**>pGL-RF**

CMV promoter

BamHI

XhoI

ClaI

Gaussia Dura Luc

pTK promoter

XbaI

Red Firefly Luc

bGHpA

actagttattaatagtaatcaattacggggtcattagttcatagcccatatatggagttccgcgttacataacttacggtaaatggcccgcctggctgaccgcccaacgacccccgcccattgacgtcaataatgacgtatgttcccatagtaacgccaatagggactttccattgacgtcaatgggtggagtatttacggtaaactgcccacttggcagtacatcaagtgtatcatatgccaagtacgccccctattgacgtcaatgacggtaaatggcccgcctggcattatgcccagtacatgaccttatgggactttcctacttggcagtacatctacgtattagtcatcgctattaccatggtgatgcggttttggcagtacatcaatgggcgtggatagcggtttgactcacggggatttccaagtctccaccccattgacgtcaatgggagtttgttttggcaccaaaatcaacgggactttccaaaatgtcgtaacaactccgccccattgacgcaaatgggcggtaggcgtgtacggtgggaggtctatataagcagagctctctggctaactagagaacccactgcttactggcttatcgaaattaatacgactcactataggGGATCCgccaccatgggagtcaaagttctgtttgccctgatctgcatcgctgtggccgaggccaagcccaccgagaacaacgaagacttcaacatcgtggccgtggccagcaacttcgcgaccacggatctcgatgctgaccgcgggaagttgcccggcaagaagctgccgctggaggtgctcaaagagttggaagccaatgcccggaaagctggctgcaccaggggctgtctgatctgcctgtcccacatcaagtgcacgcccaagatgaagaagttcatcccaggacgctgccacacctacgaaggcgacaaagagtccgcacagggcggcataggcgaggcgatcgtcgacattcctgagattcctgggttcaaggacttggagcccttggagcagttcatcgcacaggtcgatctgtgtgtggactgcacaactggctgcctcaaagggcttgccaacgtgcagtgttctgacctgctcaagaagtggctgccgcaacgctgtgcgacctttgccagcaagatccagggccaggtggacaagatcaagggggccggtggtgacCTCGAGtaaATCGATtgataagatacattgatgagtttggacaaaccacaactagaatgcagtgaaaaaaatgctttatttgtgaaatttgtgatgctattgctttatttgtaaccattataagctgcaataaacaagcttgttaacaatgagtcttcggacctcgcgggggccgcttaagcggtggttagggtttgtctgacgcggggggagggggaaggaacgaaacactctcattcggaggcggctcggggtttggtcttggtggccacgggcacgcagaagagcgccgcgatcctcttaagcacccccccgccctccgtggaggcgggggtttggtcggcgggtggtaactggcgggccgctgactcgggcgggtcgcgcgccccagagtgtgaccttttcggtctgctcgcagacccccgggcggcgccgccgcggcggcgacgggctcgctgggtcctaggctccatggggaccgtatacgtggacaggctctggagcatccgcacgactgcggtgatattaccggagaccttctgcgggacgagccgggtcacgcggctgacgcggagcgtccgttgggcgacaaacaccaggacggggcacaggtacactatcttgtcacccggaggcgcgagggactgcaggagcttcagggagtggcgcagctgcttcatccccgtggcccgttgctcgcgtttgctggcggtgtccccggaagaaatatatttgcatgtctttagttctatgatgacacaaaccccgcccagcgtcttgtcattggcgaattcgaacacgcagatgcagtcggggcggcgcggtcccaggtccacttcgcatattaaggtgacgcgtgtggcctcgaacaccgagcgaccctgcagcgacccgcttaaTCTAGAgccaccatggaaaatatggaaaacgacgagaacatcgtggtgggccccaagcccttctaccccatcgaggaaggcagcgccggcacccagctgcggaagtacatggaaagatacgccaagctgggcgccattgccttcaccaacgccgtgaccggcgtggactacagctacgccgagtacctggaaaagagctgctgcctgggcaaggctctgcagaactacggcctggtggtggacggccggatcgccctgtgcagcgagaactgcgaggaattcttcatccccgtgatcgccggcctgttcatcggcgtgggcgtggctcccaccaacgagatctacaccctgcgggagctggtgcacagcctgggcatcagcaagcccaccatcgtgttcagcagcaagaagggcctggacaaagtcatcaccgtgcagaaaaccgtgaccaccatcaagaccatcgtgatcctggacagcaaggtggactaccggggctaccagtgcctggacaccttcatcaagcggaacaccccccctggcttccaggccagcagcttcaagaccgtggaggtggaccggaaagaacaggtggccctgatcatgaacagcagcggcagcaccggcctgcccaagggcgtgcagctgacccacgagaacaccgtgacccggttcagccacgccagggaccccatctacggcaaccaggtgtcccccggcaccgccgtgctgaccgtggtgcccttccaccacggcttcggcatgttcaccaccctgggctacctgatctgcggcttccgggtggtgatgctgaccaagttcgacgaggaaaccttcctgaaaaccctgcaggactacaagtgcacctacgtgattctggtgcccaccctgttcgccatcctgaacaagagcgagctgctgaacaagtacgacctgagcaacctggtggagatcgccagcggcggagcccccctgagcaaagaagtgggagaggccgtcgccaggcggttcaatctgcccggcgtgcggcagggctacggcctgaccgagacaaccagcgccatcatcatcacccccgagggcgacgacaagcctggagccagcggcaaggtggtgcccctgttcaaggccaaagtgatcgacctggacaccaagaagagcctgggccccaacagacggggcgaagtgtgcgtgaagggccccatgctgatgaagggctacgtgaacaaccccgaggccaccaaagagctgatcgacgaagagggctggctgcacaccggcgacatcggctactacgacgaagagaagcacttcttcatcgtggaccggctgaagagcctgatcaagtacaagggctatcaggtgccccctgccgagctggaaagcgtcctgctgcagcaccccagcatcttcgacgccggcgtggccggggtgccagatcctgtggccggcgagctgcctggcgccgtggtggtgctggaatccggcaagaacatgaccgagaaagaagtgatggactacgtcgccagccaggtgtccaacgccaagcggctgagaggcggcgtgagattcgtggacgaagtgccaaagggcctgaccggcaagatcgacggcagggccatccgggagatcctgaagaaacccgtggccaagatgtgatgagcggccgcaaaatcagcctcgactgtgccttctagttgccagccatctgttgtttgcccctcccccgtgccttccttgaccctggaaggtgccactcccactgtcctttcctaataaaatgaggaaattgcatcgccggctggatgatcctccagcgcggggatctcatgctggagttcttcgcccaccccaacttgtttattgcagcttataatggttacaaataaagcaatagcatcacaaatttcacaaataaagcatttttttcactgcattctagttgtggtttgtccaaactcatcaatgtatcttatcatgtctgtataccgtcgacctctagctagagcttggcgtaatcatggtcattaccaatgcttaatcagtgaggcacctatctcagcgatctgtctatttcgttcatccatagttgcctgactccccgtcgtgtagataactacgatacgggagggcttaccatctggccccagcgctgcgatgataccgcgagaaccacgctcaccggctccggatttatcagcaataaaccagccagccggaagggccgagcgcagaagtggtcctgcaactttatccgcctccatccagtctattaattgttgccgggaagctagagtaagtagttcgccagttaatagtttgcgcaacgttgttgccatcgctacaggcatcgtggtgtcacgctcgtcgtttggtatggcttcattcagctccggttcccaacgatcaaggcgagttacatgatcccccatgttgtgcaaaaaagcggttagctccttcggtcctccgatcgttgtcagaagtaagttggccgcagtgttatcactcatggttatggcagcactgcataattctcttactgtcatgccatccgtaagatgcttttctgtgactggtgagtactcaaccaagtcattctgagaatagtgtatgcggcgaccgagttgctcttgcccggcgtcaatacgggataataccgcgccacatagcagaactttaaaagtgctcatcattggaaaacgttcttcggggcgaaaactctcaaggatcttaccgctgttgagatccagttcgatgtaacccactcgtgcacccaactgatcttcagcatcttttactttcaccagcgtttctgggtgagcaaaaacaggaaggcaaaatgccgcaaaaaagggaataagggcgacacggaaatgttgaatactcatattcttcctttttcaatattattgaagcatttatcagggttattgtctcatgagcggatacatatttgaatgtatttagaaaaataaacaaataggggtcagtgttacaaccaattaaccaattctgaacattatcgcgagcccatttatacctgaatatggctcataacaccccttgctcatgaccaaaatcccttaacgtgagttacgcgcgcgtcgttccactgagcgtcagaccccgtagaaaagatcaaaggatcttcttgagatcctttttttctgcgcgtaatctgctgcttgcaaacaaaaaaaccaccgctaccagcggtggtttgtttgccggatcaagagctaccaactctttttccgaaggtaactggcttcagcagagcgcagataccaaatactgttcttctagtgtagccgtagttagcccaccacttcaagaactctgtagcaccgcctacatacctcgctctgctaatcctgttaccagtggctgctgccagtggcgataagtcgtgtcttaccgggttggactcaagacgatagttaccggataaggcgcagcggtcgggctgaacggggggttcgtgcacacagcccagcttggagcgaacgacctacaccgaactgagatacctacagcgtgagctatgagaaagcgccacgcttcccgaagggagaaaggcggacaggtatccggtaagcggcagggtcggaacaggagagcgcacgagggagcttccagggggaaacgcctggtatctttatagtcctgtcgggtttcgccacctctgacttgagcgtcgatttttgtgatgctcgtcaggggggcggagcctatggaaaaacgccagcaacgcggcctttttacggttcctggccttttgctggccttttgctcacatgttctttcctgcgttatcccctgattctgtggataaccgtattaccgcctttgagtgagctgataccgctcgccgcagccgaacgaccgagcgcagcgagtcagtgagcgaggaagcggaaggcgagagtagggaactgccaggcatcaaactaagcagaaggcccctgacggatggcctttttgcgtttctacaaactctttctgtgttgtaaaacgacggccagtcttaagctcgggccccctgggcggttctgataacgagtaatcgttaatccgcaaataacgtaaaaacccgcttcggcgggtttttttatggggggagtttagggaaagagcatttgtcagaatatttaagggcgcctgtcactttgcttgatatatgagaattatttaaccttataaatgagaaaaaagcaacgcactttaaataagatacgttgctttttcgattgatgaacacctataattaaactattcatctattatttatgattttttgtatatacaatatttctagtttgttaaagagaattaagaaaataaatctcgaaaataataaagggaaaatcagtttttgatatcaaaattatacatgtcaacgataatacaaaatataatacaaactataagatgttatcagtatttattatcatttagaataaattttgtgtcgcccttaattgtgagcggataacaattacgagcttcatgcacagtggcgttgacattgattattgactagcatgttctttcctgcgttatcccctgattctgtggataaccgtattaccgccatgcattagttattaataacatacgctctccatcaaaacaaaacgaaacaaaacaaactagcaaaataggctgtccccagtgcaagtgcaggtgccagaacatttctct

**Supplementary file 4. Full plasmid sequence of the pGL-RF vector.** Different elements in the reporter plasmid were indicated using underline, square frame, and different colors of highlight and letters, respectively.