

HSP70-1A -----MAKA-----AAIGIDL GTTYS CVGVFQHGVKVEIIANDQGNRTTPSYVAFT-DTERLIGDAAKNQVA 61  
 HSP70-1L -----MATAKG-----IAIGIDL GTTYS CVGVFQHGVKVEIIANDQGNRTTPSYVAFT-DTERLIGDAAKNQVA 63  
 HSP70-2 -----MSARG-----PAIGIDL GTTYS CVGVFQHGVKVEIIANDQGNRTTPSYVAFT-DTERLIGDAAKNQVA 62  
 HSP70-4 -----MSVVGIDL GFQSCYVAVARAGG IETIANEYSDRCTPACISFG-PKNRSIGAAKSVI 58  
 HSP70-4L -----MSVVGIDL GFNLNCYIAVARSGG IETIANEYSDRCTPACISLG-SRTRAIIGNAAKSQIV 58  
 HSP70-5 -MKLSLVAAMLLLL SAARAEEDKKEDVG-----TVVGI DLGTTYS CVGVFKNGRVVEIIANDQGNRTTPSYVAFTP EGERLIGDAAKNQLT 85  
 HSP70-6 -----MQAPRE-----LAVGIDL GTTYS CVGVFQQGRVEILANDQGNRTTPSYVAFT-DTERLVGDAAKSQA 63  
 HSP70-7 -----MQAPRE-----LAVGIDL GTTYS CVGVFQQGRVEILANDQGNRTTPSYVAFT-DTERLVGDAAKSQA 63  
 HSP70-8 -----MSKG-----PAVGIDL GTTYS CVGVFQHGVKVEIIANDQGNRTTPSYVAFT-DTERLIGDAAKNQVA 61  
 HSP70-9 MISASRAAARLVGAAASRGPTAARHQDSWNLGSHAFRLVSRDYASEAIKGAVGIDLTGTTNSCVAVMEGKQAKVLENAEGARTTPSYVAFTADGERLVGMPAKRQAV 110  
 HSP70-12A -----MADKEAGS-----DGPRET---APTSAYSSPARSLGDTGITPLSPSHVNDTDSNV 56  
 HSP70-12B -----MLAVPEMGLQGLYIGSSPER---SPVSPPPGSPRTQESCGIAPLTPSQSP-KPEVRAP 57  
 HSP70-14 -----MAAIVHLGCTSAVAVYKDG RAGVVANDAGDRVTPAVVAYS-ENEIVGLAAKQSR 58

HSP70-1A LNPQNTVFD AKRLIGRKF GPDVVQSDMKHWP FQVINDGDKPKVQVSYKG-ETKAFYPEEISSMVLTKMKEIAEAYLGYPV TNAVITVPAYFNDSQRQATKDAGVIAGLN 169  
 HSP70-1L MNPQNTVFD AKRLIGRKFNDPVVQADMKLWPFQVINEGGKPKVLVSYKG-ENKAFYPEEISSMVLTKLKEAEALGHPVTNAVITVPAYFNDSQRQATKDAGVIAGLN 171  
 HSP70-2 MNPTNTIFDAKRLIGRKFEDATVQSDMKHWPFRVVS EGGKPKVQVEYKG-ETKTFPEEISSMVLTKMKEIAEAYLGGK VHSAVITVPAYFNDSQRQATKDAGTITGLN 170  
 HSP70-4 SNAKNTVQGKFRFHRGAFSDPFV EAKSNLAYDIVQLPTGLTG IKTVMEEERNFTTEQVTAMLLSKLKEAEASVLKPKVVDVVSVPCFYTD AERRSVMDATQIAGLN 167  
 HSP70-4L TNVVRTIHGFKKLHGRFDDPIVQTERIRLPEYELQKMPNGSAGV KVRYLEEERPFATIEQVTGMLLAKLKETSENA LKPKVADCVISIPSFYTD AERRSVMAAQAVALN 167  
 HSP70-5 SNPENTVFD AKRLIGRTWNPDSVQQDIKFLPFKVV EKKTKPIQVDIGGGQKTFAPEEISAMVLTMMKETA EAYLGKVVTHAVVTVPAYFNDAQRQATKDAGTIAGLN 195  
 HSP70-6 LNPHTVFD AKRLIGRKFADTTVQSDMKHWPFRVVS EGGKPKVQVRYRG-EDKTFYPEEISSMVLTKMKEAEAYLGQP VKHAVITVPAYFNDSQRQATKDAGIAGLN 171  
 HSP70-7 LNPHTVFD AKRLIGRKFADTTVQSDMKHWPFRVVS EGGKPKVQVRYRG-EDKTFYPEEISSMVLTKMKEAEAYLGQP VKHAVITVPYTFNSQRQATKDAGIAGLN 171  
 HSP70-8 MNPTNTVFD AKRLIGRRFD DAVVQSDMKHWPFMVNDAGR PKVQVEYKG-ETKSFYPEEISSMVLTKMKEIAEAYLGKVTNAVITVPAYFNDSQRQATKDAGIAGLN 149  
 HSP70-9 TNPNTFYATKRLIGRYYDDEPVQDKIKNVPFKIVR-ASNGDAWVEAHG---KLYSPSQIGAFVLMKMKETAENYLGHTAKNAVITVPAYFNDSQRQATKDAGQISGLN 216  
 HSP70-12A EQQSFLVVAVDFGTTSSGYA YSFTKEPECIHMRRR WEGDGPVSNQKPTPTILLTPERKFH SFGYAARDFYHDLDPNEAKQWLYLEKFKMK---LHTTGLTMDTDLT 157  
 HSP70-12B QQASFSVVVAIDFGTTSSGYA YSFA SDPEAIHMRRR WEGDGPVGHQKPTPTCLLLTP EGAH SFGYARDYHDLDP EEARDWLYEFKFKMK---IHSATDLTLKTQL 161  
 HSP70-14 RNI SNTVMKVKQILGRSSSDPQAQKYIAESKCLVIEKNGKLYEIDTGE-ETKFNVPEDVARLIFSKMKETAHSVLSGDANDVVITVPDFG EKQKALGEAARAAGFN 166

HSP70-1A VLRIINEPTAAAIAYGLDRTG-----KGERNVLIFDLGGGTFDVSILTID DGI FEVKATAGDTHLGGEDFDNRLVN-HFVEEFKRKHKKDISQNKRAVRLRTACERAK 273  
 HSP70-1L VLRIINEPTAAAIAYGLDKGG-----QGERHVLIFDLGGGTFDVSILTID DGI FEVKATAGDTHLGGEDFDNRLVS-HFVEEFKRKHKKDISQNKRAVRLRTACERAK 275  
 HSP70-2 VLRIINEPTAAAIAYGLDKKGC---AGGEKNV LIFDLGGGTFDVSILTID E DGI FEVKATAGDTHLGGEDFDNRMVS-HLAE EFKRKHKKDIGPNKRAVRLRTACERAK 276  
 HSP70-4 CLR LMNETTAV ALAYGIYQDL PAL E EKPRNVV FDMGHSAYQVSVCAFNRGK LKVLATAFD TLLGG RKFD EVLVN-HFCEEF GKKYKLDIKSKIRALLRLSQECEK 276  
 HSP70-4L CLR LMNETTAV ALAYGIYQDL PLLEKPRNVV FDMGHSAYQVSVCAFNRGK LKVLATAFD TLLGG RKFD EALVD-YFCDEFKTKYKINV KENS RALLRLYQCECEK 276  
 HSP70-5 VMRIINEPTAAAIAYGLDKRE-----GEKNLIFDLGGGTFDVSLLTID NGVFEVATNGDTHLGGEDFDQVRME-HFIKLYKKTGDKVRKDNRAVQKLRRREVEKAK 298  
 HSP70-6 VLRIINEPTAAAIAYGLDRRG-----AGERNVLIFDLGGGTFDVSIL D AGVFEVKATAGDTHLGGEDFDNRLVN-HFMEEFRKHGKDLSGNKRALRRLRTACERAK 275  
 HSP70-7 VLP IINEPTAAAIAYGLDRRG-----AGKRVN LIFDLGGGTFDVSIL D AGVFEVKATAGDTHLGGEDFDNRLVN-HFMEEFRKHGKDLSGNKRALRRLRTACERAK 275  
 HSP70-8 VLRIINEPTAAAIAYGLDKK---VGAERNV LIFDLGGGTFDVSILTID E DGI FEVKATAGDTHLGGEDFDNRMVN-HFIAEFKRKHKKDISQNKRAVRLRTACERAK 273  
 HSP70-9 VLRVINEPTAAALAYGLDKSE-----DKVIAVYDLGGGTFDVSIL EIQGVFEVKSTNGD TFLGGEDFDQALLR-HIVKEFKRETGDVLT KDNMALQRVREAAEKAK 318  
 HSP70-12A AANGKVKALEIFAYALQYFK-----EQALKE LSDQAGSEFNSDVRWVITVPAIWKQPAKQFMRAAYLAGLVSRNAEQLLIALEPEAASVYCRKLRHLQLDL LSG 261  
 HSP70-12B AVNGKTMPALEVF AHALRFFR-----EHALQELREQSPSLPEKDTVRWVITVPAIWKQPAKQFMRAAYLAGLVSRNAEQLLIALEPEAASVYCRKLRHLQLDL LSG 265  
 HSP70-14 VLR LIHESPAALLAYGIGQDS---PTGKSNILVFKLGGTSLSLVM EVNSGIYRVLSTNTDDNIGGAHFTETLAQ-YLASEFQRSFKHVRGNARAMMKTNSAEVAK 271

HSP70-1A RTLSS-STQASLEIDSLFEGID---FYTSITRARFEELCSDLFRSTLEPVEKALRD AKLDKAQIHDVLVGGSTRIPKVKQLLQDFFNGRDLNKSINPDEAVAYGAAV 378  
 HSP70-1L RTLSS-STQANLEIDSLYEGID---FYTSITRARFEELCADLFRGTLEPVEKALRD AKMDKAKIHDVLVGGSTRIPKVRQLLQDFFNGRDLNKSINPDEAVAYGAAV 380  
 HSP70-2 RTLSS-STQASIEIDSLYEGVD---FYTSITRARFEELNADLFRGTLEPVEKALRD AKLDKGQIQEIVLVGGSTRIPKIQKLLQDFFNKELNKSINPDEAVAYGAAV 381  
 HSP70-4 KLMSANASDLPLSIECFMNDVD---VSGTMNRGKFL EMCNDLLARVEPPLRSVLEQTKLKKEDIYAYEIVGGATRIPAVKEKISKFFG-KELSTTLNAD EAVTRGCAL 381  
 HSP70-4L KLMSANASDLPLSIECFMNDLD---VSSKMNRAQFEQLCASLLARVEPPLKAVMEQANLQREDISSIEVGGATRIPAVKEQITKFFL-KDISTTLNAD EAVARGCAL 381  
 HSP70-5 RALSS-QHQARIEIESFYEGED---FSETLTRAKFEELNMDLFRSVDLQVGVLEKAGVFEVKATAGDTHLGGEDFDNRLVN-HFMEEFRKHGKDLSGNKRALRRLRTACERAK 403  
 HSP70-6 RTLSS-STQATLEIDSLFEGVD---FYTSITRARFEELCSDLFRSTLEPVEKALRD AKLDKAQIHDVVLVGGSTRIPKVKQLLQDFFNKELNKSINPDEAVAYGAAV 380  
 HSP70-7 RTPSS-STQATLEIDSLFEGVD---FYK S ITRARFEELCSDLFRSTLEPVEKALRD AKLDKAQIHDVVLVGGSTRIPKVKQLLQDFFNKELNKSINPDEAVAYGAAV 351  
 HSP70-8 RTLSS-STQASIEIDSLYEGID---FYTSITRARFEELNADLFRGTLEPVEKALRD AKLDKQSIHDVLVGGSTRIPKIQKLLQDFFNKELNKSINPDEAVAYGAAV 378  
 HSP70-9 CELSS-SVQTDINL PYLTMDSGPKHLNMK LTRAQFEGIVD LIRRTIAPQKAMQAEVSKSDIGEVILVGGSTRIPKIQKLLQDFFNKELNKSINPDEAVAYGAAV 426  
 HSP70-12A KAAVNGYSGSD-TVGAGFTQAKEH IRRNRQSRTFLVENVIGEIWELEEGDKYVVVD SGGGTVDLTVHQIRLPEGHLKELYKATGGPYGSLGV DVEYEFKLLYKIFGDEF 370  
 HSP70-12B RAPGGGRLGERRSIDSFRQAREQLRRSRHSRTFLVESG GELWAEQAGDRYVVD CCGGTVDLTVHQLEQPHGTLKELYKASGGPYGAVGVDLAF EQLLCRIFGDEF 375  
 HSP70-14 HSLST-LGSANCFDLSLYEGQD---FDCNVSRARFELLCSPLFNK CIEAIRGLLDQNGFTADDINKVVLCCGSSRIPKQLQIKDLFP AVELLNSIPPDEVIPIGAAI 376

HSP70-1A QAAILMGDKSENVQDLLLLDVAP---LSLGL ETAGG-VMTALIKRNSTIPTKQTQIFFTYS DNQPGVLIQVYEG--ERAMTKDNLLGRFELSGIPPAPRG-VPQIEVT 477  
 HSP70-1L QAAILMGDKSEKVDQLLLLDVAP---LSLGL ETAGG-VMTALIKRNSTIPTKQTQIFFTYS DNQPGVLIQVYEG--ERAMTKDNLLGRFELSGIPPAPRG-VPQIEVT 479  
 HSP70-2 QAAILMGDKSENVQDLLLLDVTP---LSLGL ETAGG-VMTPLIKRNTIPTKQTQIFFTYS DNQPGVLIQVYEG--ERAMTKDNLLGRFELSGIPPAPRG-VPQIEVT 480  
 HSP70-4 QCAILSPAFKVRREFSITDVPYP--ISLRWNSPAEAGSSDCVFSKNHAAPSKVLT FYRK---EPFTLEAYSS--PQDL PYPDPAIAQFSVKVTPQSDGSSSKVKVK 481  
 HSP70-4L QCAILSPAFKVRREFSITDLPYS--ITLRWKT SFEDGSGCEVFCKNHPAPFSKVI TFKK---EPFELEAFYTN--LHEVYPPDARIGSFITQNVFPQSDGSSSKVKVK 481  
 HSP70-5 QAGVLSGD---QDTGDLVLLDVCP---LTLG IETVGG-VMTKLIPRNTVVP TKSQIFSTASDNQPTVTIKVYEG--ERPLTKDNHLLGTFDLTGIPPAPRG-VPQIEVT 500  
 HSP70-6 QAAVLMGDKCEKVQDLLLLDVAP---LSLGL ETAGG-VMTTLIQRNATIPTKQTQIFFTYS DNQPGVLIQVYEG--ERAMTKDNLLGRFELSGIPPAPRG-VPQIEVT 479  
 HSP70-7 AAGLLRQQAEGQEHPQ---LTLG IETVGG-VMTKLIPRNTVVP TKSQIFSTASDNQPTVTIKVYEG--ERPLTKDNHLLGTFDLTGIPPAPRG-VPQIEVT 367  
 HSP70-8 QAAILSGDKSENVQDLLLLDVTP---LSLGL ETAGG-VMTVLIKRNTIPTKQTQIFFTYS DNQPGVLIQVYEG--ERAMTKDNLLGRFELSGIPPAPRG-VPQIEVT 477  
 HSP70-9 QGGVLAGD---VTDVLLLDVTP---LSLGL IETLGG-VFTKLINRNTIPTKKSQVFSTAADGQTQV EIKVCQG--EREMAGDNKLLGQFTLIGIPPAPRG-VPQIEVT 521  
 HSP70-12A IEQFKIKRPAWV DLMIAFESRK---RAAPDRTNPLNITLPFSFIDYKFKFRGHSVEHALRKSNDVFKWSSQGMLRMSPDAMNALFKPTIDSIIEHLRDLFQKPEV 473  
 HSP70-12B IATFKRQRAAWDLTIAFEARK---RTAGPHRAGALNLSLPFSFIDFYRKRGHNVETALRRSSVNFVKWSSQGMRLMCEAMNLFQPTVSGI IQHIEALLARPEV 478  
 HSP70-14 EAGILIGKENLLVEDSLMIECSARDILVKG VDESASRFTVLPFSGTLPARRQHTLQAPGSISSVCELELYESD--GKNSAKEETKFAQVVLQDL DKKENG-LRDILAV 479

HSP70-1A FDI DANGILNVTAT-----DKSTGKANKITITNDKGRLSKEE----- 514  
 HSP70-1L FDI DANGILNVTAT-----DKSTGKVNKITITNDKGRLSKEE----- 516  
 HSP70-2 FDI DANGILNVTAA-----DKSTGKENKITITNDKGRLSKDD----- 517  
 HSP70-4 VRVNVHGF SVSASLVEVHKSE--ENE EPMETDQNAKEE-----EKMQVDQEEPHVEEQQQQT PAENKAESEEMETSQA GSKDKKMDQPPAKKAKVKTSTVDLPIEN 583  
 HSP70-4L VRVNIHGF SVSASVIEKQNL EGDHSDAPMETE TSFKNENKDNMDKMQVDEGEGHQKCHAEHTPEEIDHTGAKTSAVSDKQDRLNQT--LKKGKVK--IDLPIQS 586  
 HSP70-5 FEIDVNGILRVTA E-----DKGTGNKKNITITNDQNRLTPEE----- 537  
 HSP70-6 FDI DANGILSVTAT-----DRSTGKANKITITNDKGRLSKEE----- 516  
 HSP70-7 FDI DANGILNVS AV-----DKSTGKENKITITNDKGRLSKED----- 514  
 HSP70-8 FDI DANGIVHVS AK-----DKGTGREQQIVIQSS-GGLSKDD----- 557  
 HSP70-12A TVKFLFLVGGFAEAP-----LLQAVQA AFGDQ-CRIIPQDVGLTILKG----- 517  
 HSP70-12B GVKLLFLVGGFAESA-----VLQHAVQAALGARGLRVVVPHDVL TILKG----- 523  
 HSP70-14 LTMKR DGS LHV TCT-----DQETGKCEAISIEIAS----- 509

HSP70-1A -----IERMVQAEKYKA EDEVQRE RVS AKNALESYAFNMKS AVED----- 555  
 HSP70-1L -----IERMVLDAEKYKA EDEVQREKIAAKNALESYAFNMKS SVSD----- 557  
 HSP70-2 -----IDRMVQAEKYKSEDEANRVA AKNALESYTYNIKQTVED----- 558  
 HSP70-4 QLLWQIDREMLNLYIENEGKMIMQDKLEKERNDAKNAVEEYVYEMRDKLSGEYEFVSEDDRNSFTL KLEDTENWLYEDGEDQPKQVYVDKLAELKNLGQPIKIRFQES 692  
 HSP70-4L SLCRQLGQDLLNSYIENEGKMIMQDKLEKERNDAKNAVEEYVYDFRDLGT VYEFITPEDLSKLSAVLEDTENWLYEDGEDQPKQVYVDKLAELKNLGQPIKIRFQES 695  
 HSP70-5 -----IERMVNDAEKFAEEDKKLKERIDTRNELESYAYSLKNQIGDK----- 579  
 HSP70-6 -----VERMVHAEQYKA EDAQRDVAAKNSLEAHV FHVKGSLQE----- 557  
 HSP70-7 -----IERMVQAEKYKA EDEKQRDKVSSKNSLESYAFNMKATVED----- 555  
 HSP70-8 -----IENMVKNAEKYAEEDRRKERVEAVNMAEGIIHDTETKME E----- 598  
 HSP70-12A -----AVLFGLDPAVIKVRRSPLTYGVGLNRYVEGKHPPEKLLVKG DTR----- 562  
 HSP70-12B -----AVLFGQAPGVVRRRSPLTYGVGLNRFVGRHPPEKLLVDRGR----- 568  
 HSP70-14 -----IERMVQAEKYKA EDEVQRE RVS AKNALESYAFNMKS AVED----- 555

HSP70-1A -----EGLKGKISEADKKVLDKQEVISWLDANTLAEKD-----EFEHKKELEQVCNPIISGLYQGA-----GGPGPG 620  
 HSP70-1L -----EGLKGKISEDNKILDKCNELLSWLEVNQLAEKD-----EFDHKKELEQMCNPIITKLYQG-----GCTGP- 620  
 HSP70-2 -----EKLKGKISEQDKNILDKQEVINWLDNRNQMAEKD-----EYEHQKELERVCNPIISKLYQ---GGPGGSGG-- 623  
 HSP70-4 EERP KLFEE LGKIQQYMKI ISSFKNKEDQYDHLDAADMTKVEKSTNEAMEWMNNKLNQNKSLTMDPVVKSKEIEAKIKELTSTCSP IISKPKPKVEPPKEE-QKNA 800  
 HSP70-4L EERP KALNDLGKKIQLVMKVIEAYRNKDERYHLDPT EMEKVEKISDMSWLN SKMNAQNKLSLTQDPVVKVEI VAKSKELDNFCNPIIYKPKKAEVPE DKKPANS 804  
 HSP70-5 -----EKLGGKLS EDEKTEMAVEEKEI EWLESHQDADIE-----DFKAKKLEEEIVQPIISKLYG----- 636  
 HSP70-6 -----ESLRDKIPEEDRRKMQDKCREVLAWLEHNQLAEKE-----EYEHQKRELEQICRPIFSRLYGGP-----GVPGG 622  
 HSP70-7 -----EKLQKGINDEDQKILDKCN EIINWLDKNQTA EKE-----EFEHQKLEKVCNPIITKLYQSAGGMPGGMPGGF 625  
 HSP70-8 -----FKDQLPADECNKLEEKISKMR ELLARKDSETGE-----NIRQAASLQASLKL FEMAYK-----MASE 658  
 HSP70-12A -----WCTDVFDFKFSADQSVALGELVKRSYTPAKPSQLVIVIN-----IYSSEHNDV SFTDPGVKKCGTLRLDLT-----GT 632  
 HSP70-12B -----WCTDVFERFVAEQSVALGEEVRRSYCPARPGRVRLIN-----LYCCAEDARFITDPGVKCGALSLELEPADCGQD 642  
 HSP70-14 -----EGLKGKISEADKKVLDKQEVISWLDANTLAEKD-----EFEHKKELEQVCNPIISGLYQGA-----GGPGPG 620

HSP70-1A GFQAQGPKGSGSGSPTIEEVD----- 641  
 HSP70-1L ACGTGYVGRPATGPTIEEVD----- 641  
 HSP70-2 -GGGS-----GASGGPTIEEVD----- 639  
 HSP70-4 EQNGPVDGQGDNPQPAAEQGTD AVPSDSDKKLP EMDID----- 840  
 HSP70-4L EHNPGMDGQSG-----TETKSDSTK DSSQHTKSSGEMEVD----- 839  
 HSP70-5 ---SAGPPPTGEEDTAEKDEL----- 654  
 HSP70-6 SCGTQARQDPSTGPIIEEVD----- 643  
 HSP70-7 ----- 643  
 HSP70-8 PGGGAPSGGASSGPTIEEVD----- 646  
 HSP70-9 REGSGSGTGEGEKEDQKEEK----- 679  
 HSP70-12A SGTAVPARREIQTLAMQFGDTEIKATAID IATSKSVKVGIDFLNY----- 675  
 HSP70-12B TAGAPPGRREIRAMQFGDTEIKV TAVDVSTNRSVRASIDFLSN----- 686  
 HSP70-14 ----- 643