Supporting information for Yokobayashi *et al*. (2002) *Proc. Natl. Acad. Sci. USA*, 10.1073/pnas.252535999.

Annotated sequence data (GenBank format) for pINV-110 and pINV-107b. Files are available on request.

```
LOCUS       pINV-110     4887 bp    DNA   circular
FEATURES             Location/Qualifiers
     rep_origin      3171..3733
                     /vntifkey="33"
                     /label=p15A\ori
     terminator      complement(3827..3932)
                     /vntifkey="43"
                     /label=T0\Term
     CDS             complement(3957..4751)
                     /vntifkey="4"
                     /label=Kan(r)
     promoter        1233..1316
                     /vntifkey="30"
                     /label=P(LAC)
                     /note="lac promoter"
     -35_signal      1281..1286
                     /vntifkey="48"
                     /label=-35\region
                     /note="-35 region for GFP(LVA)"
     misc_binding    1246..1267
                     /vntifkey="20"
                     /label=CAP\bs
                     /note="CAP binding site"
     -10_signal      1305..1310
                     /vntifkey="47"
                     /label=-10\region
                     /note="-10 region"
     promoter        complement(1128..1183)
                     /vntifkey="30"
                     /label=P(lacIq)
     -10_signal      complement(1137..1142)
                     /vntifkey="47"
                     /label=-10\region
     -35_signal      complement(1160..1165)
                     /vntifkey="48"
                     /label=-35\region
     CDS             complement(19..1101)
                     /vntifkey="4"
                     /label=lacI
     CDS             1385..2098
                     /vntifkey="4"
                     /label=cI
                     /note="cI from pPW121"
     RBS             1367..1375
                     /vntifkey="32"
                     /label=RBSII
     CDS             2174..2893
                     /vntifkey="4"
                     /label=ECFP
                     /note="ECFP"
     RBS             2156..2164
                     /vntifkey="32"
                     /label=RBSII
                     /note="RBSII"
     terminator      2913..3017
                     /vntifkey="43"
                     /label=T1\Term
```

BASE COUNT 1186 a 1365 c 1291 g 1045 t
ORIGIN

```
   1 gacgtcattg cgttgcgctc actgcccgct ttccagtcgg gaaacctgtc gtgccagctg
  61 cattaatgaa tcggccaacg cgcggggaga ggcggtttgc gtattgggcg ccagggtggt
 121 ttttcttttc accagtgaga cgggcaacag ctgattgccc ttcaccgcct ggccctgaga
 181 gagttgcagc aagcggtcca cgctggtttg ccccagcagg cgaaaatcct gtttgatggt
 241 ggttgacggc gggatataac atgagctgtc ttcggtatcg tcgtatccca ctaccgagat
 301 atccgcacca acgcgcagcc cggactcggt aatggcgcgc attgcgccca gcgccatctg
 361 atcgttggca accagcatcg cagtgggaac gatgccctca ttcagcattt gcatggtttg
 421 ttgaaaaccg gacatggcac tccagtcgcc ttcccgttcc gctatcggct gaatttgatt
 481 gcgagtgaga tatttatgcc agccagccag acgcagacgc gccgagacag aacttaatgg
 541 gcccgctaac agcgcgattt gctggtgacc caatgcgacc agatgctcca cgcccagtcg
 601 cgtaccgtct tcatgggaga aaataatact gttgatgggt gtctggtcag agacatcaag
 661 aaataacgcc ggaacattag tgcaggcagc ttccacagca atggcatcct ggtcatccag
 721 cggatagtta atgatcagcc cactgacgcg ttgcgcgaga agattgtgca ccgccgcttt
 781 acaggcttcg acgccgcttc gttctaccat cgacaccacc acgctggcac ccagttgatc
 841 ggcgcgagat ttaatcgccg cgacaatttg cgacggcgcg tgcagggcca gactggaggt
 901 ggcaacgcca atcagcaacg actgtttgcc cgccagttgt tgtgccacgc ggttgggaat
 961 gtaattcagc tccgccatcg ccgcttccac tttttcccgc gttttcgcag aaacgtggct
1021 ggcctggttc accacgcggg aaacggtctg ataagagaca ccggcatact ctgcgacatc
1081 gtataacgtt actggtttca cattcaccac cctgaattga ctctcttccg ggcgctatca
1141 tgccataccg cgaaaggttt tgcaccattc gatggtgtca acgtaatcta gagctagcac
1201 gacaggtttc ccgactggaa agcgggcagt gagcgcaacg caattaatgt gagttagctc
1261 actcattagg caccccaggc tttacacttt atgcttccgg ctcgtatgtt gtgtggaatt
1321 gtgagcggat aacaatggat aacaatttca cacaggggta ccaattaaag aggagaaatt
1381 aagcatgagc acaaaaaaga aaccattaac acaagagcag cttgaggacg cacgtcgcct
1441 taaagcaatt tatgaaaaaa agaaaaatga acttggctta tcccaggaat ctgtcgcaga
1501 caagatgggg atggggcagt caggcgttgg tgctttattt aatggcatca atgcattaaa
1561 tgcttataac gccgcattgc ttgcaaaaat tctcaaagtt agcgttgaag aattcagccc
1621 ttcaatcgcc agagagatct acgagatgta tgaagcggtt agtatgcagc cgtcacttag
1681 aagtgagtat gagtaccctg ttttttctca tgttcaggca gggatgttct cacctgagct
1741 tagaaccttt accaaaggtg atgcggagag atgggtaagc acaaccaaaa aagccagtga
1801 ttctgcattc tggcttgagg ttgaaggtaa ttccatgacc gcaccaacag gctccaagcc
1861 aagctttcct gacggaatgt taattctcgt tgaccctgag caggctgttg agcccgggga
1921 tttctgcata gccagacttg ggggtgatga gtttaccttc aagaaactga tcagggatag
1981 cggtcaggtg tttttacaac cactaaaccc acagtaccca atgatcccat gcaatgagag
2041 ttgttccgtt gtggggaaag ttatcgctag tcagtggcct gaagagacgt ttggctgatc
2101 ggcaaggtgt tctggtcggc gcatagctga taacaattgg tacctagaat tgcttaaaga
2161 ggagaaatta agcatggtga gcaagggcga ggagctgttc accggggtgg tgcccatcct
2221 ggtcgagctg gacggcgacg taaacggcca caagttcagc gtgtccggcg agggcgaggg
2281 cgatgccacc tacggcaagc tgaccctgaa gttcatctgc accaccggca agctgcccgt
2341 gccctggccc accctcgtga ccaccctgac ctggggcgtg cagtgcttca gccgctaccc
2401 cgaccacatg aagcagcacg acttcttcaa gtccgccatg cccgaaggct acgtccagga
2461 gcgcaccatc ttcttcaagg acgacggcaa ctacaagacc cgcgccgagg tgaagttcga
2521 gggcgacacc ctggtgaacc gcatcgagct gaagggcatc gacttcaagg aggacggcaa
2581 catcctgggg cacaagctgg agtacaacta catcagccac aacgtctata tcaccgccga
2641 caagcagaag aacggcatca aggccaactt caagatccgc cacaacatcg aggacggcag
2701 cgtgcagctc gccgaccact accagcagaa cacccccatc ggcgacggcc ccgtgctgct
2761 gcccgacaac cactacctga gcacccagtc cgccctgagc aaagacccca acgagaagcg
2821 cgatcacatg gtcctgctgg agttcgtgac cgccgccggg atcactctcg gcatggacga
2881 gctgtacaag taatcggccg tctcgagtag aggcatcaaa taaaacgaaa ggctcagtcg
2941 aaagactggg cctttcgttt tatctgttgt ttgtcggtga acgctctcct gagtaggaca
3001 aatccgccgc cctagaccta ggggatatat tccgcttcct cgctcactga ctcgctacgc
3061 tcggtcgttc gactgcggcg agcggaaatg gcttacgaac ggggcggaga tttcctggaa
3121 gatgccagga agatacttaa cagggaagtg agagggccgc ggcaaagccg tttttccata
3181 ggctccgccc ccctgacaag catcacgaaa tctgacgctc aaatcagtgg tggcgaaacc
3241 cgacaggact ataaagatac caggcgtttc cccctggcgg ctccctcgtg cgctctcctg
3301 ttcctgcctt tcggtttacc ggtgtcattc cgctgttatg gccgcgtttg tctcattcca
3361 cgcctgacac tcagttccgg gtaggcagtt cgctccaagc tggactgtat gcacgaaccc
3421 cccgttcagt ccgaccgctg cgccttatcc ggtaactatc gtcttgagtc caacccggaa
3481 agacatgcaa aagcaccact ggcagcagcc actggtaatt gatttagagg agttagtctt
3541 gaagtcatgc gccggttaag gctaaactga aaggacaagt tttggtgact gcgctcctcc
3601 aagccagtta cctcggttca aagagttggt agctcagaga accttcgaaa aaccgccctg
3661 caaggcggtt ttttcgtttt cagagcaaga gattacgcgc agaccaaaac gatctcaaga
3721 agatcatctt attaatcaga taaaatatta ctagatttca gtgcaattta tctcttcaaa
```

```
     3781 tgtagcacct gaagtcagcc ccatacgata taagttgtta ctagtgcttg gattctcacc
     3841 aataaaaaac gcccggcggc aaccgagcgt tctgaacaaa tccagatgga gttctgaggt
     3901 cattactgga tctatcaaca ggagtccaag cgagctctcg aaccccagag tcccgctcag
     3961 aagaactcgt caagaaggcg atagaaggcg atgcgctgcg aatcgggagc ggcgataccg
     4021 taaagcacga ggaagcggtc agcccattcg ccgccaagct cttcagcaat atcacgggta
     4081 gccaacgcta tgtcctgata gcggtccgcc acacccagcc ggccacagtc gatgaatcca
     4141 gaaaagcggc cattttccac catgatattc ggcaagcagg catcgccatg ggtcacgacg
     4201 agatcctcgc cgtcgggcat gcgcgccttg agcctggcga acagttcggc tggcgcgagc
     4261 ccctgatgct cttcgtccag atcatcctga tcgacaagac cggcttccat ccgagtacgt
     4321 gctcgctcga tgcgatgttt cgcttggtgg tcgaatgggc aggtagccgg atcaagcgta
     4381 tgcagccgcc gcattgcatc agccatgatg gatactttct cggcaggagc aaggtgagat
     4441 gacaggagat cctgccccgg cacttcgccc aatagcagcc agtcccttcc cgcttcagtg
     4501 acaacgtcga gcacagctgc gcaaggaacg cccgtcgtgg ccagccacga tagccgcgct
     4561 gcctcgtcct gcagttcatt cagggcaccg gacaggtcgg tcttgacaaa aagaaccggg
     4621 cgcccctgcg ctgacagccg gaacacggcg gcatcagagc agccgattgt ctgttgtgcc
     4681 cagtcatagc cgaatagcct ctccacccaa gcggccggag aacctgcgtg caatccatct
     4741 tgttcaatca tgcgaaacga tcctcatcct gtctcttgat cagatcttga tcccctgcgc
     4801 catcagatcc ttggcggcaa gaaagccatc cagtttactt tgcagggctt cccaacctta
     4861 ccagagggcg ccccagctgg caattcc
//


LOCUS       pINV-107b    3759 bp    DNA   circular
FEATURES             Location/Qualifiers
     RBS             1263..1267
                     /vntifkey="32"
                     /label=SD_SEQ
                     /note=" Shine-Dalgarno sequence "
     misc_feature    1369..1525
                     /vntifkey="21"
                     /label=H_Y_EFF
                     /note=" H-strand Y effector site "
     misc_feature    complement(1709..1772)
                     /vntifkey="21"
                     /label=L_Y_EFF
                     /note=" L-strand Y effector site "
     RBS             complement(3519..3523)
                     /vntifkey="32"
                     /label=SD_SEQ
                     /note=" Shine-Dalgarno sequence "
     promoter        complement(3546..3552)
                     /vntifkey="30"
                     /label=P3_P
                     /note=" promoter P3 "
     CDS             1273..1464
                     /vntifkey="4"
                     /label=ROP
     CDS             complement(2651..3514)
                     /vntifkey="4"
                     /label=AP(R)
                     /note=" E-286 "
     rep_origin      1865..2503
                     /vntifkey="33"
                     /label=ColE1\ORI
     CDS             33..752
                     /vntifkey="4"
                     /label=EYFP
     RBS             15..23
                     /vntifkey="32"
                     /label=RBSII
     -35_signal      3720..3725
                     /vntifkey="48"
                     /label=-35\P(R)
     -35_signal      complement(3702..3707)
```

```
                     /vntifkey="48"
                     /label=-35\P(RM)
     protein_bind    3706..3722
                     /vntifkey="31"
                     /label=cI\OR2
     protein_bind    3730..3746
                     /vntifkey="31"
                     /label=cI\OR1
     -10_signal      3743..3748
                     /vntifkey="47"
                     /label=-10\P(R)
     promoter        3699..3758
                     /vntifkey="30"
                     /label=Lambda\P(R-O12)
BASE COUNT      927 a      1023 c       963 g       846 t
ORIGIN
        1 ctaggaattc aattaaagag gagaaattaa gcatggtgag caagggcgag gagctgttca
       61 ccggggtggt gcccatcctg gtcgagctgg acggcgacgt aaacggccac aagttcagcg
      121 tgtccggcga gggcgagggc gatgccacct acggcaagct gaccctgaag ttcatctgca
      181 ccaccggcaa gctgcccgtg ccctggccca ccctcgtgac caccttcggc tacggcctgc
      241 agtgcttcgc ccgctacccc gaccacatga agcagcacga cttcttcaag tccgccatgc
      301 ccgaaggcta cgtccaggag cgcaccatct tcttcaagga cgacggcaac tacaagaccc
      361 gcgccgaggt gaagttcgag ggcgacaccc tggtgaaccg catcgagctg aagggcatcg
      421 acttcaagga ggacggcaac atcctggggc acaagctgga gtacaactac aacagccaca
      481 acgtctatat catggccgac aagcagaaga acggcatcaa ggtgaacttc aagatccgcc
      541 acaacatcga ggacggcagc gtgcagctcg ccgaccacta ccagcagaac acccccatcg
      601 gcgacggccc cgtgctgctg cccgacaacc actacctgag ctaccagtcc gccctgagca
      661 aagaccccaa cgagaagcgc gatcacatgg tcctgctgga gttcgtgacc gccgccggga
      721 tcactctcgg catggacgag ctgtacaagt aaagcggccg cgactctaga attcttagct
      781 gattcgggca gcgttgggtc ctggccacgg gtgcgcatga tcgtgctcct gtcgttgagg
      841 acccggctag gctggcgggg ttgccttact ggttagcaga atgaatcacc gatacgcgag
      901 cgaacgtgaa gcgactgctg ctgcaaaacg tctgcgacct gagcaacaac atgaatggtc
      961 ttcggtttcc gtgtttcgta aagtctggaa acgcggaagt cagcgccctg caccattatg
     1021 ttccggatct gcatcgcagg atgctgctgg ctaccctgtg gaacacctac atctgtatta
     1081 acgaagcgct ggcattgacc ctgagtgatt tttctctggt cccgccgcat ccataccgcc
     1141 agttgtttac cctcacaacg ttccagtaac cgggcatgtt catcatcagt aacccgtatc
     1201 gtgagcatcc tctctcgttt catcggtatc attaccccca tgaacagaaa tccccccttac
     1261 acggaggcat cagtgaccaa acaggaaaaa accgccctta acatggcccg ctttatcaga
     1321 agccagacat taacgcttct ggagaaactc aacgagctgg acgcggatga acaggcagac
     1381 atctgtgaat cgcttcacga ccacgctgat gagctttacc gcagctgcct cgcgcgtttc
     1441 ggtgatgacg gtgaaaacct ctgacacatg cagctcccgg agacggtcac agcttgtctg
     1501 taagcggatg ccgggagcag acaagcccgt cagggcgcgt cagcgggtgt tggcgggtgt
     1561 cggggcgcag ccatgaccca gtcacgtagc gatagcggag tgtatactgg cttaactatg
     1621 cggcatcaga gcagattgta ctgagagtgc accatatgcg gtgtgaaata ccgcacagat
     1681 gcgtaaggag aaaataccgc atcaggcgct cttccgcttc ctcgctcact gactcgctgc
     1741 gctcggtcgt tcggctgcgg cgagcggtat cagctcactc aaaggcggta atacggttat
     1801 ccacagaatc aggggataac gcaggaaaga acatgtgagc aaaaggccag caaaaggcca
     1861 ggaaccgtaa aaaggccgcg ttgctggcgt ttttccatag gctccgcccc cctgacgagc
     1921 atcacaaaaa tcgacgctca agtcagaggt ggcgaaaccc gacaggacta taaagatacc
     1981 aggcgtttcc ccctggaagc tccctcgtgc gctctcctgt tccgaccctg ccgcttaccg
     2041 gatacctgtc cgcctttctc ccttcgggaa gcgtggcgct ttctcatagc tcacgctgta
     2101 ggtatctcag ttcggtgtag gtcgttcgct ccaagctggg ctgtgtgcac gaaccccccg
     2161 ttcagcccga ccgctgcgcc ttatccggta actatcgtct tgagtccaac ccggtaagac
     2221 acgacttatc gccactggca gcagccactg gtaacaggat tagcagagcg aggtatgtag
     2281 gcggtgctac agagttcttg aagtggtggc ctaactacgg ctacactaga aggacagtat
     2341 ttggtatctg cgctctgctg aagccagtta ccttcggaaa aagagttggt agctcttgat
     2401 ccggcaaaca aaccaccgct ggtagcggtg gtttttttgt ttgcaagcag cagattacgc
     2461 gcagaaaaaa aggatctcaa gaagatcctt tgatcttttc tacggggtct gacgctcagt
     2521 ggaacgaaaa ctcacgttaa gggattttgg tcatgagatt atcaaaaagg atcttcacct
     2581 agatcctttt aaattaaaaa tgaagtttta aatcaatcta aagtatatat gagtaaactt
     2641 ggtctgacag ttaccaatgc ttaatcagtg aggcacctat ctcagcgatc tgtctatttc
     2701 gttcatccat agttgcctga ctccccgtcg tgtagataac tacgatacgg gagggcttac
     2761 catctggccc cagtgctgca atgataccgc gagacccacg ctcaccggct ccagatttat
     2821 cagcaataaa ccagccagcc ggaagggccg agcgcagaag tggtcctgca actttatccg
     2881 cctccatcca gtctattaat tgttgccggg aagctagagt aagtagttcg ccagttaata
```

```
2941 gtttgcgcaa cgttgttgcc attgctgcag gcatcgtggt gtcacgctcg tcgtttggta
3001 tggcttcatt cagctccggt tcccaacgat caaggcgagt tacatgatcc cccatgttgt
3061 gcaaaaaagc ggttagctcc ttcggtcctc cgatcgttgt cagaagtaag ttggccgcag
3121 tgttatcact catggttatg gcagcactgc ataattctct tactgtcatg ccatccgtaa
3181 gatgcttttc tgtgactggt gagtactcaa ccaagtcatt ctgagaatag tgtatgcggc
3241 gaccgagttg ctcttgcccg gcgtcaacac gggataatac cgcgccacat agcagaactt
3301 taaaagtgct catcattgga aaacgttctt cggggcgaaa actctcaagg atcttaccgc
3361 tgttgagatc cagttcgatg taacccactc gtgcacccaa ctgatcttca gcatctttta
3421 ctttcaccag cgtttctggg tgagcaaaaa caggaaggca aaatgccgca aaaaagggaa
3481 taagggcgac acggaaatgt tgaatactca tactcttcct ttttcaatat tattgaagca
3541 tttatcaggg ttattgtctc atgagcggat acatatttga atgtatttag aaaaataaac
3601 aaataggggt tccgcgcaca tttccccgaa aagtgccacc tgacgtcacc attcgatggt
3661 gtcaacgtaa tctagagcta gcacgacagg ttcctagtaa atatctaaca ccgtgcgtgt
3721 tgactatttt acctctggcg gtgataatgg ttgcatgtc
```

//