

### Supplementary Data 4 - Oligonucleotide primers used for combinatorial site-directed mutagenesis

Product	Template	Primer forward sequence (5' to 3')	Primer reverse sequence (5' to 3')
<b>CK131</b>	CK63	CAGTTACTCTCCGTATTATACTTGGTTCTCTGCTGGTATG	CATACCAGCAGAGAACCAAGTATAATACGGAGAGTAACTG
<b>CK132</b>	CK63	CAGTTACTCTCCGTATTATACTTGGTTCTCTGCTGGTATG GATTTACGGTGCATCCTACCCGTACTCCGGAGTCCCTTCCCG	CATACCAGCAGAGAACCAAGTATAATACGGAGAGTAACTG CGGGAAGGGACTCCGGAGTACGGGTAGGATGCACCGTAAATC
<b>CK133</b>	CK63	GATTTACGGTGCATCCTACCCGTACTCCGGAGTCCCTTCCCG	CGGGAAGGGACTCCGGAGTACGGGTAGGATGCACCGTAAATC
<b>CK134</b>	CK66	CAGTTACTCTCCGTATTATTCTTGGTTCTCTGCTGGTATG	CATACCAGCAGAGAACCAAGAATAATACGGAGAGTAACTG
<b>CK135</b>	CK66	GATTTACGGTGCATCCTACCTGTACTCTGGAGTCCCTTCCCG CAGTTACTCTCCGTATTATTCTTGGTTCTCTGCTGGTATG	CGGGAAGGGACTCCAGAGTACAGGTAGGATGCACCGTAAATC CATACCAGCAGAGAACCAAGAATAATACGGAGAGTAACTG
<b>CK136</b>	CK66	GATTTACGGTGCATCCTACCTGTACTCTGGAGTCCCTTCCCG	CGGGAAGGGACTCCAGAGTACAGGTAGGATGCACCGTAAATC
<b>CK137</b>	CK72	GATTTACGGTGCATCCTACCCGTACTCTGGAGTCCCTTCCCG	CGGGAAGGGACTCCAGAGTACGGGTAGGATGCACCGTAAATC
<b>CK138</b>	CK72	GGTTACAGTTACTCTCCGTATTATTCTTGGTTCTCTGCTGG CTTGGTTCTCTGCTGGTATGAACTACTGGGGTCAAGGAGCC	CCAGCAGAGAACCAAGAATAATACGGAGAGTAACTGTAACC GGCTCCTTGACCCAGTAGTTCATACCAGCAGAGAACCAAG
<b>CK139</b>	CK72	CTTGGTTCTCTGCTGGTATGAACTACTGGGGTCAAGGAGCC CAGTTACTCTCCGTATTATACTTGGTTCTCTGCTGGTATG GGTTACAGTTACTCTCCGTATTATTCTTGGTTCTCTGCTGG	GGCTCCTTGACCCAGTAGTTCATACCAGCAGAGAACCAAG CATACCAGCAGAGAACCAAGTATAATACGGAGAGTAACTG CCAGCAGAGAACCAAGAATAATACGGAGAGTAACTGTAACC
<b>CK140</b>	CK72	GATTTACGGTGCATCCTACCCGTACTCTGGAGTCCCTTCCCG GGTTACAGTTACTCTCCGTATTATTCTTGGTTCTCTGCTGG CTTGGTTCTCTGCTGGTATGAACTACTGGGGTCAAGGAGCC	CGGGAAGGGACTCCAGAGTACGGGTAGGATGCACCGTAAATC CCAGCAGAGAACCAAGAATAATACGGAGAGTAACTGTAACC GGCTCCTTGACCCAGTAGTTCATACCAGCAGAGAACCAAG
<b>CK141</b>	CK72	GATTTACGGTGCATCCTACCCGTACTCTGGAGTCCCTTCCCG	CGGGAAGGGACTCCAGAGTACGGGTAGGATGCACCGTAAATC

		CTTGGTTCTCTGCTGGTATGAACTACTGGGGTCAAGGAGCC CAGTTACTCTCCGTATTATACTTGGTTCTCTGCTGGTATG GGTTACAGTTACTCTCCGTATTATTCTTGGTTCTCTGCTGG	GGTCCTTGACCCAGTAGTTCATACCAGCAGAGAACCAAG CATAACCAGCAGAGAACCAAGTATAATACGGAGAGTAACTG CCAGCAGAGAACCAAGAATAATACGGAGAGTAACTGTAACC
<b>CK142</b>	CK72	GGTTACAGTTACTCTCCGTATTATTCTTGGTTCTCTGCTGG	CCAGCAGAGAACCAAGAATAATACGGAGAGTAACTGTAACC
<b>CK143</b>	CK72	CAGTTACTCTCCGTATTATACTTGGTTCTCTGCTGGTATG GGTTACAGTTACTCTCCGTATTATTCTTGGTTCTCTGCTGG	CATAACCAGCAGAGAACCAAGTATAATACGGAGAGTAACTG CCAGCAGAGAACCAAGAATAATACGGAGAGTAACTGTAACC
<b>CK144</b>	CK72	GATTTACGGTGCATCCTACCCGACTCTGGAGTCCCTTCCCG GGTTACAGTTACTCTCCGTATTATTCTTGGTTCTCTGCTGG	CGGGAAGGGACTCCAGAGTACGGGTAGGATGCACCGTAAATC CCAGCAGAGAACCAAGAATAATACGGAGAGTAACTGTAACC
<b>CK145</b>	CK72	GATTTACGGTGCATCCTACCCGACTCTGGAGTCCCTTCCCG CAGTTACTCTCCGTATTATACTTGGTTCTCTGCTGGTATG GGTTACAGTTACTCTCCGTATTATTCTTGGTTCTCTGCTGG	CGGGAAGGGACTCCAGAGTACGGGTAGGATGCACCGTAAATC CATAACCAGCAGAGAACCAAGTATAATACGGAGAGTAACTG CCAGCAGAGAACCAAGAATAATACGGAGAGTAACTGTAACC
<b>CK146</b>	CK111	GGTGCGTCAGGCCCCGGGTGAGGAGCTGGAATGGGTTGC	GCAACCCATTCCAGCTCCTCACCCGGGGCCTGACGCACC
<b>CK147</b>	CK111	GCATCTATTGGTTCTTACCCTGGCTACACTGACTATGC	GCATAGTCAGTGTAGCCAGGGTAAGAACCAATAGATGC
<b>CK148</b>	CK111	GGTGCGTCAGGCCCCGGGTGAGGAGCTGGAATGGGTTGC GCATCTATTGGTTCTTACCCTGGCTACACTGACTATGC	GCAACCCATTCCAGCTCCTCACCCGGGGCCTGACGCACC GCATAGTCAGTGTAGCCAGGGTAAGAACCAATAGATGC
<b>CK149</b>	CK111	GCAGCTTCTGGCTCCAACCCCTACTACTACGGTGGTACG	CGTACCACCGTAGTAGTAGGGTTGGAGCCAGAAGCTGC
<b>CK150</b>	CK108	CACGTTCCGACAGGGTACCGAGGTGGAGATCAAAGGTAC	GTACCTTTGATCTCCACCTCGGTACCCTGTCCGAACGTG
<b>CK151</b>	CK111	GGTGCGTCAGGCCCCGGGTGAGGAGCTGGAATGGGTTGC GCAGCTTCTGGCTCCAACCCCTACTACTACGGTGGTACG	GCAACCCATTCCAGCTCCTCACCCGGGGCCTGACGCACC CGTACCACCGTAGTAGTAGGGTTGGAGCCAGAAGCTGC
<b>CK152</b>	CK108	CACGTTCCGACAGGGTACCGAGGTGGAGATCAAAGGTAC GGTGCGTCAGGCCCCGGGTGAGGAGCTGGAATGGGTCGC	GTACCTTTGATCTCCACCTCGGTACCCTGTCCGAACGTG GCGACCCATTCCAGCTCCTCACCCGGGGCCTGACGCACC
<b>CK153</b>	CK119	CACGTTCCGACAGGGTACCGAGGTGGAGATCAAAGGTAC	GTACCTTTGATCTCCACCTCGGTACCCTGTCCGAACGTG

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<b>CK154</b>	CK119	GCATCTATTGGTTCTTACCCTGGCTACACTGACTATGC	GCATAGTCAGTGTAGCCAGGGTAAGAACCAATAGATGC
<b>CK155</b>	CK119	GCATCTATTGGTTCTTACCCTGGCTACACTGACTATGC CACGTTCCGGACAGGGTACCGAGGTGGAGATCAAAGGTAC	GCATAGTCAGTGTAGCCAGGGTAAGAACCAATAGATGC GTACCTTTGATCTCCACCTCGGTACCCTGTCCGAACGTG
<b>CK156</b>	CK119	GCATCTATTGGTTCTTACCCTGGCTACACTGACTATGC GCAGCTTCTGGCTCCAACCCCTACTACTACGGTGGTACG	GCATAGTCAGTGTAGCCAGGGTAAGAACCAATAGATGC CGTACCACCGTAGTAGTAGGGTTGGAGCCAGAAGCTGC
<b>CK157</b>	CK119	GCATCTATTGGTTCTTACCCTGGCTACACTGACTATGC GCAGCTTCTGGCTCCAACCCCTACTACTACGGTGGTACG CACGTTCCGGACAGGGTACCGAGGTGGAGATCAAAGGTAC	GCATAGTCAGTGTAGCCAGGGTAAGAACCAATAGATGC CGTACCACCGTAGTAGTAGGGTTGGAGCCAGAAGCTGC GTACCTTTGATCTCCACCTCGGTACCCTGTCCGAACGTG
<b>CK158</b>	CK108	GGTGCGTCAGGCCCCGGGTGAGGAGCTGGAATGGGTTGC	GCAACCCATTCCAGCTCCTCACCCGGGGCCTGACGCACC

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