

Supplementary Information

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Supplementary Figure 1

Supplementary Table 1

TM NTE

α1 α2

Homo 1 10 20 30 40 50 60 70

Homo MLF KLLQRQTYTCLSHRYGLYVCFGLGVVTVSVAE QFGEVVLWESRDQYHVFDSYRDNVAGKSFQNRRLCLPM

Bos MLKLLQRQTYTCLSHRYGLYVCFVGVVTVSVAE QFGEVVLWESRDQYHVFDSYRDNVAGKSFQNRRLCLPM

Mus MLKLLQRQTYTCLSHRYGLYVCFVGVVTVSVAE QFGEVVLWESRDQYHVFDSYRDNVAGKSFQNRRLCLPM

Gallus MLKLLQRQTYTCLSHRYGPCCLGLGLVLMVSAE QFGEVVLWESRDQYHVFDSYRDNVAGKSFQNRRLCLPM

Danio MLVNVSLKLLQRQTYTCLSHRYGLYLCEGLVLMVSAE QFGEVVLWESRDQYHVFDSYRDNVAGKSFQNRRLCLPM

CR1 S1

β1 α3

Homo 80 90 100 110 120 130 140 150

Homo PIDVYVTVWNGTDLELLELQOVREQMEEEQKAMREILGKNTTEPTKKSEKQIECLLTHCIKVPMLVLDPALPANITL

Bos PIDVYVTVWNGTDLELLELQOVREQMEEEQKAMREILGKNTTEPTKKSEKQIECLLTHCIKVPMLVLDPALPANITL

Mus PIDVYVTVWNGTDLELLELQOVREHMEEQRAMREILGKNTTEPTKKSEKQIECLLTHCIKVPMLVLDPALPANITL

Gallus PIDVYVTVWNGTDVELLELQOVREQMEEEQKIMREILGKNATEPTKKSEKQIECLLTHCIKVPMLVLDPALPANITL

Danio PIDVYVTVWNGTDINLELRLRAVRQRLEEEQKALREILGKNGSEITEAPKGRPECLLTHCIMGPVLDLDPALPANITL

S1

Homo 160 170 180 190 200 210 220

Homo KDLFSLYPSFHSASDIFNVAKFKNPSITNVSVVVFDSITKDVEDAHSGLIKGNSRQITVWRGYLTTDKVLPGLVLMQDLAF

Bos KDLFSLYPSFHSASDVFNVAKFKNPSITNVSVVVFDTTKSVEDAQAGMPKGNRQITVWRGYLTTDKVLPGLVLMQDLAF

Mus KDLPTLYPSFHASDVMFNVAKFKNPSITNVSVVVFDTTKDVEDAHAGPFGGSKQMVWRAYLTTDKVLPGLVLMQDLAF

Gallus KDLLSIHP TLQANNMFFVAKFKNPSITNVTVIVFNDPKDAEAHSGMLKDNSKHIVWRGYLTTDKVLPGLVLMQDLAF

Danio KELPTLSAFASSAKELLOVAKFLHPSSTVALLFHSHTAEKAHADALKDLTHTSISRGYLTTDKVLPGLVLRMHTLAY

S1

Homo 230 240 250 260 270 280 290 300

Homo LSGFPPTFKETNQLKTKLPEENLSKVKLLQLYSEASVALKLNPKDFQELNKQTKKNMTIDGKELTISPAYLWDLIS

Bos LSGFPPTFKETNQLKAKLPEENLSKVKLLQLYSEASVALKLNPKDFQELNKQTKKNMTIDGKELTISPAYLWDLIS

Mus LSGFPPTFKETSQIKTKLPEKLSKTKLLRLYSEASVALKLNPKDFQELNKQTKKNMTIDGKELTISPAYLWDLIS

Gallus LSGFPATFKETNQLRTKLPESLSKVKLLQLYSEASVALQLNPKDFHELKQAKKNMTIDGKELTISPAYLWDLIS

Danio LSGFPASLXETEQLRVQLPAVVTSKTKKLLQLYSEASIALLHLNTAQDITDLTQAKKNLTDGKELTVSSAFLWDLIS

S1 CR2

α4 β2 β3 α5 η1

Homo 310 320 330 340 350 360 370 380

Homo AISKQKQDEDVSASRFEDNEELRYSLSRISERHAPVVRHIFIVTNGQIPSWLNLDNPRVITVTHQDVFVFNLSHLPFTFSS

Bos AISKQKQDEDVSASRFEDNEELRYSLSRISERHAPVVRHIFIVTNGQIPSWLNLDNPRVITVTHQDVFVFNLSHLPFTFSS

Mus AISKQKQDEDVSASRFEDNEELRYSLSRISERHAPVVRHIFIVTNGQIPSWLNLDNPRVITVTHQDVFVFNLSHLPFTFSS

Gallus SVSQSKQDEDVSASRFEDNEELRYSLSRISERHAPVVRHIFIVTNGQIPSWLNLDNPRITVTHQDVFVFNLSHLPFTFSS

Danio AISKQKQDEDVSASRFEDNEELRYSLSRISERHAPVVRHIFIVTNGQIPSWLNLDNPRVSVVTHQDVFVFNLSHLPFTFSS

CR2 N1

α6 β4 β5 η2 β6 β7

Homo 390 400 410 420 430 440 450 460

Homo PAIESHIHRIEGLSQKFYIYLNDDVFMFGKDVWPDFFYSHSKGQKVYLTWPVFNCAEGCPSWIKDGYCDKACNNSACDW

Bos PAIESHIHRIEGLSQKFYIYLNDDVFMFGKDVWPDFFYSHSKGQKVYLTWPVFNCAEGCPSWIKDGYCDKACNNSACDW

Mus PAIESHIHRIEGLSQKFYIYLNDDVFMFGKDVWPDFFYSHSKGQKVYLTWPVFNCAEGCPSWIKDGYCDKACNNSACDW

Gallus PAIESHIHRIEGLSQKFYIYLNDDVFMFGKDVWPDFFYSHSKGQKVYLTWPVFNCAEGCPSWIKDGYCDKACNNSACDW

Danio PAIE THIHRIEGLSQKFYIYLNDDVFMFGKDVWPDFFYSHSKGQKVYLTWPVFNCAEGCPSWIKDGYCDKACNNSACDW

N1 N2

NDD motif

Homo 470 480 490 500 510 520 530

Homo DGGDCSGNSGGSRYIAGGGTGSIGVQPWFAGGCTNSV...SYCNQGCANSWLADKFCDAQCNVLSCGFDAGDCGD

Bos DGGDCSGNSGASRYIAGAGGTGSIGVQPWFAGGCTNSV...SYCNQGCANSWLADKFCDAQCNVLSCGFDAGDCGD

Mus DGGDCSGNTAGNRFVAGGGGTGNIGAQHWFAGGCTNSV...SYCNQGCANSWLADKFCDAQCNVLSCGFDAGDCGD

Gallus DGGDCIGNSGGSRYVAGGAVGGIGNPWFAGGCTNSV...SYCNQGCANSWLADKFCDAQCNVLSCGFDAGDCGD

Danio DGGDCQGS...RF...GGAGGSVIGGQPWFAGGCTNSV...SYCNQGCANSWLADKFCDAQCNVLSAGFDVGDGCD

N2 S2

Homo 540 550 560 570 580 590 600 610

Homo HFHELYKVLILPNQTHYIIPKCECLPYFSFAEVAKRGVGAYSDNPPIIRHASANKKWTIHLIMHSGMNAITIHFNLT

Bos HFHELYKVLILPNQTHYVVPKCECLPYFSFAEIAKKGIEGAYSDNPPIIRHASANKKWTIHLIMHSGMNAITIHFNLT

Mus HFHELYKVLILPNQTHYVVPKCELYFSFSEIARKGIEGAYSDNPPIIRHASANKKWTIHLIMHSGMNAITIHFNLT

Gallus HFHEMYKVLILQNLQTYVVPKCECLPYFSFSEIARKGIEGAYSDNPPIIRHASANKKWTIHLIMHSGMNAITIHFNLT

Danio NLNLQHRIVLRNQLTLVLPQELRPFYFSFGLANRVSAHVAHQVLRHTSVANKKWTIHLILLLPGHNAITIHFNLT

S2

Homo 620 630 640 650 660 670 680 690

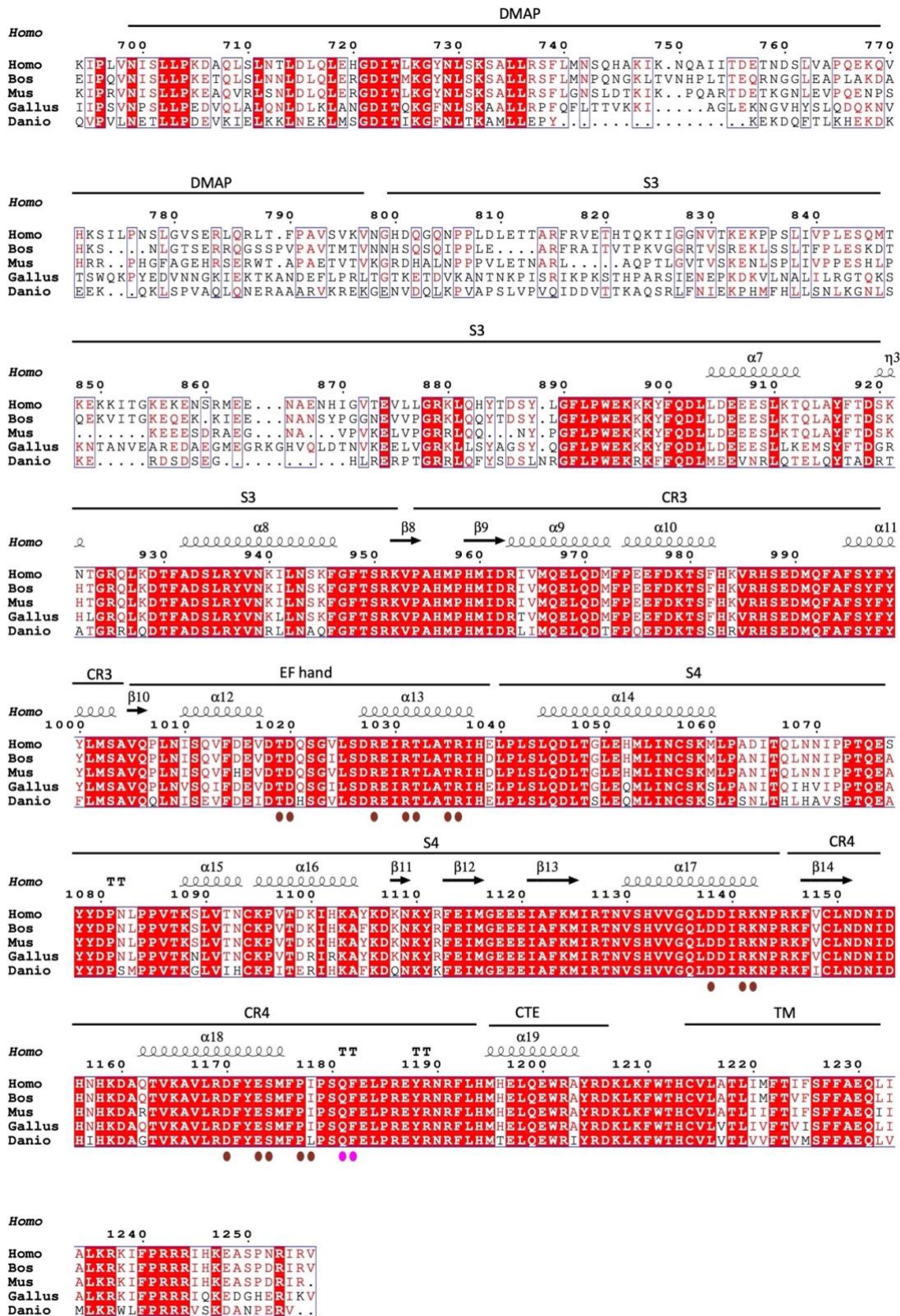
Homo FQNINDEEFKMQITVEVDTRCEPKLN...STAQKGYENLVSPITLPEAEILFEDIPKERRFPKFRHDVNSTRRAGQEEV

Bos LQGNDEEFKIQIVVEVDTRCEPKRN...STQKAYQSSMSTTLPEAEILFEDIPKERRFPKFRHDVNSTRRAGQEEV

Mus LQANDEEFKIQIIVVEVDTRCEPKLN...STQKAYESLVSPVTPPEQADVPFEDVPEKERRFPKIRRHVDNATGRFQEEV

Gallus FLNKNDEEFKMQVAVEVDTRCEPKLN...TSMQKSDTDFKTTT...VPEAEMLFEDIPKERRFPKFRHDVNSTRRAGQEEV

Danio FQSTDHHDFIMTFVSVDTRCEPKNS...STPVRDKIEEPKPTVATPEPEVPEFAVPEKERRFPKFRHDVNSTRRAGQEEV



Supplementary Table 1. Primers used in this study

Fig 2c.		
C70S	for	GGAAAGTCCTTTCAGAATCGGCTTAGTCTGCCCATGCCGATTGAC
Fig 2g.		
D1018V	For	CTCAAGTCTTTGATGAAGTTGTTACAGATCAATCTGGTGTC
L1025S	For	GATACAGATCAATCTGGTGTCCTCGTCTGACAGAGAAATCCG
L1033P	For	GACAGAGAAATCCGAACACCGGCTACCAGAATTCACGAAC
Fig 3e.		
Del S3	For	GAGACCACAGCAAGATTTAGAGTGGAAAGATACATTTGCAGATTCCTC
Del 902-924	For	CCATGGGAGAAAAAAGTATTTCAAAGGCACTAAAAGATACATTTGCAGATTC
Supp 6 e,f		
D58A	For	GTTTTGTTTGATTCTATAGAGCCAATATTGCTGGAAAGTCC
R364A	For	GGCTGAACCTTGACAATCTGCAGTGACAATAGTAACACACC
R68A	For	GGAAAGTCCTTTCAGAATGCGCTTTGTCTGCCCATGCCG
D418A	For	GGATGTCTGGCCAGATGCTTTTTACAGTCACTCC
D418A + R68A		Used R68A ; Template Used D418A; primers
Supp 7c.		
R1028A	For	GGTGTCTTGTCTGACGCAGAAATCCGAACACTGG
R1031A	For	GTCTGACAGAGAAATCGCAACACTGGCTACCAGAATTC
R1028A+R1031A	For	CAATCTGGTGTCTTGTCTGACGCGGAAATCGCCACACTGGCTACCAGAATTC
Supp 8b.		
N406A	For	CAGAAGTTTATTTACCTAGCTGATGATGTCATGTTTGG
D408A	For	GTTTATTTACCTAAATGATGCTGTCATGTTTGGGAAGG