



SS01991 EEMIEKKEICEDLKEEEVCEKPNESMLSMWQRFNKNYYTGINLTIDPEEYWFSEKRRRY  
Hbut\_0714 SKDEQLAAELRSFFCKDDNGRNACEYRGKYVSEIVERYAYTKAGQKAKEILGLLEAIYDK  
IgNi\_0328 MSTLAALPELVKWLSESGGA-----VEIMDENGNNVGLPKDQLLESLTRSLKEY  
IgNi\_0463 TSTLAAAPELACWLEIKG-----KASAKGARGRELWVTLARALLEP  
. \*: : : . : .

SS01991 YFSLFR-----RHRITFPPYYALVRADSDYLGDLLEGKLTYPYLAGIID  
Hbut\_0714 LLGEFGEFPHMLIAGILASEQRCASHLAKSVAKIREKREERVGSEVQEKAREVCSLLAK  
IgNi\_0328 SSFDF-----YQNKYSRFSLEEVLEELQ-KNETVERLIRDDSKNLYIRVLV  
IgNi\_0463 P-----PGATRLNLEALPEELEEKGELVAGLEG-----FVIRITK  
. . : : . :

SS01991 SGDIANISE-KKEEVNKLLEEYLVNAGSGPIVDYVKTVLECIIRGNLNCSCAVKIYSNEV  
Hbut\_0714 LYSRADG---VAGRYYAIVRGDGDYFGSRIKGVDFKSSRDYVEEMLKAIRDEGARSR  
IgNi\_0328 RKDRDSSKLLSLNKYIAMVKADADNMGN-LKGGRLGYDAEAYFETIYRQAGPRRGVQEE  
IgNi\_0463 EDLRAIN---SMNKYLAVIKSTVDRLDD-LKGGRLPYGTEEYFR-----EAVKKGTSGE  
. : : . . : . . . . .

SS01991 AEFMFRANRLRKKLEKIDVEREVENSLEYFRITLKEGRIIVTPAWHVSISALNRGLLV  
Hbut\_0714 APVYSEIATLLVDLMEEMKPEPSSGCKKGGKALPK-PATLVTPTYMALSRGQMITALY  
IgNi\_0328 -KLYKLAGSLVRSVIERLHEIYPKEVY--GENSSSL-PTVLVTPTYLQLSYSLMTEALV  
IgNi\_0463 GKDLAELAIIDIIKIVVDFARGLAPQRAG--GGEAG---QTVLVTPTYLSQLSYSLMTQALV  
: : : : . : \* \* \* : : \* . \*

SS01991 ELEL INKHGKGFVIYAGGDDLLAMLV-----DEVLDFVKESRR-  
Hbut\_0714 DAEIVAMLGFPVYAGGDDVAALAPG---YISKGRLENLIKGYATRATHIKDSIRADTGF  
IgNi\_0328 DKEIVEKNYGLLVFAGGDDLLALVPARSVSRGSGRAEPLGGLEEFSLRELLIIVKEFYFS  
IgNi\_0463 DAKLIELNFGLPALASGGELVALVPARTRCGPKGLPEELG--KLLKDETLKRVKEDYYS  
: : : \* : \* . \* : : \* : \*

SS01991 ----AFAGVSTGRLGNMCLENG FARINN-AYYPSLPIVGRS YS VIIAHYADPLFFVINDS  
Hbut\_0714 VPALIALYTRKNYWGLLWAGRGFHRTPIGAVYPAPVAYGRSYGIYVHYRDPFMAAWRSA  
IgNi\_0328 PALWVWWLTRLNHWGLLRSPVGFRTYDN-FFAPALLAYGRSYGIAIRHYRDLAKVFEDA  
IgNi\_0463 PALWAWLTRLNHWGLLGEPKGFRRSEL-FFAPALLAYGRRYGIAIRHFKDPLAKVYEEA  
. . \* : \*\* : \* : \*\* \* : \* \* : \* : . . . :

SS01991 YNLL EEGKEMIRYRVMYNGEYKDAKKDVAIFRYQGLT-----SVIPLSLKRPVINSVSD  
Hbut\_0714 GDLEEYK-DVIAFTSPHGTTVSKDATFLAYGRVSSIAGVELGAVALPNMKPGAGKEKVTI  
IgNi\_0328 SELEES-----AKNVSKKKG VGSYGR LGARG-----VALSNLGVEDKGD LKE  
IgNi\_0463 EGGLEAP-----LRSTG---DWTGVSYGR LGAE G-----VASPNSLGASRKEEVAE  
\* . : : \* . . . . :

SS01991 FNEIASIIDLILELKKR-----IDEGHISVSLLYDYEEYKHLI-----  
Hbut\_0714 WGAAGRKPEEPEPVGWTLLALSLDLASKVEEDRVISRSLYSDFERECP LAMRIARKIVLT  
IgNi\_0328 PASLGP IIAKLSFHR-----RGLSNNFYD I VRELQKYFGHDAKHEWA  
IgNi\_0463 RG-LGPTTASLAF LNY-----KGLSNNYYDLISFVGKY-----A  
. . : \* . \*

SS01991 VASDEKYLTEFLVKDWIKRNSLRKH-VEFTIDEKLYGVRLTIENYPIKIPNDLISNIVYT  
Hbut\_0714 GSTDLQR IAESLLEM IRRNTPERHRRKIEYITKLLKEVAMVAPAPAKLLEALECGQLRV  
IgNi\_0328 AAKGLTTPIIILKYIISRNVADEEKYSQNLKKEVEEVLEFLKLTNEYIFDVL EFGFAWH  
IgNi\_0463 SAGGSSEALEALIEYVLKRN VVSGG--EGAAKEALGRLKRALGAGAEGLEHLL EFGFHH  
: . \* : : \*\* . : : : . \* .

SS01991 LRIIYGGEK-----  
Hbut\_0714 EEAEKRLNGFSKLACLAPLPWQIVLAAYTISSGRR  
IgNi\_0328 KAVR-----  
IgNi\_0463 KAAR-----