDSSLSGS
IGLV1-44	VL 1-16	1c	QSVLTQPPSASGTPGQRTISCSGSSSNIGSNTVNWYQQLPGTAPKLLIYSNN QRPSGVPDRFGSGSKSGTSASLAISGLQSEDEADYYCAAWDDSLNGP
IGLV1-47	VL 1-17	1g	QSVLTQPPSASGTPGQRTISCSGSSSNIGSNYVWYQQLPGTAPKLLIYSNN QRPSGVPDRFGSGSKSGTSASLAISGLRSEDEADYYCAAWDDSLSGP
IGLV1-50	VL 1-18	1f	QSVLTQPPSVSGAPGQRTISCTGSSSNIGAGYVHWYQQLPGTAPKLLIYG NSNRPSGVPDQFSGSKSGTSASLAITGLQSEDEADYYCKAWDNSLNA
IGLV1-51	VL 1-19	1b	QSVLTQPPSVSAAPEGQKVTISCSGSSSNIGNNVSWYQQLPGTAPKLLIYDNN KRPSGIPDRFGSGSKSGTSATLGITGLQTGDEADYYCGTWDDSSLGAG
IGLV2-08	VL 1-2	2c	QSALTQPPSASGSPGQSVTISCTGTSSDVGGYNYVSWYQQHPGKAPKLMY EVSKRPSGVPDRFGSGSKSGNTASLTVSGLQAEDEADYYCCSYAGSNNF
IGLV2-11	VL 1-3	2e	QSALTQPRSVSGSPGQSVTISCTGTSSDVGGYNYVSWYQQHPGKAPKLMY DVSKRPSGVPDRFGSGSKSGNTASLTISGLQAEDEADYYCCSYAGSYTF
IGLV2-14	VL 1-4	2a2	QSALTQPASVSGSPGQSITISCTGTSSDVGGYNYVSWYQQHPGKAPKLMY VSNRPSGVSNRFGSGSKSGNTASLTISGLQAEDEADYYCCSYTSSTL
IGLV2-18	VL 1-5	2d	QSALTQPPSVSGSPGQSVTISCTGTSSDVGSYNRVSWYQQPPGTAPKLMY VSNRPSGVPDRFGSGSKSGNTASLTISGLQAEDEADYYCSLYTSSTF
IGLV2-23	VL 1-7	2b2	QSALTQPASVSGSPGQSITISCTGTSSDVGSYNLVSWYQQHPGKAPKLMY GSKRPSGVSNRFGSGSKSGNTASLTISGLQAEDEADYYCCSYAGSSTF
IGLV2-33	VL 1-9	2f	QSALTQPPFVSGAPGQSVTISCTGTSSDVGDYDHFVWYQKRLSTTSRLIYN VNTRPSGISDLFGSGSKSGNMASLTISGLKSEVEANYHCSLYSSSYTF
IGLV3-1	VL 2-1	3r	SYELTQPPSVSVSPGQTASITCSGDKLGDKYACWYQQKPGQSPVLVIYQDSK RPSGIPERFSGSNSGNTATLTISGTQAMDEADYYCQAWDSSTA
IGLV3-9	VL 2-6	3j	SYELTQPLSVSVALGQTARITCGGNNIGSKNVHWYQQKPGQAPVLVIYRDSN RPSGIPERFSGSNSGNTATLTISRAQAGDEADYYCQVWDSSTA
IGLV3-10	VL 2-7	3p	SYELTQPPSVSVSPGQTARITCSGDALPKKYAYWYQQKSGQAPVLVIYEDSK RPSGIPERFSGSSSGTMATLTISGAQVEDEADYYCYSTDSSGNH
IGLV3-12	VL 2-8	3i	SYELTQPHSVSVATAQMARITCGGNNIGSKAVHWYQQKPGQDPVLVIYSDSN RPSGIPERFSGSNPGNTATLTISRIEAGDEADYYCQVWDSSTDHP
IGLV3-16	VL 2-11	3a	SYELTQPPSVSVSLGQMARITCSGEALPKKYAYWYQQKPGQFPVLVIYKDSE RPSGIPERFSGSSSGTIVTLTISGVQAEDEADYYCLSADSSGTYP
IGLV3-19	VL 2-13	3l	SSELTQDPAVSVALGQTVRITCQGDSLRSYYASWYQQKPGQAPVLVIYGKNN RPSGIPDRFGSSSGNTASLTITGAQAEDEADYYCNSRDSSGNHL
IGLV3-21	VL 2-14	3h	SYVLTQPPSVSVAPGQTARITCGGNNIGSKSVHWYQQKPGQAPVLVYDDSD DRPSGIPERFSGSNSGNTATLTISRVEAGDEADYYCQVWDSSTDHP
IGLV3-22	VL 2-15	3e	SYELTQLPSVSVSPGQTARITCSGDVLGENYADWYQQKPGQAPVLVIYEDSE RYPGIPERFSGSTSGNTTLTISRVLTEDEADYYCLSGDEDNP
IGLV3-25	VL 2-17	3m	SYELTQPPSVSVSPGQTARITCSGDALPKQYAYWYQQKPGQAPVLVIYKDSE RPSGIPERFSGSSSGTIVTLTISGVQAEDEADYYCQSADSSGTYP
IGLV3-27	VL 2-19	--	SYELTQPSSSVSVSPGQTARITCSGDVLAKKYARWFQKPGQAPVLVIYKDSE RPSGIPERFSGSSSGTIVTLTISGAQVEDEADYYCYSAADNNL

Figure 47B

IGLV3-32	VL 2-23P	3i1	SSGPTQVPAVSVALGQMARITCQGDSMEGSYEHWWYQQKPGQAPVLVIYDSS DRPSRIPERFSGSKSGNTTTLTITGAQAEDEADYYYQLIDNHA
IGLV4-3	VL 5-1	4c	LPVLTQPPSASALLGASIKLTCTLSSEHSTYIEWYQQRPGRSPQYIMKVKSD GSHSKGDGIPDRFSGSSSGADRYLTFSNLQSDDEAEYHCGESHTIDGQVG
IGLV4-60	VL 5-4	4a	QPVLTQSSSASASLGSSVKLTCTLSSGHSSYIAWHQQQPGKAPRYLMKLEG SGSYNKGSGVPDRFSGSSSGADRYLTISNLQFEDEADYYCETWDSNT
IGLV4-69	VL 5-6	4b	QLVLTQSPSASASLGASVKLTCTLSSGHSSYIAWHQQQPEKGPRYLMKLNS DGSHSKGDGIPDRFSGSSSGAERYLTISLQSEDEADYYCQWTGTG
IGLV5-37	VL 4-1	5e	QPVLTQPPSSSASPGESARLTCTLPDINVGSYNIYWWYQQKPGSPPRYLLYYY SDSDKQGQSGVPSRFSGSKDASANTGILLISGLQSEDEADYYCMIWPSNAS
IGLV5-39	--	5a	QPVLTQPTSLSASPGASARFTCTLRSGINVTYRIYWWYQQKPGSLPRYLLRYK SDSDKQGQSGVPSRFSGSKDASTNAGLLISGLQSEDEADYYCAIWYSSTS
IGLV5-45	VL 4-2	5c	QAVLTQPSSLSASPGASASLTCTLRSGINVTYRIYWWYQQKPGSPPYLLRYK SDSDKQGQSGVPSRFSGSKDASANAGILLISGLQSEDEADYYCMIWHSSAS
IGLV5-48	VL 4-3	5d	QPVLTQPTSLSASPGASARLTCTLRSGINLGSYRIFWYQQKPESPPRYLLSYY SDSSKHQSGVPSRFSGSKDASSNAGILVISGLQSEDEADYYCMIWHSSAS
IGLV5-52	VL 4-4	5b	QPVLTQPSSHSASSGASVRLTCLLSSGFSVGDFWIRWYQQKPGNPPRYLLY YHSDSNKGQSGVPSRFSGSNDASANAGILRISGLQPEDEADYYCGTWHNS
IGLV6-57	VL 1-22	6a	NFMLTQPHSVSESPGKTVTISCTRSSGSIASNYVQWYQQRPGSSPTTVIYED NQRPSGVDPDRFSGSIDSSSNSASLTISGLKTEDEADYYCQSYDSSN
IGLV7-43	VL 3-2	7a	QTVVTQEPSLTVSPGGTVTLTCASSTGAVTSGYYPNWFQKPGQAPRALIYS TSNKHSWTPARFSGSLLGGKAALTLSGVQPEDEAEYYCLLYYGAQ
IGLV7-46	VL 3-3	7b	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTSGHYPYWFQKPGQAPRTLIYD TSNKHSWTPARFSGSLLGGKAALTLLGAQPEDEAEYYCLLSYSGAR
IGLV8-61	VL 3-4	8a	QTVVTQEPSFVSVPGGTVTLTCGLSSGSVSTSYPSWYQQTPGQAPRTLIYS TNTRSSGVDPDRFSGSILGNKAALTITGAQADDESYYCVLYMGSGIS
IGLV9-49	VL 5-2	9a	QPVLTQPPSASASLGASVTLTCTLSSGYSNYKVDWYQQRPGKGRPFVMRVG TGGIVGSKGDGIPDRFSVLGSGLNRYLTIKNIQEEDES DYHCGADHGSGSNFV
IGLV10-54	VL 1-20	10a	QAGLTQPPSVSKGLRQTATLTCTGNSNIVGNQGAAWLQQHQHPPKLLSYR NNNRPSGISERFSASRSGNTASLTITGLQPEDEADYYCSALDSSLASA
IGLV11-55	VL 4-6	--	RPVLTQPPSLASPGATARLPCTLSSDLVGGKNMFWYQQKPGSSPRLFLY HYSDSDKQLGPGVPSRVSGSKETSSNTAFLISGLQPEDEADYYCQVYESSA

33 functional

5 open reading frames

Figure 48

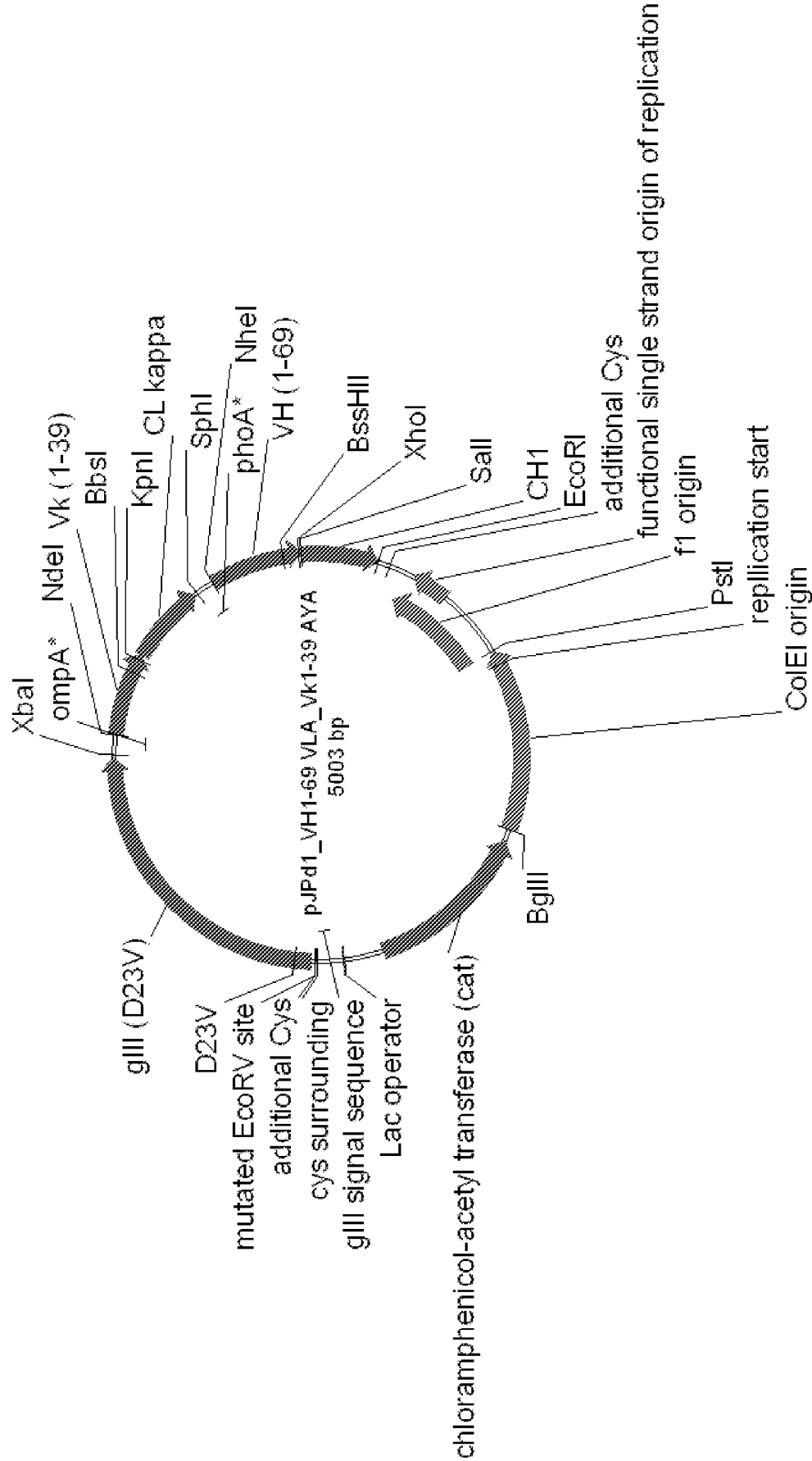


Figure 49

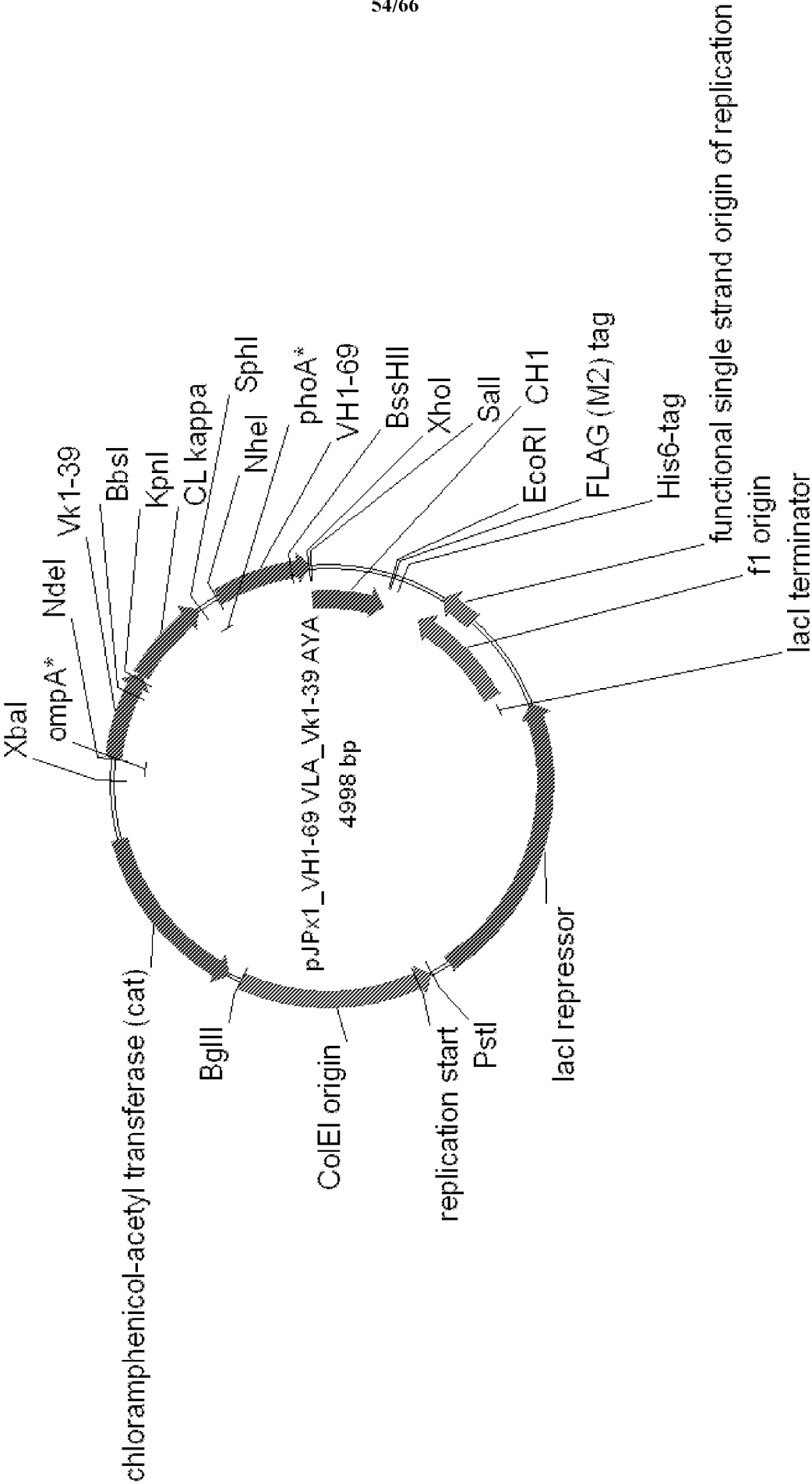


Figure 50

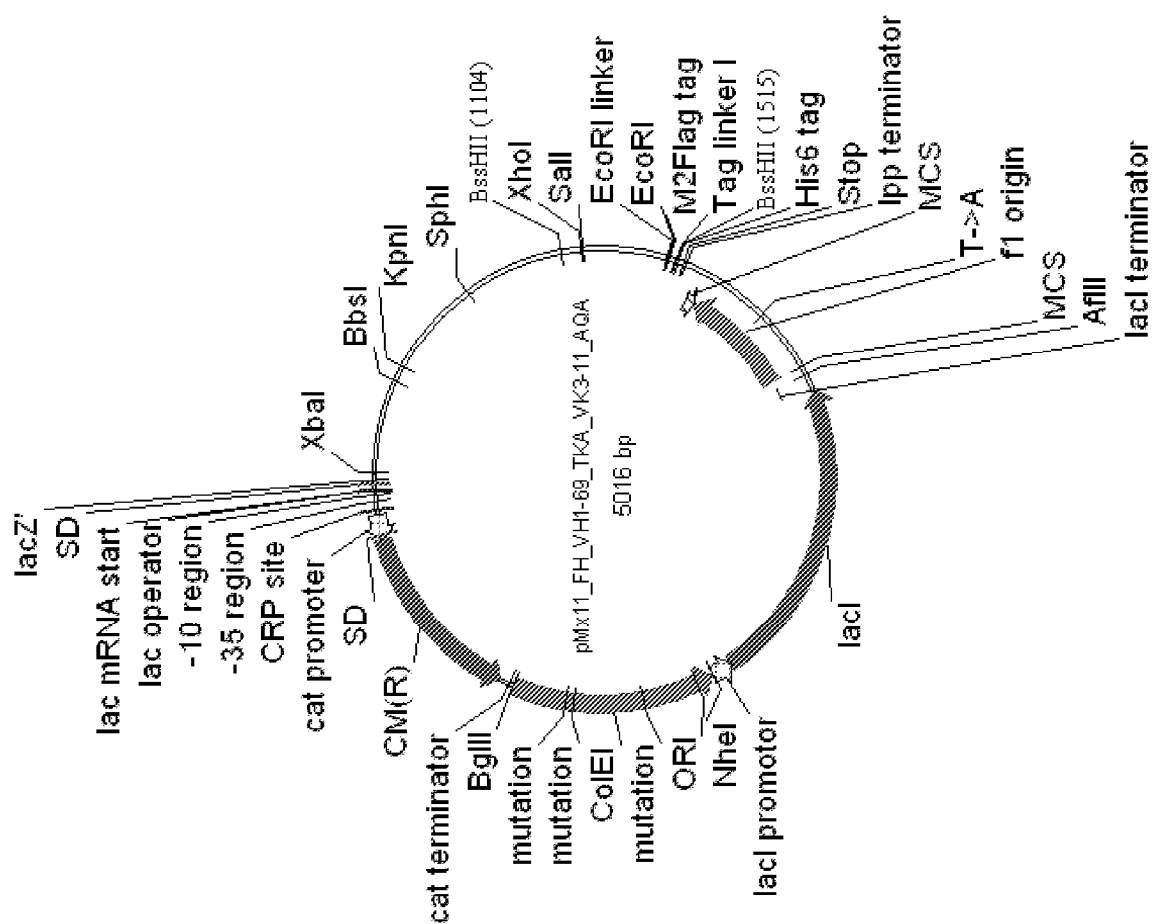


Figure 51

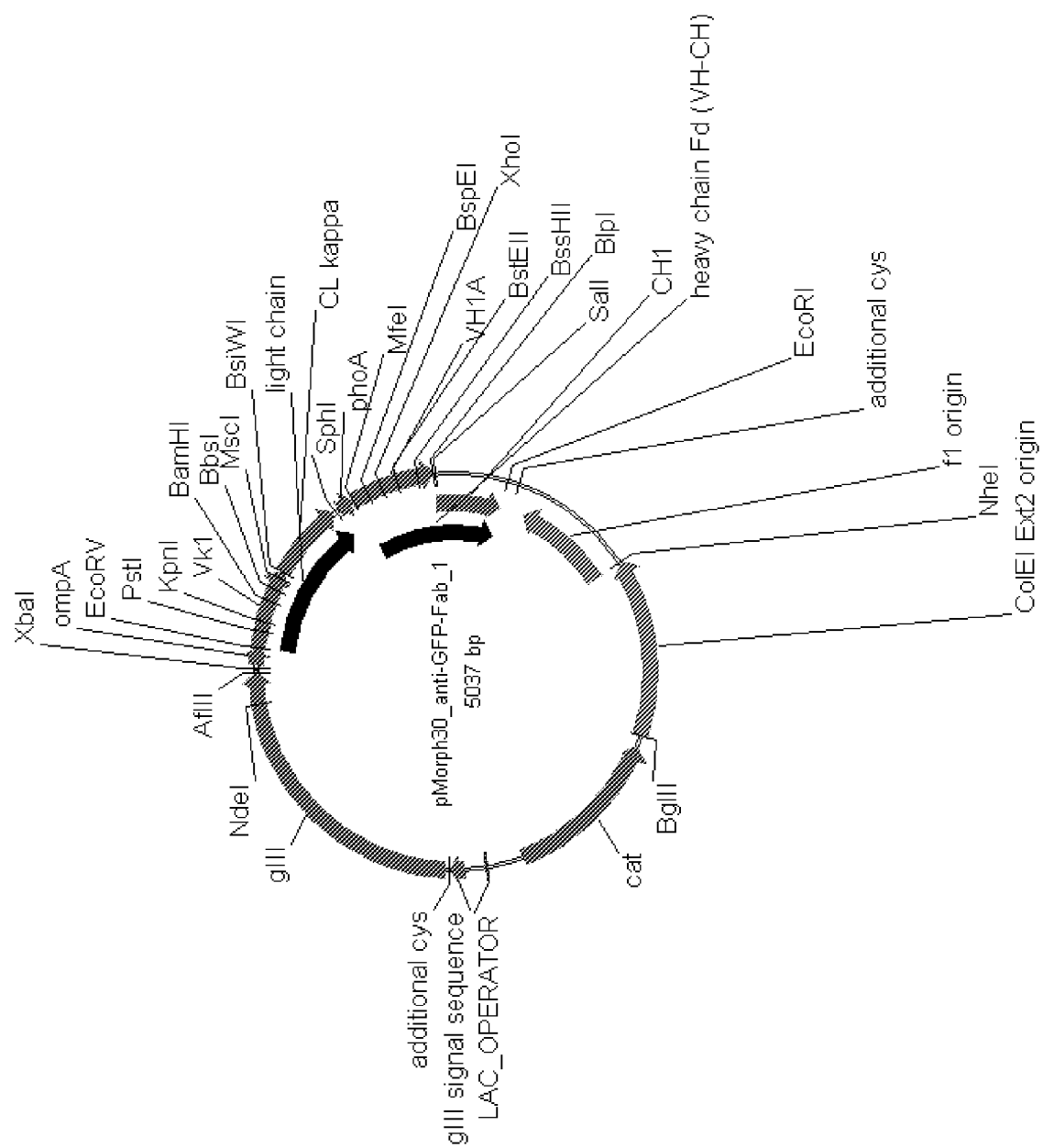


Figure 52

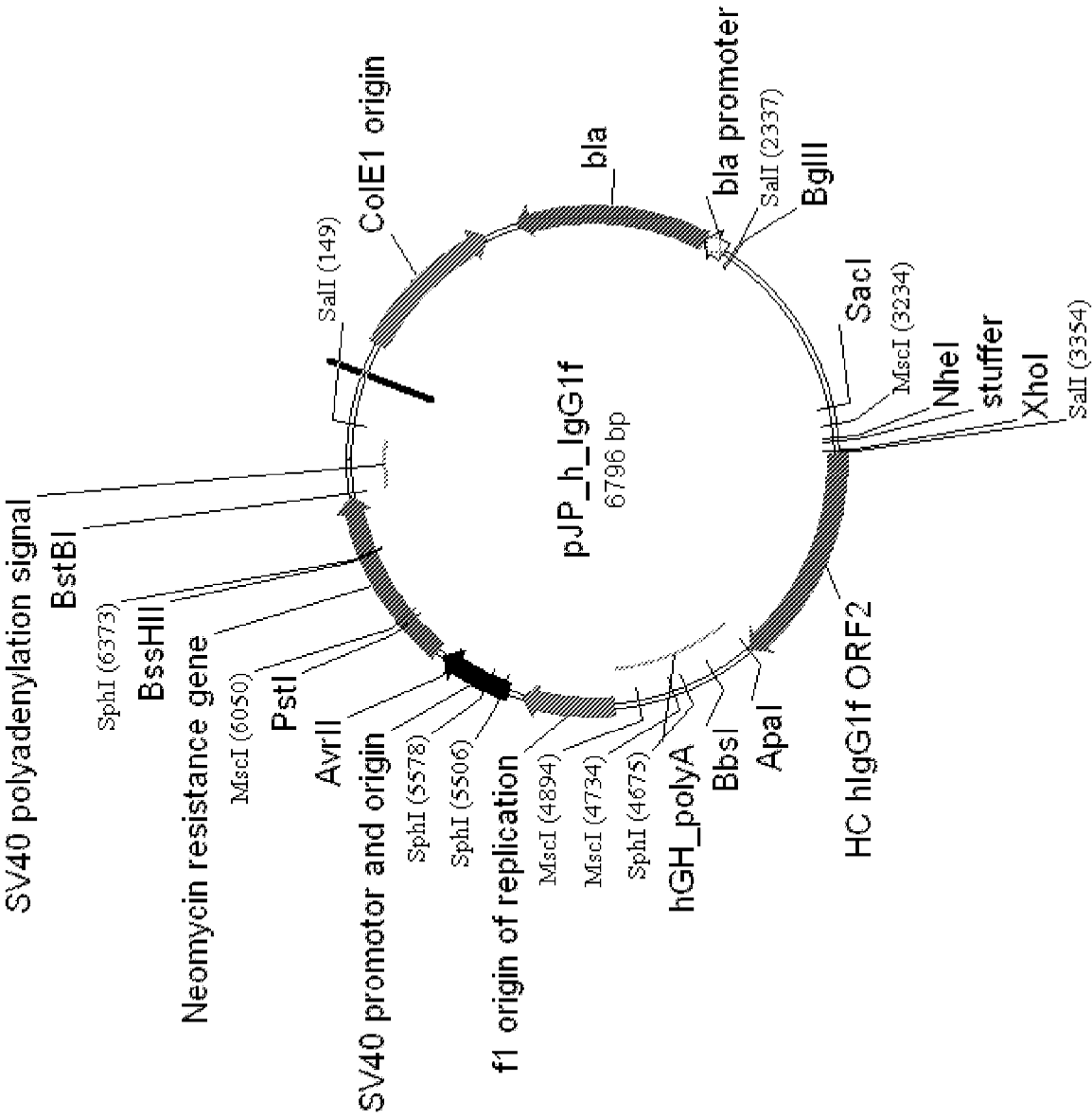


Figure 53

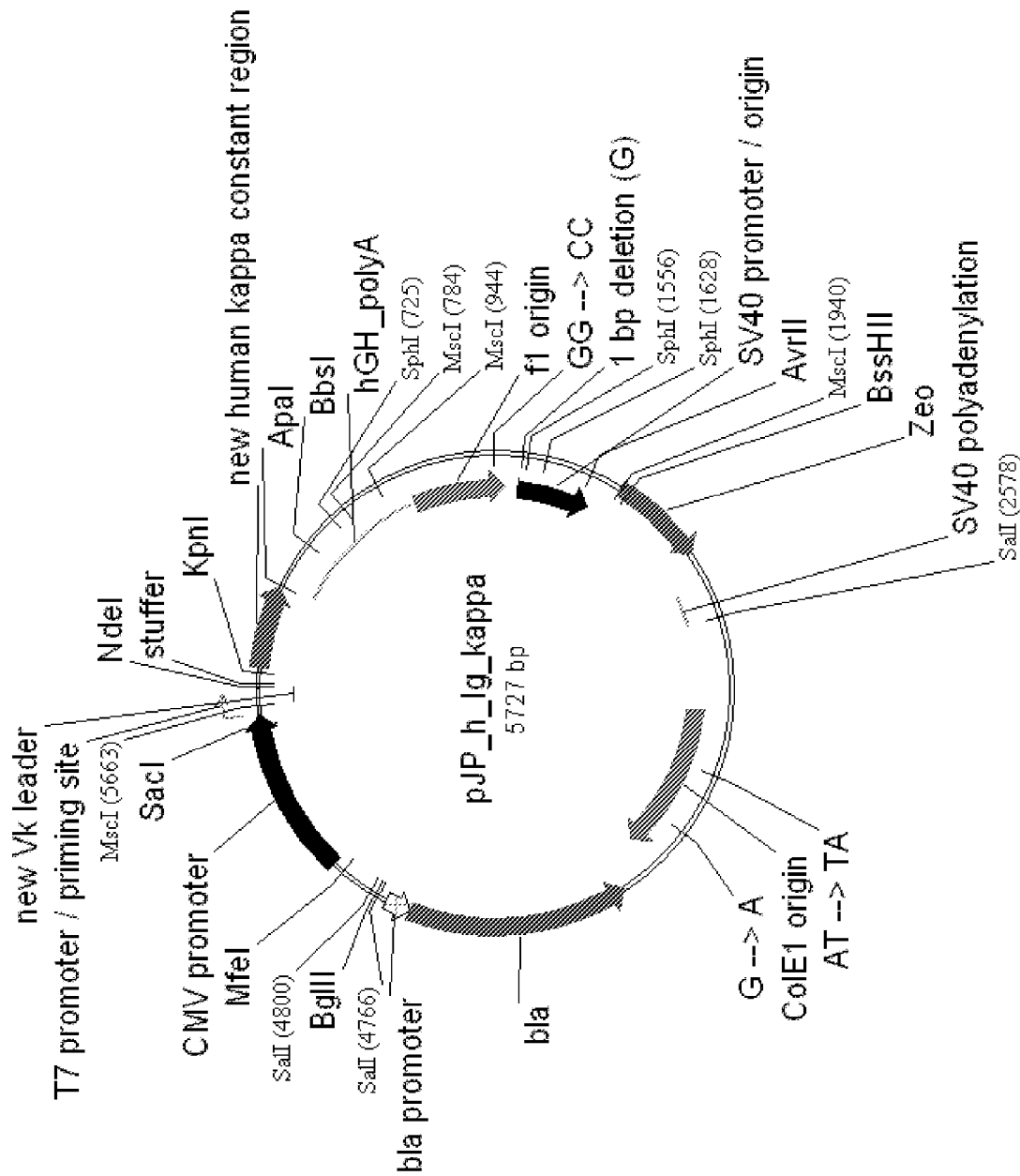


Figure 54

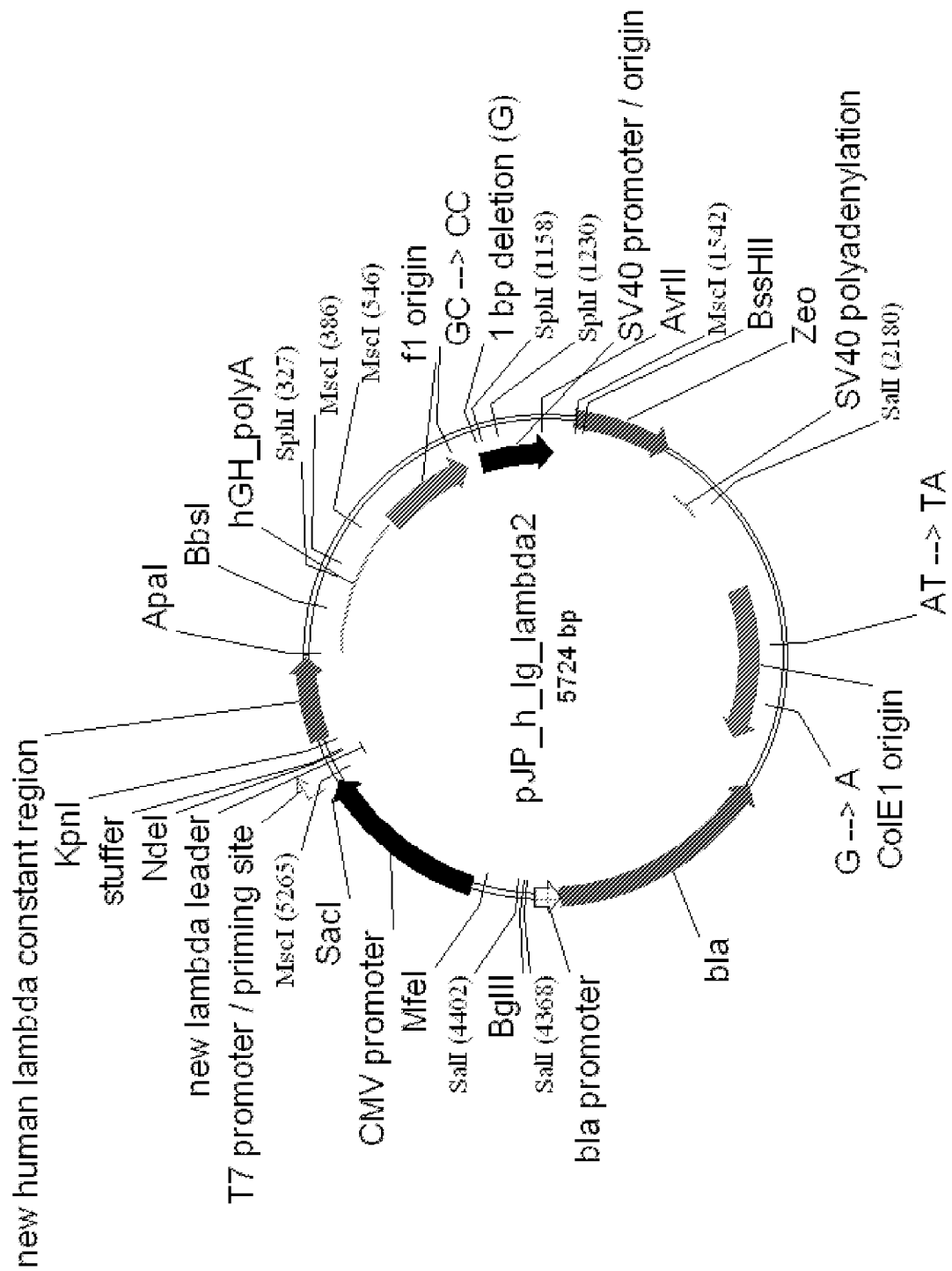


Figure 55

Relative Fab Display in ELISA (pJPd1)		hVK_1_05	hVK_1_06	hVK_1_09	hVK_1_12	hVK_1_16	hVK_1_17	hVK_1_27	hVK_1_39	hVK_2_30	hVK_3_11	hVK_3_15	hVK_3_20	hVL_1_40	hVL_1_47	hVL_1_51	hVL_2_11	hVL_2_14	hVL_2_23	hVL_3_1	hVL_3_21
1	hVH_1_2	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.4	0.0
2	hVH_1_18	2.0	0.6		1.6	2.0		1.2	3.7	1.9		2.6	2.2	2.4			1.9	2.5	4.3	4.4	3.4
3	hVH_1_46			3.0		1.3	1.3		2.5			3.0				5.7	1.6		2.7	4.3	5.2
4	hVH_1_69*01	2.1	2.9		2.1	1.2	0.9	0.2	3.5			1.6					0.8		1.8	3.4	4.6
5	hVH_3_07			6.7	10.6	7.0	10.5	14.5	27.3	13.0		14.5		8.2	6.3			11.3	6.9	5.0	
6	hVH_3_11	5.5	4.3	6.7	8.2	10.3		6.0	29.0		0.0	4.6		12.4	8.1		8.4	6.4	8.9		9.8
7	hVH_3_15	8.1	11.7	10.0	11.5	14.5	6.4	7.8	14.2		19.4	12.1	8.9	16.7	13.0	11.0	10.5	9.7	10.1	9.4	9.2
8	hVH_3_21	10.0	16.1		11.3		5.0	8.7	11.6						0.0			6.5	8.8		11.8
9	hVH_3_23			6.1		8.4		17.1	10.8	4.1			13.3			10.2	13.6	9.1	7.4	4.6	7.4
10	hVH_3_30				5.4			9.1	13.1										9.5	8.8	16.6
11	hVH_3_33											12.3							17.1		
12	hVH_3_48					8.7		8.9				12.1			10.3				9.3	6.0	
13	hVH_3_53	11.1		8.3	14.8	10.7	2.9	6.9		1.3		9.6				6.4	7.2		6.3	5.1	
14	hVH_3_73	0.4	0.3	0.3	0.3	0.3	0.1	3.6	0.2		0.5	0.2			0.0	0.3	0.2		0.8	0.0	0.4
15	hVH_3_74	6.4	9.5	8.7	8.4	8.0		5.0	8.7			10.0		8.8	3.2	7.1		4.7		7.0	1.8
16	hVH_4_04*03			4.5		3.2				0.3					8.3				2.7	2.2	5.2
17	hVH_4_31													0.0	0.0			0.0		1.4	
18	hVH_4_39	0.0	1.6				0.7		2.1					0.6				2.0	0.9	3.6	
19	hVH_5_51			2.6	1.8	1.3		0.4	3.7	0.9		1.9					0.0	2.1	3.0	3.8	
20	hVH_6_1		3.3	5.9	1.5									7.2			1.0		2.1		0.4

Values illustrate Fab display compared to control; higher numbers indicate higher display levels

Figure 57

Relative Fab temperature stability in ELISA and BEL (pJPx1)																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 hVH_1_2	bg	60	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg
2 hVH_1_18	60	60		60																
3 hVH_1_46	60		60	60	60															
4 hVH_1_69*01	60		60	60	60															
5 hVH_3_07	60	60	60	60	60															
6 hVH_3_11	60	60			60	60														
7 hVH_3_15	60	60	70	70	60	60	4	70	60	4	4	4	4	4	4	4	4	4	4	4
8 hVH_3_21		60		60	60	60		60	60	4										
9 hVH_3_23	60	60	70	60	60	60	4													
10 hVH_3_30		60		60	60	60		60	bg	4	4	4	4	4	4	4	4	4	4	4
11 hVH_3_33	60		60	60				60												
12 hVH_3_48								60												
13 hVH_3_53	4	60	60	60	bg		4	60	60	4	4	4	4	4	4	4	4	4	4	4
14 hVH_3_73	60	60	60	60	60			4	4	bg		bg								
15 hVH_3_74		60	60	60			60	70												
16 hVH_4_04*03	60	60	bg	60	60	4	4	60	bg	4	4	4	4	4	4	4	4	4	4	4
17 hVH_4_31	bg		4	60	bg	4	bg	60	60	bg		bg								
18 hVH_4_39	60		4							4										
19 hVH_5_51	60	60	60				4	60	60	60	60	60	60	60	60	60	60	60	60	60
20 hVH_6_1	60	60		bg			60	70	60	4	4	4	4	4	4	4	4	4	4	4

The numbers 60 and 70 indicate VH/VL pairs which are stable for 45 min at 60 or 70°C in the tested set-up. The number 4 indicates temperature-unstable pairs and bg (background) indicates low expression levels.

Figure 58

Relative Fab bovine serum stability in ELISA and BEL (pJPx1)		hVK_1_05	hVK_1_06	hVK_1_09	hVK_1_12	hVK_1_16	hVK_1_17	hVK_1_27	hVK_1_39	hVK_2_30	hVK_3_11	hVK_3_15	hVK_3_20	hVL_1_40	hVL_1_47	hVL_1_51	hVL_2_11	hVL_2_14	hVL_2_23	hVL_3_1	hVL_3_21
1	hVH 1_2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
2	hVH 1_18	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
3	hVH 1_46	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
4	hVH 1_69*01	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
5	hVH 3_07	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
6	hVH 3_11	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
7	hVH 3_15	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
8	hVH 3_21	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
9	hVH 3_23	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
10	hVH 3_30	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
11	hVH 3_33	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
12	hVH 3_48	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
13	hVH 3_53	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
14	hVH 3_73	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
15	hVH 3_74	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
16	hVH 4_04*03	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
17	hVH 4_31	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
18	hVH 4_39	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
19	hVH 5_51	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
20	hVH 6_1	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

S stands for stable and U for unstable at the tested conditions; bg (background)

Figure 60

Relative IgG Expression in ELISA to MOR03080		hVK_1_05	hVK_1_06	hVK_1_09	hVK_1_12	hVK_1_16	hVK_1_17	hVK_1_27	hVK_1_39	hVK_2_30	hVK_3_11	hVK_3_15	hVK_3_20	hVL_1_40	hVL_1_47	hVL_1_51	hVL_2_11	hVL_2_14	hVL_2_23	hVL_3_1	hVL_3_21
1	hVH_1_2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	hVH_1_18	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.3	0.1	0.0	0.0	0.0
3	hVH_1_46	B	0.4	0.2	0.1	0.1	0.2	0.3	0.5	0.1	0.0	0.3	0.0	0.5	0.4	0.5	0.5	0.5	0.4	0.2	0.2
4	hVH_1_69*01	C	0.9	0.9	0.4	0.2	0.3	0.5	0.6	0.5	0.0	0.1	0.4	0.1	0.9	0.6	0.3	0.3	0.3	0.4	0.3
5	hVH_3_07	D	0.9	0.5	0.4	0.3	0.4	0.4	0.4	0.0	0.0	0.5	0.0	0.2	0.2	0.3	0.2	0.3	0.3	0.2	0.1
6	hVH_3_11	E	0.9	1.3	1.5	0.9	1.5	0.9	1.8	1.2	0.3	0.4	1.8	0.4	0.3	0.8	1.2	0.8	0.7	1.2	0.3
7	hVH_3_15	F	0.5	1.4	0.9	0.9	1.2	0.9	1.7	1.8	1.1	0.6	1.6	0.2	0.3	1.3	1.9	0.4	0.4	1.6	0.3
8	hVH_3_21	G	0.4	0.8	0.9	0.7	1.5	0.8	1.7	1.8	0.6	0.8	1.9	0.5	0.1	0.2	0.9	0.9	0.4	1.0	0.2
9	hVH_3_23	H	0.8	0.9	0.4	0.5	0.0	0.0	0.5	0.8	0.1	0.2	0.3	0.5	0.5	0.3	0.9	0.7	0.9	0.4	0.1
10	hVH_3_30	I	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.3	0.0	0.0	0.4	0.2	0.1	0.1	0.2	0.1	0.3	0.1	0.1
11	hVH_3_33	J	0.7	0.6	0.3	0.3	0.4	0.5	1.0	1.0	0.1	0.1	0.9	0.4	0.8	0.3	0.4	1.0	0.5	0.5	0.2
12	hVH_3_48	K	0.0	0.6	0.2	0.2	0.4	0.5	0.2	0.8	0.3	0.6	0.9	0.3	1.0	0.4	0.6	0.5	0.5	0.7	0.5
13	hVH_3_53	L	0.6	0.7	0.2	0.3	0.5	0.5	0.9	0.5	0.3	0.7	0.3	0.4	0.6	0.4	0.7	0.6	0.5	0.5	0.3
14	hVH_3_73	M	0.8	0.7	0.4	0.2	0.3	0.5	0.2	0.2	0.0	0.3	0.5	1.1	1.2	0.4	0.3	0.8	0.6	0.5	0.5
15	hVH_3_74	N	1.1	1.0	0.9	0.5	1.1	1.0	0.9	0.8	0.3	0.2	0.1	1.1	1.2	0.8	0.7	0.4	0.1	1.0	1.1
16	hVH_4_04*03	O	0.6	1.0	0.5	0.0	0.8	0.2	1.1	0.3	0.7	0.1	1.0	0.6	1.3	0.6	1.2	0.6	1.0	0.3	0.3
17	hVH_4_31	P	0.6	1.1	0.6	0.8	0.4	0.8	0.9	1.0	0.2	0.3	1.1	1.1	0.9	0.4	0.6	0.7	0.7	1.3	0.5
18	hVH_4_39	Q	0.0	0.2	0.6	0.4	0.0	0.2	0.0	0.5	0.0	0.0	0.1	0.4	0.8	0.1	0.3	0.2	0.5	1.3	0.4
19	hVH_5_51	R	0.3	0.8	0.7	0.9	0.5	1.0	0.4	1.2	0.2	0.2	1.0	1.2	1.1	0.3	0.5	0.5	0.4	0.9	0.6
20	hVH_6_1	S	0.4	0.9	0.5	0.8	0.5	1.0	1.2	1.2	0.6	1.2	1.1	1.3	1.3	0.8	0.5	0.8	0.7	1.3	0.7
	hVH_6_1	T	0.0	1.2	1.3	1.1	1.4	1.3	1.1	1.1	0.3	0.9	1.3	1.3	1.4	0.2	0.5	0.4	0.4	1.4	0.5

Values illustrate IgG expression compared to control; higher numbers indicate higher expression levels

Figure 61

Relative IgG bovine serum stability in ELISA after 14 days incubation at 37 °C	hVK_1_05	hVK_1_06	hVK_1_09	hVK_1_12	hVK_1_16	hVK_1_17	hVK_1_27	hVK_1_39	hVK_2_30	hVK_3_11	hVK_3_15	hVK_3_20	hVL_1_40	hVL_1_47	hVL_1_51	hVL_2_11	hVL_2_14	hVL_2_23	hVL_3_1	hVL_3_21	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	A	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	bg	
	B	S	S	bg	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	D	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	E	U	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	F	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	G	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	H	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	I	S	S	S	S	S	S	S	S	S	bg	S	S	S	S	S	S	S	S	S	
	J	S	S	S	S	S	S	S	S	bg	S	S	S	S	S	S	S	S	S	S	
	K	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	L	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	M	S	S	S	S	S	S	S	S	bg	S	S	S	S	S	S	S	S	S	S	
	N	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	O	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	Q	bg	bg	S	S	bg	bg	bg	S	bg	bg	S	S	S	S	S	S	S	S	S	
	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	T	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	S stands for stable and U for unstable at the tested conditions; bg (background)																				

S stands for stable and U for unstable at the tested conditions; bg (background)