SEQUENCE LISTING

<110> Grawunder, Ulf

<120> Transposition-mediated identification of specific binding or functional proteins

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<170> PatentIn version 3.5

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tagatattaa gttttattat atttacactt acatactaat aataaattca acaaacaatt 180

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35 40 45

Gln Gly Ile Arg Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys
50 55 60

Ala Pro Lys Leu Leu Ile Tyr Ala Ala Ser Thr Leu Gln Ser Gly Val
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Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
85 90 95

Ile Ser Ser Leu Gln Pro Glu Asp Val Ala Thr Tyr Tyr Cys Gln Arg
100 105 110

Tyr Asn Arg Ala Pro Tyr Thr Phe Gly Gln Gly Thr Lys Val Glu Ile
115 120 125

Lys Arg Ser Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp
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Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn

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Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu
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Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp
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Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr
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35 40 45

Asp Asp Tyr Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
50 55 60

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Tyr Tyr Cys Ala Lys Val Ser Tyr Leu Ser Thr Ala Ser Ser Leu Asp
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Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys
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Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly
145                 150                 155                 160

Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
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Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
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Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn
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Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro
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Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
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Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
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<211> 437
<212> DNA
<213> Artificial Sequence

<220>
<223> libraries for variable heavy chain domains containing N-sequences in the HCDR3 and flanked by ClaI and Eco47III restriction sites

<220>
<221> misc_feature
<222> (362)..(385)
<223> N = wildcard, nucleotide can be any of the four nucleotides occuring in DNA

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gagactctcc tgtgcggcct ctggattcac ctttgatgat tatgccatgc actgggtccg 180

gcaagctcca gggaagggcc tggaatgggt ctcagctatc acttggaata gtggtcacat 240

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cgtctcgagc gctgcat 437

<210> 10
<211> 395
<212> DNA
<213> Artificial Sequence

<220>
<223> libraries for variable light chain domains containing N-sequences in the LCDR3 and flanked by ClaI and Eco47III restriction sites

<220>
<221> misc_feature
<222> (337)..(351)
<223> N = wildcard, nucleotide can be any of the four nucleotides occuring in DNA

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gtcaccatca cttgtcgggc aagtcagggc atcagaaatt acttagcctg gtatcagcaa 180

aaaccaggga aagcccctaa gctcctgatc tatgctgcat ccactttgca atcaggggtc 240

ccatctcggt tcagtggcag tggatctggg acagatttca ctctcaccat cagcagccta 300

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<210> 11
<211> 1784
<212> DNA
<213> Artificial Sequence

<220>
<223> ORF of functional PiggyBac transposase enzyme

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agtgaaatat tagacgaaca aaatgttatt gaacaaccag gttcttcatt ggcttctaac 240

agaatcttga ccttgccaca gaggactatt agaggtaaga ataaacattg ttggtcaact 300

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<211> 593
<212> PRT
<213> Artificial Sequence

<220>
<223> Protein sequence of functional PiggyBac transposase enzyme

<400> 12

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20 25 30

His Val Ser Glu Asp Asp Val Gln Ser Asp Thr Glu Glu Ala Phe Ile
35 40 45

Asp Glu Val His Glu Val Gln Pro Thr Ser Ser Gly Ser Glu Ile Leu
50 55 60

Asp Glu Gln Asn Val Ile Glu Gln Pro Gly Ser Ser Leu Ala Ser Asn
65 70 75 80

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Arg Ile Leu Thr Leu Pro Gln Arg Thr Ile Arg Gly Lys Asn Lys His
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Cys Trp Ser Thr Ser Lys Ser Thr Arg Arg Ser Arg Val Ser Ala Leu
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Asn Ile Val Arg Ser Gln Arg Gly Pro Thr Arg Met Cys Arg Asn Ile
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Tyr Asp Pro Leu Leu Cys Phe Lys Leu Phe Phe Thr Asp Glu Ile Ile
    130                 135                 140

Ser Glu Ile Val Lys Trp Thr Asn Ala Glu Ile Ser Leu Lys Arg Arg
145                 150                 155                 160

Glu Ser Met Thr Gly Ala Thr Phe Arg Asp Thr Asn Glu Asp Glu Ile
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Tyr Ala Phe Phe Gly Ile Leu Val Met Thr Ala Val Arg Lys Asp Asn
            180                 185                 190

His Met Ser Thr Asp Asp Leu Phe Asp Arg Ser Leu Ser Met Val Tyr
        195                 200                 205

Val Ser Val Met Ser Arg Asp Arg Phe Asp Phe Leu Ile Arg Cys Leu
    210                 215                 220

Arg Met Asp Asp Lys Ser Ile Arg Pro Thr Leu Arg Glu Asn Asp Val
225                 230                 235                 240

Phe Thr Pro Val Arg Lys Ile Trp Asp Leu Phe Ile His Gln Cys Ile
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Gln Asn Tyr Thr Pro Gly Ala His Leu Thr Ile Asp Glu Gln Leu Leu
            260                 265                 270

Gly Phe Arg Gly Arg Cys Pro Phe Arg Met Tyr Ile Pro Asn Lys Pro
        275                 280                 285

Ser Lys Tyr Gly Ile Lys Ile Leu Met Met Cys Asp Ser Gly Thr Lys
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Tyr Met Ile Asn Gly Met Pro Tyr Leu Gly Arg Gly Thr Gln Thr Asn
305                 310                 315                 320

Gly Val Pro Leu Gly Glu Tyr Tyr Val Lys Glu Leu Ser Lys Pro Val
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His Gly Ser Cys Arg Asn Ile Thr Cys Asp Asn Trp Phe Thr Ser Ile
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Pro Leu Ala Lys Asn Leu Leu Gln Glu Pro Tyr Lys Leu Thr Ile Val
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Gly Thr Val Arg Ser Asn Lys Arg Glu Ile Pro Glu Val Leu Lys Asn
370 375 380

Ser Arg Ser Arg Pro Val Gly Thr Ser Met Phe Cys Phe Asp Gly Pro
385 390 395 400

Leu Thr Leu Val Ser Tyr Lys Pro Lys Pro Ala Lys Met Val Tyr Leu
405 410 415

Leu Ser Ser Cys Asp Glu Asp Ala Ser Ile Asn Glu Ser Thr Gly Lys
420 425 430

Pro Gln Met Val Met Tyr Tyr Asn Gln Thr Lys Gly Gly Val Asp Thr
435 440 445

Leu Asp Gln Met Cys Ser Val Met Thr Cys Ser Arg Lys Thr Asn Arg
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Trp Pro Met Ala Leu Leu Tyr Gly Met Ile Asn Ile Ala Cys Ile Asn
465 470 475 480

Ser Phe Ile Ile Tyr Ser His Asn Val Ser Ser Lys Gly Glu Lys Val
485 490 495

Gln Ser Arg Lys Lys Phe Met Arg Asn Leu Tyr Met Ser Leu Thr Ser
500 505 510

Ser Phe Met Arg Lys Arg Leu Glu Ala Pro Thr Leu Lys Arg Tyr Leu
515 520 525

Arg Asp Asn Ile Ser Asn Ile Leu Pro Asn Glu Val Pro Gly Thr Ser
530 535 540

Asp Asp Ser Thr Glu Glu Pro Val Met Lys Lys Arg Thr Tyr Cys Thr
545 550 555 560

Tyr Cys Pro Ser Lys Ile Arg Arg Lys Ala Asn Ala Ser Cys Lys Lys
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Cys Lys Lys Val Ile Cys Arg Glu His Asn Ile Asp Met Cys Gln Ser
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Cys

<210> 13
<211> 7385
<212> DNA
<213> Artificial Sequence

<220>
<223> sequence of the PiggyBac expression construct
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<223> upstream Sleeping beauty 5'ITR sequence

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acatctactt tgtgcatgac acaagtcatt tttccaacaa ttgtttacag acagattatt 180

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<211> 248
<212> DNA
<213> Artificial Sequence

<220>
<223> downstream Sleeping beauty 3'ITR sequence

<400> 15
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<220>
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<223> Protein sequence of the Sleeping Beauty transposase enzyme

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20 25 30

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35 40 45

His Gly Thr Thr Gln Pro Ser Tyr Arg Ser Gly Arg Arg Arg Val Leu
50 55 60

Ser Pro Arg Asp Glu Arg Thr Leu Val Arg Lys Val Gln Ile Asn Pro
65 70 75 80

Arg Thr Thr Ala Lys Asp Leu Val Lys Met Leu Glu Glu Thr Gly Thr
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Lys Val Ser Ile Ser Thr Val Lys Arg Val Leu Tyr Arg His Asn Leu
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Lys Gly Arg Ser Ala Arg Lys Lys Pro Leu Leu Gln Asn Arg His Lys
115 120 125

Lys Ala Arg Leu Arg Phe Ala Thr Ala His Gly Asp Lys Asp Arg Thr
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Phe Trp Arg Asn Val Leu Trp Ser Asp Glu Thr Lys Ile Glu Leu Phe

145 150 155 160

Gly His Asn Asp His Arg Tyr Val Trp Arg Lys Lys Gly Glu Ala Cys
165 170 175

Lys Pro Lys Asn Thr Ile Pro Thr Val Lys His Gly Gly Gly Ser Ile
180 185 190

Met Leu Trp Gly Cys Phe Ala Ala Gly Gly Thr Gly Ala Leu His Lys
195 200 205

Ile Asp Gly Ile Met Arg Lys Glu Asn Tyr Val Asp Ile Leu Lys Gln
210 215 220

His Leu Lys Thr Ser Val Arg Lys Leu Lys Leu Gly Arg Lys Trp Val
225 230 235 240

Phe Gln Met Asp Asn Asp Pro Lys His Thr Ser Lys Val Val Ala Lys
245 250 255

Trp Leu Lys Asp Asn Lys Val Lys Val Leu Glu Trp Pro Ser Gln Ser
260 265 270

Pro Asp Leu Asn Pro Ile Glu Asn Leu Trp Ala Glu Leu Lys Lys Arg
275 280 285

Val Arg Ala Arg Arg Pro Thr Asn Leu Thr Gln Leu His Gln Leu Cys
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Gln Glu Glu Trp Ala Lys Ile His Pro Thr Tyr Cys Gly Lys Leu Val
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Ala Thr Lys Tyr
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<210> 19
<211> 6624
<212> DNA
<213> Artificial Sequence

<220>
<223> sequence of the Sleeping Beauty expression construct pCDNA3.1-hygro(+)-SB

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<211> 4975
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA sequence containing a PiggyBac ITR-flanked expression cassette for membrane spanning human Ig-gamma1 heavy chains

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cttggagctc ccgtgaggcg tgcttgtcaa tgcggtaagt gtcactgatt ttgaactata 180

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<211> 2774
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA sequence containing vector backbone components ColE1 and ampicillin resistance flanked by 5' and 3' ITRs of Sleeping Beauty

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aaagtggtga tcctaactga ccttaagaca gggaatcttt actcggatta aatgtcagga 180

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<210> 24
<211> 351
<212> DNA
<213> Artificial Sequence

<220>
<223> VH coding region of anti-human CD30 antibody brentuximab

<400> 24
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tcctgcaagg cttctggcta caccttcact gactactata taacctgggt gaagcagaag 120

cctggacagg gacttgagtg gattggatgg atttatcctg gaagcggtaa tactaagtac 180

aatgagaagt tcaagggcaa ggccacattg actgtagaca catcctccag cacagccttc 240

atgcagctca gcagcctgac atctgaggac actgctgtct atttctgtgc gaactatggt 300

aactactggt ttgcttactg gggccaaggg actcaggtca ctgtctctgc a 351

<210> 25
<211> 333
<212> DNA
<213> Artificial Sequence

<220>
<223> VL coding region of anti-human CD30 antibody brentuximab

<400> 25
gacattgtgc tgacccaatc tccagcttct ttggctgtgt ctctagggca gagggccacc 60

atctcctgca aggccagcca aagtgttgat tttgatggtg atagttatat gaactggtac 120

caacagaaac caggacagcc acccaaagtc ctcatctatg ctgcatccaa tctagaatct 180

gggatcccag ccaggtttag tggcagtggg tctgggacag acttcaccct caacatccat 240

cctgtggagg aggaggatgc tgcaacctat tactgtcagc aaagtaatga ggatccgtgg 300

acgttcggtg gaggcaccaa gctggaaatc aaa 333

<210> 26
<211> 417
<212> DNA
<213> Artificial Sequence

<220>
<223> VH coding region of anti-human CD19 mAb huB12, including leader sequence

<400> 26
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gttcagctgc aagagtctgg ccctgggttg gttaagccct cccagaccct cagtctgact 120

tgtactgtgt ctgggggttc aatcagcact tctggtatgg gtgtaggctg gattaggcag 180

cacccaggga agggtctgga gtggattgga cacatttggt gggatgatga caagagatat 240

aacccagccc tgaagagcag agtgacaatc tctgtggata cctccaagaa ccagtttagc 300

ctcaagctgt ccagtgtgac agctgcagat actgctgtct actactgtgc tagaatggaa 360

ctttggtcct actattttga ctactggggc caaggcaccc ttgtcacagt ctcctca 417

<210> 27
<211> 375
<212> DNA
<213> Artificial Sequence

<220>
<223> VL coding region of anti-human CD19 mAb huB12, including leader sequence

<400> 27
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc cagcagtgaa 60

attgttctca cccagtctcc agcaaccctg tctctctctc caggggaaag ggctaccctg 120

agctgcagtg ccagctcaag tgtaagttac atgcactggt accagcagaa gccagggcag 180

gctcccagac tcctgattta tgacacatcc aaactggctt ctggtattcc agcaaggttc 240

agtggcagtg ggtctggaac agattttaca ctcacaatca gcagcctgga gccagaggat 300

gttgctgtct attactgttt tcaggggagt gtatacccat tcacttttgg ccaagggaca 360

aagttggaaa tcaaa 375

<210> 28
<211> 423
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA fragment, containing NotI-NheI-flanked VH coding region of the VH domain of anti-human CD30 mAb brentuximab

<400> 28
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cagtgtcaga tccagctgca gcagtctgga cctgaggtgg tgaagcctgg ggcttcagtg 120

aagatatcct gcaaggcttc tggctacacc ttcactgact actatataac ctgggtgaag 180

cagaagcctg gacagggact tgagtggatt ggatggattt atcctggaag cggtaatact 240

aagtacaatg agaagttcaa gggcaaggcc acattgactg tagacacatc ctccagcaca 300

gccttcatgc agctcagcag cctgacatct gaggacactg ctgtctattt ctgtgcgaac 360

tatggtaact actggtttgc ttactggggc caagggactc aggtcactgt ctctgcagct 420

agc 423

<210> 29
<211> 432
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA fragment, containing NotI-NheI-flanked VH coding region of the VH domain of anti-human CD19 mAb hBU12

<400> 29
gcggccgcca tgaattttgg actgaggctg attttcctgg tgctgaccct gaaaggcgtc 60

cagtgtcagg tgcagctgca ggaatctggc cctggcctcg tgaagccttc ccagaccctg 120

tctctgacct gcaccgtgtc cggcggctcc atctctacct ctggcatggg cgtgggctgg 180

atcagacagc atcctggcaa gggcctggaa tggatcggcc acatttggtg ggacgacgac 240

aagcggtaca accccgccct gaagtccaga gtgaccatct ccgtggacac ctccaagaac 300

cagttctccc tgaagctgtc ctccgtgacc gccgctgata ccgccgtgta ctactgcgcc 360

cggatggaac tgtggtccta ctacttcgac tactggggcc agggcaccct cgtgaccgtg 420

tcatctgcta gc 432

<210> 30
<211> 733
<212> DNA
<213> Artificial Sequence

<220>

<223> DNA fragment containing IgL coding region of anti-CD30 mAb Ac10 and flanked by NotI and BstBI restriction enzyme sites

<400> 30
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cagtgtgaca ttgtgctgac ccaatctcca gcttctttgg ctgtgtctct agggcagagg 120

gccaccatct cctgcaaggc cagccaaagt gttgattttg atggtgatag ttatatgaac 180

tggtaccaac agaaaccagg acagccaccc aaagtcctca tctatgctgc atccaatcta 240

gaatctggga tcccagccag gtttagtggc agtgggtctg ggacagactt caccctcaac 300

atccatcctg tggaggagga ggatgctgca acctattact gtcagcaaag taatgaggat 360

ccgtggacgt tcggtggagg caccaagctg gaaatcaaac gtacggtggc tgcaccatct 420

gtcttcatct tcccgccatc tgatgagcag ttgaaatctg gaactgcctc tgttgtgtgc 480

ctgctgaata acttctatcc cagagaggcc aaagtacagt ggaaggtgga taacgccctc 540

caatcgggta actcccagga gagtgtcaca gagcaggaca gcaaggacag cacctacagc 600

ctcagcagca ccctgacgct gagcaaagca gactacgaga aacacaaagt ctacgcctgc 660

gaagtcaccc atcagggcct gagctcgccc gtcacaaaga gcttcaacag gggagagtgt 720

tagcgctttc gaa 733

<210> 31
<211> 718
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA fragment containing IgL coding region of anti-CD19 mAb hBU12 and flanked by NotI and BstBI restriction enzyme sites

<400> 31
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cagtgtgaaa ttgttctcac ccagtctcca gcaaccctgt ctctctctcc aggggaaagg 120

gctaccctga gctgcagtgc cagctcaagt gtaagttaca tgcactggta ccagcagaag 180

ccagggcagg ctcccagact cctgatttat gacacatcca aactggcttc tggtattcca 240

gcaaggttca gtggcagtgg gtctggaaca gattttacac tcacaatcag cagcctggag 300

ccagaggatg ttgctgtcta ttactgtttt caggggagtg tatacccatt cacttttggc 360

caagggacaa agttggaaat caaacgtacg gtggctgcac catctgtctt catcttcccg 420

ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc 480

tatcccagag aggccaaagt acagtggaag gtggataacg ccctccaatc gggtaactcc 540

caggagagtg tcacagagca ggacagcaag gacagcacct acagcctcag cagcaccctg 600

acgctgagca aagcagacta cgagaaacac aaagtctacg cctgcgaagt cacccatcag 660

ggcctgagct cgcccgtcac aaagagcttc aacaggggag agtgttagcg ctttcgaa 718

<210> 32
<211> 7645

<212> DNA
<213> Artificial Sequence

<220>
<223> sequence of pPB-EGFP-HC-Ac10

<400> 32
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agtgatgtcg tgtactggct ccgccttttt cccgagggtg ggggagaacc gtatataagt 660

gcagtagtcg ccgtgaacgt tctttttcgc aacgggtttg ccgccagaac acaggtaagt 720

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Phe Ser Phe Gln Pro Glu Ser Asn Pro Met Pro Ala Val His Arg Asp
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Pro Ala Leu Ser Pro Val Pro Pro Val Val His Leu Thr Leu Arg Arg
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Ala Gly Asp Asp Phe Ser Arg Arg Tyr Arg Arg Asp Phe Ala Glu Met
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Ser Ser Gln Leu His Leu Thr Pro Phe Thr Ala Arg Gly Arg Phe Ala
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cggaaatgtt gaatactcat actcttcctt tttcaatatt attgaagcat ttatcagggt 2940

tattgtctca tgagcggata catatttgaa tgtatttaga aaaataaaca aatagggggtt 3000

ccgcgcacat ttccccgaaa agtgccacct gacgtctaag aaaccattat tatcatgaca 3060

ttaacctata aaaataggcg tatcacgagg ccctttcgtc 3100

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<211> 411
<212> DNA
<213> Artificial Sequence

<220>
<223> VkappaK1-5 PCR product

<400> 47
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tggctcccag gtgccaaatg tgacatccag atgacccagt ctccttccac cctgtctgca 180

tctgtaggag acagagtcac catcacttgc cgggccagtc agagtattag tagctggttg 240

gcctggtatc agcagaaacc agggaaagcc cctaagctcc tgatctatga tgcctccagt 300

ttggaaagtg gggtcccatc aaggttcagc ggcagtggat ctgggacaga attcactctc 360

accatcagca gcctgcagcc tgatgatttt gcaacttatt actgccaaca g 411

<210> 48
<211> 495
<212> DNA
<213> Artificial Sequence

<220>
<223> NNK6-JkappaK2-CK-kappa PCR product

<220>

<221> misc_feature
<222> (22)..(23)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (25)..(26)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (28)..(29)
<223> n is a, c, g, or t

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<222> (31)..(32)
<223> n is a, c, g, or t

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<222> (34)..(35)
<223> n is a, c, g, or t

<220>
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<222> (37)..(38)
<223> n is a, c, g, or t

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cagttgaaat ctggaactgc ctctgttgtg tgcctgctga ataacttcta tcccagagag 180

gccaaagtac agtggaaggt ggataacgcc ctccaatcgg gtaactccca ggagagtgtc 240

acagagcagg acagcaagga cagcacctac agcctcagca gcaccctgac gctgagcaaa 300

gcagactacg agaaacacaa agtctacgcc tgcgaagtca cccatcaggg cctgagctcg 360

cccgtcacaa agagcttcaa caggggagag tgttagcgct ttcgaaattg gattggatcg 420

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ctgtttcctg tgtga 495

<210> 49
<211> 3083
<212> DNA
<213> Artificial Sequence

<220>
<223> pUC57_VH3-30

<400> 49
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ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc 180

accatatgcg gtgtgaaata ccgcacagat gcgtaaggag aaaataccgc atcaggcgcc 240

attcgccatt caggctgcgc aactgttggg aagggcgatc ggtgcgggcc tcttcgctat 300

tacgccagct ggcgaaaggg ggatgtgctg caaggcgatt aagttgggta acgccagggt 360

tttcccagtc acgacgttgt aaaacgacgg ccagtgaatt cgagctcggt acctcgcgaa 420

tgcatctaga tccaatccaa tcgcacagta atacacagcc gtgtcctcag ctctcaggct 480

gttcatttgc agatacagcg tgttcttgga attgtctctg gagatggtga atcggccctt 540

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aaactccatg cggccgcatt ggatatcgga tcccgggccc gtcgactgca gaggcctgca 840

tgcaagcttg gcgtaatcat ggtcatagct gtttcctgtg tgaaattgtt atccgctcac 900

aattccacac aacatacgag ccggaagcat aaagtgtaaa gcctggggtg cctaatgagt 960

gagctaactc acattaattg cgttgcgctc actgcccgct ttccagtcgg gaaacctgtc 1020

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gcgctctcct gttccgaccc tgccgcttac cggatacctg tccgcctttc tcccttcggg 1440

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acgggataat accgcgccac atagcagaac tttaaaagtg ctcatcattg gaaaacgttc 2700

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atacatattt gaatgtattt agaaaaataa acaaataggg gttccgcgca catttccccg 3000

aaaagtgcca cctgacgtct aagaaaccat tattatcatg acattaacct ataaaaatag 3060

gcgtatcacg aggccctttc gtc 3083

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<211> 2760
<212> DNA
<213> Artificial Sequence

<220>
<223> pUC57_JH4

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ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc 180

accatatgcg gtgtgaaata ccgcacagat gcgtaaggag aaaataccgc atcaggcgcc 240

attcgccatt caggctgcgc aactgttggg aagggcgatc ggtgcgggcc tcttcgctat 300

tacgccagct ggcgaaaggg ggatgtgctg caaggcgatt aagttgggta acgccagggt 360

tttcccagtc acgacgttgt aaaacgacgg ccagtgaatt cgagctcggt acctcgcgaa 420

tgcatctaga tgacgacatt ggggtcaggg aaccctggtc accgtctcct cagctagcga 480

catcggatcc cgggcccgtc gactgcagag gcctgcatgc aagcttggcg taatcatggt 540

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tgcgctcact gcccgctttc cagtcgggaa acctgtcgtg ccagctgcat taatgaatcg 720

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aaaataaaca aatagggggtt ccgcgcacat ttccccgaaa agtgccacct gacgtctaag 2700

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<210> 51
<211> 366
<212> DNA
<213> Artificial Sequence

<220>
<223> VH3-30 PCR product

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agaggtgtcc agtgtcaggt gcagctggtg gagtctgggg gaggcgtggt ccagcctggg 120

aggtccctga gactctcctg tgcagcctct ggattcacct tcagtagcta tgctatgcac 180

tgggtccgcc aggctccagg caaggggcta gagtgggtgg cagttatatc atatgatgga 240

agtaataaat actacgcaga ctccgtgaag ggccgattca ccatctccag agacaattcc 300

aagaacacgc tgtatctgca aatgaacagc ctgagagctg aggacacggc tgtgtattac 360

tgtgcg 366

<210> 52
<211> 299
<212> DNA
<213> Artificial Sequence

<220>
<223> NNK4-JH4 PCR product

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<221> misc_feature
<222> (29)..(30)
<223> n is a, c, g, or t

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<221> misc_feature
<222> (32)..(33)
<223> n is a, c, g, or t

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<221> misc_feature
<222> (35)..(36)
<223> n is a, c, g, or t

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<222> (41)..(42)
<223> n is a, c, g, or t

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atgcaagctt ggcgtaatca tggtcatagc tgtttcctgt gtgaaattgt tatccgctca 180

caattccaca caacatacga gccggaagca taaagtgtaa agcctggggt gcctaatgag 240

tgagctaact cacattaatt gcgttgcgct cactgcccgc tttccagtcg ggaaacctg 299

<210> 53
<211> 305
<212> DNA
<213> Artificial Sequence

<220>
<223> NNK6-JH4 PCR product

<220>
<221> misc_feature
<222> (26)..(27)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (29)..(30)
<223> n is a, c, g, or t

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<222> (32)..(33)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (35)..(36)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (38)..(39)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (41)..(42)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (47)..(48)
<223> n is a, c, g, or t

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gcctgcatgc aagcttggcg taatcatggt catagctgtt tcctgtgtga aattgttatc 180

cgctcacaat tccacacaac atacgagccg gaagcataaa gtgtaaagcc tggggtgcct 240

aatgagtgag ctaactcaca ttaattgcgt tgcgctcact gcccgctttc cagtcgggaa 300

acctg 305

<210> 54
<211> 311
<212> DNA
<213> Artificial Sequence

<220>
<223> NNK8-JH4 PCR product

<220>
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<222> (26)..(27)
<223> n is a, c, g, or t

<220>

<221> misc_feature
<222> (29)..(30)
<223> n is a, c, g, or t

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<221> misc_feature
<222> (32)..(33)
<223> n is a, c, g, or t

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<221> misc_feature
<222> (35)..(36)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (38)..(39)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (41)..(42)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (44)..(45)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (47)..(48)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (53)..(54)
<223> n is a, c, g, or t

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ccaaggaacc ctggtcaccg tctcctcagc tagcgacatc ggatcccggg cccgtcgact 120

gcagaggcct gcatgcaagc ttggcgtaat catggtcata gctgtttcct gtgtgaaatt 180

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cgggaaacct g 311

<210> 55
<211> 317
<212> DNA
<213> Artificial Sequence

<220>
<223> NNK10-JH4 PCR product

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<223> n is a, c, g, or t

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<221> misc_feature
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