**hprtSAGFP annotated sequence**

**Stark-JM, Pierce-AJ, Oh-J, Pastink-A, & Jasin-M (2004) Mol Cell Biol 24, 9305-9316.**

**Vector and hprt targeting arm**

**1**GCACTTTTCGGGGAAATGTGCGCGGAACCCCTATTTGTTTATTTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATAACCCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCGTGTCGCCCTTATTCCCTTTTTTGCGGCATTTTGCCTTCCTGTTTTTGCTCACCCAGAAACGCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTTACATCGAACTGGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTCGCCCCGAAGAACGTTTTCCAATGATGAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGAGCAACTCGGTCGCCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCACAGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGCTGCCATAACCATGAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAACCGCTTTTTTGCACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCTGAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAACGTTGCGCAAACTATTAACTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGACTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTGGTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACTGGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGGAGTCAGGCAACTATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTAACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAAACTTCATTTTTAATTTAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGAGTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTTTTCTGCGCGTAATCTGCTGCTTGCAAACAAAAAAACCACCGCTACCAGCGGTGGTTTGTTTGCCGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAACTGGCTTCAGCAGAGCGCAGATACCAAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCGCCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCGTGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGTCGGGCTGAACGGGGGGTTCGTGCACACAGCCCAGCTTGGAGCGAACGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGGCGGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGGAAACGCCTGGTATCTTTATAGTCCTGTCGGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTTGTGATGCTCGTCAGGGGGGCGGAGCCTATGGAAAAACGCCAGCAACGCGGCCTTTTTACGGTTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCCTGCGTTATCCCCTGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGCAGCCGAACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAACCGCCTCTCCCCGCGCGTTGGCCGATTCATTAATGCAGCTGGCACGACAGGTTTCCCGACTGGAAAGCGGGCAGTGAGCGCAACGCAATTAATGTGAGTTAGCTCACTCATTAGGCACCCCAGGCTTTACACTTTATGCTTCCGGCTCGTATGTTGTGTGGAATTGTGAGCGGATAACAATTTCACACAGGAAACAGCTATGACCATGATTACGCCAAGCTCGAAATTAACCCTCACTAAAGGGAACAAAAGCTGGAGCTCCACCGCGGTGGCGGCCGCTCTAGAACTAGTggatccGCGGCCGCTAATTCGATTCTTCTGTAAAATTATCTTATTAGTAAGTTGTAACCATCTCAGACTTCTAAGTTTGAGTTTGTAAAGGATCAGTTTTTTTTGGTGACCTACACACACACACACACACACACACACACACACACACACAGGGGGGTGGATTCTGAGAATTTAGAGAATTTAGATGGTTAATACCAGTTTTTATTTTTATTCTGTGTGATATTTATTTATTAAGATTTATTTATTTATTACATGTAGGTACACTGTATCTGTCTTCAGACACACCAGAAGAGGGCATCAGATCTCGTTACAGATGGTTGTGAGTCACCATGTGGTTGCTGGGATTTGAACTCAGGACCTCTGGAAGAACAGTCAGTGCTCTTAACCGTTGAGCCATCTCACCAGCCCCGTGATATTTTATTTAACTTACTAGAATATACTGTGTTAAAACATATTTTAGGGGATTGGGGAGATGGCCCATTCTGTAAAGTGTCTGCCATGTCATCTTCAGGACCTGCGTTTGTAACCCCAGCATGGAGAAGACAGAGACAGGGAGACCCCTGGGCTTCCTGGCAAGCTAGACTAGCAAATTTGGTTAACTAGGTTCAATGAGAGACTCAGTCTCAAAACATAAGAAGTGAATTTTTTAGACCCAATTTCAATCTCTGAACTCCATACGTATGCACATGTACCTGCATATAAATATATATACACACCCATAAACACATGCACACACAAAAAATGGTTCAAAAGTTCTTAAAATGTATAAGAGTAGAAAGTGTAGAGCCGGGAGTGGTGGCGCACGCCTTTAATCCCAGCACTTGGGAGCAGAGGCAGGTGGATTTCTGAGTTCGAGGCCAGCCTGGTCTACAGAGTGAGTTCCAGGACAGCCAGAGCTATACAGAGAAATCCTGTCTCAAAAAACCAAAAATAAAGTGTATATACTAATCTTTCATGCCTAAAATATTTATTTTTGCCACATTTTTCATACCTCTTTAATATTTTTCTTTTTCTCTTTGTGCTTCAAAGGAAATTTTGTGTCATGTTTTACTTTTCATTCTTGACTCTATTCAGCAGTAAGACGCAGCATGGCTTTCTTAGAGAAGTATAATCTATTACAAAACGGTAACATTTAACTGCTCTACATACCCTCTTGTAGCTAAATTCCTCTGTTAAACTAAGACTTATTATCTAAACGTAATTAAATGTTGATattattgaagcatttatcagggttattgtctcatgagcggatacatatttgaatgtatttagaaaaataaacaaataggggttccgcgcacatttccccgaaaagtgccacctg**3561**

**CAGGS promoter**

**3562**GTCGAcattgattattgactagttattaatagtaatcaattacggggtcattagttcatagcccatatatggagttccgcgttacataacttacggtaaatggcccgcctggctgaccgcccaacgacccccgcccattgacgtcaataatgacgtatgttcccatagtaacgccaatagggactttccattgacgtcaatgggtggagtatttacggtaaactgcccacttggcagtacatcaagtgtatcatatgccaagtccgccccctattgacgtcaatgacggtaaatggcccgcctggcattatgcccagtacatgaccttacgggactttcctacttggcagtacatctacgtattagtcatcgctattaccatggGtcgaggtgagccccacgttctgcttcactctccccatctcccccccctccccacccccaattttgtatttatttattttttaattattttgtgcagcgatgggggcggggggggggggggcgcgcgccaggcggggcggggcggggcgaggggcggggcggggcgaggcggagaggtgcggcggcagccaatcagagcggcgcgctccgaaagtttccttttatggcgaggcggcggcggcggcggccctataaaaagcgaagcgcgcggcgggcgggagtcgctgcgttgccttcgccccgtgccccgctccgcgccgcctcgcgccgcccgccccggctctgactgaccgcgttactcccacaggtgagcgggcgggacggcccttctcctccgggctgtaattagcgcttggtttaatgacggctcgtttcttttctgtggctgcgtgaaagccttaaagggctccgggagggccctttgtgcgggggggagcggctcggggggtgcgtgcgtgtgtgtgtgcgtggggagcgccgcgtgcggcccgcgctgcccggcggctgtgagcgctgcgggcgcggcgcggggctttgtgcgctccgcgtgtgcgcgaggggagcgcggccgggggcggtgccccgcggtgcgggggggctgcgaggggaacaaaggctgcgtgcggggtgtgtgcgtgggggggtgagcagggggtgtgggcgcggcggtcgggctgtaacccccccctgcacccccctccccgagttgctgagcacggcccggcttcgggtgcggggctccgtgcggggcgtggcgcggggctcgccgtgccgggcggggggtggcggcaggtgggggtgccgggcggggcggggccgcctcgggccggggagggctcgggggaggggcgcggcggccccggagcgccggcggctgtcgaggcgcggcgagccgcagccattgccttttatggtaatcgtgcgagagggcgcagggacttcctttgtcccaaatctggcggagccgaaatctgggaggcgccgccgcaccccctctagcgggcgcgggcgaagcggtgcggcgccggcaggaaggaaatgggcggggagggccttcgtgcgtcgccgcgccgccgtccccttctccatctccagcctcggggctgccgcagggggacggctgccttcgggggggacggggcagggcggggttcggcttctggcgtgtgaccggcggCTCTAGAGcctctgctaaccatgttcatgccttcttctttttcctacagctcctgggcaacgtgctggttattgtgctgtctcatcattttggcaaaGAATTC**5285**

**5’GFP**

**5286**GCCACC**ATG**GTGAGCAAGggcgaggagctgttcaccggggtggtgcccatcctggtcgagctggacggcgacgtaaacGgccacaagttcagcgtgtccggcGagggcgagggcgatgccAcctacggcaagctgaccctgaagttcatctgcaccaccggcaagctgcccgtgccctggcccaccctcgtgaccaccctgacctacggcgtgcagtgcttcagccgctaccccgaccacatgaagcagcacgacttcttcaagtccgccatgcccgaaggctacgtccaggagcgcaccatcttcttcaaggacgacggcaactacaagacccgcgccgaggtgaagttcgaGggcgacaccctggtgaaCcgcatcgagctgaagggcatcgacttcaaggaggacggcaacatcctggggcacaagctggagtacaactacaacagccacaacgtctatatcatggccgacaagcagaagaacggcatcaaggtgaacttcaagatccgccacaacAtcgaggacggcagcgtgcagctcgccgaccactaccagcagaacacccccatcggcgacggccccgtgctgctgcccgacaaccactacctgagcacccagtccgccctgagcAAAGACCCCAACGAGAAG**5936TGA**

**5940**GAATTCactcctcaggtgcaggctgcctatcagaaggtggtggctggtgtggccaatgccctggctcacaaataccactgAGATCTGATATCATCGAT**6037**

**pgk-puro(Reverse)**

**6038**gaattcTACCGGGTAGGGGAGGCGCTTTTCCCAAGGCAGTCTGGAGCATGCGCTTTAGCAGCCCCGCTGGGCACTTGGCGCTACACAAGTGGCCTCTGGCCTCACACATTCCACATCCACCGGTAGGCGCCAACCGGCTCCGTTCTTTGGTGGCCCCTTCGCGCCACCTTCTACTCCTCCCCTAGTCAGGAAGTTCCCCCCCGCCCCGCAGCTCGCGTCGTGCAGGACGTGACAAATGGAAGTAGCACGTCTCACTAGTCTCGTGCAGATGGACAGCACCGCTGAGCAATGGAAGCGGGTAGGCCTTTGGGGCAGCGGCCAATAGCAGCTTTGCTCCTTCGCTTTCTGGGCTCAGAGGCTGGGAAGGGGTGGGTCCGGGGGCGGGCTCAGGGGCGGGCTCAGGGGCGGGGCGGGCGCCCGAAGGTCCTcCGGAGGCCCGGCATTCTGCACGCTTCAAAAGCGCACGTCTGCCGCGCTGTTCTCCTCTTcCTCATCTCCGGGCCTTTCGACCGATCCAgCCGcCACCatgaccgagtacaagcccacggtgcgcctcgccacccgcgacgacgtcccccgggccgtacgcaccctcgccgccgcgttcgccgactaccccgccacgcgccacaccgtcgacccggaccgccacatcgagcgggtcaccgagctgcaagaactcttcctcacgcgcgtcgggctcgacatcggcaaggtgtgggtcgcggacgacggcgccgcggtggcggtctggaccacgccggagagcgtcgaagcgggggcggtgttcgccgagatcggcccgcgcatggccgagttgagcggttcccggctggccgcgcagcaacagatggaaggcctcctggcgccgcaccggcccaaggagcccgcgtggttcctggccaccgtcggcgtctcgcccgaccaccagggcaagggtctgggcagcgccgtcgtgctccccggagtggaggcggccgagcgcgccggggtgcccgccttcctggagacctccgcgccccgcaacctccccttctacgagcggctcggcttcaccgtcaccgccgacgtcgaggtgcccgaaggaccgcgcacctggtgcatgacccgcaagcccggtgcctgacgcccgccccacgacccgcagcgcccgaccgaaaggagcgcacgaccccatggCTCCGACCGAAGCCACCCGGGGCGGCCCCGCCGACCCCGCACCCGCCCCCGAGGCCCACCGCGGGGGACACACCGAACACGCCGACCCTGCTGAACACGCGGCGCAGTTCGGTGCCCAGGAGCGGATCGAAATTGATGATCTATTAAACAATAAAGATGTCCACTAAAATGGAAGTTTTTCCTGTCATACTTTGTTAAGAAGGGTGAGAACAGAGTACCTACATTTTGAATGGAAGGATTGGAGCTACGGGGGTGGGGGTGGGGTGGGATTAGATAAATGCCTGCTCTTTACTGAAGGCTCTTTACTATTGCTTTATGATAATGTTTCATAGTTGGATATCATAATTTAAACAAGCAAAACCAAATTAAGGGCCAGCTCATTCCTCCCACTCATGATCTATAGATCT**7623**

**7624**ttttccctctgccaaaaattatggggacatcatgaagccccttgagcatctgacttctggct**aataaa**GgaaatTtattttcattgcaatagtgtgttggaattttttgtgtctctcactcggaaggacatatgggagggcaaatcatttaaaacatcagaatgagtatttggtttagagtttggcaacatatgccatatgctggctgccatgaacaaaggtggctataaagaggtcatcagtatatgaaacagccccctgctgtccattccttattccatagaaaagccttgacttgaggttagattttttttatattttgttttgtgttatttttttctttaacatccctaaaattttccttacatgttttactagccagatttttcctcctctcctgactactcccagtcatagctgtccctcttctcttatgaagatcCCTCGACCTGCAGCCCAAGCTTTA**8089**A

**SCE-GFP3’**

**GFP {275 bp overlap between 5’GFP and SCE-GFP3’ before I-SceI}**

**8091**GGCCACAAGTTCAGCGTGtccggcGagggcgagggcgatgccAcctacggcAagctgaccctgaagttcatctgcaccaccggcaagctgcccgtgccctggcccaccctcGtgaccaccctgacctacggcgtgcagtgcttcagccgctaccccgaccacatgaagcagCacgacttcttcaagtccgccatgcccgaaggctacgtccaggagcgcaccatcttcttcaaggacgacggcaactacaagacccgcgccGAGGTGAAGTTCGA**8365**

**I-SceI 8366-8383**

TAGGGATAACAGGGTAAT

**GFP {280 bp overlap between 5’GFP and SCE-GFP3’ after I-SceI}**

**8384**CCGCATCGAGCTGAAGggcatcgacttcaaggaggacggcaacatcctggggcacaagctggagtacaactacaacagccacaacgtctatatcatggccgacaagcagaagaacggcatcaaggtgaacttcaagatccgccacaacatcgaggacggcagcgtgcagctcgccgaccactaccagcagaacacccccatcggcgacggccccgtgctgctgcccgacaaccactacctgagcacccagtccgccctgagcaaagaccccaacgagaagcgcgatcacatggtcctgctggagttcgtgaccgccgccgggatcactctcggcatggacgagctgtacaag**taa STOP CODON8738**

**8739**Agcggccgcgactctagatcataatcagccataccacatttgtagaggttttacttgctttaaaaaacctcccacacctccccctgaacctgaaacataaaatgaatgcaattgttgttgttaacttgtttattgcagcttataatggttaca**aataaa**gcaatagcatcacaaatttcaca**aataaA**GCATTTTTTTCACTGA**8942**

**hprt targeting arm and vector**

**8943**AGCTTGTTTTTATTTGTATCTTTAAATTTTATGATAGATGTTATAGTGTACTCTCCTCTCCCCTCCCCTCCCCTCTCCTCCTCAGCAGGATCTTGTTATGTAGCCCTAAGGGATCTAATACTTACTCTGTAGTCCAGGCTGTCCTTCAGCTCATGAGACACACCATCATGCTTGGCATGTTTCTTGTTCTGAAAGGTATCTGGTTTTAATTTTGGTTGAGCTGGTGTGTTGGTGTATATCTGTAATCTCAGCACAGGCAAGTAGAGACAAGGATTATGATTACAGTCCAGCCTGGGCTATTTAGAGGGATTCTCTTTAATCTTTCCTCATGCCCCAAAATCTTACCTTTGGTATATGAAAAATAGTCTCCACTTCTGCAAAATATTGCTTTATGAAGTAAGAATTCCCTTCATAGAGACAAGGAATGTGTCCTGTAAAAGTTTAATGTGTAAGAAGTATTTGTTATAAAAGATAAATATTCAGAATCTTCTTTTTAATTCCTGATTTTATTTCTATAGGactgaaagacttgCTCGAGatgtcatgaaggagatgggaggccatcacattgtggccctctgtgtgctcaaggggggctataagttctttgctgacctgctggattacattaaagcactgaatagaaatagtgatagatccattcctatgactgtagattttatcagactgaagagctactgtgTAAGTATAATTAACTTATAATTAAAAAAATAGGGCCATTCTAGTTTTATCTATATTTTTTTTAAACTTGTGCAAACTATGCTACATAATCAACTTACTTGATTATGTAATATATATAGTAATAGTTGGAATTACTATTATTACATATTTATTTTTCTGTGCTGGGGTAGAACCCAGGGAACTAAGTACTGTAATAACCGAGCTTCATTCATCCTAGTCATTTTTAATTTTTTTTTTTTTTTTTGTTTTTTCGAGACAAGGTTTCTCTGTGTAGCCCTGGCTGTCCTGGAACTCACTCTGTAGACCAGGCTGGCCTCGAACTCAGAAATCTGCCTGCCTCTGCCTCCCAGTGCTGAGATTAATGACGTGCACCACCACTGCCTGGCATTTTTTTAAAGTTTTAATTTGAGACCCTTTCTCACTAACTTGCTCACACTATCCTCGAACTCATTACGTGGGCTGGTCTAGAAATTTCAGTCAACTTGCCTCAGCTTCTCAAGTAGCTGGGATTACAGGCAGGTGCTACCACTTCTGGCCATGATCATTGTTGTTGTTGCTATTATTATTATTATTATTTCACTGATACTTCATATCACAACACAGAATAGTAACTGTAGTTCATGACCAACAAAAAAGTTGTACAGTTTCTCTGTTGTCTTATTTTGATCTGGATTTTGATTTGTTTCATGGCACTGGGCAGGCTAATCTCAAACTGCATGGCTCAAATAGTCCTTCTGTCTTAATCTCCCATGTTCTGGAAGTATAGGTATCACTACACCTAGCTGTATTTTCATATTTTAAAAAAAACGCCTAAGAATTGCTATTGAATGAGGCGGAGAGATGGCTCAGCAGTCACAAGTACTTGTAGAGGACTGGGGTTTGGTTACTAGCACCTCAAAGATGGCTTACAATTATCTGTAGCTCCAATTCCAGAGGATCTGTGTGGTAAAGCTGCATGTATATGGGCATGCAGGTAAAACTGCTAAACATATAAAAATAGCTCAGTCTTAAGAGAATTggtcgacCTCGAGGGGGGGCCCGGTACCCAATTCGCCCTATAGTGAGTCGTATTACAATTCACTGGCCGTCGTTTTACAACGTCGTGACTGGGAAAACCCTGGCGTTACCCAACTTAATCGCCTTGCAGCACATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGGACGCGCCCTGTAGCGGCGCATTAAGCGCGGCGGGTGTGGTGGTTACGCGCAGCGTGACCGCTACACTTGCCAGCGCCCTAGCGCCCGCTCCTTTCGCTTTCTTCCCTTCCTTTCTCGCCACGTTCGCCGGCTTTCCCCGTCAAGCTCTAAATCGGGGGCTCCCTTTAGGGTTCCGATTTAGTGCTTTACGGCACCTCGACCCCAAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATCGCCCTGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACTCTTGTTCCAAACTGGAACAACACTCAACCCTATCTCGGTCTATTCTTTTGATTTATAAGGGATTTTGCCGATTTCGGCCTATTGGTTAAAAAATGAGCTGATTTAACAAAAATTTAACGCGAATTTTAACAAAATATTAACGCTTACAATTTAGGTG**11342**