**pCas-Guide-EF1a-GFP**, Revised, 08/10/2016

GAATTCCCCAGTGGAAAGACGCGCAGGCAAAACGCACCACGTGACGGAGCGTGACCGCGCGCCGAGCGCGCGCCAAGGTCGGGCAGGAAGAGGGCCTATTTCCCATGATTCCTTCATATTTGCATATACGATACAAGGCTGTTAGAGAGATAATTAGAATTAATTTGACTGTAAACACAAAGATATTAGTACAAAATACGTGACGTAGAAAGTAATAATTTCTTGGGTAGTTTGCAGTTTTAAAATTATGTTTTAAAATGGACTATCATATGCTTACCGTAACTTGAAAGTATTTCGATTTCTTGGGTTTATATATCTTGTGGAAAGGACGCGGGATCCACTGGACCAGGCAGCAGCGTCAGAAGACTTTTTTGGAACGTCTCGTTTTAGAGCTAGAAATAGCAAGTTAAAATAAGGCTAGTCCGTTATCAACTTGAAAAAGTGGCACCGAGTCGGTGCTTTTTTTGGTGTACACGTGAGGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCCACAGTCCCCGAGAAGTTGGGGGGAGGGGTCGGCAATTGAACCGGTGCCTAGAGAAGGTGGCGCGGGGTAAACTGGGAAAGTGATGTCGTGTACTGGCTCCGCCTTTTTCCCGAGGGTGGGGGAGAACCGTATATAAGTGCAGTAGTCGCCGTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGGTAAGTGCCGTGTGTGGTTCCCGCGGGCCTGGCCTCTTTACGGGTTATGGCCCTTGCGTGCCTTGAATTACTTCCACCTGGCTGCAGTACGTGATTCTTGATCCCGAGCTTCGGGTTGGAAGTGGGTGGGAGAGTTCGAGGCCTTGCGCTTAAGGAGCCCCTTCGCCTCGTGCTTGAGTTGAGGCCTGGCCTGGGCGCTGGGGCCGCCGCGTGCGAATCTGGTGGCACCTTCGCGCCTGTCTCGCTGCTTTCGATAAGTCTCTAGCCATTTAAAATTTTTGATGACCTGCTGCGACGCTTTTTTTCTGGCAAGATAGTCTTGTAAATGCGGGCCAAGATCTGCACACTGGTATTTCGGTTTTTGGGGCCGCGGGCGGCGACGGGGCCCGTGCGTCCCAGCGCACATGTTCGGCGAGGCGGGGCCTGCGAGCGCGGCCACCGAGAATCGGACGGGGGTAGTCTCAAGCTGGCCGGCCTGCTCTGGTGCCTGGCCTCGCGCCGCCGTGTATCGCCCCGCCCTGGGCGGCAAGGCTGGCCCGGTCGGCACCAGTTGCGTGAGCGGAAAGATGGCCGCTTCCCGGCCCTGCTGCAGGGAGCTCAAAATGGAGGACGCGGCGCTCGGGAGAGCGGGCGGGTGAGTCACCCACACAAAGGAAAAGGGCCTTTCCGTCCTCAGCCGTCGCTTCATGTGACTCCACGGAGTACCGGGCGCCGTCCAGGCACCTCGATTAGTTCTCGAGCTTTTGGAGTACGTCGTCTTTAGGTTGGGGGGAGGGGTTTTATGCGATGGAGTTTCCCCACACTGAGTGGGTGGAGACTGAAGTTAGGCCAGCTTGGCACTTGATGTAATTCTCCTTGGAATTTGCCCTTTTTGAGTTTGGATCTTGGTTCATTCTCAAGCCTCAGACAGTGGTTCAAAGTTTTTTTCTTCCATTTCAGGTGTCGTGACTATAGGGCGGCCGGACGTGACAAATGGAAGTAGCACGCCTCACTAGGCTCGTGCAGATGGACAGCACCGCTGCAGCCATGGAGAGCGACGAGAGCGGCCTGCCCGCCATGGAGATCGAGTGCCGCATCACCGGCACCCTGAACGGCGTGGAGTTCGAGCTGGTGGGCGGCGGAGAGGGCACCCCCGAGCAGGGCCGCATGACCAACAAGATGAAGAGCACCAAAGGCGCCCTGACCTTCAGCCCCTACCTGCTGAGCCACGTGATGGGCTACGGCTTCTACCACTTCGGCACCTACCCCAGCGGCTACGAGAACCCCTTCCTGCACGCCATCAACAACGGCGGCTACACCAACACCCGCATCGAGAAGTACGAGGACGGCGGCGTGCTGCACGTGAGCTTCAGCTACCGCTACGAGGCCGGCCGCGTGATCGGCGACTTCAAGGTGATGGGCACCGGCTTCCCCGAGGACAGCGTGATCTTCACCGACAAGATCATCCGCAGCAACGCCACCGTGGAGCACCTGCACCCCATGGGCGATAACGATCTGGATGGCAGCTTCACCCGCACCTTCAGCCTGCGCGACGGCGGCTACTACAGCTCCGTGGTGGACAGCCACATGCACTTCAAGAGCGCCATCCACCCCAGCATCCTGCAGAACGGGGGCCCCATGTTCGCCTTCCGCCGCGTGGAGGAGGATCACAGCAACACCGAGCTGGGCATCGTGGAGTACCAGCACGCCTTCAAGACCCCGGATGCAGATGCCGGTGAAGAAAGAGTTTAATCGATGATATCAGATCCCCGGGATGCAGAAATTGATGATCTATTAAACAATAAAGATGTCCACTAAAATGGAAGTTTTTCCTGTCATACTTTGTTAAGAAGGGTGAGAACAGAGTACCTACATTTTGAATGGAAGGATTGGAGCTACGGGGGTGGGGGTGGGGTGGGATTAGATAAATGCCTGCTCTTTACTGAAGGCTCTTTACTATTGCTTTATGATAATGTTTCATAGTTGGATATCATAATTTAAACAAGCAAAACCAAATTAAGGGCCAGCTCATTCCTCCCACTCATGATCTATAGATCTATAGATCTCTCGTGGGATCATTGTTTTTCTCTTGATTCCCACTTTGTGGTTCTAAGTACTGTGGTTTCCAAATGTGTCAGTTTCATAGCCTGAAGAACGAGATCAGCAGCCTCTGTTCCACATACACTTCATTCTCAGTATTGTTTTGCCAAGTTCTAATTCCATCAGAAGCTGGTCGAGATCCGGAACCCTTAATATAACTTCGTATAATGTATGCTATACGAAGTTATTAGGTCCACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACCCCCGCCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTCCGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCCAGTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTTGGCAGTACACCAATGGGCGTGGATAGCGGTTTGACTCACGGGGATTTCCAAGTCTCCACCCCATTGACGTCAATGGGAGTTTGTTTTGGCACCAAAATCAACGGGACTTTCCAAAATGTCGTAATAACCCCGCCCCGTTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGAGGTCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGAATTTTGTAATACGACTCACTATAGGGCGGCCGGGAATTCGTCGACTGGAACCGGTACCGAGGAGATCTGCCGCCGCGATCGCCATGGATAAGAAATACTCAATAGGACTGGATATTGGCACAAATAGCGTCGGATGGGCTGTGATCACTGATGAATATAAGGTTCCTTCTAAAAAGTTCAAGGTTCTGGGAAATACAGACCGCCACAGTATCAAAAAAAATCTTATAGGGGCTCTTCTGTTTGACAGTGGAGAGACAGCCGAAGCTACTAGACTCAAACGGACAGCTAGGAGAAGGTATACAAGACGGAAGAATAGGATTTGTTATCTCCAGGAGATTTTTTCAAATGAGATGGCCAAAGTGGATGATAGTTTCTTTCATAGACTTGAAGAGTCTTTTTTGGTGGAAGAAGACAAGAAGCATGAAAGACATCCTATTTTTGGAAATATAGTGGATGAAGTTGCTTATCACGAGAAATATCCAACTATCTATCATCTGAGAAAAAAATTGGTGGATTCTACTGATAAAGCCGATTTGCGCCTGATCTATTTGGCCCTGGCCCACATGATTAAGTTTAGAGGTCATTTTTTGATTGAGGGCGATCTGAATCCTGATAATAGTGATGTGGACAAACTGTTTATCCAGTTGGTGCAAACCTACAATCAACTGTTTGAAGAAAACCCTATTAACGCAAGTGGAGTGGATGCTAAAGCCATTCTTTCTGCAAGATTGAGTAAATCAAGAAGACTGGAAAATCTCATTGCTCAGCTCCCCGGTGAGAAGAAAAATGGCCTGTTTGGGAATCTCATTGCTTTGTCATTGGGTTTGACCCCTAATTTTAAATCAAATTTTGATTTGGCAGAAGATGCTAAACTCCAGCTTTCAAAAGATACTTACGATGATGATCTGGATAATCTGTTGGCTCAAATTGGAGATCAATATGCTGATTTGTTTTTGGCAGCTAAGAATCTGTCAGATGCTATTCTGCTTTCAGACATCCTGAGAGTGAATACTGAAATAACTAAGGCTCCCCTGTCAGCTTCAATGATTAAACGCTACGATGAACATCATCAAGACTTGACTCTTCTGAAAGCCCTGGTTAGACAACAACTTCCAGAAAAGTATAAAGAAATCTTTTTTGATCAATCAAAAAACGGATATGCAGGTTATATTGATGGCGGCGCAAGCCAAGAAGAATTTTATAAATTTATCAAACCAATTCTGGAAAAAATGGATGGTACTGAGGAACTGTTGGTGAAACTGAATAGAGAAGATTTGCTGCGCAAGCAACGGACCTTTGACAACGGCTCTATTCCCCATCAAATTCACTTGGGTGAGCTGCATGCTATTTTGAGAAGACAAGAAGACTTTTATCCATTTCTGAAAGACAATAGAGAGAAGATTGAAAAAATCTTGACTTTTAGGATTCCTTATTATGTTGGTCCATTGGCCAGAGGCAATAGTAGGTTTGCATGGATGACTCGGAAGTCTGAAGAAACAATTACCCCATGGAATTTTGAAGAAGTTGTCGATAAAGGTGCTTCAGCTCAATCATTTATTGAACGCATGACAAACTTTGATAAAAATCTTCCAAATGAAAAAGTGCTGCCAAAACATAGTTTGCTTTATGAGTATTTTACCGTTTATAACGAATTGACAAAGGTCAAATATGTTACTGAAGGAATGAGAAAACCAGCATTTCTTTCAGGTGAACAGAAGAAAGCCATTGTTGATCTGCTCTTCAAAACAAATAGGAAAGTGACCGTTAAGCAACTGAAAGAAGATTATTTCAAAAAAATAGAATGTTTTGATAGTGTTGAAATTTCAGGAGTTGAAGATAGATTTAATGCTTCACTGGGTACATACCATGATTTGCTGAAAATTATTAAAGATAAAGATTTTTTGGATAATGAAGAAAATGAAGACATCCTGGAGGATATTGTTCTGACATTGACCCTGTTTGAAGATAGGGAGATGATTGAGGAAAGACTTAAAACATACGCTCACCTCTTTGATGATAAGGTGATGAAACAGCTTAAAAGACGCAGATATACTGGTTGGGGAAGGTTGTCCAGAAAATTGATTAATGGTATTAGGGATAAGCAATCTGGCAAAACAATACTGGATTTTTTGAAATCAGATGGTTTTGCCAATCGCAATTTTATGCAGCTCATCCATGATGATAGTTTGACATTTAAAGAAGACATCCAAAAAGCACAAGTGTCTGGACAAGGCGATAGTCTGCATGAACATATTGCAAATCTGGCTGGTAGCCCTGCTATTAAAAAAGGTATTCTCCAGACTGTGAAAGTTGTTGATGAATTGGTCAAAGTGATGGGGCGGCATAAGCCAGAAAATATCGTTATTGAAATGGCAAGAGAAAATCAGACAACTCAAAAGGGCCAGAAAAATTCCAGAGAGAGGATGAAAAGAATCGAAGAAGGTATCAAAGAACTGGGAAGTCAGATTCTTAAAGAGCATCCTGTTGAAAATACTCAATTGCAAAATGAAAAGCTCTATCTCTATTATCTCCAAAATGGAAGAGATATGTATGTGGACCAAGAACTGGATATTAATAGGCTGAGTGATTATGATGTCGATCACATTGTTCCACAAAGTTTCCTTAAAGACGATTCAATAGACAATAAGGTCCTGACCAGGTCTGATAAAAATAGAGGTAAATCCGATAACGTTCCAAGTGAAGAAGTGGTCAAAAAGATGAAAAACTATTGGAGACAACTTCTGAACGCCAAGCTGATCACTCAAAGGAAGTTTGATAATCTGACCAAAGCTGAAAGAGGAGGTTTGAGTGAACTTGATAAAGCTGGTTTTATCAAACGCCAATTGGTTGAAACTCGCCAAATCACTAAGCATGTGGCACAAATTTTGGATAGTCGCATGAATACTAAATACGATGAAAATGATAAACTTATTAGAGAGGTTAAAGTGATTACCCTGAAATCTAAACTGGTTTCTGACTTCAGAAAAGATTTCCAATTCTATAAAGTGAGAGAGATTAACAATTACCATCATGCCCATGATGCCTATCTGAATGCCGTCGTTGGAACTGCTTTGATTAAGAAATATCCAAAACTTGAAAGCGAGTTTGTCTATGGTGATTATAAAGTTTATGATGTTAGGAAAATGATTGCTAAGTCTGAGCAAGAAATAGGCAAAGCAACCGCAAAGTATTTCTTTTACTCTAATATCATGAACTTCTTCAAAACAGAAATTACACTTGCAAATGGAGAGATTCGCAAACGCCCTCTGATCGAAACTAATGGGGAAACTGGAGAAATTGTCTGGGATAAAGGGAGAGATTTTGCCACAGTGCGCAAAGTGTTGTCCATGCCCCAAGTCAATATCGTCAAGAAAACAGAAGTGCAGACAGGCGGATTCTCTAAGGAGTCAATTCTGCCAAAAAGAAATTCCGACAAGCTGATTGCTAGGAAAAAAGACTGGGACCCAAAAAAATATGGTGGTTTTGATAGTCCAACCGTGGCTTATTCAGTCCTGGTGGTTGCTAAGGTGGAAAAAGGGAAATCCAAGAAGCTGAAATCCGTTAAAGAGCTGCTGGGGATCACAATTATGGAAAGAAGTTCCTTTGAAAAAAATCCCATTGACTTTCTGGAAGCTAAAGGATATAAGGAAGTTAAAAAAGACCTGATCATTAAACTGCCTAAATATAGTCTTTTTGAGCTGGAAAACGGTAGGAAACGGATGCTGGCTAGTGCCGGAGAACTGCAAAAAGGAAATGAGCTGGCTCTGCCAAGCAAATATGTGAATTTTCTGTATCTGGCTAGTCATTATGAAAAGTTGAAGGGTAGTCCAGAAGATAACGAACAAAAACAATTGTTTGTGGAGCAGCATAAGCATTATCTGGATGAGATTATTGAGCAAATCAGTGAATTTTCTAAGAGAGTTATTCTGGCAGATGCCAATCTGGATAAAGTTCTTAGTGCATATAACAAACATAGAGACAAACCAATAAGAGAACAAGCAGAAAATATCATTCATCTGTTTACCTTGACCAATCTTGGAGCACCCGCTGCTTTTAAATACTTTGATACAACAATTGATAGGAAAAGATATACCTCTACAAAAGAAGTTCTGGATGCCACTCTTATCCATCAATCCATCACTGGTCTTTATGAAACACGCATTGATTTGAGTCAGCTGGGAGGTGACCCCAAGAAAAAACGCAAGGTGGAAGATCCTAAGAAAAAGCGGAAAGTGGACACGCGTACGCGGCCGCTCGAGCAGAAACTCATCTCAGAAGAGGATCTGGCAGCAAATGATATCCTGGATTACAAGGATGACGACGATAAGGTTTAAACGGCCGGCCGCGGTCATAGCTGTTTCCTGAACAGATCCCGGGTGGCATCCCTGTGACCCCTCCCCAGTGCCTCTCCTGGCCCTGGAAGTTGCCACTCCAGTGCCCACCAGCCTTGTCCTAATAAAATTAAGTTGCATCATTTTGTCTGACTAGGTGTCCTTCTATAATATTATGGGGTGGAGGGGGGTGGTATGGAGCAAGGGGCAAGTTGGGAAGACAACCTGTAGGGCCTGCGGGGTCTATTGGGAACCAAGCTGGAGTGCAGTGGCACAATCTTGGCTCACTGCAATCTCCGCCTCCTGGGTTCAAGCGATTCTCCTGCCTCAGCCTCCCGAGTTGTTGGGATTCCAGGCATGCATGACCAGGCTCAGCTAATTTTTGTTTTTTTGGTAGAGGCGGGGTTTCACCATATTGGCCAGGCTGGTCTCCAACTCCTAATCTCAGGTGATCTACCCACCTTGGCCTCCCAAATTGCTGGGATTACAGGCGTGAACCACTGCTCCCTTCCCTGTCCTTCTGATTTTAAAATAACTATACCAGCAGGAGGACGTCCAGACACAGCATAGGCTACCTGGCCATGCCCAACCGGTGGGACATTTGAGTTGCTTGCTTGGCACTGTCCTCTCATGCGTTGGGTCCACTCAGTAGATGCCTGTTGAATTGGGTACGCGGCCAGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTCCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGACGCGTAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTGCGGCCGCAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCGTTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTCACGCTCGTCGTTTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAATACGGGATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTTTACTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGATGATATATTTTTATCTTGTGCAATGTAACATCAGAGATTTTGAGACACGGGCCAGAGCTGCCAGGAAACAGCTATGACCATGTAATACGACTCACTATAGGGGATATCAGCTGGATGGCAGTTAAC

Features:

75-331 hU6 Promoter

334-340 BamH1

378-384 BsmB1

384-459 gRNA scaffold

497-1647 EF1a promoter

1682-2440 tGFP

2889-3479 CMV promoter

3656-7906 Cas9-NLS-Myc-DDK

8675-9294 pBR322 origin

9443-10313 Ampr0