

cx43-S-25

right arm-lamGolden-left arm-CDS-GGGGS₃-eGFP-SV40 polyA-bGH polyA
TGATACACATGAGCACAAGAACTGCCCCGTGCAGGAAGTCGTTGACCCATGCACAA
GCCTTCGACTACCCTGACGACACGCACGAACATAAAAAGCTTACACCGGGTCACGAA
TTGCAGCCATTGGCGTTGATAGATGCACGGCCGTGCAGCCGTGCCAGCAGCCGCAT
GAGCAGTCGAGCGAGGCCTGATGACCTGGACGTCGTCGACGGAGGAGGTGGTTCA
GGTGGTGGAGGATCTGGAGGTGGAGGTTCAAGTGAGCAAGGGCGAGGAGCTGTTCA
CCGGGGTGGTGCCCATCCTGGTTCGAGCTGGACGGCGACGTAAACGGCCACAAGTT
CAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAG
TTCATCTGCACCACCGGCAAGCTGCCCCGTGCCCTGGCCACCCTCGTGACCACCCT
GACCTACGGCGTGCAGTGCTTCAGCCGCTACCCCGACCACATGAAGCAGCAGACT
TCTTCAAGTCCGCCATGCCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAG
GACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCCTGG
TGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGG
GCACAAGCTGGAGTACAACAGCCACAACGTCTATATCATGGCCGACAAGCA
GAAGAACGGCATCAAGGTGAAGTTCAAGATCCGCCACAACATCGAGGACGGCAGCG
TGCAGCTCGCCGACCACTACCAGCAGAACACCCCCATCGGCGACGGCCCCGTGCT
GCTGCCCGACAACCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAGACCCCAAC
GAGAAGCGCGATCACATGGTCCTGCTGGAGTTCGTGACCGCCGCCGGGATCACTCT
CGGCATGGACGAGCTGTACAAGTAATCTAGAGATCCAGACATGATAAGATACATTGAT
GAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTT
GTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACA
ATTGCATTCATTTTATGTTTCAGGTTTCAGGGGGAGGTGTGGGAGGTTTTTTAATTCGC
GGCCGCGAATTCAGTAGTGATTGCTCGAGTGGCCAGATCCTGTGCCTTCTAGTTGCC
AGCCATCTGTTGTTTGCCCTCCCCCGTGCCCTTCTTGACCCTGGAAGGTGCCACT
CCCACTGTCTTTTCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTC
ATTCTATTCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGA
CAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGG

cx43-S-10, cx43-S-40, cx43-S-100 KI donors were the same as cx43-S-25 KI donor except for microhomologous arms

cx43-D-25

lamGolden-left arm-CDS-GGGGS₃-eGFP-SV40 polyA-bGH polyA-right arm-lampery golden
CCCCGTGCAGGAAGTCGTTGACCCATGCACAAGCCTTCGACTACCCTGACGACACGC
ACGAACATAAAAAGCTTACACCGGGTCACGAATTGCAGCCATTGGCGTTGATAGATG
CACGGCCGTGCAGCCGTGCCAGCAGCCGCATGAGCAGTCGAGCGAGGCCTGATGA
CCTGGACGTCGTCGACGGAGGAGGTGGTTCAAGTGGTGGAGGATCTGGAGGTGGA
GGTTCAAGTGAGCAAGGGCGAGGAGCTGTTCAACGGGGTGGTGCCCATCCTGGTCG
AGCTGGACGGCGACGTAAACGGCCACAAGTTCAAGCTGTCCGGCGAGGGCGAGG
GCGATGCCACCTACGGCAAGCTGACCCTGAAGTTTCATCTGCACCACCGGCAAGCTG
CCCCGTGCCCTGGCCACCCTCGTGACCACCCTGACCTACGGCGTGCAGTGCTTCA
GCCGCTACCCCGACCACATGAAGCAGCAGACTTCTTCAAGTCCGCCATGCCCGAA

GGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCG
 CGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGC
 ATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACATAA
 CAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAAGTT
 CAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAG
 CAGAACACCCCCATCGGCGACGGCCCCGTGCTGCTGCCCCGACAACCACTACCTGA
 GCACCCAGTCCGCCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCCT
 GCTGGAGTTCGTGACCGCCGCGGGATCACTCTCGGCATGGACGAGCTGTACAAGT
 AATCTAGAGATCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAAC TAG
 AATGCAGTGAATAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAAC
 CATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCAATTTATGTTTCAGGT
 TCAGGGGGAGGTGTGGGAGGTTTTTTAATTCGCGGCCCGCAATTCAGTAGTGATTGC
 TCGAGTGGCCAGATCCTGTGCCCTTAGATTGCCAGCCATCTGTTGTTGCCCTCCC
 CCGTGCCCTTCTTGACCCTGGAAGGTGCCACTCCCCTGTCCTTTCTAATAAAATG
 AGGAAATTGCATCGCATTGTCTGAGTAGGTGTCACTTCTATTCTGGGGGGTGGGGTGG
 GGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGC
 GGTGGGCTCTATGGTGATACACATGAGCACAAGAACTGTGTCGACCCCGTGCAGGA
 AGTCGTTGACCC

cx43-D-10, cx43-D-40, cx43-D-100 KI donors were the same as cx43-D-25 KI donor except for microhomologous arms

cx43-HR

lamGolden-**left arm**-**CDS**-**GGGS₃**-**eGFP**-**right arm**-**lamGolden**

CCCGTGCAGGAAGTCGTTGACCCGTGCGTTGGGAAGGCTTCTTGACAAGGTGCAG
 GCCTACTCCACGGCCGAGGGAAGGTCTGGCTCTCTGTGCTCTTCATCTTCCGGAT
 CTTGTTCTGGGAACAGCAGTGAATCGGCCTGGGGTGACGAGCAGTCAGCTTTCA
 AGTGCAATACCCAGCAGCCTGGTTGCGAGAATGTCTGCTATGACAAATCGTTCCCCA
 TCTCGCACGTGCGCTTCTGGGTGCTTCAGATCATCTTCGTGTCCACGCCGACGCTC
 CTGTACCTGGCGCATGTCTTCTACCTGATGCGAAAGGAGGAGAACTCAACCGTAAA
 GAAGAGGAGCTGAAGGCCGTGCAGAACGACGGCGGCGACGTTGAGCTCCATCTCA
 AGAAAATCGAGCTCAAGAAGTTAAGCATGGCCTAGAGGAGCACGGCAAGGTGAAG
 ATGAAGGGTAGCCTGCTGCGCACCTACATCTTCAGCATCATTTTCAAGTCCATCTGTG
 AGGTGGTCTTCTGCTCATCCAATGGTACCTCTACGGCTTCAGCCTCTCTGCCGTGT
 ACACATGCGAACGCACGCCTTGCCCTCATAGGGTGGACTGTTTCCTTTCTCGGCC
 ACCGAGAAGACCATCTTCATCATCTTCATGCTAGTGGTTTCGCTCTTCTCGCTTTTGC
 TCAACATCATCGAGCTCTTCTACGTGCTCTTCAAACGAATCAAGGACCGCGTCAAAA
 GCCGACAAAACACACAGTTTCCCACTGGCACTTTGAGCCCCACGCCGAAGGAACTG
 TCTACGACCAAATACGCGTACTACAATGGTTGCTCCTCACCAACTGCACCGCTCTCA
 CCAATGTCACCTCCAGGCTACAACTGGCCACCGGCGAAAGGACCAACTCTTGCCG
 CAATTACAACAAGCAGGCTAATGAGCAGAATTGGGCCAACTACAGCACAGAACAGAA
 TCGCTTGGGCCAGAATGGCAGCACCATCTCCAATTCACATGCACAAGCCTTCGACTA
 CCTGA**CGACACGCACGAACATAAAAAGCTTACACCGGGTCACGAATTGCAGCCATT**
GGCGTTGATAGATGCACGGCCGTGCAGCCGTGCCAGCAGCCGCATGAGCAGTCGA

GCGAGGCCTGATGACCTGGACGTGTCGACGGAGGAGGTGGTTCAGGTGGTGGAG
 GATCTGGAGGTGGAGGTTCAAGTGAAGCAAGGGCGAGGAGCTGTTACCGGGGTGGT
 GCGGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCA
 CCACCGGCAAGCTGCCCCGTGCCCTGGCCCACCCTCGTGACCACCCTGACCTACGG
 CGTGCAAGTGTTCAGCCGCTACCCCGACCACATGAAGCAGCAGCACTTCTTCAAGT
 CCGCCATGCCCCGAAGGTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGC
 AACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCA
 TCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCT
 GGAGTACAACACTACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGG
 CATCAAGGTGAAGTTCAGATCCGCCACAACATCGAGGACGGCAGCGTGACGCTCG
 CCGACCACTACCAGCAGAACACCCCCATCGGCGACGGCCCCGTGCTGCTGCCCGA
 CAACCACTACCTGAGCACCAGTCCGCCCTGAGCAAAGACCCCAACGAGAAGCGC
 GATCACATGGTCTGCTGGAGTTCGTGACCGCCGCCGGGATCACTCTCGGCATGGA
 CGAGCTGTACAAGTAA^{CCATGCCACATCCCAACGCTAGAGGACTGACACAGGCAATG}
^{AGACATGCTCATCTCCTGTAACGAGGAGGCGAGGCTGAATCCTCGCAAGTTCCTCAC}
^{TCTAGACTCTAGTCGATACAGAGACATAAAATTACTCACACTGCTGGAGGTACTATTCA}
^{TTAACAATGATGTTGAAACTAGCAGAGCTAACATGCCCTAACTACCGAACAGTCAAGG}
^{GGGCTCGTCCGGGACGAACGGCACTGAACTTGCCACGTCTCTCAACTCAGCCCAC}
^{CAGAACAGACCTTGCGGATGTGATTGATTTTTGTTGTGCTTGTTGAAATGCCACACAA}
^{TGATTCCACTTTAACACTTTGCACTCCTACAGTTTGTGTAGATTTGTGTTCTAACCCCC}
^{CCTACAGTCGATCCCGGTTATAACGTCAATCGTTTCGCATGATCTCAAATCCAACAGGG}
^{TGTTACAGTCATGAATTAATTTATTTATTCATAAAGATTAACATGATATCCACCACTA}
^{GATAAAGATTGACTACTACTCAAGGTCATGTCTACACAATTAATACCATCCAAGTGCAT}
^{ATTTATTGACAATAATCCAAATTCAGCAATACGTTTCATCAGCAAATGTGTTTTTTTTT}
^{TTTTTGTTATTAATCACAGTGGACTGTCATTTTCCTGATAAACTTTGAATTTATGTGGTG}
^{TTGGTTTTTGTTATTCGATGATATTTGTTGTATTTTGGGTGGTGGTATGAAACGGAAAT}
^{GTCTTATATGTGGACTGAGCTGCTGTAACCTTACACGGCTTGATTCTTTCTTTTTCTGC}
^{ATCTTGATTTTACTGAATAGTATGAGAGAGAAAGGCTTTATTTTGTCTCTTTTTTATT}
^{TCTATTTTCTTTATTTTGGAGGGCAGACAGAATGATTTAGTTTTTTTTTTATTAGAA}
^{TGAATAGAAATTAACGTCTTACCTTTGGAGTGAATGACCTTTTAACTCAATGTAATCG}
^{TTGCTGCTTGAGAGATCCCGTGCAGGAAGTCGTTGACCC}

cx43.4-S-25

right arm-lamGolden-left arm-CDS-GGGGS₃-eGFP-SV40 polyA-bGH polyA
 GCGCAGGCACCTGAAACTGGCTCAGCCCGTGCAGGAAGTCGTTGACCCCGTCATC
 GCGAGACATTGACCGCCTTCGTCGTCATTTAAAGTTAGCCCAACAGCACCTGGACCT
 CGCCTATCAGAATGGCGAGAGCAGTCCTTCACGCAGCAGCAGCCCAGAGTCCAACG
 GCACTGCTGTCGAGCAGAACAGACTTAACCTTGTCTCAGGAGAAGCAGGGGAGCAAA
 TGTGAAAAAGGGATCCATGCTGTCGACGGAGGAGGTGGTTCAGGTGGTGGAGGATC
 TGGAGGTGGAGGTTCAAGTGAAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGCC
 CATCCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGC
 GAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCA
 CCGGCAAGCTGCCCCGTGCCCTGGCCCACCCTCGTGACCACCCTGACCTACGGCGT

GCAGTGCTTCAGCCGCTACCCCGACCACATGAAGCAGCACGACTTCTTCAAGTCCG
 CCATGCCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAAC
 TACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCG
 AGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGA
 GTACAACACTACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCAT
 CAAGGTGAACTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCC
 GACCACTACCAGCAGAACACCCCCATCGGCGACGGCCCCGTGCTGCTGCCCCGACA
 ACCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAGACCCCAACGAGAAGCGCGAT
 CACATGGTCCTGCTGGAGTTCGTGACCGCCGCGGGATCACTCTCGGCATGGACGA
 GCTGTACAAGTAATCTAGAGATCCAGACATGATAAGATACATTGATGAGTTTGGACAAA
 CCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCT
 TTATTTGTAACCATTATAAGCTGCAATAAACAAAGTTAACAACAACAATTGCATTCATTTT
 ATGTTTCAGGTTTCAGGGGGAGGTGTGGGAGGTTTTTAATTTCGCGGCCGCGAATTCA
 CTAGTGATTGCTCGAGTGGCCAGATCCTGTGCCTTCTAGTTGCCAGCCATCTGTTGT
 TTGCCCCCTCCCCCGTGCCTTCCTTGACCCTGGAAGGTGCCACTCCCCTGTCTTT
 CCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCATTCTATTCTGGG
 GGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCAT
 GCTGGGGATGCGGTGGGCTCTATGG

cx43.4-S-10, cx43.4-S-40, cx43.4-S-100 KI donors were the same as cx43.4-S-25 KI donor except for microhomologous arms

cx43.4-D-25

lamGolden-**left arm**-**CDS**-**GGGS₃**-**eGFP**-SV40 polyA-bGH polyA-**right arm**-**lampyry**
golden

CCCGTGCAGGAAGTCGTTGACCC**CGTCATCGCGAGACATTGACCGCCT**TCGTCGTC
 ATTTAAAGTTAGCCCAACAGCACCTGGACCTCGCCTATCAGAATGGCGAGAGCAGTC
 CTTACGCAGCAGCAGCCCAGAGTCCAACGGCACTGCTGTCGAGCAGAACAGACTT
 AACTTTGCTCAGGAGAAGCAGGGGAGCAAATGTGAAAAAGGGATCCATGCTGTCGA
C**GGAGGAGGTGTT****CAGGTGTTGGAGGATCTGGAGGTGGAGGTT****CAGTGAGCAAG**
GGCGAGGAGCTGTT**CACCGGGGTGGT****GGCCATCCTGGT****CGAGCTGGACGGCGAC**
GTAACGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACG
GCAAGCTGACCCTGAAGTTCATCTGCACCACCGGCAAGCTGCCCGTGCCCTGGCC
CACCCTCGTGACCACCCTGACCTACGGCGTGCAGTGCTTCAGCCGCTACCCCGACC
ACATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAGGAG
CGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTT
CGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAG
GACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACTACAACAGCCACAACGTCTA
TATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACTTCAAGATCCGCCACAA
CATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCCATC
GGCGACGGCCCCGTGCTGCTGCCGACAACCACTACCTGAGCACCCAGTCCGCC
TGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCCTGCTGGAGTTCGTGACC
GCCGCCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAATCTAGAGATCCAGA
 CATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAAT

GCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAA
 ACAAGTTAACAACAACAATTGCATTCATTTTATGTTTCAGGTTTCAGGGGGAGGTGTGG
 GAGGTTTTTTAATTCGCGGCCGCGAATTCAGTAGTGATTGCTCGAGTGGCCAGATCC
 TGTGCCCTTCTAGTTGCCAGCCATCTGTTGTTTGCCCTCCCCGTGCCTTCCTTGAC
 CCTGGAAGGTGCCACTCCCCTGTCTTTCTAATAAAATGAGGAAATTGCATCGCAT
 TGTCTGAGTAGGTGTCATTCTATTCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGG
 GGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGGGC
 GCAGGCACCTGAAACTGGCTCAGGTCGACCCCGTGCAGGAAGTCGTTGACCC

cx43.4-D-10, cx43.4-D-40, cx43.4-D-100 KI donors were the same as cx43.4-D-25 KI donor except for microhomologous arms

cx43.4-HR

lamGolden-left arm-CDS-GGGGS₃-eGFP-right arm-*lamGolden*

CCCGTGCAGGAAGTCGTTGACCCAGGACTGAGACGGTGGTACTTCTTGAAGCACCA
 TGAGCTGGAGTTTTCTTACGCGGTTGTTGGATGAAATCTCCAACCACTCCACCTTCG
 TGGGCAAGATATGGCTCACGTTATTCATCATCTTCCGCATTGTTTTGACTGTTGTGGG
 GGGAGAATCGATATACTACGATGAACAGAGCAAATTTGTGTGTAATACCCAGCAACCT
 GGTTGTGAGAACGTTTGCTACGATGCATTTGCACCACTCTCTCATGTCCGGTTCTGG
 GTTTTCCAGATCATTTTGATCACAACCCCCACTATCATGTACTTGGGATTTGCTATGCA
 CAAGATCGCTCGGTCAAATGATGTGGAGTACAGGCCAGTCAACAGGAAACGCATGC
 CAATGATCAACCGCGGAGCCAACCGGGATTATGAGGAGGCCGAAGACAACGGTGAG
 GAAGATCCTATGATTATGGAAGAGATCGTGCCTGAGAAAGAAAAGGCTCCAGAGAAG
 TCTGCTGTAAACATGACGGCCGGCGGAGAATAAAGCGAGATGGGCTCATGAAGGT
 GTACATCCTGCAGCTTCTGTCGAGGATTATTTTCGAGGTGGGCTTTCTCTTTGGCCA
 GTATATCCTGTATGGTTTCGAGGTGCCCCGTCATACGTGTGCACTCGCAGTCCCTG
 CCCGCACACCGTAGACTGCTTTGTGTACGTCCGACAGAGAAAACCATCTTTCTGCT
 GATTATGTATGCCGTGAGCTGTCTCTGCTTGTCTTACGGTGCTGGAGATACTTCAT
 TTGGGCCTCAGCGGAATTCGTGATGCTTTTCGACGACGTGCACGCCATCAAAGTGTT
 CAGCGCCACGTGCCCCCATATGCAGACAGGTGCCCACTGCCCCGCCAGGGTACC
 AACTGCCCTGAAAAAGACAAGCTGTCTTTGGGAATGAAACCGGAGTATAACTTGG
 ACTCCGGTCGGGAGTCTTTTGGTGACGAGTCGTCATCGCGAGACATTGACCGCCTT
 CGTCGTCATTTAAAGTTAGCCCAACAGCACCTGGACCTCGCCTATCAGAATGGCGAG
 AGCAGTCCTTCACGCAGCAGCAGCCAGAGTCCAACGGCACTGCTGTGCGAGCAGA
 ACAGACTTAACCTTTGCTCAGGAGAAGCAGGGGAGCAAATGTGAAAAAGGGATCCATG
 CTGTCGACGGAGGAGGTGGTTCAGGTGGTGGAGGATCTGGAGGTGGAGGTTCAGT
 GAGCAAGGGCGAGGAGCTGTTCAACGGGGTGGTGCCCATCCTGGTCGAGCTGGAC
 GGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCA
 CCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCACCGGCAAGCTGCCCGTGCCC
 TGGCCACCCCTCGTGACCACCCTGACCTACGGCGTGCACTGCTTCAGCCGCTACCC
 CGACCACATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCCGAAGGCTACGTCC
 AGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGT
 GAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCA
 AGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACAGCCACAAC

GTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACTTCAAGATCCGC
 CACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCC
 CCATCGGCGACGGCCCCGTGCTGCTGCCCGACAACCACTACCTGAGCACCCAGTC
 CGCCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCCTGCTGGAGTTCC
 TGACCGCCGCGGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAATTGAGACTC
 ATAGACTATCATTCGTCTGCTTTTCTTTGCAACGGAGCGCCTCACCTGGGATTAGCAA
 TGCTCATCTTGCAAAGTGGAAGAGTCCAGTTTGTGTGTGTGTGTGTGTGTGTGTGT
 GT
 TCCTACGCACACTGGTGAATCTGTGAGAATGTGTCATGCAGTATTATGGCAAGTGAAC
 GCCATGTAGAAAATCTCAGAAGCAGCATTTACCAGCCAGTTATACTTGACATCGGCC
 AGTCTGCCTGATACTCCAAAGTGCCCAAAAGGTAGTTAGGAAAATGTTTGTTATACTC
 CTCTCTTACTAGGCGACTGTGCAATGTCTCGTTTTTTTTATCATCTCTTTTTATTACGTAG
 GGGGGAAAAAATCAGTGGTTCTTCCATTTGTTTACCACGCTTCTAATGAAGTGCCAA
 GGGTTGCATCTCAAAAATGCCTTAAACTGGAGTTTACATATTATCTTGCCATTCCAAA
 ATGAGATGGACGAGCCAGTGTAACCACATCAGAAATGTAGTTTAGTGTAGTTAGAG
 CATTTCTGTAGTTCTGTGTTTGGAGTAGTGTTTGTAAACGGAAACCTGGAAAATGCT
 TGAATACTTGTGAATCAATTATTGATCTGCAAAGAAGCTTTTGATTATTTATTTGCATAT
 TGTGTACTTGGTTGTATATGAGAATTTTGTCTACTACCCCTATTGGAAGTGAAGTCAT
 GGAGGCGAATGTTTTATATGGTACCAATGCAACTTTGTTTTCTTTTTGTCTTGAAACT
 GTTTAAAGTATAAGAGTTTAATGTCTGTCAACACCCAGGTTTTCCAACCTTTTGATACTT
 TTTTCAACAATACTTTTTCAACTTTTGATACTTTTTCAACTTTGATACTTTTTTTTTTTAT
 ATCTTCCAAAACATTTTGTACGATTTTTGTAAAGGTATTTGTACACTGTCCACCCCGTG
 CAGGAAGTCGTTGACCC

cx43.4-NHEJ

lamGolden-intron and CDS-**GGGGS₃**-**eGFP**-SV40 polyA-bGH polyA

CCCGTGCAGGAAGTCGTTGACCCCTTATGGACACCAATAATCCAATTTTAATATGATTGA
 CTACTCTGATTAGGAGTCTACCATGTAAACAGCTGTTTTTGATTATTAATCCGATTAA
 AGTTTTATAATCGAACTAAACAGAAATCAGATTAAGACATGTGGAGTATGCTGATTTAT
 TGCCATTGAAGTGCATTTTAGTTTTATTAAAGTGCAGTACAGACATGTAAACATTGCAA
 ACAAATATTATCATTGTGTAGGATTTCTCAGCATTTTACAGGATACAGGATAGTCAAT
 ACACACATTTCTGTTTGACACTATTTTCTGCACCTACCAAGTCCGTAAAGGACCACAG
 ACACCTGCATCACAAAATGCGAAGGTTTTCTTTCCCATACGGTGTGCGGTATCAAAT
 TCCATGAAAACAACACTAGCAGTTCAGACTGACTTCCAATATCTCGTTTATCACGGGG
 GCATGCATGAAATGTTCTGAATGAAAGTAAAGTGCCAAATTGCAGTTAAAGTCCAC
 AAATTAATAATGAAACACCCAAAAGTAAATGAACTCAAAGAAAATGTTGATAGCGTG
 GTGACAATGGTGTTAACCAATTATGTGCTATAACATGTAAAACGAGATCATTCAAAAAG
 CAACTCATGTAAACGCCTTAATCATATTACTGTCTTTTTCAGATTAAGGCATATAATTAG
 ATTACTGATGTCCATGTAAACGTAGTCACTCTGTCACTAAGGTTTACAGCTAACATTAAGC
 TGGACTATGATGATAACAGGTCTGACCAGGGTACTCATTTTTTAGCTTGCCAGCAAT
 TTGCCACTTCTAGTAGAAGTATAAACCTATTTTCACTCAATTGCTTATGTTGTCTAATTG
 CTTGTATGTCTCCTAATTGGCACCTATACTCAATGAGCGCAATCATTGTATGACCAAAT
 TAAGGTGTTTGCTTTATTGAATTGTACAAAATACACACATACCTATCAAATTAGTAGTT
 TTTAAGTTTTTTAATCAAGTAAAGCTGCGGTCACACTAGAGTTTGATAATGCGATATTC

TGTCGTGCGGCTCTGCGAAAAGGGGCGGGAATGAACAAGATTATCAGGCATTAAAAA
 AAGCAAGCAATTGCTCCATGTTTTAAAGTTCTGTCCATTGAAGTCATGTTTTGATACTA
 GGTTGGTCTCACGCAGTCAAGTGTTGCGATTTCGCAGATCAGAGTTCACCAAGCTTG
 AACTTTGCATCGCAGCAACCTGCAAACTTGACGCATGACCCTGCGTTTTTCGGTCTG
 ACGCATTTGCGTGCGTATGAATGGAAGTCTTATGTGGAGAAAAGCCCAGTGTGACCG
 CAGCTTGAGAGAGTCTTATTTGCCACTTGGGTTTCACCAAAATCCTAAGTTGAAAACC
 TGTCAATATCCGCTGGAACTAATGTATCTGAGCTAACCACCTTTTGATTGAATCAATGA
 AGCGCCAAGTAGAGATGGCCTAATATTCAAAGTTTTGGATAAGTTCATCCAAAAGTT
 CAACTAATCAAATACGACAGCAGATAATTGCATTTTTTTGTATCTTTTTTTTTTAACCAA
 AAATAAATCGTAGTAAAAAAAATGTTTCCATTCTCCATGTCTTTGTGTTCACTCTAAG
 GATAGTTCACTCAAATAAAAATGGTCATTTACTCAATCTTCATTTGATCGACCAATTTGA
 GTTTCTTTCTCCAAAGAAGATATTTTAGTAATTAAACCAAGTCAATGGGTCCCAGCTAT
 CAGCATACTCAACAGCAGAAAAGAACTCATAAAGGCTTAACTACATGAGGGAGAATGT
 ATAATTAGGTTGTTTTTAATTTGTGAGAAGTTAACATATTTGTTGCTTGATAATGTAAATA
 AATGATTTCCATGTTTTAATATGATGTTGTCTTTTCTCTTTCTCAGGGATCCATGCTGTC
 GACGGAGGAGGTGGTTCAGGTGGTGGAGGATCGGAGGTGGAGGTTCAAGTGAGCA
 AGGGCGAGGAGCTGTTACCCGGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGA
 CGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTAC
 GGCAAGCTGACCCTGAAGTTCATCTGCACCACCGGCAAGCTGCCCCGTGCCCTGGC
 CCACCCTCGTGACCACCCTGACCTACGGCGTGCAGTGCTTCAGCCGCTACCCCGAC
 CACATGAAGCAGCAGACTTCTTCAAGTCCGCCATGCCGAAGGCTACGTCCAGGA
 GCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGT
 TCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGA
 GGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACTACAACAGCCACAACGTCT
 ATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAAGTCAAGATCCGCCACA
 ACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCCAT
 CGGCGACGGCCCCGTGCTGCTGCCCCGACAACCACTACCTGAGCACCCAGTCCGCC
 CTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCCTGCTGGAGTTCGTGAC
 CGCCGCCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAATCTAGAGATCCAG
 ACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAA
 ATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAAT
 AAACAAGTTAAACAACAACAATTGCATTCATTTTATGTTTCAGGTTTCAGGGGGAGGTGT
 GGGAGGTTTTTTAATTCGCGGCCCGCAATTCAGTAGTGATTGCTCGAGTGGCCAGAT
 CCTGTGCCCTTCTAGTTGCCAGCCATCTGTTGTTTGCCCTCCCCCGTGCCCTTCCTTG
 ACCCTGGAAGGTGCCACTCCCACTGTCCTTTCCTAATAAAATGAGGAAATTGCATCG
 CATTGTCTGAGTAGGTGTATTCTATTCTGGGGGGTGGGGTGGGGCAGGACAGCAA
 GGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATG
 G

***cx30.3, cx34.4, cx35, cx44.1, cx47.1, cx48.5, cx52.6, cx55.5* KI donors were designed based on the S-25 KI strategy**

cx30.3-sg-1

right arm-lamGolden-left arm-CDS-GGGGS₃-eGFP-SV40 polyA-bGH polyA

AACTGGCCTATCTGATTGTCAAAGCCCCGTGCAGGAAGTCGTTGACCCATTGTCATT

GTGCTCAATGTGGCTGAGTTAGCATACTTAATCGTAAAGGCGTTGCTCAGGTGCTCA
 GCCAGAGCCAAAGGGAGGTGCTCATTTGTACACCAAGAGAAAATGTCCACAGAAAA
 GGCGCACCTACAGAATGAAAAAACGCAAGGTTGCTGTCATCGGCTTCGGACTCATC
 GAGCAATAAGACTGTTGTCGACGGAGGAGGTGTTTCAGGTGGTGGAGGATCTGGA
 GGTGGAGGTTCAAGTGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGCCCATCC
 TGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGGG
 CGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCACCGGCA
 AGCTGCCCCTGCCCCTGGCCACCCTCGTGACCACCCTGACCTACGGCGTGCAGTG
 CTTCAAGCTACCCCGACCATGAAGCAGCACGACTTCTTCAAGTCCGCCATGC
 CCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAG
 ACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGA
 AGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAAC
 TACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTG
 AACTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTA
 CCAGCAGAACACCCCATCGGCGACGGCCCCGTGCTGCTGCCCGACAACCACTAC
 CTGAGCACCCAGTCCGCCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGT
 CCTGCTGGAGTTCGTGACCGCCGCGGGATCACTCTCGGCATGGACGAGCTGTACA
 AGTAATCTAGAGATCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAAC
 AGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTA
 ACCATTATAAGCTGCAATAAACAAAGTTAACAAACAATTGCATTCAATTTATGTTTCAG
 GTTCAGGGGGAGGTGTGGGAGGTTTTTAATTCGCGGCCGCGAATTCAGTAGTGATT
 GCTCGAGTGGCCAGATCCTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGCCCTC
 CCCCCTGCTTCTTGAACCTGGAAGGTGCCACTCCCCTGCTTCTTAATAAAA
 TGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTATTCTATTCTGGGGGGTGGGGT
 GGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGAT
 GCGGTGGGCTCTATGG

cx30.3, cx34.4, cx35, cx47.1, cx52.6 KI donors were the same as **cx30.3-sg-1** KI donor except for microhomologous arms and complementary CDS

cx30.3-sg-2

right arm-lamGolden-left arm-CDS

CTCAGGTGCTCAGCCAGAGCCAAAGCCCGTGCAGGAAGTCGTTGACCC**GGCCTATC**
TGATTGTCAAAGCATTGTTGCGTTGTAGCGCACGCGCTAAGGGGAGGTGCTCATTTG
 TACACCAAGAGAAAATGTCCACAGAAAAGGCGCACCTACAGAATGAAAAAACGCAA
 GATTGCTGTCATCGGCTTCGGACTCATCGAGCAATAAGACTGTT

cx34.4-sg-1

right arm-lamGolden-left arm-CDS

GTGTGGTCATGTCAGCCAAAAAGAACCCGTGCAGGAAGTCGTTGACCC**GAAGACCA**
GCCGGCACCCAGCATACAGCGTAGTTATGAGCGCTAAGAAAAAGACCAGCTTGAAAAA
 TACTTTCAATCCGAGTTGGACCTTGAGAGATGACAAATGTTCAACTTCACATTCACTT
 GGAGGTGAATGCGAACGTGAC

cx34.4-sg-2

right arm-lamGolden-left arm-CDS

CCATGGCTAATATGACAAACTTGAA~~CCCGTGCAGGAAGTCGTTGACCC~~TCACGACAT
GTGAACAGAGAGAGATCTATGGCCAACATGACGAATCTCAACGCTCATTAGAGTCA
AACAAACAAAACTGGCAAGCGAAGACCAGCCGGCACCAGCATAACAGTGTGGTCAT
GTCAGCCAAAAAGAAAACCAGCTTGGAAAATACTTTCAATCCGAGTTGGACCTTGAG
AGATGACAAATGTTCAACTTCACATTCACTTGGAGGTGAATGCGAACGTGAC

cx35-sg-1

right arm-lamGolden-left arm-CDS

TTTCGGAAGAACCCAGTCCAGTGAC~~CCCGTGCAGGAAGTCGTTGACCC~~ACTTACCG
CGGATGAGCATGCCGAACTTTGGGCGGACTCAATCTTCAGATAGCGCATATGTG

cx35-sg-2

right arm-lamGolden-left arm-CDS

CCAGTGACTCTGCCTACGTTTAATG~~CCCGTGCAGGAAGTCGTTGACCC~~ATGCCGAAT
TTCGGAAGAACCCAGTCTTCAGATAGCGCATATGTG

cx47.1-sg-1

right arm-lamGolden-left arm-CDS

CTGGTGGCACAAACGACAGAGCAGAA~~CCCGTGCAGGAAGTCGTTGACCC~~ATTTCAAG
AGCCAGCAGCCCCGTTTCGGGCGGTACGACAACGGAGCAAAATCGCATCAACATGG
CTCAGGAGAAGCAGGGCGCTCGGCCCAAAGCAAGCACCGAGAGAGCTGGGACACT
AGTAAAAAATGGAAAACTTCGGTGTGGATT

cx47.1-sg-2

right arm-lamGolden-left arm-CDS

TTCTGGTGGCACAAACGACAGAGCAG~~CCCGTGCAGGAAGTCGTTGACCC~~ATATTTCA
AGAGCCAGCAGCCCCGTAAAGCGGGGGAACCACTACCGAGCAAAACCGCATCAACAT
GGCTCAGGAGAAGCAGGGCGCTCGGCCCAAAGCAAGCACCGAGAGAGCTGGGAC
ACTAGTAAAAAATGGAAAACTTCGGTGTGGATT

cx52.6-sg-1

right arm-lamGolden-left arm-CDS

ATGACACCACCCCCTGCAGCAGGAC~~CCCGTGCAGGAAGTCGTTGACCC~~TATCACTC
AAGGGGAGAGTCCCGCTATGACCCCGCCTCCAGCTGCCGGGCGTAGAATGTCAATG
AGCATGATCCTGGAACTTTCTTCAATCATGAAAAAG

cx52.6-sg-2

right arm-lamGolden-left arm-CDS

TGAGAGTGCAGCCTCCAAGAGTGGA~~CCCGTGCAGGAAGTCGTTGACCC~~CAAGGGG
ACTTTCAGAGAGCCCGTCTGGAATCCGCCGCTAGTAAATCCGGCTCAGACACAGAGG
CCAACCGTATCACTCAAGGGGAGAGTCCCGCTATGACACCACCCCCTGCAGCAGGA
CGTAGAATGTCAATGAGCATGATCCTGGAACTTTCTTCAATCATGAAAAAG

cx44.1-sg-1

right arm-lamGolden-left arm-CDS-GGGGS₃-mCherry-SV40 polyA-bGH polyA
GCATCGTCAGGAATTCTGCGCAGGGCCCGTGCAGGAAGTCGTTGACCC^{CCAGACG}
ACCGTGATTGGACCGAGT^{GCCAGTAGCGGGATCTTAAGACGTGATGAAGATGAGGA}
CGAGTTGGCTGTGGAGGCAGACATGGAGGCCAGCGAGACGATAGAAGATACACGAC
CTCTCAGCAGCCTGAGCAAGGCCAGCAGTCGCGCAAGGTCAGATGACTTGACGGTA
GTCGAC^{GGAGGAGGTGGTTTCAGGTGGTGGAGGATCTGGAGGTGGAGGTTCA}GTGA
GCAAGGGCGAGGAGGATAACATGGCCATCATCAAGGAGTTCATGCGCTTCAAGGTG
CACATGGAGGGCTCCGTGAACGGCCACGAGTTCGAGATCGAGGGCGAGGGCGAG
GGCCGCCCTACGAGGGCACCCAGACCGCCAAGCTGAAGGTGACCAAGGGTGGC
CCCCTGCCCTTCGCCTGGGACATCCTGTCCCCTCAGTTCATGTACGGCTCCAAGGC
CTACGTGAAGCACCCCGCCGACATCCCCGACTACTTGAAGCTGTCCTTCCCCGAGG
GCTTCAAGTGGGAGCGCGTGATGAACTTCGAGGACGGCGGCGTGTTGACCGTGAC
CCAGGACTCCTCCCTCCAGGACGGCGAGTTCATCTACAAGGTGAAGCTGCGCGGCA
CCAACCTTCCCCTCCGACGGCCCCGTAATGCAGAAGAAGACCATGGGCTGGGAGGC
CTCCTCCGAGCGGATGTACCCCGAGGACGGCGCCCTGAAGGGCGAGATCAAGCAG
AGGCTGAAGCTGAAGGACGGCGGCCACTACGACGCTGAGGTCAAGACCACCTACA
AGGCCAAGAAGCCCGTGAGCTGCCCGGCGCCTACAACGTCAACATCAAGTTGGAC
ATCACCTCCCACAACGAGGACTACACCATCGTGGAACAGTACGAACGCGCCGAGGG
CCGCCACTCCACCGGCGGCATGGACGAGCTGTACAAGTAATCTAGAGATCCAGACAT
GATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGC
TTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAAC
AAGTTAACACAACAATTGCATTCATTTTATGTTTCAGGTTCAGGGGGAGGTGTGGGA
GGTTTTTTAATTGCGCGCCGCGAATTCAGTAGTGATTGCTCGAGTGGCCAGATCCTG
TGCCTTCTAGTTGCCAGCCATCTGTTGTTTGCCCCTCCCCCGTGCCTTCCTTGACCC
TGGAAGGTGCCACTCCCCTGTCTTTCTAATAAAATGAGGAAATTGCATCGCATTG
TCTGAGTAGGTGTCATTCTATTCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGGG
GAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGG

cx44.1, cx48.5, cx55.5 KI donors were the same as cx44.1-sg-1 KI donor except for microhomologous arms and complementary CDS

cx44.1-sg-2

right arm-lamGolden-left arm-CDS
CTGTGGAGGCAGACATGGAGGCCAG^{CCCGTGCAGGAAGTCGTTGACCCAGGGATG}
AAGATGAGGACGAGTTGG^{CCGTTGAAGCCGATATGGAAGCTTCTGAGACGATAGAA}
GATACACGACCTCTCAGCAGCCTGAGCAAGGCCAGCAGTCGCGCAAGGTCAGATGA
CTTGACGGTA

cx48.5-sg-1

right arm-lamGolden-left arm-CDS
CGGAGGAGGGGCACGTCAACCACCAC^{CCCGTGCAGGAAGTCGTTGACCCGCTGGTG}
GTGGTTTAAGCACTGGGC^{CCGAAGAAGGTCACGTGACGACGACCGTGGAGATGCA}
CGAGCCGCCCGTCATTTTCACTGACGCTCGACGACTGAGCAGGGCTAGTAAAGCCA
GCAGTGTGAGAGCGAGGCCCAATGATCTGGCGGTG

cx48.5-sg-2

right arm-lamGolden-left arm-CDS

CGGTGGAGATGCACGAGCCGCCCGTCCCGTGCAGGAAGTCGTTGACCCCCGGAGG
AGGGGCACGTCACCACCAACCGTAGAAATGCACGAACCTCCTGTAATTTTCACTGACG
CTCGACGACTGAGCAGGGCTAGTAAAGCCAGCAGTGTGAGAGCGAGGCCCAATGAT
CTGGCGGTG

cx55.5-sg-1

right arm-lamGolden-left arm-CDS

TGGCCAGCAGTTCCAGCAGCAGACGCCCGTGCAGGAAGTCGTTGACCCGCGTCAC
CAAGCCATCGTGCCTCATTAGCATCATCCAGTTCGTCTCGTAGGGCAGCTCCACAG
ACTTACAAATT

cx55.5-sg-2

right arm-lamGolden-left arm-CDS

TGAGCAGGCCACCTCCCCTGATTCCCCGTGCAGGAAGTCGTTGACCCACCTCATC
CAGGTCTGATACCAAGCTATCTCGACCAACAAGTCCCGACAGTGTGAAGAATCGAG
CTCTGAGTCACGGCATAGTCCACGAGCGTCACCAAGCCATCGTGCCTCATTGGCCA
GCAGTTCCAGCAGCAGACGAGCAGCTCCACAGACTTACAAATT

cx43.4-V

**right arm-lamGolden-left arm-CDS-P2A-Gal4-VP64-SV40 polyA-bGH polyA-3xSV40
polyA-5xUAS-E1b-eGFP-SV40 polyA-bGH polyA-2xinsulator**

GCGCAGGCACCTGAAACTGGCTCAGCCCGTGCAGGAAGTCGTTGACCCCGTCATC
GCGAGACATTGACCGCCTTCGTCTGCTATTAAAGTTAGCCCAACAGCACCTGGACCT
CGCCTATCAGAATGGCGAGAGCAGTCCTTCACGCAGCAGCAGCCCAGAGTCCAACG
GCACTGCTGTGAGCAGAACAGACTTAACTTTGCTCAGGAGAAGCAGGGGAGCAAA
TGTGAAAAAGGGATCCATGCTGGTACCCTACTAACTTCAGCCTGCTGAAGCAGGCT
GGAGACGTGGAGGAGAACCCTGGACCTCCCAAGAAAAACGCAAGGTGGGTTCTAA
GCTACTGTCTTCTATCGAACAAGCATGCGATATTTGCCGACTTAAAAAGCTCAAGTGC
TCCAAAGAAAAACCGAAGTGCGCCAAGTGTCTGAAGAACAACCTGGGAGTGTGCTA
CTCTCCCAAAACCAAAAGGTCTCCGCTGACTAGGGCACATCTGACAGAAGTGGAATC
AAGGCTAGAAAGACTGGAACAGCTATTTCTACTGATTTTTCTCGAGAAGACCTTGAC
ATGATTTTGAAAATGGATTCTTTACAGGATATAAAAGCATTGTTAACAGGATTATTTGTA
CAAGATAATGTGAATAAAGATGCCGTCACAGATAGATTGGCTTCAGTGGAGACTGATA
TGCTCTAACATTGAGACAGCATAGAATAAGTGCGACATCATCATCGGAAGAGAGTAG
TAACAAAGGTCAAAGACAGTTGACTGTATCGGGATCTGACGCAATTGGACGATTTTGAT
CTGGATATGCTGGGAAGTGACGCCCTCGATGATTTTGACCTTGACATGCTTGGTTCCG
GATGCCCTTGATGACTTTGACCTCGACATGCTCGGCAGTGACGCCCTTGATGATTTT
GACCTGGACATGCTGGTAGTCCTAAGAAAAAGCGGAAAGTGTAATCTAGAGATCCA
GACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAA
AATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCA
ATAACAAGTTAACAACAACAATTGCATTCATTTTATGTTTCAGGTTTCAGGGGGAGGT

GTGGGAGGTTTTTTAATTCGCGGCCGCGAATTCAGTAGTGATTGCTCGAGTGGCCAG
ATCCTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTCCCCCTCCCCCGTGCCTTCCT
TGACCCTGGAAGGTGCCACTCCCACTGTCTTTCCTAATAAAATGAGGAAATTGCATC
GCATTGTCTGAGTAGGTGTCATTCTATTCTGGGGGGTGGGGTGGGGCAGGACAGCA
AGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATG
GCACGTGCGCCGGTGCGGAACCTTGTTTATTGCAGCTTATAATGGTTACAAATAAAGCA
ATAGCATCACAAATTTACAAATAAAGCATTTTTTTTCACTGCATTCTAGTTGTGGTTTTGT
CCAAACTCATCAATGTATCTTATCATGTCTGGAACTTGTTTATTGCAGCTTATAATGGT
TACAAATAAAGCAATAGCATCACAAATTTACAAATAAAGCATTTTTTTTCACTGCATTCT
AGTTGTGGTTTTGTCCAAACTCATCAATGTATCTTATCATGTCTGAACTTGTTTATTG
CAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTACAAATAAAGCATT
TTTTCACTGCATTCTAGTTGTGGTTTTGTCCAAACTCATCAATGTATCTTATCATGTCTG
ATCGGAGGACGACTCCCGGGCGGAGTACTGTCTCCGAGCGGATTAGAAGCCACC
GGATCCGGGTGACAGCCCTCCGTCTTCACGGGATACTCTACACCGTAGGGTTCCGG
AGTACTGTCTCCGCGGAGACTCTAGAGGGTATATAATGGATCCCATCGCGTCTCAG
CCTCACTTGAGCTCCTCCACACGAATTCGTCGACATGGTGAGCAAGGGCGAGGAG
CTGTTACCGGGGGTGGTGCCCATCTGGTCGAGCTGGACGGCGACGTAAACGGCC
ACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGAC
CCTGAAGTTCATCTGCACCACCGGCAAGCTGCCCCGTGCCCTGGCCACCCTCGTGA
CCACCCTGACCTACGGCGTGCACTGCTTCAGCCGCTACCCCGACCACATGAAGCAG
CACGACTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATCTT
CTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGAC
ACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACAT
CCTGGGGCACAAGCTGGAGTACAACAGCCACAACGTCTATATCATGGCCGA
CAAGCAGAAGAACGGCATCAAGGTGAACTTCAAGATCCGCCACAACATCGAGGACG
GCAGCGTGCACTCGCCGACCACTACCAGCAGAACACCCCATCGGCGACGGCCC
CGTGCTGCTGCCCGACAACCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAGACC
CCAACGAGAAGCGCGATCACATGGTCTGCTGGAGTTCGTGACCGCCGCCGGGAT
CACTCTCGGCATGGACGAGCTGTACAAGTAATCTAGAGATCCAGACATGATAAGATAC
ATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTG
AAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAACAAGTTAACA
ACAACAATTGCATTCATTTTATGTTTCAGGTTCAAGGGGAGGTGTGGGAGGTTTTTTA
ATTCGCGGCCGCGAATTCAGTAGTGATTGCTCGAGTGGCCAGATCCTGTGCCTTCTA
GTTGCCAGCCATCTGTTGTTTCCCCCTCCCCCGTGCCTTCCTTGACCCTGGAAGGT
GCCACTCCCACTGTCTTTCCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTA
GGTGTCAATTCTATTCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTG
GGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGGCAGAGGACAGC
CCCCCCCCAAAGCCCCCAGGGATGTAATTACGTCCCTCCCCCGCTAGGGGGCAGCA
GCGAGCCGCCGGGGCTCCGCTCCGGTCCGGCGCTCCCCCGCATCCCGAGCC
GGCAGCGTGCGGGGACAGCCCGGGCACGGGGAAGGTGGCACGGGATCGCTTTCC
TCTGAACGCTTCTCGTGCTCTTTGAGCCTGCAGACACCTGGGGGGATACGGGGAA
AAGAGGGACAGCCCCCCCCAAAGCCCCCAGGGATGTAATTACGTCCCTCCCCCGC
TAGGGGGCAGCAGCGAGCCGCCCGGGGCTCCGCTCCGGTCCGGCGCTCCCCCG
CATCCCGAGCCGGCAGCGTGCGGGGACAGCCCGGGCACGGGGAAGGTGGCACG

GGATCGCTTTCTCTGAACGCTTCTCGCTGCTCTTTGAGCCTGCAGACACCTGGGG
GGATACGGGGAAAAACGCGCCTAAAA

cx43.4-VH

right arm-*lamGolden***-left arm-***CDS-P2A-Gal4-VP64-HSF1-SV40 polyA-bGH polyA-3xSV40 polyA-5xUAS-E1b-eGFP-SV40 polyA-bGH polyA-2xinsulator*

GCGCAGGCACCTGAAACTGGCTCAGCCCGTGCAGGAAGTCGTTGACCCCGTCATC
GCGAGACATTGACCGCCTTCGTCGTCATTTAAAGTTAGCCCAACAGCACCTGGACCT
CGCCTATCAGAATGGCGAGAGCAGTCCTTCACGCAGCAGCAGCCCAGAGTCCAACG
GCACTGCTGTGAGCAGAACAGACTTAACTTTGCTCAGGAGAAGCAGGGGAGCAAA
TGTGAAAAAGGGATCCATGCTGGTACCCTACTAACTTCAGCCTGCTGAAGCAGGCT
GGAGACGTGGAGGAGAACCCTGGACCTCCCAAGAAAAAACGCAAGGTGGGTTCTAA
GCTACTGTCTTCTATCGAACAAGCATGCGATATTTGCCGACTTAAAAAGCTCAAGTGC
TCCAAAGAAAAACCGAAGTGCGCCAAGTGTCTGAAGAACAACCTGGGAGTGTGCTA
CTCTCCCAAACCAAAAGGTCTCCGCTGACTAGGGCACATCTGACAGAAGTGGAATC
AAGGCTAGAAAGACTGGAACAGCTATTTCTACTGATTTTCTCGAGAAGACCTTGAC
ATGATTTTGAAAATGGATTCTTTACAGGATATAAAGCATTGTTAACAGGATTATTTGTA
CAAGATAATGTGAATAAAGATGCCGTACAGATAGATTGGCTTCAGTGGAGACTGATA
TGCCTCTAACATTGAGACAGCATAGAATAAGTGCGACATCATCATCGGAAGAGAGTAG
TAACAAAGGTCAAAGACAGTTGACTGTATCGGGATCTGACGCGATTGGACGATTTTGAT
CTGGATATGCTGGGAAGTGACGCCCTCGATGATTTTGACCTTGACATGCTTGGTTG
GATGCCCTTGATGACTTTGACCTCGACATGCTCGGCAGTGACGCCCTTGATGATTTG
GACCTGGACATGCTGGTAGTGGCTCAGGATCCGGCTTCAGCGTGGACACCAGTG
CCCTGCTGGACCTGTTTCAGCCCCTCGGTGACCGTGCCCGACATGAGCCTGCCTGA
CCTTGACAGCAGCCTGGCCAGTATCCAAGAGCTCCTGTCTCCCCAGGAGCCCCCA
GGCCTCCCGAGGCAGAGAACAGCAGCCCGGATTAGGGAAGCAGCTGGTGCCTA
CACAGCGCAGCCGCTGTTCTGCTGGACCCCGGCTCCGTGGACACCGGGAGCAAC
GACCTGCCGGTGCTGTTTGAGCTGGGAGAGGGCTCCTACTTCTCCGAAGGGGACG
GCTTCGCCGAGGACCCACCATCTCCCTGCTGACAGGCTCGGAGCCTCCCAAAGC
CAAGGACCCCACTGTCTCCGGTAGCCCTAAGAAAAAGCGGAAAGTGTAATCTAGAGA
TCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGA
AAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCT
GCAATAACAAGTTAACAACAACAATTGCATTCATTTTATGTTTCAGGTTTCAGGGGGA
GGTGTGGGAGGTTTTTTAATTCGCGGCCCGCAATTCAGTAGTGATTGCTCGAGTGGC
CAGATCCTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGCCCCTCCCCCGTGCCTT
CCTTGACCCTGGAAGGTGCCACTCCCAGTGTCTTTCTAATAAAATGAGGAAATTG
CATCGCATTGTCTGAGTAGGTGTCACTTCTGTTTCTGGGGGGTGGGGTGGGGCAGGAC
AGCAAGGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCT
CTATGGCACGTGCGCCGGTGCGGAACCTTGTTTATTGCAGCTTATAATGGTTACAAATA
AAGCAATAGCATCACAAATTCACAAATAAAGCATTTTTTTTCACTGCATTCTAGTTGTG
GTTTGTCCAACTCATCAATGTATCTTATCATGTCTGGAACTTGTTTATTGCAGCTTAT
AATGGTTACAAATAAAGCAATAGCATCACAAATTCACAAATAAAGCATTTTTTTTCACTG
CATTCTAGTTGTGGTTTGTCCAACTCATCAATGTATCTTATCATGTCCTGAAACTTGT
TTATTGCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTCACAAATAAAG

CATT TTTT TTT CACTGCATTCTAGTTGTGGTTTGTCCAAACTCATCAATGTATCTTATCATG
 TCTGGATCGGAGGACGACTCCCGGGCGGAGTACTGTCTCTCCGAGCGGATTAGAAGC
 CACCGGATCCGGGTGACAGCCCTCCGTCTTCACGGGATACTCTACACCGTAGGGTT
 CCGGAGTACTGTCTCCGCGGAGACTCTAGAGGGTATATAATGGATCCCATCGCGTCT
 TCAGCCTCACTT GAGCTCCTCCACACGAATTCGTCGACATGGTGAGCAAGGGCGA
 GGAGCTGTTACCGGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAAAC
 GGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGC
 TGACCCTGAAGTTCATCTGCACCACCGGCAAGCTGCCCGTGCCCTGGCCACCCTC
 GTGACCACCCTGACCTACGGCGTGCAGTGCTTCAGCCGCTACCCCGACCACATGAA
 GCAGCAGCACTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCA
 TCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGC
 GACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCA
 ACATCCTGGGGCACAAGCTGGAGTACAACACAAGCCACAACGTCTATATCATGG
 CCGACAAGCAGAAGAACGGCATCAAGGTGAACCTCAAGATCCGCCACAACATCGAG
 GACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCCATCGGCGACG
 GCCCGTGCTGCTGCCCGACAACCACTACCTGAGCACCCAGTCCGCCCTGAGCAA
 AGACCCCAACGAGAAGCGCGATCACATGGTCTGCTGGAGTTCGTGACCGCCGCC
 GGGATCACTCTCGGCATGGACGAGCTGTACAAGTAATCTAGAGATCCAGACATGATA
 AGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTAT
 TTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAACAAGT
 TAACAACAACAATTGCATTCATTTTATGTTTCAGGTTCAAGGGGAGGTGTGGGAGGTT
 TTTTAATTCGCGGCCCGCGAATTCCTAGTGATTGCTCGAGTGGCCAGATCCTGTGCC
 TTCTAGTTGCCAGCCATCTGTTGTTTGGCCCTCCCCCGTGCCCTTCCTTGACCCTGGA
 AGGTGCCACTCCCACTGTCCTTTCTAATAAAATGAGGAAATTGCATCGCATTGTCTG
 AGTAGGTGTCATTCTATTCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGG
 ATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGGCAGGGGAC
 AGCCCCCCCCCAAAGCCCCCAGGGATGTAATTACGTCCCTCCCCCGCTAGGGGGCA
 GCAGCGAGCCGCCCGGGGCTCCGCTCCGCTCCGGCGCTCCCCCGCATCCCCGA
 GCCGGCAGCGTGCGGGGACAGCCCGGGCACGGGGAAGGTGGCACGGGATCGCTT
 TCCTCTGAACGCTTCTCGCTGCTCTTTGAGCCTGCAGACACCTGGGGGGATACGGG
 GAAAAGAGGGACAGCCCCCCCCCAAAGCCCCCAGGGATGTAATTACGTCCCTCCCC
 CGCTAGGGGGCAGCAGCGAGCCGCCCGGGGCTCCGCTCCGCTCCGGCGCTCCCC
 CCGCATCCCCGAGCCGGCAGCGTGCGGGGACAGCCCGGGCACGGGGAAGGTGGC
 ACGGGATCGCTTTCCTCTGAACGCTTCTCGCTGCTCTTTGAGCCTGCAGACACCTG
 GGGGGATACGGGGAAAAACGCGCCTAAAA

cx43.4-SPH

right arm-lamGolden-left arm-CDS-P2A-Gal4-GCN4-SV40 polyA-bGH polyA-CMV-
 scFV GCN4-P65-HSF1-SV40 polyA-bGH polyA-3 × SV40 polyA-5 × UAS-E1b-eGFP-
 SV40 polyA-bGH polyA-2 × insulator
 GCGCAGGCACCTGAAACTGGCTCAGCCCGTGCAGGAAGTCGTTGACCCCGTCATC
 GCGAGACATTGACCGCCTTCGTCGTCATTTAAAGTTAGCCCAACAGCACCTGGACCT
 CGCCTATCAGAATGGCGAGAGCAGTCCTTCACGCAGCAGCAGCCAGAGTCCAACG
 GCACTGCTGTCGAGCAGAACAGACTTAACCTTGTCTCAGGAGAAGCAGGGGAGCAAA

TGTGAAAAAGGGATCCATGCTGGTACCGCTACTAACTTCAGCCTGCTGAAGCAGGCT
GGAGACGTGGAGGAGAACCCTGGACCTAAGCTACTGTCTTCTATCGAACAAGCATG
CGATATTTGCCGACTTAAAAAGCTCAAGTGCTCCAAAGAAAAACCGAAGTGCGCCAA
GTGTCTGAAGAACAAGTGGGAGTGTGCTACTCTCCCAAACCAAAGGTCTCCGC
TGAAGGGCACATCTGACAGAAGTGAATCAAGGCTAGAAAGACTGGAACAGCTAT
TTCTACTGATTTTTCTCGAGAAGACCTTGACATGATTTTGAAAATGGATTCTTTACAG
GATATAAAAGCATTGTTAACAGGATTATTTGTACAAGATAATGTGAATAAAGATGCCGTC
ACAGATAGATTGGCTTCAGTGGAGACTGATATGCCTCTAACATTGAGACAGCATAGAA
TAAGTGCGACATCATCATCGGAAGAGAGTAGTAACAAAGGTCAAAGACAGTTGACTG
TATCGGGATCTTATCCCTATGACGTGCCGATTATGCCAGCCTGGGCAGCGGCTCCC
CCAAGAAAAACGCAAGGTGGAAGATCCTAAGAAAAAGCGGAAAGTGGACGGCATT
GGTAGTGGGAGCAACGGCAGCAGCGGATCCaaCGGTCCGactgacgCCGCGGaaGAA
GAACTTTTGAGCAAGAATTATCATCTTGAGAACGAAGTGGCTCGTCTTAAGAAAGGTT
CTGGCAGTGGAGAAGAACTGCTTTCAAAGAATTACCACCTGGAAAATGAGGTAGCTA
GACTGAAAAAGGGGAGCGGAAGTGGGGAGGAGTTGCTGAGCAAAAATTATCATTTG
GAGAACGAAGTAGCACGACTAAAGAAAGGGTCCGGATCGGGTGAGGAGTTACTCTC
GAAAAATTATCATCTCGAAAACGAAGTGGCTCGGCTAAAAAAGGGCAGTGGTTCTGG
AGAAGAGCTATTATCTAAAACTACCACCTCGAAAATGAGGTGGCACGCTTAAAAAAG
GGAAGTGGCAGTGGTGAAGAGCTACTATCCAAGAATTATCATCTTGAGAACGAGGTA
GCGCGTTTGAAGAAGGGTTCCGGCTCAGGAGAGGAACTGCTCTCGAAGAACTATCA
TCTTGAAAATGAGGTGCTCGATTAAAAAAGGGATCGGGCAGTGGTGAGGAACTACT
TTCAAAGAATTACCACCTCGAAAACGAAGTAGCTCGATTAAAGAAAGGTTGAGGGTC
GGGTGAAGAATTACTGAGTAAAAATTATCATCTGGAAAATGAGGTAGCGAGACTAAAA
AAGGGGAGTGGTTCTGGCGAGGAATTGCTATCGAAAAATTATCATCTTGAGAACGAA
GTTGCTAGGCTCAAAAAGGGCTCAGGCTCAGGCACCGCGGtaaACATAGGTGGTGG
AACCGGTCCGatggatctacagcgccgcaaGGTGGAGGTGGACCCAAGAAGAAGCGCAAG
GTGTAATCTAGAGATCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAA
CTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTG
TAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCATTTTATGTTTC
AGGTTGAGGGGGAGGTGTGGGAGGTTTTTTAATTGCGGGCCGCGAATTCAGTAGTG
ATTGCTCGAGTGGCCAGATCCTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGCCC
CTCCCCCGTGCTTCCTTGACCCTGGAAGGTGCCACTCCCCTGTCTTTCTTAATA
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