

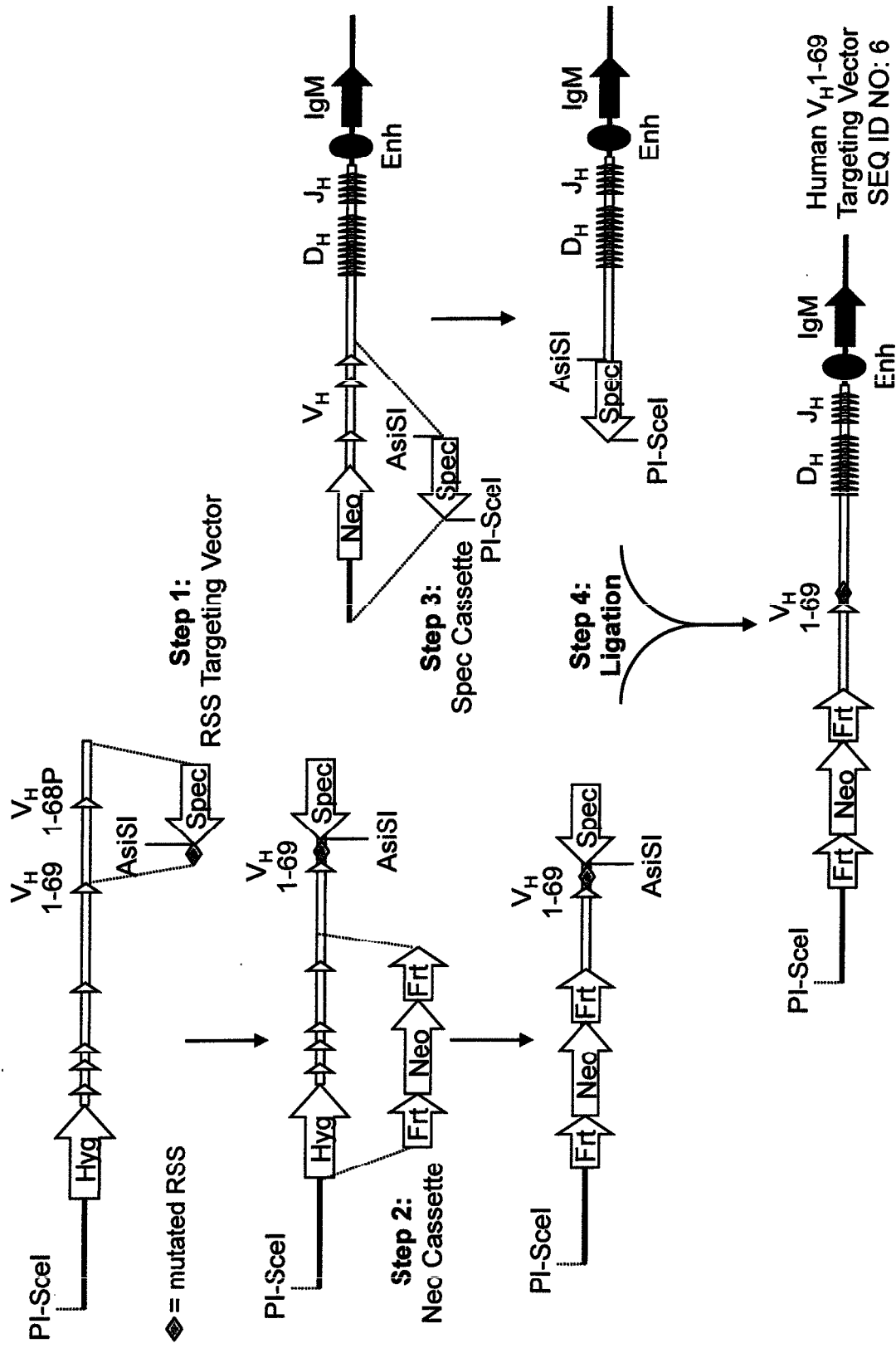


FIG. 1

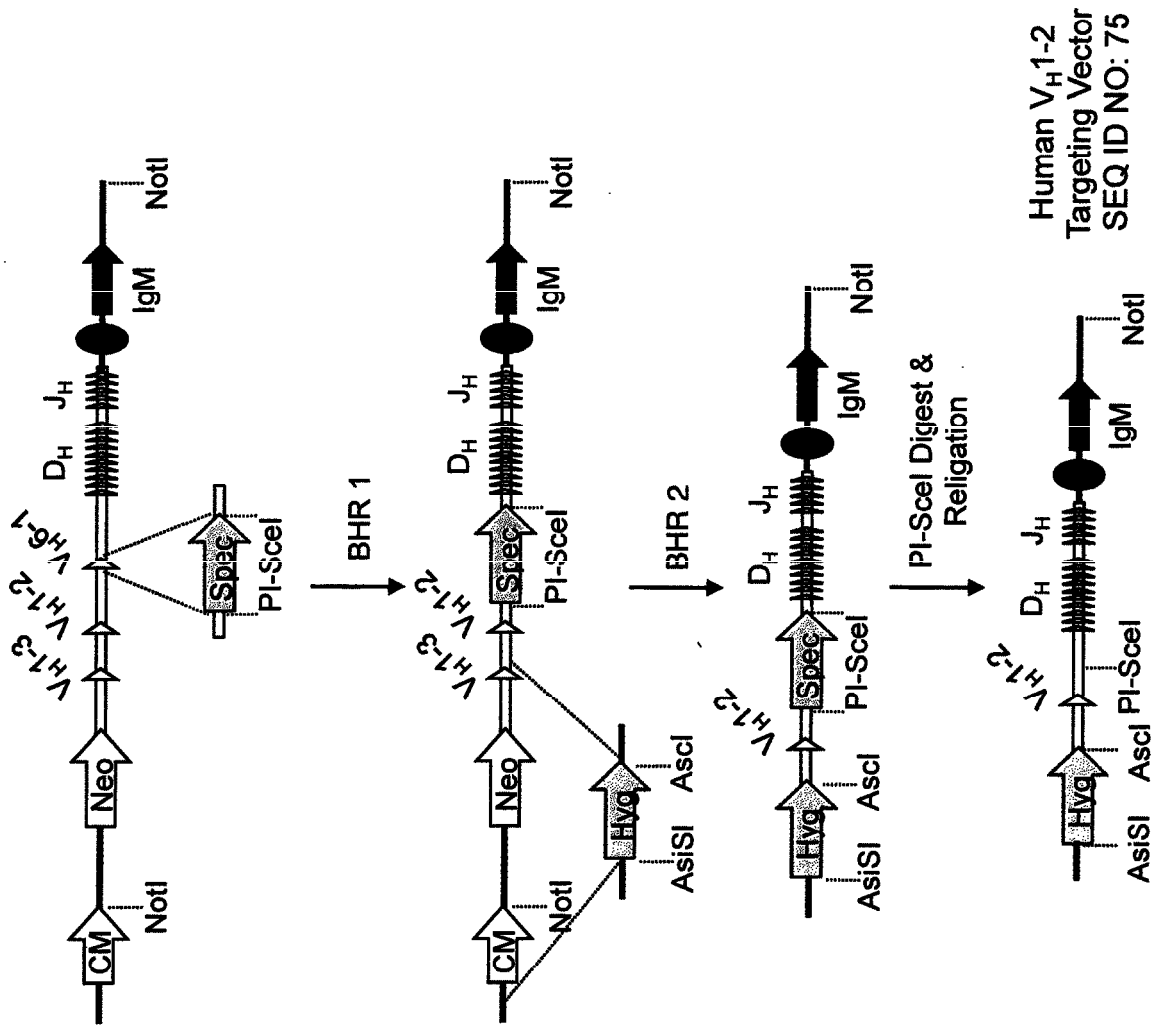


FIG. 2

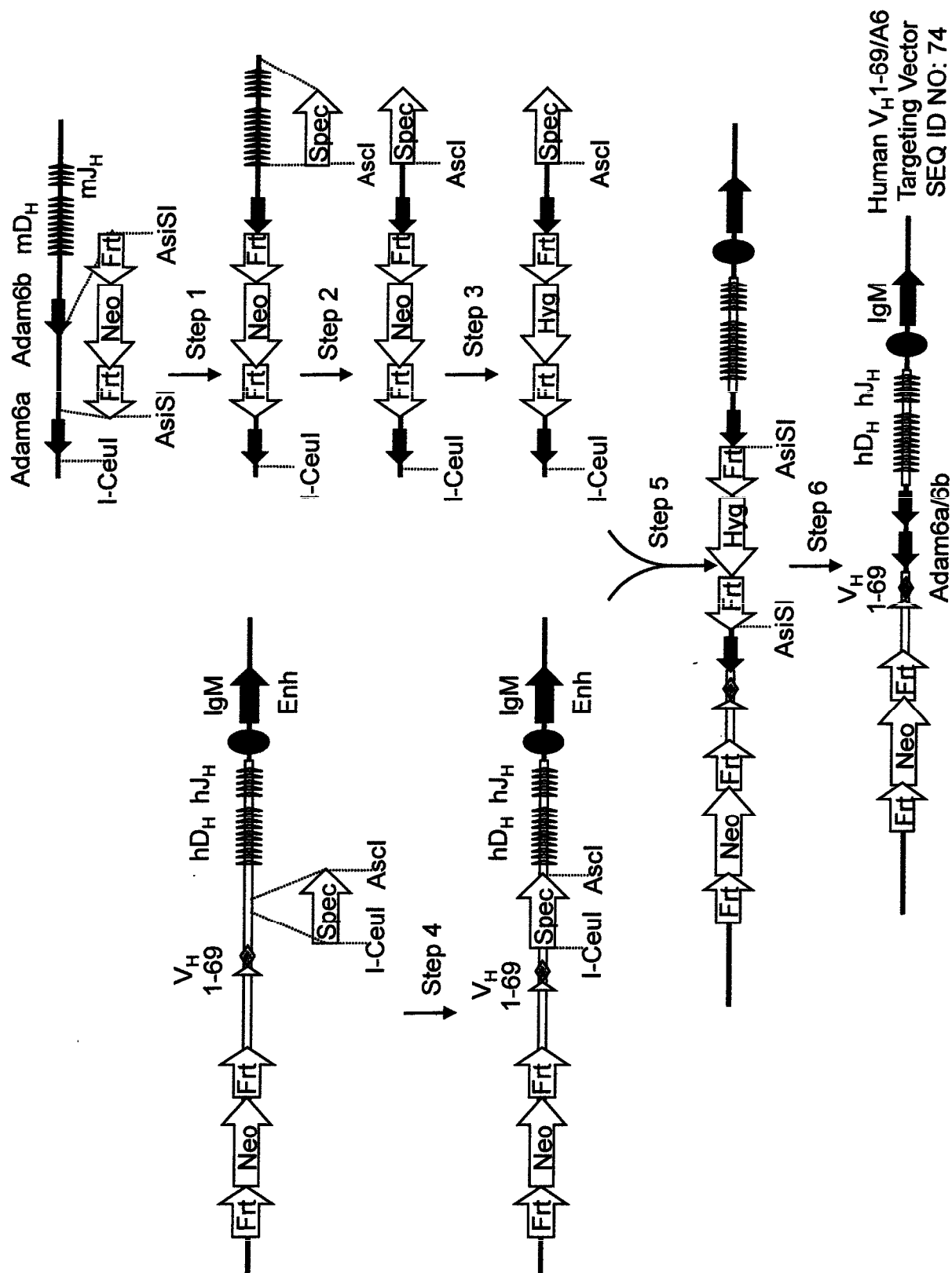


FIG. 3

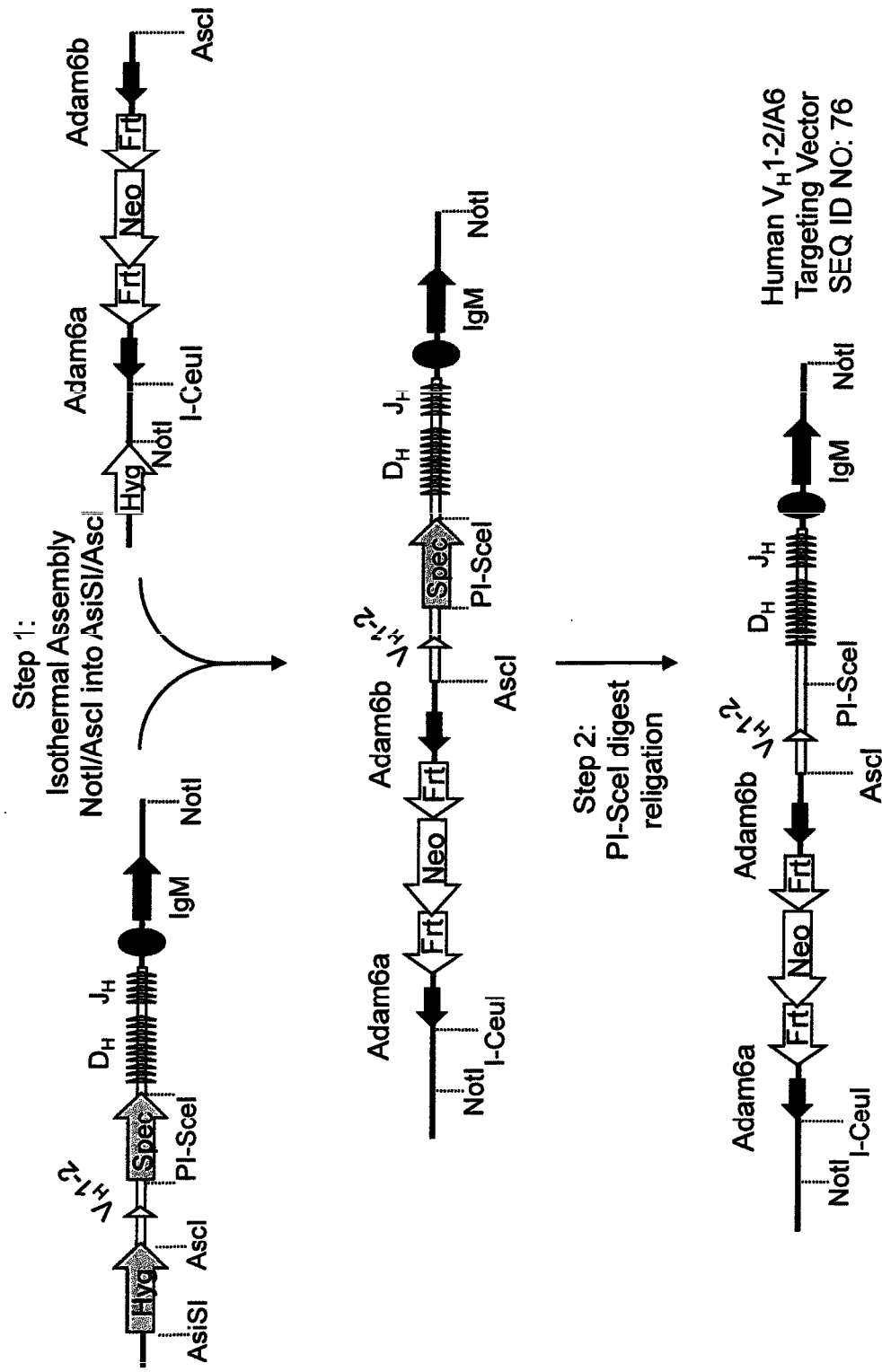


FIG. 4

	10	20	30	40	50	60	70
VH1-69*01	CAGGTg	CAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT					
VH1-69*02	CAGGTCCAGCTGGTGC	AaTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT					
VH1-69*03	CAGGTg	CAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT					
VH1-69*04	CAGGTCCAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT						
VH1-69*05	CAGGTCCAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT						
VH1-69*06	CAGGTg	CAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT					
VH1-69*07	-----	-----	-----	-----	-----	-----	-----
VH1-69*08	CAGGTCCAGCTGGTGC	AaTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT					
VH1-69*09	CAGGTg	CAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT					
VH1-69*10	CAGGTCCAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCaGTGAAGGTCTCCTGCAAGGCTTCT						
VH1-69*11	CAGGTCCAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT						
VH1-69*12	CAGGTCCAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT						
VH1-69*13	CAGGTCCAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCaGTGAAGGTCTCCTGCAAGGCTTCT						
	CAGGTCCAGCTGGTGCAGTCTGGGGCTGAGGTGAAGAAGCCTGGGTCCTCGGTGAAGGTCTCCTGCAAGGCTTCT						

	80	90	100	110	120	130	140	150
VH1-69*01	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAGGG							
VH1-69*02	GGAGGCACCTTCAGCAGCTATaCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAaGG							
VH1-69*03	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAGGG							
VH1-69*04	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAaGG							
VH1-69*05	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAGGG							
VH1-69*06	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAGGG							
VH1-69*07	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAaGG							
VH1-69*08	GGAGGCACCTTCAGCAGCTATaCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAaGG							
VH1-69*09	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAaGG							
VH1-69*10	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAGGG							
VH1-69*11	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAaGG							
VH1-69*12	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAGGG							
VH1-69*13	GGAGGCACCTTCAGCAGCTATGCTATCAGCTGGGTGCGACAGGCCCTGGACAAGGGCTTGAGTGGATGGGAGGG							

	160	170	180	190	200	210	220
VH1-69*01	ATCATCCCTATCTTTGGTACAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACGAATCC						
VH1-69*02	ATCATCCCTATCCTTTGGTAtAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACaAATCC						
VH1-69*03	ATCATCCCTATCTTTGGTACAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACGAATCC						
VH1-69*04	ATCATCCCTATCCTTTGGTAtAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACaAATCC						
VH1-69*05	ATCATCCCTATCTTTGGTACAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCaCGGACGAATCC						
VH1-69*06	ATCATCCCTATCTTTGGTACAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACaAATCC						
VH1-69*07	ATCATCCCTATCTTTGGTACAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACGAATCC						
VH1-69*08	ATCATCCCTATCCTTTGGTACAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACaAATCC						
VH1-69*09	ATCATCCCTATCCTTTGGTAtAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACaAATCC						
VH1-69*10	ATCATCCCTATCCTTTGGTAtAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACaAATCC						
VH1-69*11	ATCATCCCTATCCTTTGGTACAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACGAATCC						
VH1-69*12	ATCATCCCTATCTTTGGTACAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACGAATCC						
VH1-69*13	ATCATCCCTATCTTTGGTACAGCAAACTACGCACAGAAGTTCCAGGGCAGAGTCACGATTACCGCGGACGAATCC						

	230	240	250	260	270	280	290
VH1-69*01	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA						
VH1-69*02	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAA---						
VH1-69*03	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA---						
VH1-69*04	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA---						
VH1-69*05	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA---						
VH1-69*06	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA---						
VH1-69*07	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAG-----						
VH1-69*08	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA						
VH1-69*09	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA						
VH1-69*10	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA						
VH1-69*11	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA						
VH1-69*12	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA						
VH1-69*13	ACGAGCACAGCCTACATGGAGCTGAGCAGCCTGAGATCTGAGGACACGGCCGTGTATTACTGTGCGAGAGAA						

FIG. 5

VH1-69*01	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*02	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*03	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*04	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*05	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*06	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*07	-----KPGSSSVKVSCKASG	30	40	50	60
VH1-69*08	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*09	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*10	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*11	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*12	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60
VH1-69*13	QVQLVQSGAEVKKPGSSSVKVSCKASG	30	40	50	60

VH1-69*01	AQKFQGRVTITADESTSTAYMELSSLRSEDTAVY	70	80	90	100
VH1-69*02	AQKFQGRVTITADkSTSTAYMELSSLRSEDTAVY	70	80	90	100
VH1-69*03	AQKFQGRVTITADESTSTAYMELSSLRSDDT	70	80	90	100
VH1-69*04	AQKFQGRVTITADkSTSTAYMELSSLRSEDTAVY	70	80	90	100
VH1-69*05	AQKFQGRVTITtDESTSTAYMELSSLRSEDTAVY	70	80	90	100
VH1-69*06	AQKFQGRVTITADkSTSTAYMELSSLRSEDTAVY	70	80	90	100
VH1-69*07	AQKFQGRVTITADESTSTAYMELSSLRSE	70	80	90	100
VH1-69*08	AQKFQGRVTITADkSTSTAYMELSSLRSEDTAVY	70	80	90	100
VH1-69*09	AQKFQGRVTITADkSTSTAYMELSSLRSEDTAVY	70	80	90	100
VH1-69*10	AQKFQGRVTITADkSTSTAYMELSSLRSEDTAVY	70	80	90	100
VH1-69*11	AQKFQGRVTITADESTSTAYMELSSLRSEDTAVY	70	80	90	100
VH1-69*12	AQKFQGRVTITADESTSTAYMELSSLRSEDTAVY	70	80	90	100
VH1-69*13	AQKFQGRVTITADESTSTAYMELSSLRSEDTAVY	70	80	90	100

FIG. 6

% IDENTITY													
V _H 1-69 Allele	V _H 1-69*01	V _H 1-69*02	V _H 1-69*03	V _H 1-69*04	V _H 1-69*05	V _H 1-69*06	V _H 1-69*07	V _H 1-69*08	V _H 1-69*09	V _H 1-69*10	V _H 1-69*11	V _H 1-69*12	V _H 1-69*13
V _H 1-69*01	100	94.9	91.8	95.9	99	99	77.6	95.9	95.9	96.9	98	100	100
V _H 1-69*02	95.9	100	86.7	99	93.9	95.9	74.5	99	99	98	96.9	94.9	94.9
V _H 1-69*03	92.9	88.8	100	87.8	90.8	90.8	82.4	87.8	87.8	88.8	89.8	91.8	91.8
V _H 1-69*04	95.9	100	88.8	100	94.9	96.9	75.5	98	100	99	98	95.9	95.9
V _H 1-69*05	100	95.9	92.9	95.9	100	98	76.5	94.9	94.9	95.9	96.9	99	99
V _H 1-69*06	99.0	96.9	91.8	96.9	99	100	76.5	96.9	96.9	98	96.9	99	99
V _H 1-69*07	77.6	75.5	83.5	75.5	77.6	76.5	100	75.5	75.5	74.5	77.6	77.6	77.6
V _H 1-69*08	96.9	99	89.8	99	96.9	98	76.5	100	98	96.9	98	95.9	95.9
V _H 1-69*09	95.9	100	88.8	100	95.9	96.9	75.5	99	100	99	98	95.9	95.9
V _H 1-69*10	96.9	99	89.8	99	96.9	98	74.5	98	99	100	96.9	96.9	96.9
V _H 1-69*11	98	98	90.8	98	98	96.9	77.6	99	98	96.9	100	98	98
V _H 1-69*12	100	95.9	92.9	95.9	100	99	77.6	96.9	95.9	96.9	98	100	100
V _H 1-69*13	100	95.9	92.9	95.9	100	99.0	77.6	96.9	95.9	96.9	98	100	100
% SIMILARITY													

FIG. 7

	310	320	330
VH1-2*01	G A C A C G G C C G T G T A T T A C	T G T G C G G A G A	--
VH1-2*02	G A C A C G G C C G T G T A T T A C	T G T G C G G A G A A	
VH1-2*03	G A C A C G G C C G T G T A T T A C	T G T G C G G A G A A	
VH1-2*04	G A C A C G G C C G T G T A T T A C	T G T G C G G A G A	--
VH1-2*05	G A C A C -- C t G T G G A g - A C T	- C G C G A	----
	G A C A C G G C C G T G T A T T A C	T G T G C G G A G A	

VH1-2*01 VH1-2*02 VH1-2*03 VH1-2*04 VH1-2*05	10	20	30	40	50
	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG
	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG
	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG
	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG	QVQLVQSGAEVKKPKPGASVKVSCKASGYTFTGYYMHWVRQAPGGQGLEWMG
VH1-2*01 VH1-2*02 VH1-2*03 VH1-2*04 VH1-2*05	60	70	80	90	
	INPN SGGTNYAQKFQGRVTS TRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTM TRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR
	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR
	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR
	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR	INPN SGGTNYAQKFQGRVTRDTSISSTAYMELSRLRSDDDTVVYCAR

FIG. 9

% IDENTITY					
V _H 1-2 Allele	V _H 1-2*01	V _H 1-2*02	V _H 1-2*03	V _H 1-2*04	V _H 1-2*05
V _H 1-2*01	100	96.9	94.9	95.9	99.0
V _H 1-2*02	96.9	100	98.0	99.0	98.0
V _H 1-2*03	94.9	98.0	100	96.9	95.9
V _H 1-2*04	95.9	99.0	96.9	100	96.9
V _H 1-2*05	99.0	98.0	95.9	96.9	100
% SIMILARITY					

FIG. 10