

Figure S1

CLUSTAL W (1.83) multiple sequence alignment

<i>S. cerevisiae</i>	MSH5	-----	
<i>A. thaliana</i>	MSH5	-----	
<i>C. elegans</i>	MSH5	-----	MST 3
<i>H. sapiens</i>	MSH5	-----	
<i>M. musculus</i>	MSH5	-----	
<i>H. sapiens</i>	MSH4	-----MLRPEISSTSPSAPAVSPS-----	SGETRSPQGPRYNFGL 35
<i>M. musculus</i>	MSH4	MCCLFLRLRDYSTAHALSLPPCQRCGLQPWSARSHARRTLGVRKAGEMLRQEASLSSSP	60
<i>A. thaliana</i>	MSH4	-----	
<i>C. elegans</i>	MSH4	-----	
<i>S. cerevisiae</i>	MSH4	-----MSESNLSSFISTN	13
↓			
<i>S. cerevisiae</i>	MSH5	--MSHEWLISASETMRSIGNGEGLRDKGAVVANNDGEFNEGDTNREEDSSTIFSFDFDEE	58
<i>A. thaliana</i>	MSH5	-----MEEMEDTETEPO	12
<i>C. elegans</i>	MSH5	RWRYYNSKRNGNGFRGRGRGRGTSLTAVALPRDDNFHKGAQDGAYFKDMPMDPEQFRDE	63
<i>H. sapiens</i>	MSH5	-----MASLGANPRTTPQGP--RPGAAASSGFPSA-APVPGPRAEEEEEVEEEELAE	49
<i>M. musculus</i>	MSH5	-----MAFRATPGRTPPGPGPRSGIPSASFPSQPPMAGPGGIEEE---DEEPAE	48
<i>H. sapiens</i>	MSH4	QETPQSR--PSVQVVSASTCPGTSGAAGDRSSSSSLPCPAPNSRPAQGSYFGNKRAYAE	93
<i>M. musculus</i>	MSH4	RWTPSRRDAPCGRTLASASRPSTEGAMADRSSSSSSPAPAS---APGSSFGNKR SYAI	116
<i>A. thaliana</i>	MSH4	-----	
<i>C. elegans</i>	MSH4	-----MYSNKSFQRRQRQQVAESRSEEKF SRSL	28
<i>S. cerevisiae</i>	MSH4	YFNLRSAANSSNSISKPSTKKSIRNQSKPTNISSWALKKTLQIAETTWENNEKDSTHSH	73
↓			
<i>S. cerevisiae</i>	MSH5	IVMCIDFSGGKLGCSILDYHTKTLKAFDQDYVVNKTT-----	95
<i>A. thaliana</i>	MSH5	VYMACIQHGRRVG-----VSYYDCSVR-----	34
<i>C. elegans</i>	MSH5	TVLSLSFAQGMLGAAYYEQSSQLKIMNDISEDLEFRFLKRLIDDVKPTLIIANRSQDLE	123
<i>H. sapiens</i>	MSH5	IHLCVLWNSSGYLG-----IAYYDTSDS-----	71
<i>M. musculus</i>	MSH5	IHLCVLWNSSGYLG-----IAYYDTSDS-----	70
<i>H. sapiens</i>	MSH4	NTVASNFTFGASSSSARDTNYPQTLKTPLSTGNPQRSGYKSWTPQVGYSASSSS-----	147
<i>M. musculus</i>	MSH4	HRAASSFPVGTSSSSARDTTYPHTFRTPLSAGNPQRSGHKSWTPQVGYSATSS-----	169
<i>A. thaliana</i>	MSH4	-----MEDDGGERS-----	9
<i>C. elegans</i>	MSH4	VRLNAQSLLDSSG-----NNTTTKNVN-----	50
<i>S. cerevisiae</i>	MSH4	YLMTGSMASRTATS-----LSRYSTNASLLG-----	99
↓			
<i>S. cerevisiae</i>	MSH5	-----ISSHDLIDDADMSSNDISLLLGLIMEANPTVCLVPARLEDWIFDYIKTKCDEIN	150
<i>A. thaliana</i>	MSH5	-----QLHVLEFWEECDSDFTLINMVKYQAKPSIYASTKSEE--SFIAALQONDGT	85
<i>C. elegans</i>	MSH5	FIKFLTTRYDPQEKIYEDGTTEEGTSEDTVPTWDSSLAYSTDETAEKEEKEEDED DDE	183
<i>H. sapiens</i>	MSH5	-----TIHFMPDADPHESLKLQRVLDEINPQSVVTSAKQDENMTRFLGKLASQEHREP	125
<i>M. musculus</i>	MSH5	-----TIHFMPDADPHESLKLQRVLDEINPQSVVTSAKQDEAMTRFLGKLASEEHREP	124
<i>H. sapiens</i>	MSH4	-AISAHSPSVIVAVVEGRGLARGEIGMASIDLKNPQIILSQFADN-TTYAKVITKLKILS	205
<i>M. musculus</i>	MSH4	-AVSAHAPSVIVAVVEGRGLARGEIGMASIDLKSPQIMLSQFADN-TTYAKVITKLQVLS	227
<i>A. thaliana</i>	MSH4	-----SFVAGLIENR---AKEVGMAFDLRSASLHLSQYIETSSSYQNTKTLRFYD	58
<i>C. elegans</i>	MSH4	-----SDVVIVVMEGRGSCEGHIGIALHDTCFPEIHLCEFVDS-REYTLKTMINVHE	102
<i>S. cerevisiae</i>	MSH4	-----PSIDCVLCCIYEVPRDISTRIGLCIINCNTGQMYLSDFMDS-QIYIRVVHKLQIYQ	154
↑ ↑ ↑ ↑			

S. cerevisiae MSH5 CRLELQPIKRFKKWDLQLQLRGHDNQTILNDILSNSKFVVTLGTVGCILANHEQLG 210
A. thaliana MSH5 ETTMVKLVKSSFTSYEQAWHRLVYLRVTGMDDGLNIKERICYLSSMMVGSEVQVRVSGG 145
C. elegans MSH5 GLPAKLNKLPNNFFRMSRAIERLKAMAGSHDSSMTEEDKYIIIKMRFDIEAVNMIRSGA 243
H. sapiens MSH5 KRPEIIFLPSVDFGLEISKQRLLSGNYSFIPDAMTATEKILFLSSIIPFDCLLTVRALGG 185
M. musculus MSH5 KGPEIILLPSVDFGPEISKQRLLSGNYSFISDSMTATEKILFLSSIIPFDCLLTVRALGG 184
H. sapiens MSH4 PLEIIMSNTACAVGNSTKLFTLITENFKVNFTTIQRKYFNETKGLEYIEQLCIAEFSTV 265
M. musculus MSH4 PLEIIMSNTACVGNSTKLFTLITENFKVNFTTVQRKYFNETKGLEYIEQLCIAEFSSV 287
A. thaliana MSH4 PSVIIIVPPNKLADGMGVGSELVDRCYSTVRKVVFARGCFDDTKGAVLIQNLAAEPLAL 118
C. elegans MSH4 AFDIVIQNGNEERGSTKLLGEALMTAFPEASLQSISSSKYFNNSERGERQLQSLMNAEVSTV 162
S. cerevisiae MSH4 PTEILIPSSSLAPTVSKLATMIKFVNVAETVKIEEGSRKCFNSQDGLAAITKYLMDDTKKD 214

S. cerevisiae MSH5 EYNDSTAS---SNMVTGRLVQNAFEDVIHGYRIDIRDRMVLDENTISALHIFPTAHKL 266
A. thaliana MSH5 LLAILESERIVETLEQNESG---SASIAIDSVMEVPLNKFLKLDAAAHEALQIFQTDKHP 202
C. elegans MSH5 LLLFLDET---RMGVTDDPL---SVTSPSIKSITFTLGNLVEIDFNTIQALDILPKETEN 297
H. sapiens MSH5 LLKFLGRR---RRIGVELEDY---NVSVPILGFKKFMLTHLVNIDQDTYSVLQIFKSESHP 239
M. musculus MSH5 LLKFLLSR---RRIGVELEDY---DVGVPILGFKKFVLTHLVSIDQDTYSVLQIFKSESHP 238
H. sapiens MSH4 LMEVQSK---YYCLAAVAAL---LKYVEFIQNSVYAPKSLKICFQGSEQTAMIDSSSAQN 319
M. musculus MSH4 LMEVQSR---YYCLAAAAL---LKYVEFIQNSVYAPKSLKIYFQGSEQTAMIDSSSAQN 341
A. thaliana MSH4 GLDTYYKQ-HYLSLAAAAT---IKWIEAEKGIVTNHSLTVTFNGSFDMHNIDATSVEN 174
C. elegans MSH4 SEGCLRR---TLALGALAVL---LKYIHETRCVFFRVKSLRIKEMGVNDCMIDFVSWES 216
S. cerevisiae MSH4 LKIEIIDKTFALCAASAAISYMEIIISKSSRNLNNAFRKLRIQFEGTENTMLIDSCKTVRG 274

S. cerevisiae MSH5 GHDKMMRN-----GFFSVFELFNQVSSDYARRILKSWLINPLTNKKRIETRYSII 316
A. thaliana MSH5 SHMGIGRA-----KEGFSVFGMMNKCATPMGRRLLRSWFMRPILDLEVLDRLNAI 253
C. elegans MSH5 KKTFGQGR-----SLYQLMDKCRSTVGKKCLRKWFRNPTTDRLDLSRQKCV 344
H. sapiens MSH5 SVYKVVASG-----LKEGLSLFGILNRCHCKWGEKLLRLWFTRPTHDLGELSSRLDVI 291
M. musculus MSH5 SVYKVASG-----LKEGLSLFGILNRCRCKWGQKLLRLWFTRPTRELNSRLDVI 290
H. sapiens MSH4 LELLINNQ-----DYRNNHTLFGVLYNTKTPGGSRRRLRSNILEPLVDIETINMRLDCV 372
M. musculus MSH4 LELLVNNQ-----DYRSNHTLFGVLYNTKTAGGSSRLRSNILEPLVDVETISMRLDCV 394
A. thaliana MSH4 LEIIDLPHNALL--GTSNKKRSLFQMFKTTKTAGGTRLLRANILLQPLKDIETINTRLDCL 232
C. elegans MSH4 LEIVDADDASKARKFQMKQKRTLMSVLTNVTNTNGYRLLRSSVLQPSTDVYLIQSRQEAI 276
S. cerevisiae MSH4 LELVENKLD-----KNGISLWKFLDTTSTKMGQRSLRNSILQPLTDRGSIEMRLEAL 326

S. cerevisiae MSH5 RTLLDKQNAIIFSDSLQSISIKRCPDAFGFINQLRSGKST-----LGTWSKV 361
A. thaliana MSH5 SFFIS--SVELMASLRETLKSVKDISHLKKFNSPTSLCTS----NDWTAFLKSISAL 305
C. elegans MSH5 HYFKQ--DWN--AEVTAKLSSILGRVKALNSVFQKFQS-----GTAQLIHW 386
H. sapiens MSH5 QFFLL--PQN--LDMAQMLHRLGHIKNVPLILKRMKL-----SHTKVSDW 333
M. musculus MSH5 QFFLM--PQN--LDMAQMLHRLLSHIKNVPLILKRMKL-----SHTKVSDW 332
H. sapiens MSH4 QELLQ--DEELFFGLQSVISRF-LDTEQLLSVLVQIPK-----QDTVNAAESKITNL 421
M. musculus MSH4 QELLQ--DEELFFGLQSVISRF-LDTEQLLSVLVQIPK-----QDTVNAAESKITNL 443
A. thaliana MSH4 DELMS--NEQLFFGLSQVLRKFPKETDRVLCFCFKPKVTEAVIGFENTRKSQNMISS 290
C. elegans MSH4 EELIG--KPQLKDKLRLRTLSRAHELDVRVIAIMCIQTSTS-----WTVRESEAKINQI 325
S. cerevisiae MSH4 EELKA--NDDLLQKLRLEMKSLPDLDKLFSLRLLCINHS-----AIKPDQRINYV 373

S. cerevisiae MSH5 ASFLEKGIAIFQLVSSLKLGDEANILHDIKNKVDISALKECLRKVETVIDFDTSRDTKT 421
A. thaliana MSH5 LHVNKIFEVGVSESLREHMRRFNLDIEKAGLCIST-ELDYVYELVIGVIDVTRSKERGY 364
C. elegans MSH5 ECFVSTVNALVEILNNIIRQTPISKEFPVESDLLREV---SEIAVIAGSIINFAESKIQGR 443
H. sapiens MSH5 QVLYKTVSALGLRACRSLPQSIQLFRDIAQEFS-DLHHIASLIGKVVDFEGSLAENR 392
M. musculus MSH5 QVLYKTVSALGLRACRSLPQSIQLFRDIAQEFS-DLHHIASLIGKVVDFEGSLAENR 391
H. sapiens MSH4 IYLKHTLELVDPPLKIAMKNCNTPLLR-AYYGSLEDK-RFGIILEKIKTVINDDARYMKGC 479
M. musculus MSH4 IYLKHTLELVPLKVLKNCSTPLLR-AYYGSLEDH-RFGLILDKIKTVINDDARYMKGC 501
A. thaliana MSH4 ILLKTALDALPILAKVLDAKCFLLANVYKSVCEND-RYASIRKKIGEVIDDDVLHARVP 349
C. elegans MSH4 IKLMHTLKVIQGIRTLLHSAMKSNILIEKTEFLKDPRFDQIMNILVEKVDDSLDGKKN 385
S. cerevisiae MSH4 LLLKETLQSVKSLKDALNDQLIQSRLISETKKIFNNDAIMEIEKLINSINEDCVWASSA 433

S. cerevisiae MSH5 LTINTG-VDNRLDECERNIYNHLEGILLDVARETQIFLLNTMPQEDCKTTKSLEKLVNAVY 480
A. thaliana MSH5 QTLVKEGCAELDELQRQIYEEFLQEVSAMELEHFPHLHKEK--LP-----PCIVY 415
C. elegans MSH5 VTVMNG-IDEELDEIRDYENMPMVLTAIKQEEARLGLPPYSN-----VACVY 491
H. sapiens MSH5 FTVLPN-IDPEIDEKKRRLMGLPSFLTEVARKELENLDSR-----IPS-----CSVIY 439
M. musculus MSH5 FTVLPN-IDPDIDAKRRLIGLPSFLTEVAQKELENLDSR-----IPS-----CSVIY 438
H. sapiens MSH4 LNMRTQ-KCYAVRSNINEFLDIARRTYTEIVDDIAGMISQLGEKYSLP-----LRTSF 531
M. musculus MSH4 LNMRTQ-KCYAVRSNISEFLDIARRTYTEIVDDIAGMIAQLAEKYSLP-----LRTSF 553
A. thaliana MSH4 FVARTQ-QCFALKAGIDGFLDIARRTCDFCTSEAIHNLA SKYREFNLNP-----LKLPF 402
C. elegans MSH4 SLHLQNTKYAIRHFVAVQLDLARQTYEEIIRNVEETGAREIAEYFHGNS---SVRLSF 441
S. cerevisiae MSH4 IQLLNQ-RSYAVKSDSNGLLDVS RQIYKEVKEEFFREVEDLTAKNIN-----LDHNY 485

S. cerevisiae MSH5 IPQLGYLVTIS-----VLMEPLLDGIPNLQWEEIFRSSENIFYKNGRVLELDETYGDIY 535
A. thaliana MSH5 IQQIGYLMCIFGEKLDETALNRLTEFEFAFSMDGETQR-FFYHTSKTRELDNLLGDIYH 474
C. elegans MSH5 IPLVGFVLSVP-----RDYGVESQPDMLLYSTHEDLVRNATTSLR DDEFGDILM 542
H. sapiens MSH5 IPLIGFLLSIP----RLPSMVEASDFEINGLDFMFLSEEKLHYRSARTKELDALLGDLHC 495
M. musculus MSH5 IPLIGFLLSIP----RLPFMVEASDFEIEGLDFMFLSEDKLHYRSARTKELDTLLGDLHC 494
H. sapiens MSH4 SSARGFFIQMT---TDCIALPSDQLPSEFIKISKVKNS-YSF TSADLIKMN ERQESLR 586
M. musculus MSH4 SSSRGFFIQMT---TDCAALSSDQLPSEFIKISKVKNS-YSF TSADLIKMN ERQESLR 608
A. thaliana MSH4 NNRQGFFFRI P---QKEVQG---KLPNKFTQVVKHGKN-IHCSSLELASLNVRNKS AAG 454
C. elegans MSH4 SQSRGFHYTFV-----TRQAESVTIPRYFLDVFRNRTT-VTFNSRKVIAYNDRLEQVVA 494
S. cerevisiae MSH4 DSARGFYLRIK---RQEFTDDVATLPDVFISRTIKNY-IECTTLNIKKNARLKEVME 540

S. cerevisiae MSH5 AISDFEIEILFSLQEQLRRTQLTAYNILLSELEILLSFAQVSAERN---YAEPQLVE 591
A. thaliana MSH5 KILD MERAIIRDLLSHTLLFSAHLLKAVNFVAELDCILS LACVAHQNN---YVRPVLT 530
C. elegans MSH5 RLIDSQTAII TLKTRVMKKRSIIKLLS IASRIDVLISFG LIAQNG---WNCPALVD 598
H. sapiens MSH5 EIRDQETLLMYQLQCQVLARA AVLTRVLDL LASR LDVLL ALASAARDY G---YSR PRYSP 551
M. musculus MSH5 EIRDQETLLMYQLQCQVLARA SVL TRVLDL LASR LDVLL ALASAARDY G---YSR PHYSP 550
H. sapiens MSH4 E IYHMTYMI VCKLL SEI YEH I HCLY KLS DTVSML DM LLS -FAH ACT LS ---DY VRPEFTD 642
M. musculus MSH4 E IYHMTYMI VCKLL SEI YEH I HCLY KLS DTVSML DM LLS -FAH ACT LS ---DY VRPEFTD 664
A. thaliana MSH4 ECFIR TET CLE ALM DAIRE DIS AL TLL AE VL CLL DM IV NS FAH T I STK PVDRY SRPE LTD 514
C. elegans MSH4 EMFLASDVIVCDMIEEMQPMIPVLYYAMD ALSS IDFLC GLAT YSDL RD---TCKPTFGP 550
S. cerevisiae MSH4 E ILL SEETV DELL DKI A THI SELF MIA EAVAIL DLV CSFT YNL KENN---YTIPIFTN 596

S. cerevisiae MSH5 DECILEIINGRHALYETFLDNYIPNSTMIDGGLFSELSWCEQNKGRIIVVTGANASGKSV 651
A. thaliana MSH5 ES-LLDIRNGRHVQEMAVDTFIPNDTEIN-----DNGRIHIITGPNSGKSI 577
C. elegans MSH5 EPVIEAVELYHPISVLVVKSFVPNVSSGR-----DGIKASIITGPNAACGKSV 647
H. sapiens MSH5 QVLGVRIQNGRHPMLCARTFVPNSTECGG-----DKGRVKVITGPNSSGKSI 600
M. musculus MSH5 CIHGVRIQNGRHPMLCARTFVPNSTDCGG-----DQGRVKVITGPNSSGKSI 599
H. sapiens MSH4 T---LAIKQGWHPILEKISAEPKIANNTYVT-----EGSNFLIITGPNSMSGKST 688
M. musculus MSH4 T---LAIKQGWHPILEKISAEPKVANNTYIT-----EGSNVLIITGPNSMSGKST 710
A. thaliana MSH4 SGP-LAIDAGRHPILESIHND-FVSNSIFMS-----EATNMLVVVMGPNSMSGKST 561
C. elegans MSH4 S---FSISQGRHPILDWDDSEKTITNDTCLT-----DRRRFGIITGPNMAGKST 596
S. cerevisiae MSH4 N---LLIRDSRHPILLEKVLKNFVPNTISSTK-----HSSLQIITGCNMSGKSV 642

S. cerevisiae MSH5 YLTQNGLIVYLAQIGCFVPAERARIGIADKILTRIRTQETVYKTQSSFLLDSQ-QMAKSL 710
A. thaliana MSH5 YVKQVALIVFLSHIGSFVPADAATVGLTDRIFCAMG-SKFMTAEQSTFMIDLH-QVGMM 635
C. elegans MSH5 YMKSIGIMVFLSHIGSFVPARHAKIGIVDRIVTRMFTVDSVLDGMSTFAKDVE-QVALAL 706
H. sapiens MSH5 YLKQVGLITFMALVGGSFVPAEEAEIGAVDAIFTRIHSCEISLGLSTFMIDLNLQQVAKAV 660
M. musculus MSH5 YLKQVGLITFMALVGGSFVPAEEAEIGVIDAIFTRIHSCEISLGLSTFMIDLNLQQVAKAV 658
H. sapiens MSH4 YLKQIALCQIMAQIGSYVPAEYSSFRIAQKIFTRISTDDDIETNSSTFMKEMK-EIAYIL 747
M. musculus MSH4 YLKQIALCQIMAQIGSYVPAEYASFRIAQKIFTRISTDDDIETNSSTFMKEMK-EIAYIL 769
A. thaliana MSH4 YLQQVCLVVILAQIGCYVPARFATIRVVDRIFTRMGTMNDLNESNSSTFMTMR-ETAFIM 620
C. elegans MSH4 YLKQTAQLAIMAQIGCFIPANYASLPIFNRIFSRMGHNDELIRNKSASAEMS-DAAAIV 655
S. cerevisiae MSH4 YLKQVALICIMAQMGSZIPALYGSFPVFKRLHARVC-NDSMELTSSNFGFEMK-EMAYFL 700

S. cerevisiae MSH5 SLATEKLILIDEYKGKTDILDGPSLFGSIMLNMSKSEK--CPRIIACTHFHELPNENVL 768
A. thaliana MSH5 RQATSRSLCLLDEFKGKTLTEDGIGLLGGTISHFATCAEP--PRVVVCTHLTELLNESCL 693
C. elegans MSH5 RKATGNSLVIIDEFGKGTMTEVGLSLLASVMTYWMNRGADRCPHIFLSSHFHALPNYIPL 766
H. sapiens MSH5 NNATAQSLVLIDEFGKGTNTVDGLALLAAVLRHWLARGPT-CPHIVATNFLSLVQLQLL 719
M. musculus MSH5 NNATEHSLVLIDEFGKGTNSVDGLALLAAVLRHWLALGPS-CPHVIVATNFLSLVQLQLL 717
H. sapiens MSH4 HNANDKSLILIDEGLGRGTNTEEGIGICYAVCEYLLSLK---AFTLFATHFLELCHIDAL 803
M. musculus MSH4 HNANDKSLILIDEGLGRGTNTEEGIGISYAVCEHLLSIK---AFTLFATHFLELCHIDAL 825
A. thaliana MSH4 QNVTNRSLIVMDELGRATSSDGLAMAWSCCEYLLSLK---AYTVFATHMDSLAELATI 676
C. elegans MSH4 QYADKNSLVVLDEARSTSTEEDIAITYAICEKVLKLQ---SYTFLATHFLDIAALANY 711
S. cerevisiae MSH4 DDINTETLLILDELGRGSSIADGFCVSLAVTEHLLRTEAT---VFLSTHFQDIPKIMSK 756

S. cerevisiae MSH5 TENIKGIKYCTDILISQKYNLLEAHVGEDHESEGITFLFKVKEGISKQS-FGIYCAKV 827
A. thaliana MSH5 PVSEKIKFYTMSVLXPDTES-----ANMEEIVFLYRLIPGQTLLS-YGLHCALL 741
C. elegans MSH5 ETNIATFLFTVLR--EAG-----GKIKYLFRMTPGLVDCS-FALSVAKE 808
H. sapiens MSH5 PQGPLVQYLTMETC--EDG-----NDLVFFYQVCEGVAKASHASHAAQA 762
M. musculus MSH5 PQGPLVQYLTMETC--EDG-----EDLVFFYQLCQGVASASHASHAAQA 760
H. sapiens MSH4 YPNVENMHFEVQHV--KNTS-----RNKEAILYTYKLSKGLTEEKNYGLKAAEV 850
M. musculus MSH4 YLNVENMHFEVQHV--KNTS-----RNKDAILYTYKLSRGLTEEKNYGLKAAEA 872
A. thaliana MSH4 YPNVKVLHFYVDIR--DNR-----LDFKFQLRDGTLHVPHYGLLAEV 717
C. elegans MSH4 SNAIDNYHFLPQTD-----ENSTKKHKLLRGQYRGPLYGFELVEL 751
S. cerevisiae MSH4 KPAVSHLHMDAVLLN-----DNSVKMNYQLTQKSVAIENSGIRVVKK 798

<i>S. cerevisiae</i>	MSH5	CGLSRDIVERA--EELSRMINRGDDVVQQCGNLTEKEMR-----EFQKNQEIVK	874
<i>A. thaliana</i>	MSH5	AGVPEEVVKRA--AIVLDAFENNNVDKLSLDKISSLQAFKDAVD	785
<i>C. elegans</i>	MSH5	EGIPPPVIGRA--CRIYKALKAGTLLKEIKAEVSNDEKQLVEDMDVVLADEDFGMAAVE	866
<i>H. sapiens</i>	MSH5	G-LPDKLVARG--KEVSDLIRSGKPIKPVKDLLKKN-----QMENCQTLVD	805
<i>M. musculus</i>	MSH5	G-LPDPLIARG--KEVSDLIRSGKPIKATNELLRRN-----QMENCQALVD	803
<i>H. sapiens</i>	MSH4	SSLPPSIVLDA--KEITTQITRQILQNQRSTPEMER-----QRAVYHLATR	894
<i>M. musculus</i>	MSH4	SSLPSSIVLDA--RDITTQITRQILQNQRSSPEMDR-----QRAVYHLATR	916
<i>A. thaliana</i>	MSH4	AGLPSTVIDTA--RIITKRITDKENKRIELNCGKHH-----EIHRIYRVAQ	761
<i>C. elegans</i>	MSH4	STIPDEVIEHA--QLSLATELRLANVEDTERDYDSERRRIK-----VYMNHRFRECAE	800
<i>S. cerevisiae</i>	MSH4	IFNPDIIAEAYNIHSLLKIAKARTENEDSNGVVDQKTIN-----QMKRHIHLVAILK	850
 ↓			
<i>S. cerevisiae</i>	MSH5	KFLSWDLDLETTTSENLRKLKNFLR-----	901
<i>A. thaliana</i>	MSH5	KFAELDISK---GDIHAFFQDIFTS-----	807
<i>C. elegans</i>	MSH5	SFVKRKTSFCESSMRNVSEEIEKERSEASTPASKSRSTITARSNSVLSSRSMASVDQLS	926
<i>H. sapiens</i>	MSH5	KFMKLDLEDPNLD-LNVFMSQEVLPAATSIL-----	835
<i>M. musculus</i>	MSH5	KFLKLDLEDPTLD-LDIFISQEVLPAAPTIL-----	833
<i>H. sapiens</i>	MSH4	LVQTARNSQLDPDSLRIYLSNLKKYKEDFPRTEQVPEKTEE-----	936
<i>M. musculus</i>	MSH4	LVQAARNSQLEPDRLRTYLSNLKKYAGDFPRAVGLPEKTEE-----	958
<i>A. thaliana</i>	MSH4	RLICLKYSRQTEDSIRQALQNLNESFTEERL-----	792
<i>C. elegans</i>	MSH4	YFMDTHGEKWKEEKAIDKMKALRKYLVDLAKIDSQEOMCQ-----	842
<i>S. cerevisiae</i>	MSH4	ECAGNEKEPLTLGKLKEINSDFIENFEE-----	878
 ↓			
<i>S. cerevisiae</i>	MSH5	-----	
<i>A. thaliana</i>	MSH5	-----	
<i>C. elegans</i>	MSH5	VLDALLPKKKKKVTGSSMESSMSPDPFQEEDEGTEGEEDQISAPVSRPTLPSVQKYASE	986
<i>H. sapiens</i>	MSH5	-----	
<i>M. musculus</i>	MSH5	-----	
<i>H. sapiens</i>	MSH4	-----	
<i>M. musculus</i>	MSH4	-----	
<i>A. thaliana</i>	MSH4	-----	
<i>C. elegans</i>	MSH4	-----	
<i>S. cerevisiae</i>	MSH4	-----	
 ↓			
<i>S. cerevisiae</i>	MSH5	-----	
<i>A. thaliana</i>	MSH5	-----	
<i>C. elegans</i>	MSH5	EEKQQSINSRHSFSTRTAIHIPTPIQMGEAGGVKPRSTSTSSPGPSASKSVRTEVFKKT	1046
<i>H. sapiens</i>	MSH5	-----	
<i>M. musculus</i>	MSH5	-----	
<i>H. sapiens</i>	MSH4	-----	
<i>M. musculus</i>	MSH4	-----	
<i>A. thaliana</i>	MSH4	-----	
<i>C. elegans</i>	MSH4	-----	
<i>S. cerevisiae</i>	MSH4	-----	
 ↓			
<i>S. cerevisiae</i>	MSH5	-----	
<i>A. thaliana</i>	MSH5	-----	
<i>C. elegans</i>	MSH5	PNVKESQVLETPKQLSISSFLEPKFPSSEKDVISRVSERYLQSDPFKTPISDRRSQQSSR	1106
<i>H. sapiens</i>	MSH5	-----	
<i>M. musculus</i>	MSH5	-----	
<i>H. sapiens</i>	MSH4	-----	
<i>M. musculus</i>	MSH4	-----	
<i>A. thaliana</i>	MSH4	-----	
<i>C. elegans</i>	MSH4	-----	
<i>S. cerevisiae</i>	MSH4	-----	

S. cerevisiae MSH5 -----
A. thaliana MSH5 -----
C. elegans MSH5 HSTPKNRSMNQSLIQSARDTPHETIRSSNEVNPEFFNIFNFPPDDSIKSQDTYDPNVTPR 1166
H. sapiens MSH5 -----
M. musculus MSH5 -----
H. sapiens MSH4 -----
M. musculus MSH4 -----
A. thaliana MSH4 -----
C. elegans MSH4 -----
S. cerevisiae MSH4 -----

S. cerevisiae MSH5 -----
A. thaliana MSH5 -----
C. elegans MSH5 SSSRRELRPDVSHSQNSQFGEVFSELGTQFSIFNSQQSFPGNSMGTNPDCSIFDDFFAN 1226
H. sapiens MSH5 -----
M. musculus MSH5 -----
H. sapiens MSH4 -----
M. musculus MSH4 -----
A. thaliana MSH4 -----
C. elegans MSH4 -----
S. cerevisiae MSH4 -----

S. cerevisiae MSH5 -----
A. thaliana MSH5 -----
C. elegans MSH5 SQDGEKKIDSTKTSMPIVNSDNFIFKTPPEPRSSEKQRSLLKNKGQASNSSISPSSLILGQ 1286
H. sapiens MSH5 -----
M. musculus MSH5 -----
H. sapiens MSH4 -----
M. musculus MSH4 -----
A. thaliana MSH4 -----
C. elegans MSH4 -----
S. cerevisiae MSH4 -----

S. cerevisiae MSH5 -----
A. thaliana MSH5 -----
C. elegans MSH5 LAFGDVQTPRPRGDNPIEFQYDVVDDDDPIFEKNCAPVFEFLKSNDDEEDDEFLKSF 1346
H. sapiens MSH5 -----
M. musculus MSH5 -----
H. sapiens MSH4 -----
M. musculus MSH4 -----
A. thaliana MSH4 -----
C. elegans MSH4 -----
S. cerevisiae MSH4 -----

S. cerevisiae MSH5 -----
A. thaliana MSH5 -----
C. elegans MSH5 LETEGSLHIDTSADETIDRSKRS 1369
H. sapiens MSH5 -----
M. musculus MSH5 -----
H. sapiens MSH4 -----
M. musculus MSH4 -----
A. thaliana MSH4 -----
C. elegans MSH4 -----
S. cerevisiae MSH4 -----