

Supplemental Materials

Supplemental Figure 1. Ser4 amino acid sequences from human, gorilla (gor), macaque (mac), murine (m), and rat Ser4 proteins are aligned. Red, blue, black, and dash indicate conserved, partially conserved, non-conserved, or non-existing residues, respectively.

Supplemental Table 1. Primers used for creating Mut-1 to 8 by overlapping PCR are shown.

Supplemental Figure 1

1 90
hSer4 MVGAKAGPSPGTSLGLAQQHSGGSSVLVKSFFCQVCCCGPAPCASCHSRWPSLTASTCSRLFYILLHV GASAI CCLLLSR TVVERVWGK
gorSer4 MVGAKAGPSPGTSLGLAQQHSGGSSVLVKSFFCEVCCCGPAPCASCHSRWPSLTASTCSRLFYILLHV GASAI CCLLLSR TVVERVWGK
macSer4 MVGAKAGLSPSTSLG LAQQRSGGSSVLVKSFFCQVCCCGPAPCASCHSRWPSLTASTCSRLFYILLHV GASAI CCLLLSR TVVERVWGK
mSer4 MMGAKVVTGRSTTQGLAQQHGVS NVV-ETPFNQASCCGPVSWTSGCHS----LTERCSRLLYILLHV GASAI CCLLLSK TVVERVWGK
ratSer4 MGAKDITGRSTTQGF AQQHGVS DVVVKT PFYQVSCCGPVSWTSGCHS----LTESTCSRLLFYILLHMGASAI CCLLLSK TVVERVWGK
Consensus mmGAK. . tgrsTtqGLAQQhgV s. VvvktPF. #vsCCGPvswtSgCHS. . . . LTestCSRLLFYILLHV GASAI CCLLLSK TVVERVWGK

91 180
hSer4 THRIQMPGSLCAHLFGLSDCPVLSGSGAVYRVCAGTATFHLLQAVLLVHLHSPTS PRAQLHNSFWLLKLLFLLGLCAIAFCIPDEHLFPA
gorSer4 THRIQMPGSLCAHLFGLSDCPVLSGSGAVYRVCAGTATFHLLQAVLLVHLHSPTS PRAQLHNSFWLLKLLFLLGLCAIAFCIPDEHLFPA
macSer4 THRIQMPGSLCAHLFGLSDCPVLSGSGAVYRVCAGTATFHLLQAVLLVHLHSPTS PRAQLHNSFWLLKLLFLLGLCAIAFCIPDEHLFPA
mSer4 AHGIQMPSVLCAHLFGS SDCPVLSGSGAVYRVCAGTATFHLLQAVLLVHLHSPTN PRAQLHNSFWSLKLLFLLGLCVVAFICIPDEHLFPA
ratSer4 AHGIQMPSVLCAHLFGNSDCPVLSGSGAVYRVCAGTATFHLLQAVLLVHLHSPTS PRAQLHNSFWSLKLLFLLGLCTAFCIPDEHLFPA
Consensus aHgIQMPsvLCAHLFG. SDCPVLSGSGAVYRVCAGTATFHLLQAVLLVrLHSPTS PRAQLHNSFWsLKLLFLLGLC. . AFCIPDEhLFPA

181 270
hSer4 WHYIGICGGFAFILLQLVLITAFASWKNKNWQTGAAQDCSWFLAVLLATLGFYSMAGVAVLLFHY YTHPAGCLLNKMLLSLHLCFCGLI
gorSer4 WHYIGICGGFAFILLQLVLITAFASWKNKNWQTGAAQDCSWFLAVLLATLGFYSMAGVAVLLFHY YTHPAGCLLNKMLLSLHLCFCGFI
macSer4 WHYIGICGGFAFILLQLVLITAFASWKNKNWQTGAAQDCSWFLAVLLATLGFYSMAGVAVLLFRY YTHPAGCLLNKMLLSLHLCFCGLI
mSer4 WHYIGICGGFTFILLQLVLITAFASWKNKNWQTGAAQDCSWLGVSLATLGFYSMAGVAVLLFHQYTHPDGCLLNKMLLSLHLCFCGLI
ratSer4 WHYIGICGGFTFILLQLVLITAFASWKNKNWQTGAAQDCSWFLGVLATLGFYSMAGVAVLLFHHYTHPDGCLLNKMLLSLHLCFCGLL
Consensus WHYIGICGGftFILLQLVLITAFaQsWKNKNWQTGAAQDCSWflgVlLATLGFYSMAGVAVLLfh. YTHPDGCLLNKMLLSLHLCFCGLl

271 360
hSer4 SFLSIAPCIRLKPQRSGLLQASVISCYIMYLTFSALSSRPPE RVILQGQNHTLCLPGLSKMEPQTPDISLAMLSASIMYACVLFACNEAS
gorSer4 SFLSIAPCIRLKPQRSGLLQASVISCYIMYLTFSALSSRPPE RVILQGQNHTLCLPGLSKMEPQTPDISLAMLSASIMYACVLFACNEAS
macSer4 SFLSIAPCIRLKPQRSGLLQASVISCYIMYLTFSALSSRPPE RVILQGQNHTLCLPGLSKMEPQTPDISLAMLSASIMYACVLFACNEAS
mSer4 SLLSIAPCIRLRKQPN SGLLQASII SCYIMYLTFSALSSRPPE TIFQGNHTLCLPGRNKMEPQIPDTSVAVFSAGIMYACVLFACNEAS
ratSer4 SLLSIAPCIRLRQPN SGLLQASII SCYIMYLTFSALSSRPPE TIFQGNHTLCLPGQNKMEPQIPDASVAVFSASIMYACVLFACNEAS
Consensus SLLSIAPCIRlkQpNsGllQAS! ISCYIMYLTFSALSSRPPE! ifQGNHTLCLPG. nKMEPqiPD. SvAvfSAsIMYACVLFACNEAS

361 450
hSer4 YLAEVFGPLWIVKVYSYEFQKPSLCFCCPETVEADKQGRGGAARPADQETPPAPPVQVQHLSYNYS AFHFVFFLASLYVMVTLTNWFSYE
gorSer4 YLAEVFGPLWIVKVYSYEFQKPSLCFCCPETVEADKQGRGGAARPADQETPPAPAVQVQHLSYNYS AFHFVFFLASLYVMVTLTNWFSYE
macSer4 YLAEVFGPLWIVKVYRYEFQKPSLCFCCPEIVEADEGQRGGAARPADQETPPAPSVQVQHLSYNYS AFHFVFFLASLYVMVTLTNWFSYE
mSer4 YLAELFGPLWIKVYKYEYEFQKPSVCFCCPQTVPEPDGQ-RSRARSADQETPPAAQVQSQHLSYSYSGFHF AFFLASLYVMVTLTNWFSYE
ratSer4 YLAQLFGPLWIKVYKYEYEFQKPSVCFCCPQTVPEPDGQ-GSRARPADQETPPAAQVQSQHLSYSYSGFHF AFFLASLYVMVTLTNWFSYE
Consensus YLA#lFGPLWI!KVYkYEFQKPSvCFCCP#tVep#dGQ. gsrARPADQETPPAAqVqsQHLSYSYSgFHFaFFLASLYVMVTLTNWFSYE

451 519
hSer4 GAELEKTFIKGSWATFWVKVASCWACVLLYLGLLLAPLCWPP TQKPQLILRRRRH-RIISPDNKYPPV
gorSer4 EALEKTFIKGSWATFWVKVASCWACVLLYLGLLLAPLCWPP TQKPQLILRRRRH-RVISPDNKYPPV
macSer4 GAELEKTFIKGSWATFWVKVASCWACVLLYLGLLLAPLCRSPTQKPQLILRRRRRHRIISPDNKYPPV
mSer4 EALEKTFIKGSWATFWVKVASCWACVLLYLGLLLAPLLAPHSESPPP
ratSer4 EALEKTFIKGSWATFWVKVASCWACVLLYLGLLLAPLLAHHSESPPP
Consensus eAELEKTFtKGSWATFWVKVASCWACVLLYLGLLLAPLlaphs#sPpP.....

Supplemental Table 1. Primers for overlapping PCR

Name	Sequences	Introduction
CMV.S4_S	5' CAGTACACCAATGGGCGTGGATAG 3'	5' terminal primer for all vectors
Myc_A	5' CCAGATCCTCTTCTGAGATGAGTTTCT 3'	3' terminal primer for vectors based on pCMV-mSer4
hSer4_880_A	5' CAGATACATGATATAGCAGCTGATGA 3'	3' terminal primer for vectors based on pCMV-hSer4
mS4_ex1_S	5' AACCCCCTTCAATCAGGTGTGCTGCTGTGGGCCTGCTC 3'	for Mut3 and Mut6
mS4_ex1_A	5' CCCACAGCAGCACACCTGATTGAAGGGGGTTTCCACTAC 3'	for Mut3 and Mut6
mS4_ex2_S	5' TGGGGCAAAGCACATGGGATCCAGATGCCCTCGGGGTGT 3'	for Mut1 and Mut5
mS4_ex2_A	5' CCGAGGGCATCTGGATCCCATGTGCTTTGCCCCAGACC 3'	for Mut1 and Mut5
hS4_ex1_S	5' GTCCCTTCTGTCAGGCATCCTGCTGTGGACCTGTTTCT 3'	for Mut4 and Mut5
hS4_ex1_A	5' GTCCACAGCAGGATGCCTGACAGAAGGGACTTTTCACT 3'	for Mut4 and Mut5
hS4_ex2_S	5' GGCAAGACACACAGGATCCAGATGCCCTCAGTGCTATGT 3'	for Mut2 and Mut6
hS4_ex2_A	5' CTGAGGGCATCTGGATCCTGTGTGTCTTGCCCCACACCCT 3'	for Mut2 and Mut6
hS4_S2NT_S	5' GGACCCCCGGGCTCCGCGGGCACAGCTGCATAATAGCTTCT 3'	for Mut-7
hS4_S2NT_A	5' CAGCTGTGCCCGCGGAGCCCGGGGTCCCGGCTGCTGCTCA 3'	for Mut-7
hS4_S5NT_S	5' AAAGTTGTAGACCGCGGGCACAGCTGCATAATAGCTTCTGG 3'	for Mut-8
hS4_S5NT_A	5' AGCTGTGCCCGCGGTCTACAACCTTTTGCTGTTGTTGATTTTC 3'	for Mut-8