6/26/2008

Part Design

Prefixes: gaattcgcggccgcttctag
gaattcgcggccgcttctagag
Suffixes: tactagtagcggccgctgcag

1. (Prefix) TetR promoter → RBS → λcI gene → Terminator (Suffix)

***Individual Parts:**

Promoter:
gaattcgcggccgcttctagagtccctatcagtgatagagattgacatccctatcagtgatagagatactgagcac
tactagtagcggccgctgcag

RBS:
gaattcgcggccgcttctagagtcacacaggaaagtactagtagcggccgctgcag

Protein:
gaattcgcggccgcttctagatgagcacaaaaaagaaaccattaacacaagagcagcttgaggacgcacgtcgcctt
aaagcaatttatgaaaaaaagaaaaatgaacttggcttatcccaggaatctgtcgcagacaagatggggatggggca
gtcaggcgttggtgctttatttaatggcatcaatgcattaaatgcttataacgccgcattgcttgcaaaaattctca
aagttagcgttgaagaatttagcccttcaatcgccagagaaatctacgagatgtatgaagcggttagtatgcagccg
tcacttagaagtgagtatgagtaccctgttttttctcatgttcaggcagggatgttctcacctgagcttagaacctt
taccaaaggtgatgcggagagatgggtaagcacaaccaaaaaagccagtgattctgcattctggcttgaggttgaag
gtaattccatgaccgcaccaacaggctccaagccaagctttcctgacggaatgttaattctcgttgaccctgagcag
gctgttgagccaggtgatttctgcatagccagacttgggggtgatgagtttaccttcaagaaactgatcagggatag
cggtcaggtgtttttacaaccactaaacccacagtacccaatgatcccatgcaatgagagttgttccgttgtgggga
aagttatcgctagtcagtggcctgaagagacgtttggcgctgcaaacgacgaaaactacgctttagtagcttaataa
tactagtagcggccgctgcag

Terminator (Ah-nuld):
gaattcgcggccgcttctagagaaaaaaaaaccccgcccctgacagggcggggttttttttactagtagcggccgc
tgcag

***Composition (921):**

gaattcgcggccgcttctagagtccctatcagtgatagagattgacatccctatcagtgatagagatactgagcact
actagagtcacacaggaaagtactagatgagcacaaaaaagaaaccattaacacaagagcagcttgaggacgcacgt
cgccttaaagcaatttatgaaaaaaagaaaaatgaacttggcttatcccaggaatctgtcgcagacaagatggggat
ggggcagtcaggcgttggtgctttatttaatggcatcaatgcattaaatgcttataacgccgcattgcttgcaaaaa
ttctcaaagttagcgttgaagaatttagcccttcaatcgccagagaaatctacgagatgtatgaagcggttagtatg
cagccgtcacttagaagtgagtatgagtaccctgttttttctcatgttcaggcagggatgttctcacctgagcttag
aacctttaccaaaggtgatgcggagagatgggtaagcacaaccaaaaaagccagtgattctgcattctggcttgagg
ttgaaggtaattccatgaccgcaccaacaggctccaagccaagctttcctgacggaatgttaattctcgttgaccct
gagcaggctgttgagccaggtgatttctgcatagccagacttgggggtgatgagtttaccttcaagaaactgatcag
ggatagcggtcaggtgtttttacaaccactaaacccacagtacccaatgatcccatgcaatgagagttgttccgttg
tggggaaagttatcgctagtcagtggcctgaagagacgtttggcgctgcaaacgacgaaaactacgctttagtagct
taataatactagagaaaaaaaaaccccgcccctgacagggcggggttttttttactagtagcggccgctgcag

2. (Prefix) LacI Promoter → RBS → p22 mnt gene → Terminator (Suffix)

***Individual Parts:**

Promoter:

gaattcgcggccgcttctagagcaatacgcaaaccgcctctccccgcgcgttggccgattcattaatgcagctggca
cgacaggtttcccgactggaaagcgggcagtgagcgcaacgcaattaatgtgagttagctcactcattaggcacccc
aggctttacactttatgcttccggctcgtatgttgtgtggaattgtgagcggataacaatttcacacatactagtag
cggccgctgcag

RBS:

gaattcgcggccgcttctagagtcacacaggaaagtactagtagcggccgctgcag

Protein:

gaattcgcggccgcttctagatggcccgggatgatcctcacttcaattttcgtatgccaatggaagtaagagagaaa
ttgaaatttagagcagaggcaaacggacggagcatgaactctgagcttttgcaaatcgtacaagatgccctaagcaa
accgtcaccagtcactgggtaccgcaatgatgcggaacgactcgccgatgagcagagcgagttagtgaagaagatgg
tcttcgatacactgaaggatctttataaaaaaaccaccgctgcaaacgacgaaaactacgctttagtagcttaataa
tactagtagcggccgctgcag

Terminator (Ah-nuld):

gaattcgcggccgcttctagagaaaaaaaaaccccgcccctgacagggcggggttttttttactagtagcggccgc
tgcag

***Composition Design for Synthesis (605):**

gaattcgcggccgcttctagagcaatacgcaaaccgcctctccccgcgcgttggccgattcattaatgcagctggca
cgacaggtttcccgactggaaagcgggcagtgagcgcaacgcaattaatgtgagttagctcactcattaggcacccc
aggctttacactttatgcttccggctcgtatgttgtgtggaattgtgagcggataacaatttcacacatactagagt
cacacaggaaagtactagatggcccgggatgatcctcacttcaattttcgtatgccaatggaagtaagagagaaatt
gaaatttagagcagaggcaaacggacggagcatgaactctgagcttttgcaaatcgtacaagatgccctaagcaaac
cgtcaccagtcactgggtaccgcaatgatgcggaacgactcgccgatgagcagagcgagttagtgaagaagatggtc
ttcgatacactgaaggatctttataaaaaaaccaccgctgcaaacgacgaaaactacgctttagtagcttaataata
ctagag aaaaaaaaaccccgcccctgacagggcggggttttttttactagtagcggccgctgcag

3. (Prefix) LacI/λcI Promoter → RBS → GFP → Terminator

***Individual Parts**

P1,LacI:caatacgcaaaccgcctctccccgcgcgttggccgattcattaatgcagctggcacgacaggtttcccg
actggaaagcgggcagtgagcgcaacgcaattaatgtgagttagctcactcattaggcaccccaggctttacacttt
atgcttccggctcgtatgttgtgtggaattgtgagcggataacaatttcacaca

P2,λcI: taacaccgtgcgtgttgactatttacctctggcggtgataatggttgc

RBS:
gaattcgcggccgcttctagagtcacacaggaaagtactagtagcggccgctgcag

Protein:
Gaattcgcggccgcttctagatgcgtaaaggagaagaacttttcactggagttgtcccaattcttgttgaattagat
ggtgatgttaatgggcacaaattttctgtcagtggagagggtgaaggtgatgcaacatacggaaaacttacccttaa
atttatttgcactactggaaaactacctgttccatggccaacacttgtcactactttcggttatggtgttcaatgct
ttgcgagatacccagatcatatgaaacagcatgactttttcaagagtgccatgcccgaaggttatgtacaggaaaga
actatatttttcaaagatgacgggaactacaagacacgtgctgaagtcaagtttgaaggtgataccttgttaatag
aatcgagttaaaaggtattgattttaaagaagatggaaacattcttggacacaaattggaatacaactataactcac
acaatgtatacatcatggcagacaaacaaaagaatggaatcaaagttaacttcaaaattagacacaacattgaagat
ggaagcgttcaactagcagaccattatcaacaaaatactccaattggcgatggccctgtccttttaccagacaacca
ttacctgtccacacaatctgccctttcgaaagatcccaacgaaaagagagaccacatggtccttcttgagtttgtaa
cagctgctgggattacacatggcatggatgaactatacaaataataatactagtagcggccgctgcag

Terminator (Ah-nuld):
Gaattcgcggccgcttctagagaaaaaaaaaccccgcccctgacagggcggggtttttttttt
actagtagcggccgctgcag

***Promoter Composition (160):**

gaattcgcggccgcttctagaggcgcaacgcaattaatgtgagttagctcactcattaggcataacaccgtgcgtgt
tgactatttacctctggcggtgataatgtgtggaattgtgagcggataacaatttcacacatactagtagcggccg
ctgcag

*Notes: Prefix → λcI O1 → λcI -35 → λcI O2 → λcI -10 → LacI O1 → Suffix
**Questions: Does the CAP binding site need to be present?

***Overall Composition (954):**

gaattcgcggccgcttctagaggcgcaacgcaattaatgtgagttagctcactcattaggcataacaccgtgcgtgt
tgactatttacctctggcggtgataatgtgtggaattgtgagcggataacaatttcacacatactagagtcacaca
ggaaagtactagatgcgtaaaggagaagaacttttcactggagttgtcccaattcttgttgaattagatggtgatgt
taatgggcacaaattttctgtcagtggagagggtgaaggtgatgcaacatacggaaaacttacccttaaatttattt
gcactactggaaaactacctgttccatggccaacacttgtcactactttcggttatggtgttcaatgctttgcgaga
tacccagatcatatgaaacagcatgacttttcaagagtgccatgcccgaaggttatgtacaggaaagaactatatt
tttcaaagatgacgggaactacaagacacgtgctgaagtcaagtttgaaggtgataccttgttaatagaatcgagt
taaaaggtattgattttaaagaagatggaaacattcttggacacaaattggaatacaactataactcacacaatgta
tacatcatggcagacaaacaaaagaatggaatcaaagttaacttcaaaattagacacaacattgaagatggaagcgt
tcaactagcagaccattatcaacaaaatactccaattggcgatggccctgtccttttaccagacaaccattacctgt
ccacacaatctgccctttcgaaagatcccaacgaaaagagagaccacatggtccttcttgagtttgtaacagctgct
gggattacacatggcatggatgaactatacaaataataatactagagaaaaaaaaaccccgcccctgacagggcggg
gttttttttactagtagcggccgctgcag

4. (Prefix) TetR/p22 mnt Promoter → RBS → RFP → Terminator

***Individual Parts**

P1,TetR tccctatcagtgatagagattgacatccctatcagtgatagagatactgagcac

P2,p22: ctcgaggtgagtgcacagtactaggtccacggtgacctagatctcctatagtgagtcgtattaattt

RBS:
gaattcgcggccgcttctagagtcacacaggaaagtactagtagcggccgctgcag

Protein:
Gaattcgcggccgcttctagatggtgagcaagggcgaggaggataacatggccatcatcaaggagttcatgcgcttc
aaggtgcacatggagggctccgtgaacggccacgagttcgagatcgagggcgagggcgagggccgcccctacgaggg
cacccagaccgccaagctgaaggtgaccaagggtggcccccctgcccttcgcctgggacatcctgtcccctcagttca
tgtacggctccaaggcctacgtgaagcaccccgccgacatccccgactacttgaagctgtccttccccgagggcttc
aagtgggagcgcgtgatgaacttcgaggacggcggcgtggtgaccgtgacccaggactcctccttgcaggacggcga
gttcatctacaaggtgaagctgcgcggcaccaacttcccctccgacggccccgtaatgcagaagaagaccatgggct
gggaggcctcctccgagcggatgtaccccgaggacggcgccctgaagggcgagatcaagcagaggctgaagctgaag
gacggcggccactacgacgctgaggtcaagaccacctacaaggccaagaagcccgtgcagctgcccggcgcctacaa
cgtcaacatcaagttggacatcacctcccacaacgaggactacaccatcgtggaacagtacgaacgcgccgagggcc
gccactccaccggcggcatggacgagctgtacaagtaataatactagtagcggccgctgcag

Terminator (Ah-nuld):
gaattcgcggccgcttctagagaaaaaaaaaccccgcccctgacagggcggggttttttttactagtagcggccgc
tgcag

***Promoter Composition (97 or 104):**

gaattcgcggccgcttctagagtccctatcagtgatagagattgacaaggtccacggtgacctagatactgagcact
actagtagcggccgctgcag

*Notes: Prefix → TetR O1 → TetR -35 → p22 mnt O1 → TetR -10 → Suffix

***Overall Composition (885):**

gaattcgcggccgcttctagagtccctatcagtgatagagattgacaaggtccacggtgacctagatactgagcact
actagagtcacacaggaaagtactagatggtgagcaagggcgaggaggataacatggccatcatcaaggagttcatg
cgcttcaaggtgcacatggagggctccgtgaacggccacgagttcgagatcgagggcgagggcgagggccgccccta
cgagggcacccagaccgccaagctgaaggtgaccaagggtggcccccctgcccttcgcctgggacatcctgtccccctc
agttcatgtacggctccaaggcctacgtgaagcaccccgccgacatccccgactacttgaagctgtccttccccgag
ggcttcaagtgggagcgcgtgatgaacttcgaggacggcggcgtggtgaccgtgacccaggactcctccttgcagga
cggcgagttcatctacaaggtgaagctgcgcggcaccaacttcccctccgacggccccgtaatgcagaagaagacca
tgggctgggaggcctcctccgagcggatgtaccccgaggacggcgccctgaagggcgagatcaagcagaggctgaag
ctgaaggacggcggccactacgacgctgaggtcaagaccacctacaaggccaagaagcccgtgcagctgcccggcgc
ctacaacgtcaacatcaagttggacatcacctcccacaacgaggactacaccatcgtggaacagtacgaacgcgccg
agggccgccactccaccggcggcatggacgagctgtacaagtaataatactagagaaaaaaaaaccccgcccctgac
agggcggggttttttttactagtagcggccgctgcag

Sequences to synthesize

1 (Prefix) LacI Promoter → RBS → p22 mnt gene → Terminator (Suffix)

gaattcgcggccgcttctagagcaatacgcaaaccgcctctccccgcgcgttggccgattcattaatgcagctggca
cgacaggtttcccgactggaaagcgggcagtgagcgcaacgcaattaatgtgagttagctcactcattaggcacccc
aggctttacactttatgcttccggctcgtatgttgtgtggaattgtgagcggataacaatttcacacatactagagt
cacacaggaaagtactagatggcccgggatgatcctcacttcaattttcgtatgccaatggaagtaagagagaaatt
gaaatttagagcagaggcaaacggacggagcatgaactctgagcttttgcaaatcgtacaagatgccctaagcaaac
cgtcaccagtcactgggtaccgcaatgatgcggaacgactcgccgatgagcagagcgagttagtgaagaagatggtc
ttcgatacactgaaggatctttataaaaaaaccaccgctgcaaacgacgaaaactacgctttagtagcttaataata
ctagag aaaaaaaaaccccgcccctgacagggcggggtttttttttactagtagcggccgctgcag

2. LacI/λcI Promoter → RBS

gaattcgcggccgcttctagaggcgcaacgcaattaatgtgagttagctcactcattaggcataacaccgtgcgtgt
tgactatttacctctggcggtgataatgtgtggaattgtgagcggataacaatttcacacatactagagtcacaca
ggaaagtactagtagcggccgctgcag

3. TetR/p22 mnt Promoter → RBS

gaattcgcggccgcttctagagtccctatcagtgatagagattgacaaggtccacggtgacctagatactgagcact
actagagtcacacaggaaagtactagtagcggccgctgcag