

## QUERY UniRef90 F7YU58 UniRef90-B7IF44 UniRef90 F2NLJO UniRef90-H5SRC6 UniRef90-H9UE68 UniRef90-B2KAT3 UniRef90-G7Z1N1 UniRef90-G9ZDM6

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HLIE YLMKHGHETPFEHTVFTFHVKAPIFVARQWFRHRTA RL: EHLLKNGHESPFEHIVFTFHIKCPDFVARQWMRHRIA ELI DYLMRHRHTSPFEMVEFKFHVKAPI FVVRQWFRHRTA ELI DYLMRHRHTSPFEMVEFTFHI KAPIGVARQWFRHRTA KLI NYLMKHRHETPFEHSVFQFHISCPLFVARQWFRHRVA ALI FYLMEHGHETPFEHIVFTFHVKAPLVARQWFRHR1 G KLIEYLLRSGHESPFEH\VFTFHIKCPIFVARQWMRHR\|A ALI KYLLENAHHSPFEHTNFQFNVRCPI YIARQWMRHRWG GL ALI RYGMRHAHTTPFEMCEVKFHVKLPVFVARQWIRHRTA KLIFYLMEHGHHSPFEHIIFKFHIKLPIFVMRQLVRHRDA GL: NYLMRHRHSTPFEMCEIKKHIKKLPMFVRQWIRHRTA ALI KYLMRHHHTTPFEMCEDKFHVKLPIFIARQWIRHRTA RLI DYLMKNGHQSPFEHIEFKHLKLPIFVMRQLVRHRDA GL: RYLMRHRHSTPFEMCEDKFHVKLPVFVARQWIRHRMA GLI RYLLSHWHTTPFEMCEDKFHIKLPDFVARQWIRHRTA GLI RYLLRNEHTSPFEQVVFTFHAKMPVFVARQWVRHRTA ELIDYLMRQGHTSPFEQVVMTFHLKMPLFVARQWLRHRTA GLIRYLMRHRHTTPFEMCADKDHVKLPGFIARQWIRHRMA KLIFYLMEHKHHSPFEHQVFTFHIKTPIFIARQWMRHRDG

 GLI RYLMRHDHTTPFEMVELKFHCKLPI FVAREWIRHRTA ELI DYLDRNKHTSPFEQVVLTFHTKLPDFIARQWIRHRTA


 ALL DYGLRHQHTSPFEQVVMTFHVKMPDFVARQWVRHRTG
 ALI DYYMRNEHMSPFEMVEFVFHLKVPI: FVARQUFRHRTA
 ELLDYLLRNEHTSPFEQVVETFHAKMPDFVARQWVRHRTA GLI RYLMRHRHTPFEMCEIKYHIKLPIFVARQWIRHRTA GLI NYL LRHWHTTPFEMAEIKLHVKLPIGVARQWIRHRMA GLI DYLLRHEHTSPFEQVVLTFHLKMPIVFARQWVRHRTA
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 ALI KYL MRHYHTTPFEMCEI KFHVKLPI FVARQWI RHRTA GLI DYL $\backslash R N D H T S P F E Q V I L T F H T K M P V F V A R Q W V R H R T A$
 CLI RYGMRHWHTSPFEGCEDKLHVKLPVFVARQWIRHRTA GLIAYGMRHWHSTPFEMCETKFHVKLPIFIARQWIRHRTA GLIRYLMRHSHSTPFEMAEAKGHVKLPDGFARQWVRHRTA GLI RYLMRHWHTTPFEMCEIKFHVKLPI FVARQWIRHRTA ALIGYLMRHAHTSPFEMCEIIKHVKLPIFVARQWVRHRTA
 SFL NKI MSLGHHSVLE HASFTFGUEGDSRVTHQLVRHRDA AL DYLLRHQHTSPFEQVVFTFHLKMPIVFARQWVRHRMA RLVRQLARMGHTSTFEHVTFTFAIEGVSRVTHQLVRHRDA GLI NYLMRHRHTPFEMCEDKGHVKLPIGVARQWIRHRTA GLISYLDRNEHTSPFEQVNFTFHVKMPIFVARQWVRHRTA ALIHYLMRHSHTTPFEMCEIKFHIKMPIFVARQWIRHRTA KFLNMLLS GHGS LEHASFTFSIEGSRASHQVRHR A RLLNKAKKLQHMSUFEHASFTFY:EGVSRVTHQLVVRHRDA SLLDKLVSMGHFSADEHASFTFGVEGSRACSHQLVRHR A KLVRFVIKSGHHSTTEHITYTFAI EGSRALTHQLVRHRIA KSIRTVKKRGHLSVDEHASFTFALDGCSRVTHQLVRHRLA D LI RYLMRHRHTTPFEMVEFKFLI R GPDFVARQFIRHRTA GLI HYLYRNLHTSPFEQVSDTFHAKMPIFVARQWVRHRTA KFLDMLVELGHESPGEHVSFTFGVEGVSRLTHQLVRHRDA GLINYLMRHRHTTPFEMCEDKDHVKLPDFVARQWIVHRMA



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A A F VVY S L L S Q H L S
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 S A FKE Y RME A V
S A F IDE Y C LIE S A
E S F R N H R L G G V N F EAFEDYRRGAVTFS AAFRCDRRFNAANS A K A GP T CVVTA GY CS EAFREYRLGAASLS EAFRDYMQEAAJLS EAF LDD R LLNSVIL S EAFEDYRLGAVSVS RAFRDYRMNAATI S A A FVEYHLES STIS A AFEEYRLLGAHSFS SSFENHMYK G VRRS $R Q A G P G C V N G P C$
NSFEN
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A AFEEYRLGGAHLS | E A F RE H T | L G GRKF S |  |
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| E A F L | K Y V | K C S A F S |

 K K T GP S C V N G S C $S D A G P P C D R G P C$ A AFREYRLGAFTFS $\begin{array}{lll}\text { R G A G P G C } \\ \text { E E A G P } & \text { N } & \text { L } \\ L & R & G P C \\ R & G P C\end{array}$ E E A G P C
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E A F E E F H L S A VP L S EAFRE HRLL G GVR R S K NAGPACLKGPC D A F E E Y L RGGTH $\square$ S K D A GAGCVRGAC
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 K L R Y LKHEHWSPFRMVEFKFHVKAPRSVVARQWFRARAA
 GLI R Y L M R H WHS T P FEEMCE DK Y H V K L P P
 R L L GL I RY L M R H WHN T P F E MVEFK F H I K M P M Y I A R Q H MR HRMA R L I E K I L K L G H F S V L E HVVS F S F G L E G S R A C S H Q L V R H R V A











 K L L E H L L K S G H M S PF E HVVA F T F AMMD G S R V C TH QL V R H R L A
 GLL R Y L L R H R H T T P F E M V E F K F L V R R L P A L L A A K







 | $K$ | $L$ | $R$ | $F$ | $V$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $S$ | $G H$ | $L$ | $S$ | $T$ |
| $K$ | $L$ | $G$ | $L$ | $L$ | $V$ |
| $S$ | $M$ | $G H$ | $E$ | $S$ | $P$ |
| $I$ | $E$ |  |  |  |  |



 | $K$ | $L$ | $V$ | $R$ | $L$ | $V$ | $E$ | $M$ | $G H$ |
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 \begin{tabular}{lllllllllllllll}
$H$ \& $V$ \& $S$ \& $F$ \& $T$ \& $F$ \& $G$ \& $E$ \& $G$ \& $S$ \& $R$ \& $S$ \& $L$ \& $H$ \& $Q$ <br>
$H$ \& $V$ \& $R$ \& $H$ \& $R$ \& $G$ <br>
$A$ \& $F$ \& $T$ \& $F$ \& $A$ \& $I$ \& $E$ \& $G$ <br>
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 HAS Y T F A $V$ E G S R A L T H Q L V R H R 

$H$ \& $V$ \& $S$ \& $F$ \& $T$ \& $F$ \& $G$ \& $I$ \& $E$ \& $G$ \& $V$ \& $S$ \& $R$ \& $V$ \& $T$ \& $H$ \& $Q$ \& $L$ \& $V$ <br>
$H$ \& $H$ \& $R$ \& $I$ \& $G$ <br>
$H$ \& $V$ \& $F$ \& $T$ \& $F$ \& $A$ \& $I$ \& $E$ \& $G$ \& $V$ \& $S$ \& $R$ \& $V$ \& $T$ \& $H$ \& $Q$ \& $L$ \& $V$ \& $R$
\end{tabular} Q F R M F



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KFI EMLMNYGHYSPVE


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U6R6F2 UniRef90－UPIO0037481EA UniRet90＿G9PU30 UniRef90－UPIO003B5307E UniRef90 A6TWK2 UniRef90＿UPIOOO379C910 UniRef90－D5X918 UniRef90－D3BLB0 UniRef90－R9M435
UniRef90＿C2BD23 UniRef90－B1HOH7 UniRef90－G4D3U1 UniRef9O－R6TBG7 UniRef90－A0A017RR35 UniRef90 UPIIOOO37615EA UniRet90－F9MV19 UniRef90－HOUR92 UniRef90 UPIOOO2893793 UniRef90 UPIOOO465343C
UniRef90＿V2Q7Y4

SVNEMSARYSIVDEEYYEPEVLRGQSAVNHQGSEGVVELD RLNEDSGRYSVMKDEFYLPDPGQVRRQSKTNKQGRVIETL NVNEYSTRYSVADDSAQTTDPGEWDGYLESSKGDHLTKRE SFSQQSQRYVKLDQFEYIVPPQUEKDEEAKKIFIQSMKKD
 NVNEQSQRYVTFRGDGF TPPDRWRTPGSVSATEKRRQVF NVNEYSTRYSIALDATQKTDPDKWEGFLSAEVGKDLSEKE SYSQQS QRYVKDLDFQY I IP PE DDKDNNTRS DF DEAMENS


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SYSQQSQRYVKEHNFEVIMPPSDAAKPEAKAEFE
SVNEYSARYSVVKDEHYKPEVLRGQSKVNHQGSEDRENAL


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SYSQRSQRYVKHKSGFEVVLP GS IIESNSEAKKDF




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UniRef90_M4QZK3 UniRef90_UPIOOO368D0E8 UniRef90-BoSHA1 UniRef90-C5VRFO UniRef90 UPIOOO37A6593 UniRef9O-UP100016C4D6A UniRet90_Q2GEN6 UniRef90-C6PZD2 UniRef90-F8E4M8 UniRef90-H6LD46 UniRef90-Q748A9 UniRef90 FoSHI1 UniRef90-17A7W6 UniRef90-WOJEPO UniRef90-Q890M6 UniRef90-A7XX47
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UniRef90 $\times 1 \mathrm{~K} 1 \mathrm{Y} 7$ UniRef90-X1K1Y7
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160 RREQES IYRNYEGMI GHDI ARELARDNLPLSLYTEWYWQI TEFQKFANDDYNERLEMGVAREQARKDLPLATYTEAYWKG

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HDDFDQVHHLYKDMLEAGVPAEDARFVLPNAAQTKLVMTM
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 Q

 K E DAQRNFSTY HN LL N A GI A RE LA R IGGLP LSTYYTQMYWQT

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QQVCR
MEMVRNSLEFYNRLI E
K F Q N R S F D L Y K D F L E N KII P A E D A R YV L S N A F P T QUI I TM
EAALEEMHRVYAELMEAGIPAEDARFVLPNAAETKLVMTM DTLMRQVQEIYDELLGLGVMHQEDARYVLANATETKVVVTM EETMDGUWDSYSKLIGMGIPAEDARYVLPNGCTTNITITM DENMKQQQK LY NKLYEEKEADEAARYLLPNATETKIVVTM QQVYDE LVKLLKELAAEKKAIEDARYVFPNACETKIIVTM
 MA QIQA WY DRWVEKLGSGRAYEDARFVLPNAAETKIVVTM EELMGTDQSTYNELVEGGVHKEDARYCLANAAETKMVVTM




 QEYYN QLTELYYKEHVDEKKA DEDARYVVPNACETKIVVTMM
 QE AEYQELLKVAPAEDARYVLPNACTTSLMATF KKAYQKLTE LLKKLIDRGMS DEDARYVEPNACETKIVFTM
 KEQIGSAQRAYDELVSLGIPKEDARFILPHGAETRIVVTM GRHYLNDA A A LQAKHAEKLANEDARFVLPNACETKMVVTM QGAYDRLAEHYQGFVDGGQADEDARFVLPNACETKDVVTM HETYMQLADNYQEMI AQGMAIEDARFVLPNACDTKMILTM DADMEQURVVYDELVELGVHKEDARYVLANAAETKVVATF NEAYKELADL LDQVEANYKTYSELLDKGVSREDARYVLP P QDYYDRTAALLKALAAAGVPIEDARFVLPNACDTKLVVTM QEAYDKLAEHYDVLINKGMAIEDARYVFPNACETKIVFTM DDF L K NTETLYKEFLDEGDPAEDARYI LPNASATKIVDTM KEAYKK TTEILNKSADEKASDEDARYVFPNACETKIVFTM EA QVA AL H A AYGALVVEAGVPA EDARYLLDPNATATKMI I TTM
 AAFHNAARELYQSRINEGMAREQARYVFPNCETKVFTM AAFHQAARELYQSRDNEGVAREQARKDLPLSTYTEAYWST
QRDYQALVDSLEKRADEKKADEDARYVFPNACETKVILT M QRAVQVAEEAYRQLCSMGVPREDARFLDPHGFSTRMVFTM
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DThnlmha ${ }^{170}$ RMDhaski 180
80
RDYATA TYELLVQPLVPHAM DLHNLFHFINLRSDEHAQYEIRQYAEAMAQCVRAVAPLAF DLHNLGHFLALRMDDHAQLE: RLEAKTVGELVQKWVPHTW

NTRSLYNFFEHRCCERAQWEI DLHNLFNFGRLRMDAHAQLED DLLNLFHFLKLRSHQGAQYE
NARSLVNFFKHRCCNRAQWE NARELLHFSLRCCERAQWE NTRELHFFNQRCCNRAQWEI DLHNLLNFLSLRMDSHAQLDEI DLHNLLRFISLRMDSHAQYEI NARELLHFFTLRTCKKAQKEI DLRNLLHFLKLRLDSHAQLE NVRSLLHFLELRCCNRAQWEI DLLNLMNFLFLRGDSHAQYEI NARELWHFFRLRCCDRAQWEI NARELLHFFSLRLCKRAQWEI NARSLLNFFSLRCCMRAQWEI NARELHHFFSLRCCRRAQWE NARSLYNFFRLRCCRRAQWEI NARELRHFFSLRCCQRAQWEI NLLNLFKFGSLRADPHAQYE NARSLMNFFHRCCDRAQWEI NARELLHFFGLRCCERAQWE NARELLHFFNHRCCNRAQWEI NARELHHFFSLRLCRRAQWE NARSLFNFFKHRCCNRAQWEI NARELDHFFNVRCCNRAQWEI NLHNLMHFDRLRADPHAQYEI
 NVRSLYNFFDHRCCERAQWE SLQAVAHFDRGRTDSHAQWE! NARELGFFSLRCCVRAQWE: NARELGHFFTLRCCERAQWE: NARELLHFALRCCRRAQWE NARSLLHFFEKRCCQRAQWEI NARSLLHFFEVRCCNRAQREI NARELMHFFGERCCNRAQWEI NVRSLHNFFNHRCCNRAQWE: RELADEMLKLCRGVAPALF NARELRHFFSLRCCQRAQWEIRALADEMLRLAKEVAPLLF DLNNLFHFIKKRLAERSSKEMRKYAKVLLDIVAEIVPI AT

 NARELWHFFNLRCCNRAQWEI REMAKQMLELVQKVSPAIF NGRELDFFTVRCCNRAQWE: REMADNMLKQVKKVAPVVF NARSLMNFTHRCCERAQWEI NARSLMNFFRHRCCNRAQWE NARELLLIFKLRCCNRAQWE: NARALFNFFALRCCNRAQWE NVRSLMNFFSLRCCNRAQWEI DLNNLEHFDKLRLDLDSPKEI NARSLLNFFEHRTCMRAOWE NVRTLIHFFDLRCCTRAQWE NARSLQNFFHLRCCSRAQWEI NARTLDHFFSLRCCMRAQWE NARELHHFFALRLCRRAQWEI NARSLNHFFRLRCCNRAQWE! NARSLGNFFHLRCCNRAQWEI NARSLQNFFALRCCNRAHWEI NARSLYNFFRHRCCERAQWEI
NARSGNFRURCCNSQKE NARSLLFFSHRCCNRAQWE NARALLHFFNLRSCNRAQWEI NARTLLNFFELRCCNRAQWE NARELLHFFAVRCCERAQWE NVRTLFNFFQHRCCNRAQWEI
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NARELHHFFSLRLCRRAQWEI
NARELLHFFSLRLCRRAQWE
RELATQMLKEVKTVAPLLF RKYAEVIEEVVGSWVPMAY RRMADGMLKQVKEVAPMLIF RELATQMLKECKKVAPLLF
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 RQYAEA LL RLE EPLDPTV
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RAMAK MLLLCRDAAPVIF
 RVYAEAMEKLIEPUVPVAV RELADEMLRQVREIAPIL F RAMAVEMLRLVKGVAPTIF RAVANEMLRCVSKVAPNLF
 RNLARLMLSEVRQVAPGiF RELATEMLREVRKVAPTLF RVLA EKMLDECLKVAPSTF RVYAEKMLAMMADWVPVTT
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 REAA DEMLKITKSKAP!IF REVARRMLALAREKAPMI F REMAYRMLNEVKK AAPTIF RALAVEMLRQVRGVAPGLF RNLANAMLREVQAVAPRLF REMADEMLRLCKEVSPVIF REMANEMLNQVKDIAPIIF RAMANEMLMEVKKVSPVLF R D L A F E M L R E V K S V A P I L F
 RELAWKMLELARPTAPF:F $R$ QLAE KMLAECKKAAPVLF
REYAKALILIVREIVPI SF RSMAVGMLKLAKQAAPTIF RQMAEKMLQLVQEVAPNLF RQLATEMLKQCKKISPLLF RALAEEMLRLVYPVAPHLF RALAREMLRAVREAAPVLF
 RDVATQMLKLVKPIAPTIF RELADKMVEQVKHAAPLLE RKLANLMLAEVRRVAPLLF REVADRMLALVSEVAPTLF RDMSDQMVKLVKEDYPNVF RDMACDMLNLVKKKAALLF
 KA VADEMLRLCK QAAPELF RQYASEMEETVKRWVPLAW REMAKQMLLEEVKKVYPEAF RLLAVRMLGLVRAAAPELF NARELLHFFALRLCNRQWERELSKMLALCYDTAPAVF

210
EAFMDFRIVNAMQL
EAFEEYVRHAAHF EAFVDYRLSALHL K NA GPDCVKGNC KNCGPKCVKGPC
 K Y S GP S CLD GVC KNSGPGCLSGPC
 RDAGPGCLTGGPC
EAFQDYRVNAMYL EAFMDY IYNGVKFS K NAGPSCIRGRC KYSGPSCVNGNC QTWKEIVLEGK KDAGPGCVKGPC A AF LDD Y RVGA A H LS SKAGPGCVGGAC

 KAFMDFRMNA LQLLS AQAGPGCLRGAC A LIA GPSC A DAGPGCLVGPC A A W
KNDGPKCVTGPC KNAGPSCVAGPC

 EKAGPTC DVA GP S CVK GK C KYAGPSCLNGPC ASFENHEKDGVQFS KYAGPNCVVDKC EAFRDYQLEAGRLS KHAGPGCVTEKC EKAGPPCLRGAC RNCGPKCVKGPC
KALL
EKAGPLCTRGVCF
ENAGPACVRGRC
NMAGPACVVSGKCK
EHAGPACFRGKC
EAFEEFQQGGDDFS A A GGPGCLVGAC
TKAGPACVVA
TKAGPACV
SDAGPACIRGPC N NAGPTCVEGRC
 $\begin{array}{lll}K & D A G P R C L N G A C \\ A D A G P E C L V G P C\end{array}$
 EDAGPSC
ENAGPTCMWGRC RGAGPACARGPC ETAGPNCLRGPC KNAGPSCYKGSC
 ENAGPPCVLGPC MDAGPSCVREGC KYCGPKCVWGEC

 AEAGPTCVTGVC

 VTAGPSCVEGAC

 KNAGASCCV SNAGAPDC
EAFIDDYFES AKAGPPCVRGGC

 AKAGPGCLAGPC
$K N A G P S C M K G K C$ KNAGPSCMKGKC
KNCGPGCDI
NS C EAFKDYRLNALRLS
 $E L A$
$K$
$K$
$K$
 EKAGPGCCNKGC



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| :---: | :---: |
| UniRef90_DSSME | SYSOQSORYVKLDOFEY VPPSTEEDERA |
| UniRef90-R8W4B4 | SYSUQSQRYVREKGFEYVVPPEIEKIPAA |
| UniRef90-E4KWl1 | SYSQQSQRYVKLDDSEYIIPPQIERNEEAKKVFIEAN |
| UniRef90-B8DOA5 | SYSQRSQRYVSEEDFDYUIPPSIQKNSE |
| UniRef90-R7RU82 | SYSQQSQRYVRLNQFEYIVPPSUEENEEALNLLTDEAMEKD |
|  |  |
| UniRef90- $\mathrm{H} 2 \mathrm{C912}$ | SYTQMSHRFAKPKDEFYQPVTPSWRD |
| UniRef90-C0GIM9 | SYSQKSQRYVTEDA |
| UniRef90-A8N | SYSQKSQRYVNEGGF |
|  | SYSQRSQRYVEEKGF |
| UniRef90-B5YKN7 | SYSQQSQRYVSEEK |
| UniRef90 D9X6S9 |  |
| UniRet90-C7MN | YNQQSQRYVKFKNGIETVKPATIEQUPE |
| UP10001C37 | SYSQKSQRYVNENGFEFUTPPEIDALPEAKEEFDRIMDED |
| UniRef90 M4PRP2 | NLNEYSGRYSEMVRLIFYTPELAQQMMCQGTVNESEPAQDQU |
| Ref90-UPI0003B35266 | SFSQKSQRYVKHGDGFQFVLPDTIL AEDNEDTGLY |
| UniRef90 UPIO0036A6839 | SYDQQSQRYVAAHG |
| UniRet90_C2CG49 | QRYVKLDQFEYI PPEDDKNEKARDUFDKQMEDS |
| UniRef90-UP1000361. | SFSQQSQRYVDGSNFDY LPPAFAKDPEAKARFEKFLEEV |
| UniRef90 TOM8 80 | SYSQQSQRYVKLINAFEYITPPAIENNEEAKKIFIDEAMR |
| UniRef90-A0A031LPP8 | SYTQMSHRFAKPVDEYYVTP |
|  | QQSQRYV |
| UniRef90-UP10004785DD9 | NVNEYSARYSILDKEFYLPAKENLAAQSKNNRQDDVLKIL |
| UniRet90-EONIQ6 | QSQRY RRLD |
| UniRef90 D3L2H8 | SYSQQSQRYVSMDEARYVPRETS DSVKVDARA |
| UniRe990 R6GSIO | SYSVQSQRYVKANEFEFVLPPEISETDEAKEEF LRAMK |
| UniRee90-R7 | YSQQSQRYVDGTSFEF |
| UniRef90-B8G1U4 | SYSQRSQRYVKEEGFDFVTPPTIRRNPQT |
| UniRef90- UPIO0036391 | SYAQQSQRYVDLGEASFVCPPA A H P R |
| UniRef90-R500K8 | SYSVQSQRYVSKANFDYILPPEIEKDPEAKAEFDAA |
| UniRef90-UPI00046F: | SFSVKSQRYVSERSEGG KTFNYIIPQGDKADGQPY |
| UniRet90_UPIOOO33 | N |
|  | KNEISGRYVEVGERVYVPRSFRRQAKSNRDDQQGAALVW |
|  | SVQSQRYVK GFSFVVPPKAVEQGKE |
| UniRef90-E6UAP | YSQKSQRYVNEDGFDFITPPEIEELPEAKEEFDRTMDMLL |
| UniRef90-E3GFK7 | SFSQKSQRYVTEGQFNY VPYEIANIPEAKEEYDRAMENA |
| UniRef90-B1C950 | YSQQSQRYVSETE |
| UniRet90_R6NAL5 |  |
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| UniRef90 W7 KP32 | S |
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| UniRef90-A5D5J6 | SYSVKSQRFVEEDGVFGYI IPPRIEALGR EYVEIDFKS |
| UniRet90_R4K9T2 | SFSVKSQRYVKADGVFNYIIPPRIJALGAGEVSEYARQMA |
| UP100047A | YSQKSQRYVREGQFEYVIPPEVKKIPAAQELYIHTMKEQ |
| UniRef90-R97970 | SYSQQSQRYVSMDHSQY |
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| UniRef90 UPIOOO46399E1 | SYNEESGRYRELLRPVFY |
| UniRef90_B9MLD1 UniRef90-R713Y9 |  |
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|  | QRWVREDQFDYVIPPEI QA ${ }^{\text {dea }}$ AKDI FEKAMQED |
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| UniRef90-E4RJD8 | SYSQRSQRYVKEDNFDYIIPPKDAKN EKAAKEY |
| UniRef90- R7FCH6 | SYSVQSQRYVRQDPFVYTTPPATAADPALLADYQNVMQQA |
| UniRef90-U2YS14 | SYNEESGRYRELRPVFYVPGRERNLNQGTDEQFAVVDEST |
| UniRef90- ${ }^{\text {S3Y }}$ | GRYRQMRPIFYVPGPERKLVQKGKEQHEIVTKAY |
| UniRef90-UPIIOOO3626B28 | ESGRYRELRPVFYVPGPERKFEDGTPEQHELVTRAT |
|  | SFSVQSQRYVKENMFEYVLPPEPESVPEAREEYURAMEED |
| UniRef90-UPIo003B6CAAB | SYNEESGRYRELRPVFYVPASDRDFLPGTAEQTALVEQQT |
| UniRef90-UPIO003765B42 | SYNEESGRYRELDPVFYVPGADRKLVQEGRQQHELVRSVL |
| E5Y6 | SYSQQSQRYVDGSDFDYL |
| UniRet90_W8U396 | SYSQQSQRYVRLEQFEY LPPADEAIPEAAEKFKEAMESD |
| UniRef90-A0LV | SYNEESGRYRQLRPVFYVPAPDRKLVQQTPEQYKIVVEAT |
| UniRef90- UPI0004785CE2 | GWNEASGRYVELQEEFYVPAT WRAQSSSNKQEQADAAAAY |
| UniRef90 E6W469 | SYSQQSQRYVRQGQFSY |
| UniRef90-R6VVE8 | QRYVNKSNFTYI IPPADEADEEARAEFLSAMEED |
| UniRef90-F4FZR9 |  |
| UniRef90-UPI00046794F |  |
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| UniRef90-A5FPL4 | RSQRYVKENQAEFDTPPEDTEGDSAK |
| H1XU01 |  |
| ef90_G9XAQ1 |  |
| XOYBC7 |  |
| UniRef90 M3AB65 |  |
| UPI000378E9 |  |
|  | T |
|  | TFQEFSQRYAETNLLGYEIPTPDLRSQDHKNRQNSVDDII |
| iRef90--D4LE | QSQRYVKKSNFVYITPPAIAEDAGTQAVFEEAMAAY |
| UniRef90 ковгг3 | YSQQSQRYVKLEQFQY\\|IIPPSIESNKEAREIFIKKAMED |

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180
R T F A K T \G E 190 IR P LIF P VA W
200
D L H NLL L GF L S L JRMDSHA QYE|I


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 N A R S L NARALENFFRKRCCNRAQWEI RDLA DEMMKVVVDVAPNVF NARSLLNFFEHRTCQRAQWEI

 NARELYHFFELLRCCNRAQWEI NVRSLFNFFRHRCCNRAQWEI RAVANEMLRLDCEAA PH I F
 NCRELLHFFSVRCCERAQWEI NARSSLLHFFNLRCCLRAQWEI









 RNLAKEMLKLVLQVAPNIF



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 NARSLLNFFSLRCCNRAQWE NARELYNFFALLRTCSRAQWE I
 NARELLHFRALLRCCNRA QWE I NARALFNFFHHRCCNRAQWE NARSLLNFFAHRCCKRAQWEI
 NAREELYNFFA L R L C S R A Q WE NARALMNF LSSLRTSSYPQRE
 NARSLNNFFRHRCCQRAQWE
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 NARSLLMNFTLRCCNRAQWE NARE L Y N F F G L L R L C S R A Q WE


 | $R$ | $A$ | $C$ | $A$ | $\square$ | $A$ | $M$ | $L$ | $V$ | $E$ | $C$ | $R$ | $K$ | $V$ | $A$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $L$ | $L$ | $F$ |  |  |  |  |  |  |  |  |  |  |  |  |
| $R$ | $G$ | $L$ | $A$ | $T$ | $E$ | $M$ | $L$ | $K$ | $L$ | $V$ | $K$ | $E$ | $V$ | $C$ | $P$ |
| $V$ | $I$ | $F$ |  |  |  |  |  |  |  |  |  |  |  |  |  | $R D V A E Q M L K Q C L E V A P B L F$ R QMA Y L M L A E V K K V A P L L F

 R A V A D E M L R R V L L P L A P Hi F
 R A L A T E ML R L V R R V A P EL F

 REVA D Q ML S LV CRVAP T L F | $R$ | $E$ | $V$ | $A$ | $E$ | $E$ | $M$ | $L$ | $R$ | $L$ | $V$ | $R$ | $D$ | $V$ | $S$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $Y$ | $I$ | $F$ |  |  |  |  |  |  |  |  |  |  |  |  |
| $R$ | $E$ | $M$ | $S$ | $D$ | $Q$ | $M$ | $L$ | $K$ | $L$ | $V$ | $K$ | $D$ | $I$ | $Y$ | $P$ | $R$ LVA WR ML E EVVKRV H P RLLF E MVAEKMEKHFAQLMPMTY R A V A D K ILLE L VK NVA P N I F


 $R$ RLA E EML RLVR QVAP TLF K E M A Y L M L E EVVK K V S P HI F R S LLA N Q M L K Q V K E I S S P VL F R A V A WQ ML L E E V R R V H P R L F

 E MCA EKMET F WR E L M P L T H \begin{tabular}{ll|lllllllllllll}
$E$ \& $M$ \& V \& $E$ \& $K$ \& $D$ \& $E$ \& $E$ \& $F$ \& $F$ \& $T$ \& $E$ \& $A$ \& $M$ \& $P$ <br>
$L$ \& $T$ \& $Y$ <br>
$E$ \& $M$ \& V \& I \& $V$ \& $M$ \& $E$ \& $A$ \& $R$ \& $W$ \& $A$ \& $E$ \& $L$ \& $M$ \& $P$ <br>
$L$ \& $T$ \& $H$

 $R D V A D Q M Y R L V Y A A A P K L F$ R A I A WK MLDD EVVK R V H P R L F EMCAEQMEKHFAELMP LTY 

$E$ \& $M$ \& $V$ \& $G$ \& $E$ \& $K$ \& $M$ \& $E$ \& $E$ \& $E$ \& $W$ \& $A$ \& $K$ \& $L$ \& $M$ <br>
$R$ \& $H$ \& $L$ \& $T$ \& $Y$ <br>
$R$ \& $A$ \& $D$ \& $E$ \& $M$ \& $L$ \& $A$ \& $L$ \& $C$ \& $R$ \& $G$ \& $V$ \& $L$ \& $P$ \& $E$ <br>
$V$ \& $F$
\end{tabular}









 NARELLHACS LRLCLRAQWEIVVELFELI KAEVERVAPRLG NGRSLLNFLSLRRVTAPLWEI DRAAGQVEELAQQVTPEAF NAR S L M S F L S L R T DPR A QRE I E M V G E QM E G L WA GLLMP LT H N A R S L R N F FS L R C C E R A Q WE I R A V A WE ML G L C L Q A A P H L F


210
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UniRef90-E3SJP7
UniRef90-F5L7J8
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UniRef90_G8RKX4

1
KПOWD ${ }^{10} 20$
GFVRLVDHLGNDLSJVRAARVSYDAAWRAGE EDRFRSDRVELLSYTPEPLSVIYASRQCYEDPKEKQA E DRFRSDVTVQLVKAAQDGDVVFAARVSTEDATARDK TVTTLI SHTPQPEQUIAAAKKLCYGLDAEQAE RVVLLAHTEGPEAAALAGRRCYS SLDNNDLD
$\qquad$ MDR RPKAKLINYSENPEKVALIAAKLCYSMSQEDMN

## MEI

## $M \mathrm{E} \mid$

 DKGYMDNGRVKLV

## ME


MF RGEVLDKG
MEDKF NSGQVSLI
EVTFRNDGTVKLVKUTPNAEKIAYCARVSSKQENPNIDE 1 RVLDQGFIQLVDYMPSDSDVAMAARVSTGSHEEKDE URFRSDVTVELIKHSAADQDVLWAARVSTEKDASRSK EFAGRACY VCLVSVTPDEKTПGYDARVSNPNNOENPA VVLLTHTPEPEKLDAAAKLCYGLEPDTVK
MDPVF LSEDT VKLI NYTPNPDKTVAAABLCYNMSQEDVD NTTLTLINFTPNPELTVADARQSRNLGEEDUI RVDPLSGFDFDL QEVGSDQTCQAARVSTKFGTDESA MAEDKVELVDSMGDDLRVANAARVSFNKWKEEDV RFRSDMTVELVKASAADSDVLWAARVSTGADPARSG VKLLNYTPEPERAVAAARLCYKLSDDKVK DEVLDKGYVRLVNHMGSDLSVVNAARVSYAKENDKDA NKDRVTLVNYTKKPETVTWAALISYWEGWEDVE RVELLAHTPEPLSLDYAARQCYHSGREKQA VSFRSEVTVELVKHSAADSDVLWAARVSTHKDPERSK DRSDMRVTLLAHTPEALSLIYAARQCYEGAREKQA PRTEPRVELLAHTPEPLSLLYAARQCYEIEREKQG

 VEFSDVTVELVRSSASDSDVLFAARVSTMGEQTRDR VKLVNYSPKPETVTWAALISYWTTMEDVE
 RVTLVNYTKRPETAGRACYQSWDKPNPRNA RVELLSMTPNADEGGYACYETWDKPNPRNR FRSDMTVELVKHSAADTDVLWAARVSTKKDPERSA

EDDPDNDGKSRLLSHMGSDLDVVNDARASFDKLDEKDD HDDUAFRSDMTVELVRSSAHDSDVIFAARVSEEKRVKRDR PLLSHGFVVLVDYMGDDAAVVQAARVSYGAGTRDDR TKVCLVSVTPDEKTIGYVARVSNPANQENEK

SVKVTVTPDAEK GYVARVSNPKNNPNVA $K \square D V L D K G Y V R L V D V M G D D L R V V A A R V S Y A K E S K K D I$ VEALDRES EFAGRACYESWDKPNPRTA SVKLVWVTPDAENLISMARVSNPSNQGNYD पKVQLIASTTFEVVDWSTDAEFAGRACYESWDKPNPRNA VNLIEHMGSDLTVVNAARVSFAKESEKDE पDPLGDGRपELIGSMGSDERCGRVCYKSEDKITESAEV DHMGDDNSVVNAARVSFAKDPEQNK
K $\square R$ VEFMAMTPDALSLIYAARQCYEDDPQVQA MTFDPLKDGRIELVSSMGTDLDVVNDARASFEKSTDKDT LK VDVLDKGYVRLEADTGNDLSAVNSARVSYDKFTEKDK

KPGELVAHTPDPAWVIDAASVCYDSTPTREC
MNVT KPSVE


【HVLDQGFПRLIDFMPGDLAVVAAARVSGKGVEQDH


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| :---: | :---: |
| 52A9 |  |
| UniRef90_A0A022KWL7 | SYNEESGRYREMRPVFYVPSRERVFEPGTADQHELVEESV |
| UniRef90-14D164 | SYSQRSQRYVKENGFDYV ${ }^{\text {S }}$ P P S VQRKPEAMERFE |
| UniRef90-R5VJZ6 | SFSVQSQRYVRKNQFTYVTPPAIAADEAAAADYHQT |
| UniRef90-B1IOT2 | S F SVQ S Q Y K NPD GVFP DYVIPPRIA ALGNGAREEFA |
| UniRef90-W010M3 | S Y TQQS HR |
| UniRef90-E3DPY9 |  |
| UniRef90-V9GDI3 | A WNEASRRYI TIDVENYI PNPKDWRSKPENSKQHEA |
| UniRef90-IOR2Y9 | S Y NEESGRYRELQPVFYVPGPERKFEDGTDEQTALVV |
| UniRef90-Q5JI17 | S Y T Q S QRYIVLNPEDVEETFVIPSGIK EDPELLAEW |
| UniRef90-I3IPQ5 | SYSQQSQRYVKEKGGFHFIVPPS |
| UniRef90-UPI0003B58717 | S Y S QRSQRYVSHDTFDY IVPPSLKGKAVETDDGEMDAEVY |
| UniRef90-UPI00037F227D |  |
| UniRef90-R8D7U2 | A WNESSRRYVTEEPTFYI PNENEWRKAPENSKQGIFTDEL |
| UniRef90-C1IC19 | SFNEESARYREVGAAFYVPDATRLLRQESTDDHQQVVRSA |
| UniRef90-UPI000466A970 | S Y S Q S L R Y VNMKNNFNY IMPTEINM DVDLTHLY |
| UniRef90-A3ILJ9 | CFQQFSKRYQEV |
| UniRef90_R4T8K8 | SYNEESGRYKTLKPSFYVPGKERKPGAYTFEP |
| UniRef90-Q7N162 | EMNFQSGRYTPYENEFYLPEKLRAQDKVNKQEERA |
| UniRef90_UPI00036806FB | S Y NEES GRYRELQP VFYVVPAED |
| UniRef90-F6EJS0 |  |
| UniRef90-13ULL3 | T F QEFS QRYADSSPELRRQDTKNRQNS ${ }_{\text {L }}$ D DVDPFTVQKL |
| UniRef90-C9KJB1 |  |
| UniRef90-UPI0003747674 | SFSQQSQRYVDMKNAEYVVPESIAADPE LDEKRF |
| UniRef90-UPI0003728A41 |  |
| UniRef90-Q83MS7 | S Y NEES GRYKNLDP VFFYIPDEKRKFEEGTSEQYGLLIEEM |
| UniRef90_10GHU0 | SFTQQSQRYVKYENPVFIFPPSVKNNLE A A EVVF |
| UniRef90-D4P7K1 | S Y NEQSGRYMELLLPVFYIPPAHRPFVDGTDEQHETT |
| UniRef90-K1ZIG2 | S Y NElIS YRYVKAPVEFYIPTAWRFQDTQ |
| UniRef90_UPIO00155 | S WNEVSRRYVDAG EFFVPDNWRSRPDGVVEDNDMFKSUY |
| UniRef90-C7QFA6 | S Y NEESGRYRKLLEPVFYVPGPDRKLVQE TEEQHKTA |
| UniRef90-I0GNZ1 | SYDQQSQRYVAAHGFQYI TPPSDAEKPEAMAKYE |
| UniRef90-T2GG36 | S Y S Q S QRYVDET DFDYLVPPA IARNPAA |
| UniRef90-UPI000379A319 | S WNESSRRYI TEEPTFYI PGSDQWR |
| UniRef90-F8AIM6 | S Y T QRSQRYI VEDGVDFV \PESVGRAEREKLGKKV |
| UniRef90-UPI000299DA70 | SYTQQSQRYI KLDDLNDV EETFVIPESVREKPELYQKW |
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| UniRef90-X0V281 | SFSQKS QRYVTEDGGFDLVMPDS $\square$ R D S A |
| UniRef90-J2K5B0 | S Y NEESGRYRQLEPVFYVPGESRRPGKYEFVEGTQAQHDL |
| UniRef90-E1K1W3 | S Y S Q S Q |
| UniRef90-D9VXP8 | S Y NEESARYRELLKPDFYLPPGHYRFEPGTPEQFATVDAEL |
| UniRef90-Q729U4 | SFSQQSQRYVDGSHFDYVMPPADARNAAAKARFEQFMEDV1 |
| UniRef90-Q1PYK6 | S Y S Q S QRYVKYSKKTVGFDFVIPPPMDEKAGKKQWFDEKM |
| UniRef90-B7R573 | S Y TQQSQRYIKLINPEDV EDTFVIPESVRERPELYKKW |
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| UniRef90-M1Z6C5 |  |
| UniRef90-IOA1T8 | S Y S QLS QRYKRIKEENYYVIPKS L L K K G K |
| UniRef90-R4TN68 | S Y NEESGRYKQLDPTFYVPSPDRKPGAYTFEPGTNFQKVF |
| UniRef90-D3TCP9 | S Y TQQSQRYVNLKAPKFIV PEADYGSEFEDEF |
| UniRef90-B9ECC2 | SWNESSRRYITEEPTFYI PSSKEWRSKPTLEIGGDKYTRD |
| UniRef90-W0ZAZ4 | S Y NEES GRYRELLRPVFYVPAADRRL |
| UniRef90-A0QIT4 | S Y S QLS QRYVPENDSRVVVPPQQDLAAAADASR |
| UniRef90-H3ZP17 | SYTQQSQRYI K LTNPQDV EETFVTPED\KENPEDYEKW |
| UniRef90-J1H8V4 |  |
| UniRef90-M4QDS5 |  |
| UniRef90-A0A022LQA5 |  |
| UniRef90-Q8U3C9 | SYTQQSQRYI VLDEENV EETFVIPESIKKDRELYEKW |
| UniRef90-E2MU23 | SFS QLS QRFVPASSNNVVVPPAIGEDPDLLRVFESAVELL |
| UniRef90-UPI0003B5F7DC | S Y SQQS QRYVAENDLDYILPPAIAARIPEARERFEAFMAEVV |
| UniRef90-S3BIH0 | S Y NEESGRYRQLQPVFYVPDTSRKLVQQGRPGKYEFVEAM |
| UniRef90-W4C219 | S WNESSRRYDTEEPVFYQPAAGEWRD |
| UniRef90-H2BCW1 | GWNEKSFRYCPADHEEFYFPKEFRDGPLDQGSARVAEDKY |
| UniRef90-H6MYY1 | S Y SQLS QRFVPEHDSNVVAPPERDFIEATDASRAAYTELL |
| UniRef90-UPI00035C5 | SWNEKSFRYVADEDDFYIPQSFRQQSKSNRQANEKALA |
| UniRef90-A5CSM9 | S Y E ES GRYKEL DADFYVPGPEREFHAGTPEQTALVQEET |
| UniRef90-T1A9E2 | SVNEYSARYSVVPDEYELPAPGEVHRQSARNRQESFRADV |
| UniRef90-H6E | TFQEFSQRYADSSPELDRRQDTTNRQKSIDDLDPQKYEDWM |
| UniRef90-H8H031 | SKNEDS GRYVEMQERNFMPPAFRRQAPSNRQDQAAATHIW |
| UniRef90-E3SJP7 | T Y Q F S QRYADSSMDAETDP LPEDRRQDTKNRQNS $\square$ D DLM |
| UniRef90 | A WNEASRRYITMEPEWYIPDENAWRSKPDHSKQGEA |
| UniRef90-U2K4B9 | SFSVQSQRYVRQDHFVFVTPPAIVAEPELLREYENAMQQS |
| UniRef90-UPI00037EC32F | SFSQLS QRFVPEHDSNVVVPPAI AGDAELETKFRAATE |
| UniRef90-H61 | SFQEFSQRYADVGALT DI EVPENRQNSTDDLP FEVKAE |
| UniRef90-L7LCB7 | S Y S QLS QRFVPEHD GNVVVPPA $\mathrm{D}^{\text {PRGDAETDASRQAYAELL }}$ |
| UniRef90-D5BQR5 | S WNEVSRRYVDSDPEFYNPTVWRGRPQGEDDDQNTAK |
| UniRef90-R7KVA6 | SYSQESTRYCNYSKDKFGNELTF\RPCFWDDDSEE YAVW |
| UniRef90-UPI000347F6CA |  |
| UniRef90-F1WCA3 | AMNTVSRRYVSEAPDYYLP |
| UniRef90-UPI0001FFF3EA | S Y SQLS QRYVPERDAAMVEPDVIA DDPELHELTGQASADA |
| UniRef90-M1WYU5 |  |
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| UniRef90-J9ABR1 | S WNESSRRYI TEKPEFYVVQPSEWRSVPENSKQELA |
| UniRef90-M119L5 | A WNEGSRRYVNDDVEFYLPKPDEWREPLYRNVGERLS |
| UniRef90 G9RRS6 | SYSQRSQRYCDEDGFGYVTPPSTE L L S |
| UniRef90-R7C578 | SYSQESTRYCNYSGDKFITVIDIAGGFSYDLNNEQKYEAW |
| UniRef90-C7F4H2 | SFQEFSQRYSSVAEDPEI EMPELRKQDPKKMEEKVEQA |
| UniRef90-A3PYB1 | S Y S QLS QRYVPENDSQVVVPPTAAADASRAAYAEL |
| UniRef90-G8LUD8 | SYAQESTRYCNYSKDKFSNQDTYDEPCFTTPEGKEKYEI W |
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 QDHEKHSMDLYHQMLDAGTAKECARFVLPDATPTKLYMTG RDA VDAKNAYNGLQRLGVKNEDARAVLPNACCTRMVFTM RALLMDKDWEEYRALLSEKVPVEDARYVLPNACTTNMTVTM KMYDELTDKLVKKGYNEKEALEAARYVLPNATETKGVVTM EKTLKTMEESYKKLLSLKI PEEDARFILPNATETK DVATA RIDAYTWAWDSYRNMLNRGIAKEVARICCDVATYSSAYVTC SEYUKHSLLATYENLLACNVAPEQARMVLPQSMMVDWDWTG RRSCEASYAAY LEMLDAGIAREVARSVLPVGDYSSMYATC RKTYDELT EMGVPKEDARYVLA ASAYQELKALLEAAGRGAKAKEDARFVLPQAAESKIVVTM LEYMEEGVQKYEAAGENGVCAEQARLFLPYGMYVRWYWTA KDFMKNADELYEETCRAGIHQEDARFILPQAlIRTKIVVTM GAAYRDIKALLEADGRAGKSNEDARFVLPQAAETRIVLTM KGLMAKVTDVYELLIKDGVPAEDARFVLPNACETKLVVTM

EDSYRQAYEAYQEMLIAGVAREVARAVLPVGLISSSMYATC | ED |
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| G |
| L | LRAYETAYQSYERMLIAAGVAREDARAALCVVGIYSSMYVTM GSAYRDIVALLEQDGRTGRANEDARFVLPQAAASKMVVTM NCIQEWYDELVEALGDSGESFEDARFLLPNAAETKIIVTM RAQSEAAYASYQRMDDAGVAREVARTVLPQANYYSMYVTV SDAYEQAYRSYEVMLEDGI AREVARMVLPVGLIFSFYATC MEY DDGGERLYNEAMEDGVCAEQARLFLPYGMYVRWYWTA EHTYATVYDEYEALLLHGDAKEVARSILPVGUYTSFYATC MAYVDEGIDAKYESALEDGICPEQARLFLPYGMYVRWYWTA REASVHAFEAYQRMLDAGVAREVARIVLPDNDYSSMYVTM ARLEAKFADQPSAVLRRKQARQAARAVLPNATETR VVTG KKLMREADELYEETYAKGIDHQEDARFILPQAVRTKIVVTM RKVIDDAFA LYEDMLSRGDAKECARMILPDCTPTRDYMSG REAYERFADVPNPMLRHKQARQAARSVLPNATETRIVVTG

 DALEEKWADEPNAILRRKQARQAARAVLPNATETRUVVTGG EDAYRKAYATYLEMLEAGVAREVARAVLPVGLYSSMYATC QEYTELGLSKYEASLADGICAEQARLFLPYGLFVRWYWTA AEADQTIREAYATLLAVGVSKEQARGILPTCHYSSFVWTC AALEAKFADVPNAILRRKQARQAARSVLPNATETK\|VVTG QAQCEASYKAYKDLLELGVGREQARGVLVPSVYTSWVWTA
 DRDSQEAYQAYQRALSQGVARETARMLLPVSFYTQWYWKV EEAWRAAYGAYQALLTLGVTREQARGVLPQSLYTESYYTF QHHFKEAMSLYQDMLDSG\|AKECARFVLPGAVPTKDYMTG TDSYNRLADAGAAKYAEKKADEDARYVLPNGMYTKMYWTA TALLEDKFADVPNALLRRKQARQAARSVLPNATETRVVVTG DEADEQSKKLYNKMLDKGVAKESARFFLPDATPSRLYMTG ARLEDKFADVPNATLRRKQARQAARSVLPNATETRIVVTG EQTNLLAFKNYKSLI DAGVAPEMARVILPQTMMTEWFWSG KQAMEEDEKTYVKLI SGGAKPEEARSLEPNSHKTEVVCTM SYYMQASDDLYKQL:DEGVTPEQARFVLPQGVMTEWVWSG LSAYQKLLEGLEKTLRRKQARQAARSVLPNATETKVVVTG ERQCQASYATYRELLNLGVSREQARGVLDPSVYTSWVWTV TRMHDQGLKRYEWAMEQGICAEQARLFLPYGLYVRWYWSA DEHQLEGLELYEDALKMGVCTEQARLFLPYGLYVRYWWTG MRAMENAEKSYFELIELGATPQEARSVLPNSLKTEIVVTM GDEFVFAKDLYEDLLEAGAARETARDVLPLATPTRLYMSG AKLMGDEPREGRATLRRKQARQAARSVLPNATETR VVTG KSVMEFTEQKYMELLRAGATPQEARTILPNSLKTELVMTM QAHYEAGFSDYKKMLDKGVAKEMARLALPWALYYTAYVKM
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R V F A E A I L K L L I R P MV P V C|V

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 $N L R E L K H R E L A D R M L D L K P T A P T I F$ N A R S $S L Q S V C H F L N Q R L A H D S Q V E$ I
 $N$ ARELLHF F QV R CCCNRAQWE NAREL FHFFSERLCNRAQWE I
 SLQ S VV HF L NQRLA H DA QV E

 NA HALLMHYLLAKRTEPDAQQYEVEMVADEME EVFADAMPLTVW

 NLRNWIHYY I L R S A H G T Q Y E HM QI A E L C K K HF I C Q F P T I A


 $N L H A L M H F L K L R L G A G A Q K E \| R$
SLTA FF HVWRLDRDDSHAQKEAQEFAQKDEEVVQPDFPHSW NARALMHFLSSLRTKHEPQREDEMVAEKMEAYFAELMMLTY NAARS L M H F F F N L R C C N R R A Q W
 NL R E L K H F F G L R L L E R A Q WE I R E V A WK ML E E I I E E L R P I I I W $N L R E L K H F L G L R A C E R A Q W E I$ REVVAWKMLEEIAAKVDPII W NCRS LL L F F EHRCCMRA Q WE I R A MA DAMLD LARGV LPEL F
 NCRSLLHFFEL RCCMRAQWEI RAMAGRMLDLCKEALDPVV




 NAREL R HF I SLLRCDPSAQWEI RAMAKEMLKLAYEKAPALD S L Q S V CHF L NQRELEHDA QKEI Q DYAK A IL E L S K P L Y P NA N A R A L M N F L S L R T K R E P Q RE I E M V A E K M E H I WT D L M P F T H

 S L R S WMHY IE LRS GHGT QQEHMDI A NECKQU|FVEQFPII S

 NCRALR HFFHLRCCNRAQWEI RAMADAMLADCKDKDPADF NARSLMHFLGLRTRHEPQREI SVQ S V A H F L N Q R L E H D A Q K E I $\begin{array}{ll}S \\ L & Q A L L H F F S Q R R P G D A Q W E \\ M & L\end{array}$
 NARA L M N F L S L R R K H EP QRE

## E Q $R$ $R$ $R$ $H$

NLH NLFHFLSLRLD
SVRSWMHYIDLRCAHGTQKEHQDVAELCKQHFDCQFPTDS

 SLLQSVAHMLN QRLLAHDAQAEFQAYARAVYELVKPYEEHSLL

 S L H A F G R I C K Q R LD P H T Q E E T Q II A N GI N E H CE R L A P V S W

 SLMA WAREYN QRIDDH H A QKE I Q E L L A K QV D K I I E P L L F P V A W

 S L Q S I CHEFL A Q RLLEKD S QK E I Q E Y A K A V L I I A R E L F P TA V NLRSLIDNFMRERLCNRAQWEIREAAKEMRKLVVDVMPQAD $N$ L R S WRNF F R L R CDS HA H P Q M R E V A N I A L D L F K K RLP I F F




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A A WE E
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D QLL
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ADFEIYY PL
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${ }^{10}$ - 20

DMSVEYVDHMGSDVNVVVNA A RVSFAK DVEK DK



 $M D V K L L E A T P E D L D T S V G S Q S F E A T M A E V D G D S D E E K K E$ $M K V T L V S K T L P L V A E S L L T P E E F V V V Y T A R V S N P T N Q M N T E$ $P K V R D I A M D P D D E F A G R A C Y Q S W S K P N P R T A$
 MTNQKVE LVVSVTPDEKTMGYVARVNNPSNQDNPK DHMGDDSVVNAARVSFDK TSEWDQ
MK VT I L E D P S WA GT D Y VG D D $E T V G R N$


$E \square E \square L$
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TLR NLGYETRWDSSASDEFAGERACYESFDKPNPRNE T S VNLVVVTPE E QTMGYVARVSNPANQENPK PRVVNLEFVVTPNAERMGYVARVSNPQNQENPA K P S I E I DD IVK K $\square \mathrm{V}$ $\square S L I S V T$ P DEELI A Y L

ELVRS QASDA
$K$ P S VK LF N Y IG DA P
KPSVKLF
SVS V Y O A PRI A SAEIVEKMNK DK TI I ELI

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$\square$ M H M A E P


LD $\square$ QF T DEIVVEVLDSNFSDSFRARACYETWDKNPTA MDLGFIK DS S A D | $L V$ | $A$ | $H$ | $P$ | $D$ | $T$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $F$ | $V$ | $S$ | $T$ | $P$ | $D$ | $R V C D A A R T S T G A D D S E R Y$

S RI $\square$ A SAS S $\quad$ T G D M D Y VK T E
EFAGRACYETA DKPNVRTA
LVH $\square$ TP DAE D $\square$ A Y MARVSNP HNTETS A
$T L R N L G Y E T R W D S S A S D E L A E F A G R N C Y R S A T R E N K$ VK F VS $\square$ T P D A EKMA Y $\square$ AR V V NP S N NENYS EF AGRACYETFNKPNPRNA

MRVRLLEATPEELIDWVGDESFDEAMAGVEGDTIDE QTA N D S P V K L I A T TK S P Q E V $\quad$ Y VA R V S N P S N Q D K F A $K \square S I V S K P V I E G V N T \quad A E Q L I A Y A A R V S N P D N N K T A A$


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SHTARSTRYHDERNFGYVDPPPDRNDPELVEMFKQAMESA
AWNESSRRYVTEEPAFYI PQADEWNGYADVNAGSHYTNAL

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 N YRAWRHFVEMRATEHADVEI RHVAIECLRQLQVAAPNVF

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 S V R S W I H Y L
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Q|V K F $\|$ T A T P D A E K $\| \overline{\mathrm{V}} \mathrm{Y} \square \mathrm{A}$ R V V S N P Q D N P S VA EFARA C Y Q S W S K P N P T N E
Q N V R GA R L C Y S S T P E S A E 1 IQ K P A V EVVLST E S Y E ER IGGRVCYK S E D R DE E S A E H P Y V E L G Y Y A DELLA A GRNCYRSFNRPNPENE
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 T P K THE EFAGRACYDSFDKPNPRNE

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 EFAGRNCYQSFGRPNPKNA LVDHMGSDLTTVNAARASYGAESHEME ELLAAR T CYYK S E D K S P P D S A R
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 VR L L E A T D D P ERVITTA A R N DYSAPE EKKR

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 IA EK M D ENK DE
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| UniRef90-A0A011UAM3 | FAQRSQRFCSEDGFDFVTPPETADYPEAKEE |
|  | SFSQLSQRFVHTDDAQVVVPPAIAKDEEA |
| UniRef90-B0FIM6 | SWNEMSRRYKDGAVEVFIPKEDFARPSD |
| UniRef90-G1B | VLSQRYVDPVP FGVQ |
| UniRef90-F2YON9 | QEFSQRYAISNL |
| UniRef90 J3EVW0 | SFDVQSMRYVSFDDEMVVTPPSASDPNWDEETINAKR |
| UniRef90_C8XJE8 UniRef90-D1CDE5 | SFSQLSQRYLPASGPEVVEPDADAADPELIALLFQAAVDLLC |
| UniRef90-U7KQ26 | SFSQLSQRFVHPDETEVVLPKLVAEDMQAVDETRFV |
| UniRef90-G18 |  |
| UniRef90-UPIOO | CFQQLSRRYAGEEQAPVEPHPKDRQASLDTL |
| UniRef90 UPIOOO3 | FSQLSQRFVPTETNEVVVPPLDAQDEEADESRFVYEELLL |
| UniRef90-W5XSB8 | FSQLSQRFVHPEDAEVVVPKSTADDEQVDDTRFVYEELL |
| UniRef90-UP10003B37A12 | YSQQSQRYVSMKKFPYVKPESLEDKY VETEMGRFSF |
| UniRef90-G1D1 | FSVVSQRYVDPT ELGVHVPPAlQECMGElPG |
| UniRef90-B2 | N |
| UniRef90 X 5 D | SQLSQRYVPPEQSE |
| UniRe90-D902887 |  |
| UniRet9o-GOYPZ1 |  |
| UniRef90-B6CXI1 | KFNVQSQRYDVSGEFFEFVKPKLGYSTLKENEQKAYELV |
| UniRef90-M1 HU60 | QEFSQRYAAVADAPVIVEARTQDHKNRQNSFEWWEQEQ |
| UniRef90-U00 | QRYVDVGK |
|  | RRYKDGEPDVVFGRPEKLMTQTAQPLPQDFADDI |
| UniRef90-C7LQR0 | ESTRYANYAQDKFGREITVIRPFFWAEDDAR YALW |
| UniRef90-E10H39 |  |
| UniRet90_B3EMK9 |  |
| UniRe990C7BUX4 | QEFSQRYADSSMLIDEDPLFDLRRQDTKNRQNSHDDV |
| UniRef90-UPIO00379940D UniRef90 G8EXH6 | SFSQLISQRFVGPDDAEVVLPDAVVGDEEADESRFVY |
| UniRef90-S5 | FSVVSQRYVDPTQ LGIEYPPALKYVEGHRDY |
| UniRef90-M1GWN8 | FQEFSQRYAAVADAPVVVEAR\QDHTNRQNSFETED |
| UniRef90 M1ZZ35 | YSHQSQRYVNGNNFDFVVPR |
| UniRe990-K2DW67 |  |
| UniRet90-B3023 | FQEFSQRYAKATTEKYQPRRQDIKNRQN |
| UniRef90_Q857H4 | SFSVVSQRYVDPT ELGVHEPPAVKDLIDAPGRGYAKELL |
| UniRef90_MOMB18 | DVQSMRYVAFDEVDVVTPPSATDPD |
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| UniRef90-Q2RFM5 | N |
| UniRef90_B5LJ96 | SMDYVLAMGTGEQRRMVDSAT |
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| UniRef90-C8X3N1 | RYANYAKERFGNEDTVIRPCFWQEGSEAYRMW |
| UniRef90 D5U244 | SQRYSDKFLIRLLVEASVLINSNVPEGFLEASKLL |
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| UniRet90-_P100037D0 | QRYANPEDLEFVIREARLQDPKNRQDDEKIIEEW |
|  | SFQEFSLR S S |
| UniRef90 - X1D6 | AYNEVSMRYSDPVGKFYMPQUWRRQASGEVEDQEGCTTIL |
| UniRef90- Q3ATLL | QF QEFSQRYAKVEVERYEPRRQDSKNRQNSTDDLWFMEAQ |
| UniRef90-UP100035EED30 | QRYVKETQFEYVIPQD\\|KNNP\|LEQSYKNHMEDS |
| UniRef90-A4J3T1 | VFAQESQRYVKYEN |
| UniRef90 W5WYYe | QRY |
| UniRef90-E9NIG7 | FQEFSQRYAKVDMLEIVIPDLRLQDHTNRQNSIDAMDSI |
| UniRef90-D7WF68 | FSQLSQRFVPAAEADVVIPDAlADDADVDESRFVYEELL |
|  | SCSQLSQRYVHPDDNPVVVPPL |
| ef90 UPIO0035 |  |
| UniRef90-K9RUK6 |  |
| UniRef90- ${ }^{\text {B4SEP8 }}$ | QFQEFSQRYAKA QE\\|ERYQP |
| UniRef90-UPIO0035CCDFB | FSQLSQRFVHSGDAQFVMPDAVAEDDELSRLVEQAVELL |
|  | FSQLSQRYVHPEETQVVLPKLIAEDMQAVDETRFVYNEL |
| UniRet90_M1 UZD7 | SFSQLSQRFVHSGQQAVVVPEVIQEDPELLALLFMQAMDDT |
| Ref90-COQBP5 | SFSQESTRYANYSKAKFGNEVTVIRPFFWEEGSAPFQE W |
| UniRer90_CINRU6 |  |
| UniRef90-X1HS83 | SFSQQSQRYVKINNT |
| UniRef90-C44567 UniRef90 G81694 | Sta |
| UniRef90 ${ }^{\text {M4 }}$ | SWNEVSRRYVKTEPEFFTPERWRSAHEWSEYDKDDIITTAY |
| UniRef90 V4K608 | E |
| UniRet90-U2YRD5 | SMRYVAFDDE |
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| iRef90_13TD | D |
| UniRef90-M1H2N |  |
|  | Y |
| UniRet90-SOG7N2 | N |
| iRef90_B4WPM1 | FDVQSFRYTDVEDVFYVGSYTDRQGKKYDYTEALR |
| UniRef90_DJKCE9 | SMSCRSQRYCSEDGFKYVVINPTGED A DVF |

## UniRef90 S4TNIO

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 QEAMENAERSYFQMIELG MDAYARLLEGLEKRFRRKQARQAARSALMNATETRIVVTG NDICALSIVEKYNEALDKGIAKECARMLLPLSTQTKLYMKG KHAMESAEAHYFSLLDSGVTPQEARSVLPNSTKTETTUTA
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## D

DRALSVEKYNEAL KRHF SGMMKY KRHFQSGMDIGYHMLEMGIAKECARFVLPLATPTRIVYMGG SELYTLSQEVYRGMLEDGVAKECAREVLPMGSDTTLYMNG EKVAQVSQEAYQELYERKQAREAARAVLPNMTNSPMVVTG EQYKKETMRLYNELVGLGVPKEDARYILPNATTSNIVVTM LEAMEQAEKFYDKALEAGDKPEQAREVLPHADKTEIVATA EKПAKLAFDSYEEALEKGDAKESARVLLPDGTQTRLYMKG EEVQHASAEAYDELLGRKKAREAARAVLPNMTNSPMVVTG MASYGALYELTKRNLPLKQAREAARAVLPNMTNSPMVVTG
 LSAMEAAEQAYGGLIQAGAKPQEARSVLPNSLKTEIVMSA NDVMMFDGKFYEALVEEEVPKEDARFVLPNACTTRIVFTM AEAWDSAESYYKRLLARKKAREAARAVLPNMTNSPMVVTG RSAMAYAEKMY LKLVREGASPQEARSVLPNSDKTEVVMTA EESYDASVRLYEDAIARGDAKECARMVLPGSSPTTLYMNG

 RNAVEESIIKSYDRLVERKKAREAARAVLPNMTNSPMVVTG A AVWEKSHQLYEEALAKGIAKECARSILPENTVTRLYMKG QEAYEHSLSAYKKLLDMGVCREQARSIVPVGNYTEFYATA


 EKLFQQVDHVYSLLLNKGVAKECARMVLPMCAPTKVYMSG GALEENTEDEPNALLRKKKARQAARAILPNATETRFVVTG AQADEASLNVYNQLYERKQAREAARAVLPNMTNSPMVVTG RFAYEELLSALNALLRMKQARQAARMILPGATESREVVTG KASQQQVWELYQAALERGTAKECARALLPLNTVTRIYMKG KEWFDKAQETYNEALEKGIAKECARVLLPMATQTKLYMKG
 RFVYNELLEEPNALLRKKQARQAARAVLPNATESRIVVTG
 IDTVKELDGDYQLLLDHNDEAEDARYILPQAVTTKMI DSA VESCMRAEKTYNYLISEGRTPQEARSVLPNSLKTEVVMTA KNAWQDATAAYERLLPRKQAREAARAVLPNMTNSPMVVTG SYUIDESLRMYNQFIDKGVAPEMARMILPQSMQTEWIWSG ARELLEATSSYYELLSKGVPREDARFVIPMSVRTKVTFTM SAF GEAEVADYQELVVEGMAREDARFVLP LERLLESVRDYYEVLKSGVIVEDARFLLPQAVKTRVIVSM EAEQSAIYDAYEEALARGUAKESARMVLPMSSPTTVYMTG WDHCSWGLTLYEEMLVEGLCPEQARFVLPQGVEVNWIWTG DWCVKGAQR YQMRIEQGFSEEHARGLI D N MMS D $\square$ D T D Y Q $\square$ LKKHNAKNEDARAVK

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UniRef90-D5U244 UniRef90_Q0AUG0 UniRef90-G1DA98 UniRef90_UPI00037D0518 UniRef90-P73053 UniRef90 ${ }^{-}$X1D680 UniRef90_UPIO00466A9BF UniRef90-Q3ATL2 UniRef90_UPI00035EED30 UniRef90-A4J3T1 UniRef90-W5WYJ6 UniRef90-E9NIG7 UniRef90-H9NCV4 UniRef90_U3GW63 UniRef90-UPIO0035D829C UniRet90_K9RUK6
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200 $N L L R S W\|T Y\| Q|L R S A N G T Q K E H M E\||A Q A A K E\||F K S Q F P T \|| A$ NYRAWRHFIAMRATEHADVE R RAA DECLRHLQKAAPGAF NVRADFNFFKERLCDRAQEEDRDMAYEMWLACMEDAPTDF
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 T IRDWDHY
 S LYGWFELCRQRLSSHAQYEVRVFAKSLDEEMAKQYPDSW NHRAWRYVIKARWHEAADAEIRELAGELLTQLREEAPNTY T $\square$ RS WMHYI Q LDRCGNGTQKEHREVALACANVIDSIIFPI NARMLMHDADMRAAADAQWEDRQMTEEVLDHAEEWCPVTF
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 N $\square R$ R W W
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 NARAL DEMSHLRLCSRAQKE\|REMFTEMKREVAQVCPEVA

UniRef90 S4TNIO UniRef90-C6WDI6 UniRef90-F2JNO1 UniRef90_R9MET5 UniRef90 W0LJ69 UniRef90-A8L6G7 UniRef90-B4S458 UniRef90_R9K5Y6 UniRef90 ${ }^{-} \mathbf{O 4 1 1 5 6}$ UniRef90-A0A011UAM3
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 VRLLE A T D D PERVVCME SVD G G S L E E K K R
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T $P$ VLLEEATDDPE E EVIRAARNDYMSEEEKKR T P $\$ S E G GIIK EL Q H $\square$ E K I GRVCYK S E DEDGESAR
 $\square Q L \square A K T P N Y L K T C W A A R T C Y E K S E A D M L$ MNDKLLGHT TEDL SDDSAS QIVALLTADRTCYGEGGSEAD
 $M Q \mathrm{~V} T \mathrm{~L} H \mathrm{H}$ S P LP VA A H EF A GR LCY L S F KRPNPATA

KPSVK L LF Y LS DVPK K A VA T DFGGKGGKEVD GFGSMDDTKVV MNRFRVEVISCTPNPQQTIYAARDRWPAEA QAGE

 EFAGRACYQSFHRPNPKTA MD R F RVVELDA ATPNPQQACVYAARTEWPDERTAGE DETDA DELAEFAGRLCYNPATATNA PEFAGRFCYRSFKKGRPADE
 EHCGRVAYQSDDRTTPSAA
GF DE LED T WGDEAT LLNTARVSTDAFSDKDR




E A K K K GKGTEADR
 $M Q \square K L L N F T P L W V C A H \quad A T R T C W Q S F A K G D E K D C$ RLGEF GF I ELEDTWGDETT ILNTAARDSTSNRTEKDR MDRFTVEVDS QTPNPQQTMYAARSTWPSEERCGE $\square T \square T \mathrm{LLH}$ H T P L EVCSH A DRTCWSSFDKSDEKDR MRVTLLFHTPLLSVCSHATMRTCWQSFEKGDEKDK


PEFAGRFCYRSFRKGRPA E
MERFR VEEVLAK T P N P Q QVIV A A R D T F P S E E A C G E MDRFRVDLIAATPNPQRClYAAYVVADQAQWPDE

| VEK $\square$ D $\square$ MK R L ERACRTCYRSEGKT D D S Y K |  |
| :---: | :---: |
| K VTLDARPFVELGDSTHGERLAEFAGRLCYNPASRTTA |  |
|  | EAAGR\CYKSFERKNPATA |
| M Q $\square$ T LLF H T P LSSVCSH | D R |
|  | ATRTCWQSFDKGDEKDK |
|  | 1 V Y A A RVSNPANRETDA |
|  | $R$ VQLINKTPNFLRT\WTAGRCQDQSESAML |  |
|  |  |  |
| M Q |  |
| MQVTLLNHTPLN $\square$ CS H |  |
|  | - |
|  | CWQSFDKGDEKDV |
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 E LLC R Q A A L R Y Q E L L E A GY A E E HA R G I L P F D Y R Q H F V V S R DAMECA NA A Y T K L R E LG DA R E Q A R Y V L P LAA L H T H Y V V T M S D A Y S V I QK A LiD A GILTK K K QA N Q A A R A V L M GA T E T R M V M T G

 $L T D C E S A L G R Y K R W Q E K K R A N E A A R C I L D N A T E A B L V W T M$








 R E WM D L N E Q M Y R G L R A A G WA A Q D A R Q V L P $\square$ G $\square$ A A Q
 DWCRSAS QRYK ER RID QGFA E EHAR G LIP

 RA DCRRHARA RYCA ALTARKRANEAARA LA P E SA Y K T E LTT WT I T LAA A Y R D M MV S A G V K P E D A R Y V Q WCLLEA A K R Y K A D FE S G M S E E HA R GK V P F D Y R Q H F V V S F E D A L R E LQQ DA Y D Y L R E M G V P A E DA R A V L P NA A A T N L V M T A


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SNAITRTCWQSFDKGDNGGE
 $M N D G R V G D G N V V L \square A Y T D V A A R F T R T E K \square S E \square I A S P Y N A$ MQUTLLHYTPLHICS NA $\square R T C W Q S F S K S D N K D K$ EASDA
GKGTEADR ERFTVEVISHTPNPQQDTYAARNQWPEEAKCGE

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D H S S Q
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MK/VT LIENT


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E D E VL

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R VKHLLGRGHYGPDEHAS TTFAVYFPHSVDQQARTHRVG TLQRTLFDQAHWSDAEHASATLHITGVSRAFTELTRHRHL DCVKRL | ERGHYGPLEHAQ $\ V L V W F P H S V M Q Q A R T H R V G$ |
| :--- | DDADYLRRQGHWSTAEHATATLYFTGVSRAFAELTRHRHL ELMQKIAFESDKLELTQVNFEFQDPLSFAVLTHLTRHRTH DVVSRVWNSGHRSIARHGMASFLVEGVSSLLRQLSRHPHD RLFRHTTRSGHTSTLEHLTFTFALEGSRALAAELTRHRVF

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 ED Y I A Y R Y Y C VLPA QADA N N P EA L L V Y SWDVQSMRYTDVEEAFYVGDYTNRQGKRYTY DERLRAKD SFSVRSQRFVDESDCNVVMPPADRD AEYPSGRTAW SFDVQSMRYI DLEEVFYLRPEGQYSDRQGKKYAYTAAERS

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$S Y S V Q S Q R Y V R M G G F D Y V V P P S L N G K D T D S S R G T G F D E E T$ NVNEYSARYSILDREFYIDPEPEALAAQSVVN



 $R Y T E L A E N K K D L E D D R Y V G D Y T D R Q G K K Y Y Y S P Q Q R Q A D L$
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 Q W
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A WCWE ALADRLLLRRLQE
S

## A

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A
R D A GPSC
E GCVEG
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EFFE
A WYEKTRWRK
PYF
DTFNKFKVESVN $\square$ S
D
Y DFKK

| D | D |
| :--- | :--- | :--- |
| E | C |

SDLEEKR
A GAGPNCV
QFFAP
Q DFAP
EMDEK
PFFE
AFFG
GK $\prod_{\mathrm{E}}$
A WYQQKR LYKARL
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P A
E D
ED
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$G$ GDY
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E LIF
R DF
AFFG
SDFE
K WT WDNLPR
K S I I K

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EEFL
QDF
EFF
SWY L SHRYTRAK L
VD
ERMG CKGDE LR
KKAGAPC C K K AR
GWY $\square$ KNRWGKARL
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T WY E K S RLLHKAKL

K E L
P Y F
RDFCTKVPKGEDCR
$K Y$ V $G$
NSFENHF LRGKRFS
A A F

QWY QKNRLGKSRL
G D Y E
QD F Y NTNRGEYD Y NTNRGEYD

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 PSARLLGA WGSEA LAGSAMC YRSWEPGLN P NVV

EAlRTCYQSFANSDGGGR EAI RTCYQSFDGGGRKDL QK IGK FA GVVCWNSPVDDAA

## E VA GRACYRSFEPGREGSH

KEPRLQK
K EPRLQK
 LK P S F R S DV TVVDLVKHSAADS DVLWAARVSTGKDPERSK LD RGGLDEVLNDPQQLAEFA GRLCYRSWEPD QT EPLDHATVRLVDYDQESP DKVGAAELCRK LDRE DLS

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EFAGR■CYRSWKPGRTDQD LD RG D LDSALNDP QLAEFAGRLCYRSWEPDQD $\begin{array}{ll}\text { WE PR Q D } \\ D P & E R A G \\ D P & R\end{array}$



FPVSESKKA
EFAGRASFRTFDRPNPDNA
K LIS Y D K N A E E V VA I E E I L N P Q K N P Y L L K L I S Y D K N A E E V V A I E E G L N P Q K N P Y L L

LDRGELDDDELNDPEFAGRLCYRSWEPGLNPNA VEL L R Y T Q D A L D L L L E T K VS E M T E S E K Q E

DWGADASYSGDVKASK
 Y T P LDD S QA IARTCWQSFEYSDDKDK

ERTVVCLVAKNFDDPRP LLAVKVSTGKAQEKKE $\square$ M G S D LS PVVAARASFMKAS QQD $\square$
$K \square T \prod Q N Y T C K N P \square T M \square G F E A G \square C W G A D \quad T A D E K K N Y$
 L S WGEEAPKAK
$\square$ S T MD G TA GE $\square$ Y A K S $\square$ A A GQEKNE


EFAGRLCYRSFEPGRSDQD
$E \square P \square M \quad T S V M V G W Y D G A E V L V A N A G A L C Y D \square P N K \square G Q$


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UniRef90－I3D185

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AYLGNVIGSQHGSVLEHANFTFILENVSRVTHELIVRHRAC KRGLDCLISGHWRVMEYVNVEMVIDGYSRVIREWYTHLGG DMLKYTVEHKLSSVLDFPYYIIEEVGGSRSTHQWVRHRGS
 KLDRVAKYRHNSTLEHLFYNFDI QGSRACLQELARHRMA
 ALIVDRIVKHKHHSTLEHLIVYFEVVGDSRCLQELARHRMA
 WSLWKHKESYWNDNGKHVIASNHNDEQ EVVREVLSHGRKRELEQVNVTAFFRGWSAGVTHLARHRMQ EVI REVLSHGRKRELEQVNVTAFFRGISAGVTHLARHRMQ GLI NYLMRDRHGSPFEHNSMTFFDSAPDFVFREFMRHRVG A YLTNGASMHGSVLEHVSFSFVLHNVSRVAHELVRHRPG
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 KMMQN』LHKEEKRELEQVSFSFQ\｜PISLSILTHLTRHRM KLIDDKDLPDETYFKHHF LSVMVVTDRGVTHELVRHRPC SFMRHILEปGSADFLAHATVTVY乌AGПSCTACNDVTSRLT DTLNNWAHSPVMRSLNNVNYVFKKRLSHTADSQDQRHRM DTLNNWAHSPVMRSLNNVNYVFKKRLSHHADSQDQRHRM I KAMDALALKQVLNTLNDSFTLEGMDRVQSTLICELKD NNINSLSEPDLRELLKTVNLSFVMEELNRLQSTLVCELKD
 HW HNFVANGIVVHNSF HW RYMDDT $\begin{aligned} & \text { KSPFDFVDYПFDDTDVSKMTHQMVRTRTG }\end{aligned}$ KHRHLAVKFIVSRAVTHELVRHRPC LSLAEVDALPAALLLAHRFVAVRFVVNRAVTHELVRHRPC DLLERVLDRRHKSLEHAVFTFEDLADFGVYRDLQRHR GWSNWLAKDSFPSVLEHSVFTFFIEGCSRVSHQLVRHRLL RLLDFLAREAHTSPYRHATVTLEVKAPFMIARQWFKYRVG RRGLDCDESGHGRTFEFPDVYDTDEGYSRVIREWYTHDGG K LMK SIFNEVNHEDLRQVNMRFQFAVPYAILTHFTRHRR【
 EIVRRVLGYGHESDAEQVRTTFGMMCSVVTYHQQVRHRLP HNFVANGTVVHNSF KLIGKVLSSGHTSVLEHCYVNDSFENVSVLAEQFIVFRLA REFELVDLVFQANISSSCFTQLKRHRIA EEDDDILRHKPPRALEHAFYTFDLVGDYGCFRDLKRHRMA drvadwikrnhlsvikianliffvaEg TNRVQSMLLCELKA DRVADWIKRNHLSVLKTANIFFVAEGINRVQSMLLCELKA RTSLHCRDSHHNTVIMOPSYDDEVDGPNFIANGVVVHNSF KRGLDCLSSGHGRTWEYPQVYMILEGYSRVDRELYTHDGG K S SADAQNQRHRR K SLSADAQNQRHRR DFYRRTLEYGDESTAELVTAQVGTQNVSNVISKVIEETRL


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K
S
S
 $A V S Q E S L R F V R L Q E L P F W F P E W A R E D P E L M A R A T D M L T R M$
 KYMSASLQYSDYSGVEDFVDPYDLMGTGQ EEGY



 T R L Q D S T R Y I N F E D F A Y Y N P G

S
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N QRSQRY $\underset{\mathrm{V}}{\mathrm{V}}$
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 VT A T T A

$S Y$ V Q Q S
S YVQQS QRYVTMDAGAYRLPHLEGEDR
S Y V Q Q S Q R Y V TVTT D Q G Y V P Q L E A T D R L N A E N L I K R T L A L
 $A$ I S QES LRRFVRGLQDDPFWFPEWAREDAELMKRATAMLLEQM


## S

SFDVKSSRYTLRELKEVESF
SVDVQS YRFCDIIETAFYVGEYS DRKGKKYYYSAEQREK D L

 QPTQASTRY
S LS DP DF VPNND LLKYTTPPKIK Q N



$R Y T G Q A E G K R D V E D V F Y V G N Y D N R Q G K K Y L Y S E K Q R N E D$ SFTVVKSRRYVDFSKAGYVSPAFADDAQRVV
TIISS TIVYDPKF GYTMPKSDDKDAQKDAFRNVMKK S $T \|$ I T D Y DPKFGYTMPKSIDKIAQKDAFRNVMKKS LT Q Q R QL L S T N L L G Y N DP Q D D D D S G G L D K K F T K A L N E A

 SFDERSSLRYCRAA DGYYVPNYLEMSYDSRVMDKDPMRQEW S P TQA S T RY $\square$ NY QK GF P Y V T P P T $\square A G$
 S L G I R Q K L E T D F Q K D F Y I
 S Y L E K S T R Y V A Y D D G H Y L F M Q A E K I GI E E E I S R Q WP I E S F
T L Q R Q

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 EKAQQRLAEALRPFHEKKVLTSAMRRIVPDGVATTVIWTA KRVAEQ
KRVAEQ
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 NLRTLRHVMEMRTAKGAEEEIRLVFNKLGEIMKKEAPAA: F NARELLNFVPLRCAAAAQAE: RHVCWQMFKLVWDDAPN NLH
 $N A R S L Q N F L S L R T D T K A L W E: R Q L L A F A L Y D A L P Q D H Q Y L F$
$N L R N M I L M N Q R L C S R A Y S E I R A L A A E E R A S L E E W A W I C G$

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YESREAAESAVAEFRELHPS
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 NLDEWRHMFNRRTAAAAEPSMREVMIPGQQAMQDRYPSMF NLRALQWLCELRSQPAGHPNYRYVAQEMAKEVIDAFPAF NARSLQNFLTLRSSNKALKEMQDLAKALFDALPGEHQYAF NLREWLHLI ELRDHPKAQWEI RGVARAVKELLKEEVPEVL SLQGVAFFISERTKHDAQDE:TQYAYAVWDLIRPYFKHSL NLRALLHFLDLRFKKDAQLEVQKLCDLIWPHVEEWVPEVA N DGEAFRWICRLRECTKAQWC:RNVVTKMHELIDEVSTYYS
 NARELVHVMNELTYGRGDPELRALGESLFAQCERQ NMRELCHFARLRQDAHAQWDIRELAHNTEKAKEVAPTT NMRELCHFARLRQDAHAQWD $\overline{\text { R }}$ NLRSLVWMCELRSAPQGHDNY SGDKLWEFFLLFNDRR SGDKLWEFFLLFNDRR NVRTLRNT ESRTAEGAEEEDRGVFNRGGEDMREEAPSLF
 NLRNLVDMSHQRLCTRAYWEFRQLMNDMKTELEEWKFLTE DLSSFQHKTQM
$\qquad$ WQETYDQVKDT
WQETYDQVKDi
AHDLYEELKGEFPQII NLREACHLIELRTVPQGHDDYRRVAQQMFKQUNKVHPNLIS

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EAFDEF
E WY EK Y R L K K G R L S

A ALVD
NKMGPSCV
NKMGPSCV
DA L
DWYENTR L GKAKL
A D Y
NYFKPKCDKAGYC
YRFGPWCDQERC
ADY
RDFCAKVPKGEDCR
QDCVQEC


| N | L | F | V | P | K C V T G F C $\square$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

N DLE
R HA GPRCV
GD F
EAWSNH
S LY GP S C Y T GEC
SLYGPPSCYTGEC

G D Y
S DYE
ERFFKFV
K Y Y G P S C F $\square$ S S C
K Y Y GP S CF I S S C
A HM
S DCGPFCMNGGC
EDFG
K Y A K P N A Y
K Y A K P N A Y
G D Y
G D Y E
DDFSKHGYES
DDFSKHGYES
NYFVPTC
K WY T T NR L GKARL

A
G D Y
$N \mathrm{~V}$ Y A K K R M GKNLL
N Y F V V K C L T G Y C
K GLGP T C ITT D K Y C K GLGPTCIT DKYC R S YVEN

K Hi GP PCFN
K HIGPPCFN
$T V L G P A E Y D S D$
TVLLPAEYDSD
GD YV
EWYLE NRAKKAR $\square$ S
P LLQP QC $\square G G K C$

ERFLK F V
EDCLKH
EWYEKNRLKKGKL
A
DKLL
KWYEHTRDGKARL
H Y FMPKC
A NLGPDCDTKHDC
A NLGGPDCCVUTALC
EKALPPCLVSKC $\qquad$
A WY T K NRAKKARLS

S PFFKFV
RALFP
RA A P
GDYV
EWYLQNRWGKARLS
GDVNMPCY
NYFQPKC

K

PVCLVDFTPDADTKLIAARECMEKTPEKNM PVCLVDFTPDADTKLI AARECMEKTPEKNM TSKAQ $K \prod K \ V K P V$ LISNTPNPDDVIQDMEESEKDDPEYKA K $\mathrm{K} \| \mathrm{V}$ SKPV LI SNTPNPDDVIQUMEESEKIDPEYKA K A P A L S KAPALSLAPVTLVEYTRDGDECIAAALLCRKIIKKLPQ

$\square E V K \square L N K$ ES $\square$ DQAEK LMMVCAARLTYEKPYK R
DPEK $\|$ VQSAR LCYE LTTNESVI
MK $\square$ S LIS YTQWELLLGTKSTRMRGQDPATMTEAEKLDHW


Q $\square$ QPAASSTVQLVEYDPDAEVK $\square V A A \quad \square L Y P H T D L T W E$
GD LR L $\square$ NYMDEGRA $\square D M A T R M D \square N \square P \nabla E K E Y$
QVLILEETTKNP\TLMGSRAGDCWGS D\|S S DREKNY
VKLISHTPEPEKVIAAAKLCYDLTDES DE
 E $\square$ EVLAA $\square$ F YENSELPFAQARENVRGLSDQERE

VK LVQYTPEPKLVAAASKMSDSHGDEEVE SSTTVQLVQYDPQAEMKVVAACLYPHSNEQVR

VTLVEFDPDAEAKVVAA ILYPHSDQP DE QVEPGSNSTVQLVEYDPDAEVKVVAA ILYPHTDQTFE D S SLLADARALAEAMTADERM $V K$ L V Y G D P D G L Y K I A A A YM F P Y S E H T Y A
 S D S R V R L I G F N P E D ERMGVA L S $\square$ S N GLLHQDF R R


SQDCEKNA
पD WVLDPAR】R
$\square N V P \| V D D G F V R \square I A Y T P D P E \square V A R M A S V S W R K N A E E A K$ DAVPVT LVAFDPDAEARVTAA LYPMTADERA VKLLSSDPDAVVKVAAA LLFAHSDKGYH

E VESFTKAGVK LID FDKDGPAKVAGALLCRKDPEEDLN MDNRYSR LVSYSSNGPEVLASAVLGLSKNSLNDE MDNRYSRLVSYSSNGPEVLASAVLGLSKNSLNDE VSLVDF DPDAEEKI LAA A I CYSHSSLLPE TVTLVDYDPRAEWKLLAAAELVAAMPEAERH

S S P SVQLVYGDPDGTYKVAAGF F PYSNRS $\square$ NELRAVARAEV EKARR
 $T G D V L A A M T A A$ E S A QRAE EISAQRAE


RHKPGRALEHAYYTFD LLADFGVYRDLQRHRM
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 EVLNYLLDSPVMRALNNVNYVFKKRLSHMVARQWWKYVVGG ELLNYLLDSPVMRALNNVNYVFKKRLSHTADSQDQRHRM Q
 G LK Q
 K R GLLE CLT S G H G R V M E Y V NVVEMV L D G Y S RVVVR E WY T H I G G


EE $\square$ S K L S Y E E R K $\square H$ QF VT MK IIT DRGVSHELVRHRRC KLLRKNRRHRPSRAFENVYYTFDLLNNFGMFRDFHRHR L R K N R R HRPSSRAFENVYY TF DLL NNFGMFRDFHR HR SLLR QWARHKPGRALEHASYTEDUVGDYGSYRDLHRHRD S L V A Y H Q A ll R H R T V
 AYVRDLGTHRPGRAFEEVYYTFDI LADDGAYRDLQRHRVL S LLKELRRHKLGRAFEGITYSFEVNMNYGAFREFQRHRFF
 RALFNVQYSF QKRI SHTADSSQDQRHRMV

 $R L I R A Y A G H R P G R A F E E A R Y T F D L L A D D G A Y R D L Q R H R M$ ELLDDLMRRRHKSPGECAEFAFDI TADFGAYRDLQRHRD

 S Y L R HV I E VGHLLSVLEHASATFYITGSRSCTHELIDRHRHE KVAKS TKKAGHLTTRQHPHF\|FTLDKVSFVWSFLHSHPYY KV A K S T K K A GHL T T R Q H P H F I F T L D K V S F V WS F L H S H P Y Y
 $K L I D D V T R S G H N S V V E H T Y F N D A F Q N V T A V V E Q F I E F R L A$
 RRLDALNVSAHMRTLGHANYTFRKKLSHSADSQDQRHRMV

 S LI RA Y VGHRPGRAFE EARYTFD L LA D DGAYRDLQR HRM DL LQ Y C R S L L P E E E E L L E H A D F T F E M MV T D F G V Y R D
 $R L L R D N R R H K S P R A L E H A S F T F E D L A D F G V Y R D D H R H R M$ L R T N R R H R P P R A F E M T E Y T F D I I GNF GMF R DL HR H R VL
 QILARVRRHKPGRAFERSFYRFDVLSDYGAFRDMQRHRML ALI NA AVGHRPGRAFEEPYYTFDDI A D DGAYRDDQRHRDL

$\square R K N R R H K L H R A F E S V S Y L F Q I$ TTNYGAFRDMQRHRF』

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UniRefo
BOVIB6
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UniRefo
Un UniRef90-M5A335 UniRef90-A9WDJ9 UniRef90 R6PL89 UniRef90-T0LU88 UniRef90-Q9Z7F9 UniRef90 XoSQL5 UniRef90_-UniRef90-K6Q033 UniRef90-UPI0003B36C96 UniRef90 UP10003B36C96 UniRef90-F7K2E7 UniRef90-F4DKB9 UniRef90-D4C6D0 UniRef90_E5AJC3
UniRef90_S7KJ95


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TLTTQS
YNPDLGVTMP
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sLL!
Y
SLLIVPBE

\section*{| T | $\mathrm{T} V \mathrm{VQG}$ |
| :---: | :---: |
| T | $\mathrm{T} V \mathrm{VQG}$ |}

PEFT

TESSLSLQELDTGFYVPASVKEGKAKTRDSPAA
SWQELSRRYVLASRNPFEFYVSEKLRDN
RTNEVSGSYSLMREEFYVPLVEDIKIQNVDSNQSDULIDVLV
KYMSGSLQYSDYSEVEDFVIPYDLMGTGKEAE
 AYQQETSRALEVSWDFDEKATANGEPDPTYHAREELNRLW SWNESSRRYUTEEPAFYGPSAGQWRGAPEWELGEKYTREL

 SFQERQHYCVYSKOKFGDKDRHGYVIPTELEEANLDAQT

## S

 S DRK S F S Q Q S QRYVK LIE QFEYI I P PEIEK I E K A K ELLF

## S F

S



 WQE $P$ G GGRPVRMSQYA GVVDY TRNEVGGRPVLMSQYAGVPDYITGAPFVVQKYPELKEKY TQERQRY SVVHGYAVAPELEAAGVAAAYCTVLDQT VLTQERQHYSVRHGYVIPPELEEANLSQSYCKALEYA LTQERQRFGVQHGYVVPPEI DEYGLGAPFRAALDQA
LTQERQLLTTKLGYTMPSQLDDTPMEAP
LT QERQLLCCDYGFYMPP E C Q Q TPYEEAYCHALNQA

A Y S QES LDRYVRLVRIGGRVPPALEPLRQQCVE SYSQLS QRFVPEDDSNVVLPP AVEDDPELVALV NSEQVSQRYVEVKKENYYVPSSLKQRESYLEAVEYASNAY NSEQVSQRYVEVKKENYYVPSSLKQRESYLEAVEYASNAY SYTEKSQRYISSLKNNFIIPEE VRKAGMQERDQNDFYHKLYY
SFTVKSRRYVDFSDAGFF I
PEDADENY PASR TQERQNFTVDYGYDTRKEYDS DG SMAEQSTRYCNYTKDKFVNVPKWIKDDSDFVPSQVDMELF SYTQQSMRYVDLSKEYYIVPPSIMKKENLWVD
AHLVQSMRYRES DDGDEEVMYQRPAGFTYVDRYGQKVEYT
LTQERQFLSCDYGFYVPQEI VGTEFEEQYDQALHQA SYTEKSQRYVTLK GDYVIPEELKATGDNEYDDMIKAQNNF SMAEQSTRYCNYTKNKFGSEDSDNDPTWVKGDLETNDEKF

TMQRQ


TQERQRFTVRHG YVTPPE
$M S A S D Q Y S D Y S G S S D F V V P$ KFMSASLQYSDYSGSSDFVVP YKMLEAGDEVVELY NRNASSSRA $\square P T S K F E P V M P S H W G K N Q K G M Q A F E E L S E D I$ S $\square$ N R Q
 SMAEQSTRYCNYAKDKFVNLPTWVADAAAAPEPAADLENW HFAAQA PGVEHGITVPPRIQEAG HFAAQA PGVEHGUTVPPRUQEAG DGQERSTRYQDFRRSGWYTPELSSETPRFTGATEALFLAY DGQERSTRYQDFRRSGWYTPELSSETPRFTGAIEALFLAY


AS DQ Y S


LTQERQLLSTNLLGYQMP

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130
140
150
160
ADACERGYQADHLKVRTYVACPTCKGIVLPNATETKDFTTA IDRAEKLFAWYREDLDREKP EDARDILPNLLKSEIFVSG ESQDEKGLELYQGLVSRGDKKEDARFVTPQGSATTVLATG

TKLNNKI R RMGSAL
TNAAYSVLKESLDVG
TNAAYSVLKESLDVG KGKTCDVVRYI LPVATLTSLGMTL
 PPKLAPYFRTNASIVTVFVKM AEYMLTNAHRRRVLLKV $K K F R D Y G Y K K Y N$
1 NAQKENMKIFEEFKNSNVSDEDLIYFYLGCQMLNVVTTM LQVIRQTEQTYQKLLKE MPLAAPYVLTNSHRRRALVGL俍 QDLIKQSEDLYFELLEEGTKPQEARRVIPQMGYTQDWGAF EKSQKYCYKLYQDMIDFNVLKEDSRIAL LKQCSRSMKEYQELINAGVDNDSAGYCAPMGMRNDLLISA VECMDLAKQVYEAM AKTMPEEAQYVVNFAYRYPYFVKM IDAMKELDGIYQLLLDHNDEAEDARYILPQAV HDAUADAQTSYQKLLEAGASDQDARAIIPSNMETKПAAKF MEYTQLGMQKYEAALADGDCAEQARLFLAYGLYVRWYWTA KEDMDMLWDSKNRLLDMDVKAEYACYLLPNAVNVRFDQNG KEIMDMLWDSKNRLIDMDVKAEYACYLLPNAVNVRFIQNG KELLRKAFELYEEMSRLGUPAEDARY：LPLACKTNWSMAM RKALLEYAAET TELISQDLPDAAQYVVPFAYRVRWRIKL DIAFNNAAEAYFELLHEGAKPEQARAVLPTNLKAEITITA VEAMERAGTLYGNLMKKYGEKDAQYVVPYAYKYPVVFS

D WCLLE AVKRYQ DDFEGGMSEEHARGKDPFDYRQHFVVS L ETVFT T I EKGYMDLASRKVTPDKARAILPNALKTSIVVTTT K HTFDKI RTKH


 TQLCIESLECYDKLVKDGCRLGDAAL LPQALKLYVVRAY AVDMEKALAYYYELKSKGVPREDARFVIPMSVRTKITFTM KEVLDDAAET TELIAKDLP DASEYVVPFAYLVRWRVKL VELMDEAR LIYNDI MGRS GRKDAQYVVPYAYKYPVVFSS EALIKQSEELYFELLENGVKPQEARRLIPQAGYSQUWGAF DATHTRVFEKLNRFLDAGGSPEYGTYLLPNSFPIIRFYESG SEVYQFSDNLYHWLLLVGVCPEQARLALPQAMLTEFWETG AETTE LTSSYロP GEVVSADAADL
REAMEKADQAYRLIAEE FP
KEVFDLIDSELD
KEVKDLISS SEL K KLKKESSGS EQULDCGCLEHYYKALEDGVK
RKATDASRAAYVEL LEK
FEFVEKARASYPEKWQKKKCLEVARYLLPLGTYTY【YHSV FEFVEKARASYPEKWQKKKCLEVARYLLPLGTYTYLYHSV KKLSHLAADKKNHKIIDDWAKEDARYVISLATEGQLGMTV KSHMAKLEGLYSEFCEAGVPKEDARFLLPYCLFSNFFCSLM

EELRQQSYFEYAEQVDLGYPFEMARGCLPTGFRQNYTLAA
 YKNLFKK VELCEDAEFAYMKLLAMGCKPQEARVILDMDTNTQLGVHTAB RDAMEQAKVAYDTIARE LDPEEAQYVVPMAYNVHWYFHA KHVFEKMRAKY RRRMDGDFKSLNRFDEAGGSTEHASYLLPNAFPVRFYESG RRRMDGIFKSLNRFIEAGGSTEHASYLLPNAFPVRFYESG DETMERSAALYDALGDQ HHEQAPYAVAMAYRMRYNMQF RTALEQAADLVTA LDEATLPNEAQYAVP LDARVRWRDK L K LT NMFAMKEYTHVAED CGNDSAGYLAPQGMRNTLII SA WEQAASSAATYAEMLRRGVHKQIVNRILEPFTHDRVVVT
 NS S Y S K L Y KK LiRA YI LIE GWAKEDARYVVSLATKGQLGMTV QFANLAAERAYMNLMAAGRKPQEARAVLPLDTNTELVHTA MRAVDAAERLFFRLVRAGLPLAAHYVVTNAHRRRVVAEF





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UniRef90
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 NARNLIYAINKMITS PLGEMQDIGNDLKKIAEKSIPTIA NLREIYHFVRLRSDENAQWEDRELSQLMAAQVKKNAPQAA NLREI YHFVRLRSDENAQWEDRELSQLMAAQVKKNAPQAA NARELYH S SRLREDATAQWDI RNTATEMSERAAEVFPV






TPYQWKHM THQR DCRRNTKETRYVMDK $\square W E Q L I I Q N A E L F$

$N$ LRTLSDMAKVRLCVRTQGEYQEAFREMRR VVLEVYPMFD SLQSVAHFLNQRLEHDAQQEDQDYAKA LLEDVKTLFPVAT S F L N F L H K WR L R L C F S A QL E SFLL HKWRLLCSAQLE NGFKLIDFFYLNDR
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$N L R T L L H F \square D L R F K K D A Q L E \square Q K L C E L M W P H D E T W V P E V A$ NLAEWELI FGLRDDFAAHHDMRRVMQLVKNHFVKE NLREACHLIELRTVPQGHDDYRRVAQQMFKEDDKVHPNDF

 NGFNLLYFVATRTCSYAQWEERALAYKLLHEVVKRAPELE NAREL
NLREVYHLVELRSTRQGHPSYRADAQQMYQQDQ\HHPTLF $N L N E L T Y F L E L R S N Q Q V H P D L R K V A Q D Q Y S E I K K D H P H L F$ QPTQLANYFRLRDDSHAQWEI RQTALAMKELLEK DLLNLHHKWRSRTCYNAQEEI FQASVEELTDVMKVHPGDA DLLNLHHKWRSRTCYNAQEEIFQASVEELTDVMKVHPGIAA

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 NGR
NARELYHVVE DRTTPSGHPDYRK $\square M Q E S F R M V E K V H P S T T$ S LM HL L HKWSMRTCFNAQREDFEASDDEDEQVRAVHPQLM FLKDWKHFFD $\square R T T G E P H P D A K A \square A M P L Y E E F K K L$
$D Q Q A L L H D L D Q R T K K D A Q \square E A Q V L A D L I L N Q L D R W V P E D A$ NLRALQWI CELRSAAAGHSGYRLVAQEMAKKVSAAFPQA NARNLELMMRRRFASHNLKE $\square N V L G K K F Y R L V K K \square A P S \square I$ FVSDWKHFFDLRTTGAPHPDAKILAEPDYEEFKER $N L R S L Q W L T E L R S Q A A G H P T Y R L I A Q E M A R Q V S V A D P S F F$ $N L R E A C H L D E L R T I P Q G H A D Y R Q V A Q K M F L A D K K R H P T D F$
 NVREAFHMLELRSSPQGHPSYRRVALDMHRQIADVA NLREAYHLI ELRSARQGHPSYRQIAQLMFREI SAVAPFLA TPFQWKHMIQQRVCRRNTDETRY MQKMWEQLYNISPALAF

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 NARNLE FLIRRFASQKMAELKEFNRKI YALAKEV FVADWRHFFDLRTTGAPHPDARVLAQPLMEEFVRL DLWQLYHLITLRGKPEAQWDIRQVVHRLAQRVMEVHPNLV DLWQLYHLITLRGKPEAQWDIRQVVHRLAQRVMEVHPNLV NARTLETQVS RLLTSPFAEVRQI AEKLRRAATE NARTLETQVS RLLTSPFAEVRQI AEKLRRAATE



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S D Y QKVPL

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S F L
SFL

EKADPSCVYGKC
K GLGPTCM
K GLG L T CM
E
A WY RKHRWGKARLS
R C F
$\underset{\mathrm{E}}{\mathrm{Y} D C G P F C M S S G C}$
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S LLQP H CDT G S C
E ELL
KHI GPPCFN
KHIGPPCFN

VDLD D Y A LDE
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R Y M
RHVGPPCL

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E
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ANAGPFCMNGYC
SWH【PY $\square R K \square D C \square$
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#  

 D EK TI A AVLH S S S GLDPMERCMNI A S L MEREERE
 $K L V D F S P N G E E \square V A D A R L L D P H L N P G R T$
$N P L G T V E N V$ ARRRAEGMDPED L E ARRRAEGMDPEDLE

GADPAKSE


VRLVDFDPEAETKLLAAYSHSGLTLQQDR END WM
S EKS

$E K \square R$

GMSYQEKE
GMSYQEKE $Y E T \square R E L Q A A A R P E L R N L T P E T D S A A Y A A R E E V E K A R S Q S N R$ Y E T I R ELLQAARPELLRNLTPETISAAYAARE EVEKARMSNR P L GKEDNV
PR】V L L S C N N D P LG S $\square$ A A A A K A Y K IT D A ER R

YESKNDYQK
YESKNDYQK $K P G \square D L V E Y D Q D A E D R \square V A A Q \square S Y K Q \square K E A V S$

TEEEKR
VE L I S $\square$ T P N Y K K V L G A $\square$ S Q C Y Q T D K H S D K K T P S K P K
GKGGKEVA
$T \square Q A K P \square V Q L V E Y D P Q A E \square K V V A A \quad \square Y P H S K L N F E$ KAKEFHE
KAKEFHE
$\mathrm{MK} \square \mathrm{T} A \square \mathrm{~K} T$
N Y K P T D $\square$ A VG S A R S C Y A NENYA NENYA $R L V S Y S S N G P E \square L A Q S V R S S S L G D E D A B$ RVLAE NKAMDNL $\begin{array}{llllll}G & Q & N & K & D & I \\ E & N & K & M & A & D\end{array}$ $\mathrm{V}\|\square \mathrm{G}\| \mathrm{T}$ A Y $\square$ T T N L R VLAA E N K R M A DL
 MDQDLDDVT DTPRHAFGLLASEKAR

A Q A LQVVENAPAEERA
A Q ALQVVVEAPAEERA

$$
\begin{aligned}
& \text { VAYNPNAERLDATATMNM }
\end{aligned}
$$

> FENNESRGR
> RVIE E CDAEPML

LE N $\square$ K VT LVD Y T P WE S IIVN AT WADEPEETYSMA A S D P DI R SVVYKEFK T GAKS GE AS DP D $\$ R S V Y E K E F K T GAK S GE

ERAA
ERAA

IT I LPE T T K N P TT LM G Q R A GVC WG G NV
EDPEKNY

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## UniRef90- H ЕЕ2A0

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K WLD DLQFVCDP LPLLHELLRTVHFTTQVGVTREFNRHRAN
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SLIGLITEYDGYAVF VQFTYQKKI HTAD DMI RNLTVHDHHGAFKTVVYRILLRVSEANWHQLLRHNRG DMIRNLTVHDHHGAFKTVVYRILLRVSEANWHQLLRHNRG LQ HL HYQMELA A S SEANWHQLLRHNR GLINYDARERHGSPFEHTSMTFFISAPDFVFREFMRHRQA
K WV

K WVE RHRPGBGFERVRYRIEEVV
ERVRALRRHKPERGLEMPFYTFDILGDYGMYRDLQRHRM
A LLSY LTE PTALHDRRVTVHFTTQVAVTREFNRHRAN
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E I R DKVAKSGHLTTRQHPHFIFTLDKVSFVWSFLHSHPYY

R $\square$ MRENRRHK $\square H R A F E T V W Y L F Q N T N G G A F R D L Q R H R F D$
 SVINRALDHPHDIPDRQIDYTVDLTMDYGAYREFKRHRMQ SVINRALDHPHDIPIRQUDYTFDLTMDYGAYREFKRHRMQ
 TLI GMMKDYDGYAVFFIVDNVSRTMTHQLVRHTALD


TRLLNHAHFTFMKKLSHTADSQEQRHRTL $N$ L A K A V V G Y G H R S il S E H D Y $L$ L V F A




 $R L I K H V V G S G H D S T L E H L T Y \square F A V E G S R A L L D S Q T T R H H V G$

K WV E
 LL N S $\square F$ KA GHH T T L M H Y HF T FLI E GMSRIWRLLHSHP F Y
 DLVLLNPAKNGHLTALFNVQYSFQKRISHTADSQDQRHRMV
 D LI R R S R R DK LDPRAFEFINLTYR VMMNYGAFREFQRHRFM ELLTELSSEHHERRVTVGHTVTVAVTREFNRHRAN ALLRD L VRHRPGRGFEALRYRFE VVSDYGAFRDLQRHRLL TFHEKVVVGYGHASVAE HAVVHLAVENDSIIASKADEDRLIA T F H E K V V V G Y G H A S V V A E E H A V V V HLTEMLLRGRHDRELEYAYFTVDVLLDQGAYFELKRHRMM

 HATVT MNLKVDRATGLQQWRHAMA
 ALVLDPARNGHMQTLNHVSFTFQKRISGAEDAQNQRHR G ALVLDPARNGHMQTLNHVSFTFQKRGSGAEDAQNQRHR G D Y LDH LIE H GDH GALE HASMTVVAVSGSCALLAEEAGHARAL ALVLDPARHGHMQTMNHVPFTFQKR\SGAEEAQNQRHRLS
 D F Y R R V L

SEPTEYHEKRVTVRFNTDIGI SREFNRHRAN Q V V L V H P HR EFYRR

 RHRPPRSFEMTGYTFDLLTNFGMFRDLDRHR A F L K K WVE Y WH N S L K D S D Y V R FA V E WV S EVVLTMKVIRESP F W


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| :---: | :---: |
| UniRe | SMAEQSTRYCNYSKEKFVNLPDWV |
| UniR | SMAEQSTRYCNYSKDKFINVPEWI |
| UniRef90-UP100046EB6E4 |  |
| UniRef90 ${ }^{\text {a }}$ R 5 XCL8 | KFMSASLQYSNYSEKAAF |
|  | AYSQESTRFAVKEDVPVGLPPS |
| UniRef90-B2 | NFSQRSQRYVREDENYTVLPPSILESQEEDEV |
| UniRef90 Xour | PGSRPMLILLADSERPDYTV |
| UniRef90-H2C | SRPVLMRQF TGDVDAIV |
| UniRef90-H2CBE9 | RPVLMRQF TGDVDAIVPELIEQC |
| UniRet90-C1DX | NFSQRSQRYVREEENYCIVPPSVEENDK |
| UniRef90 ${ }^{\text {D }}$ WWS | A DFTYGVPGGAGGWVIPPRV |
| UniRef90-UPI0003B3CED0 | FSFGQPTVP |
| UniRef90-UP10003B3CED0 | SYA HFSFGQPTVRLGYTTPPHV |
|  |  |
| UniRef90 D9TSE4 | Fitewseryorpirar |
| UniRef90_D9TSE4 | TVVQWQR |
|  |  |
| UniRef90-R5FC. | S |
|  |  |
| UniRef90-UPI000467 | NSAQRPKLYTIYKRDFYYPPPDGKFELYTEAEEFASNAY |
| UniRef90-UPIO00467D | SPAIRPKLETUYKRDFYIPP VIEKFAKD |
| Uni |  |
|  | YSLGKFGS |
| UniRef90-K1RXH | ASLQYSNYTGQADFA |
|  | SQA ATVNLGYVVDLKDSG |
| UniRef90_Q2LXJO | SYTEKSQRYILLTDDFVIPEEI |
| UniRef90-Q2LX | SYTEKSQRYILLTDDFVIPEEIR |
|  | QRSQRYVKEDENSLVIPPD |
|  | AYSQESTRFAVKEDDEYVDNCWKEYAEKTASQEQLWR |
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| UniRef90-R7KGA8 | R NVDFRNVG |
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| UniRef90- K9D2E1 | QSSRGTFLDE YLQTGD |
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|  | NAASSRA1 |
| UniRef90 C2XMG1 | Q |
| UniRef90 Bok |  |
| UniRef90-B0K5 | AFIEWSQRYQKPTRDKVVIPQELEEKPDLKEKFLKV |
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| UniRef90-A6DCl UniRet90 |  |
|  |  |
| UniRef90-D1P8K1 | QSTRYCNYSKNKFIN |
| UniRef90-ToLZPP9 |  |
| H1HJN1 |  |
| UniRef90-A0A017T3Z0 | Q ${ }^{\text {a }}$ |
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|  | STIAEQSTRYCNYNKDKFINLPSW |
| UniRef90 E8MZZO | TQTAQ RLSALHGYALPKAL |
| UniRef90-A0RU91 | ERQ |
| UniF | PV |
| PIo | ELLSQRYVDRTNAEYRKML |
| 88E | SRNAASSRALPVSADQVRND |
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| UniRef90-86X5 | S |
| UPIC |  |
| $01 C 9$ | P |
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| UniRef90_S5DTP4 | SFSAQCTGD |
| UniRef90- Q97 | SYLEKSTRYVRYDKKLYMSPERIGGISGDDAKDYVQLCD |
| UniRef90-Q8R | WTEPTVENGFVIPPN |
| ef90-Q8 | WTEPTVENGFVIPPN |
| UniRef90-D1QUT1 |  |
| UniRef90-K2GHZ9 | YMLFSKESTLFPPEL |
| UniRef90-K2GHZ9 | RYMLFSKES LLFPPEL |
|  | ( |
| UniRef90-A9F015 UniRef90 A9F015 |  |
| D4KQx9 | SPTQSSTRYTNYRGFDYIIPPSIQNNKEALEKYQALMAHT |
| ef90-D8FIB | RLNHFEYUVPPQUEKDPRLRKFLSGLWK |



UniRef90 E6MKzo
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UniRet90
B2V9C3 UniRef90-B2V9C3
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UniRef90 D5WSK UniRef90-D5WSK2 UniRef90-UPIOо03B3CEDO UniRef90-UP10003B3CED0 UniRet90-JgDUK2 UniRef90-DgTSE4 4 UniRef90-D9TSE4 UniRet90-UPIOOO37F57EE UniRef90-R5FCJ3 UniRef90-S3W3C3 UniRef90-S3W3C3 UniRef90 UPIOO0467D563 UniRef90-UPI000467D563
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TLSWI KDFIEKRNTPHAQWEIRNVAKLMKEIL
SLIHLLHKWTMRTCFNAQEEIYRASMEETEQVRQVH
DLLNLHHKWKARTCYNAQEEI FRASVEELDQAAVVLPGLT
DLLNLHHKWKARTCYNAQEEI FRASVEELDQAAVVLPGLT
TLSWIRDFTQKRNTPHAQWEI RSLLAYKMQQLLEEQ NLWELYHLI NLRTSPEAQWDI RQAFEMDDRELRDRHPALI NLWELYHLI NLRTSPEAQWD: RQAFEMLDRELRDRHPALI SLWELYHLINLRTSPEAQWDURDTFQQLHEQLQAAQPALAA QFSNFRQAI QLRC
NALDLQDILRK LQSHGTKEAETLAENTINEAEKDAPSMM NALDLQDII RK LQSHGTKEAEILAENIINEAEKIAPSMM NARAAMQLERSGREGHPSYRAVAHEMHRLIGGVHPAVA NLRALIWLTE:RSTPQGHTGYRRIAQEMFRKVEAAQPLLA F SDWKHFFDLRTTGAPHPDAKALAQPLYEAFVEK NGLTLHRYYRLMNSFNVPEEQKFVVEAMIEKVRESDPLYV NGLTLHRYYRLMNSFNVPEEQKFVVEAMIVKVRESDPLYV DFNEFAHKAQMRLCYNAQEEIFDIVYNQVNQLKKAGVKAS NLKELAFFCELRSTPQAHYDLRR ASDMYDAVKAVHPEL SLEHWHHMEHMRANPAAEPSMREIMDPVAEFIRRFPN NLXECYHLFKLRTSPQAHFTLRQVMTEAMTLASNQHPLLF NLXECYHLEKLRTSPQAHFTLRQVMTEAMTLASNQHPLLE NARGLELLLR RFAAHPLEECRAFSQHLYEKTFEIAPSLI TLYWIKDFITKRTDPHAQWEIRDTADKMKKLLENQ DLRALKEHAGVRLCTQAQFEWRQVWAQUVQSI RE DFAEALYDSELRSGVAGHFSYRRVAWEMYQAVAKKHPS AA DFYNFYHKWKSRLCYNAQEEDFYSAHAEVAEVKQNYPEIG DANELFRDTSLYGKMAKDDETKELGAKLANMMGEACPYLV DANELFRUTSLYGKMAKIDETKELGAKLANMMGEACPYLV FVSDWKHFFDLRTTGAPHPDAKAIAQPGYEEFK
NLREATHFTELRSQKQGHYSYRKVCIDDMHDLIDNKAKH
TLSWПKDFI TKRTDPHAQWEDQKVAKAMKTLLENQ
NFRAWFEYLPKRM
NGRSWWHMGKQRSSKEAEPQWSNVVTQMDEADEPY(PRFY
$N \square R E A Y H L I E D R N C Q G H P S R T \ A Q Q M Y Q Q \square Q A A A P M K F$ NALDLQDVVK LFVHPTKEAKLLAER VEQGEKTAPSML NALDLQDIVRK LFVHPTKEAKLLAERIVEQGEKIAPSML NVTALRYITAVKVIPEAKEEVNQLKQQMLKIDDENLAPLI DFNAFAHKSQMRLCYNAQEEIFDIVYDQVKQLREAGVSAA
 FVSDWKHFFDLRTTGAPHPDAK ILALPLLMEEFKQK NLRELAYFSELRSTPQSHPDLRETALKMVGTFLDREPEFF FVSDWKHFFDLRTTGAPHPDAKA TAQPLYEEFERL NARAAMQLIELRSGREGHPSYRAVAHELHAQTAAVHPAVG NAR VLEMLLSKLLSSPLAEVRRI GTEMRTAALSVAPTLV NAR VLEMLLSKLLSSPLAEVRRIGTEMRTAALSVAPTLV FVSDWLHFFDLRTTGAPHPDAKALAWPLMEEFVRR


 P $\square R Q W K H F \square N L R D T H A Q K E D R A D A Q A D K D A F E E$ T C MDNFFWLRNHEDAQPEI RELLARLMWEALDESKPN NLRELVYLTELRSTPQAHFDLRQLSRDMVRLVRQANPSLS $T L L T Y F W K W V K R L C F D A Q R E \| V E T A R Q E T E Q V A R V L P R U G$
$T$ F
SI RAWREVAV TAGAVGGEGQRFAAAVLHHLRATAPNSV TLLTYFWKWVKRLCYDAQRETFETARQETEQVKQVLPEIG
 NARAF N OKMAS
YVSDWEHFFALRCDSHAHPMARELATPLREEFLKR
FVSDWKHFFDLRTTGQPHPDAKTLAMPLFEEFKKR
NVKDLLAFCKQRTDRQTQPKSNTIAYQMYLELCRAYPTAH
 DLWAFDHFANLRCTKEAQWDDRETSFKMLGLI REVAPQLA DLWAFDHFANLRCTKEAQWDIRETSFKMLGLIREVAPQLA NLREATHLIELRTVPQGHADYRKVVQEMYRLINKKHPTLF FVSDWKHFFDLRTTGAPHPDAKAI AAPDFEEFKRL
QTRTLESHLSWMLS SHPLEEARTVARSVMEEALKKISPGLL
 N RELFHVI ELRSAKQGHTSYRRMAQGLYRTADTVHPWL NLRSLEMSHQRMCNRAYWEYRQLFGDIRKALSE

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D WLRAPCY
D WL L A P C Y

RHLSPSKY
R HLS P S K Y
G A M
K Y M
E E M D D P I P
E EMDD P I P
K N F LiP P C
$K N F L P P C$

APSGPFCQ■DRCL
K Y L
RYTEPTP F DRDT
RYTEPTPFDRDT

S Y F
KH I GPPCVVREHLK
K HI GPPCVVREHLK
S S L K K K
S S L K K
D F VD DCMK

D T L IK Q $\square \mathrm{AKG}$

VDDN D Y T LDE
$\begin{array}{llllll}\text { R H T A P T } & \mathrm{V} & \mathrm{Y} \\ \text { R H T A P T } & \mathrm{V} & \mathrm{Y}\end{array}$
$K \mathrm{NF}$ K P P C
$K N F L P P C$
K W DK P Y C P E G D H
VD Y G K Y P L G
A A M
K Y A
K Y A
$R Y L L$
$R Y$ L L
$R A F \square$
$R$ Y A Q P P CV
RYA QP P CV
Q D $\square$ P D T R F G G
$R Y A R P P C M$
RYARPPCM

| $K$ | S A |
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| K S | I |

LDLID F EMPS
D D AL
D D AL

VDLN E Y D LE
SHVDKNEYE
SHVDKNEYE
A P NLDP F CQK GAC

10 VSTKAFPTPKNVIATART 30
30
LTKAFPTPKNVATARTCYSARQTGFE -TLVSLTKAFPTPKNVIATARTCYSARQTGFE
 GK I A GVCYDEPDEKTE


TELDAQKAE
TELNAQKAE
 DEMTVRLVEYDPHAETKLVASRVAELSADERHA Y V P Q P L T E P E Q T

YMK $\square R$ VF DEFEPEA $\square$ A YSRSGES $V$ DAHAVK $\nabla$ A
$\begin{array}{ll}\text { ERGAKKFM } \\ E & \text { CAQRAE }\end{array}$ El SAQRAE
$E \square A A E A G R \square A D G A P E G D T T$
$E R A E$
$E R A E$

R VLAE NKSLSDL
MCESLNNDEES
AKMCDD $\square$ ND $\square$ QES MK A LVK P S $\square$ K F $\square$ D M T DEP $\square E A \square R A G R T C Y K S E D K S A E$


E N G A VK F $\square$ D A M P D
A $\square$ M C K E $\square$ ND $\square$ E D S

E!SAQRAE
EISAQRAE

KPEVVLIQETGVAEAAARTCYDSFENSENRA】 E LT F $\square$ S GKYAGTCYAADGYET $\square R T Q E P Q$

LARYSRSPDSVVS VEWVRTHDSAK LARYSRSPDS VDS VEWVRTHDSAK EKTQK
STADKE

MKTK $\square L Q N F F \square K T F D \square E N A L L F S G R \square A G V C Y D K D \square S N T Q$ EKPKV T L L Q E S GLGV A E IAAARTCY D S FENSEN KPRVKILRYTPDRLSLAKNAA IFFLGKSDEDNV $M K \square K V I A S T K V E A V D F S G K S A G I C Y T V E T L F A E A P E K T Q$ MELSILPNTYRNTFNMDSSLKLCGQDAGVCYSKSEDKTL

LEEFAPRVEDAVRA
GVGRERTE GVVGRERTE

VK L DAFTKPDSFCAKMAG $\square$ CYMKDE $\square$ STE

EKPKVTLLQQSGDGV AEDAARTCYDSFENSEN


UniRef90 G2LHD9 UniRe90-G2LHD9 UniRef90-R8F7V4 UniRef90_R8F7V4
UniRef90 R5J7M6 UniRef90-A0A024QIB1
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 RRINMTLNNGHHSVYDHIFIDSFNIKIPK\LAMVINNEKEY AMKGILFRMTHFDAFKRVKYNADLLVSEANWHQLLRHNRK AMKGILFRMTHFDAFKRVKYNADLLVSEANWHQLLRHNRK

KFLNFYFQYGHRSTADLAHDAMATESLSLLAATMVVESRW KFLNFYFQYGHRSIADLAHIAMAI ESLSLLAATIVVESRW E $\|$ I FRFDI LMDDGGFRDMHRHRRC ALGNRTSRHRPGRAFEEPYYTFD LAADGAYRDLQRHR\|L ALLKS LLAAQPRKRELEQASYTLQFGGLSAALTHLTRHRMQ R WL A E Y GDD S I AEMGGVHLCVEGLSNVAKEIEDKRDG
E E SYYYVGYGHA Q F L N AYVHA VENRRDSTGARLTTQQLVYPRFIHSEFMTHRVF KLYDKVVEYGDDSVAQLGGVHLACEQASNAARKVLARALA
 $\square P E V I I I G Q L K P Y P F N W V G V I V H N F S R I V H Q F V R H T W L$ K Y L S N Y VA G R HE

QLLDD L A TYFHHS NLLGDTATYFHHSPQGDLTTTFELVYHRFI HSEFMTHRMI SVIAAKSITSYPGTSQFPVTITTFELLEYPRFI HAEMMTHRAQ K FVKKLINS GHLAMDEHAWMSYRIVCDCGVTHEIVRHRDF


VEADGSDPHPTVQKFAVDTVAVVGSRRFLAQQTRHNEV LICPRFVLAEFNTHRQF WSKTI DRSRNAAAPQHVLSTLLLRMPRDVLAEWNTHRCM SLLDDLATYFHHS ILEHANLSFLVRGSRGVLQEHARHRMQ RRTKRDRPPRAFEYGY DNFDVVTGFAEYRDLQRHRML SPQGQRITTFELEYPRIIHSELMTHRLF
 QFLNFYFQYGHRSIADLAHIAFAVERLSLLAAVVDEQRW QY $\quad$ EKNMTYFHHS ILEHANLSF LVRGSLVAVYQSIRHRSV KA $\square$ RRTAQNGHHSVFQHSMVT MELCYPRFI HAELMTHRVF $M E$ QCPK I A MLLNS $\quad$ GVVS FVLTYHRMVHSEFMTHRML
 FLESFYFQYGHASIADLGHLAVCFEGISSELAAEDEDEQLWW A MVWY LIK
 KRTNNTDENDHHSVYDHIMINFNGVGMPK LSAMVMNNEVY ASVKHAMEHHHHSI DEHATLSYLI QGSRGVLQEHARHRDQ KRPLDNLLKKGHTSIFRGEHVKFEFWTTKVVYDHLVTYTTA RRANGNLESGHHSVFGHAHYNLILEGPKILAMILNNEKDY NRDETTLNNGHHSVYDHVNVTLN KNDPK LDAMVNNEHY RRANMTLNSGHHSVFDHTSYNLALEGPKILAMULNNEGMY

LLLRYPRMVHADFMTHRVF
$\square T T F Q L R Y P R F I H A E L M T H R K F$
 ALLARVIEYGDDSVAQLAVVHFAI EIPALLARRDERGRDA ALLARVIE YGDDSVA QLAVVHFAlEIPALLARRIERGRLA SRVATHEIVRHRAG FELEYPRFIHSELMTHRDF KRLNRVLKSGHHSVFDHVKDTFEFSNPKII AMDLNNEKDY
 ACVKNAMDHHHHSIIEHATLSYLIQGSRGVLQEHARHRLQ
 KRSKD IVKDGYSS I LIEMPII HVSVILPRISTGSLVSFPLGG KFLKFYFDYGHASTADLAHVA IAA EDDSLLAME IVDEPLW KFLKFYFDYGHASUADLAHVAIADEDISLLAMEIVDEPLW
RRDSMTMDNGHHSVYDHVTITLNWENDPK LIAMVQNNEHY




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UniRef90 AOMZCO UniRef90-UPI000479F83F UniRef90_UPIO00479F83F UniRef90OUPIOO036EFFF1 UniRef90_UPIooo36EFFF1 UniRef90-Q30UN3 UniRef90-Q52PS3 UniRef90-R5SZT8 UniRef90_L8MWT9 UniRef90-17HPF4 UniRef90-UP1000360CCC2 UniRef90-UP1000360CCC2 UniRef90 UPI000018F687 UniRef90-X1N656 UniRef90-Q8DJR6 UniRef90-A0A023MHS2 UniRet90_R5N9K5 UniRef90-A6QCL9 UniRef90_UPI00037B879F UniRef90-R7FIK4 UniRef90- R7M2U7 UniRef90-UP100047A77BD UniRet90_R5ZOZ1 UniRef90-K4JQNO UniRef90-W6ASM9 UniRef90-D8P973 UniRef90-UPIo0036BEB39 UniRef90-C7LYQ6 UniReffo-CTLYQ6 UniRef90-T1BA16 UniRef90-F1D1L7 UniRef90-R6UH26
UniRef90 $\mathrm{M1F2E1}$ UniRef90-M1F2E1
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EWTNFFALRCTPQAQPETREVALKMRAAYERSEP
EWDNFFALRDHEDAQPEISALAKAM KDAMMSAPVQF

NLRSLKNYFTLRDSGAAFFQIRWLAQEMMRA
NAREAMHLIELRSSPQGHPHYRHUAQEMARLIRDEA
NLRELGHLTELRSQKAGHPKYRRTVQVMAKLYMDRHPEMF T DFENFWWLRVDKDADPTTFALAEAMKKAFDESLDEEL $T$
$T$ NARTLETQVS RLLSHPVAEVRELGRKLRDAA NARTLETQVS RLLSHPVAEVRELGRKLRDAA
NLLSPMGFVATRTCSAAQWEERADAYKVWREVEQRMPELG NLLSPMGFVATRTCSAAQWEERAI AYKVWREVEQRMPELG NLRSLKNYFTLRDSGAAYFQIRWLAQEMMR
T EWDNFFMLRLSDQAEPNIRELARKMIRAMYRFEP
PFRNDFYVMDMRDQLDGQADARRLAEELSGLVK
EFQNFFEQRCHDDAQPEDQYHANKMKAAM
 DPYSLDNFFRGRCASDAQPEFRKIADELA
NLLRSFFWETELRTDPEGHPDYRKIEQEKIKLVQKDYPLDG
 TLRQTNY
NRSLKNYFDDRDSGAAWFQDQWLAQAM
$K E \operatorname{VPVKY}$
$N F L T M E V F P Q R W E P G A Q P D T F E V V N D M W E Q V R Q H D P E L W$
SFEQLNFIFEDYDDYEPETEFSTKLKKAMKEFLEADPDLK
S $\mathrm{DRQL}^{2} \mathrm{NFI}$
DFAEAVY SE $\square R S Q P Q G H S S Y R R A W E M Y Q A \square K R Q Y P A \square S$
SLRQLNY।
SATDWINFLTLRDDAGAQDETQVLARRWKADLEAQKPRL
STEFNNFYHLRCHPDAQPEIEVLATQMRLAAQNSKPVLL
DYAEAEY AKLRSGVKGHWSYRTVAWLMKQKLVTERYPIL
SAQAAERLVW RLRADATPGASEVADEVARVLGVLVPGLT
NLRTLRHVVEMRTAPGAEEELRLIFGRIVAEIVM
T EFSNFFWLRLDEDAQPE $L$ ELLALCMKSAYDESYPE
SLR
T EMENFLWMRVDADADPT EEVANDMKEA DDNSEPE
NTRSLKNYFDLRDSGAAWFQUQWLAEAM AALEAVTPVKY
NLSHLVNMLS
NLSHLVNMLS
TLEMENFL WLRVDADADPTTEVLANLMKEAMDNSEPE
SARVLEQQUR RLFASPFPEVHN ARELKKSDADQ
SARVLEQQIR RLFASPFPEVHNIARELKKSIADQ
DLREAVWVHELRTGRQGHPDYRKLMQESFYQLSYANPSLF
T FRQANYI
ShRQ: NYM
TLRQINNLCS
PFRNIFYVMDFAKKMEAKDEHME
N LRQAADHLR NLSGHPLSETRETAAMLLTELKKKYPVSF

UniRef90 G2LHD9 UniRef90_G2LHD9 UniRef90_R8F7V4 UniRef90-R8F7V4 UniRef90 R5J7M UniRef90-A0A024QIB1 UniRef90_A0A024QIB1
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UniRef90_UPI000378C8C
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UniRef90_UPI0002EEB29B
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UniRef90_R5W804
UniRef90-R6SIZ8
UniRef90 R6DIM5
UniRef90_K7Z351
UniRef90_K2AFF3

SKA
SKA
SAA
SAA

VD T G N Y P L G
GL F
A
S L Y GP TCDS GKC

SHQEKTEV

DDFEEGRPGGP

G L F

| E F |
| :--- | :--- | :--- |
| E F |
| L |

LDLGQW

E WHLDPY $\square$ T NSDY L

RMMGEKC
RMMGEKC

DAALPNDPLAPTL
DAALPNDPLAPTL
K Y L L
K
$\frac{\square}{D} K \square D K E Y R$
VEK L N P R DKGTK L S
EFF

E WH $\square \mathrm{P}$ Y $\square \mathrm{K}$ N A A
R Y
QRMDRPDRGG
QRMDRPDRGG



1
30
40
YDRATSFLLK
FNPGELLVEFAGRTCYRSWEPDPR
VELLD GKPLEVASAALRCYQSEDPK $\square G$
$\begin{array}{ll}\text { E } & \\ E & \text { S SQRAE } \\ \text { I S S Q R A E }\end{array}$
SQEKAE
SQEKKAE
KNADKSI

GK DAGVCYDEDEKKT】 K P IVSLLDHSKDPFNLIATARTCYEKS\|EDRD

E E G Q Q $\quad \begin{aligned} & \text { K K K } \\ & \text { K } \\ & \text { V } \\ & \text { K }\end{aligned}$
MKKKVLS GTFDLKRAMTHSGH@AGDCYASFEESPDKTE

VD WD NPDAS VIE
lupas 21
lupas_14
lupas_28
jnet
conf
sol25
solb
jhmm


UniRef90_K2AFF3 UniRef90-K2ERJ7 UniRef90-TOZY11 UniRef90-K2FHL7 UniRef90-C1F676 UniRef90-C1F676 UniRef90 Q02BZ1 UniRef90-F81386 UniRef90-F81386 UniRef90_B5JJN3 UniRef90_R7H924 UniRef90_JOUVV1 UniRef90-R6BM90 UniRef90 V6HWS5 UniRef90-X0UUY6 UniRef90-M4NJI6 UniRef90 X0UVM2 UniRef90_K2C642 UniRef90-R7F0Y5 UniRef90-R6XL32 UniRef90 K2CEW6 UniRef90-K2CEW6 UniRef90-U7D4U8 UniRef90-K4JUK2
(

WV|EYGHNSI K DWDVIIR
 GYLRNILKSAHGSVLEHASYSFALHNVSRVAAKAVQBRAG QUI DRLFIDSHHTTLQHAFFTFSIEGI SVI F GLHMVHPFY
 ARGRGGLYAYDITMDIGAYRDLHRHRRC


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UniRef90_K2AFF3 UniRef90-K2ERJ7 UniRef90-TOZY11 UniRef90-K2FHL7 UniRef90-C1F676 UniRef90 C1F676 UniRef90_Q02BZ1 UniRef90_F81386 UniRef90-F81386 UniRef90-B5JJN3 UniRef90_R7H924 UniRef90_J0UVV1 UniRef90-R6BM90 UniRef90 V6HWS5 UniRef90-X0UUY6 UniRef90-M4NJI6 UniRef90 X0UVM2 UniRef90-K2C642 UniRef90-R7FOY5 UniRef90-R6XL32 UniRef90 K2CEW6 UniRef90-K2CEW6 UniRef90-U7D4U8 UniRef90_K4JUK2
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm
lupas_14
lupas_28
jnet
conf
sol25
sol0
jhmm
jpssm

AF 90
100
110 SGQEASTRYVDFSKQAFLNPVGSAEGEKDQEDQAHLKKQF SGQEAS $\quad$ RYYVDFSAQAFLNPVGSAEGEK DQEDQAHLKKQF NSDERSGRYCALLEPDFYGMEKYIGKYWPNIKKKEVATEVA

 QKFRQA YSGNLGFDTPALVTESGAGALYEEAMQAA DGQERSTRYQDFNDSPYYV DGQERSTRYQDFNDSPYYV $P E G A T P A Y$
$P E G A T P A Y$ QMSESSTRY $\square$ AMDPQN $\square P$ TPDE $\square G M P V D L A E E W L S \square V S E A$ NTSEKSARYTKMQPQTEKEREFYEKWHTLV SKEARSERVVDDSKDDYWLPEDLLEKSEYSARSE LVVEYL TTSEKSGRYTP VIVRTEGSI DTEKEEELYNKWVEIF $N S E Q V S Q R Y V E V K K E N Y Y V P S E L Q N G K L L E L Y$ QQSQRYVKLDEVRAHLPPALQGEAREVVAVEGAWRAY SRNAASNRAIP SKNNPAYP DFWGKNKAGMQANEQFSKRK EYQEKSTRYRPFVASNVYDPNGDSDDDKSRIIIGH

RTMQVAQDYTFQHGYDVHPELASYGGLYPYQLAMDTD NASERSLRYTKPSAHAGLSDRE

EI NK $\quad$ Y PAVKK
 RIV Y QDYYY HGYDTHPETGKYGGLYPYQLAMMDTD
 SRNASSSRAIPHARDADIFIDPFRKNKAGMQPGEYLSPDE


130


160 PRKDEEDEKI YSKTIVA RAFDITRSLLPAGATTNVAWRM EEFQRSAAEQLQ
KK LIKKEREKYLEANAPKDAQEQDRMFDSVIFPTGLDFTV ADGMLADVYAYERTLRA RAFDVARYLLDLATNTSLGQUV ADGMLAAI YEAYERTLRA RAFDVARYLLPLATNTSLGQUV LAAMRRLPAPANE Y A L LAFGARSRFLFKM

 ERDCEVYPGKFDEKEVDKLAYENARYMISVFCPTAMVYSL
 LDAVDFASQAY
A ELSERDEPVADGLLAEKRADETARYVIPVACHTAMVYTV $\square R L C R F A W K W S G R L M K D G L H K Q T A N R L L M P W Q F M H V V L S$ NKLDETYNA YNETGKRDLARYLLPVGSKTAMACMA TETLKKV LDLI EQNLGALPDRKKRTLAQENARSMTSVVFYQTELVYTV GKTEEQUEKEIRNDADKKKAQENARYLDSVFTPTEMGHTG T TPVLKKL DKTNHEAAVY

DKTNHEAAVYLMPMGFKRRSLLFKM



170
180
190
 NFRQFADQLML LRHHPLEEVRDUAEKTEAALKEAYPSSF
$N \square T V L A A \square H R T A W T P A \quad M Q H V V S E M V R \square V L E K H P E L$ NARTLETQUS RLLSHPVAEDRQLGESLREA NARTLETQi S RLLSHPVAEURQLGESLREAA DFAEAEY ISRDRSGVKGHFSYREI A WEMKVKMEQLEPED SARRVLE QQ R R LLAASPYHEVVRTI AA A EMKK A A S Q A E P F
 PFRNDFYVLD Y $\square$ QDMDS FYN $\quad$ MMEREAYPE $\square R Q \square A T S \square R K L I Q K$ SLRQDNYIL
$S G \square T \square H R \square R R T A A A C D A S R E A R T V V D R M V A E V E R \square D P A F F$ STEMDNFFD LDRDHEDAQFEDFAVAYLIEKAMRTSTP S I R S WER VVG RMDAYPTVESKELGKK LVYNDRKAY SWNELDY I GK LIRTGAGRHLSYWKGALRMVEEAAK IDPE P L A QL N RLLMM
DIRQFSY LiLH
GWNEDDY I GKLRTGPGRHLSYWQDALRMVEEAKK LSPVRA GWNEIDYI GKLRTGPGRHLSYWQUALRMVEEAKKLSPVRA TARVWAETVKQ LDSLPDKEAHDAAEGIRRRELAKIAPRLI SSTDWSNFDGLRIHGEAQDEDRVLAEMMLEAREAATP

## jhmm

jpssm


K H
K HI
R H

K H

RE $\square G D A P \square E S$
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm

[^3]
[^0]:[^1]:[^2]:    

[^3]:    

