

Fig. 1. Overview of methodology

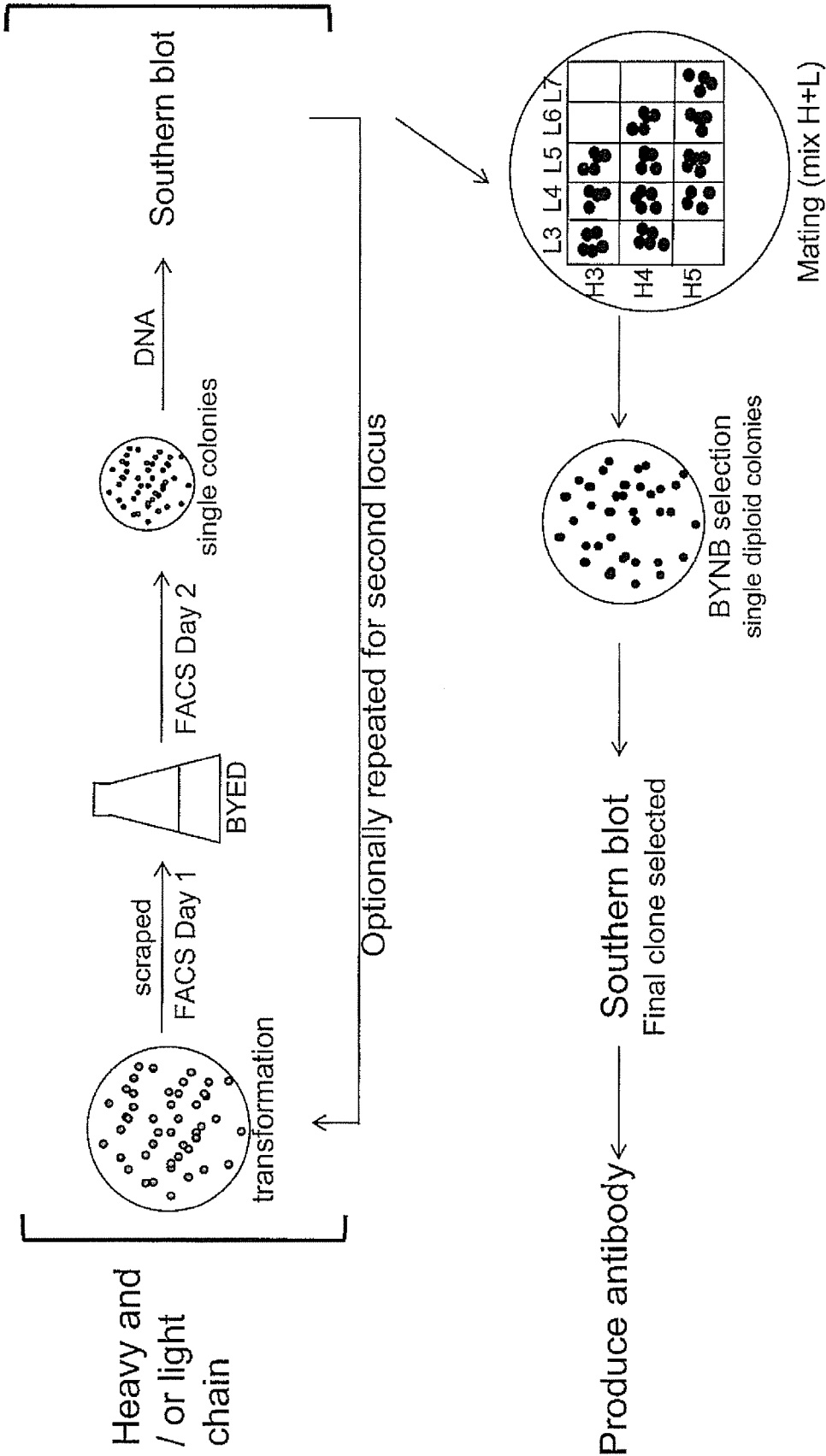
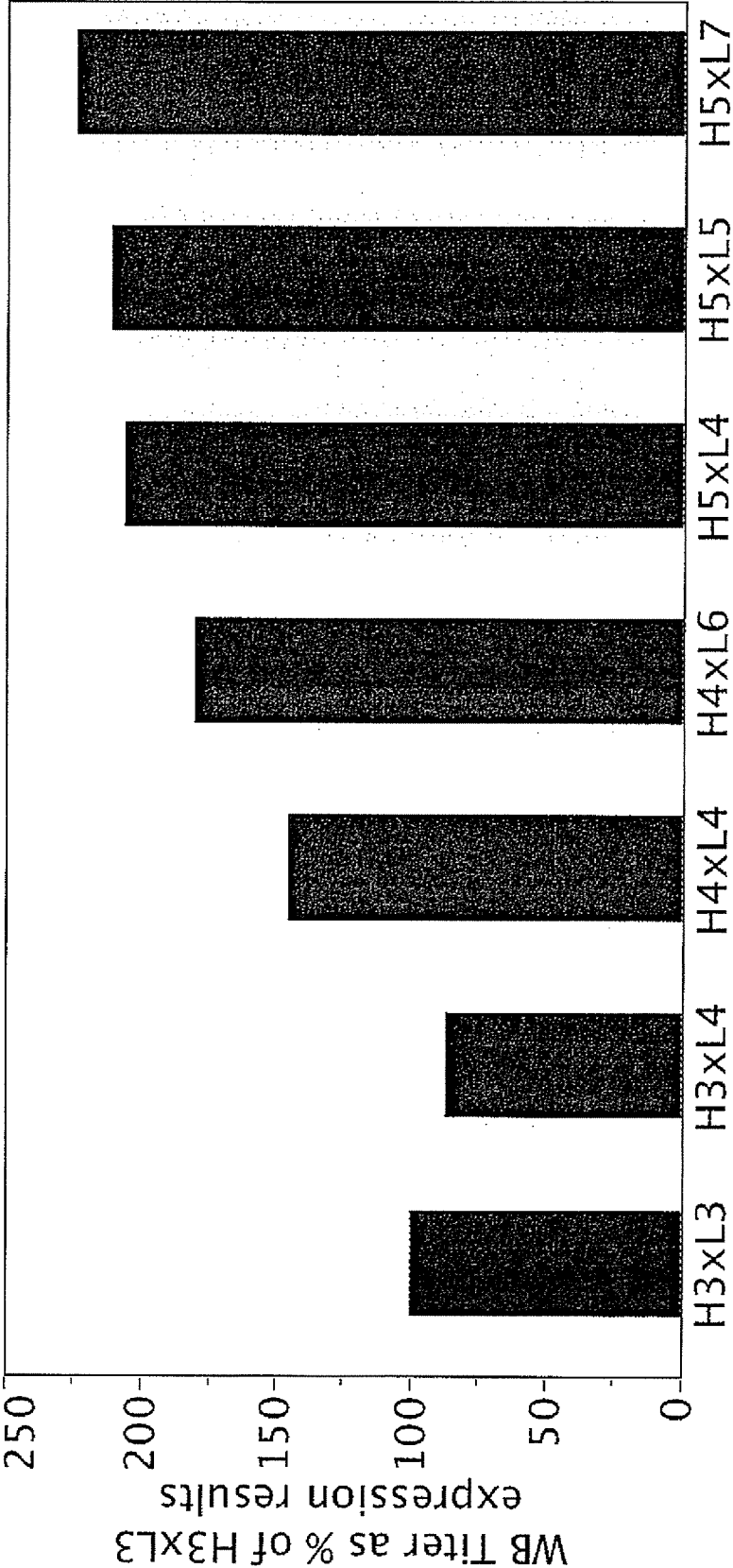


Fig. 2. Ab-A yield



Ab3 heavy chain and light chain copy number

Fig. 3. Ab-B yield

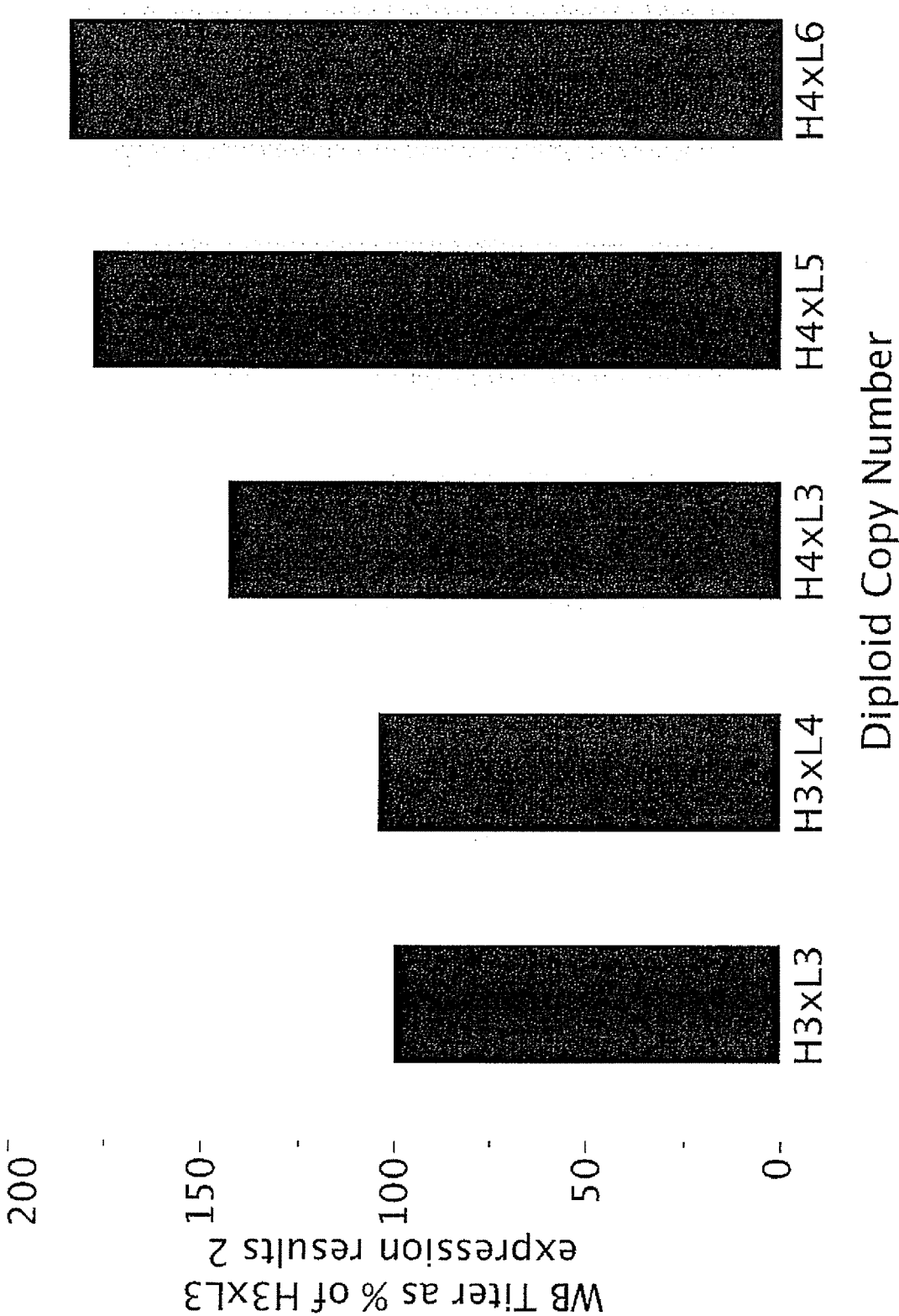
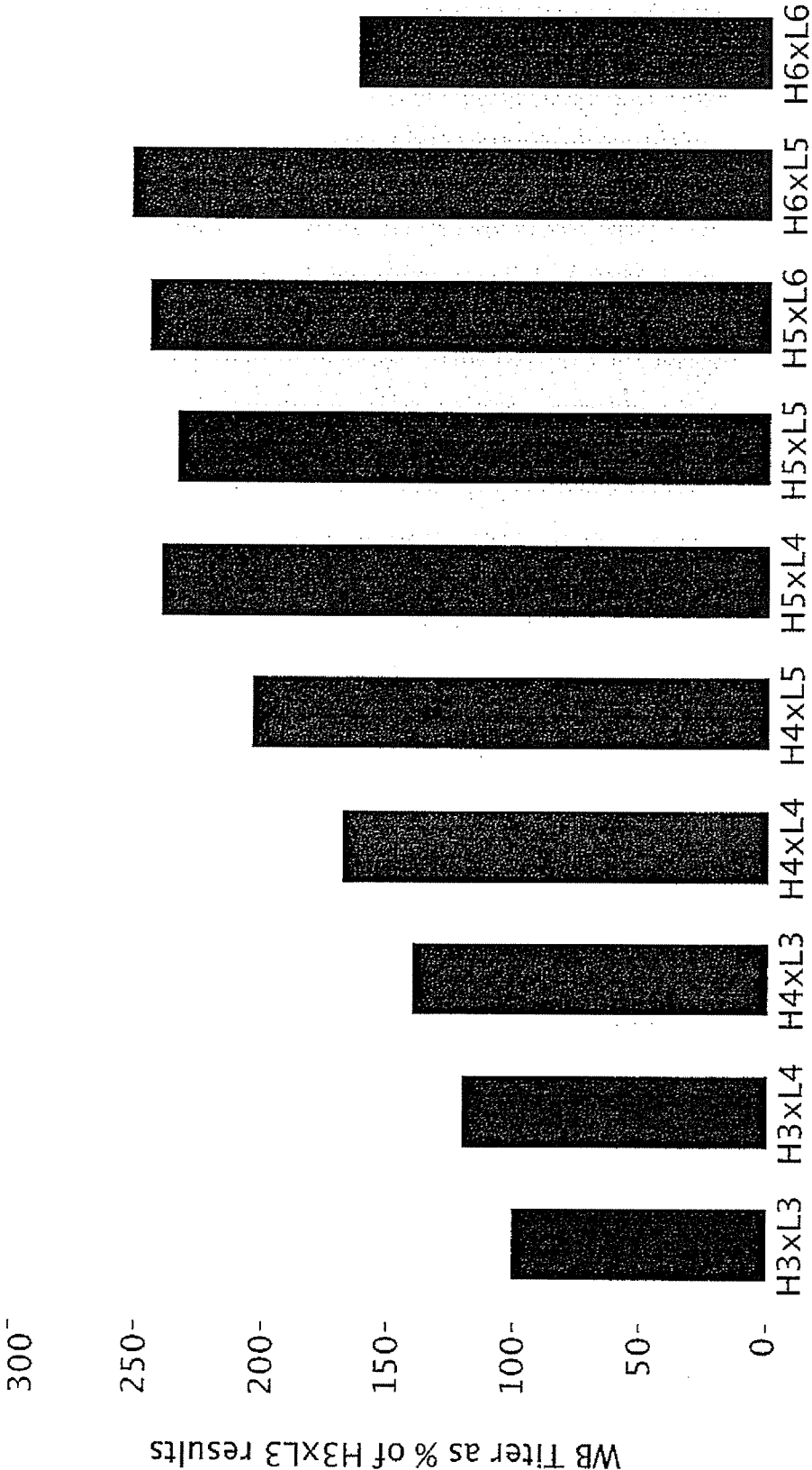


FIG. 4. Ab-C Yield



Ab-C heavy chain and light chain copy number

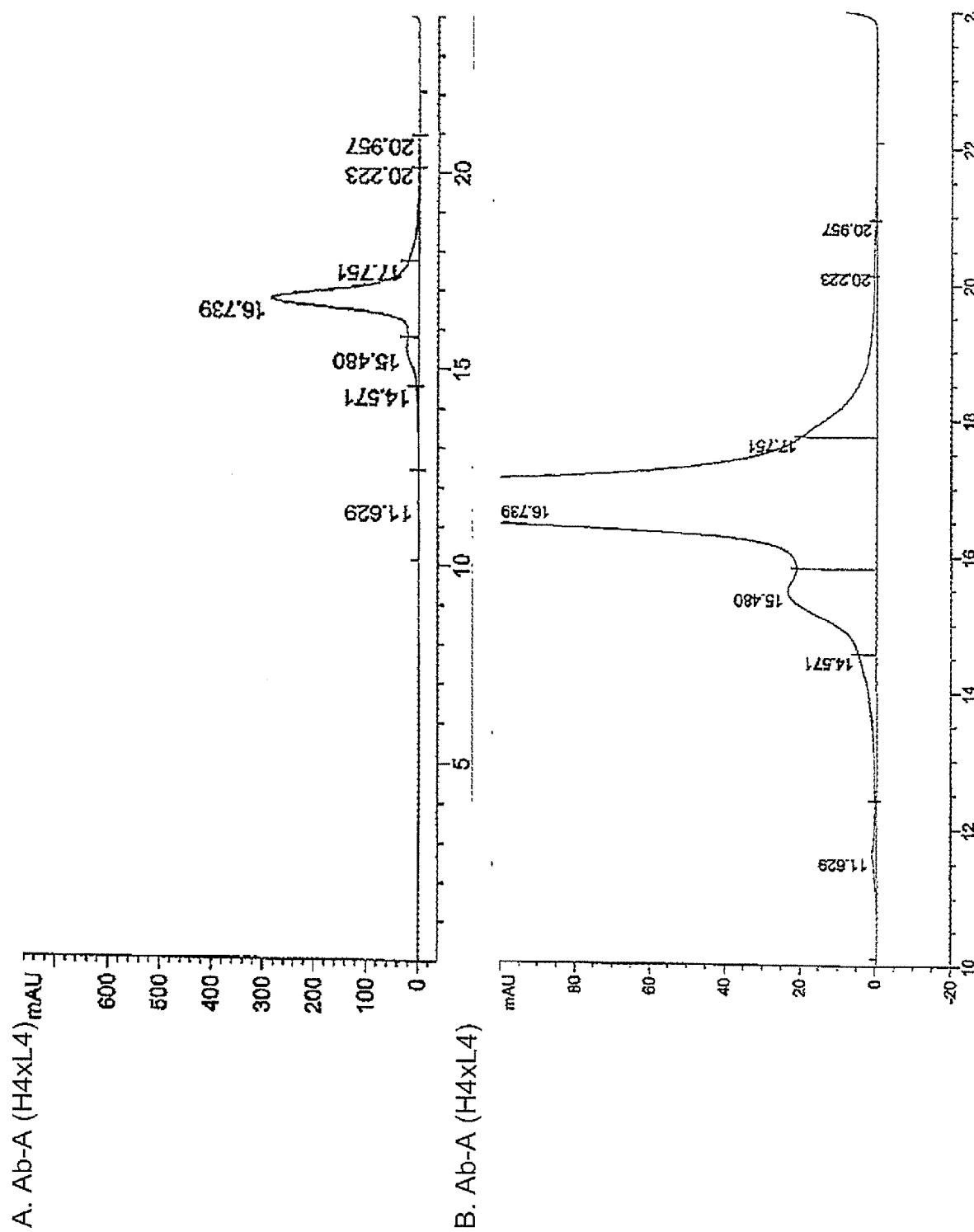
FIG. 5. Ab-A Purity by HPLC

FIG. 5. (continued)

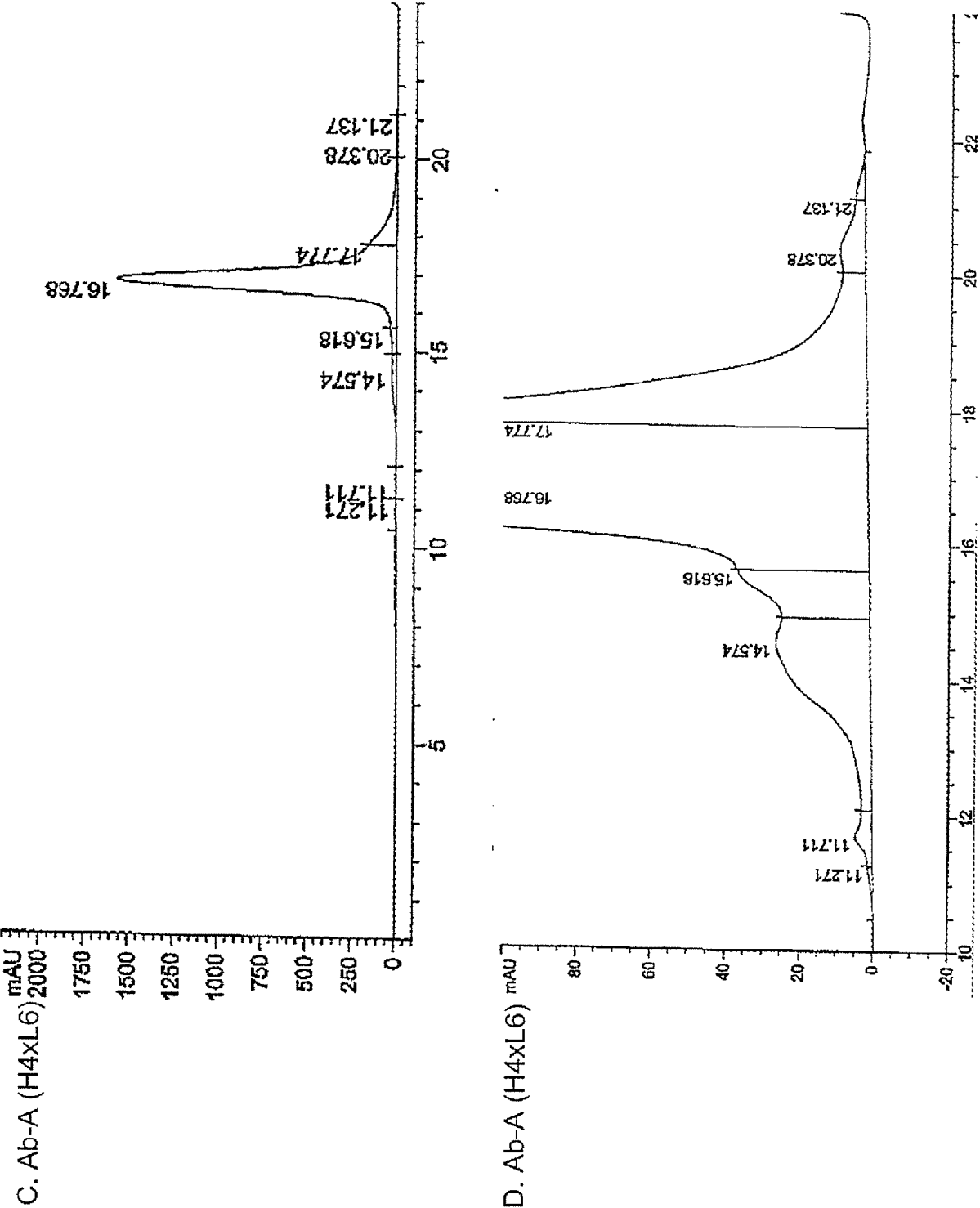


FIG. 5. (continued)

E.

Retention time	Ab-A-H4xL4 % of total signal	Ab-A-H4xL6 % of total signal
0 to 14.6 min	2.07	3.24
15.5	8.81	1.58
16.7	83.71	86.97
18 to 22 min	5.42	8.19

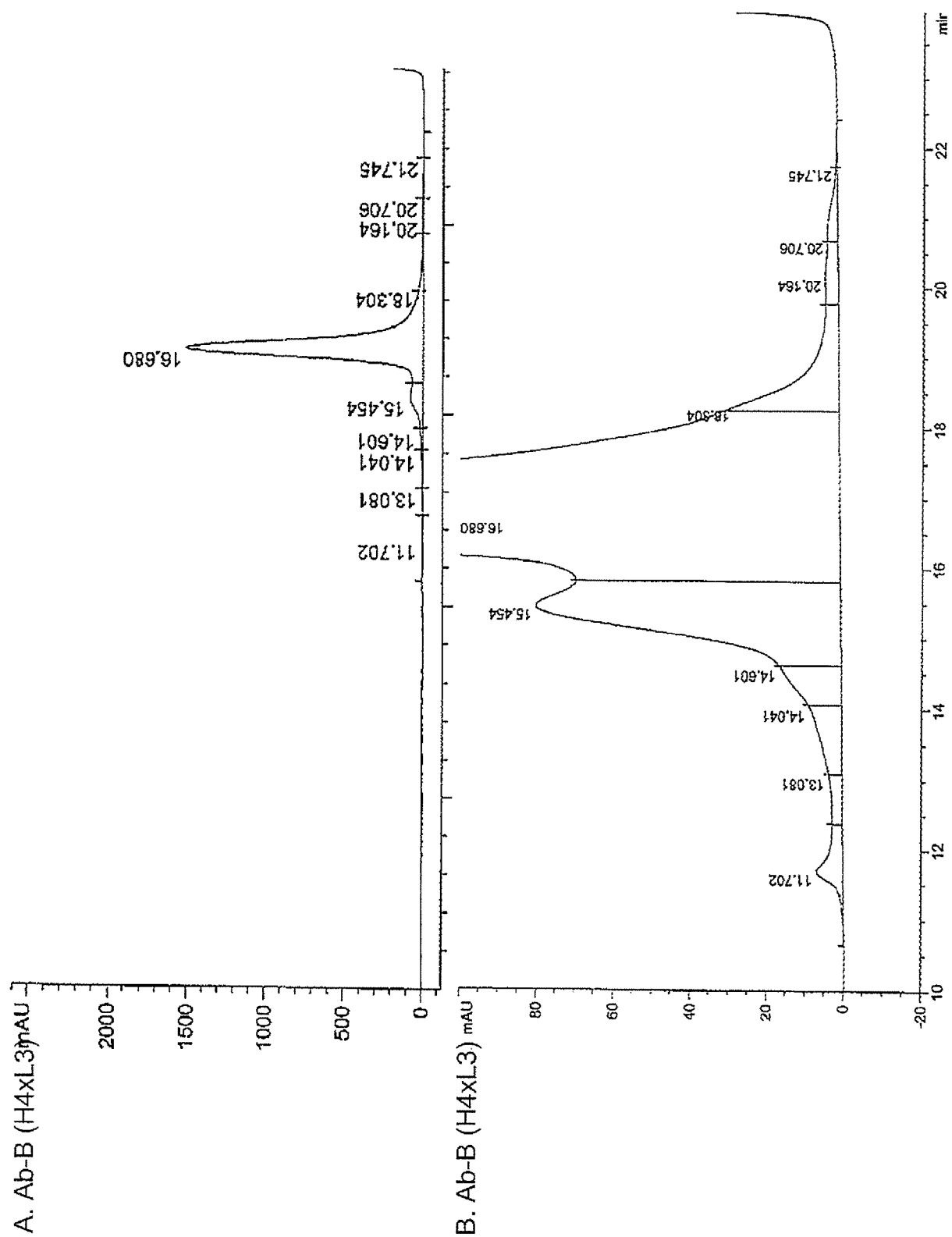
FIG. 6. Ab-B Purity by HPLC

FIG. 6. (continued)

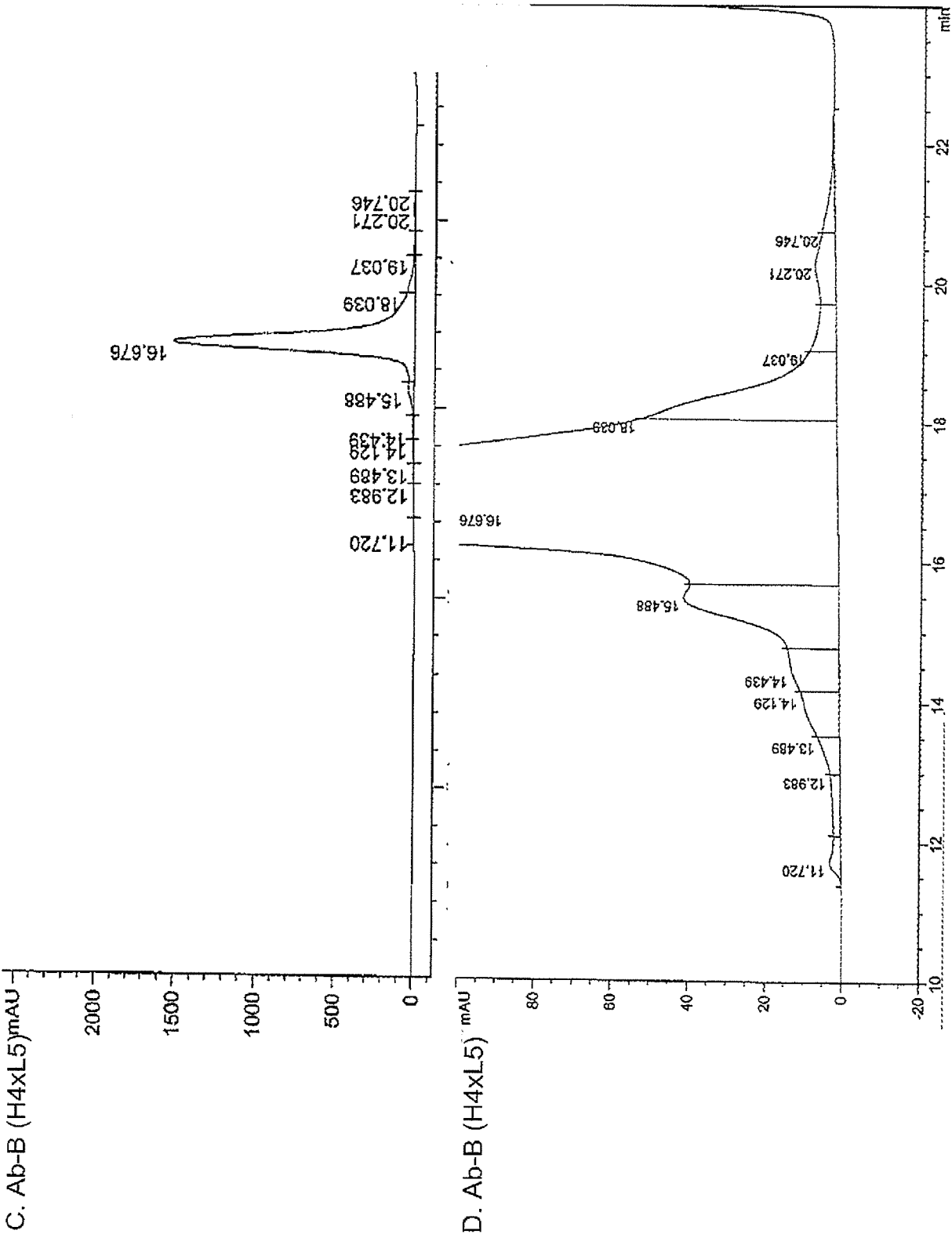


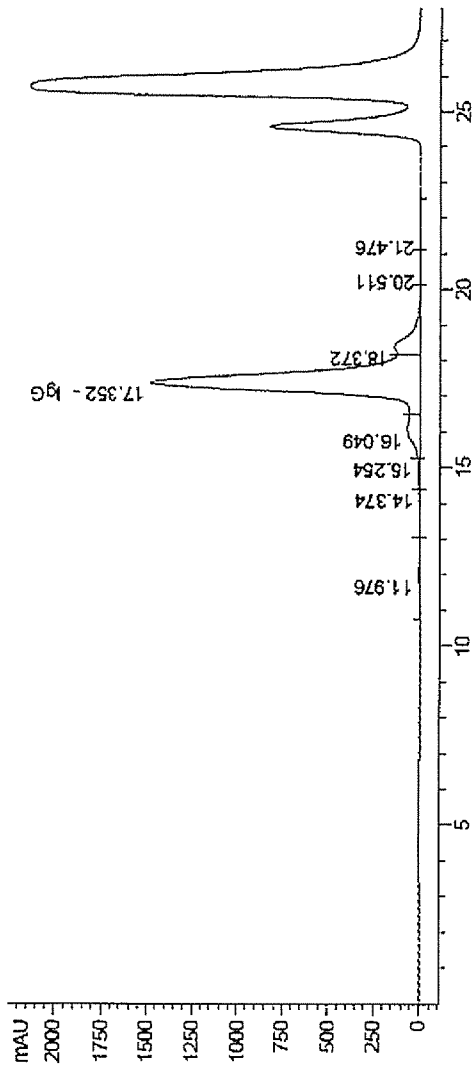
FIG. 6. (continued)

E.

Retention time	Ab-B-H4xL3 % of total signal	Ab-B-H4xL5 % of total signal
0 to 14.6 min	1.82	1.83
15.5	6.26	2.54
16.7	90.05	92.18
18 to 22 min	1.87	3.46

FIG. 7. Ab-C Purity by HPLC

A. Ab-C
(H3XL3)



B. Ab-C
(H3XL3)

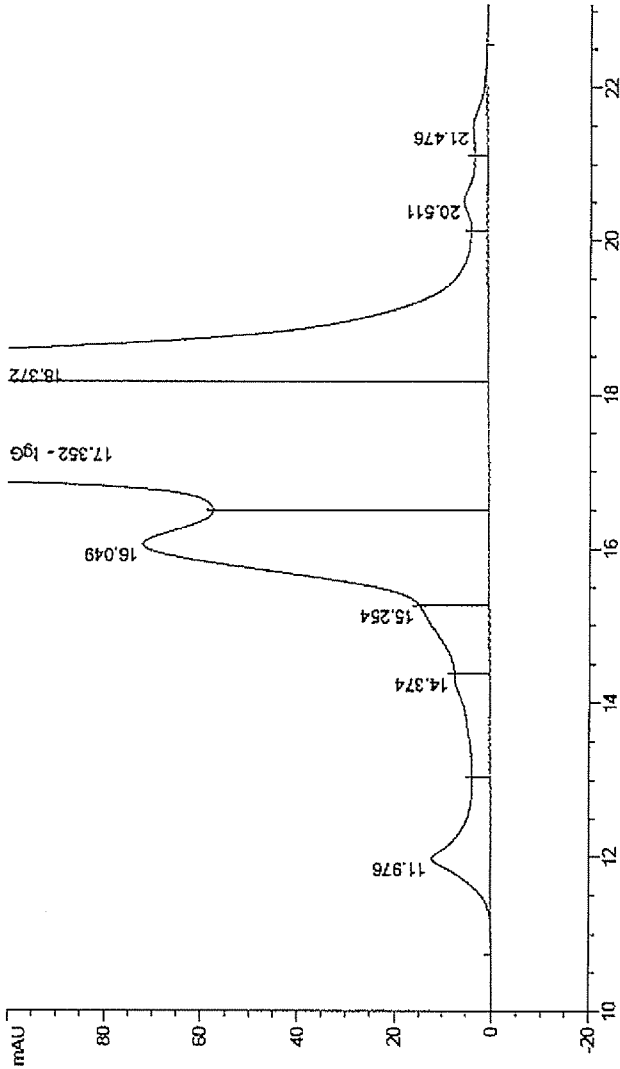
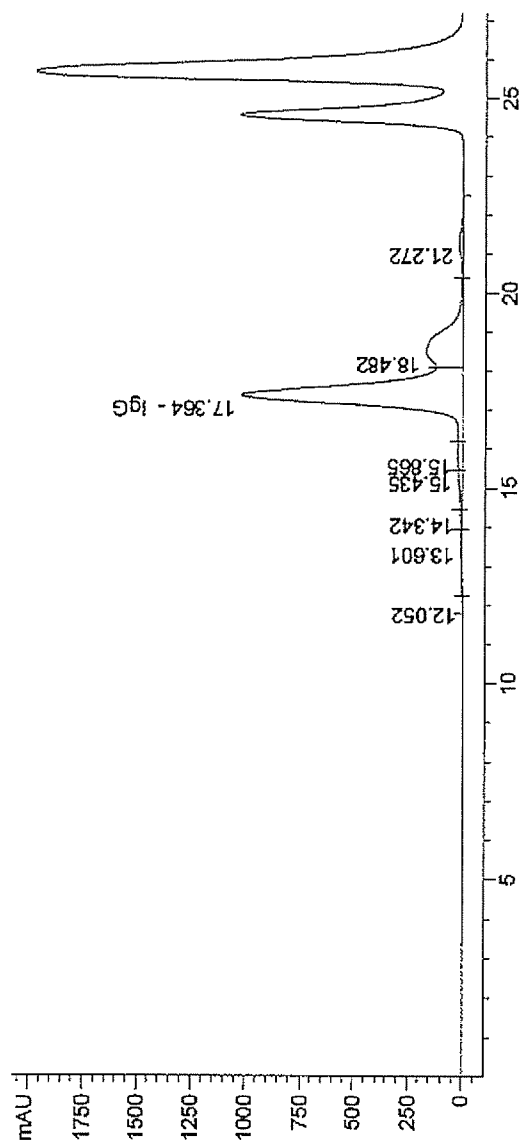


FIG. 7. (continued)

C. Ab-C
(H5xL5)



D. Ab-C
(H5xL5)

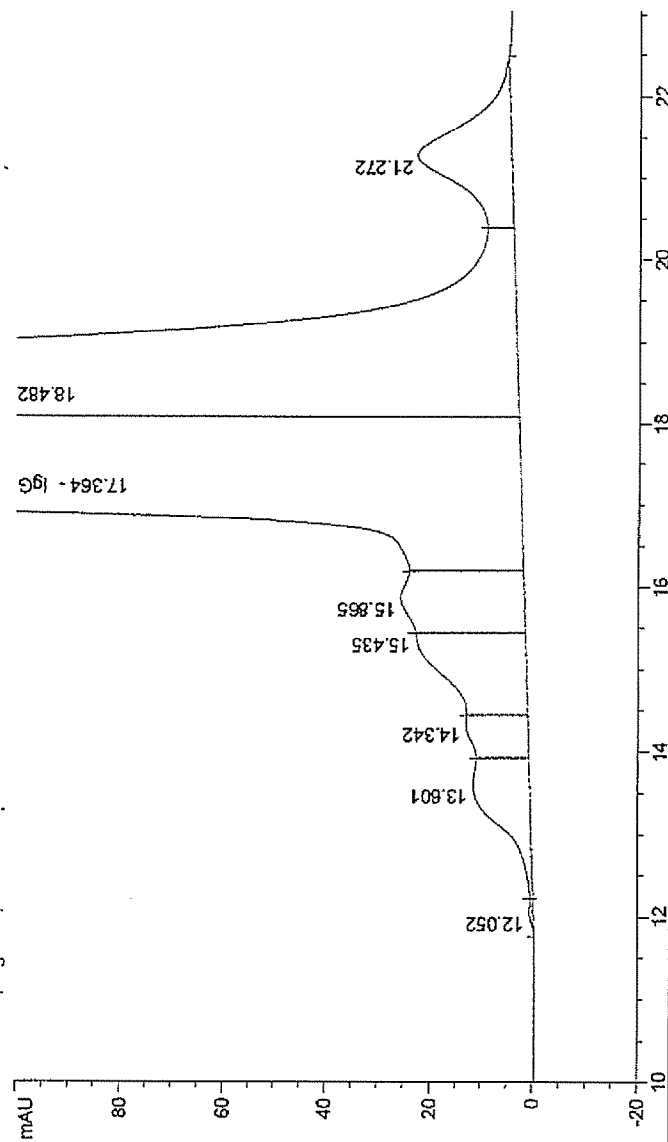


FIG. 7. (continued)

E.

Retention Time	Ab-C-H3xL3 % of Total Signal	Ab-C-H5xL5 % of Total Signal
0 to 14.4 min	1.54	1.92
15.2 to 16.1 min	6.55	4.00
17.4 min	83.48	72.16
18 to 22 min	0.52	21.92

FIG. 8. Ab-A Purity

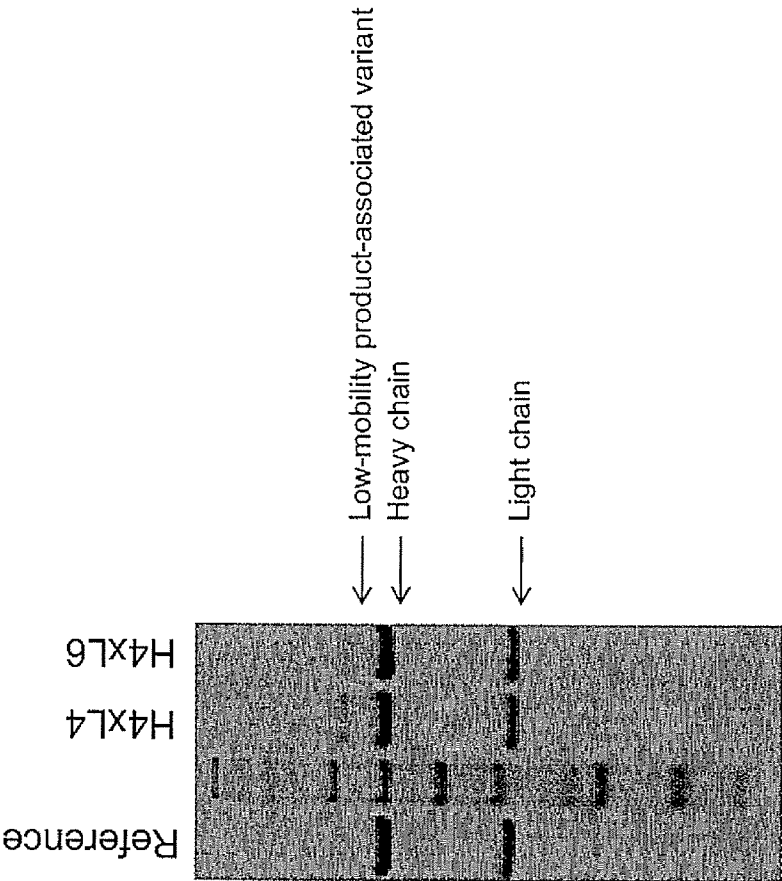


FIG. 9. Ab-B Purity

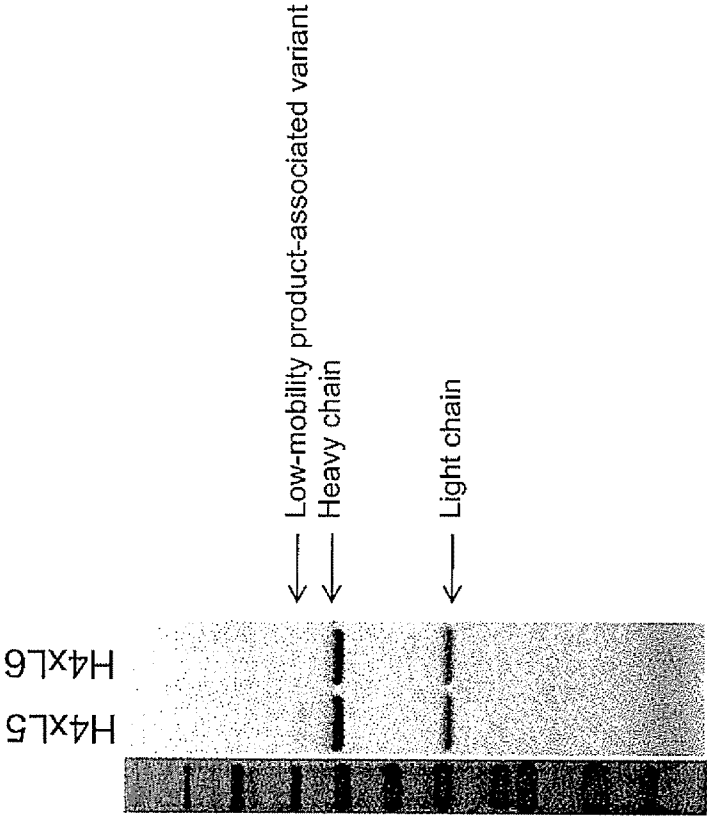


FIG. 10. Ab-C Purity

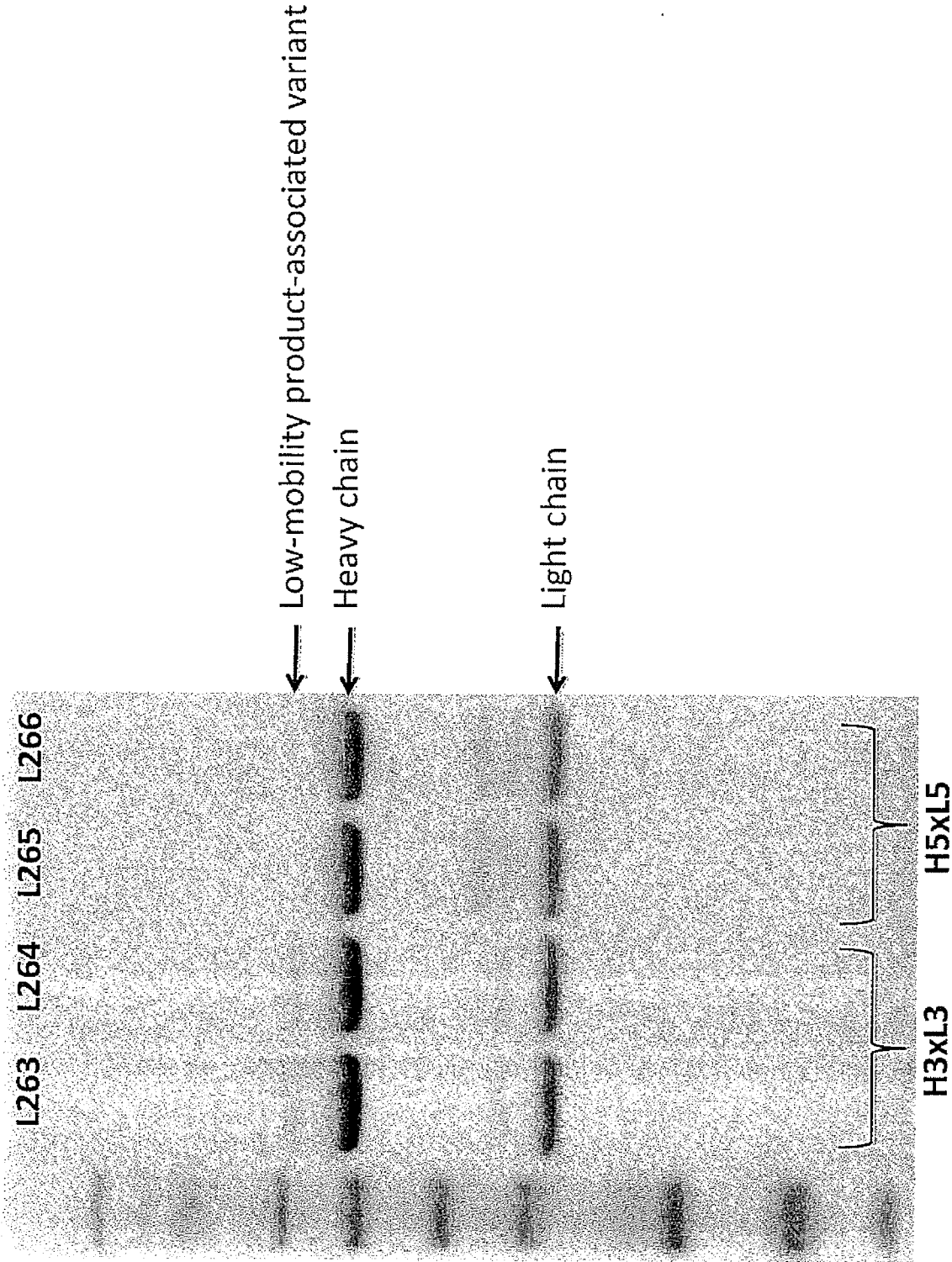


FIG. 11. Identity of Ab-B species: Low-mobility impurity is related to human Fc and is glycosylated.

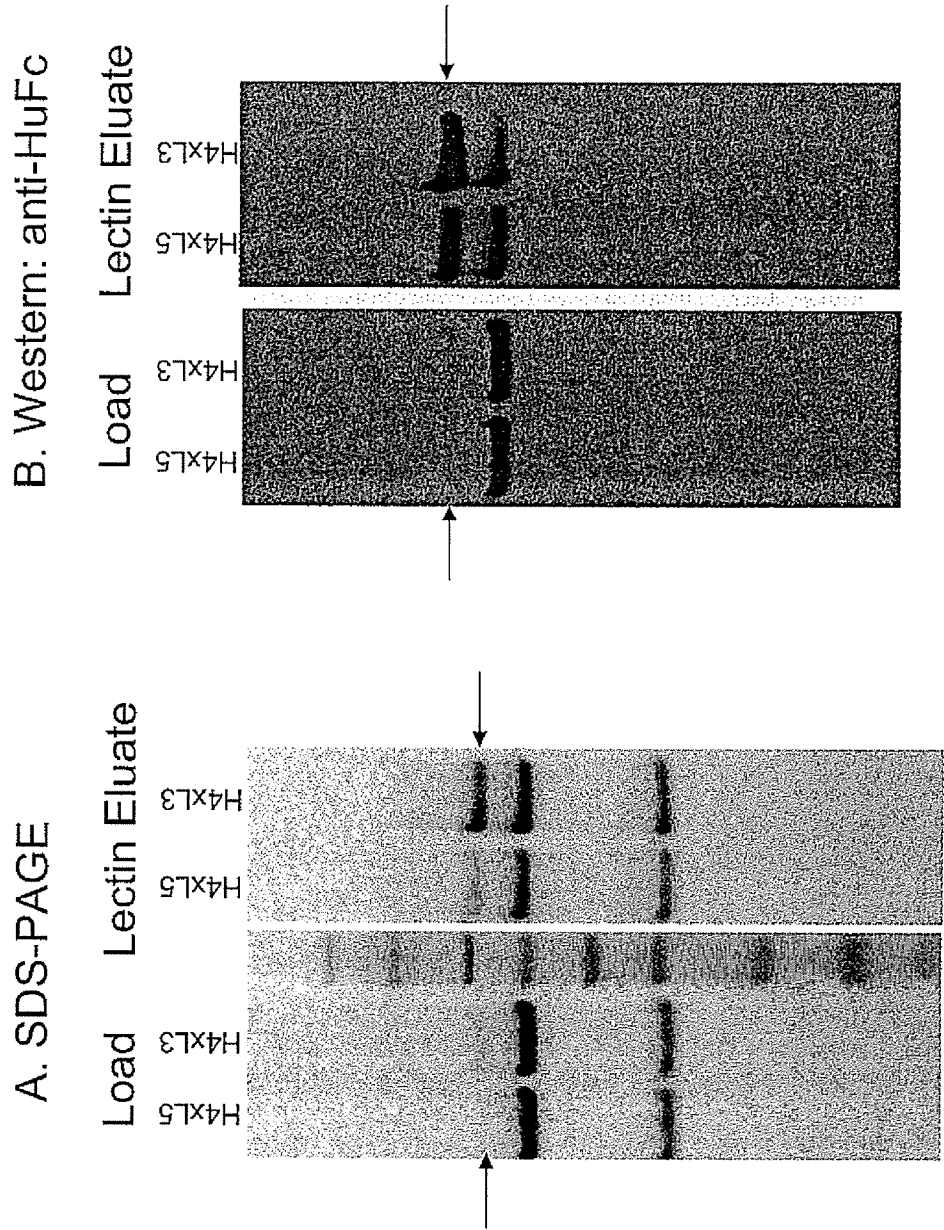


FIG. 12

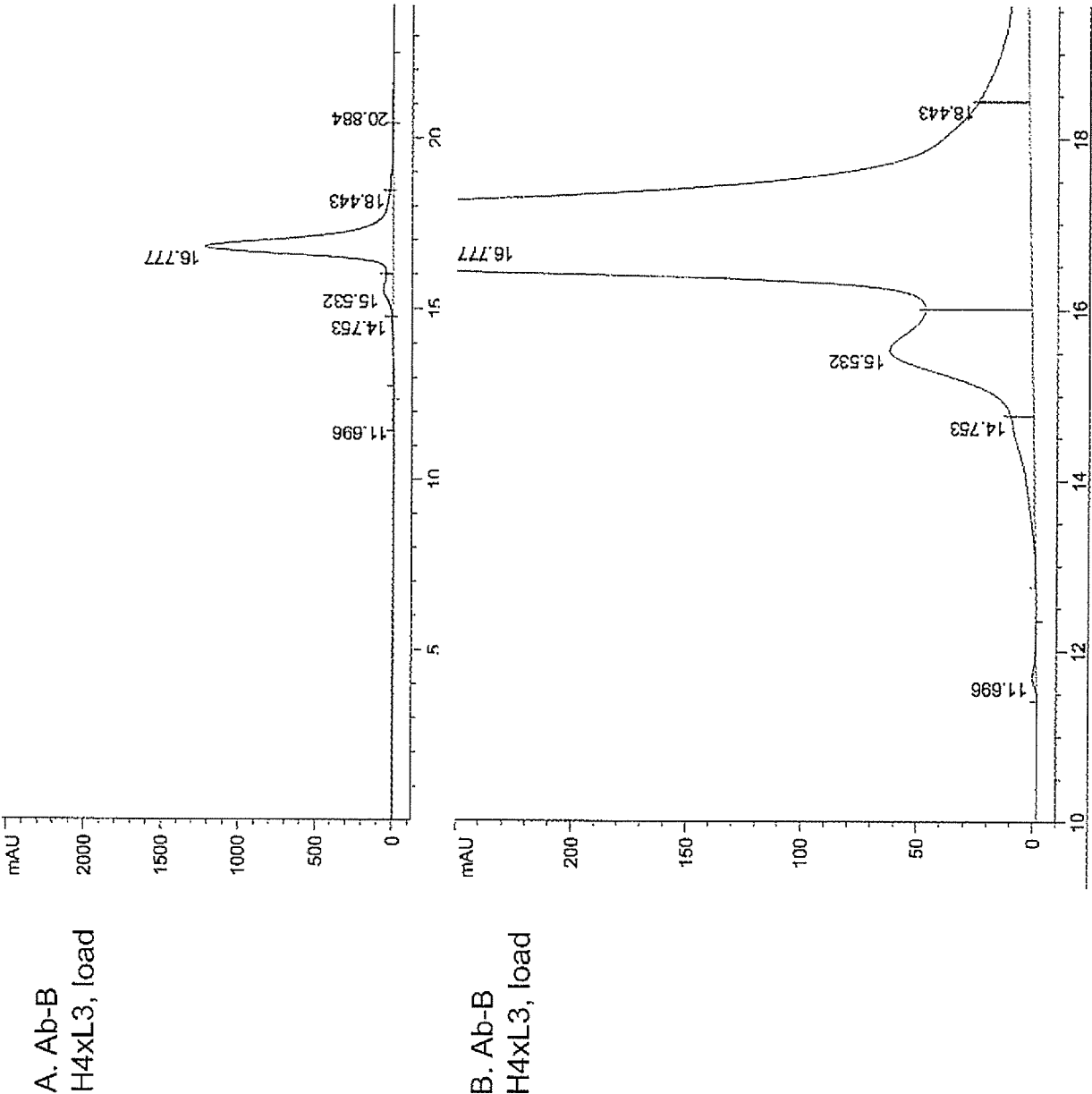


FIG. 12 (continued)

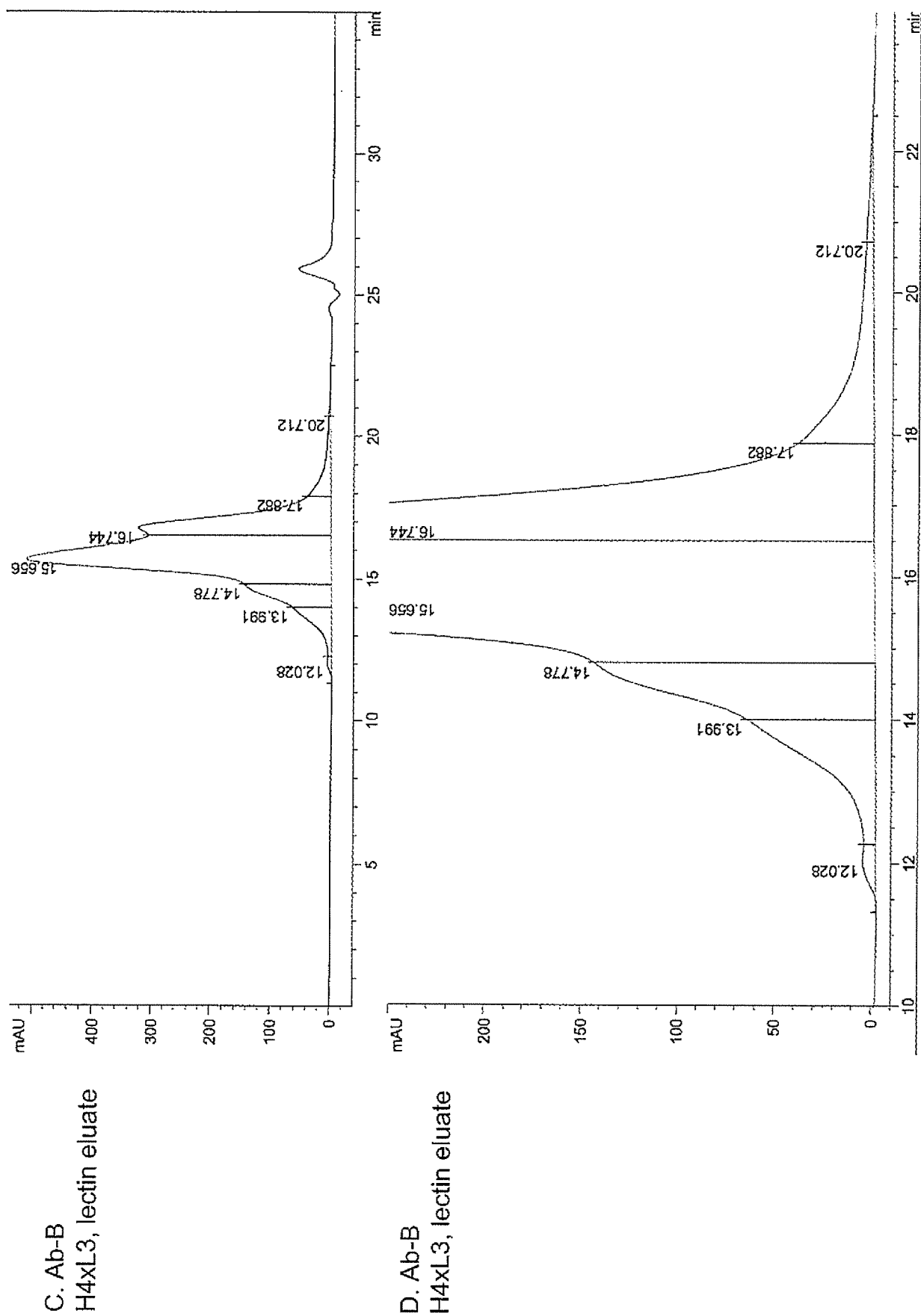
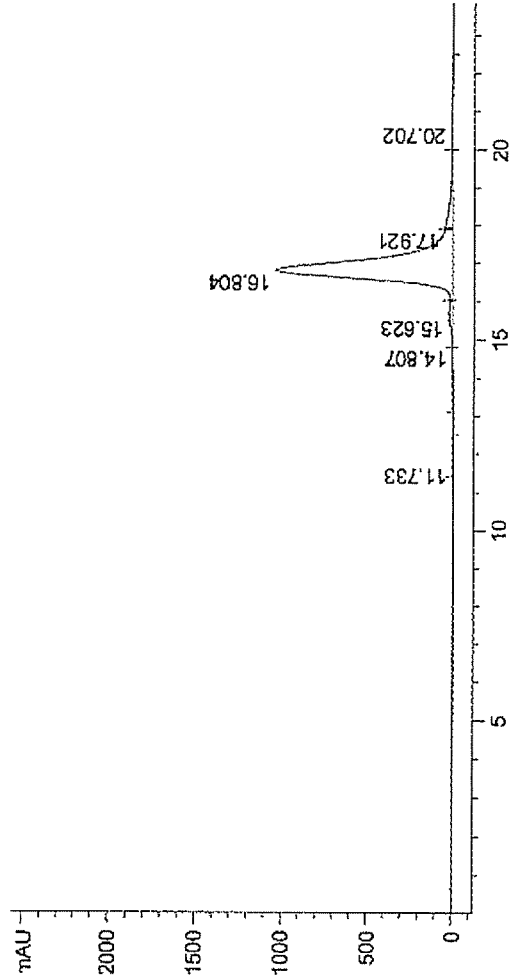


FIG. 13

A. Ab-B
H4xL5, load



B. Ab-B
H4xL5, load

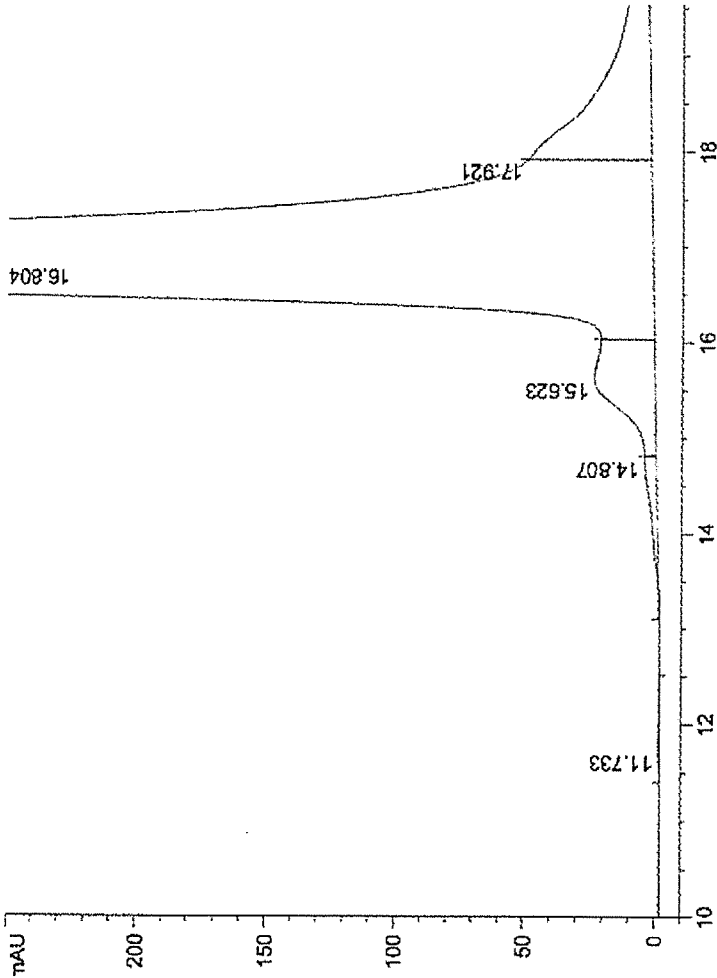
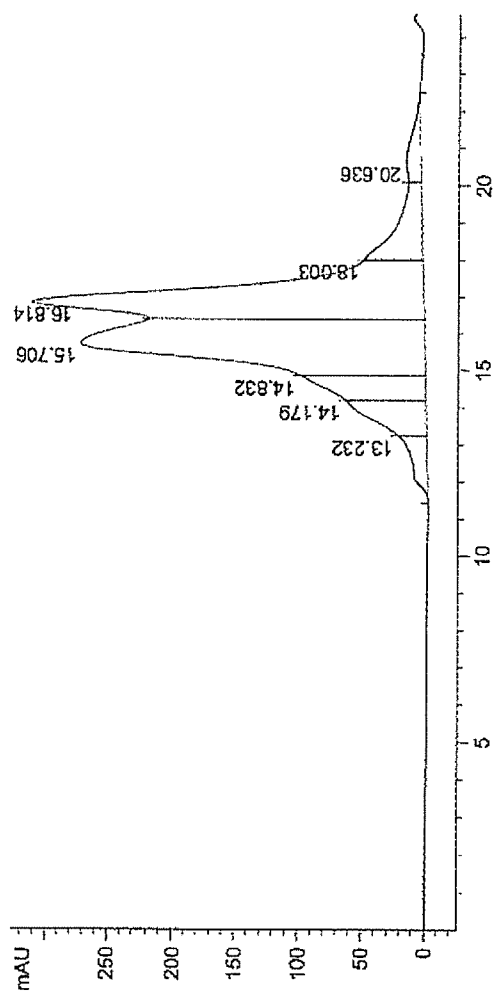


FIG. 13

C. Ab-B
H4xL5, lectin eluate



D. Ab-B
H4xL5, lectin eluate

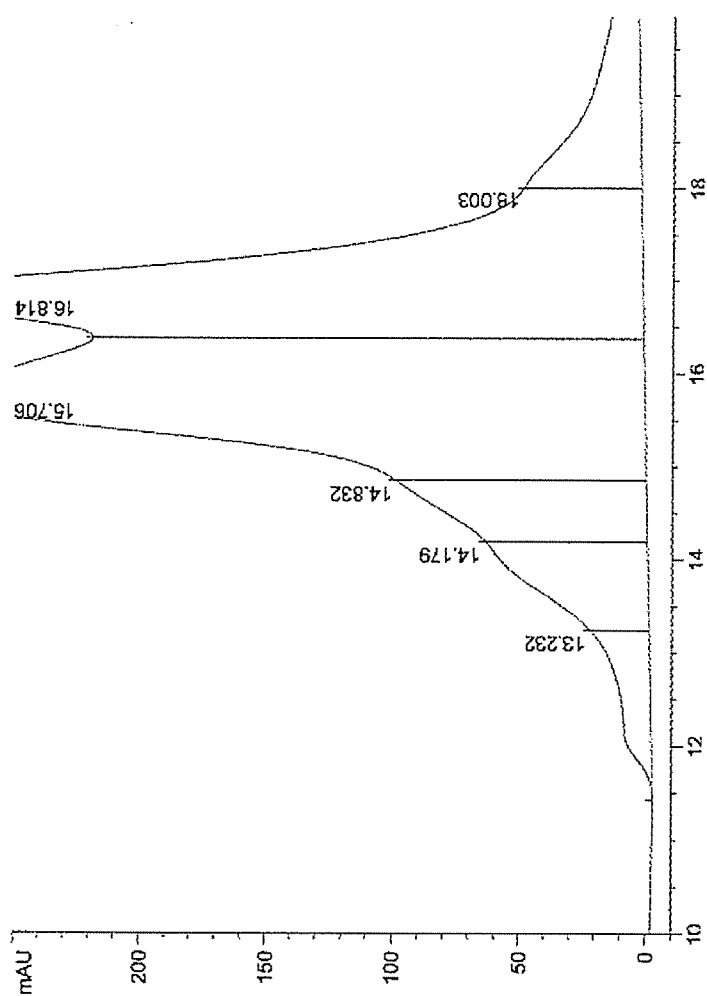
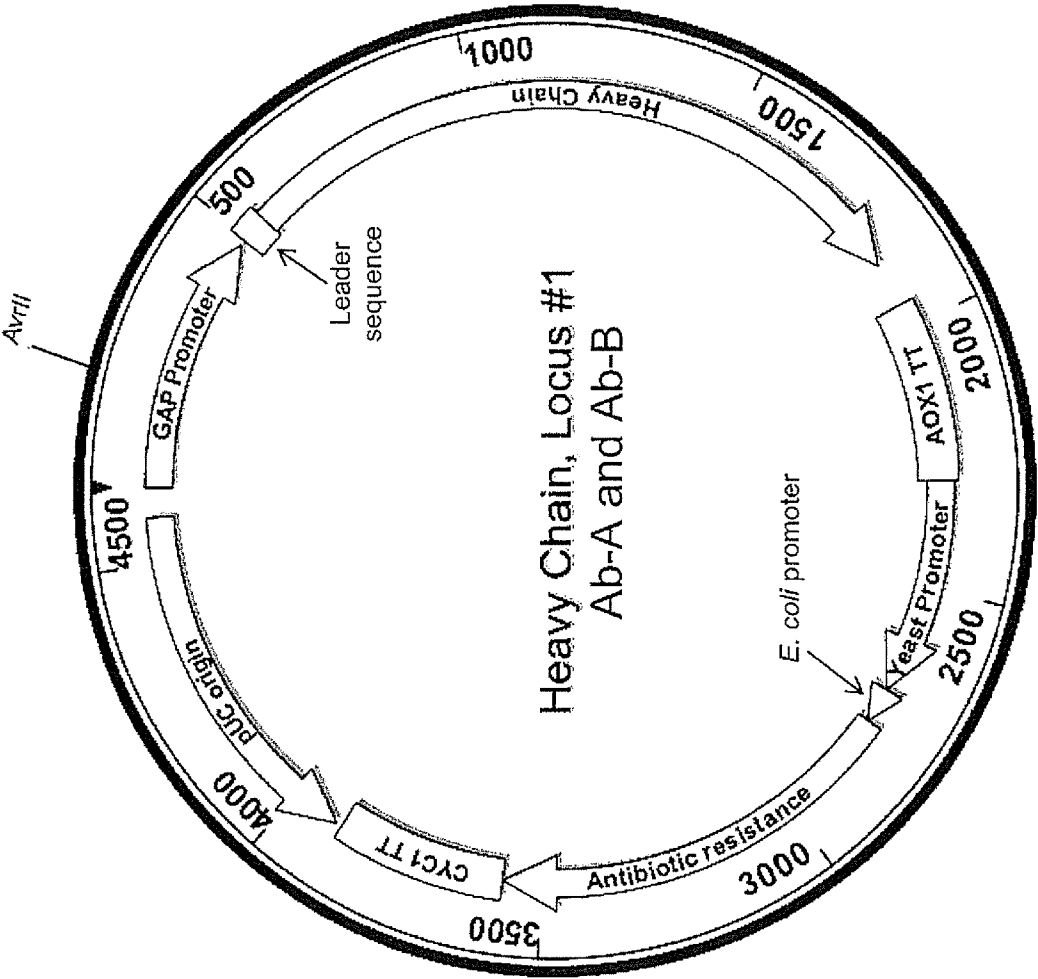


FIG. 14



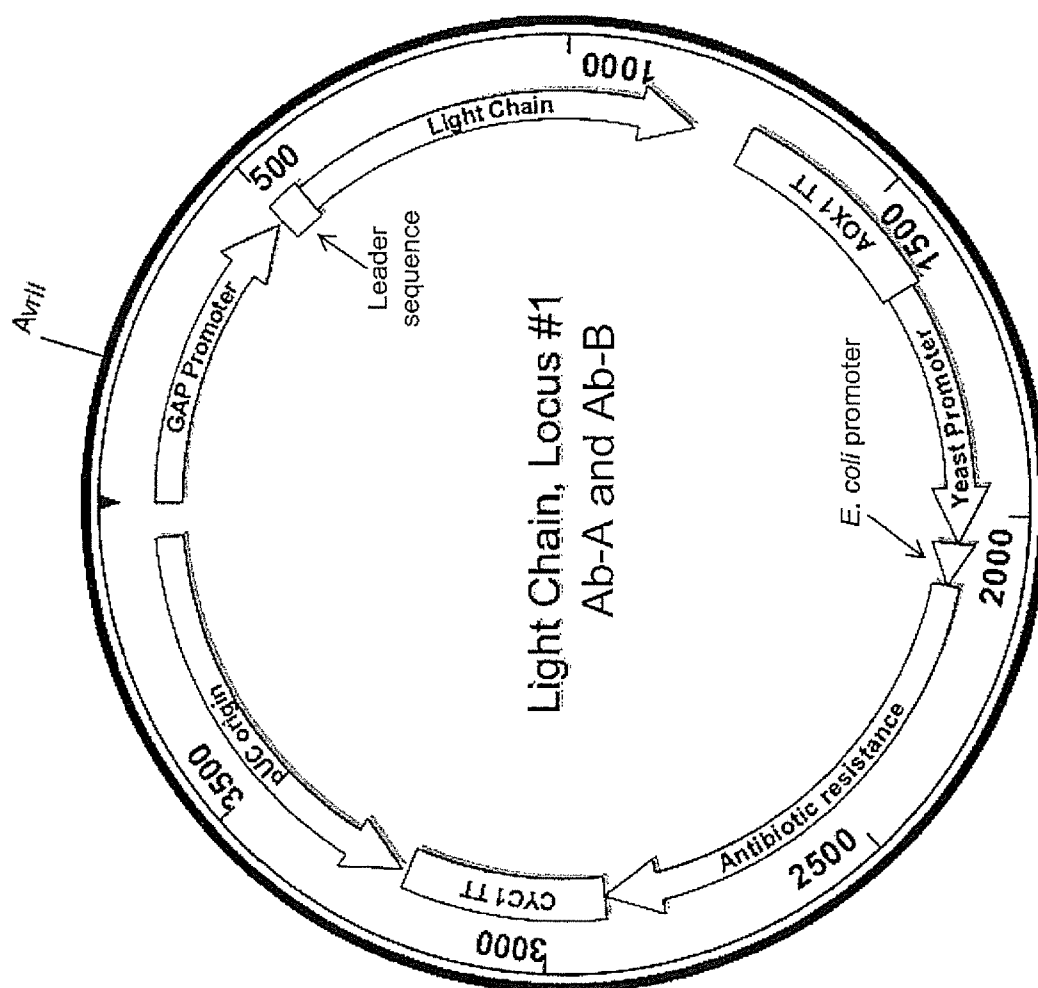


FIG. 15

FIG. 16

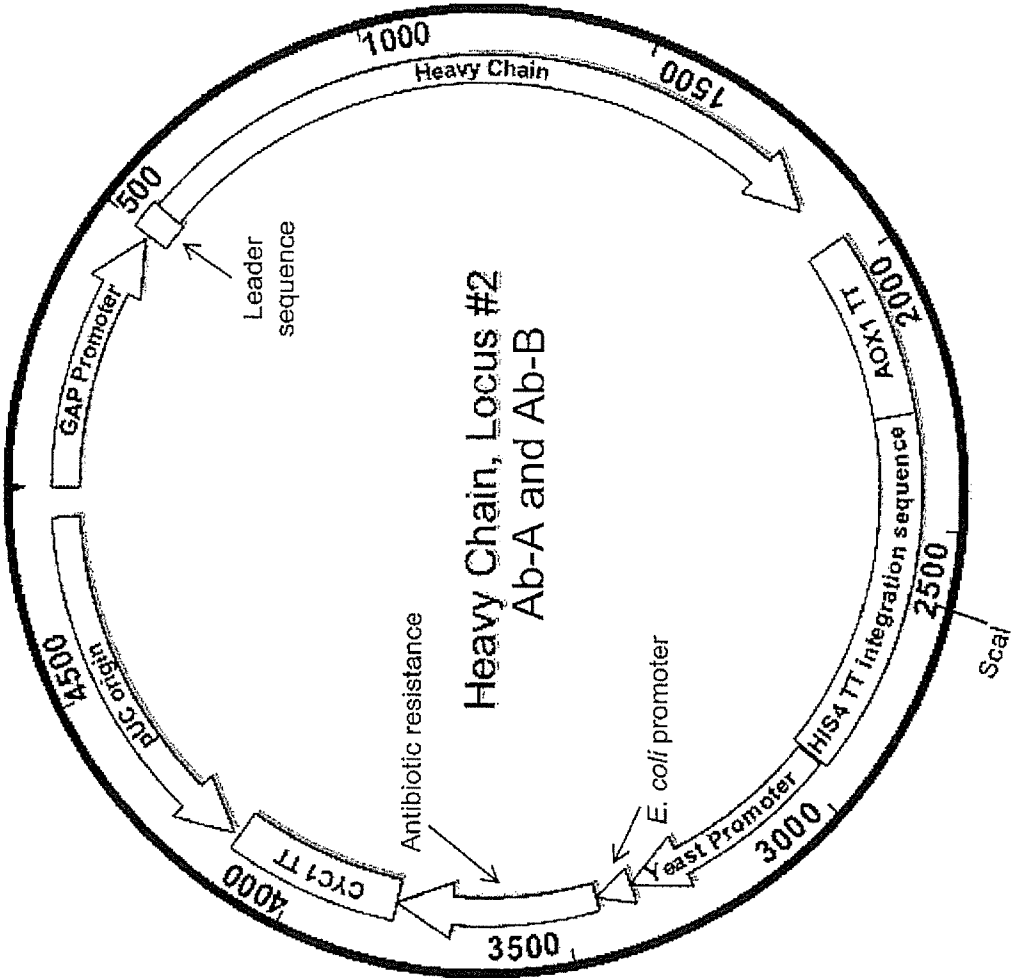


FIG. 17

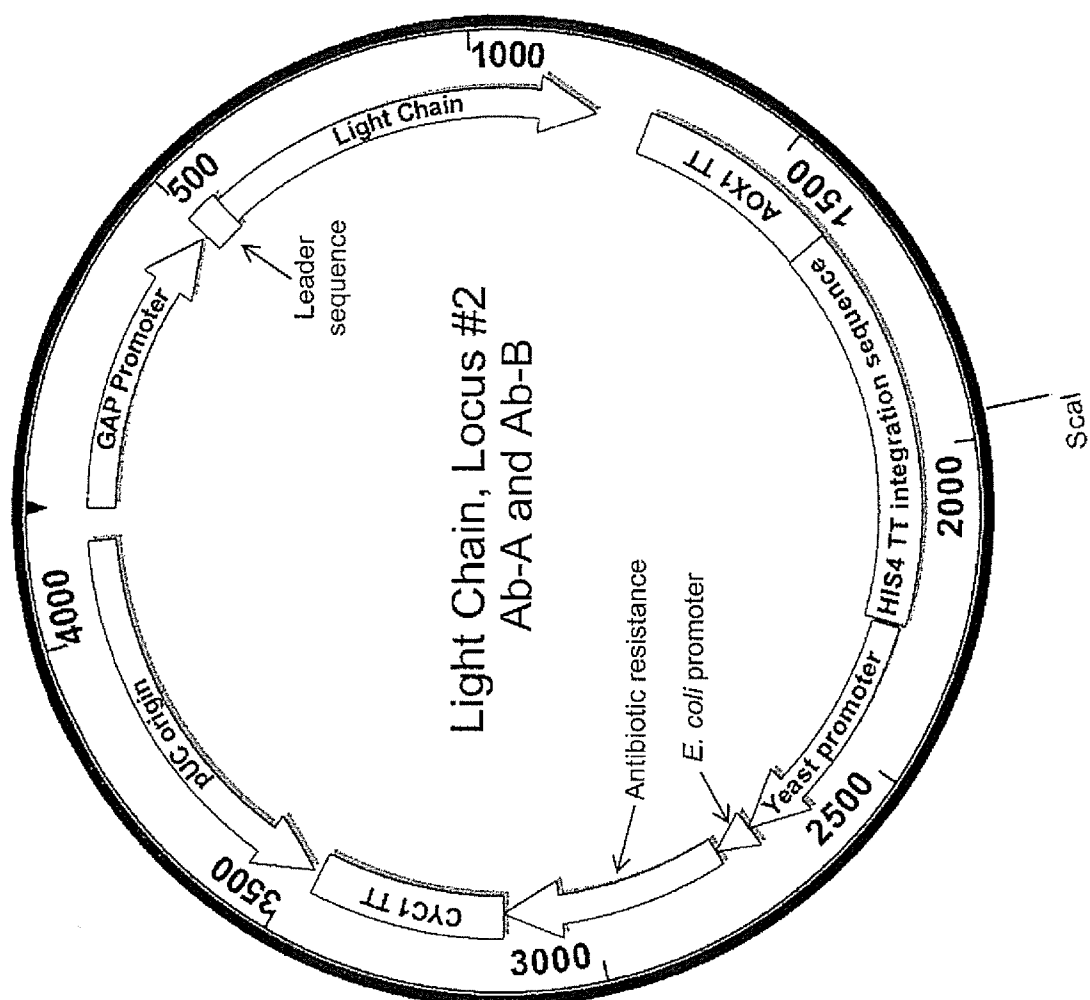


FIG. 18

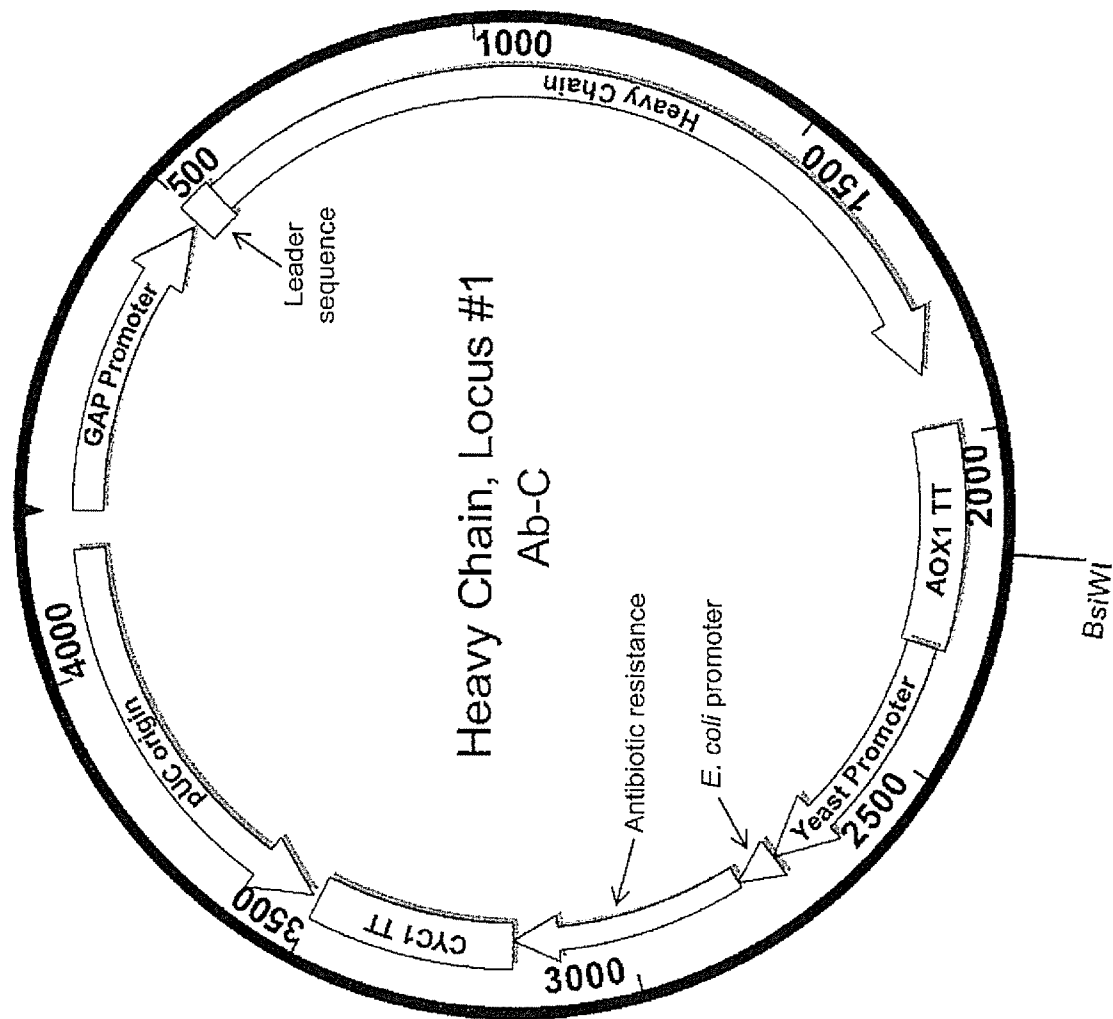


FIG. 19

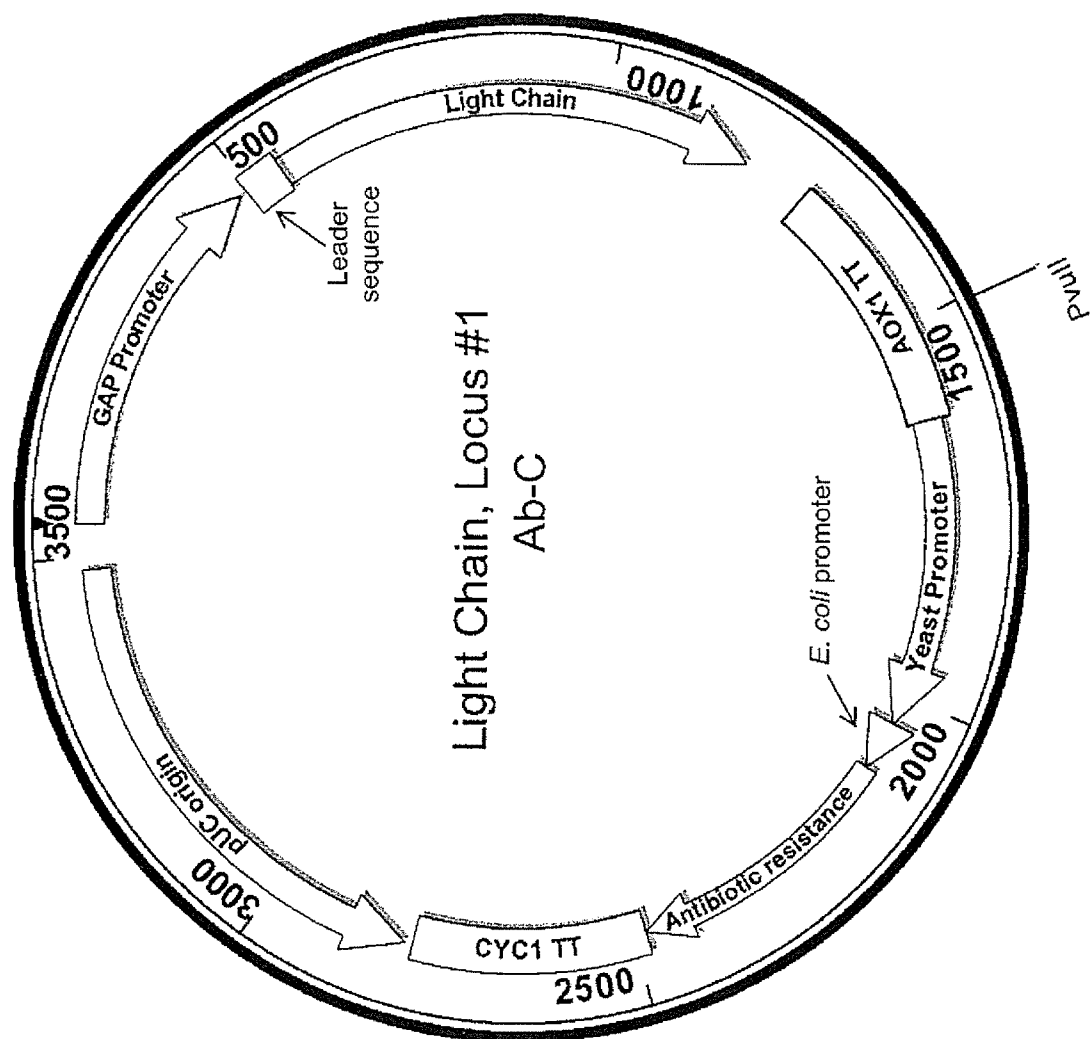


FIG. 20

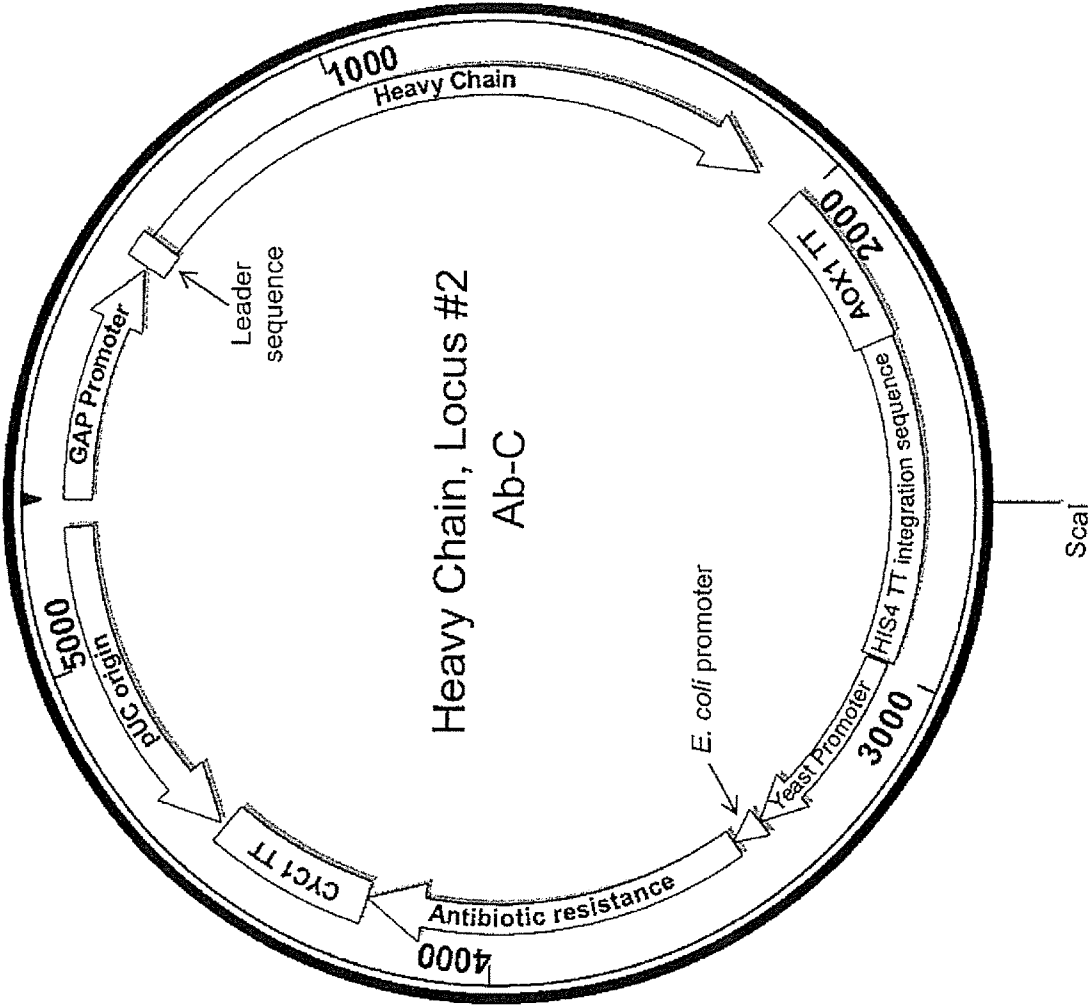


FIG. 21

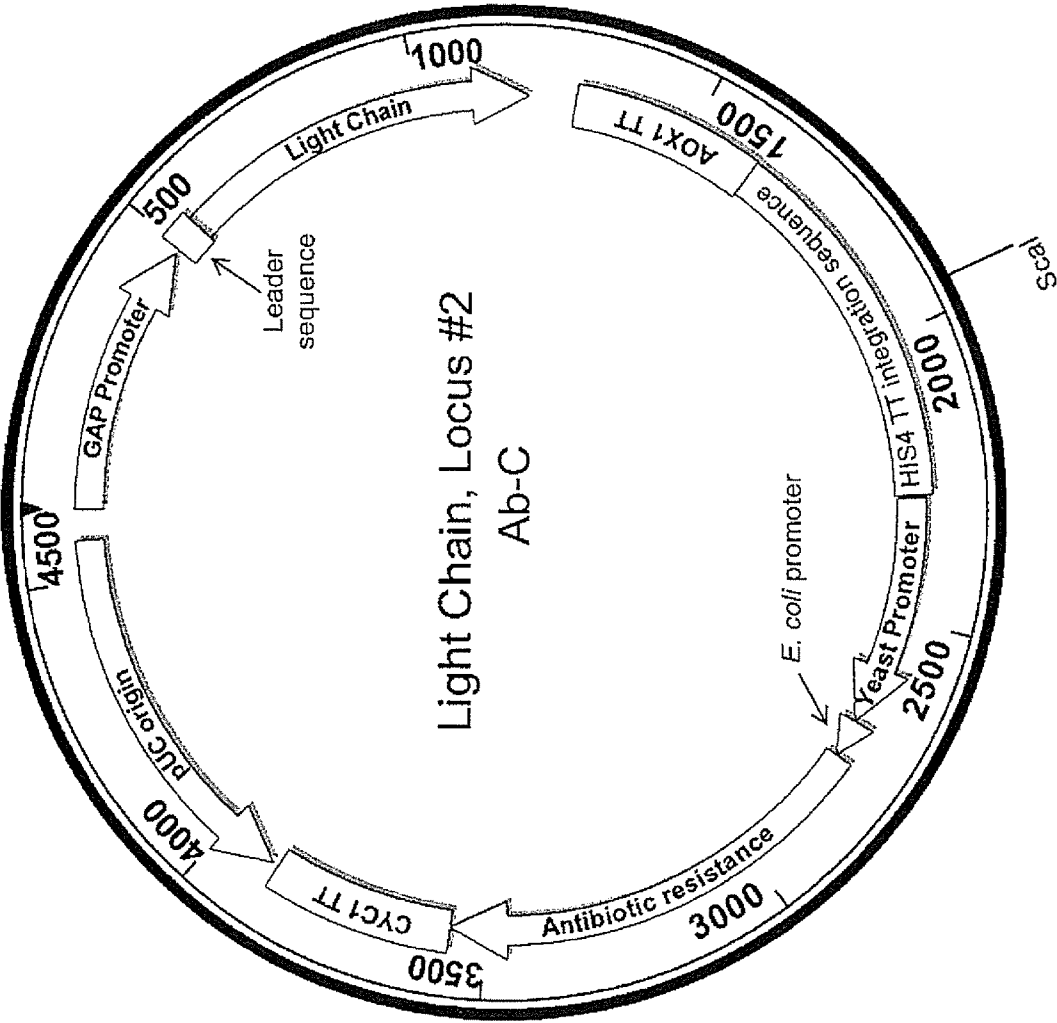


FIG. 22. Molecular Biology Overview Single Locus

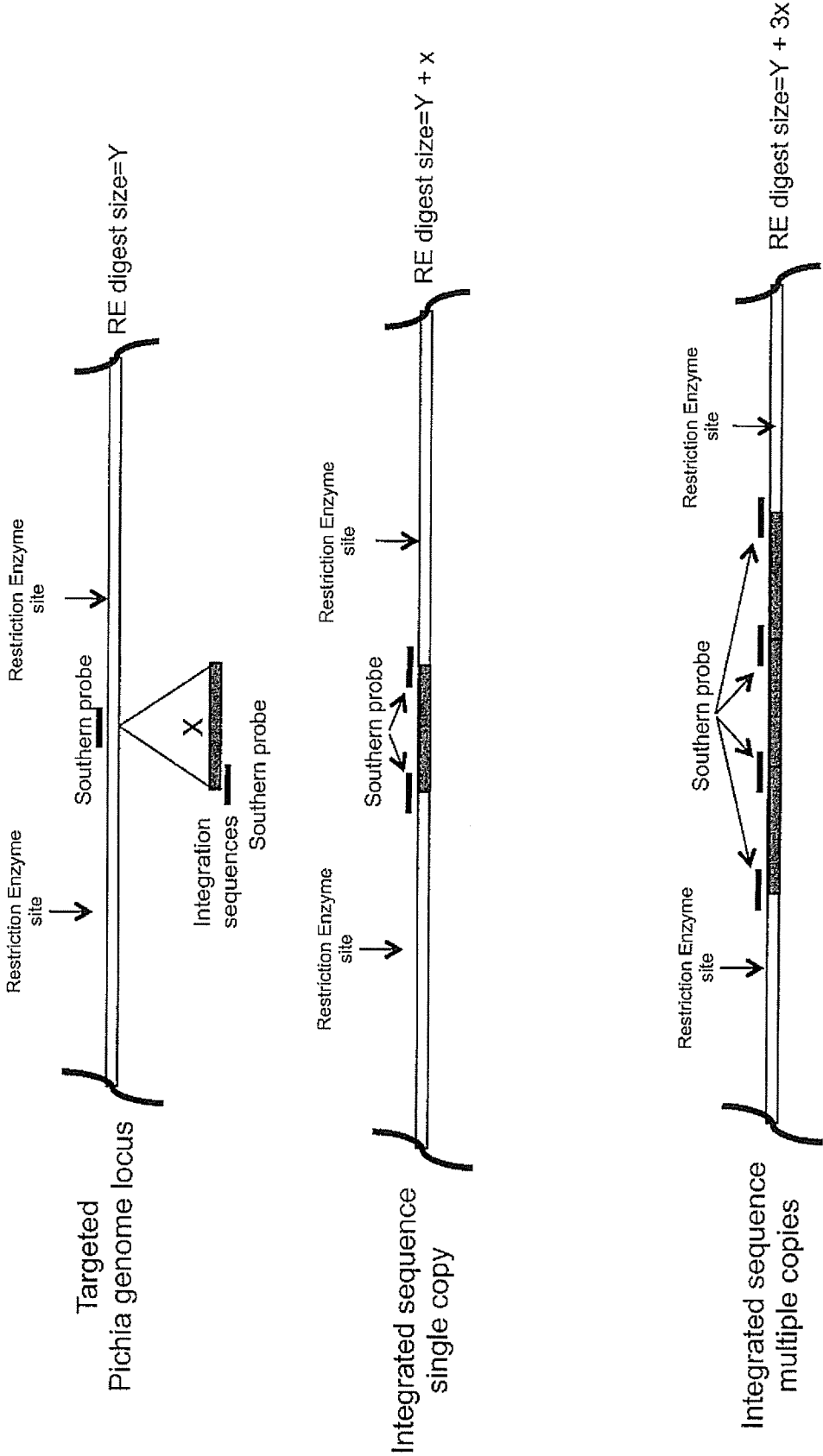


FIG. 23. Ab-A – Haploid Southern (pGAP locus)

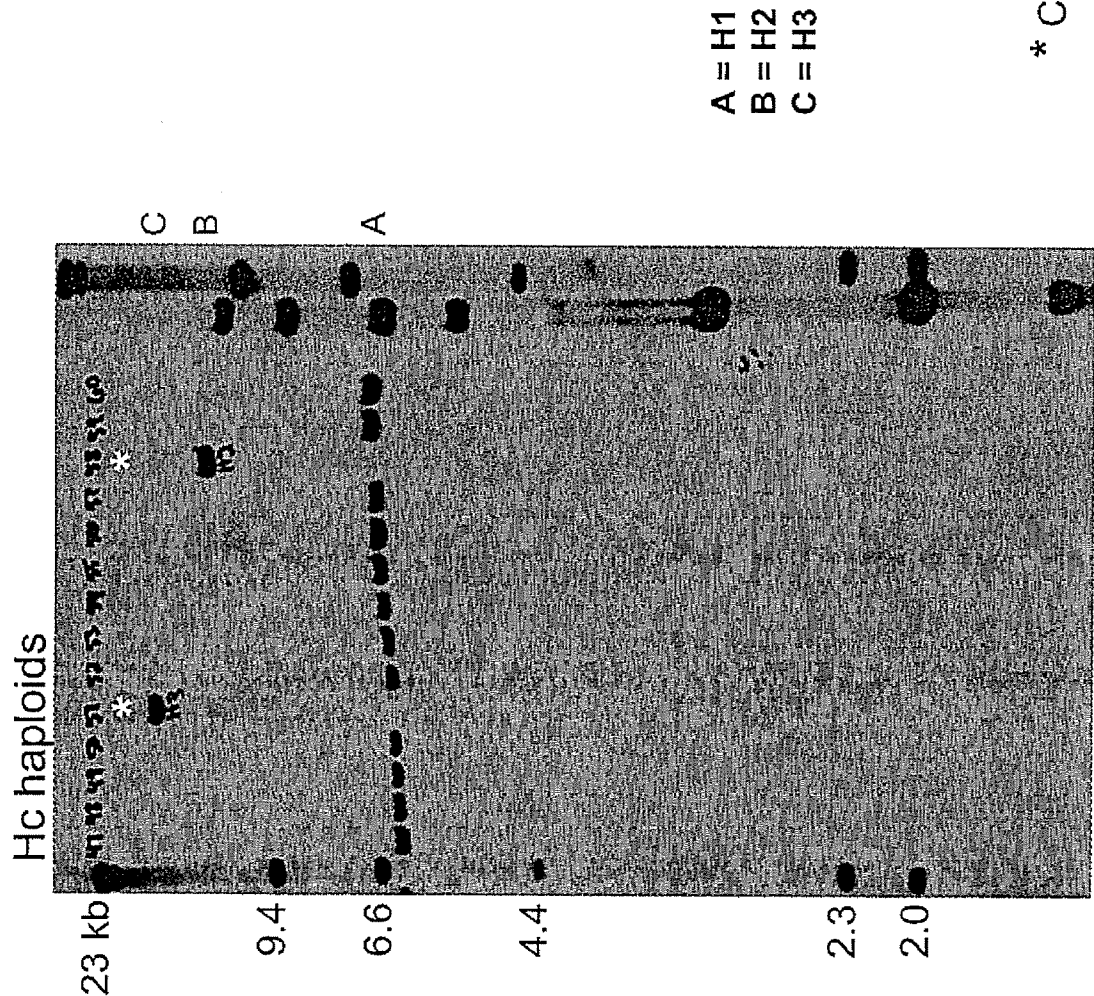
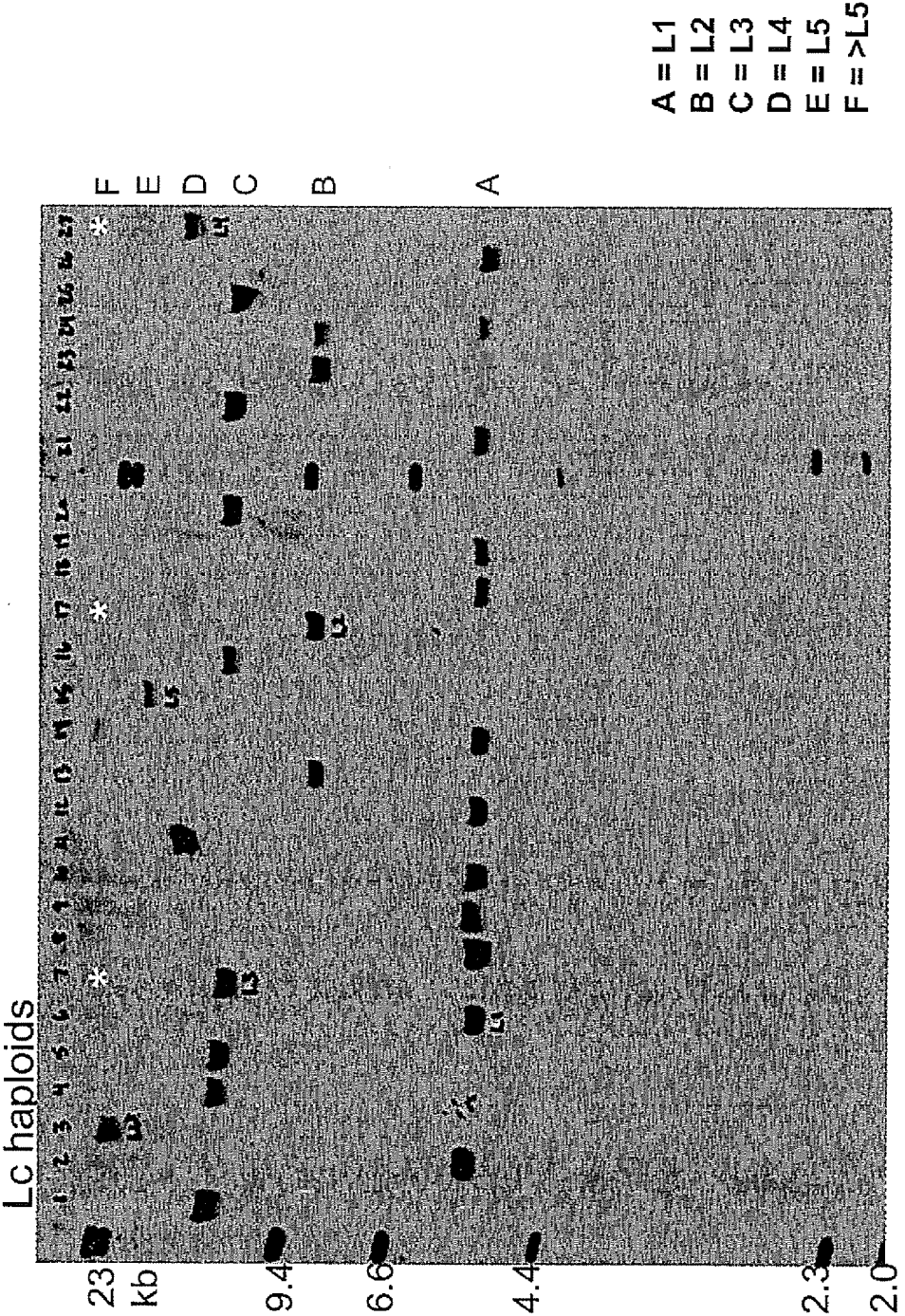
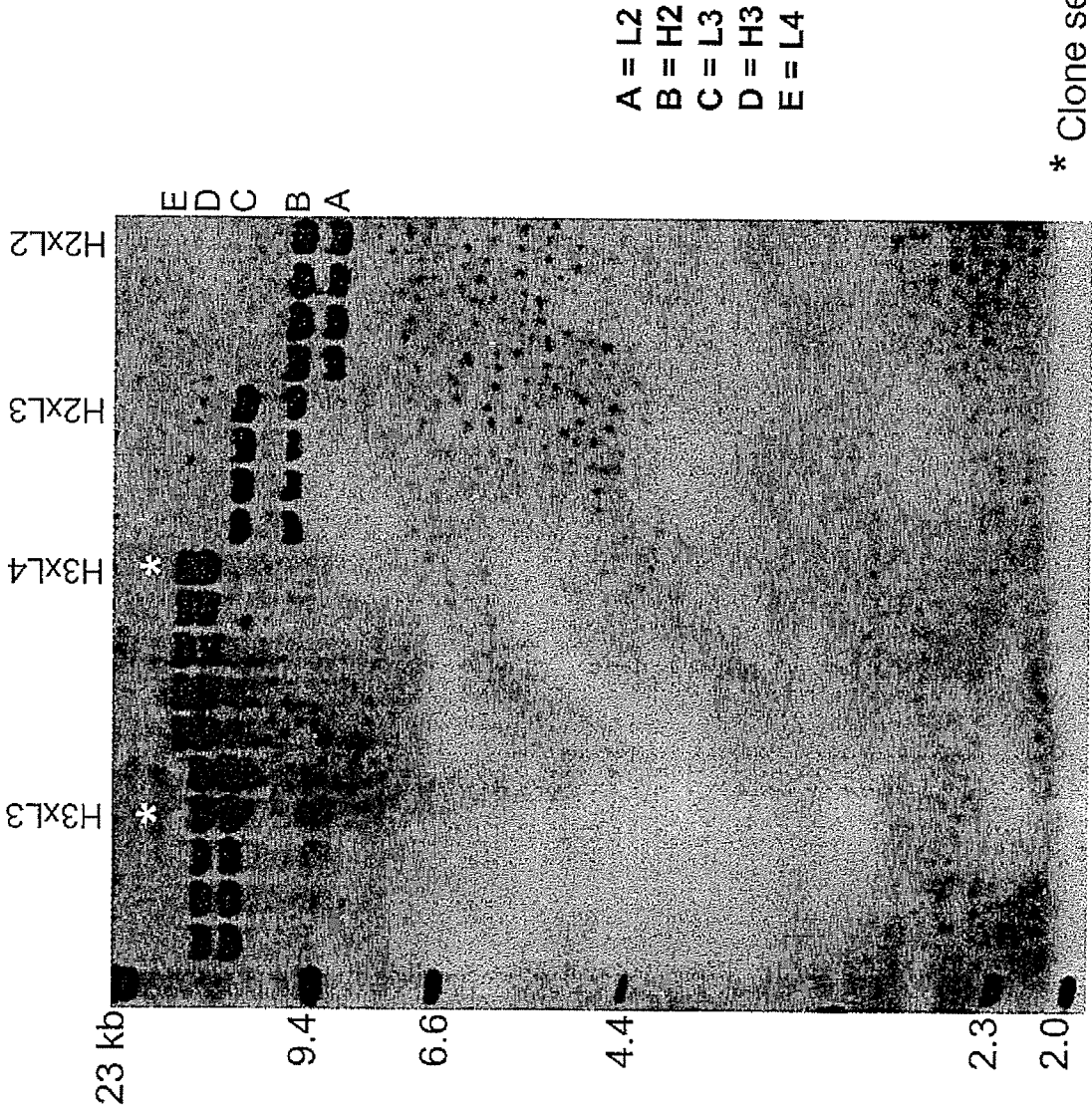


FIG. 24. Ab-A – Haploid Southern (pGAP locus)



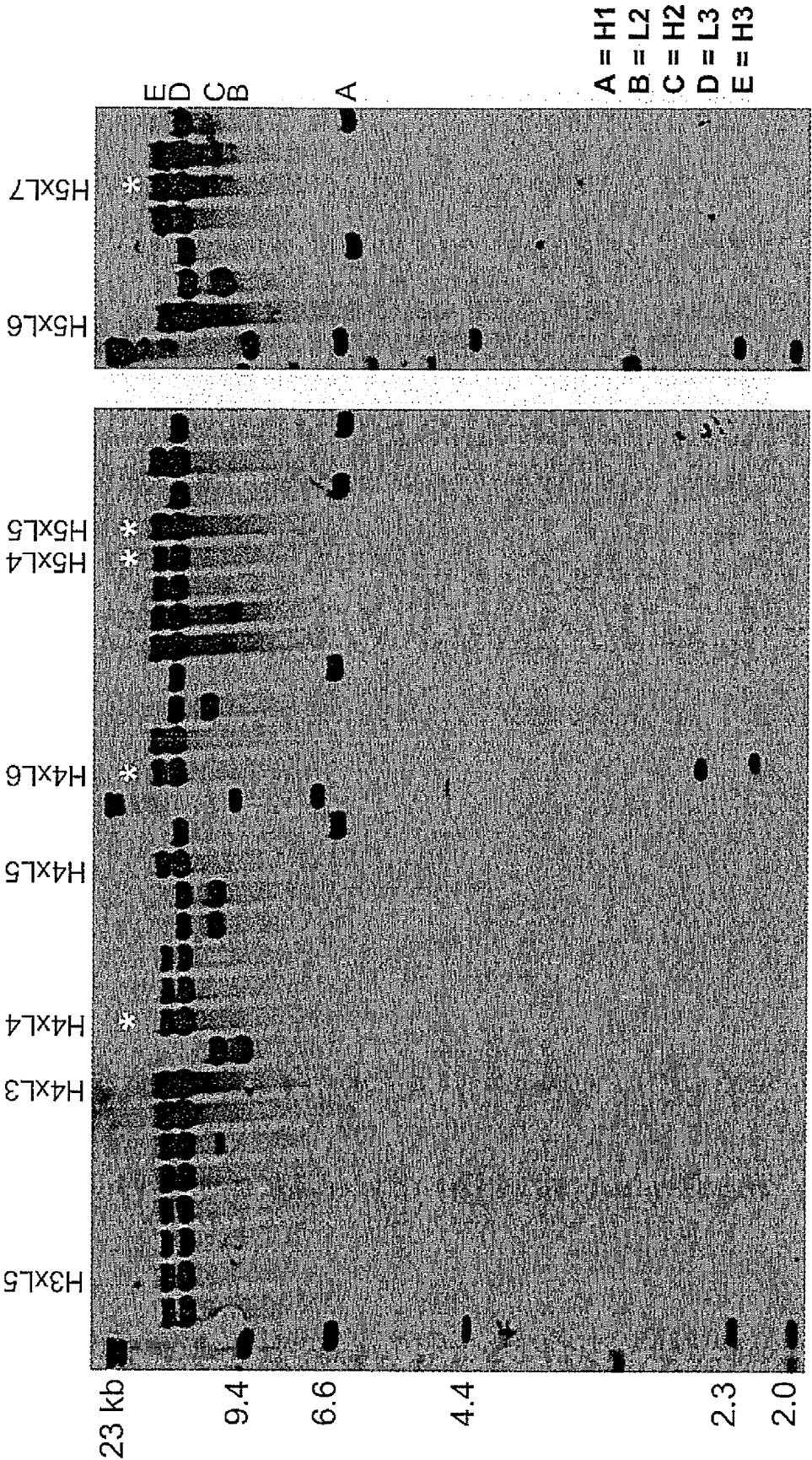
* Clone selected for mating

FIG. 25. Ab-A – Diploid Southern (pGAP locus)



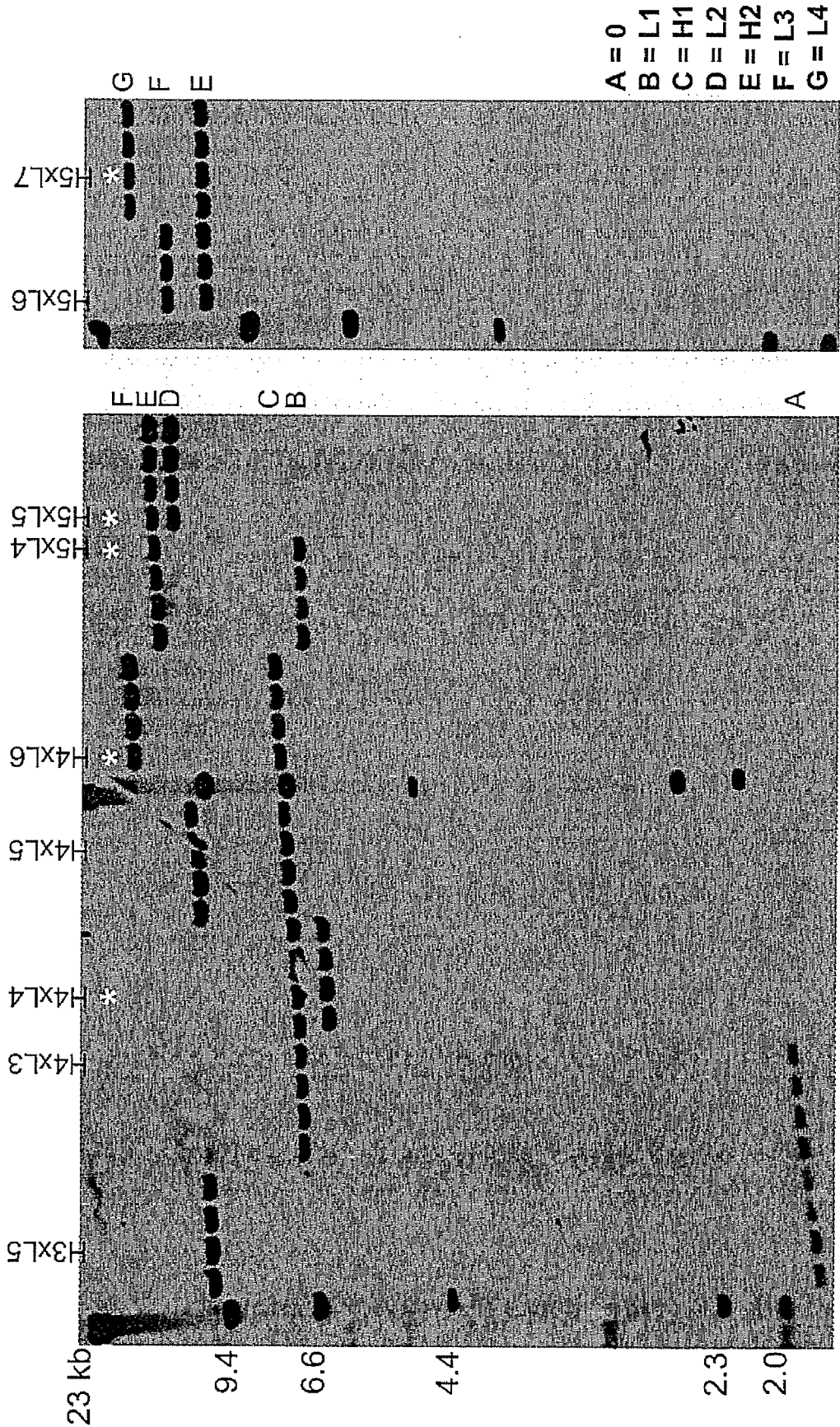
* Clone selected for bioreactor

FIG. 26. Ab-A – Diploid Southern (pGAP locus)



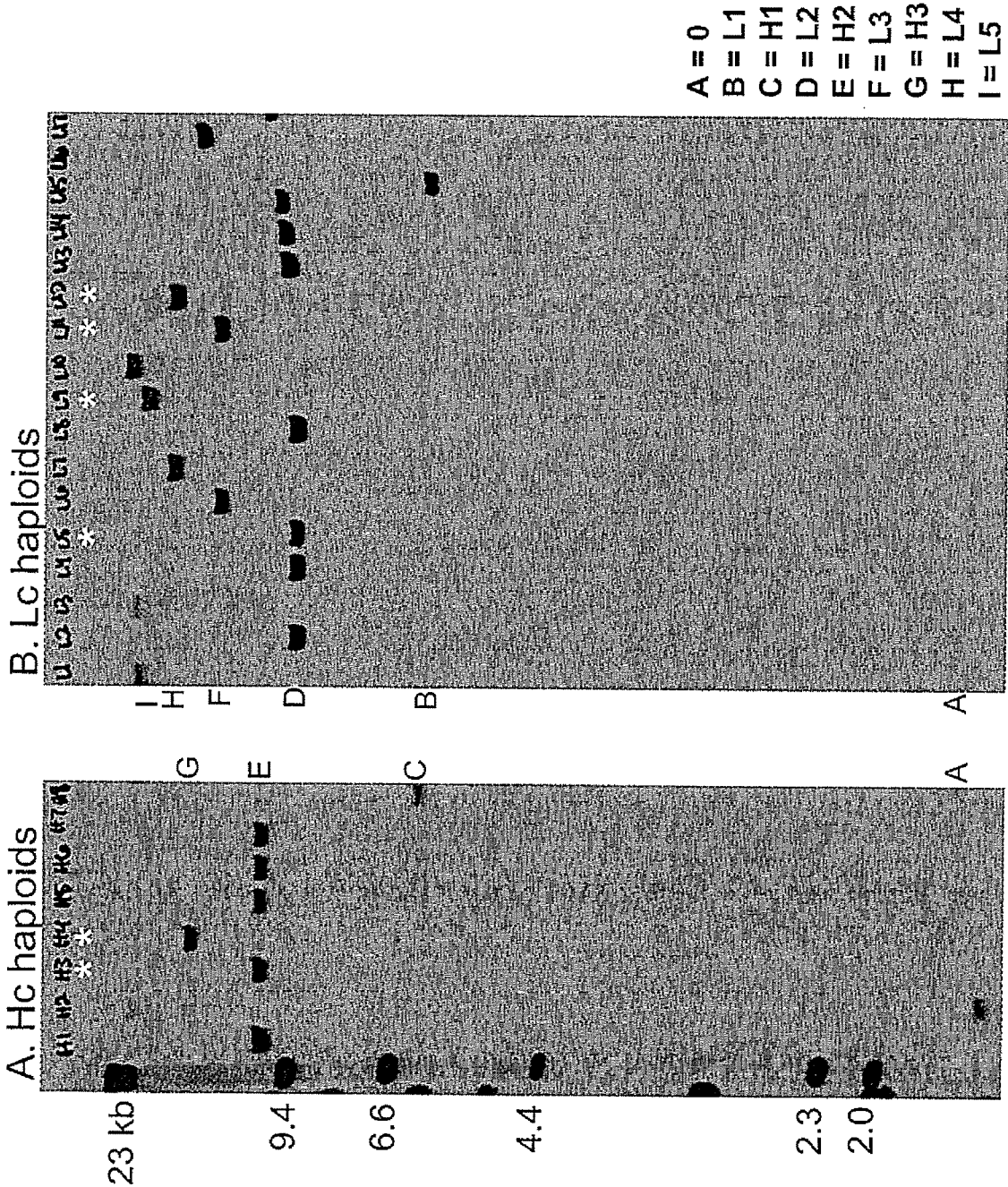
* Clone selected for bioreactor

FIG. 27. Ab-A – Diploid Southern (HIS4 TT locus)



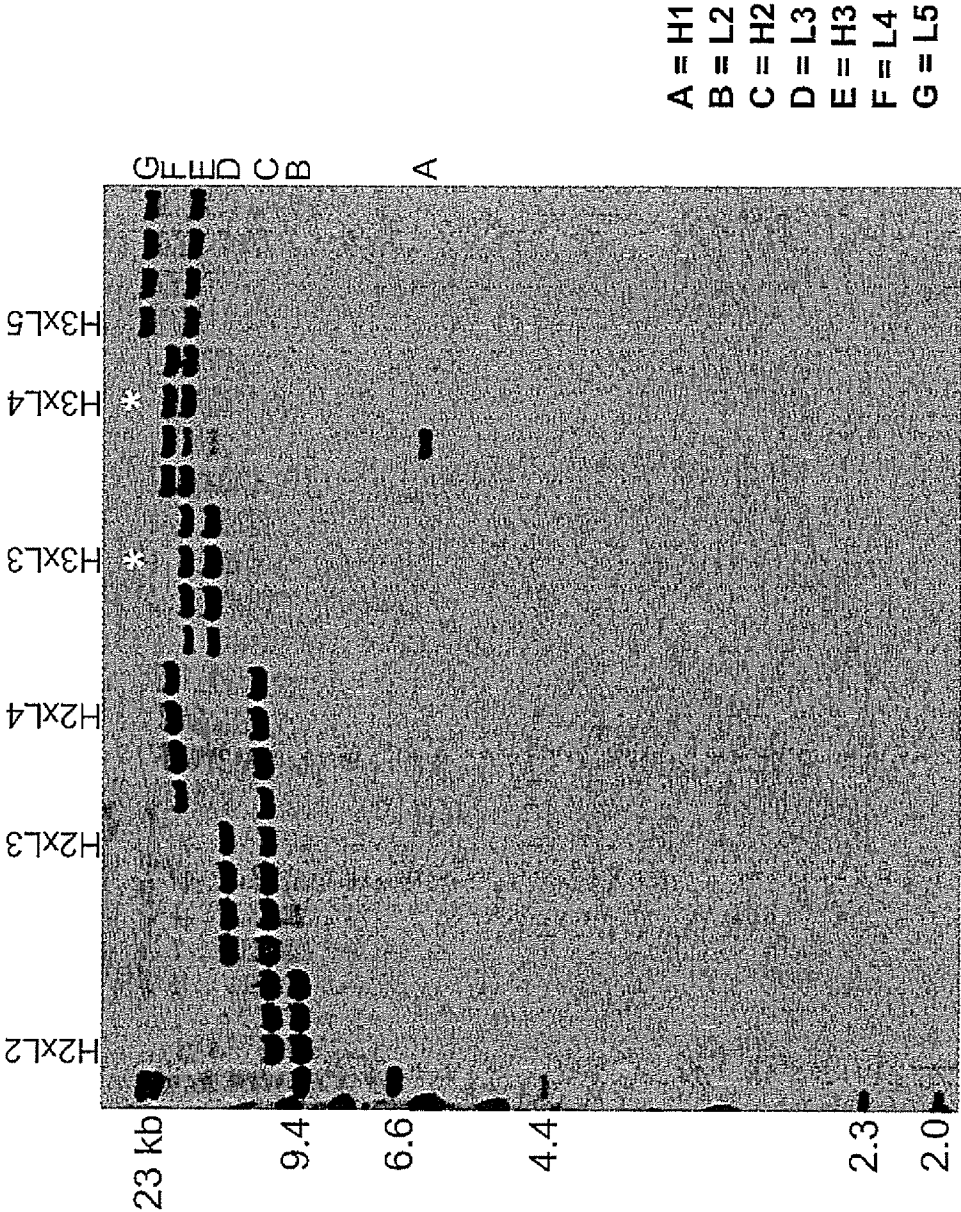
* Clone selected for bioreactor

FIG. 28. Ab-B – Haploid Southern (pGAP locus)



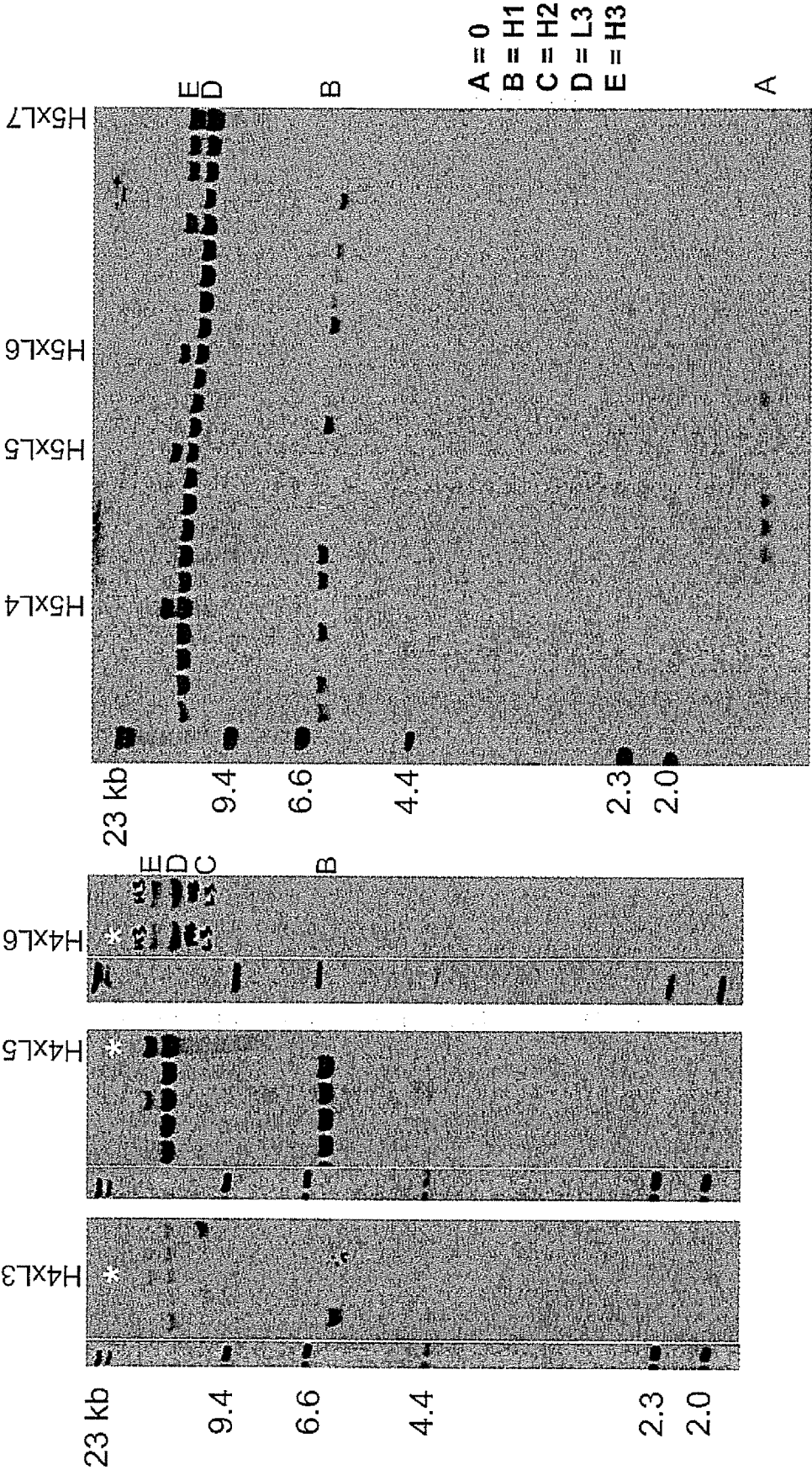
* Clone selected for mating

FIG. 29. Ab-B – Diploid Southern (pGAP locus)



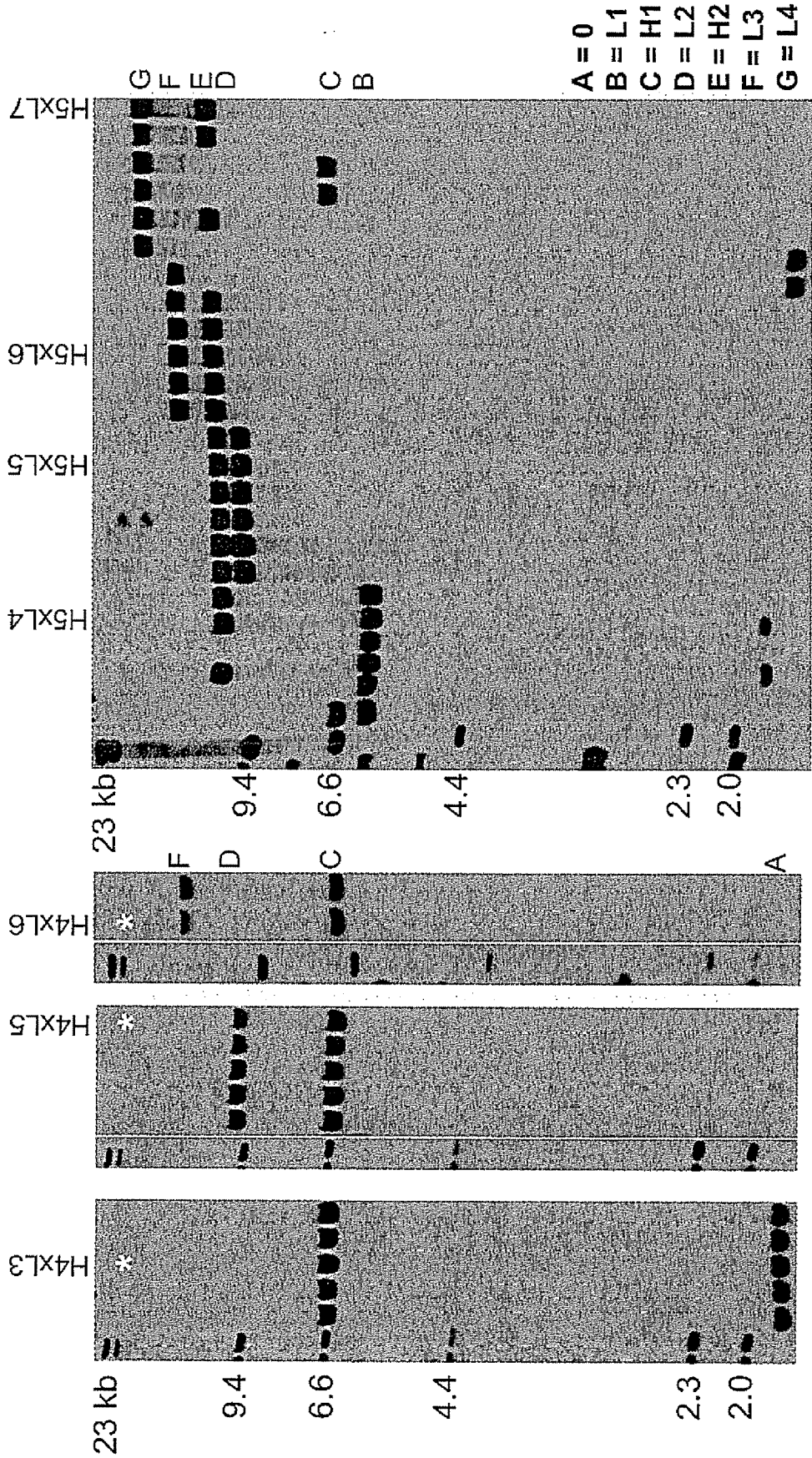
* Clone selected for bioreactor

FIG. 30. Ab-B – Diploid Southern (pGAP locus)



* Clone selected for bioreactor

FIG. 31. Ab-B – Diploid Southern (HIS4 TT locus)



* Clone selected for bioreactor

FIG 32. Ab-C – Haploid Southern (3'AOX TT locus)

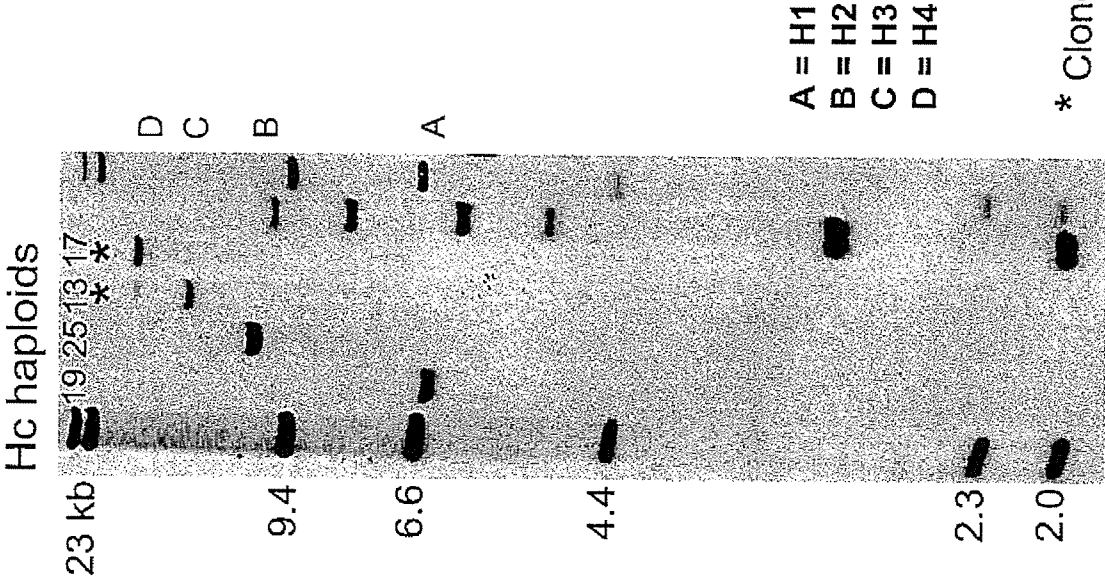


FIG 33. Ab-C – Haploid Southern (3'AOX TT locus)

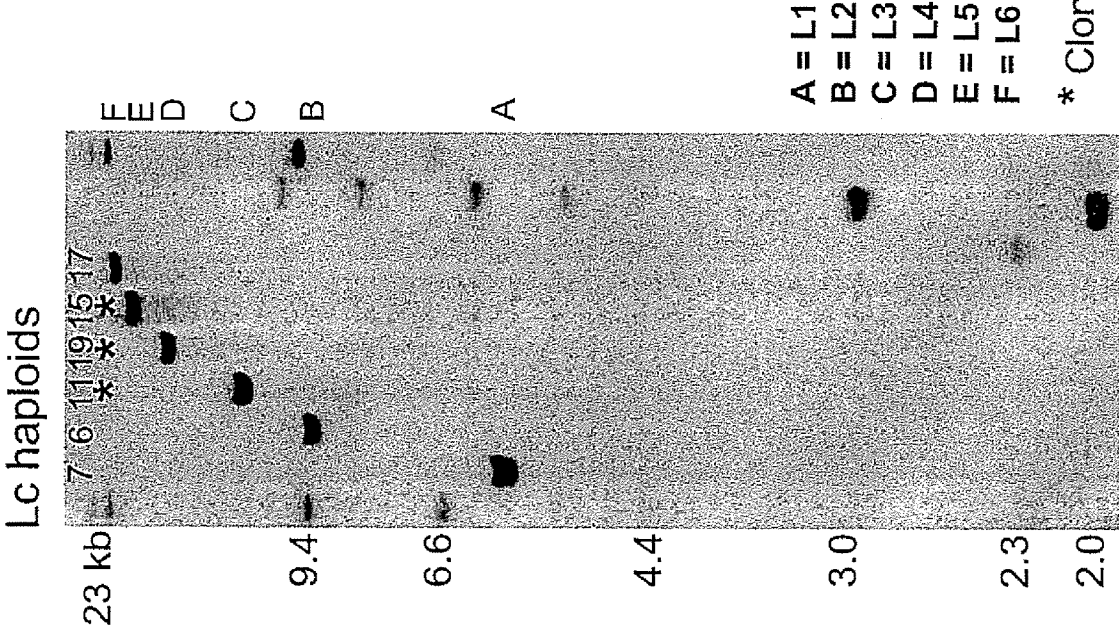


FIG. 34. Ab-C – Diploid Southern (3'AOX TT locus)

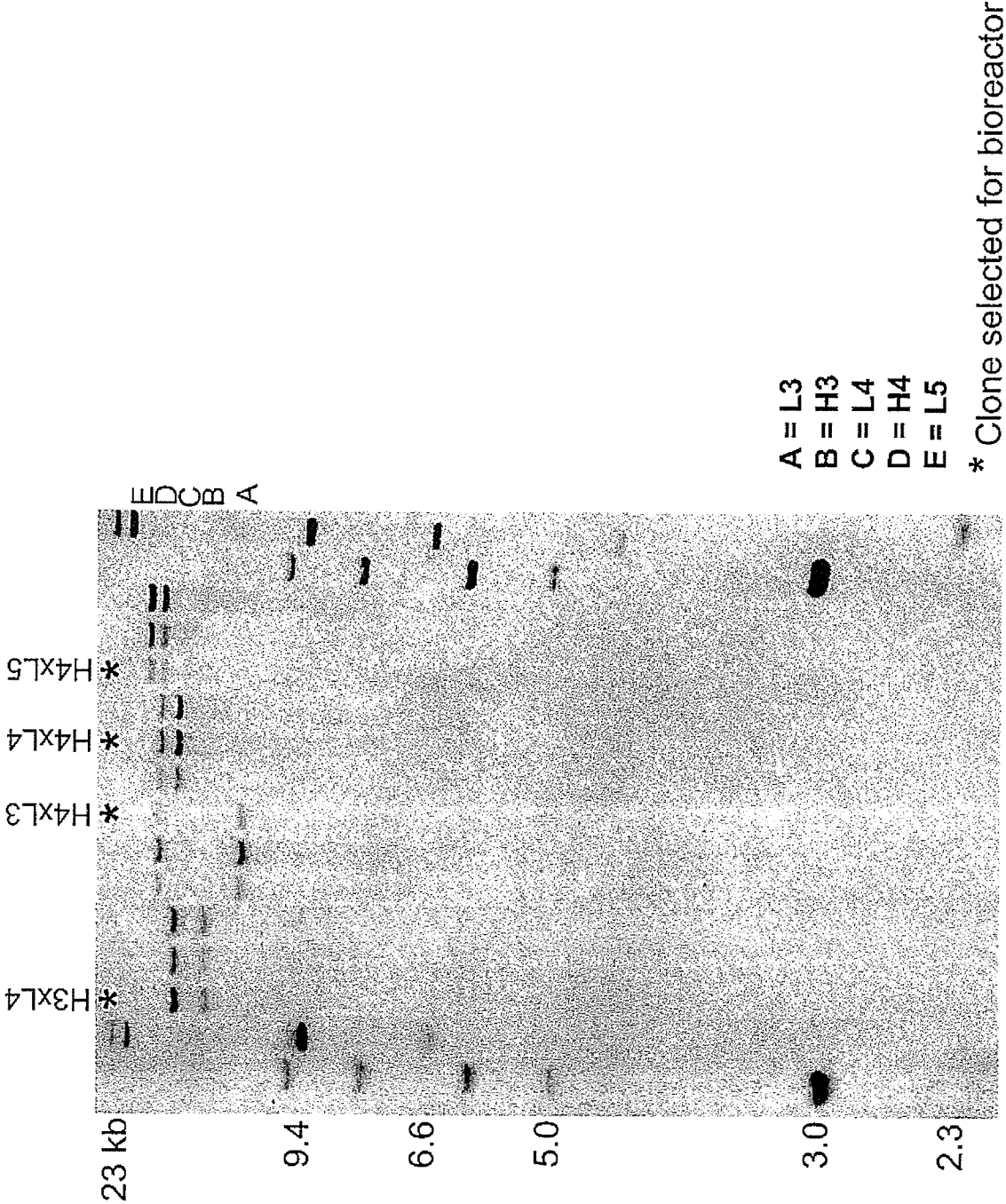


FIG. 35. Ab-C – Diploid Southern (3'AOX TT locus)

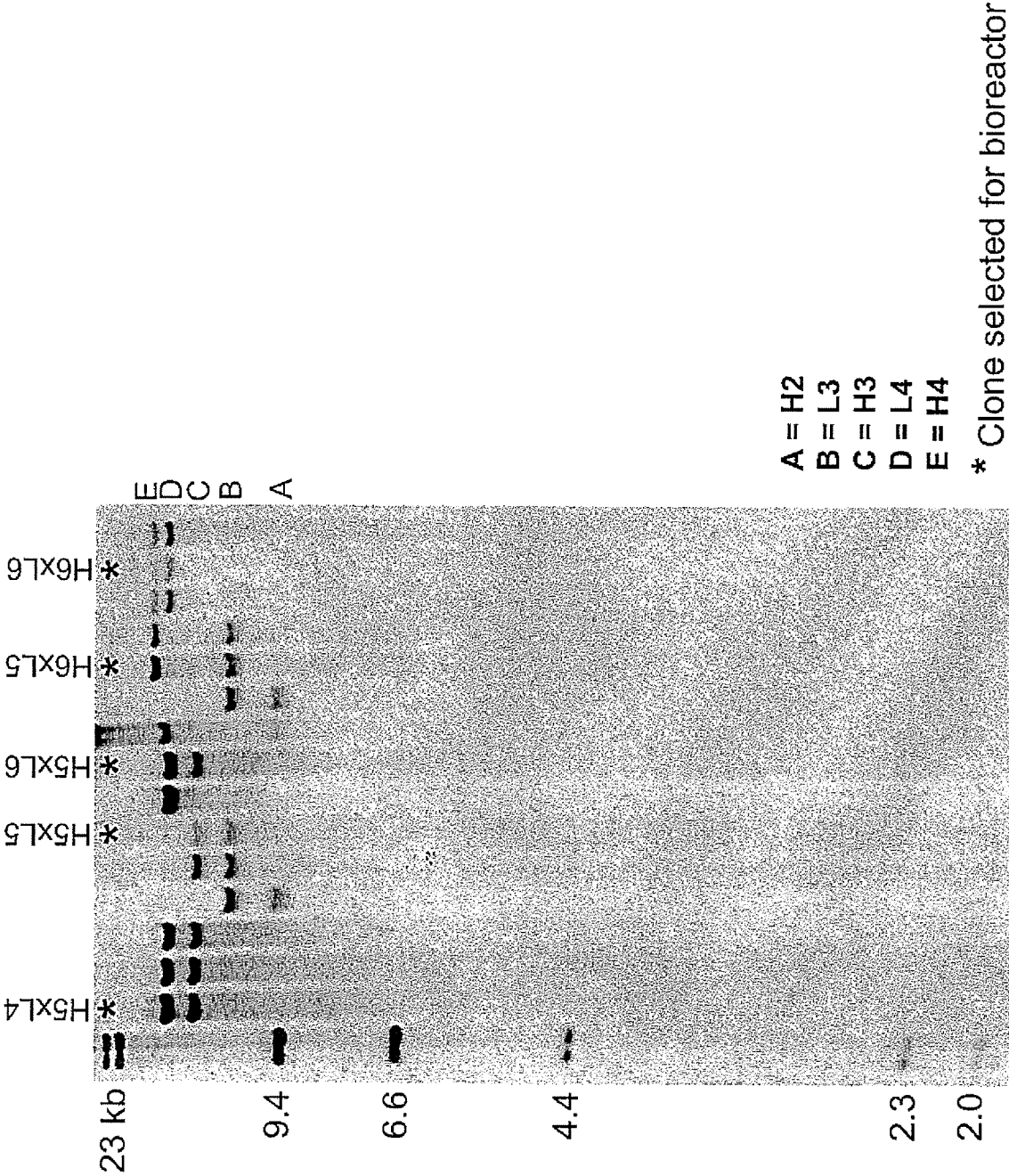


FIG. 36. Ab-C – Diploid Southern (HIS4 TT locus)

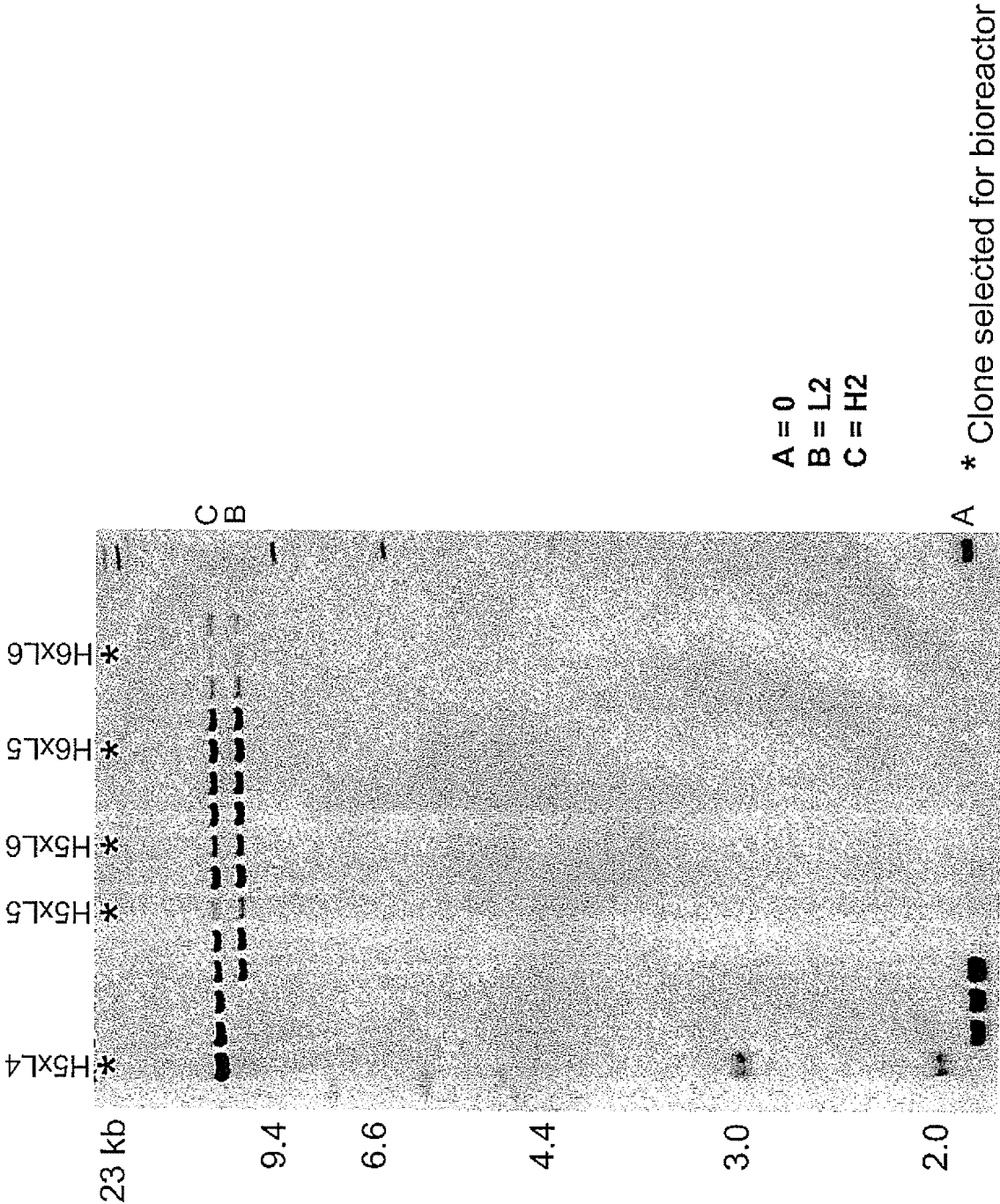


FIG. 37

	Heavy Chain Gene Copy Number									
	1	2	3	4	5	6	7	8	9	10
1		H2xL1	H3xL1	H4xL1	H5xL1	H6xL1	H7xL1	H8xL1	H9xL1	H10xL1
2	H1xL2	H2xL2	H3xL2	H4xL2	H5xL2	H6xL2	H7xL2	H8xL2	H9xL2	H10xL2
3	H1xL3	H2xL3	H3xL3	H4xL3	H5xL3	H6xL3	H7xL3	H8xL3	H9xL3	H10xL3
4	H1xL4	H2xL4	H3xL4	H4xL4	H5xL4	H6xL4	H7xL4	H8xL4	H9xL4	H10xL4
5	H1xL5	H2xL5	H3xL5	H4xL5	H5xL5	H6xL5	H7xL5	H8xL5	H9xL5	H10xL5
6	H1xL6	H2xL6	H3xL6	H4xL6	H5xL6	H6xL6	H7xL6	H8xL6	H9xL6	H10xL6
7	H1xL7	H2xL7	H3xL7	H4xL7	H5xL7	H6xL7	H7xL7	H8xL7	H9xL7	H10xL7
8	H1xL8	H2xL8	H3xL8	H4xL8	H5xL8	H6xL8	H7xL8	H8xL8	H9xL8	H10xL8
9	H1xL9	H2xL9	H3xL9	H4xL9	H5xL9	H6xL9	H7xL9	H8xL9	H9xL9	H10xL9
10	H1xL10	H2xL10	H3xL10	H4xL10	H5xL10	H6xL10	H7xL10	H8xL10	H9xL10	H10xL10

Light Chain Gene Copy Number

FIG. 38

Ab-A Sequences**Ab-A Heavy chain (humanized) Full length protein sequence – yeast produced.**

EVQLVESGGGLVQPGGSLRLSCAVSGLDSSYYMQWVRQAPGKGLEWVGVIINDNTYYASWAKGRFTISRDN SKTTVYL
 QMNSLRAEDTAVYFCARGDIWGQGTLLVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPTVSWNSGALTSGV
 HTFPAVLQSSGLYSLSSVTVPSSSLGTQYICNVNHNKPSNTKVDARVEPKSCDKTHTCPPCPAPPELLGGPSVFLFPPKPKDTL
 MISRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPA
 PIEKTISKAKGQPREPQVYTLPPSREEMTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPPVLDSDGSFFLYSKLTVD
 KSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK (SEQ ID NO: 1)

Ab-A Variable region heavy chain (humanized) protein sequence.

EVQLVESGGGLVQPGGSLRLSCAVSGLDSSYYMQWVRQAPGKGLEWVGVIINDNTYYASWAKGRFTISRDN SKTTVYL
 QMNSLRAEDTAVYFCARGDIWGQGTLLVTVSS (SEQ ID NO: 2)

Ab-A Variable region heavy chain (humanized) CDR protein sequences.

CDR1: SYVMQ (SEQ ID NO: 3)

CDR2: VIGINDNTYYASWAKG (SEQ ID NO: 4)

CDR3: GDI

Ab-A Variable region heavy chain (humanized) CDR DNA sequences. CDR1: Bold; CDR2: Underlined; CDR3: Italics.

GAGGTGCAGCTTGTGGAGTCTGGGGGAGGCTTGGTCCAGCCTGGGGGTCCCTGAGACTCTCCTGTGCAGTCTCTGGAC
 TCGACCTCAGTAGCTACTACATGCAATGGGTCCTCAGGCTCCAGGAAAGGGCTGGAGTGGGTCGGAGTCATTGGTA
 TCAATGATAACACATACACGAGCTGGGCGAAAGGCCGATTACCATCTCCAGAGACAATTCCAAAGACCACGGTGT
 ATCTTCAAATGAACAGCCTGAGAGCTGAGGACACTGCTGTGTAATTTCTGTGCTAGAGGGGACATCTGGGGCCCAAGGGAC
 CCTCGTCACCGTCTCGAGC (SEQ ID NO: 5)

FIG. 38 (CONTINUED)

Ab-A Heavy chain (humanized) Full length DNA sequence – yeast produced.

GAGGTGCAGCTTGTGGAGTCTGGGGGAGGCTTGGTCCAGCCTGGGGGTCCCTGAGACTCTCCTGTGCAGTCTCTGGAC
 TCGACCTCAGTAGCTACTACATGCAATGGGTCCGTAGGCTCCAGGGAAGGGCTGGAGTGGTCCGAGTCAATTGGTA
 TCAATGATAACACATACTACGCGAGCTGGGGAAGGCCGATTACCATCTCCAGAGACAATTCGAAGACCACGGTGT
 ATCTTCAAATGAACAGCCTGAGAGCTGAGGACACTGTGTATTTCTGTGCTAGAGGGGACATCTGGGGCCAAAGGA
 CCTCGTCAACCGTCTCGAGCGCCTCCACCAAGGGCCCATCGGTCTTCCCTGGCACCTCTCCAAAGAGCACCTCTGG
 GGGCACAGCGGCTGGGTGGTCAAGGACTACTTCCCGAACCGGTGACGGTGTCTGGAACCTCAGGCGCCCT
 GACCAAGCGGTGCACACCTTCCCGGTGCTACAGTCTCAGGACTCTACTCCCTCAGCAGCGTGGTGAACCTGCCC
 TCCAGCAGCTTGGCACCCAGACCTACATCTGCAACGTGAATCAAGCCAGCAACACCAAGGTGGACGCGAGATT
 GAGCCCAATCTTGTGACAAACTCACACATGCCACCGTGCCAGCACTGAACTCCTGGGGGACCGTCACTCTCC
 TCTTCCCCCAAAACCAAGGACACCTCATGATCTCCCGGACCCCTGAGGTCAATGCGTGTGTGGACGTGAGCCA
 CGAAGACCTGAGGTCAAGTTCAACTGTGACGTGACCGTCTCAGGAGTGCATAATGCCAAGACAAGCCGGGAGG
 AGCAGTACGCCAGCACTACCGTGTGTGACGTCTCAGGCTCTCAGGACTGGCTGAATGGCAAGGAGTACA
 AGTGCAAGGTCTCCAAACAAGCCCTCCAGCCCATCGAGAAACCATCTCCAAAGCCAAAGGGCAGCCCGAGAAC
 CACAGGTGTACACCTGCCCATCCCGGAGGAGATGACCAAGAACAGGTGACGCTGACCTGCTGTTCAAGGCT
 TCTATCCAGCGACATCGCCGTGGAGTGAGAGCAATGGCAGCCGGAGAACTACAAGACCACGCTCCCGTGC
 TGGACTCCGACGGCTCTTCTCTCTACAGCAAGTCACTGACCAAGAGCAGGTGGCAGCAGGGGAACGTCTTCTC
 ATGCTCCGTGATGATGAGGCTCTGCACAACTACACGACAGAGCCTCTCCCTGTCTCCGGGTAATGA (SEQ
 ID NO: 6)

Ab-A Light chain (humanized) Full length protein sequence.

QVLTSQSPSSLSASVGDRTVINCQASQSVYDNNYLAWYQQKPKVPKQLIYSTSTLASGVPSRFSGSGTDFTLTISSLPED
 VATYYCLGSYDCSSGDCFVFGGKVEIKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGNSQ
 ESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGEC (SEQ ID NO: 7)

Ab-A Variable region Light chain (humanized) protein sequence.

QVLTSQSPSSLSASVGDRTVINCQASQSVYDNNYLAWYQQKPKVPKQLIYSTSTLASGVPSRFSGSGTDFTLTISSLPED
 VATYYCLGSYDCSSGDCFVFGGKVEIKR (SEQ ID NO: 8)

FIG. 38 (CONTINUED)

Ab-A Variable region Light chain (humanized) protein CDR sequences.

CDR1: QASQSVYDNNYLA (SEQ ID NO: 9)

CDR2: STSTLAS (SEQ ID NO: 10)

CDR3: LGSYDCSSGDDCFV (SEQ ID NO: 11)

Ab-A Variable region Light chain (humanized) DNA sequence. CDR1: Bold; CDR2: Underlined; CDR3: Italics.

CAAGTGCTGACCCAGTCTCCATCCTCCCTGCTGTCATCTGTAGGAGACAGAGTCACCAATCAATTGCCAGGCCAGTCAG
 AGTGTTTATGATAACAACACTACCTAGCCTGGTATCAGCAGAAACCAGGAAAGTTCCTAAGCAACTGATCTATTCTAC
 ATCCACTCTGGCACTCTGGGTCCCATCTCGTTTCAGTGGCAGTGGATCTGGGACAGATTTCACCTCTCACCATCAGCAGC
 CTGCAGCCTGAAGATGTTGCAACTTATTACTGCTAGGCAGTTATGATTGTAGTAGTGTGTTTTCGGCGGAG
 GAACCAAGGTGGAAATCAAACGT (SEQ ID NO: 12)

Ab-A Light chain (humanized) Full length DNA sequence.

CAAGTGCTGACCCAGTCTCCATCCTCCCTGCTGTCATCTGTAGGAGACAGAGTCACCAATCAATTGCCAGGCCAGTCAGA
 GTGTTTATGATAACAACACTACCTAGCCTGGTATCAGCAGAAACCAGGAAAGTTCCTAAGCAACTGATCTATTCTACATC
 CACTCTGGCATCTGGGTCCCATCTCGTTTCAGTGGCAGTGGATCTGGGACAGATTTCACCTCTCACCATCAGCAGCCTG
 CAGCCTGAAGATGTTGCCAACTTATTACTGTCTAGGCAATTATGATTGTAGTGGTGAATTGTTTTCGGCGGAGG
 AACCAAGGTGGAAATCAAACGTACGGTGGCTGCACCATCTGTCTTCAATCTTCCCGCCATCTGATGAGCAATTGAAATCT
 GGAACTGCCCTCTGTTGTGCTGCTGAATAACTTCTATCCAGAGAGGCCAAAGTACAGTGGAAAGGTGGATAACGCCCC
 TCCAATCGGGTAACCTCCAGGAGAGTGTCAAGAGCAGGACAGCAAGGACAGCACCTACAGCCTCAGCAGCACCCCTGA
 CGCTGAGCAAAGCAGACTACGAGAAACACAAAGTCTACGCCCTGCGAAAGTCAACCCATCAGGGCCTGAGCTCGCCCCGTCA
 CAAAGAGCTTCAACAGGGGAGAGTGTTAG (SEQ ID NO: 13)

FIG. 39

Ab-B Sequences**Ab-B Heavy chain (humanized) Full length protein sequence – yeast produced.**

EVQLVESGGGLVQPGGSLRLSCAVSGIDLSGYVMNWVRQAPGKGLEWVGVINGATYYASWAKGRFTISRDN SKTTVYL
 QMNSLRAEDTAVYFCARGDIWGQGTILVTVSSASTKGPSVFLAPSSKSTSGGTAALGCLVKDYFPEPTVSWNSGALTSGV
 HTFPAVLQSSGLYSLSSVTVPSSSLGTQTYICNVNHNKPSNTKVDARVEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTL
 MISRTPEVTCVVDVVSHPEDPEVKFNWYVDGVEVHNAKTKPREEQYASTYRVVSVLTIVLHQDWLNGKEYKCKVSNKALPA
 PIEKTISKAKGQPREPQVYTLPPSREEMTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPPVLDSDGSFFLYSKLTVD
 KSRWQQGNVFCFSVMHEALHNHYTQKSLSLSPGK (SEQ ID NO: 14)

Ab-B Variable region heavy chain (humanized) protein sequence.

EVQLVESGGGLVQPGGSLRLSCAVSGIDLSGYVMNWVRQAPGKGLEWVGVINGATYYASWAKGRFTISRDN SKTTVYL
 QMNSLRAEDTAVYFCARGDIWGQGTILVTVSS (SEQ ID NO: 15)

Ab-B Variable region heavy chain (humanized) protein CDR sequences.

CDR1: GYYMN (SEQ ID NO: 16)

CDR2: IGINGATYYASWAKG (SEQ ID NO: 17)

CDR3: GDI

Ab-B Variable region heavy chain (humanized) DNA sequence. CDR1: Bold; CDR2: Underlined; CDR3: Italics.

GAGGTGCAGCTTGTGGAGTCTGGGGGAGGCTTGGTCCAGCCTGGGGGTCCCTGAGACTCTCTGTGCAGTCTCTGGAA
 TCGACCTCAGTGGCTACTACATGAACCTGGTCCGTCAAGCTCCAGGGAAGGGCTGGAGTGGTGGAGTCAATTGGT
 ATTAATGGTGCCACATACACGCGAGCTGGGCGAAAGGCCGATTCCACATCTCCAGAGACAATTCGAAGACACCGTG
 TATCTTCAATGAACAGCCTGAGAGCTGAGGACACTGCTGTGATTCTGTGCTAGAGGGGACATCTGGGGCCAAAGGA
 CCTCGTCACCGTCTCGAGC (SEQ ID NO: 18)

FIG. 40 (CONTINUED)

Ab-B Heavy chain (humanized) Full length DNA sequence – yeast produced.

GAGGTGCAGCTTGTGGAGTCTGGGGGAGGCTTGGTCCAGCCTGGGGGTCCTGAGACTCTCTGTGAGTCTCTTGAA
 TCGACCTCAGTGGCTACTACATGAAGTGGTCTCGTCAAGGCTCCAGGGAAGGGCTGAGTGGTGGAGTCAATTGGTA
 TTAAATGGTGCCACATACTACGCGAGCTGGCGGAAAGGCCGATTCCACCATCTCCAGAGACAATTCCAAGACCACGGTGT
 ATCTTCAAAATGAACAGCCTGAGAGCTGAGGACACTGCTGTGTAATTTCTGTGCTAGAGGGGACATCTGGGGCCAAAGGA
 CCCTCGTCAACCGTCTCGAGCGCTCCACCAAGGCCCATCGGTCTTCCCCCTGGCACCCCTCTCCAAAGACACCTCTGG
 GGGCAGCGGCCCTGGCTGCCCTGGTCAAGGACTACTTCCCCGAACCGGTGACGGTGTCTGTGGAACTCAGGGGCCCT
 GACCAGCGGTGCACACCTTCCCGGTGCTCAGTCTCAGGACTCTACTCCCTCAGCAGCGTGTGACCCGTGCC
 TCCAGCAGCTTGGCACCCAGACCTACATCTGCAACGTGAATCAAGCCAGCAACACCAAGGTGGACGCGAGAGTT
 GAGCCCAAATCTTGTGACAAACTCACACATGCCACCGTGCCAGCACTGAACCTCCTGGGGGACCGTCAGTCTTCC
 TCTTCCCCCAAACCCAAAGGACACCTCATGATCTCCGGACCCCTGAGGTCAATGCGTGGTGGACGTGAGCCA
 CGAAGACCTGAGGTCAAGTTCAACTGTAGTGGACGGCGTGGAGTGCATAATGCCAAAGACAAGCCCGGGAGG
 AGCAGTACGCCAGCACGTACCGTGTGTGTCAGCGTCTCACCGTCCAGCAAGCAAGCAAGCAAGCAAGCAAGCA
 AGTGCAAGGTCTCCAAACAAGCCCTCCAGCCCCATCGAGAAACCATCTCCAAAGCAAGCAAGCAAGCAAGCAAGCA
 CACAGGTGTACACCTGCCCCCATCCCGGAGGAGATGACCAAGAACAGGTGAGCTGACCTGCTGCTGGTCAAGGCT
 TCTATCCAGCGACATCGCCGTGGAGTGGAGAGCAATGGGACCGCGAGAACAACTACAAGACCAAGCTCCCGTGC
 TGGAATCCGACGGCTCCTTCTCTCTACAGCAAGCTACCGTGGACAAGAGCAGGTGGCAGCAGGGGAACGTCTTCTC
 ATGCTCCGTGATGCATGAGGCTCTGCACAACCACTACACGCAGAAAGCGCTCTCCCTGTCTCCGGGTAATGA (SEQ
 ID NO: 19)

Ab-B Light chain (humanized) Full length protein sequence.

QVLTQSPSSLSASVGDRVTINCAQASQSVYHNTYLAWYQQKPKVPKQLIYDASTLASGVPSRFSGSGTDFTLTISSLPED
 VATYYCLGSYDCTNGDCFVFGGGTKVEIKRTVAAPSVFIFPPSDEQLKSGTASVVCCLNNFYPREAKVQWKVDNALQSGNS
 QESVTEQDSKDSYLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGEC (SEQ ID NO: 20)

Ab-B Variable region Light chain (humanized) protein sequence.

QVLTQSPSSLSASVGDRVTINCAQASQSVYHNTYLAWYQQKPKVPKQLIYDASTLASGVPSRFSGSGTDFTLTISSLPED
 VATYYCLGSYDCTNGDCFVFGGGTKVEIKR (SEQ ID NO: 21)

FIG. 40 (CONTINUED)

Ab-B Variable region Light chain (humanized) protein CDR sequences.

CDR1: QASQSVYHNTYLA (SEQ ID NO: 22)

CDR2: DASTLAS (SEQ ID NO: 23)

CDR3: LGSYDCTNGDCFV (SEQ ID NO: 24)

Ab-B Variable region Light chain (humanized) DNA sequence. CDR1: Bold; CDR2: Underlined; CDR3: Italics.

CAAGTGCTGACCCAGTCTCCATCCTCCCTGCTGCACTCTGTAGGAGACAGAGTCACCATCAATTGCCAGGCCAGTCAG
 AGTGTATTATCAATAACACCTACCTGGCTGGTATCAGCAGAAACCAAGGAAAGTTCCCTAAGCAACTGATCTATGATGC
 ATCCACTCTGGCATCTGGGGTCCCATCTCGTTTCAGTGGCAGTGGATCTGGACAGATTTCACCTCTCACCATCAGCAGC
 CTGCAGCCTGAAAGATGTTGCAACTTATTACTGCTGGGCAGTTATGATTGTAATAATGGTGAATGTTTTCGGCGGAG
 GAACCAAGGTGGAATCAAAACGT (SEQ ID NO: 25)

Ab-B Light chain (humanized) Full length DNA sequence.

CAAGTGCTGACCCAGTCTCCATCCTCCCTGCTGCACTCTGTAGGAGACAGAGTCACCATCAATTGCCAGGCCAGTCAGA
 GTGTTTATCATAAACACCTACCTGGCTGGTATCAGCAGAAACCAAGGAAAGTTCCCTAAGCAACTGATCTATGATGCATC
 CACTCTGGCATCTGGGGTCCCATCTCGTTTCAGTGGCAGTGGATCTGGACAGATTTCACCTCTCACCATCAGCAGCCTG
 CAGCCTGAAAGATGTTGCAACTTATTACTGCTGGGCAGTTATGATTGTAATAATGGTGAATGTTTTCGGCGGAGG
 AACC AAGGTGGAAATCAAACGTACGGTGGCTGCACCATCTGCTTCATCTCCGCCATCTGATGAGCAGTTGAAATCT
 GGAACTGCCCTGTTGTGCTGCTGTAATACTTCTATCCAGAGAGGCCAAAGTACAGTGGAAAGGTGATAACGCCCC
 TCCAAATCGGGTAACTCCAGGAGAGTGTACAGAGCAGCAAGGACAGCACCTACAGCCTCAGCAGCACCCCTGA
 CGCTGAGCAAAGCAGACTACGAGAAACACAAAGTCTACGCCCTGCGAAGTCAACCCATCAGGGCCTGAGCTCGCCCGTCA
 CAAAGAGCTTCAACAGGGGAGAGTGTAG (SEQ ID NO: 26)

FIG. 40

Ab-C Sequences**Ab-C Heavy Chain Full length DNA sequence**

GAGGTGCAGCTGGTGGAGTCTGGGGAGGCTTGGTCCAGCCTGGGGGGTCCCTGAGACTCTCCTGTGCAGCCTCTGGAT
 TCTCCCTCAGTAACACTACTACGTGACCTGGTCCGTACGGTCCAGGGAAGGGCTGGAGTGGTGGCATCATCTATGG
 TAGTGATGAACCCGCTACGCTACCTCCGCTATAGCCGATTCAACCATCTCCAGAGACAATTCCAAGAACAACCTGTAT
 CTTCAATGAACAGCCTGAGAGCTGAGGACACTGCTGTATTACTGTCTAGAGATGATAGTAGTAGTGGATGCA
 AAGTTCAACTTGTGGGCCAAGGACCCCTCGTCAACGCTCGAGCCCTCCACCAAGGCCCATCTTCCCGAACCCGCTGG
 CACCTCCTCCAAGAGCACCTCTGGGGGACAGCGGCCCTGGGCTGCTGTCAAGGACTACTTCCCGAACCCGCTGAC
 GGTGCTGTGAACTCAGCGCCCTGACCAAGCGGTGCAACCTTCCCGCTGTCTACAGTCTCAGGACTCTACTCC
 CTCAGCAGCGTGTGACCGTGCCTCCAGCAGCTTGGCACCCAGACCTACATCTGCAACGTGAATCACAAGCCACG
 AACACCAAGTGGACAAGAGAGTTGAGCCCAATCTTGTGACAAAACTCACACATGCCACCGTGCCAGCACTGAA
 CTCCTGGGGACCGTCAGTCTTCTCTTCCCCCAAAACCAAGGACACCCCTCATGATCTCCCGACCCCTGAGGTCA
 CATGCGTGGTGTGACGTGAGCCACGAAGACCCCTGAGGTCAAGTTCAACTGTAAGTGGACGGCGTGGAGGTGCATA
 ATGCCAAGACAAAGCCGCGGAGGAGCAGTACGCCAGCACGTACCGTGTGGTCAAGCTCTCACCGTCTCACCCAGG
 ACTGGCTGAATGGCAAGGATACAAAGTCAAGGTCTCCAACAAGCCCTCCAGCCCCATCGAAGAAACCATCTCCA
 AAGCCAAAGGGCAGCCCCGAGAACCAAGGTGTACACCTGCCCCCATCCGGGAGGAGATGACCAAGAACCAAGGTC
 AGCCTGACCTGCTGTCAAGGCTTCTATCCAGCGACATCGCCGTGGAGTGGAGAGCAATGGCAGCCCGAGAAC
 AACTACAAGACCAACGCTCCCGTGTGACTCCGACGGCTCTTCTCTCTACAGCAAGCTCACCGTGGACAAGAGCA
 GGTGGCAGCAGGGGAACGTCTTCTCATGTCTCGTGATGAGGCTCTGCACAACCACTACACGACAGAAAGACCTCT
 CCTGTCTCCGGGTAAA (SEQ ID NO: 27)

Ab-C Heavy Chain Full length polypeptide sequence

EVQLVESGGGLVQPGGSLRLSCAASGFSLSNYYVTWVRQAPGKGLEWVGIYGSDEYATSAIGRFTISRDNKNTLYLQM
 NSLRAEDTAVYYCARDSSDWDAKFNLWGQGTLVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNS
 GALTSGVHTFPAVLQSSGLYSLSSVTVTPSSSLGTQTYICNVNHKPSNTKVDKRVEPKSCDKTHTCPPCPAPELLGGPSVFLFP
 PKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVS
 NKALPAPIEKTISKAKGQPREPQVYTYLPPSREEMTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPVLDSDGSFFLY
 SKLTVDKSRWQQGNVFCFSVMHEALHNHYTQKSLSLSPGK (SEQ ID NO: 28)

FIG. 40 (CONTINUED)

Ab-C Light Chain Full length DNA sequence

GCTATCCAGATGACCCAGTCTCCTTCCTCCCTGTCTGCACTCTGTAGGAGACAGAGTCACCATCACTTGCCAGGCCAGTC
 AGAGCATTAACAATGAGTTATCCTGGTATCAGCAGAAACCAGGAAAGCCCTAAGCTCCTGATCTATAGGGCATCCA
 CTCTGGCATCTGGGTCCCATCAAGGTTCAAGGCGCAGTGATCTGGGACAGACTTCACTCTCACCATCAGCAGCCTGCA
 GCCTGATGATTTTGCAACTTATTACTGCCAACAGGGTTATAGTCTGAGGAACATTGATAATGCTTTCGGCGGAGGGACC
 AAGGTGGAAATCAACGTACGGTGGTGCAACCATCTGTCTTCACTTCCCGCCATCTGATGAGCAGTTGAAATCTGGAA
 CTGCCTCTGTTGTGCTGCTGAATAACTTCTATCCCAAGAGGCCAAAGTACAGTGGAAGGTGGATAACGCCCTCCA
 ATCGGGTAACTCCCAAGGAGGTGTCAACAGAGCAGCAAGGACAGCACCTACAGCCTCAGCAGCACCCCTGACGCT
 GAGCAAGCAGACTACGAGAAACACAAAGTCTACGCCCTGCGAAGTCAACCCATCAGGGCCTGAGCTCGCCCGTCACAAA
 GAGCTTCAACAGGGAGAGTGT (SEQ ID NO: 29)

Ab-C Light Chain Full length polypeptide sequence

AIQMTQSPSSLSASVGDRTVTITCQASQSNNELSWYQQKPGKAPKLLIYRASTLASGVPSRFSGSGTDFTLTISSLQPDFAI
 YYCQQGYSLRNIDNAFGGGTKVEIKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNFPYPRQAKVQWKVDNALQSGNSQESVT
 EQDSKDSYSTLSSTLTLSKADYEKHKVYACEVTHQGLSPVTKSFNRGEC (SEQ ID NO: 30)