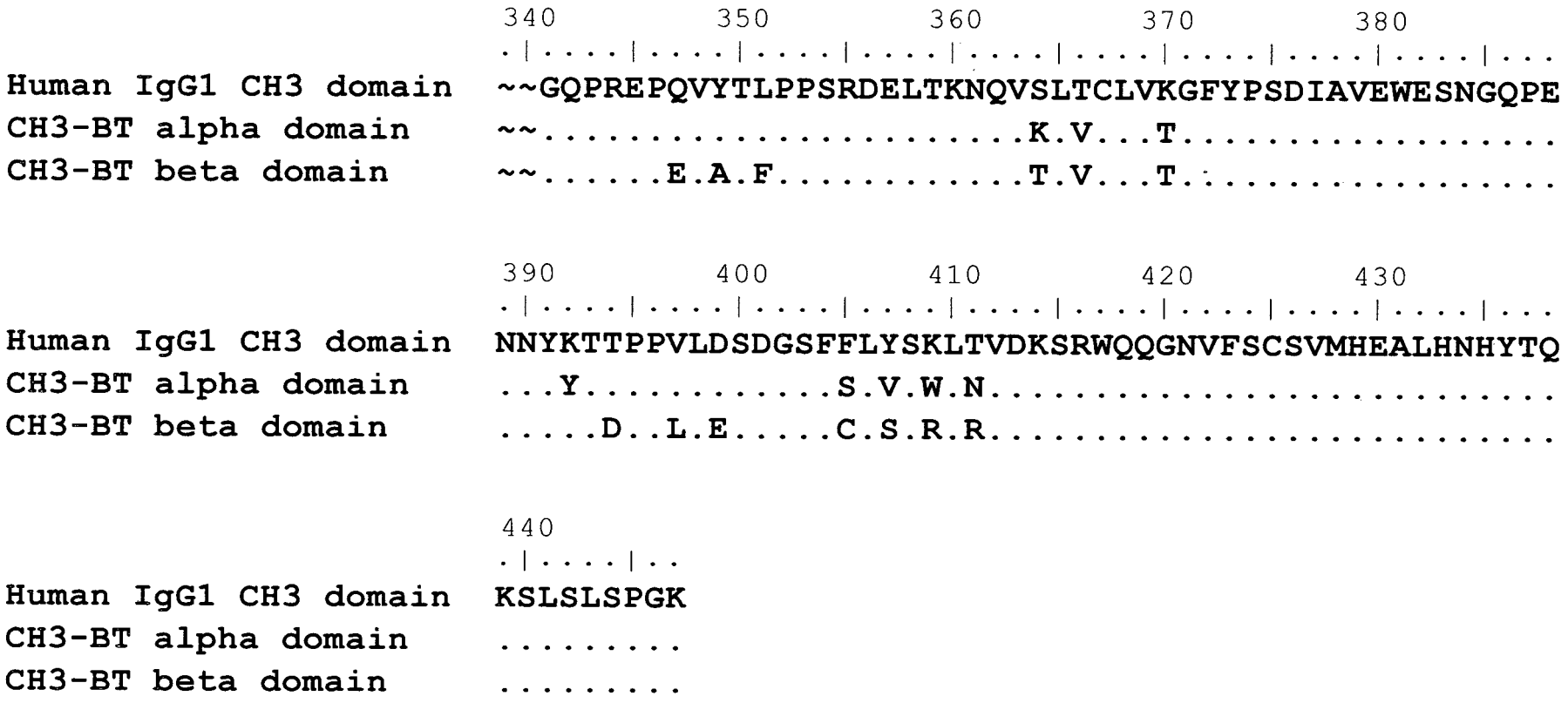
FIG. 1



SUBSTITUTE SHEET (RULE 26)

FIG. 2

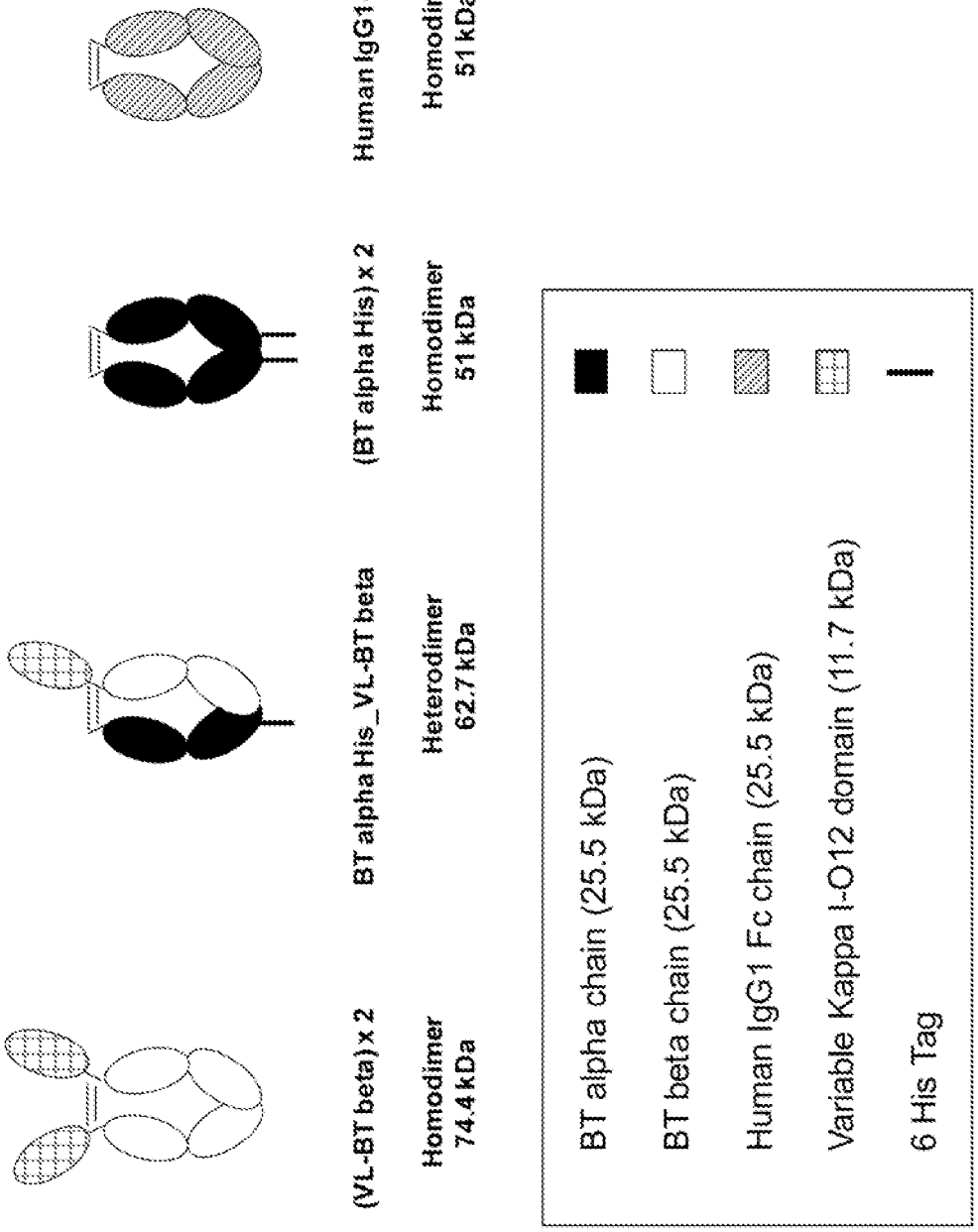

(VL-BT beta) x 2
Homodimer
74.4 kDa
BT alpha His_VL-BT beta
Heterodimer
62.7 kDa
(BT alpha His) x 2
Homodimer
51 kDa
Human IgG1-Fc
Homodimer
51 kDa
BT alpha chain (25.5 kDa)
BT beta chain (25.5 kDa)
Human IgG1 Fc chain (25.5 kDa)
Variable Kappa I-O12 domain (11.7 kDa)
6 His Tag

FIG. 3

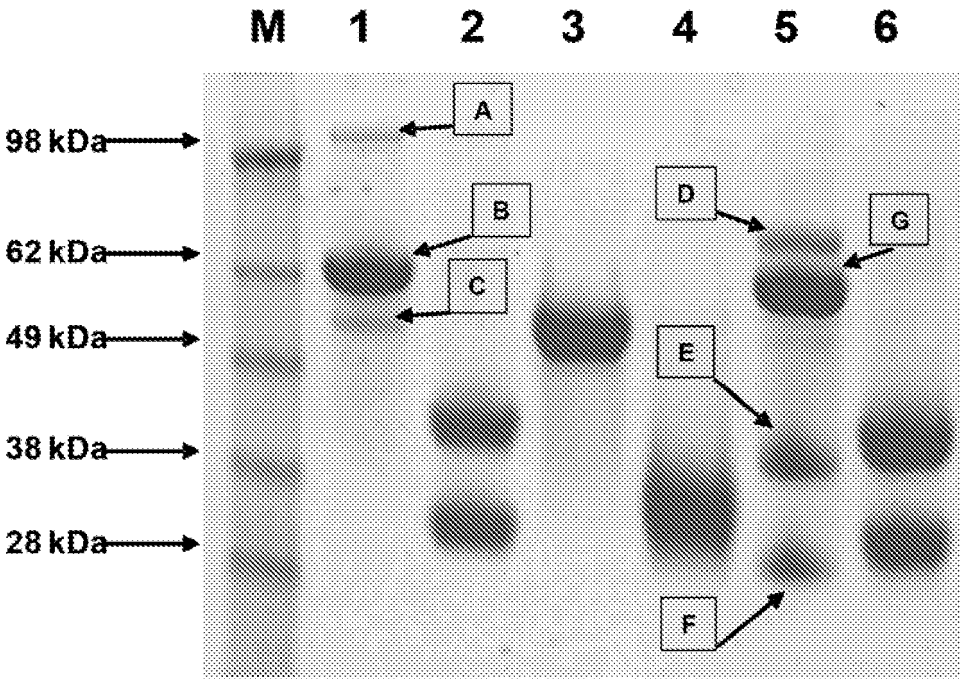
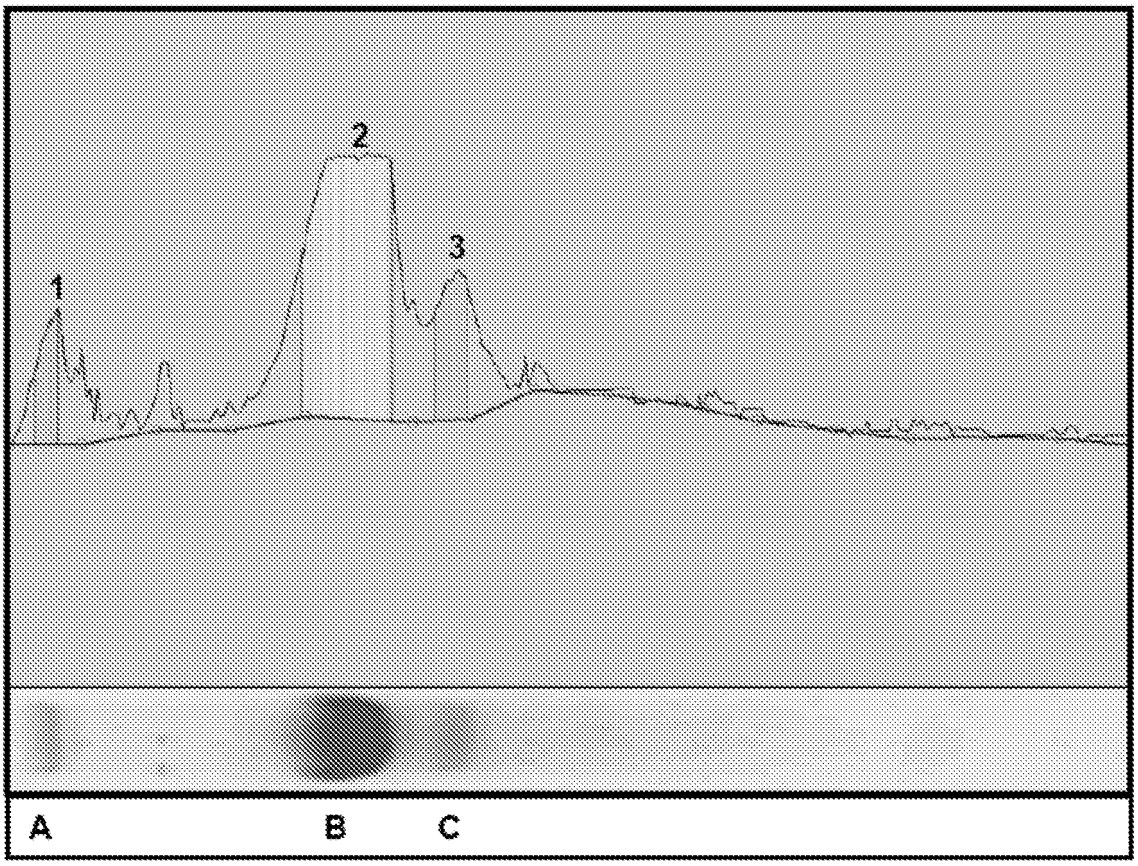
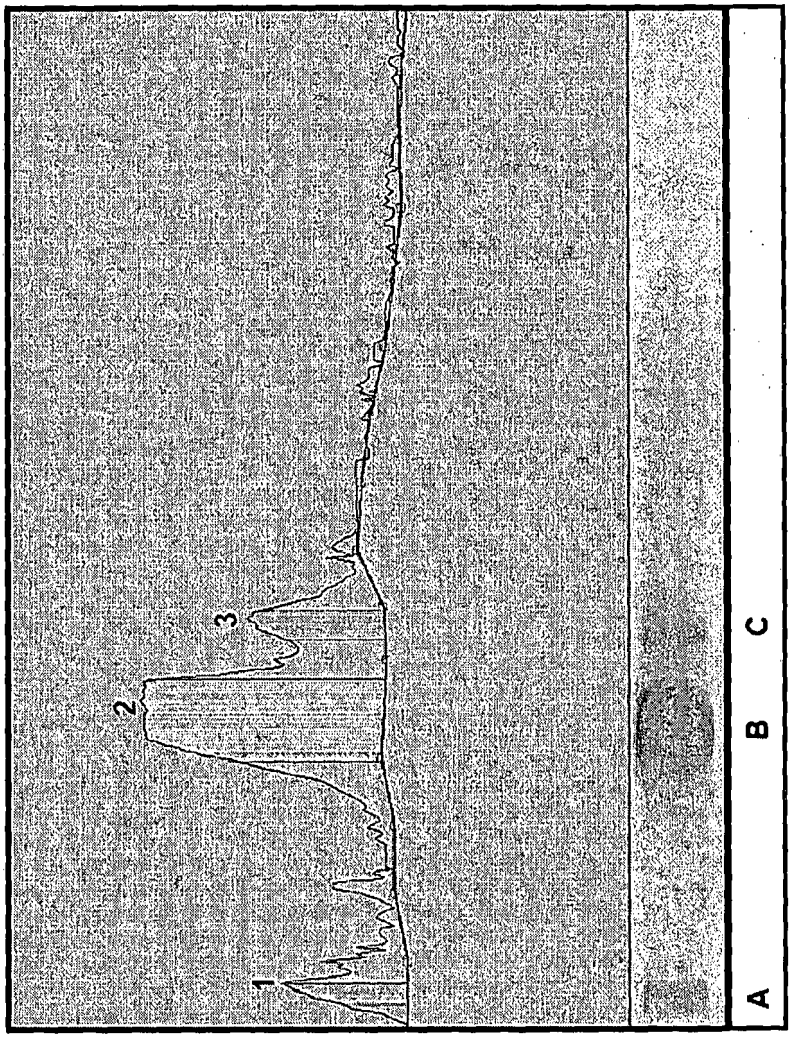


FIG. 4A



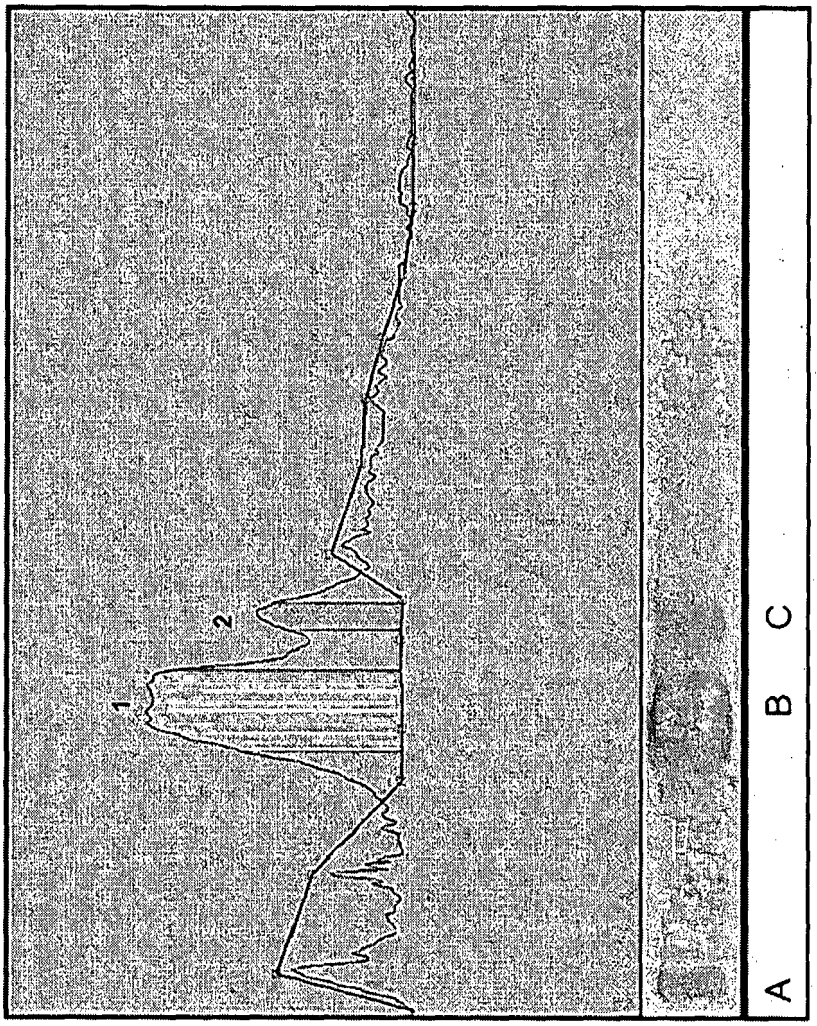
LANE	PEAK	DIST	WIDTH	HEIGHT	AREA	%
1	1	12	8	40	479	8.5
1	2	130	34	130	4286	76.1
1	3	169	12	74	869	15.4

FIG. 4A



LANE	PEAK	DIST	WIDTH	HEIGHT	AREA	%
1	1	12	8	40	479	8.5
1	2	130	34	130	4286	76.1
1	3	169	12	74	869	15.4

FIG. 4B



LANE	PEAK	DST	WIDTH	HEIGHT	AREA	%
1	1	122	34	136	4404	83.8
1	2	170	11	76	852	16.2

FIG. 5

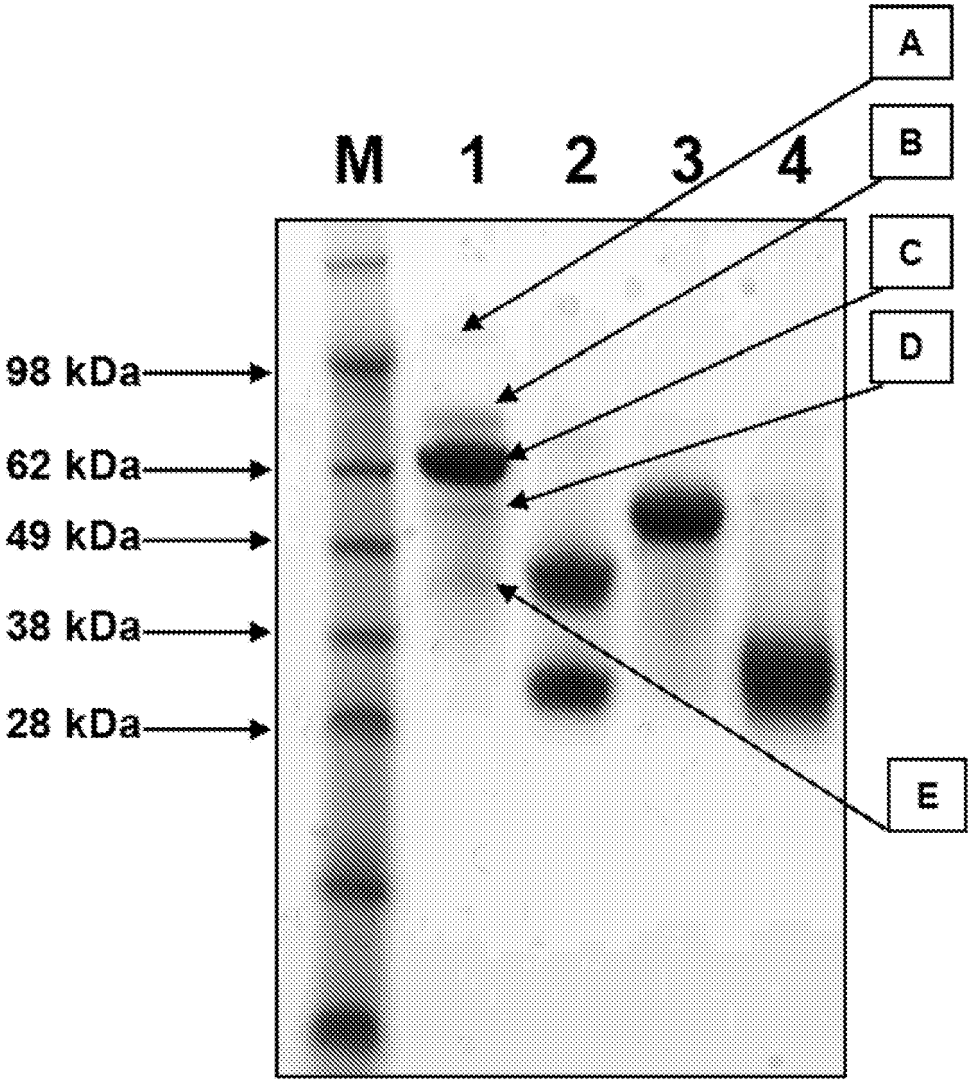


FIG. 6

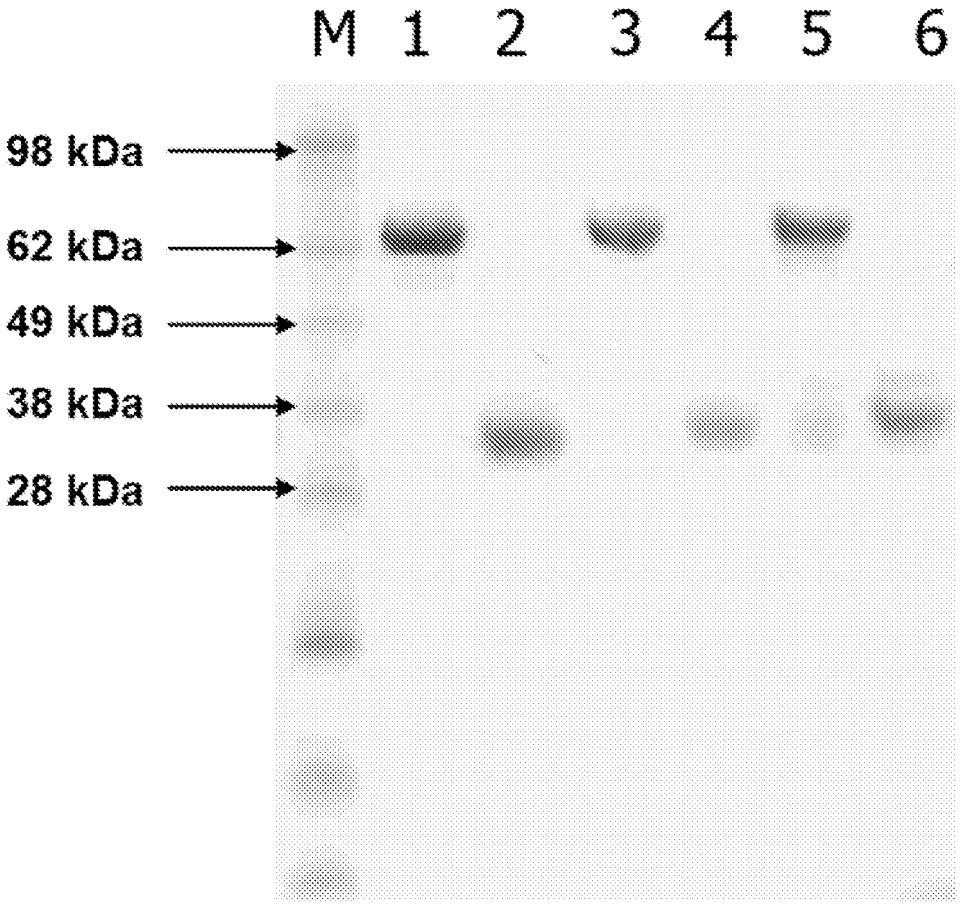
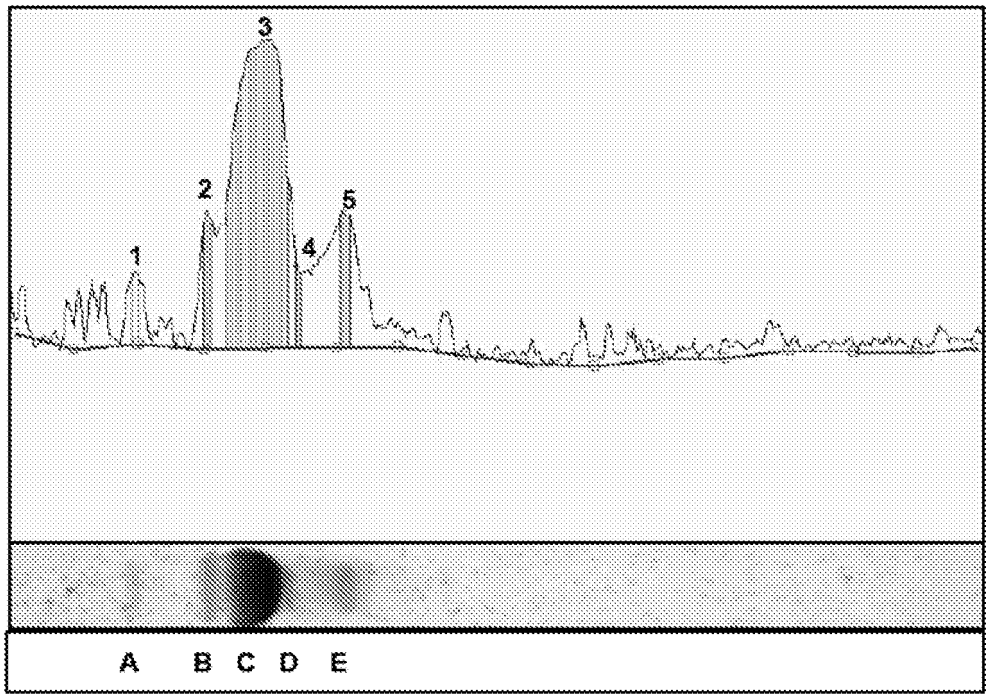
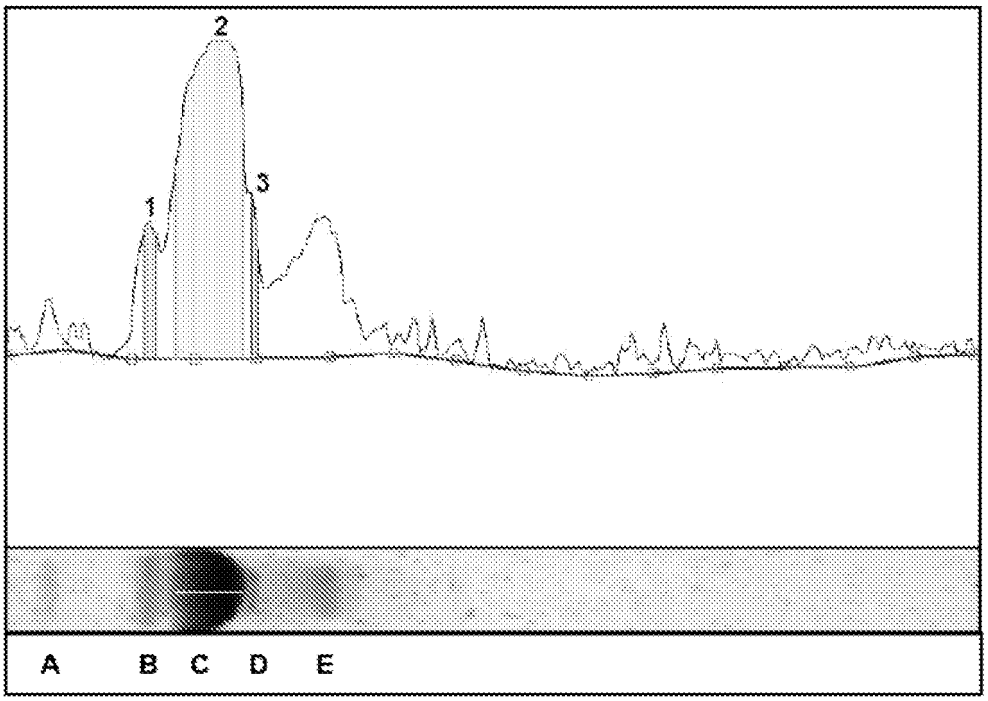


FIG. 7A



LANE	PEAK	DIST	WIDTH	HEIGHT	AREA	%
1	1	70	4	11859	56192	3.0
1	2	110	5	22496	128398	6.8
1	3	146	35	49916	1534196	80.7
1	4	162	3	11971	51389	2.7
1	5	187	5	22496	129985	6.8

FIG. 7B



LANE	PEAK	DIST	WIDTH	HEIGHT	AREA	%
1	1	64	5	22053	126843	7.8
1	2	93	29	51049	1404252	86.9
1	3	109	3	23782	85575	5.3

FIG. 7C

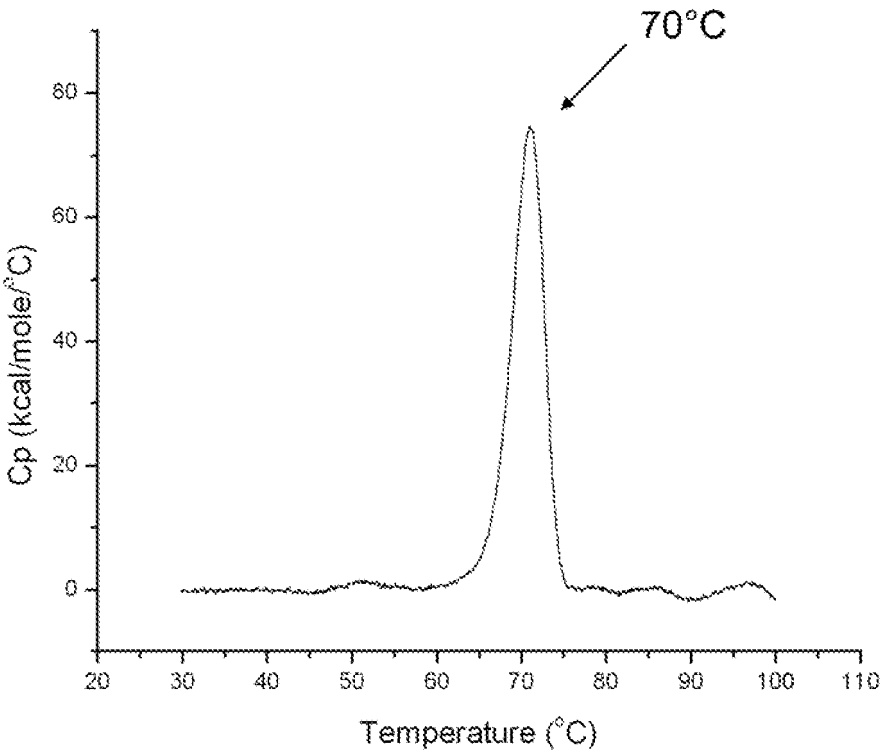

70°C
80
60
40
20
0
Cp (kcal/mole/°C)
20
30
40
50
60
70
80
90
100
110
Temperature (°C)

FIG. 8

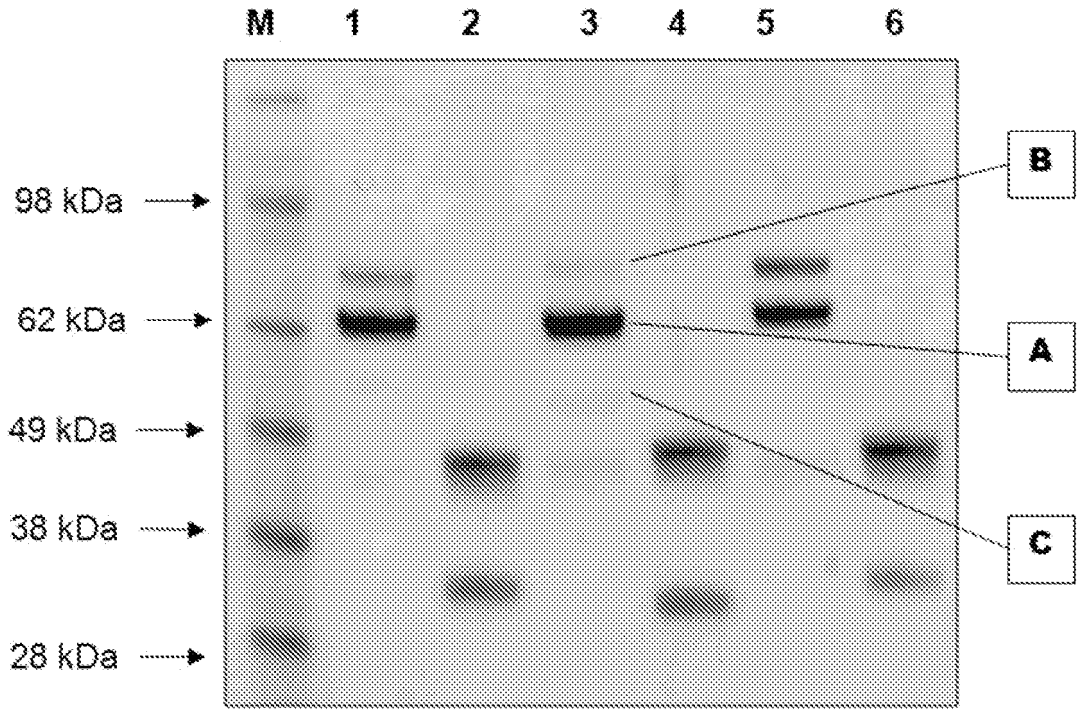


FIG. 9

LANE	PEAK	DST	WIDTH	HEIGHT	AREA	%
1	1	103	15	30	397	7.7
1	2	165	26	186	4581	89.3
1	3	231	10	17	150	2.9

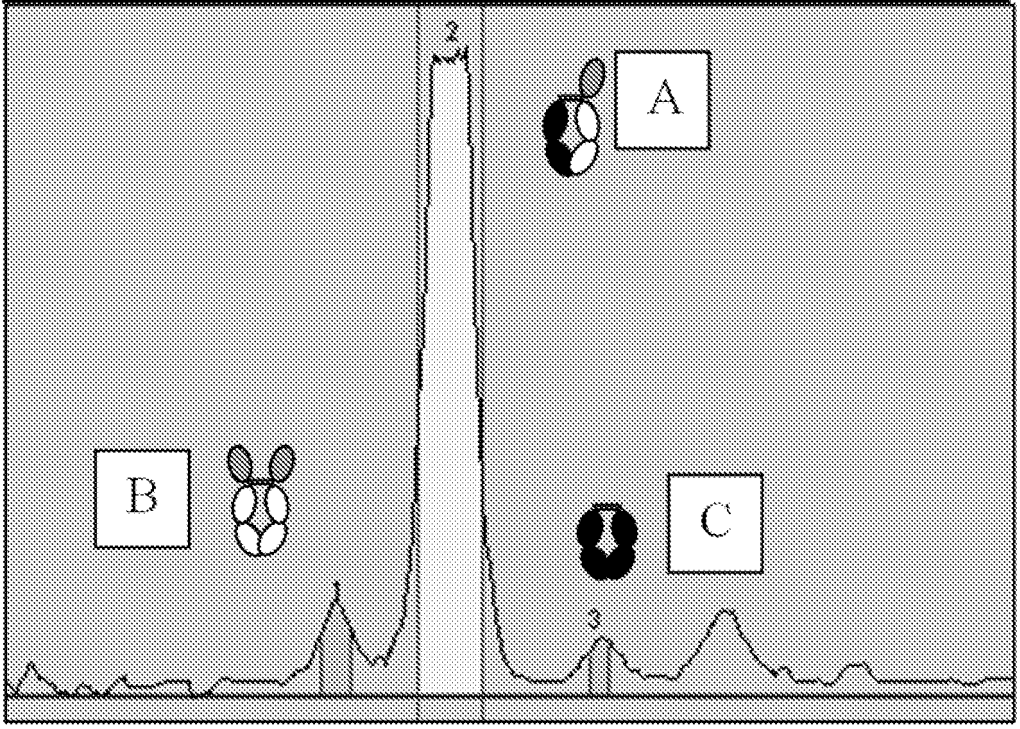


FIG. 10

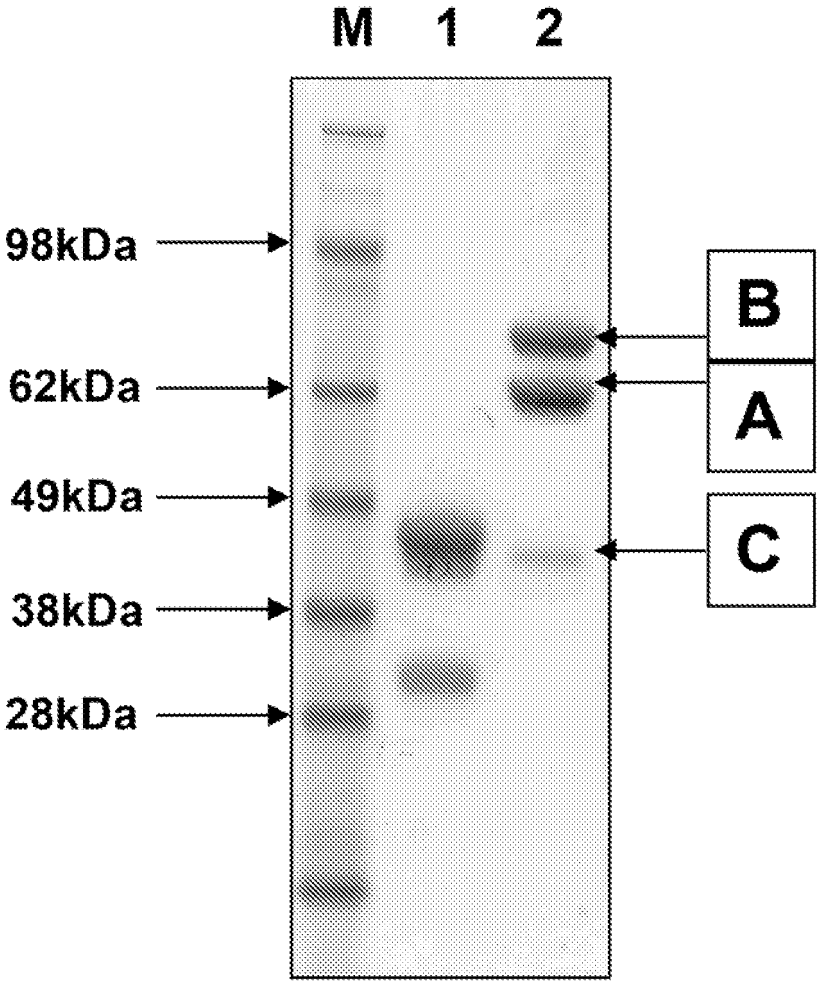


FIG. 11A

PEAK	DIST	WIDTH	HEIGHT	AREA	%
1	355	61	163	7459	38.5
2	450	77	186	10092	52.1
3	731	34	61	1834	9.5

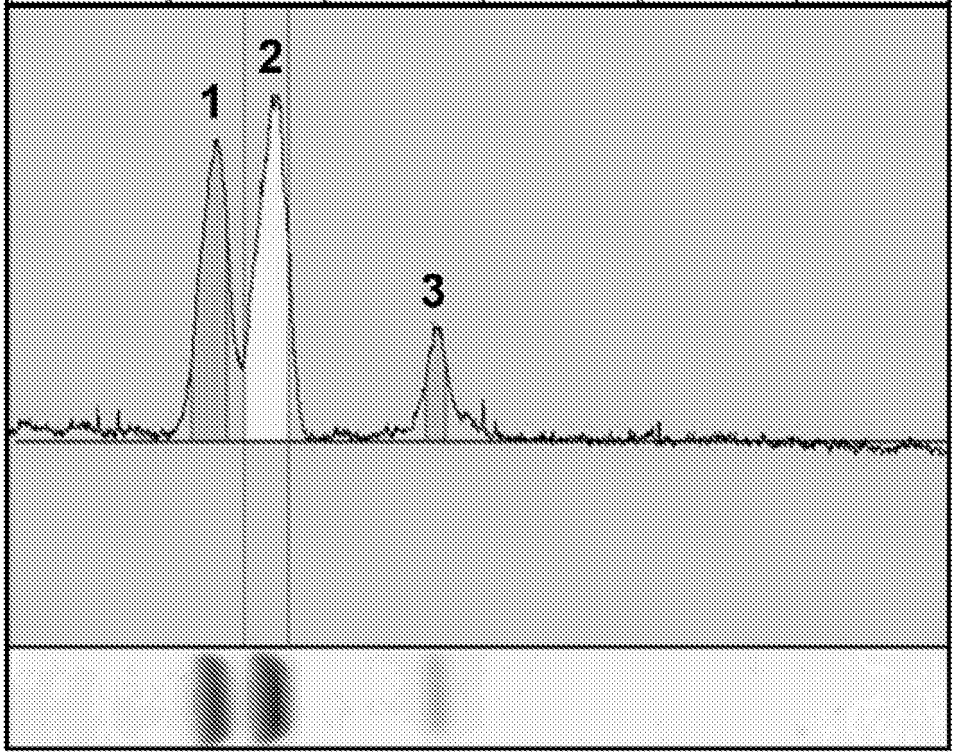


FIG. 11B

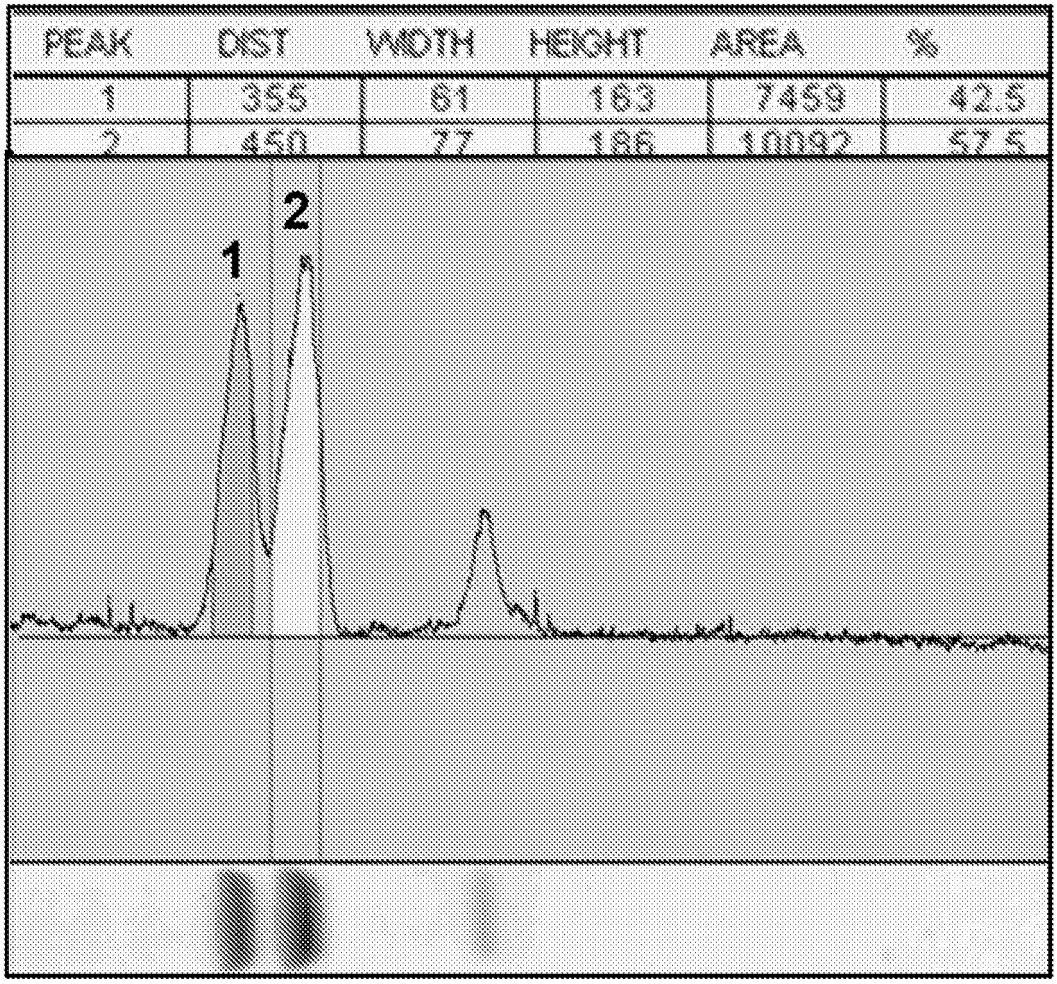

PEAK DIST WIDTH HEIGHT AREA %
1 355 61 163 7459 42.5
2 450 77 186 10092 57.5
1
2

FIG. 12

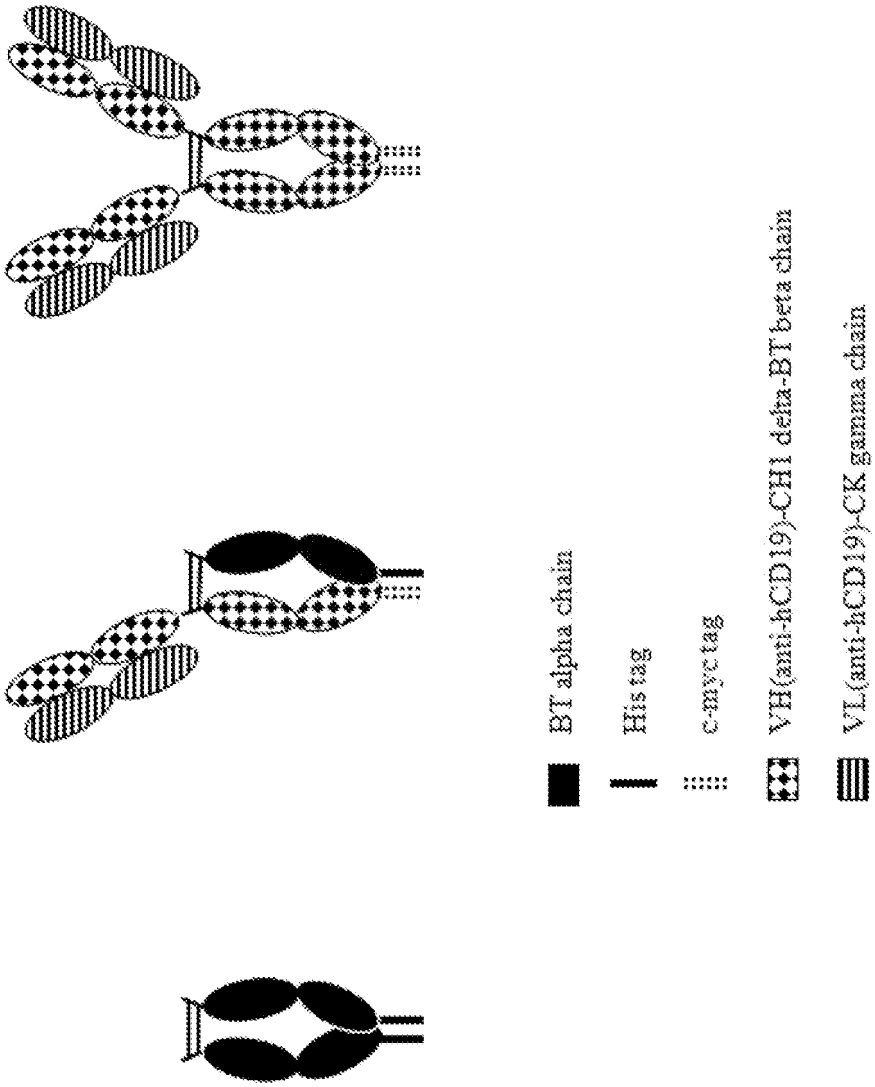

BT alpha chain
His tag
c-myc tag
VH(anti-hCD19)-CH1 delta-BT beta chain
VL(anti-hCD19)-CK gamma chain

FIG. 13

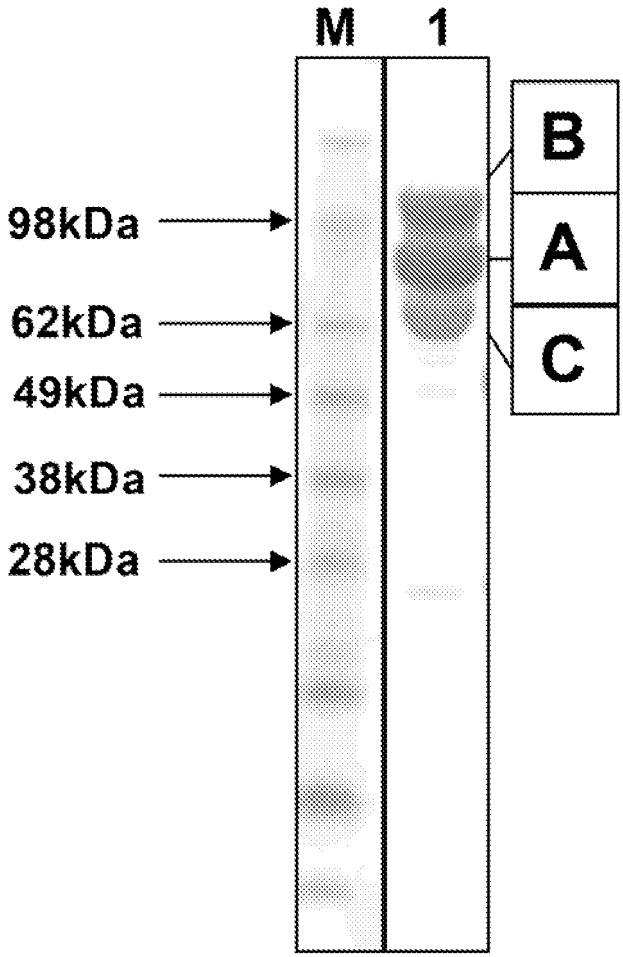


FIG. 14

PEAK	DIST	WIDTH	HEIGHT	AREA	%
1	20	16	116	1920	26.2
2	64	30	129	3684	50.2
3	90	16	107	1734	23.6

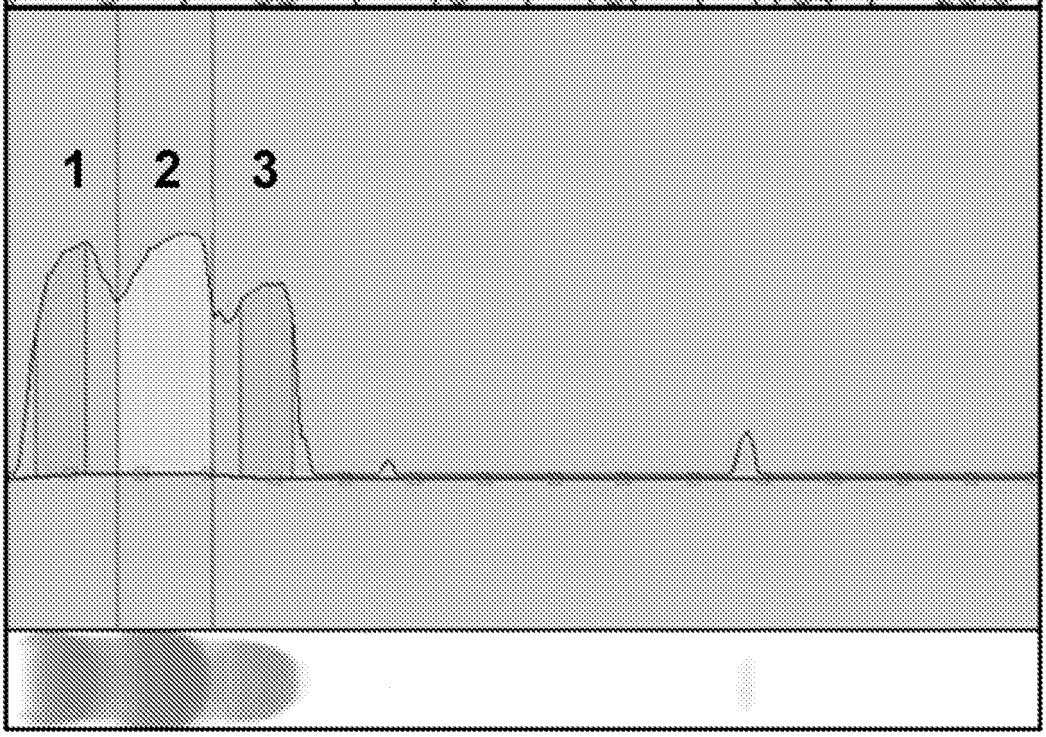


FIG. 15

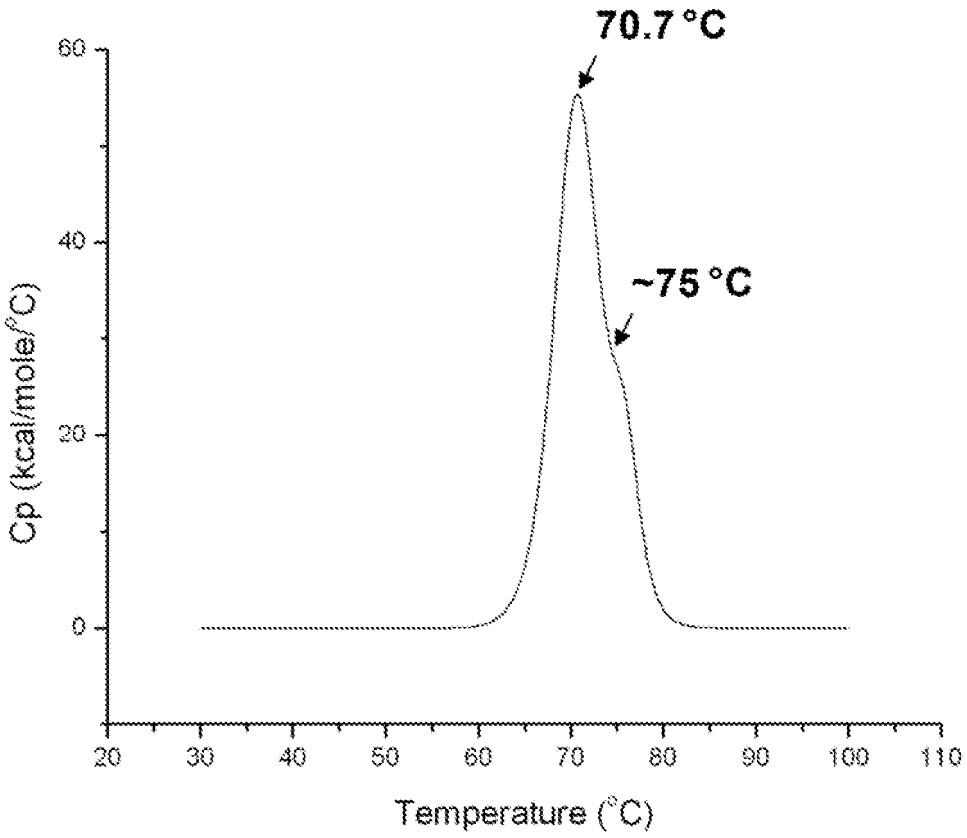

70.7 °C
~75 °C
Cp (kcal/mole/°C)
60
40
20
0
20
30
40
50
60
70
80
90
100
110
Temperature (°C)

FIG. 16

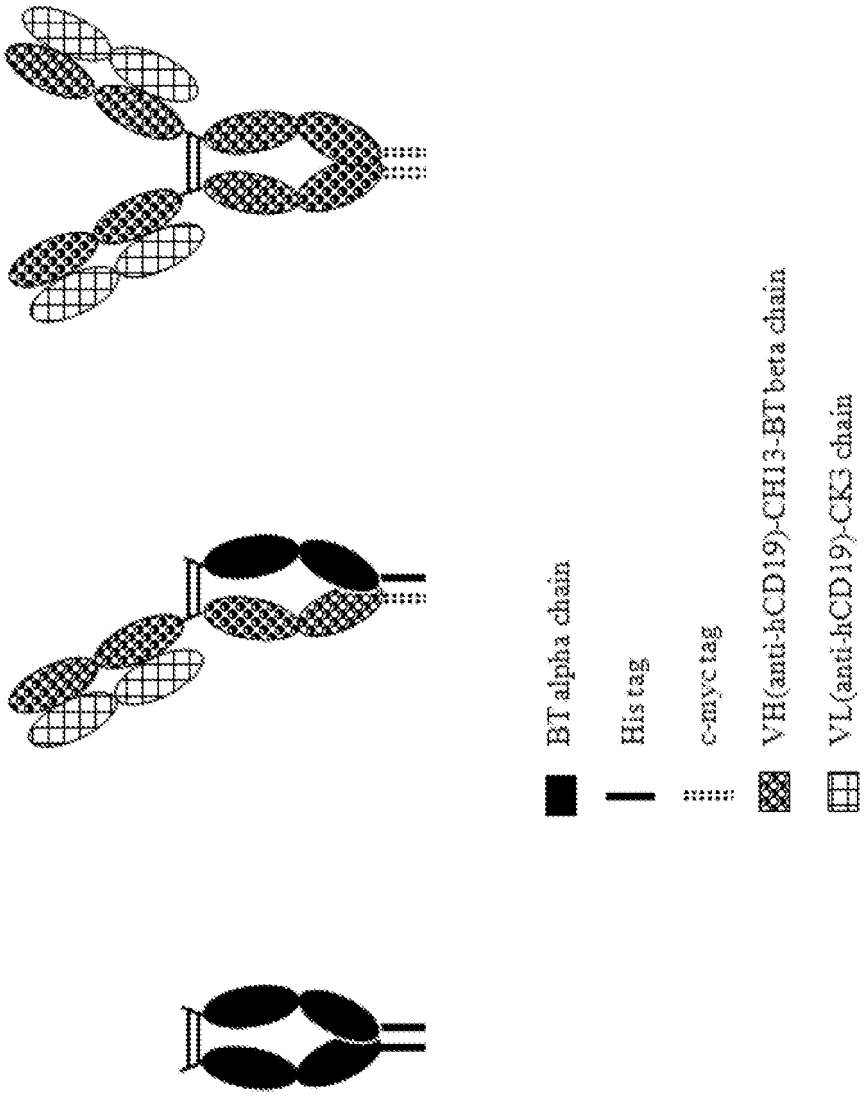

BT alpha chain
His tag
c-myc tag
VH(anti-hCD19)-CH1-BT beta chain
VL(anti-hCD19)-CK3 chain

FIG. 17

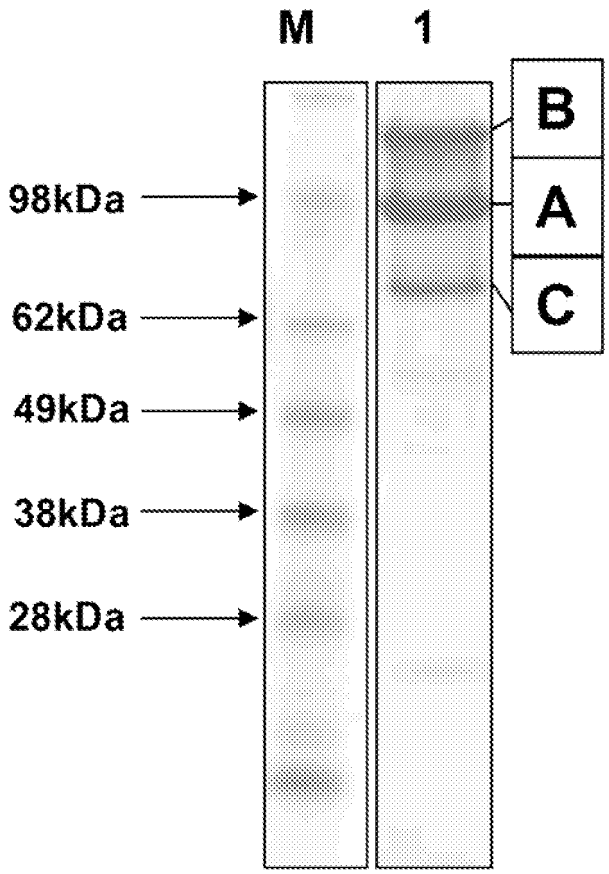


FIG. 18

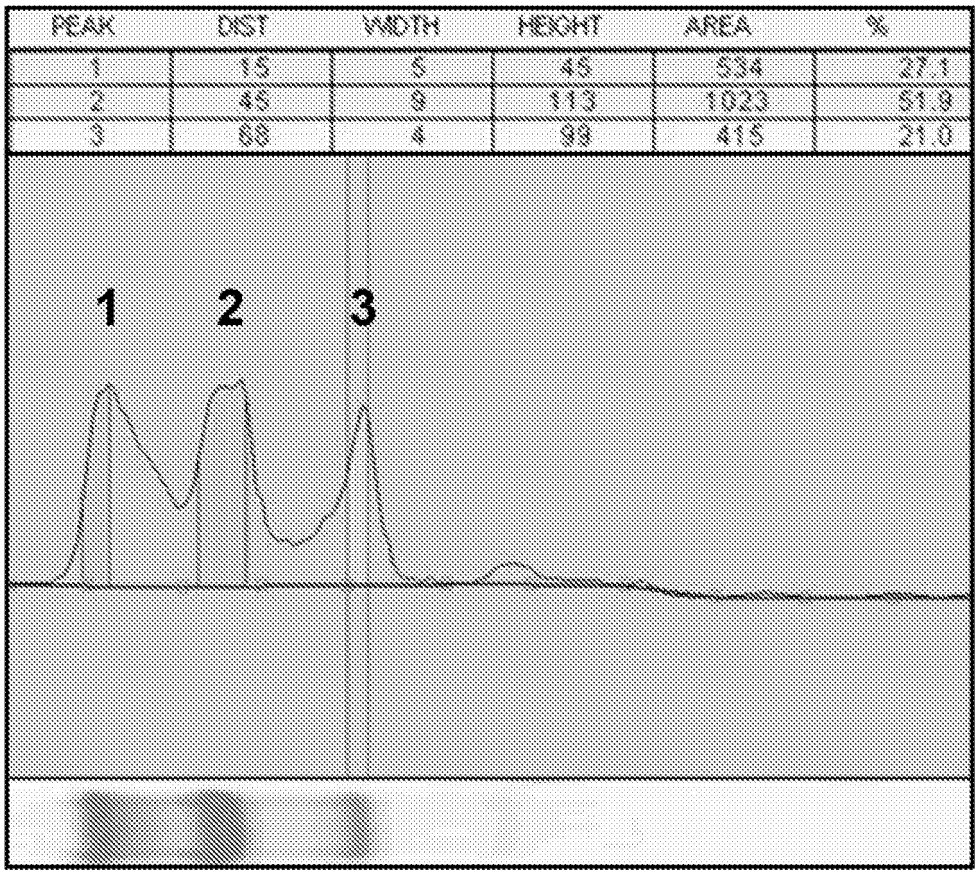

PEAK DIST WIDTH HEIGHT AREA %
1 15 5 45 534 27.1
2 45 9 113 1023 51.9
3 68 4 93 415 21.0
1
2
3

FIG. 19A

CH1																			
IMGT®	1.4	1.3	1.2	1.1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
EU	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	
IGHG1	A	S	T	K	G	P	S	V	F	P	L	A	P	S	S	K	S	T	
IGHG2														C		R			
IGHG3														C		R			
IGHG4														C		R			

IMGT®	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	35	36
EU	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153
IGHG1	S	G	G	T	A	A	L	G	C	L	V	K	D	Y	F	P	E	P
IGHG2		E	S															
IGHG3																		
IGHG4		E	S															

IMGT®	37	38	39	40	41	42	43	44	45	45.1	45.2	45.3	77	78	79	80	81	82
EU	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171
IGHG1	V	T	V	S	W	N	S	G	A	L	T	S	G	V	H	T	F	P
IGHG2																		
IGHG3																		
IGHG4																		

FIG. 19A (cont.)

IMGT®	83	84	84.1	84.2	84.3	84.4	85.4	85.3	85.2	85.1	85	86	87	88	89	90	91	92
EU	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189
IGHG1	A	V	L	Q	S	S	G	L	Y	S	L	S	S	V	V	T	V	P
IGHG2																		
IGHG3																		
IGHG4																		

IMGT®	93	94	95	96	98	99	100	101	102	103	104	105	106	107	108	109	110	113
EU	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
IGHG1	S	S	S	L	G	T	Q	T	Y	I	C	N	V	N	H	K	P	S
IGHG2		N	N	F						T				D				
IGHG3										T								
IGHG4							K			T				D				

IMGT®	114	115	116	117	118	119	120	121
EU	208	209	210	211	212	213	214	215
IGHG1	N	T	K	V	D	K	K	V
IGHG2							T	
IGHG3							R	
IGHG4							R	

FIG. 19B

IMGT®	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
EU	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
IGHG1-hinge	E	P	K	S	C	D	K	T	H	T	C	P	P	C	P

FIG. 19C

CH2																				
IMGT®	1.6	1.5	1.4	1.3	1.2	1.1	1	2	3	4	5	6	7	8	9	10	11	12		
EU	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248		
IGHG1	A	P	E	L	L	G	G	P	S	V	F	L	F	P	P	K	P	K		
IGHG2			~	P	V	A														
IGHG3																				
IGHG4				F																
IMGT®	13	14	15	15.1	15.2	16	17	18	19	20	21	22	23	24	25	26	27	28		
EU	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266		
IGHG1	D	T	L	M	I	S	R	T	P	E	V	T	C	V	V	V	D	V		
IGHG2																				
IGHG3																				
IGHG4																				
IMGT®	29	30	31	34	35	36	37	38	39	40	41	42	43	44	45	45.1	45.2	45.3		
EU	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284		
IGHG1	S	H	E	D	P	E	V	K	F	N	W	Y	V	D	G	V	E	V		
IGHG2								Q												
IGHG3								Q		K										
IGHG4		Q						Q												

FIG. 19C (cont.)

IMGT®	45.4	77	78	79	80	81	82	83	84	84.1	84.2	84.3	84.4	85.4	85.3	85.2	85.1	85
EU	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302
IGHG1	H	N	A	K	T	K	P	R	E	E	Q	Y	N	S	T	Y	R	V
IGHG2												F				F		
IGHG3																F		
IGHG4												F						

IMGT®	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
EU	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
IGHG1	V	S	V	L	T	V	L	H	Q	D	W	L	N	G	K	E	Y	K
IGHG2						V												
IGHG3																		
IGHG4																		

IMGT®	104	105	106	107	108	109	110	113	114	115	116	117	118	119	120	121	122	123
EU	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338
IGHG1	C	K	V	S	N	K	A	L	P	A	P	I	E	K	T	I	S	K
IGHG2							G											
IGHG3																		
IGHG4							G			S	S							

IMGT®	124	125
EU	339	340
IGHG1	A	K
IGHG2	T	
IGHG3	T	
IGHG4		

FIG. 19D

CH3																			
IMGT®	1.4	1.3	1.2	1.1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
EU	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	
IGHG1	G	Q	P	R	E	P	Q	V	Y	T	L	P	P	S	R	D	E	L	
IGHG2																E		M	
IGHG3																E		M	
IGHG4															Q	E		M	

IMGT®	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	35	36	
EU	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	
IGHG1	T	K	N	Q	V	S	L	T	C	L	V	K	G	F	Y	P	S	D	
IGHG2																			
IGHG3																			
IGHG4																			

IMGT®	37	38	39	40	41	42	43	44	45	45.1	45.2	45.3	45.4	77	78	79	80	81	
EU	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	
IGHG1	I	A	V	E	W	E	S	N	G	Q	P	E	N	N	Y	K	T	T	
IGHG2																			
IGHG3								S								N			
IGHG4																			

FIG. 19D (cont.)

IMGT®	82	83	84	84.1	84.2	84.3	84.4	85.4	85.3	85.2	85.1	85	86	87	88	89	90	91
EU	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412
IGHG1	P	P	V	L	D	S	D	G	S	F	F	L	Y	S	K	L	T	V
IGHG2			M															
IGHG3			M												R			
IGHG4															R			

IMGT®	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109
EU	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430
IGHG1	D	K	S	R	W	Q	Q	G	N	V	F	S	C	S	V	M	H	E
IGHG2										I								
IGHG3										I								
IGHG4							E											

IMGT®	110	112	113	114	115	116	117	118	119	120	121	122	123	124	125	129	130
EU	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447
IGHG1	A	L	H	N	H	Y	T	Q	K	S	L	S	L	S	P	G	K
IGHG2																	
IGHG3				R		F											
IGHG4															L		

FIG. 20A

IMGT®	1.4	1.3	1.2	1.1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
EU	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
CH1	A	S	T	K	G	P	S	V	F	P	L	A	P	S	S	K	S	T
ALPHA																		
BETA							E		A		F							
DELTA											M							
GAMMA							K		T									
CH3							Q		Y							D	E	

IMGT®	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	35	36
EU	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153
CH1	S	G	G	T	A	A	L	G	C	L	V	K	D	Y	F	P	E	P
ALPHA						K		V				T						
BETA						T		V				T						
DELTA						N		A					E					
GAMMA						T		L				E	K					
CH3				Q		S		T										

IMGT®	37	38	39	40	41	42	43	44	45	45.1	45.2	45.3	77	78	79	80	81	82
EU	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171
CH1	V	T	V	S	W	N	S	G	A	L	T	S	G	V	H	T	F	P
ALPHA															Y			
BETA																	D	
DELTA															F		A	
GAMMA																	G	
CH3															K		T	

FIG. 20A (cont.)

IMGT®	83	84	84.1	84.2	84.3	84.4	85.4	85.3	85.2	85.1	85	86	87	88	89	90	91	92
EU	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189
CH1	A	V	L	Q	S	S	G	L	Y	S	L	S	S	V	V	T	V	P
ALPHA												V		W		N		
BETA		L		E						A				R		R		
DELTA				S						N		V		L		K		
GAMMA		M								M		F		W				
CH3				D						F		Y		K				

IMGT®	93	94	95	96	98	99	100	101	102	103	104	105	106	107	108	109	110	113
EU	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
CH1	S	S	S	L	G	T	Q	T	Y	I	C	N	V	N	H	K	P	S
ALPHA																		
BETA																		
DELTA																		
GAMMA																		
CH3																		

IMGT®	114	115	116	117	118	119	120	121
EU	208	209	210	211	212	213	214	215
CH1	N	T	K	V	D	K	K	V
ALPHA								
BETA								
DELTA								
GAMMA								
CH3								

FIG. 20B

IMGT®	1.6	1.5	1.4	1.3	1.2	1.1	1	2	3	4	5	6	7	8	9	10	11	12
EU	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248
CH2	A	P	E	L	L	G	G	P	S	V	F	L	F	P	P	K	P	K
ALPHA																		
BETA									E		A							
DELTA													M					
GAMMA									K		T							
CH3											Y		L					

IMGT®	13	14	15	15.1	15.2	16	17	18	19	20	21	22	23	24	25	26	27	28
EU	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266
CH2	D	T	L	M	I	S	R	T	P	E	V	T	C	V	V	V	D	V
ALPHA										K		V		V	V	T		
BETA										T		V				T		
DELTA										N		A					E	
GAMMA										T		L				E	K	
CH3										S								

IMGT®	29	30	31	34	35	36	37	38	39	40	41	42	43	44	45	45.1	45.2	45.3
EU	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284
CH2	S	H	E	D	P	E	V	K	F	N	W	Y	V	D	G	V	E	V
ALPHA																		
BETA																		
DELTA																		
GAMMA																		
CH3																		

FIG. 20B (cont.)

IMGT®	45.4	77	78	79	80	81	82	83	84	84.1	84.2	84.3	84.4	85.4	85.3	85.2	85.1	85
EU	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302
CH2	H	N	A	K	T	K	P	R	E	E	Q	Y	N	S	T	Y	R	V
ALPHA				Y													S	
BETA						D			L		E						A	
DELTA				F		A			L		S						N	
GAMMA						G		M									M	
CH3								T				D					F	

IMGT®	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
EU	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
CH2	V	S	V	L	T	V	L	H	Q	D	W	L	N	G	K	E	Y	K
ALPHA			W		N													
BETA	S		R		R													
DELTA			L		K													
GAMMA	F		W															
CH3	Y		K															

FIG. 20B (cont.)

IMGT®	104	105	106	107	108	109	110	113	114	115	116	117	118	119	120	121	122	123
EU	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338
CH2	C	K	V	S	N	K	A	L	P	A	P	I	E	K	T	I	S	K
ALPHA																		
BETA																		
DELTA																		
GAMMA																		
CH3																		

IMGT®	124	125
EU	339	340
CH2	A	K
ALPHA		
BETA		
DELTA		
GAMMA		
CH3		

FIG. 20C

IMGT®	1.4	1.3	1.2	1.1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
EU	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358
CH3	G	Q	P	R	E	P	Q	V	Y	T	L	P	P	S	R	D	E	L
ALPHA																		
BETA							E		A		F							
DELTA											M							
GAMMA							K		T									

IMGT®	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	35	36
EU	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376
CH3	T	K	N	Q	V	S	L	T	C	L	V	K	G	F	Y	P	S	D
ALPHA						K		V				T						
BETA						T		V				T						
DELTA						N		A					E					
GAMMA						T		L				E	K					

IMGT®	37	38	39	40	41	42	43	44	45	45.1	45.2	45.3	45.4	77	78	79	80	81
EU	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394
CH3	I	A	V	E	W	E	S	N	G	Q	P	E	N	N	Y	K	T	T
ALPHA																Y		
BETA																		D
DELTA																F		A
GAMMA																		G

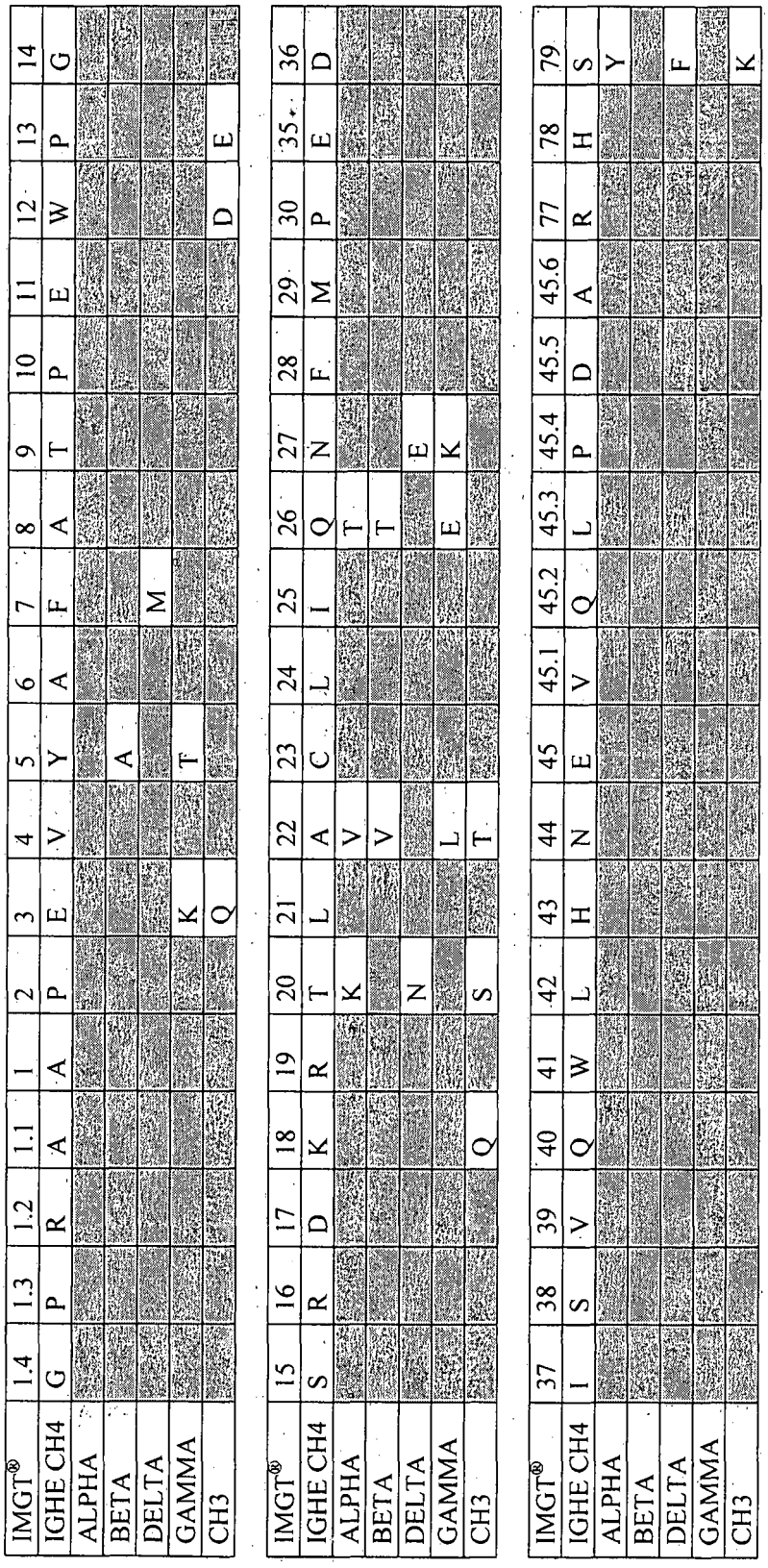
FIG. 20C (cont.)

IMGT®	82	83	84	84.1	84.2	84.3	84.4	85.4	85.3	85.2	85.1	85	86	87	88	89	90	91
EU	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412
CH3	P	P	V	L	D	S	D	G	S	F	F	L	Y	S	K	L	T	V
ALPHA											S		V		W		N	
BETA			L		E						A		S		R		R	
DELTA					S						N		V		L		K	
GAMMA			M								M		F		W			

IMGT®	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109
EU	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430
CH3	D	K	S	R	W	Q	Q	G	N	V	F	S	C	S	V	M	H	E
ALPHA																		
BETA																		
DELTA																		
GAMMA																		

IMGT®	110	112	113	114	115	116	117	118	119	120'	121	122	123	124	125	129	130
EU	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447
CH3	A	L	H	N	H	Y	T	Q	K	S	L	S	L	S	P	G	K
ALPHA																	
BETA																	
DELTA																	
GAMMA																	

FIG. 21A



IMGT®	1.4	1.3	1.2	1.1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IGHE CH4	G	P	R	A	A	P	E	V	Y	A	F	A	T	P	E	W	P	G
ALPHA																		
BETA									A									
DELTA									A		M							
GAMMA							K		T									
CH3							Q									D	E	

IMGT®	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	35+..	36
IGHE CH4	S	R	D	K	R	T	L	A	C	L	I	Q	N	F	M	P	E	D
ALPHA						K		V		L		T						
BETA								V				T						
DELTA						N							E					
GAMMA							L					E	K					
CH3				Q		S		T										

IMGT®	37	38	39	40	41	42	43	44	45	45.1	45.2	45.3	45.4	45.5	45.6	77	78	79
IGHE CH4	I	S	V	Q	W	L	H	N	E	V	Q	L	P	D	A	R	H	S
ALPHA																		Y
BETA																		
DELTA																		F
GAMMA																		
CH3																		K

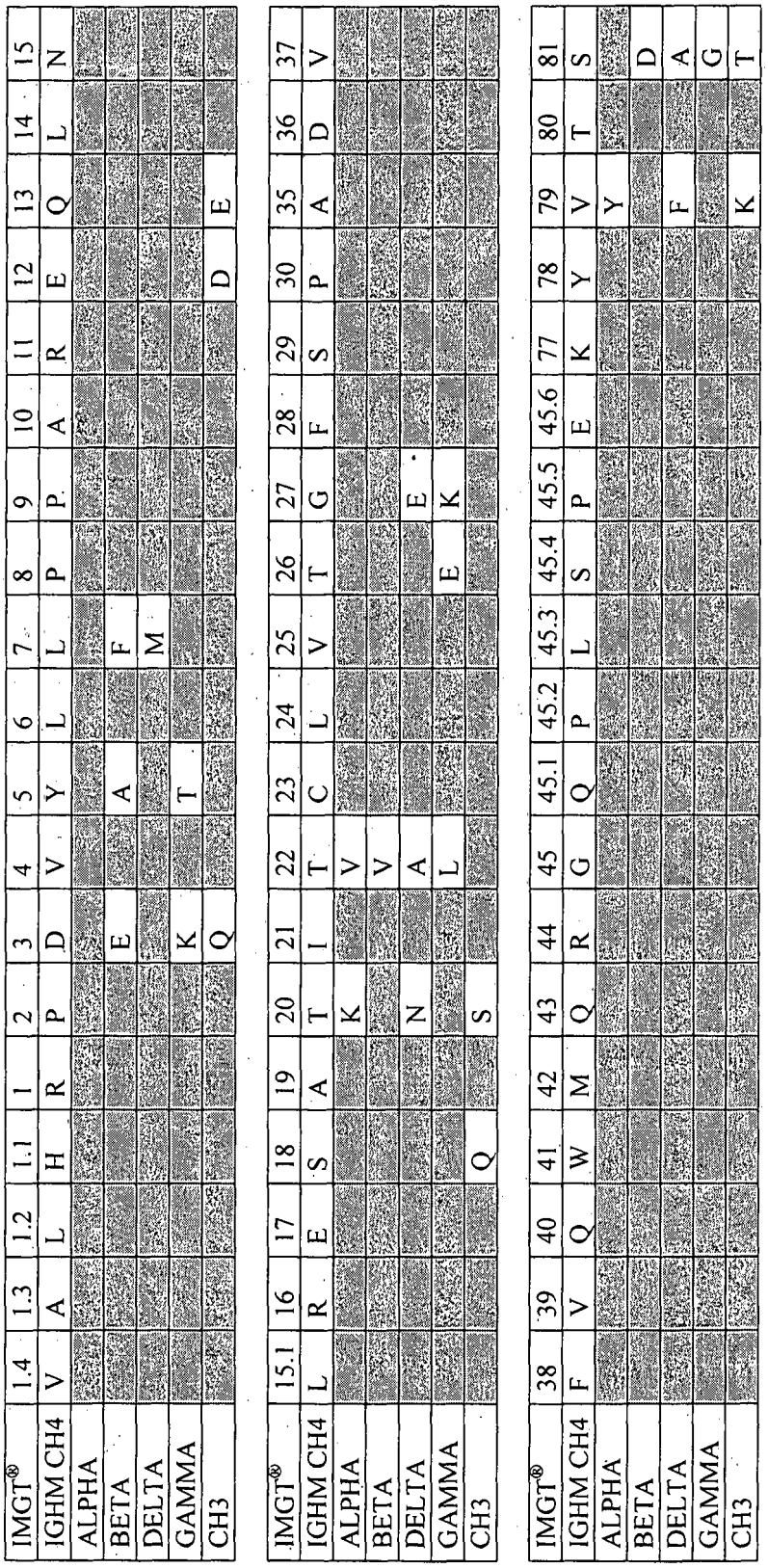
FIG. 21A (cont.)

IMGT®	80	81	82	83	84	84.1	84.2	84.3	84.4	85.4	85.3	85.2	85.1	85	86	87	88	89
IGHE CH4	T	T	Q	P	R	K	T	K	G	S	G	F	F	V	F	S	R	L
ALPHA													S		V		W	
BETA		D			L		E						A		S			
DELTA		A					S						N		V		L	
GAMMA		G			M								M				W	
CH3							D								Y		K	

IMGT®	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107
IGHE CH4	E	V	T	R	A	E	W	E	Q	K	D	E	F	I	C	R	A	V
ALPHA	N																	
BETA	R																	
DELTA	K																	
GAMMA																		
CH3																		

IMGT®	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
IGHE CH4	H	E	A	A	S	P	S	Q	T	V	Q	R	A	V	S	V	N	P
ALPHA																		
BETA																		
DELTA																		
GAMMA																		
CH3																		

FIG. 21B



IMGT®	1.4	1.3	1.2	1.1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
IGHM CH4	V	A	L	H	R	P	D	V	Y	L	L	P	P	A	R	E	Q	L	N
ALPHA																			
BETA							E		A		F								
DELTA											M								
GAMMA							K		T										
CH3							Q									D	E		

IMGT®	15.1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	35	36	37
IGHM CH4	L	R	E	S	A	T	I	T	C	L	V	T	G	F	S	P	A	D	V
ALPHA						K		V											
BETA								V											
DELTA						N		A					E						
GAMMA								L				E	K						
CH3				Q		S													

IMGT®	38	39	40	41	42	43	44	45	45.1	45.2	45.3	45.4	45.5	45.6	77	78	79	80	81
IGHM CH4	F	V	Q	W	M	Q	R	G	Q	P	L	S	P	E	K	Y	V	T	S
ALPHA																	Y		D
BETA																			
DELTA																	F		A
GAMMA																			G
CH3																	K		T

FIG. 21B (cont.)

IMGT®	82	83	84	84.1	84.2	84.3	84.4	84.5	85.5	85.4	85.3	85.2	85.1	85	86	87	88	89	90
IGHM CH4	A	P	M	P	E	P	Q	A	P	G	R	Y	F	A	H	S	I	L	T
ALPHA													S		V		W		N
BETA			L										A		S		R		R
DELTA					S								N		V		L		K
GAMMA													M		F		W		
CH3					D										Y		K		

IMGT®	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109
IGHM CH4	V	S	E	E	E	W	N	T	G	E	T	Y	T	C	V	V	A	H	E
ALPHA																			
BETA																			
DELTA																			
GAMMA																			
CH3																			

IMGT®	110	112	113	114	115	116	117	118	119	120	121	122	123	124	125
IGHM CH4	A	L	P	N	R	V	T	E	R	T	V	D	K	S	T
ALPHA															
BETA															
DELTA															
GAMMA															
CH3															

FIG. 22

IMGT®	1.4	1.3	1.2	1.1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
EU	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
IGKC	R	T	V	A	A	P	S	V	F	I	F	P	P	S	D	E	Q	L
ALPHA																		
BETA							E		A									
DELTA											M							
GAMMA							K		T									
CH3							Q		Y		L				D	E		

IMGT®	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	35	36
EU	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
IGKC	K	S	G	T	A	S	V	V	C	L	L	N	N	F	Y	P	R	E
ALPHA						K						T						
BETA						T						T						
DELTA						N		A					E					
GAMMA						T		L				E	K					
CH3								T				K						

IMGT®	37	38	39	40	41	42	43	44	45	45.1	45.2	45.3	45.4	45.5	77	78	79	80
EU	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161
IGKC	A	K	V	Q	W	K	V	D	N	A	L	Q	S	G	N	S	Q	E
ALPHA																	Y	
BETA																		
DELTA																	F	
GAMMA																		
CH3																	K	

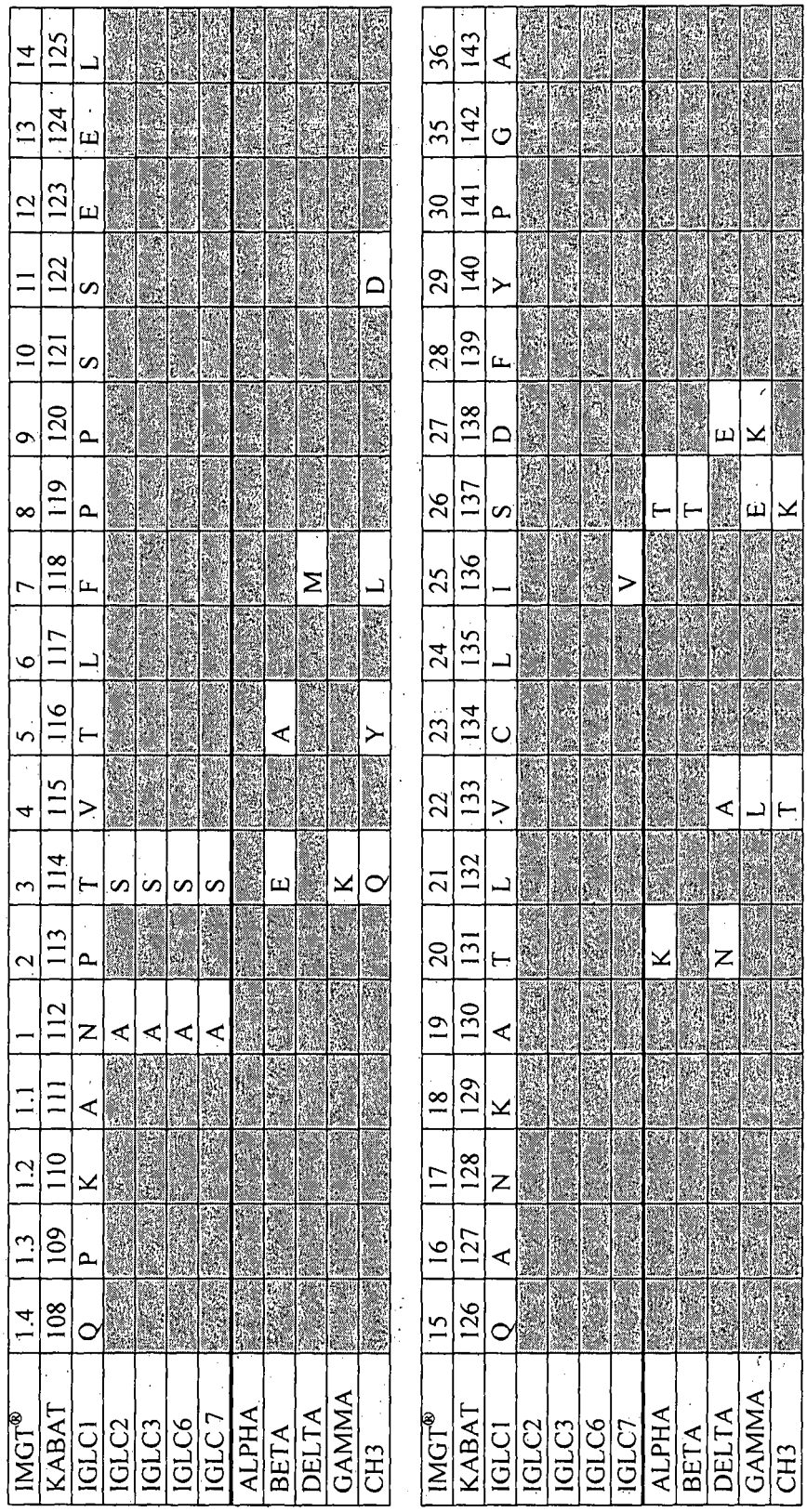
FIG. 22 (cont.)

IMGT®	81	82	83	84	84.1	84.2	84.3	84.4	84.5	85.4	85.3	85.2	85.1	85	86	87	88	89
EU	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179
IGKC	S	V	T	E	Q	D	S	K	D	S	T	Y	S	L	S	S	T	L
ALPHA															V		W	
BETA	D			L		E							A				R	
DELTA	A					S							N		V		L	
GAMMA	G			M									M		F		W	
CH3	T			V									F		Y		K	

IMGT®	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107
EU	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197
IGKC	T	L	S	K	A	D	Y	E	K	H	K	V	Y	A	C	E	V	T
ALPHA	N																	
BETA	R																	
DELTA	K													S				
GAMMA																		
CH3																		

IMGT®	108	109	110	113	114	115	116	117	118	119	120	121	122	123	124	125	126
EU	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214
IGKC	H	Q	G	L	S	S	P	V	T	K	S	F	N	R	G	E	C
ALPHA																	
BETA																	
DELTA																	
GAMMA																	
CH3																	

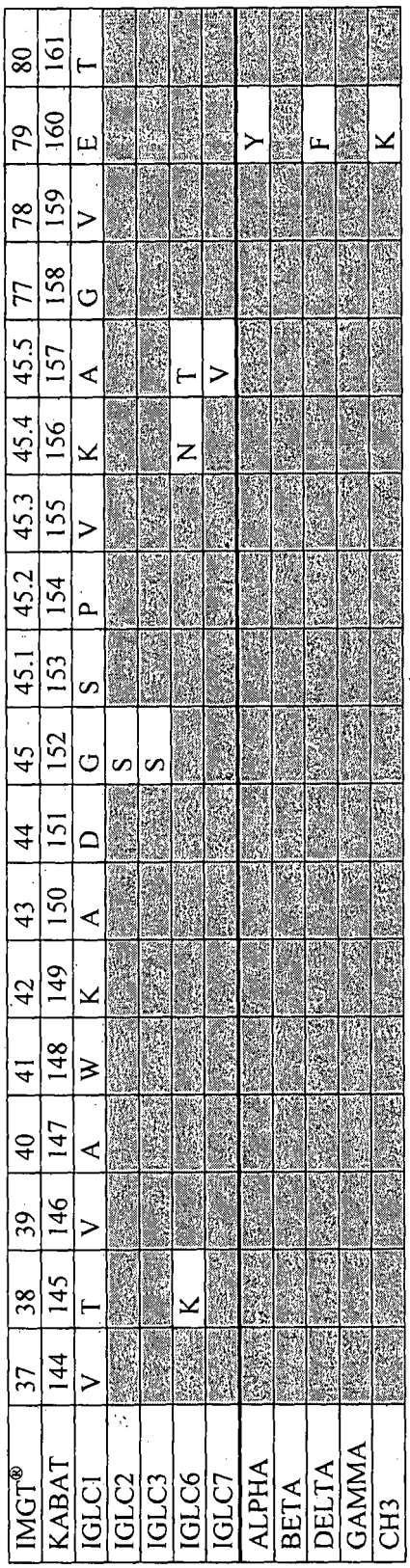
FIG. 23A



IMGT®	1.4	1.3	1.2	1.1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
KABAT	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
IGLC1	Q	P	K	A	N	P	T	V	T	L	F	P	P	S	S	E	E	L
IGLC2					A		S											
IGLC3					A		S											
IGLC6					A		S											
IGLC 7					A		S											
ALPHA																		
BETA							E		A									
DELTA											M							
GAMMA							K											
CH3							Q		Y		L				D			

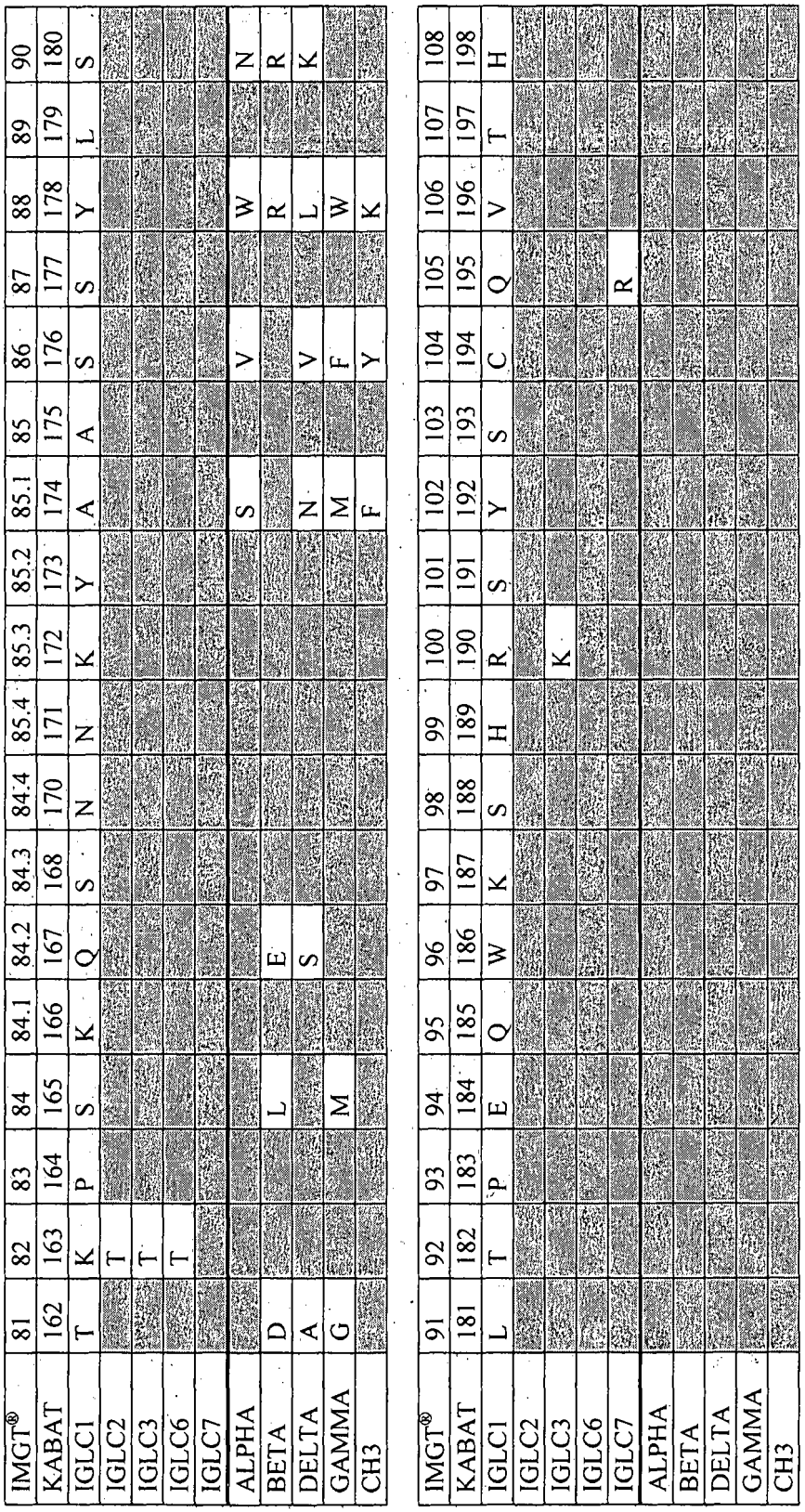
IMGT®	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	35	36
KABAT	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
IGLC1	Q	A	N	K	A	T	L	V	C	L	I	S	D	F	Y	P	G	A
IGLC2																		
IGLC3																		
IGLC6																		
IGLC7											V							
ALPHA						K						T						
BETA												T						
DELTA						N		A					E					
GAMMA								L				E	K					
CH3								T				K						

FIG. 23A (cont.)



IMGT®	37	38	39	40	41	42	43	44	45	45.1	45.2	45.3	45.4	45.5	77	78	79	80
KABAT	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161
IGLC1	V	T	V	A	W	K	A	D	G	S	P	V	K	A	G	V	E	T
IGLC2									S									
IGLC3									S									
IGLC6		K											N	T				
IGLC7														V				
ALPHA																	Y	
BETA																		
DELTA																	F	
GAMMA																		
CH3																	K	

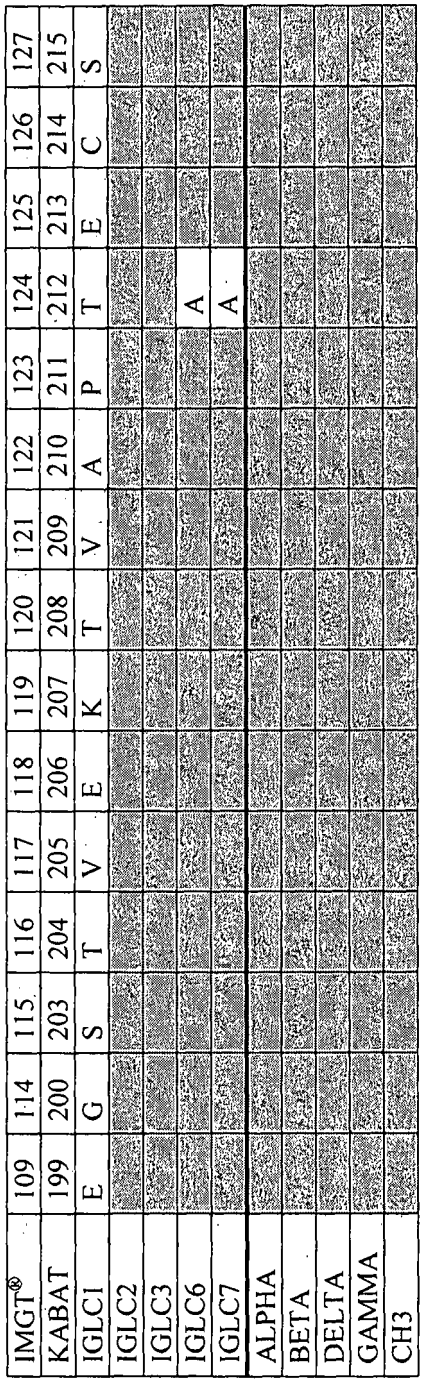
FIG. 23B



IMGT®	81	82	83	84	84.1	84.2	84.3	84.4	85.4	85.3	85.2	85.1	85	86	87	88	89	90
KABAT	162	163	164	165	166	167	168	170	171	172	173	174	175	176	177	178	179	180
IGLC1	T	K	P	S	K	Q	S	N	N	K	Y	A	A	S	S	Y	L	S
IGLC2		T																
IGLC3		T																
IGLC6		T																
IGLC7																		
ALPHA												S		V		W		N
BETA	D		L		E											R		R
DELTA	A				S							N		V		L		K
GAMMA	G		M									M		F		W		
CH3												F		Y		K		

IMGT®	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
KABAT	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
IGLC1	L	T	P	E	Q	W	K	S	H	R	S	Y	S	C	Q	V	T	H
IGLC2																		
IGLC3										K								
IGLC6																		
IGLC7															R			
ALPHA																		
BETA																		
DELTA																		
GAMMA																		
CH3																		

FIG. 23B (cont.)



IMGT®	109	114	115	116	117	118	119	120	121	122	123	124	125	126	127
KABAT	199	200	203	204	205	206	207	208	209	210	211	212	213	214	215
IGLC1	E	G	S	T	V	E	K	T	V	A	P	T	E	C	S
IGLC2															
IGLC3															
IGLC6												A			
IGLC7												A			
ALPHA															
BETA															
DELTA															
GAMMA															
CH3															

FIG. 23B

IMGT®	81	82	83	84	84.1	84.2	84.3	84.4	85.4	85.3	85.2	85.1	85	86	87	88	89	90
KABAT	162	163	164	165	166	167	168	170	171	172	173	174	175	176	177	178	179	180
IGLC1	T	K	P	S	K	Q	S	N	N	K	Y	A	A	S	S	Y	L	S
IGLC2		T																
IGLC3		T																
IGLC6		T																
IGLC7																		
ALPHA												S		V		W		N
BETA	D			L		E										R		R
DELTA	A					S						N		V		L		K
GAMMA	G			M								M		F		W		
CH3												F		Y		K		

IMGT®	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
KABAT	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
IGLC1	I	T	P	E	Q	W	K	S	H	R	S	Y	S	C	Q	V	T	H
IGLC2																		
IGLC3										K								
IGLC6																		
IGLC7															R			
ALPHA																		
BETA																		
DELTA																		
GAMMA																		
CH3																		

IMGT®	109	114	115	116	117	118	119	120	121	122	123	124	125	126	127
KABAT	199	200	203	204	205	206	207	208	209	210	211	212	213	214	215
IGLC1	E	G	S	T	V	E	K	T	V	A	P	T	E	C	S
IGLC2															
IGLC3															
IGLC6												A			
IGLC7												A			
ALPHA															
BETA															
DELTA															
GAMMA															
CH3															

FIG. 24

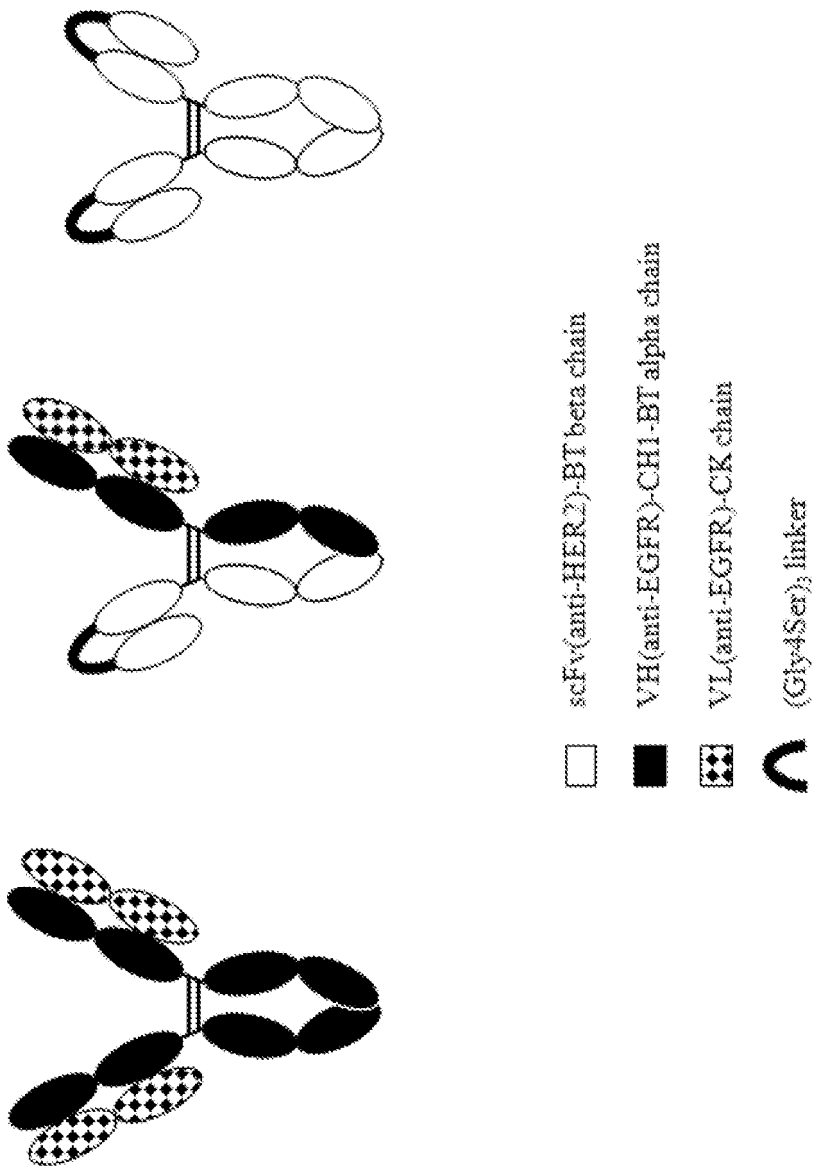

scFv(anti-HER2)-BT beta chain
VH(anti-EGFR)-CH1-BT alpha chain
VL(anti-EGFR)-CK chain
(Gly4Ser)3 linker

FIG. 25

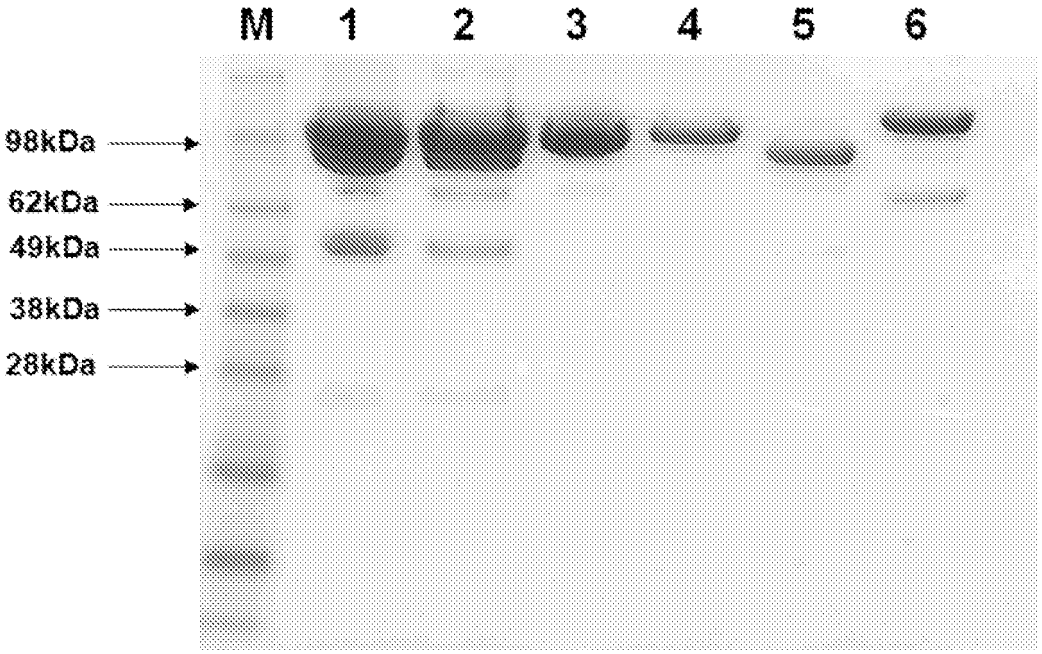


FIG. 26

PEAK	DIST	WIDTH	HEIGHT	AREA	%
1	19	4	43	193	7.1
2	31	15	95	1344	49.5
3	47	12	91	1176	43.3

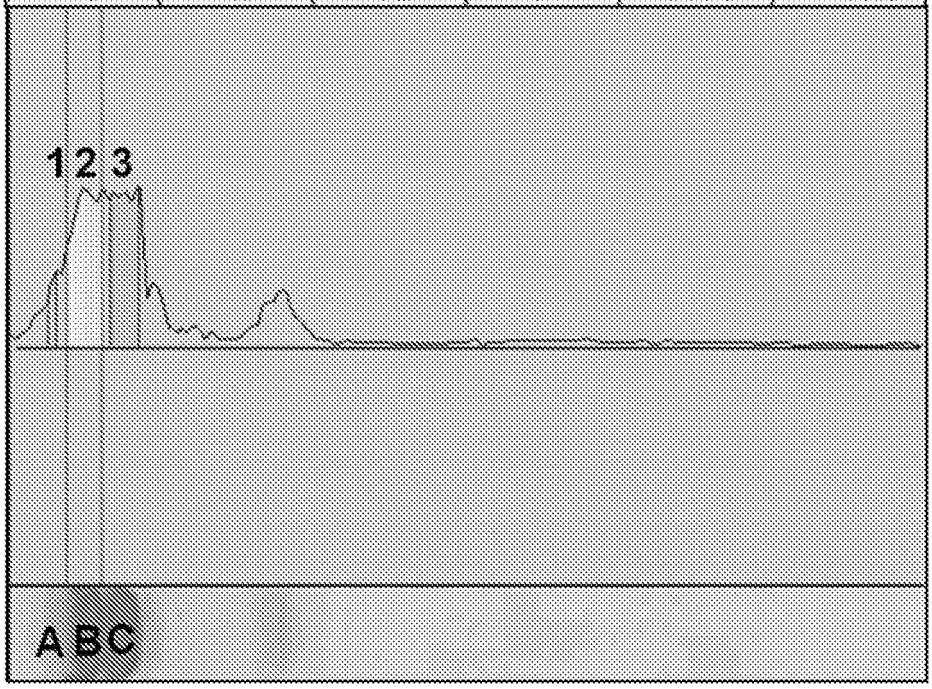


FIG. 27

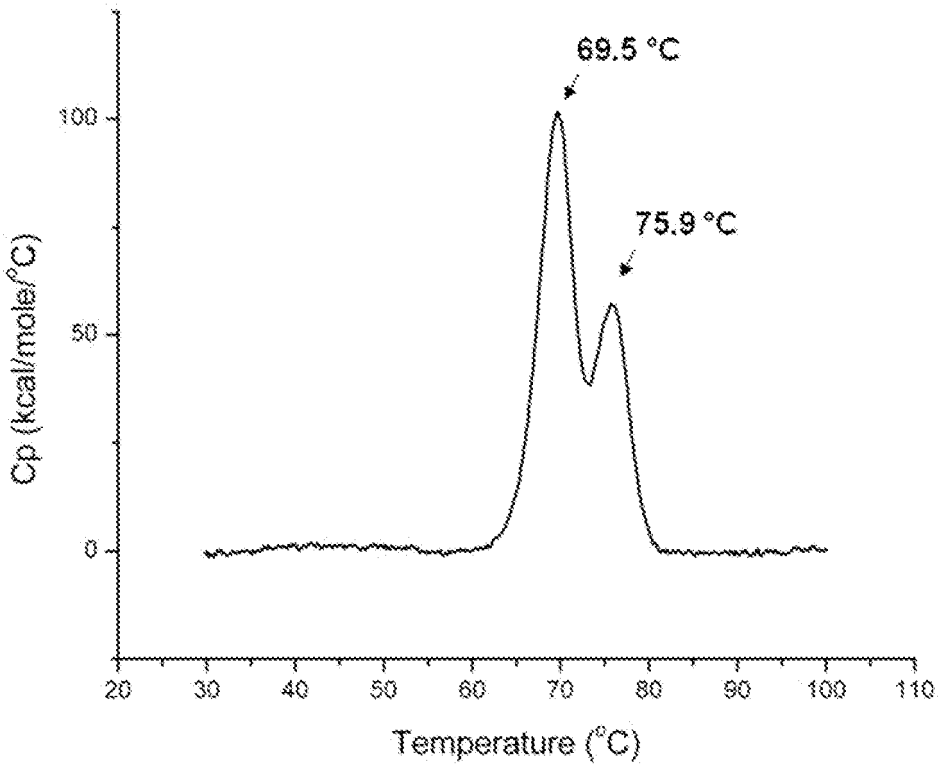

69.5 °C
75.9 °C
Cp (kcal/mole/°C)
100
50
0
20
30
40
50
60
70
80
90
100
110
Temperature (°C)

FIG. 28A

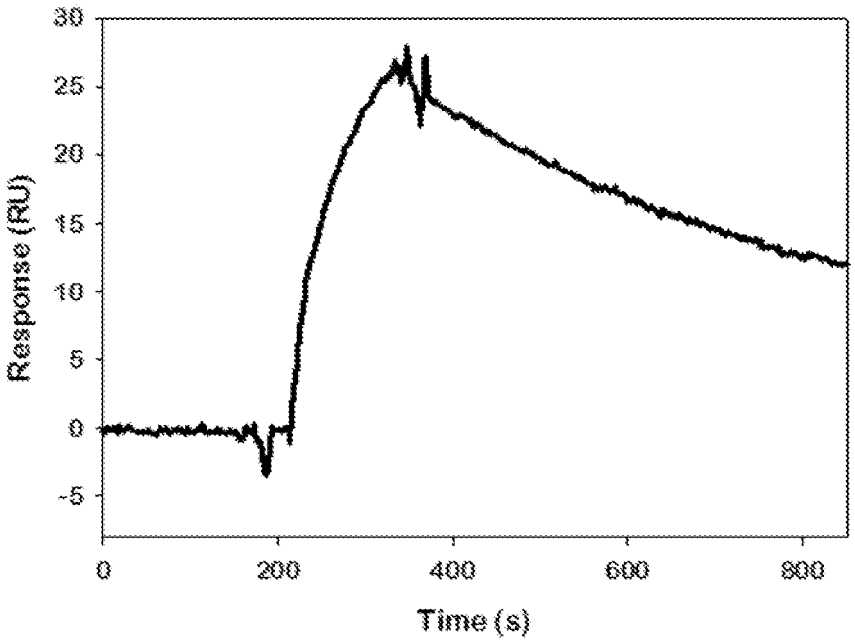
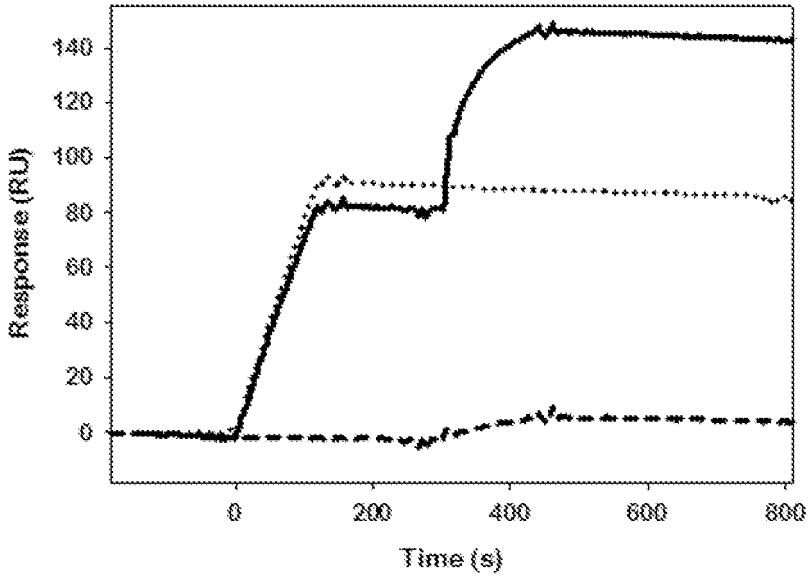

30
25
20
15
10
5
0
-5
Response (RU)
0
200
400
600
800
Time (s)
Immobilized human EGFR-Fc + (Erbitux-BT alpha_Herceptin scFv-BT beta)

FIG. 28B



——— Immobilized human HER2-Fc
+ human EGFR-Fc
+ (Erbitux-BT alpha_Herceptin scFv-BT beta)

····· Immobilized human HER2-Fc
+ (Erbitux-BT alpha_Herceptin scFv-BT beta)

– – Immobilized human HER2-Fc
+ human EGFR-Fc

FIG. 29

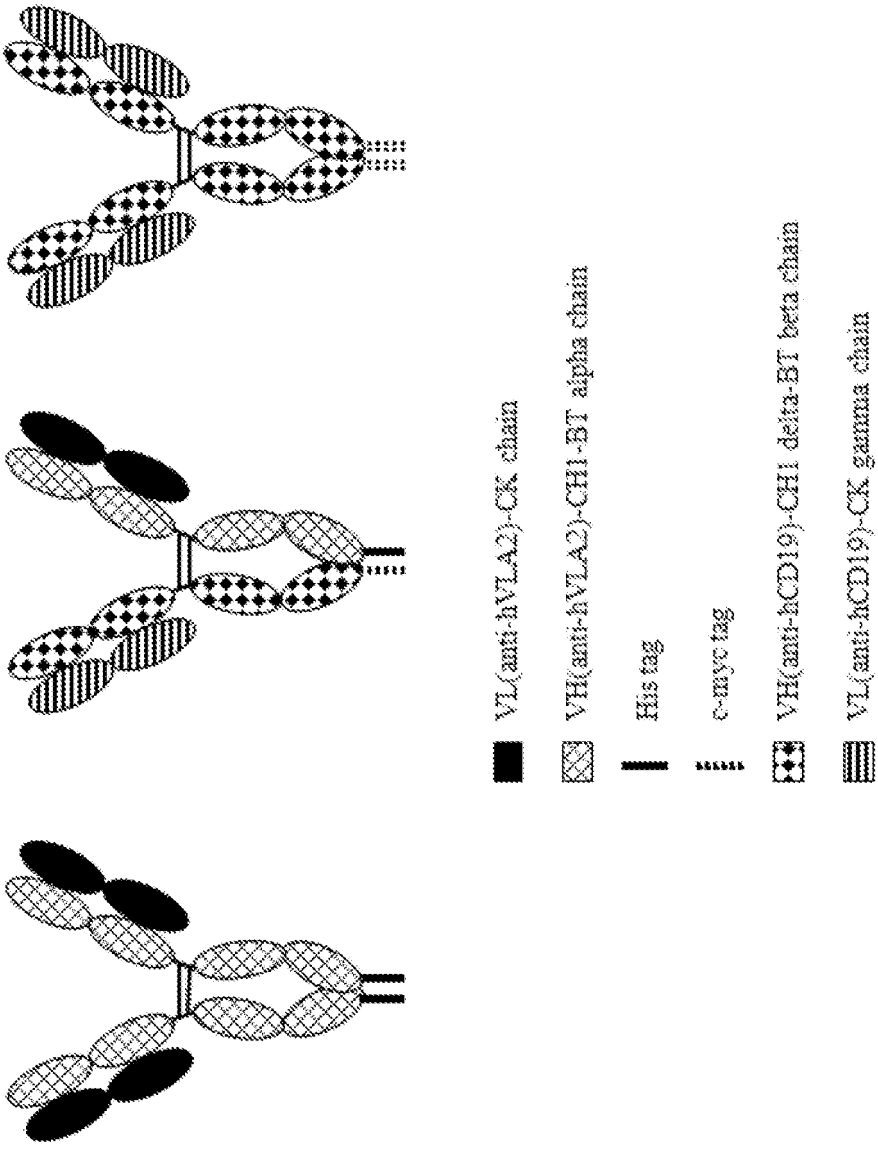

VL(anti-hVLA2)-CK chain
VH(anti-hVLA2)-CH1-BT alpha chain
His tag
c-myc tag
VH(anti-hCD19)-CH1 delta-BT beta chain
VL(anti-hCD19)-CK gamma chain

FIG. 30

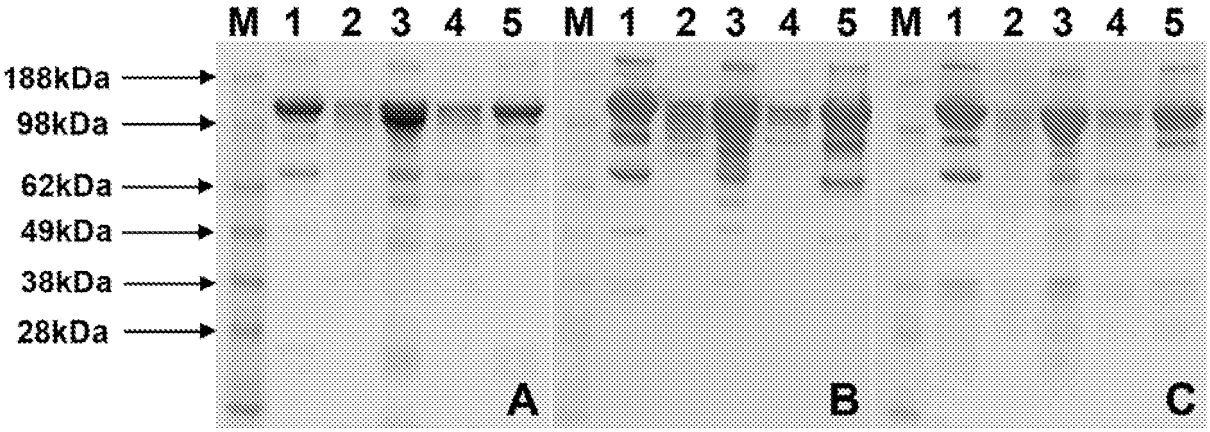

M 1 2 3 4 5 M 1 2 3 4 5 M 1 2 3 4 5
188kDa
98kDa
62kDa
49kDa
38kDa
28kDa
A
B
C

FIG. 31

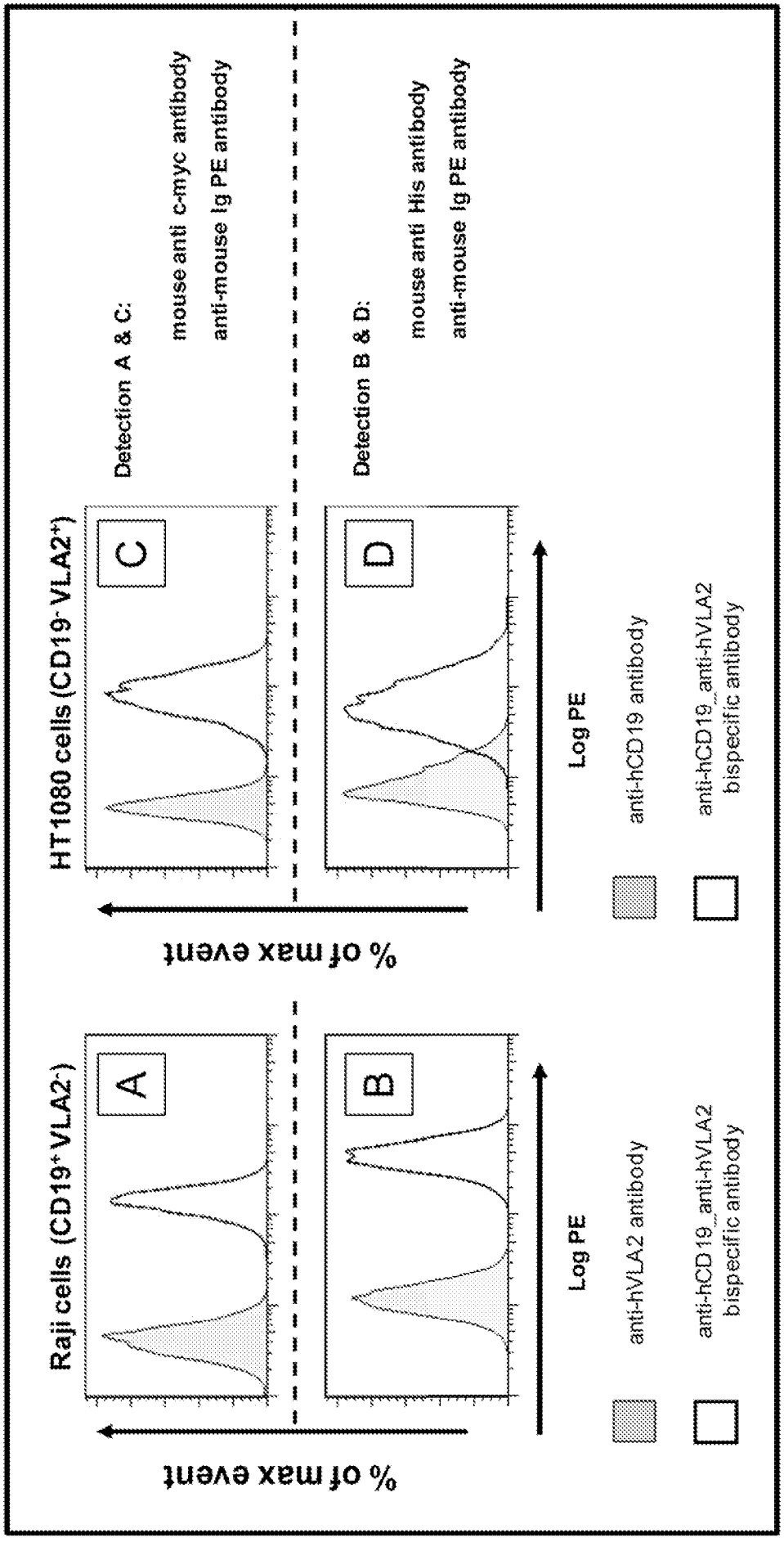

Raji cells (CD19+ VLA2-)
A
B
% of max event
Log PE
anti-hVLA2 antibody
anti-hCD19_anti-hVLA2 bispecific antibody
HT1080 cells (CD19- VLA2+)
C
D
% of max event
Log PE
anti-hCD19 antibody
anti-hCD19_anti-hVLA2 bispecific antibody
Detection A & C:
mouse anti c-myc antibody
anti-mouse Ig PE antibody
Detection B & D:
mouse anti His antibody
anti-mouse Ig PE antibody

FIG. 32

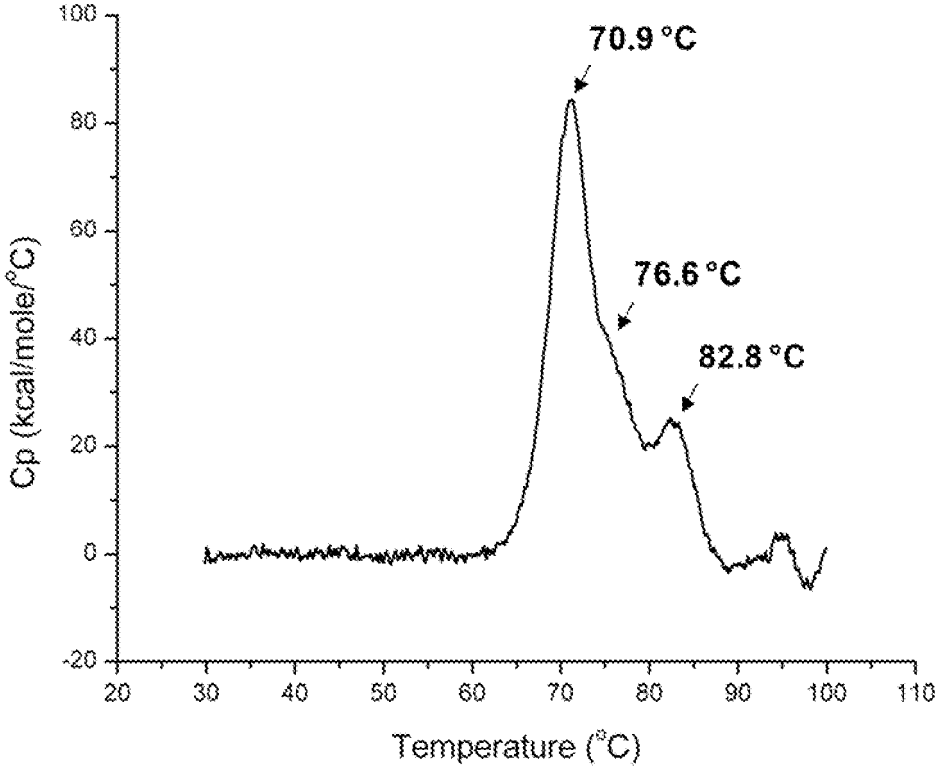

70.9 °C
76.6 °C
82.8 °C
Cp (kcal/mole/°C)
Temperature (°C)
100
80
60
40
20
0
-20
20
30
40
50
60
70
80
90
100
110

FIG. 33

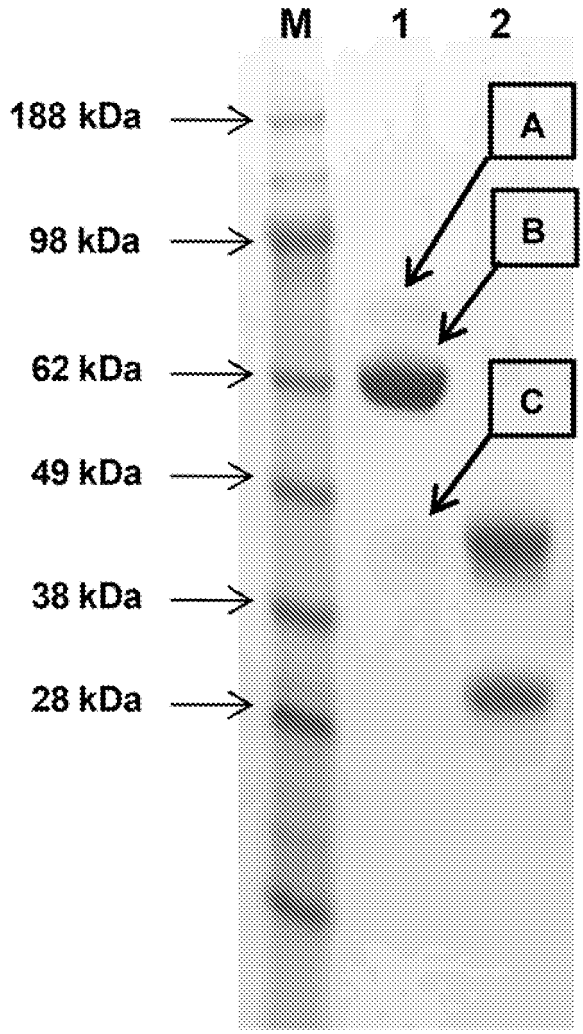
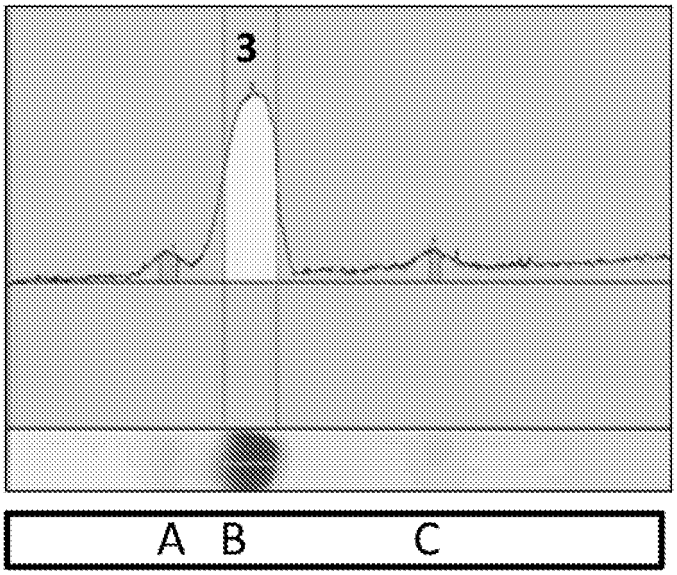


FIG. 34



LANE	PEAK	DST	WIDTH	HEIGHT	AREA	%
1	1	210	22	23	550	5.4
1	2	309	67	153	9206	91.0
1	3	537	13	29	360	3.6

FIG. 35

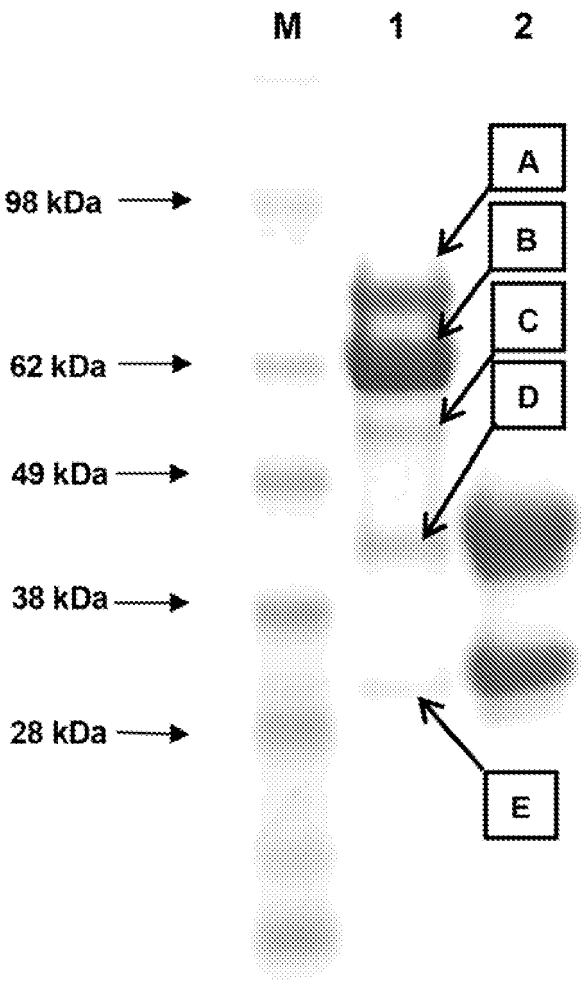
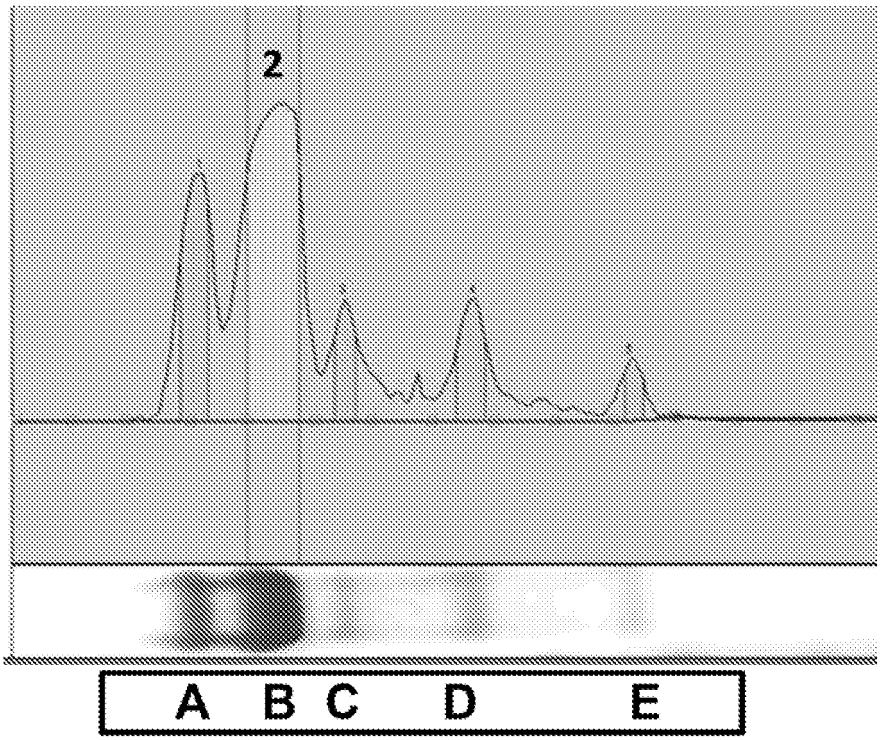


FIG. 36



LANE	PEAK	DIST	WIDTH	HEIGHT	AREA	%
1	1	54	8	150	1210	23.0
1	2	78	15	191	2850	54.2
1	3	95	6	74	438	8.3
1	4	132	8	74	560	10.7
1	5	177	5	38	197	3.7

FIG. 37

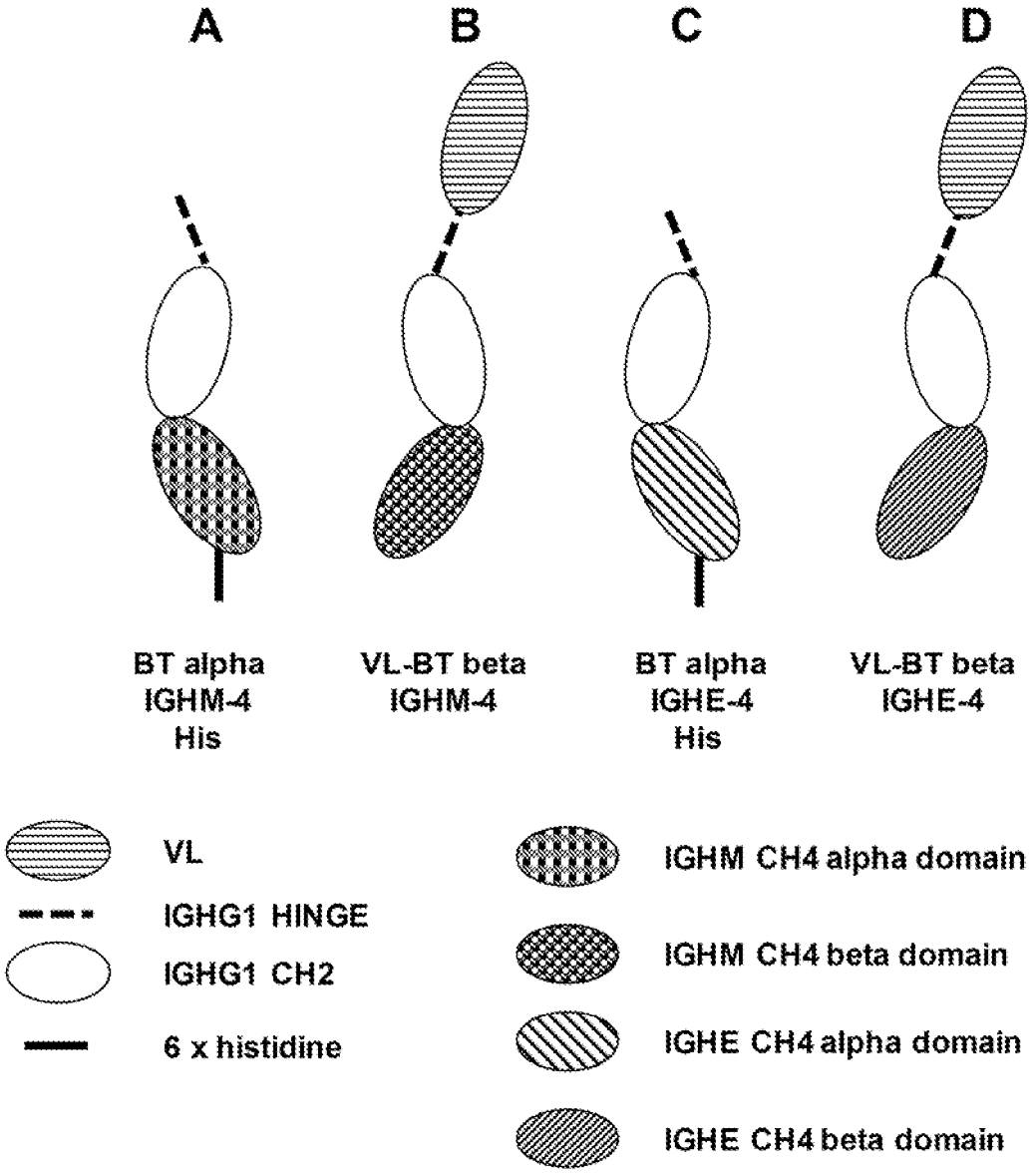

A
B
C
D
BT alpha IGHM-4 His
VL-BT beta IGHM-4
BT alpha IGHE-4 His
VL-BT beta IGHE-4
VL
IGHG1 HINGE
IGHG1 CH2
6 x histidine
IGHM CH4 alpha domain
IGHM CH4 beta domain
IGHE CH4 alpha domain
IGHE CH4 beta domain

FIG. 38

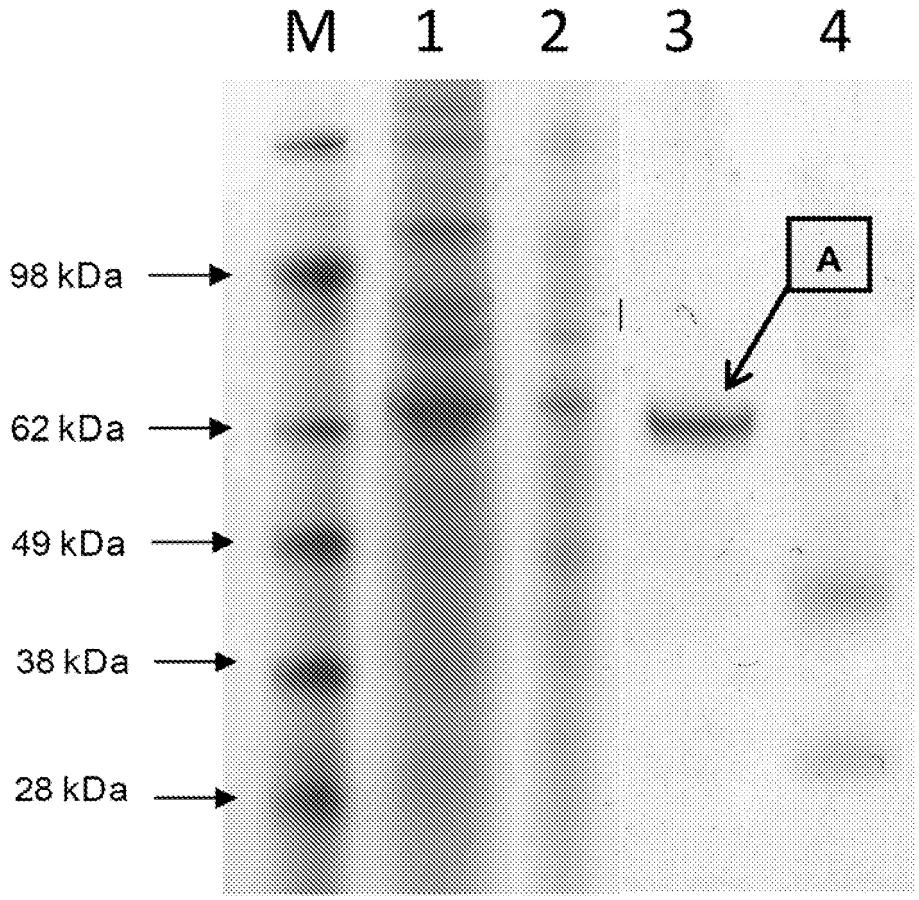


FIG. 39

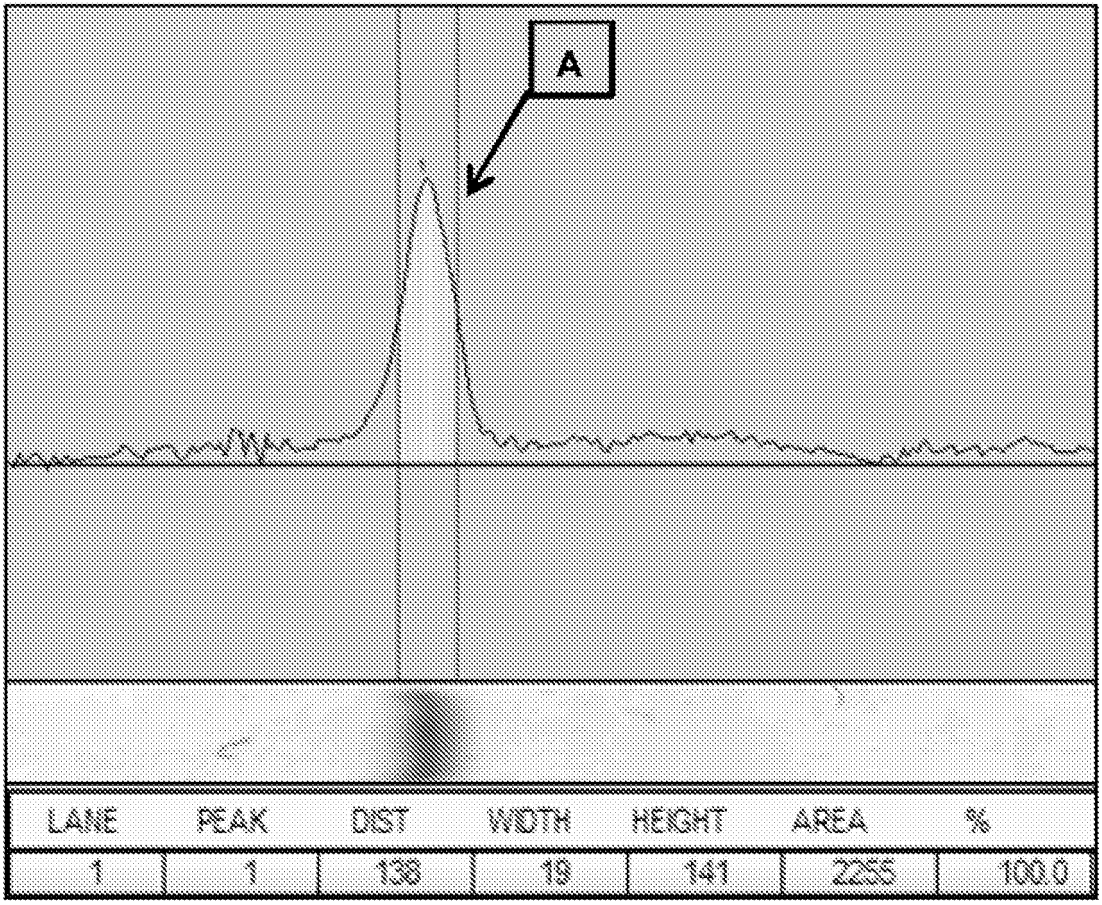


FIG. 40

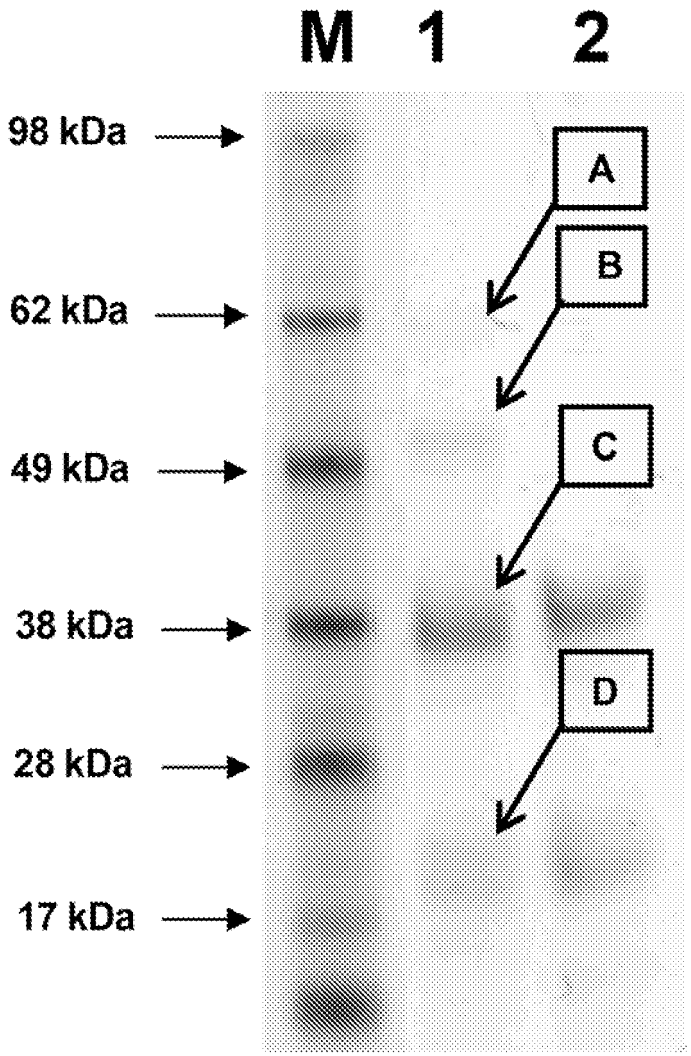
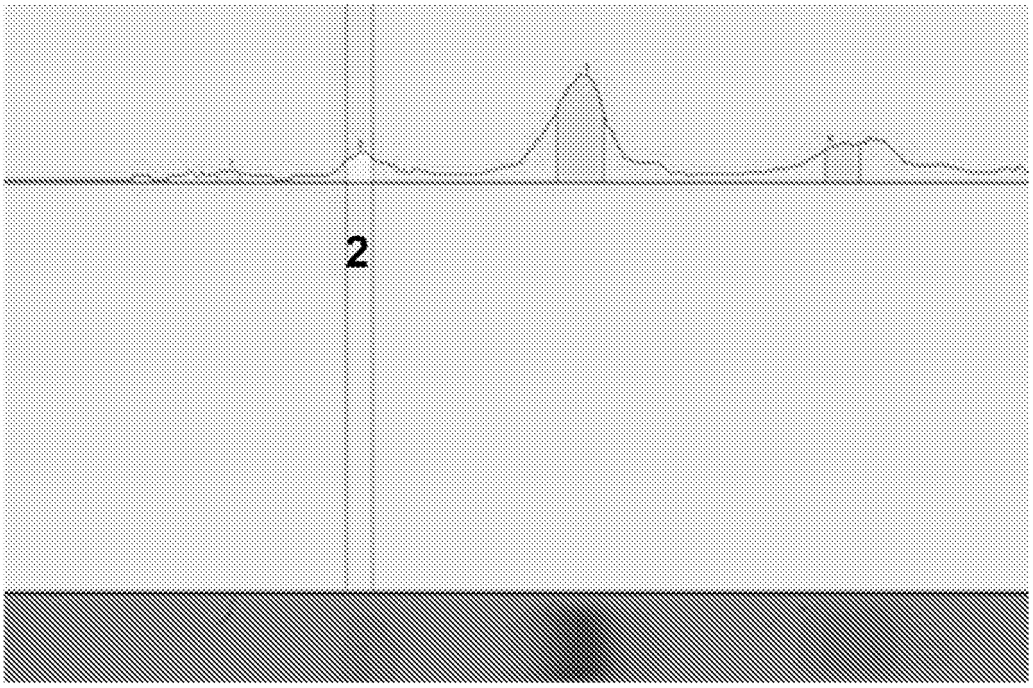


FIG. 41



LANE	PEAK	DST	WDTH	HEGHT	AREA	%
1	1	108	10	7	73	3.9
1	2	167	12	18	203	10.8
1	3	271	22	62	1235	65.7
1	4	382	16	21	368	19.6

FIG. 42

```
                                A          AB      B           BC          C       CD
                              (1-15)                (16-26)    (27-38)    (39-45)
                          ------------->   ---------->                   ------>
                          1         10  15   16     23 26 27       38 39 41  45
                        87654321|........|...|123|......|..| |........|  |.|...|1234567
CH1
J00220 IGHA1              ASPTSPKVFPLSLCSTQP....DGNVVIACLVQ GFFPQ.EPLS  VTWSESGQGV....
J00221 IGHA2              ASPTSPKVFPLSLDSTPQ....DGNVVVACLVQ GFFPQ.EPLS  VTWSESGQNV....
K02875 IGHD               APTKAPDVFPIISGCRHPKD..NSPVVLACLIT GYHP..TSVT  VTWYMGTQSQ....
J00222 IGHE               ASTQSPSVFPLTRCCKNIPSN.ATSVTLGCLAT GYFP..EPVM  VTCDTGSLNG....
J00228 IGHG1              ASTKGPSVFPLAPSSKSTS...GGTAALGCLVK DYFP..EPVT  VSWNSGALTS....
J00230 IGHG2              ASTKGPSVFPLAPCSRSTS...ESTAALGCLVK DYFP..EPVT  VSWNSGALTS....
X03604 IGHG3              ASTKGPSVFPLAPCSRSTS...GGTAALGCLVK DYFP..EPVT  VSWNSGALTS....
K01316 IGHG4              ASTKGPSVFPLAPCSRSTS...ESTAALGCLVK DYFP..EPVT  VSWNSGALTS....
X06766 IGHGP              ASTKGPSVFPLVPSSRSVS...EGTAALGCLVK DYFP..EPVT  VSWNSGALTR....
X14940 IGHM               GSASAPTLFPLVSCENSPSD..TSSVAVGCLAQ DFLP..DSIT  LSWKYKNNSDIS..
CH2
J00220 IGHA1                CCHPRLSLHRPALEDLLL..GSEANLTCTLT GLRDA.SGVT  FTWTPSSGKS....
J00221 IGHA2                CCHPRLSLHRPALEDLLL..GSEANLTCTLT GLRDA.SGAT  FTWTPSSGKS....
K02878 IGHD             ECPSHTQPLGVYLLTPAVQDLWL..RDKATFTCFVV GSDL..KDAH  LTWEVAGKVPTG..
J00222 IGHE             VCSRDFTPPTVKILQSSCDGGGHF.PPTIQLLCLVS GYTP..GTIN  ITWLEDGQVMD...
J00223 IGHEP1 .....NPRGVSAYLSRPSPFDLFI..RKSPTITCLVV DLAPSKWTVN  LTWSRASGKPV...
J00228 IGHG1            APELLGGPSVFLFPPKPKDTLMI.SRTPEVTCVVV DVSHEDPEVK  FNWYVDGVEVH...
J00230 IGHG2            AP.PVAGPSVFLFPPKPKDTLMI.SRTPEVTCVVV DVSHEDPEVQ  FNWYVDGVEVH...
X03604 IGHG3            APELLGGPSVFLFPPKPKDTLMI.SRTPEVTCVVV DVSHEDPEVQ  FKWYVDGVEVH...
K01316 IGHG4            APEFLGGPSVFLFPPKPKDTLMI.SRTPEVTCVVV DVSQEDPEVQ  FNWYVDGVEVH...
X06766 IGHGP            TTEPLGGPSVFLFPPKPKDTLMI.SRTPEVTCVVV DVSHEDPEVK  FNWYVDGVEVH...
X14940 IGHM              VIAELPPKVSVFVPPRDGFFGN.PRKSKLICQAT GFSP..RQIQ  VSWLREGKQVGS..
```

SUBSTITUTE SHEET (RULE 26)

FIG. 42 (cont.)

```
                    A          AB      B          BC          C       CD
                 (1-15)                (16-26)    (27-38)    (39-45)
                ---------------->  ------------>           ------>
                      1        10  15   16   23 26  27      38 39 41  45
           87654321|.........|....|123|......|..| |.........| |.|...|1234567
CH3
J00220 IGHA1       GNTFRPEVHLLPPPSEELAL..NELVTLTCLAR GFSP..KDVL VRWLQGSQELPRE.
J00221 IGHA2       GNTFRPEVHLLPPPSEELAL..NELVTLTCLAR GFSP..KDVL VRWLQGSQELPRE.
K02879 IGHD         AAQAPVKLSLNLLASSDPP..EAASWLLCEVS GFSP..PNIL LMWLEDQREVNTS.
J00222 IGHE        DSNPRGVSAYLSRPSPFDLFI..RKSPTITCLVV DLAPSKGTVN LTWSRASGKPV...
J00223 IGHEP1       GPRAAPEVYAFATPEWLGS...RDKRTLTCLIQ NFMP..EDIS VQWLHNEVQLPDA.
J00228 IGHG1        GQPREPQVYTLPPSRDELT...KNQVSLTCLVK GFYP..SDIA VEWESNGQPEN...
J00230 IGHG2        GQPREPQVYTLPPSREEMT...KNQVSLTCLVK GFYP..SDIA VEWESNGQPEN...
X03604 IGHG3        GQPREPQVYTLPPSREEMT...KNQVSLTCLVK GFYP..SDIA VEWESSGQPEN...
K01316 IGHG4        GQPREPQVYTLPPSQEEMT...KNQVSLTCLVK GFYP..SDIA VEWESNGQPEN...
X06766 IGHGP        GQPREPQVYTLPPSQK.MT...KNQVTLTCLVK GFYP..SDIT VEWESNGQPEN...
X14940 IGHM         DQDTAIRVFAIPPSFASIFL..TKSTKLTCLVT DLTTY.DSVT ISWTRQNGEAV...
CH4
J00222 IGHE         GPRAAPEVYAFATPEWPGS...RDKRTLACLIQ NFMP..EDIS VQWLHNEVQLPDA.
X14940 IGHM        GVALHRPDVYLLPPAREQLNL..RESATITCLVT GFSP..ADVF VQWMQRGQPLSPE.
```

FIG. 42 (cont.)

```
                                D          DE           E      EF   F          FG          G
                               (77-84)                 (85-96)     (97-104)   (105-117)   (118-128)
                               ------->              ---------->  ------->               ---------->
                              77      84            85   89    96  97   104 105       117 118     128
                               |      |12345677654321|...|......|12|......| |...........| |.........|
CH1
J00220  IGHA1                 TARNFPPSQDASG.....DLYTTSSQLTLPATQC..LAGKSVTC HVKHY...TNPSQ DVTVPCP
J00221  IGHA2                 TARNFPPSQDASG.....DLYTTSSQLTLPATQC..PDGKSVTC HVKHY...TNPSQ DVTVPCP
K02875  IGHD                  PQRTFPEIQRRD......SYYMTSSQLSTPLQQW...RQGEYKC VVQHT...ASKSK KEIFRWP
J00222  IGHE                  TTMTLPATTLTLS.....GHYATISLLTVSGAW....AKQMFTC RVAHTPSSTDWVD NKTFS
J00228  IGHG1                 GVHTFPAVLQSS......GLYSLSSVVTVPSSSL...GTQTYIC NVNHKP..SNTKV DKKV
J00230  IGHG2                 GVHTFPAVLQSS......GLYSLSSVVTVPSSNF...GTQTYTC NVDHKP..SNTKV DKTV
X03604  IGHG3                 GVHTFPAVLQSS......GLYSLSSVVTVPSSSL...GTQTYTC NVNHKP..SNTKV DKRV
K01316  IGHG4                 GVHTFPAVLQSS......GLYSLSSVVTVPSSSL...GTKTYTC NVDHKP..SNTKV DKRV
X06766  IGHGP                 SVHTFPAVLQSS......GLYSLSSVVTVPSSSL...GTQTYTC NVDHKP..SNTKV DKTV
X14940  IGHM                  STRGFPSVLRGG.......KYAATSQVLLPSKDVMQGTDEHVVC KVQHP....NGNK EKNVPLP
CH2
J00220  IGHA1                 .AVQGPPERDLCG......CYSVSSVLPGCAEPW..NHGKTFTC TAAYPE..SKTPL TATLSKS
J00221  IGHA2                 .AVQGPPERDLCG......CYSVSSVLPGCAQPW..NHGETFTC TAAHPE..LKTPL TANITKS
K02878  IGHD                  GVEEGLLERHSN......GSQSQHSRLTLPRSLW..NAGTSVTC TLNHPS..LPPQR LMALREP
J00222  IGHE                  VDLSTASTTQEG......ELASTQSELTLSQKHW..LSDRTYTC QVTYQ....GHTF EDSTKKCA
J00223  IGHEP1                NHSTRKEEKQRN......GTLTVTSTVPVGTRDW..IEGETYQC RVTHPQ..LPRAL VRSTTKTS
J00228  IGHG1                 NAKTKPREEQYN......STYRVVSVLTVLHQDW..LNGKEYKC KVSNKA..LPAPI EKTISKAK
J00230  IGHG2                 NAKTKPREEQFN......STFRVVSVLTVVHQDW..LNGKEYKC KVSNKG..LPAPI EKTISKTK
X03604  IGHG3                 NAKTKPREEQYN......STFRVVSVLTVLHQDW..LNGKEYKC KVSNKA..LPAPI EKTISKTK
K01316  IGHG4                 NAKTKPREEQFN......STYRVVSVLTVLHQDW..LNGKEYKC KVSNKG..LPSSI EKTISKAK
X06766  IGHGP                 NAKTKPWEEQYN......STYHVVSVLTVVHQNW..LNGREYKC KVSNKG..LPAPI EKTISKTK
X14940  IGHM                  GVTTDQVQAEAKES..GPTTYKVTSTLTIKESDW..LGQSMFTC RVDHR....GLTF QQNASSMCVP
```

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FIG. 42 (cont.)

```
                    D          DE          E          EF   F          FG          G
                  (77-84)                 (85-96)          (97-104)   (105-117)   (118-128)
                  ------->              ---------->        ------->   ---------->
                77      84              85   89    96    97    104 105         117 118       128
                |       |12345677654321|...|.....|12|.....|     |.............| |.........|
          CH3
          J00220 IGHA1   KYLTWASRQEPSQG...TTTFAVTSILRVAAEDW..KKGDTFSC MVGHEA.LPLAFT QKTIDRLA
          J00221 IGHA2   KYLTWASRQEPSQG...TTTFAVTSILRVAAEDW..KKGDTFSC MVGHEA.LPLAFT QKTIDRLA
          K02879 IGHD    GFAPARPPPQPRS.....TTFWAWSVLRVPAPPS..PQPATYTC VVSHEDSRTLLNA SRSLEVS
          J00222 IGHE    NHSTRKEEKQRN.....GTLTVTSTLPVGTRDW..IEGETYQC RVTHPH..LPRAL MRSTTKTS
          J00223 IGHEP1  RHSTTQPRKTKG.....SGFFIFSRLEVTRAEW..EQKDEFIC RAVHEAAIPSQTV QRAVSVNP
          J00228 IGHG1   NYKTTPPVLDSD.....GSFFLYSKLTVDKSRW..QQGNVFSC SVMHEA.LHNHYT QKSLSLSP
          J00230 IGHG2   NYKTTPPMLDSD.....GSFFLYSKLTVDKSRW..QQGNVFSC SVMHEA.LHNHYT QKSLSLSP
          X03604 IGHG3   NYNTTPPMLDSD.....GSFFLYSKLTVDKSRW..QQGNIFSC SVMHEA.LHNRFT QKSLSLSP
          K01316 IGHG4   NYKTTPPVLDSD.....GSFFLYSRLTVDKSRW..QEGNVFSC SVMHEA.LHNHYT QKSLSLSL
          X06766 IGHGP   NYKTTPPMLDSN.....GSFFLYSKLTVDKSRW..QQGNVFSC SVMHEG.LHNHYT QKSLSLSP
          X14940 IGHM    KTHTNISESHPN.....ATFSAVGEASICEDDW..NSGERFTC TVTHTD..LPSPL KQTISRPK
          CH4
          J00222 IGHE    RHSTTQPRKTKG.....SGFFVFSRLEVTRAEW..EQKDEFIC RAVHEAASPSQTV QRAVSVNP
          X14940 IGHM    KYVTSAPMPEPQA....PGRYFAHSILTVSEEEW..NTGETYTC VVAHEA.LPNRVT ERTVDKST
```

FIG. 43

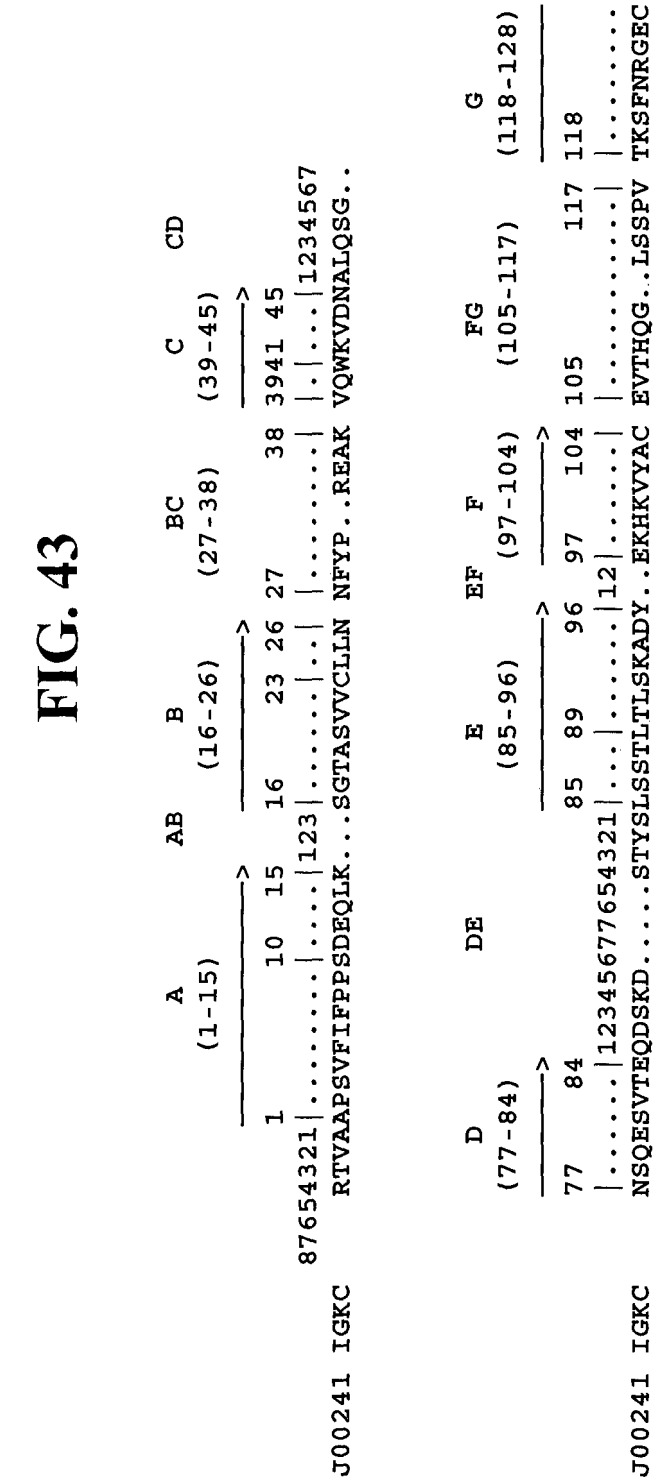

A AB B BC C CD
(1-15) (16-26) (27-38) (39-45)
1 10 15 16 23 26 27 38 3941 45
87654321 123 1234567
J00241 IGKC RTVAAPSVFIFPPSDEQLK...SGTASVVCLLN NFYP..REAK VQWKVDNALQSG..
D DE E EF F FG G
(77-84) (85-96) (97-104) (105-117) (118-128)
77 84 85 89 96 97 104 105 117 118
12345677654321 12
J00241 IGKC NSQESVTEQDSKD.....STYSLSSTLTLSKADY..EKHKVYAC EVTHQG..LSSPV TKSFNRGEC

FIG. 44

```
                                A          AB       B          BC          C       CD
                             (1-15)              (16-26)     (27-38)     (39-45)
                            ------->          ---------->             ---------->
                                 1         10  15   16   23 26  27        38 3941 45
                          87654321|.........|....|123|.....|..| |.........| |.|...|1234567
J00252 IGLC1                 PKANPTVTLFPPSSEELQ...ANKATLVCLIS DFYP..GAVT VAWKADGSPVKA..
J00253 IGLC2              GQPKAAPSVTLFPPSSEELQ...ANKATLVCLIS DFYP..GAVT VAWKADSSPVKA..
J00254 IGLC3                 PKAAPSVTLFPPSSEELQ...ANKATLVCLIS DFYP..GAVT VAWKADSSPVKA..
J03011 IGLC6              GQPKAAPSVTLFPPSSEELQ...ANKATLVCLIS DFYP..GAVK VAWKADGSPVNT..
X51755 IGLC7              GQPKAAPSVTLFPPSSEELQ...ANKATLVCLVS DFYP..GAVT VAWKADGSPVKV..

                                D          DE       E          EF  F       FG          G
                             (77-84)             (85-96)     (97-104)    (105-117)   (118-128)
                            ------->          ---------->             ---------->
                                77    84            85  89    96  97   104 105       117 118
                                |.....|12345677654321|...|.....|12|.....| |.............| |..........
J00252 IGLC1                GVETTKPSKQSN.....NKYAASSYLSLTPEQW..KSHRSYSC QVTHE....GSTV EKTVAPTECS
J00253 IGLC2                GVETTTPSKQSN.....NKYAASSYLSLTPEQW..KSHRSYSC QVTHE....GSTV EKTVAPTECS
J00254 IGLC3                GVETTTPSKQSN.....NKYAASSYLSLTPEQW..KSHKSYSC QVTHE....GSTV EKTVAPTECS
J03011 IGLC6                GVETTTPSKQSN.....NKYAASSYLSLTPEQW..KSHRSYSC QVTHE....GSTV EKTVAPAECS
X51755 IGLC7                GVETTKPSKQSN.....NKYAASSYLSLTPEQW..KSHRSYSC RVTHE....GSTV EKTVAPAECS
```

FIG. 45

```
                                  A          AB     B          BC          C     CD
                                (1-15)              (16-26)    (27-38)   (39-45)
                              ---------->        ---------->            ------->
                                1         10  15   16    23 26 27      38  3941 45
                             87654321|........|....|123|......|..| |........| |.|...|1234567
X02883 TRAC                     XIQNPDPAVYQLRDSK.........SSDKSVCLFT DFDS...QTN  VSQSKDS.......
M12887 TRBC1                   EDLNKVFPPEVAVFEPSEAEISH..TQKATLVCLAT GFFP..DHVE  LSWWVNGKEVHS..
M12888 TRBC2                   EDLKNVFPPEVAVFEPSEAEISH..TQKATLVCLAT GFYP..DHVE  LSWWVNGKEVHS..
M22148 TRDC                     XSQPHTKPSVFVMKNG.........TNVACLVK EFYP..KDIR  INLVSSKKI.....
M14996 TRGC1                 DKQLDADVSPKPTIFLPSIAETKL..QKAGTYLCLLE KFFP..DVIK  IHWQEKKSNTIL..
M15002 TRGC2(2x)             DKQLDADVSPKPTIFLPSIAETKL..QKAGTYLCLLE KFFP..DIIK  IHWQEKKSNTIL..
M17323 TRGC2(3x)             DKQLDADVSPKPTIFLPSIAETKL..QKAGTYLCLLE KFFP..DIIK  IHWQEKKSNTIL..

                                  D          DE          E      EF   F                FG                 G
                                (77-84)                   (85-96)     (97-104)       (105-117)        (118-128)
                              ---------->                ---------->  ---------->                   ----------
                                77    84                  85  89    96  97   104 105                 117 118
                                |......|12345677654321|...|......|12|......| |......123456654321.....| |........
X02883 TRAC                  DVYITDKTVLDMRSM.DFKSNSAVAWSNKS.........DFAC ANAFNN.............SIIPE DTFFPSP
M12887 TRBC1                 GVSTDPQPLKEQPAL.NDSRYCLSSRLRVSATFWQ.NPRNHFRC QVQFYGLSENDEWTQDRAKPVTQIV SAEAWGRA
M12888 TRBC2                 GVSTDPQPLKEQPAL.NDSRYCLSSRLRVSATFWQ.NPRNHFRC QVQFYGLSENDEWTQDRAKPVTQIV SAEAWGRA
M22148 TRDC                  TEFDPAIVISPS......GKYNAVKLGKYED.......SNSVTC SVQHDNK.............TVHST DFEVKTDST
M14996 TRGC1                 GSQEGNTMKTND.......TYMKFSWLTVPEK....SLDKEHRC IVRHENN............KNGVDQ EIIFPPIKT
M15002 TRGC2(2x)             GSQEGNTMKTND.......TYMKFSWLTVPEE....SLDKEHRC IVRHENN............KNGIDQ EIIFPPIKT
M17323 TRGC2(3x)             GSQEGNTMKTND.......TYMKFSWLTVPEE....SLDKEHRC IVRHENN............KNGIDQ EIIFPPIKT
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