Figure S2

a) CI

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WHsp16.9-CI    MSIVRRTNVFDPFA-DLWA--D--PFD------TFRSIVP---AISGGGSETAAFANARMDWKETPEAHVFKADLPGVKKEEVKVEVEDGNVLVVSGERTKEKEDKNDKWHRVERSSGKFVRRFRLLEDAKVEEVKAGLENGVITVTVPKAEVKKPEVKAIQISG   151
HvHsp16.9-CI   MSIVRRSNVFDPFA-DLWA--D--PFD------TFRSIVP---AISGGNSETAAFANARMDWKETPEAHVFKADLPGVKKEEVKVEVEDGNVLVVSGERTKEKEDKNDKWHRMERSSGKFVRRFRLPEDAKVEEVKAGLENGVITVTVPKAEVKKPEVKAIEISG   151
HvHsp16.86-CI  MSIVRRSNVLDPFA-DLWA--D--PLD------TFRSIFP---AISGGNSETAAFANARMDWKETPEAHVFKADLPGVKKEEVKVEVEDGNVLIVSGERTKEKEDKNDKWHRVERSSGKFVRRFRLPEDAKVDEVKAGLENGVITVTVPKAEVKKPEVKAIEISG   151
HvHsp16.88-CI  MSIVRRSNAFDPFA-DLWA--D--PFD------TFRSIVP---AFSG-NSETAAFANARVDWKETPEAHVFKADLPGVKKEEVKVEVEDGNVLVVSGERTKEKEDKNDKWHRVERSSGKFVRRFRLPEDAKVEEVKAGLENGVITVTVPKTEVKKPEVKAIEISG   150
OsHsp169A-CI   MSLVRRSNVFDPFSLDLW---D--PFDS-----VFRSVVP---ATSD--NDTAAFANARIDWKETPESHVFKADLPGVKKEEVKVEVEEGNVLVISGQRSKEKEDKNDKWHRVERSSGQFMRRFRLPENAKVDQVKAGLENGVITVTVPKAEVKKPEVKAIEISG   150
OsHsp169B-CI   MSLVRRSNVFDPFSLDLW---D--PFDS-----VFRSVVP---ATSD--NDTAAFANARIDWKETPESHVFKADLPGVKKEEVKVEVEEGNVLVISGQRSKEKEDKNDKWHRVERSSGQFMRRFRLPENAKVDQVKAGMENGVITVTVPKAEVKKPEVKAIEISG   150
OsHsp169C-CI   MSLVRRSNVFDPFA-DFW---D--PFDG-----VFRSLVP---ATSD--RDTAAFANARVDWKETPESHVFKADLPGVKKEEVKVEVEEGNVLVISGQRSKEKEDKNDKWHRVERSSGQFMRRFRLPENAKVDQVKASMENGVITVTVPKAEVKKPEVKAIEISG   149
HvHsp16.7-CI   MSLIRRGDVFDPFSLDLWD-----PFGSG-----SGSVFP---RTTD--SETAAFAGARIDWKETPDAHVFKADVPGLRKEEVKVEVDDGNVLQISGERNKEQEEKTDTWHHVERSSGRFLRRFRLPDNARAEEIKAAMENGVITVTVPKAEAKKPDVKPVQITG   150
HvHsp17.7-CI   MSLIPRGNAFDPFSVDLWNPFDGFPFGSG-SSSSGGSLFPSFPR-TS--SDTAAFAGARIDWKETPEAHVFKADVPGLKKEEVKVEVEDGNILQISGERNKEQEEKTDTWHRVERSSGKFLRRFRLPEDAKADQIKAAMENGVITVTVPKEEAKKPEIKSIQISG   161
HvHsp17.5-CI   MSLIRRSNVFDPFSLDFFDPFDGFPFGSG-SSNSGGSLVP---R-TS--SDTAAFAGARIDWKETPEAHVFKADVPGLKKEEVKVEVEDGNILQISGERNKEQEEKTDTWHRVERSSGKFLRRFRLPENAKAEQVKASMENGVITVTVPKEEAKKPEVKSIQISG   158
OsHsp174-CI    MSMIRRSNVFDPFSLDLWDPFDGFPFGSG-----SGSLFP---R-AN--SDAAAFAGARIDWKETPEAHVFKADVPGLKKEEVKVEVEDGNVLQISGERIKEQEEKTDKWHRVERSSGKFLRRFRLPENTKPEQIKASMENGVITVTVPKEEPKKPDVKSIQITG   154
OsHsp179A-CI   MSLIRRSNVFDPFSLDLWDPFDGFPFGSG--GSSSGSIFPSFPRGAS--SETAAFAGARIDWKETPEAHVFKADVPGLKKEEVKVEVDDGNILQISGERNKEQEEKTDQWHRVERSSGKFLRRFRLPDNAKPEQIKASMENGVITVTVPKEEAKKPDVKSIQISG   161
OsHsp180-CI    MSLIRRSNVFDPFSLDLWDPFDGFPFGSG--SRSSGSIFPSFPRGTS--SETAAFAGARIDWKETPEAHVFKADVPGLKKEEVKVEVEDGNVLQISGERSKEQEEKTDKWHRVERSSGKFLRRFRLPENTKPEQIKASMENGVITVTVPKEEPKKPDVKSIQVTG   161
OsHsp177-CI    MSLIRRGNAFDPFSLDLWDPVDGFPFGSGGSSSSSGSLFP---R-AN--SDAAAFAGARIDWKETPEVHVFKADVPGLKKEEVKVEVDDGNILQISGERSREQEEKSDKWHRVERSSGKFLRRFRLPENTKPEQIKASMENGVITVTVPKEEPKKPDVKSIQISG   159
               **...*....***.**.*.*.****..****.....*..****....*....****.**.******..******.**..********..**.*..**.*..*.*.*.*.***.*******.*****.*........**...********..*.***........*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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Consensus Region II Consensus Region I

b) CII

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HvHsp17.7-CII MEGRMFGLETPLMTALQHLLD--IPDGEAGGVGVAG--GEKQGPTRAYVRDARAMAATPADVKEL--PGAYAFVVDMPGLGSGDIKVQVEDERVLVISGERRR-----EEKED-AKYVRMERRMGKMMRKFVLPENADMEKIAAACRDGVIFVTVEKLPPPEPKKP   154
HvHsp17.77-CII MEGRMFGLETPLMTALQHLLD--IPDGEAGGPGHAG--GEKQGPTRAYVRDARAMAATPADVKEL--PGAYLFVVDMPGLGSGDIKVQVEDERVLVISGERRR-----EEKED-ARYLRMERRMGKLMRKFVVPDNADTEKISAVCRDGVIFVTVDKLPPPEPKKP   154
HvHsp17.3-CII MAGMVFGLETPVMTALQHLLD--IPDGEAG---AAG--GEKQGPTRAYVRDARAMAATPADVKEL--PGAYAFVVDMPGLGSGDINVQVEDERVLVISGERRR-----EEKED-AKYVRMERRMGKMMRKFVLPENADMEKISAACRNGVIFVTVEKLPPPEPKKP   151
OsHsp180-CII   MESAMFGLETPLMTALQHLLD--IPDGEGG---AAGKQGATGGPTRAYVRDARAMAATPADVKDL--PGAYAFVVDMPGLKSSDIKVQVEEERLLVISGERRRGGGE-EEKEESCKYLRMERRMGKFMRKFVLPDNADVDKISAVCQDGVIFVTVEKLPPPEPKKP   158
OsHsp190-CII   MELSVVGGEPLLAVAMQQLLDLDLPDELER---------QLNPPTRAYVRDRRAMANTPMDVKELRASGALVLAVDMPGVAPADVRVEVEDGNVLAISGERRRPAGDGDDGGEGVKYLRMERRMGKFMRRFPLPESADLDGVRAEYKDGVIFVTVDKKPPPEPKKP   157
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Consensus Region II  Consensus Region I

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                 β10
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HvHsp17.7-CII KTIQVQVA   162
HvHsp17.77-CII KTIQVQVA   162
HvHsp17.3-CII KTIQVQVA   159
OsHsp180-CII   KTIEVKVA   166
OsHsp190-CII   RVVEVKVAGAGEPKGKGK   175
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c) CIII

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HvHsp190-CIII  MAELLFAPAMAGLVHLPEVLDRLAAADADHR---DHAHHHAAHGHGHAHPRAHIGAGGGAPVDIVETPGEYSFLLDVPGLSKSDIQVTLEEDNVLVMKSASSSNGGGANGKRKREEEEADCRYIRLERRASPRSFVRKFRLPEDADAGAVAARCENGVITVTVKKQ   163
OsHsp186-CIII  MTEL-FDTAVTSLLHLPEVLDRLGAAAGDRRSAGDHAHH-AAHGHGQHR---ISGIGGGAPVDIMETPGEYAFVLDVPGLSKSDIQVTLEEDRVLVMK---SSNGAG-NGKRKREEEEGECKYIRLERRASPRAFARKFRLPEDADTGGISARCENGVLTVTVKKR   157
               *.****..*...*.*********.**....*********.******........*.*******.******.*.******************.*****...****.*.**********..*.**********.*.*********.*...***************.
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Consensus Region II Consensus Region I

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                 β11
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HvHsp19.0-CIII PPPEKKTKSVQVAIA   178
OsHsp186-CIII  PPPEKKTKSVQVTIA
               ************.**   172
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d) CV

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HvHsp17.1CV MD--YPMQ---EVQQHPGFR-AVHPWQWWQWQ--LSVLASSSSPPAPSTRPP--NHVSWDETGAAHIYSADLPGVKKEEIRVEIEDGRYLVVRTELDAG---DAEVHGRRGGFARKFRLPGMVDADGITAEYAHGVLTVTVPRMHNRARPMVNLIGSG-----PAC 148
OsHsp188-CV MDYYYPMEEEEEVHERPRFRRPVHPWQWHHWQNLLGLLSSSSPSPATAAAAQRCSHVSWEETAAAHLYSASLPGVRKEEIRVEVEDAMYLVIRTELDDGGDGDGGGGGGRRSFARKFRLPAMVDADGISAEYTHGVLRVTVPRLHTRARPVVNLAGGGGGGGGPAC 166
            **..***....**...*.**..******..**..*..*.***..**.........****.**.*********************.**..***.*****.*...*....*.*..********.*******.***.****.*****.*.****.***.*.*.....***

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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e) CIX

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HvHsp17.76-CIX MSMVRFLDTLALDSWNPFGSIFGTTASGGADAWLASDTTAFADTYIESRETAEAYVFSARLPAGVTKEEVKVEVEEEGKVLVIAGERTLRREAKNETRHHVERSCATFFGRFHLPEDAALGRVRAAMDDGGAQLTVTVPRVG--------AAAAAEAMPEPAVAIE 158
OsHsp179B-CIX  MSLVKLFDTLAFDAWNPF-SIFGTTVA--ADAWLASDTSAFANTYIESRETAEAYVFRADLPAGVKKEEVRVEVDE-GNVLVITGERSVRREEKGQRSHHIERSCATFFGRFHLPDDAVVDLVRASMDGG--MLTVTVPRVVTDKQPAIAAAAPVPAVVAPAVEAK 160
               **.*...****.*.****.******....*********.***.**************.*.*****.****.***.*.*.****.***..***.......**.*****************....******.....******.*.........***...*...***...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
HvHsp17.76-CIX VVEASPC 165
OsHsp179B-CIX  AIEASP 166
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f) CX

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HvHsp19.2-CX MSMISNMLGRRQPPPPQQQQPAGHKTNGHGGGGEVVEPVSIDILEPFMEAISLKAFGGP------ALGLPFSTASMDWKETPTAHVFMADVPGLRREEVKVEVEQERVLRISGQRARAAEDKGDRWHRVERSAEKFVRTVRLPPNADVDGGGVHAALDNGVLTITI 160
OsHsp188-CX  MSMITSMLGRKQN--AQQKGGGGGGRTGGGGGGE-IEPVSVDIMEPFMDAISLTAFAAAPSAAAAAAGVP-STASMDWKETAAAHVFMADMPGVRREEVRVEVEEEKVLRISGQRARAAEEKGERWHRVERSSEREFVRTVRLPPNANTDG--VHAALDNGVLTITI 160
             ****..******....**.........*.*****..****.**.****.****.**.........*.*.*.**********..**********.*****.****.*.*************.**.********.*.***********..**..**************
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
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g) Px

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HvHsp15.1-Px MADLFFGGSPFRRLLYARPL------ASAPGAMDWVETQTSHVLRINVPGLGKDDVKVQVEDGNVLSVRGAAKEKTKEGN---EEDAVWHVSERGKPEFARFEVPLPEHVRVDQIRASVDNGVLTVVVPKEPAPARPRTRPITVSSKL 138
OsHsp160-Px  MADLFFGG-PFRRILYGRPFPPDWASASATAAMDWVETPTSHVLRINVPGLGKDDVKVQVEDGNVLTVRGAAPHAAAEKEREREKDVVWHVAERGRPEEFARFEVALPAEVRVEQIRASVDNGVLTVVVPKEPAPARPRTRPIAVSSKL 146
             ********.*******.**.......***..*******.**************************.*****.....*.....***.****.***.*******.**..***.****************************.*****
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
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h) M

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                                                                                                                                                                β2      β3
HvHsp21.3-MI   --MASAVACKGATPASFLK-----------SGAPVAFCPLN-----------TTAVTADHRPYNTLVKEAIRYD--DD------DDYS----GRHLVLPSFFSQ-DVLDPLG-------------------AHQTGLS--CTAGASRLGR-WVTKEDDGAVYLKVF   107
OsHsp24.0-MI   --MASIVASKRIPLFRLVEQLLAA------SPAQGAASALR-----------PVAVAGGSRAYNTG-AQLRRHER-DESDDDSGRGYDTRRPTRDATMPAFFSGNVFRDPFSAPQSLGRLLSLMDD----LATPAGRAG---AATLRRG--WNAKESEEALHLRVD   136
OsHsp26.2-MI   --MASTVALKGRPLATLLRQLLAADAPPAATGRPVAAAPAASGKPVTAPAAATATNAASRRLYNTEGAPLRRYDVVDESGTDSGDEYDATDDGRRLTVPFFFSASDVLDPFGAPTSLGRLLALMEDAAVATAAAPGTNGLATAAARRGGW-WVAKEDDDAVHLKVS   163
OsHsp23.6-MII  MALARQCLSKRLAAGCALARPLH-------AASPVAAAAAN-----------SHGPLNFRALFSSAGADAAATT--GGCAPAKGDGHSREVAVVDRSRRRWPWR-DLRDFVP-----------LR-----LVDGIGSALSQVAETLTRPLTGKVREDEERYRLRFF   129
               ...*.............................*.......................................................................*......******..............*......*.............*......*...

                         β4        β5                        β6             β7        β8             β9

HvHsp21.3-MI   MPGLTKEHVQVRADKNILVIKGE------GEKQPWAGDDDSAVPRYNHRIEIPADAYKMDKIKAEMKNGMLWVTLLKLKEEERKDVFHVKVE   193
OsHsp24.0-MI   MPGLGKEHVKVWAEQNSLVIKGE------GEKEA-GEDEGAAPARYSGRIELAPEVYRMDQIKAEMKNGVLKVVVPKVKEEQRRDVFQVNVE   221
OsHsp26.2-MI   MPGLGKEHVKVWAEQNSLVIKGE------GEKDP-EDDADAAPPRYTRRIELPADAFKMDKIKAEMKNGVLRVAVPKLKEEERKDVFQVNVE   248
OsHsp23.6-MII  VPGLGKDDVRVYVDDGVLAIHGEKRDVVEEDRGRDGDGECWAAATYHAGLLLPEDAVAEG-ITAEVRDGVLHVTVPRS-PERKRSVTEVKVR   219
               .***.*..*.*......*.*.**.......................*.....*..........*.**...*.*.*.....*.*..........*.
                 Consensus Region II                                Consensus Region I
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i) ER

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                                                                                                β2        β3            β4            β5                  β6        β7

HvHsp-ER       ------------------------------------------------------------------------------------------------------NDQPHF-----------------------------------------------WTK-ERSIGDFQITFSFTARVD    27
HvHsp21.9-ER   MAAVSKK---ALVATAVLALAVLAPPVAGLVPYGVSSG--------LWDLLDDPFRVLEQAPLAVQRPASAGDPAASVSSPMALARCDWKETPDAHVISLDVPGVRRDDVKVEVEEN-RVLRVSGERK---ADEEKEGER----WHRAERAAGRFWRRFRMPAGAD   147
OsHsp232-ER    MASMRTAAAAAMLACIAVVLASTAADGALLPWFGGGGARDEAVPELGLLAAADPFRILEHVPFGFDR---------DDVAMLSMARVDWRETGDAHEVVVDVPGMRKEDLRVEVEDN-RVLRISGERRREETTEQKGGGD---HWHREERSYGRFWRQLRLPDNAD   153
OsHsp218-ER    MAAVAEREVLGMVAAVAAMVVMMAPPAAALVPYGYG------------YMLDDPFRVLEQSPLRPAG-GVAAAAAAGEPAAVALARCDWKETPEAHVVTVDVPGVRRGDVRVEVDEASRVLRVSGERRRAGAAEEEEGERDGVRWHRAERAAGRFWRRFRMPPGAD   153
               **...........*.........*...*.*...*..................****.**..*......................**.**.**..**....*.*..*..*..***....****.****.*....*...*......*...**..*.*.*........*
                                                                                                                                  Consensus Region II

                    β8      β9             β10

HvHsp-ER       QDSVRASLKNGVLSVVVPKEAAPTPKKIR                                                                                                                                                                  56
HvHsp21.9-ER   VERVTARLEDGVLTVTVPKIAEHQRREPRVINIAGEASNNGGK----GAGAGAEVTSSKSEMM                                                                                                                                206
OsHsp232-ER    LDSIAASLDNGVLTVRFRKLAPDQIKGPRVVGIASAGGDDGGKKSIGGAGEGQNQQAKKVEL                                                                                                                                215
OsHsp218-ER    VGRVAARLDDGVLTVTVPKVPGHRGREPRVVAIDG-----AGA----GDMEAEVVKASKAEM                                                                                                                                206
               .....*.*..***.*...*.........**..*........*.....*..........*.*..
               Consensus Region I
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j) P

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                                                                β2                                                                                β3       β4

HvHsp26.8-P    MAAATAPFALVSRLSPAARLPIR-AWRAARPAP--LWTGRTRPLSVASAAQENTD-SSVDVQVSQDRNAGNQQGNAVQRRPRRAAGFD-ISPFGLVDPMSPMRTMKQMLDTMDRLFDD-AVGFPTAGRSPAAAAGEMPRMPWDIMEDDKEVKMRFDMPGLSREEVK   160
OsHsp26.7-P    ---MAAPFALVSRVSPAARLPIRAAWRRARPTVGLPSSGRARQLAVASAAQENRDNTAVDVHVNQD--GGNQQGNAVQRRPRRSSALDGISPFGLVDPMSPMRTMRQMLDTMDRIFDDVALGFPATPRR-SLATGEV-RMPWDVMEDDKEVRMRFDMPGLSREEVK   159
               .....********.*********.*******.......**.*.*.********.*...***.*.**...**************......****************.************.*.***...*....*.**..*****.**********************

                β5      β6                        β7                  β8       β9          β10

HvHsp26.8-P    VMVEDDALVIRGEHKKEAGEGQGEAAGGGDGWWKERSVSSYDMRLALPDECDKSQVRAELKNGVLLVSVPKRETERKVIDVQVQ   244
OsHsp267-P     VMVEDDALVIRGEHKKEEGEG---AEGSGDGWWKERSVSSYDMRLALPDECDKSKVRAELKNGVLLVTVPKTEVERKVIDVQVQ   240
               ****************.***...*.*.*************************.************.***.*.**********
               Consensus Region II                          Consensus Region I
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