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          140          *          160          *          180          *          200          *          220          *          240          *          260
SPRAG1L      : EAYQATKS--TKRKA-VGTDG-----LPPKIPSAAVSGT-----DEQQASCSTAPSPPT
PMRAG1L      : SAYTAHV--AQLRF-QFAAH-----QSSSDQPDQF-----
ECRAG1L      : LEHRVRL--NSIQF-VFKKP-----AALSTLTSGSSQR-----
AFRAG1L      : RTHATHK--SLLQF-QFAAAGPSTPTSAAPELQAGPSSSTTSAPPEL-----
RAG1_GG      : HTPS-----RGVKR-KSQ-----PENVQHGRVKI-----IAERARVNRG--IKNOV--IKNKNV-----MKEITNCKNRHLSTKLL-----AVDYPADFI
RAG1_XL      : HSSK-----PWGKR-KSAPO-----LNPHKMKRKRKGE-----FVKKSKTSSGNSIQWKN--MKAFNQ-----MKD--SCKKIHLNLL-----VLDYPSDFV
RAG1_FR      : SPRKVSFERTRRKR--KGV-----PRALSLGKRTRCDNSDGNADGERRNLERP-----ALRDW--PKSRDQREQW--VRSITHCQRDHLINLI-----SEKLPEDFL
RAG1_CL      : NFSS-----GTRKR-KGL-----KRSPPAAKAKV-----TVETP-----IRPGV--IKRKDQKLSTSIMLAKKIVNCKIHLSTKLL-----VLDYPNNFI
RAG1_HS      : NTAR-----RGLKR-KSL-----QNLQSKKLT-----VLDQARQARQ--RKRRARISKDV-----MKKIANCSKIHLSTKLL-----AVDFPEHFV
Chapaev-1_BF : EKVATLT--KGRF-VKKKS-----PGRKTQKNEKGN-----EKGEKVEECAKTMSEETFSELLSTLDDFPLDEDRFK----PICSL
Chapaev-2_BF : EKVLSISK--GCKP-KKSK-----AGRRLQTDKGA-----VEQEQSTPEYSDGNLTEETFAHLLDLEDLPFDETKFE----PICNL
Chapaev-1_NV : ALEEQIQ--KGRF-KKAKR-----GGARGQAKNSAWEE-----TTNAGLKAQLIARVTELSASMNILDRHRFTERFDFETFCK
Chapaev-2_NV : EKEEFAR--KGRF-KSKR-----GGNTRKAQRRISF-----VDSVAALQDQIADVTKIASRRIDNFSERFELNEVRK
Chapaev-4_HM : IYG-----KVGKR-KSPN-----VGRGVF-----KRWTLNINLFLESPLPL-NKKEISEFNIQLNPHI
Chapaev-6_HM : FKS-----NKGRK-KKKI-----SGRSSISYKE-----NIWTRHKINNIQSKLSPQTKLNLKLDINCILNPHV
Chapaev-7_HM : FSK-----VSGRK-VKKCK-----AGRCIIEQNQ-----KRWTRPIINLIASIPKQT-LRLNAIDIDPVANPHL
Chapaev-1_AcA : RHRVNLN--DCLK-PAKEP-----AATVAGDSPSTSPS-----LHSQHSVTPSPSTSTYDDPTTR-----
Chapaev-2_AcA : THYHRTS--MCKN-TPIEL-----VTTKTSEATKTHS-----PHRSTFEDSANTTSNSTAEPSTH-----
Chapaev-3_AcA : EQKRLN--LCCAT-VKPRD-----PQSHSSSHEKYTHQ-----ASPSTNISEDTTTQSTCTRALSTDSTQQNDPH-----
Chapaev-1_AA : IAARVTLN--NLIDPQKSRK-----RGRFVLEESKRAR-----
Chapaev-1_HM : QTARTNM--NQRHP-----LEPKPKENS-----
Chapaev-2_HM : QIAKLL--NQHPE-----LA--KEQTRNLQD-----
Chapaev-5_HM : QISKTKG--KCKHP-----FEK--SQQEVQKEEK-----
Chapaev3-2_AC : IVKT-----SYNK-KNKCK-----IEY--SLPSAIRPVE-----HSA-EIPVPVFIE-----
Chapaev3-1_PM : MVDP-----SKRRTGKNAPA-----ITY--DLPSSIAVPV--HCH-ELPVPPTPE-----
Chapaev3-2_HR : MTNI-----QCHSK-KTKAS-----IVY--NCSSAIKVPV--HSV-EYPVPTPPT-----
Chapaev3-3_HR : MTVI-----KGFSE-KTRKS-----ISY--DIESVSKPIP--HNPVNCPVPISPD-----
Chapaev3-1_AA : LMPSL-----VGRKW-CORSE-----IQY--KRSLCTLPEKVLV-----
Chapaev3-3_AA : LVTV-----QGIST-KNKKM-----ICY--NVRSDQPTP--HSN-DLPIPVPPN-----
Chapaev3-1_SM : SVNMM-----TGFST-KNKNK-----IVY--VMDSARRPVQ--HGE-ELPIPIPPD-----
Chapaev3-1_DA : LTKV-----QG--GKHFK-----VIY--DVQSVTKAAP--HSS-LYPKREPPA-----
Chapaev3-4_HM : SVNI-----SRNS-KGKKA-----IVY--NLPSAIRPVE--HSA-ELTVPEPPS-----
Chapaev3-5_HM : ILNI-----TCINR-NNRSK-----WTY--DLLSARRPVL--HSE-EVPIPTFLQ-----

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*      280      *      300      *      320      *      340      *      360
SPRAG1L : ARIYQP1IKPQ2TRSDSRNAEGPTYHL3SV4-----AATTLTKEKAVGTD5DLPPP-----EIPSAAVSGLDEQQAS
PMRAG1L :
ECRAG1L : -----RING finger-----C2H2-----
AFRAG1L :
RAG1_GG : KSI1SC2QICEHILADPVETT-CRHLF3RT4ILSCIRVMG---CYCPS5WYPCFP-TDLVTPVK6SFLNILD7LSIR8CPVPECDEEILHGKYG9Q10HFSNHKE
RAG1_XL : KSVS1CLVCEHILSDPVQTS-CKHLF2RI3CILKYIKLMG---CYCPS4CKYPCFP-TDLTVPVK5SYLNVLNALLK6CTVSGCDEEISLGKYS7HHISKHKE
RAG1_FR : FSFT1CVVCDHLLSDPVQPP-CGHLS2RS3CIKKYSYVLG---PHCPV4NLRCTP-DNFAPPAKAF5LALQALPLL6PRSGCGREVR7LDSFKAHYLDHEL
RAG1_CL : QSVS1CQVCEHLLADPVQSP-GMHLF2RT3CILKCVTVLG---KYCPV4CRFP5CDP-KEFRSPVKS6FNLVNSLVLR7CPVTDCEEV8KLGEYSNHALNHKE
RAG1_HS : KSI1SC2QICEHILADPVETN-CKHVF3RV4CILRCLKVMG---SYCPS5CRYPCFP-TDLESPVK6SFLSVLNSLMVK7CPA8KECNEEV9SLEKYNHHISSHKE
Chapaev-1_BF : EAYK1CGICQCFVYLPVQAL-CAHVF2FE3CLHKL4FQIAGNNNADCAICKAQIKA-SDLTSVHRTW5RSCYAQLTFNC--RNCCAQLR6LDELKYHNECPTN
Chapaev-2_BF : DAYK1CGICQSFYLPVLTLP-CAHIF2FE3CIQKSFTISERNMIDCAICKTQILQ-NDLKPVHRTW4VSCTYQLTFNC--KNCSTOLR5LEOLKHHLDCSST
Chapaev-1_NV : EEFHCAICLDVLEKPLSSK-CQHSC2SD3WKS4AFEL-GEKHPAC5PIQ6ETLADPN7DLQ8RAPLVLIQLLEGYLVK--RACGTRL9LPYHLCNSHP10CP11PRK
Chapaev-2_NV : DDFY1CPICSELLDKPVETI-FTHNA2GAL3TQALAV---NSSCPV4CKTILSSGDDIKKFNRTLLGLIESQIYK--KGC5GKEVQYQHCGEHECRPSE
Chapaev-4_HM : TLCIC1KVCGRIMHQPVMIKDCQHSF2SO3CIISIIKGL4ENEARCPV5LT6CIMI--NSLCS7VHVLEMI8EHL9YIAC--KICEK10NFIKDKYENHECK11KDH
Chapaev-6_HM : HLCV1CTICNDIMHKPIIIKNCLHSF2AS3LLPLIIGKQI4AKTK5PK6SFSIPS--DGLIS7TNV8MIENI9LQ10EV11C-KQCG12RLFKITQLSERKKH13QKT
Chapaev-7_HM : DLCIC1QLCNNIMYKPLILKECQHSF2SE3CLFREIEGKLE4TEAKCFI5Q6HIPL--YTILNSV7NV8TLLIEHILLGC-NKKCKL9KFAVKDNDL10KLHEEI
Chapaev-1_ACa : -----PSSNTPHSSHINTVFP1SQT2QSAEQNEITC-----
Chapaev-2_ACa : -----TEDNTSHEERQ1DEDIASL2D3SAASST-----GH
Chapaev-3_ACa : -----TSTSQT1FHP2HPQ3SV4PVSD5QHV6G7VQHAD8TMVQ9DSHIVAHTD10TISQ11STSV12TNSPIPHDSSC-----EH
Chapaev-1_AA : -----FTKL1TK2CFSEM-----
Chapaev-1_HM : -----SIEKR1SD2CFSVI-----
Chapaev-2_HM : -----ESSKPG1SPNSRLK2SSEKR3TQ4LSIL-----
Chapaev-5_HM : -----SFEKR1TK2LSVI-----
Chapaev3-2_AC : -----
Chapaev3-1_PM : -----
Chapaev3-2_HR : -----
Chapaev3-3_HR : -----
Chapaev3-1_AA : -----
Chapaev3-3_AA : -----
Chapaev3-1_SM : -----
Chapaev3-1_DA : -----
Chapaev3-4_HM : -----
Chapaev3-5_HM : -----

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