**pCas-Guide-ef1a-CD4 (SKU GE100022), version 09/16/2014**

GAATTCCCCAGTGGAAAGACGCGCAGGCAAAACGCACCACGTGACGGAGCGTGACCGCGCGCCGAGCGCGCGCCAAGGTCGGGCAGGAAGAGGGCCTATTTCCCATGATTCCTTCATATTTGCATATACGATACAAGGCTGTTAGAGAGATAATTAGAATTAATTTGACTGTAAACACAAAGATATTAGTACAAAATACGTGACGTAGAAAGTAATAATTTCTTGGGTAGTTTGCAGTTTTAAAATTATGTTTTAAAATGGACTATCATATGCTTACCGTAACTTGAAAGTATTTCGATTTCTTGGGTTTATATATCTTGTGGAAAGGACGCGGGATCCACTGGACCAGGCAGCAGCGTCAGAAGACTTTTTTGGAACGTCTCGTTTTAGAGCTAGAAATAGCAAGTTAAAATAAGGCTAGTCCGTTATCAACTTGAAAAAGTGGCACCGAGTCGGTGCTTTTTTTGGTGTACaCGTGAGGCTCCGGTGCCCGTCAGtgggcagagcgcacatcgcccacagtccccgagaagttggggggaggggtcggcaattgaaccggtgcctagagaaggtggcgcggggtaaactgggaaagtgatgtcgtgtactggctccgcctttttcccgagggtgggggagaaccgtatataagtgcagtagtcgccgtgaacgttctttttcgcaacgggtttgccgccagaacacaggtaagtgccgtgtgtggttcccgcgggcctggcctctttacgggttatggcccttgcgtgccttgaattacttccacctggctgcagtacgtgattcttgatcccgagcttcgggttggaagtgggtgggagagttcgaggccttgcgcttaaggagccccttcgcctcgtgcttgagttgaggcctggcctgggcgctggggccgccgcgtgcgaatctggtggcaccttcgcgcctgtctcgctgctttcgataagtctctagccatttaaaatttttgatgacctgctgcgacgctttttttctggcaagatagtcttgtaaatgcgggccaagatctgcacactggtatttcggtttttggggccgcgggcggcgacggggcccgtgcgtcccagcgcacatgttcggcgaggcggggcctgcgagcgcggccaccgagaatcggacgggggtagtctcaagctggccggcctgctctggtgcctggcctcgcgccgccgtgtatcgccccgccctgggcggcaaggctggcccggtcggcaccagttgcgtgagcggaaagatggccgcttcccggccctgctgcagggagctcaaaatggaggacgcggcgctcgggagagcgggcgggtgagtcacccacacaaaggaaaagggcctttccgtcctcagccgtcgcttcatgtgactccacggagtaccgggcgccgtccaggcacctcgattagttctcgagcttttggagtacgtcgtctttaggttggggggaggggttttatgcgatggagtttccccacactgagtgggtggagactgaagttaggccagcttggcacttgatgtaattctccttggaatttgccctttttgagtttggatcttggttcattctcaagcctcagacagtggttcaaagtttttttcttccatttcaGGTGTCGTGACTATAGGGCGGCCGGACgtgATGAACCGGGGAGTCCCTTTTAGGCACTTGCTTCTGGTGCTGCAACTGGCGCTCCTCCCAGCAGCCACTCAGGGAAAGAAAGTGGTGCTGGGCAAAAAAGGGGATACAGTGGAACTGACCTGTACAGCTTCCCAGAAGAAGAGCATACAATTCCACTGGAAAAACTCCAACCAGATAAAGATTCTGGGAAATCAGGGCTCCTTCTTAACTAAAGGTCCATCCAAGCTGAATGATCGCGCTGACTCAAGAAGAAGCCTTTGGGACCAAGGAAACTTTCCCCTGATCATCAAGAATCTTAAGATAGAAGACTCAGATACTTACATCTGTGAAGTGGAGGACCAGAAGGAGGAGGTGCAATTGCTAGTGTTCGGATTGACTGCCAACTCTGACACCCACCTGCTTCAGGGGCAGAGCCTGACCCTGACCTTGGAGAGCCCCCCTGGTAGTAGCCCCTCAGTGCAATGTAGGAGTCCAAGGGGTAAAAACATACAGGGGGGGAAGACCCTCTCCGTGTCTCAGCTGGAGCTCCAGGATAGTGGCACCTGGACATGCACTGTCTTGCAGAACCAGAAGAAGGTGGAGTTCAAAATAGACATCGTGGTGCTAGCTTTCCAGAAGGCCTCCAGCATAGTCTATAAGAAAGAGGGGGAACAGGTGGAGTTCTCCTTCCCACTCGCCTTTACAGTTGAAAAGCTGACGGGCAGTGGCGAGCTGTGGTGGCAGGCGGAGAGGGCTTCCTCCTCCAAGTCTTGGATCACCTTTGACCTGAAGAACAAGGAAGTGTCTGTAAAACGGGTTACCCAGGACCCTAAGCTCCAGATGGGCAAGAAGCTCCCGCTCCACCTCACCCTGCCCCAGGCCTTGCCTCAGTATGCTGGCTCTGGAAACCTCACCCTGGCCCTTGAAGCGAAAACAGGAAAGTTGCATCAGGAAGTGAACCTGGTGGTGATGAGAGCCACTCAGCTCCAGAAAAATTTGACCTGTGAGGTGTGGGGACCCACCTCCCCTAAGCTGATGCTGAGCTTGAAACTGGAGAACAAGGAGGCAAAGGTCTCGAAGCGGGAGAAGGCGGTGTGGGTGCTGAACCCTGAGGCGGGGATGTGGCAGTGTCTGCTGAGTGACTCGGGACAGGTCCTGCTGGAATCCAACATCAAGGTTCTGCCCACATGGTCCACCCCGGTGCAGCCAATGGCCCTGATTGTGCTGGGGGGCGTCGCCGGCCTCCTGCTTTTCATTGGGCTAGGCATCTTCTTCTGTGTCAGGTGCCGGCACACCGGTTAGGATATCAGATCCCCGGGATGCAGAAATTGATGATCTATTAAACAATAAAGATGTCCACTAAAATGGAAGTTTTTCCTGTCATACTTTGTTAAGAAGGGTGAGAACAGAGTACCTACATTTTGAATGGAAGGATTGGAGCTACGGGGGTGGGGGTGGGGTGGGATTAGATAAATGCCTGCTCTTTACTGAAGGCTCTTTACTATTGCTTTATGATAATGTTTCATAGTTGGATATCATAATTTAAACAAGCAAAACCAAATTAAGGGCCAGCTCATTCCTCCCACTCATGATCTATAGATCTATAGATCTCTCGTGGGATCATTGTTTTTCTCTTGATTCCCACTTTGTGGTTCTAAGTACTGTGGTTTCCAAATGTGTCAGTTTCATAGCCTGAAGAACGAGATCAGCAGCCTCTGTTCCACATACACTTCATTCTCAGTATTGTTTTGCCAAGTTCTAATTCCATCAGAAGCTGGTCGAGATCCGGAACCCTTAATATAACTTCGTATAATGTATGCTATACGAAGTTATTAGGTCCACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACCCCCGCCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTCCGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCCAGTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTTGGCAGTACACCAATGGGCGTGGATAGCGGTTTGACTCACGGGGATTTCCAAGTCTCCACCCCATTGACGTCAATGGGAGTTTGTTTTGGCACCAAAATCAACGGGACTTTCCAAAATGTCGTAATAACCCCGCCCCGTTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGAGGTCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGAATTTTGTAATACGACTCACTATAGGGCGGCCGGGAATTCGTCGACTGGAACCGGTACCGAGGAGATCTGCCGCCGCGATCGCCATGGATAAGAAATACTCAATAGGACTGGATATTGGCACAAATAGCGTCGGATGGGCTGTGATCACTGATGAATATAAGGTTCCTTCTAAAAAGTTCAAGGTTCTGGGAAATACAGACCGCCACAGTATCAAAAAAAATCTTATAGGGGCTCTTCTGTTTGACAGTGGAGAGACAGCCGAAGCTACTAGACTCAAACGGACAGCTAGGAGAAGGTATACAAGACGGAAGAATAGGATTTGTTATCTCCAGGAGATTTTTTCAAATGAGATGGCCAAAGTGGATGATAGTTTCTTTCATAGACTTGAAGAGTCTTTTTTGGTGGAAGAAGACAAGAAGCATGAAAGACATCCTATTTTTGGAAATATAGTGGATGAAGTTGCTTATCACGAGAAATATCCAACTATCTATCATCTGAGAAAAAAATTGGTGGATTCTACTGATAAAGCCGATTTGCGCCTGATCTATTTGGCCCTGGCCCACATGATTAAGTTTAGAGGTCATTTTTTGATTGAGGGCGATCTGAATCCTGATAATAGTGATGTGGACAAACTGTTTATCCAGTTGGTGCAAACCTACAATCAACTGTTTGAAGAAAACCCTATTAACGCAAGTGGAGTGGATGCTAAAGCCATTCTTTCTGCAAGATTGAGTAAATCAAGAAGACTGGAAAATCTCATTGCTCAGCTCCCCGGTGAGAAGAAAAATGGCCTGTTTGGGAATCTCATTGCTTTGTCATTGGGTTTGACCCCTAATTTTAAATCAAATTTTGATTTGGCAGAAGATGCTAAACTCCAGCTTTCAAAAGATACTTACGATGATGATCTGGATAATCTGTTGGCTCAAATTGGAGATCAATATGCTGATTTGTTTTTGGCAGCTAAGAATCTGTCAGATGCTATTCTGCTTTCAGACATCCTGAGAGTGAATACTGAAATAACTAAGGCTCCCCTGTCAGCTTCAATGATTAAACGCTACGATGAACATCATCAAGACTTGACTCTTCTGAAAGCCCTGGTTAGACAACAACTTCCAGAAAAGTATAAAGAAATCTTTTTTGATCAATCAAAAAACGGATATGCAGGTTATATTGATGGCGGCGCAAGCCAAGAAGAATTTTATAAATTTATCAAACCAATTCTGGAAAAAATGGATGGTACTGAGGAACTGTTGGTGAAACTGAATAGAGAAGATTTGCTGCGCAAGCAACGGACCTTTGACAACGGCTCTATTCCCCATCAAATTCACTTGGGTGAGCTGCATGCTATTTTGAGAAGACAAGAAGACTTTTATCCATTTCTGAAAGACAATAGAGAGAAGATTGAAAAAATCTTGACTTTTAGGATTCCTTATTATGTTGGTCCATTGGCCAGAGGCAATAGTAGGTTTGCATGGATGACTCGGAAGTCTGAAGAAACAATTACCCCATGGAATTTTGAAGAAGTTGTCGATAAAGGTGCTTCAGCTCAATCATTTATTGAACGCATGACAAACTTTGATAAAAATCTTCCAAATGAAAAAGTGCTGCCAAAACATAGTTTGCTTTATGAGTATTTTACCGTTTATAACGAATTGACAAAGGTCAAATATGTTACTGAAGGAATGAGAAAACCAGCATTTCTTTCAGGTGAACAGAAGAAAGCCATTGTTGATCTGCTCTTCAAAACAAATAGGAAAGTGACCGTTAAGCAACTGAAAGAAGATTATTTCAAAAAAATAGAATGTTTTGATAGTGTTGAAATTTCAGGAGTTGAAGATAGATTTAATGCTTCACTGGGTACATACCATGATTTGCTGAAAATTATTAAAGATAAAGATTTTTTGGATAATGAAGAAAATGAAGACATCCTGGAGGATATTGTTCTGACATTGACCCTGTTTGAAGATAGGGAGATGATTGAGGAAAGACTTAAAACATACGCTCACCTCTTTGATGATAAGGTGATGAAACAGCTTAAAAGACGCAGATATACTGGTTGGGGAAGGTTGTCCAGAAAATTGATTAATGGTATTAGGGATAAGCAATCTGGCAAAACAATACTGGATTTTTTGAAATCAGATGGTTTTGCCAATCGCAATTTTATGCAGCTCATCCATGATGATAGTTTGACATTTAAAGAAGACATCCAAAAAGCACAAGTGTCTGGACAAGGCGATAGTCTGCATGAACATATTGCAAATCTGGCTGGTAGCCCTGCTATTAAAAAAGGTATTCTCCAGACTGTGAAAGTTGTTGATGAATTGGTCAAAGTGATGGGGCGGCATAAGCCAGAAAATATCGTTATTGAAATGGCAAGAGAAAATCAGACAACTCAAAAGGGCCAGAAAAATTCCAGAGAGAGGATGAAAAGAATCGAAGAAGGTATCAAAGAACTGGGAAGTCAGATTCTTAAAGAGCATCCTGTTGAAAATACTCAATTGCAAAATGAAAAGCTCTATCTCTATTATCTCCAAAATGGAAGAGATATGTATGTGGACCAAGAACTGGATATTAATAGGCTGAGTGATTATGATGTCGATCACATTGTTCCACAAAGTTTCCTTAAAGACGATTCAATAGACAATAAGGTCCTGACCAGGTCTGATAAAAATAGAGGTAAATCCGATAACGTTCCAAGTGAAGAAGTGGTCAAAAAGATGAAAAACTATTGGAGACAACTTCTGAACGCCAAGCTGATCACTCAAAGGAAGTTTGATAATCTGACCAAAGCTGAAAGAGGAGGTTTGAGTGAACTTGATAAAGCTGGTTTTATCAAACGCCAATTGGTTGAAACTCGCCAAATCACTAAGCATGTGGCACAAATTTTGGATAGTCGCATGAATACTAAATACGATGAAAATGATAAACTTATTAGAGAGGTTAAAGTGATTACCCTGAAATCTAAACTGGTTTCTGACTTCAGAAAAGATTTCCAATTCTATAAAGTGAGAGAGATTAACAATTACCATCATGCCCATGATGCCTATCTGAATGCCGTCGTTGGAACTGCTTTGATTAAGAAATATCCAAAACTTGAAAGCGAGTTTGTCTATGGTGATTATAAAGTTTATGATGTTAGGAAAATGATTGCTAAGTCTGAGCAAGAAATAGGCAAAGCAACCGCAAAGTATTTCTTTTACTCTAATATCATGAACTTCTTCAAAACAGAAATTACACTTGCAAATGGAGAGATTCGCAAACGCCCTCTGATCGAAACTAATGGGGAAACTGGAGAAATTGTCTGGGATAAAGGGAGAGATTTTGCCACAGTGCGCAAAGTGTTGTCCATGCCCCAAGTCAATATCGTCAAGAAAACAGAAGTGCAGACAGGCGGATTCTCTAAGGAGTCAATTCTGCCAAAAAGAAATTCCGACAAGCTGATTGCTAGGAAAAAAGACTGGGACCCAAAAAAATATGGTGGTTTTGATAGTCCAACCGTGGCTTATTCAGTCCTGGTGGTTGCTAAGGTGGAAAAAGGGAAATCCAAGAAGCTGAAATCCGTTAAAGAGCTGCTGGGGATCACAATTATGGAAAGAAGTTCCTTTGAAAAAAATCCCATTGACTTTCTGGAAGCTAAAGGATATAAGGAAGTTAAAAAAGACCTGATCATTAAACTGCCTAAATATAGTCTTTTTGAGCTGGAAAACGGTAGGAAACGGATGCTGGCTAGTGCCGGAGAACTGCAAAAAGGAAATGAGCTGGCTCTGCCAAGCAAATATGTGAATTTTCTGTATCTGGCTAGTCATTATGAAAAGTTGAAGGGTAGTCCAGAAGATAACGAACAAAAACAATTGTTTGTGGAGCAGCATAAGCATTATCTGGATGAGATTATTGAGCAAATCAGTGAATTTTCTAAGAGAGTTATTCTGGCAGATGCCAATCTGGATAAAGTTCTTAGTGCATATAACAAACATAGAGACAAACCAATAAGAGAACAAGCAGAAAATATCATTCATCTGTTTACCTTGACCAATCTTGGAGCACCCGCTGCTTTTAAATACTTTGATACAACAATTGATAGGAAAAGATATACCTCTACAAAAGAAGTTCTGGATGCCACTCTTATCCATCAATCCATCACTGGTCTTTATGAAACACGCATTGATTTGAGTCAGCTGGGAGGTGACCCCAAGAAAAAACGCAAGGTGGAAGATCCTAAGAAAAAGCGGAAAGTGGACACGCGTACGCGGCCGCTCGAGCAGAAACTCATCTCAGAAGAGGATCTGGCAGCAAATGATATCCTGGATTACAAGGATGACGACGATAAGGTTTAAACGGCCGGCCGCGGTCATAGCTGTTTCCTGAACAGATCCCGGGTGGCATCCCTGTGACCCCTCCCCAGTGCCTCTCCTGGCCCTGGAAGTTGCCACTCCAGTGCCCACCAGCCTTGTCCTAATAAAATTAAGTTGCATCATTTTGTCTGACTAGGTGTCCTTCTATAATATTATGGGGTGGAGGGGGGTGGTATGGAGCAAGGGGCAAGTTGGGAAGACAACCTGTAGGGCCTGCGGGGTCTATTGGGAACCAAGCTGGAGTGCAGTGGCACAATCTTGGCTCACTGCAATCTCCGCCTCCTGGGTTCAAGCGATTCTCCTGCCTCAGCCTCCCGAGTTGTTGGGATTCCAGGCATGCATGACCAGGCTCAGCTAATTTTTGTTTTTTTGGTAGAGGCGGGGTTTCACCATATTGGCCAGGCTGGTCTCCAACTCCTAATCTCAGGTGATCTACCCACCTTGGCCTCCCAAATTGCTGGGATTACAGGCGTGAACCACTGCTCCCTTCCCTGTCCTTCTGATTTTAAAATAACTATACCAGCAGGAGGACGTCCAGACACAGCATAGGCTACCTGGCCATGCCCAACCGGTGGGACATTTGAGTTGCTTGCTTGGCACTGTCCTCTCATGCGTTGGGTCCACTCAGTAGATGCCTGTTGAATTGGGTACGCGGCCAGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTCCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGACGCGTAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCGTTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTCACGCTCGTCGTTTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAATACGGGATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTTTACTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGATGATATTATTTTATCTTGTGCAATGTAACATCAGAGATTTTGAGACACGGGCCAGAGCTGCCAGGAAACAGCTATGACCATGTAATACGACTCACTATAGGGGATATCAGCTGGATGGCAGTTAAC

Features:

75-331 hU6 Promoter

334-340 BamH1

378-384 BsmB1

384-459 gRNA scaffold

497-1647 EF1a promoter

1678-2958 CD4

3407-3997 CMV promoter

4174-8424 Cas9-NLS-Myc-DDK

9193-9812 pBR322 origin

10071-10831 Ampr