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 D L H S R R NL E L VE T L R EKKK G S L L WA V D E TVTAAMGGRLLLK Q DVNSRKNLELTVETLREKKKGSSLWWVLDKTSTAMGGRQLRR DAATRRNLELTVNLQGGHTNTLDSVLDSTVTAMGSRMLQR
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 MIEQPLDHKTA QDRLDAVEMLKDNLMARREYMNSI YDLE WLNRPLRSQEEVRQRQNAIKELDYQFEALHETLKQIGDSE WI EQPL DHPGPITRRLAAVDELFSDREDVMEDLDGVHDLE WLHHPLRDRQKLAHRHLAIEALDDKLTSVRQQLKSIVDIE WI QQPLLNKEQIEARLDTVEELTKNTFARQECLSHVYDLE WI TTPLISEEKINYRLDGVNELYSSRGGDDERLKEIHDME WLHHARRDQAVARARHAAINALMRTDACTASTLASVPDVE WI DRPLIDGDDEEARQQDVQSFINHYMELMEQLKQVYDLE WLDRPL LS LDELKKARQDKVDELLDQYFERQDELVKVYDME WL HQP RNTEKLTLRHSTINELNQAYDPLQKLLQNTADI E WL R WIN NPLRTLDVLNNRQRAVHWFDYRFEKTAEALKGHDME RIDKPLDQRAPI ERRLEAVDYLYNQFIVREDALKEGYDLE WLARPLRDQAPVRARHQALAALTDTATPLREVLTGGGDL WMERPLGSADH|ATRHDQVEGFLEQFFERREELTNVYDLE WLEAPLLNLHDDTERQDGVEDLVRHEDMRQDTLDKY YDFE WLHHPPRASVAAQARHQAI GALLDAPMHVRSALRQIADVE WLHHPLRDRAlPQARQQAI EVLGGDWQTLRSTLRTLSDVE
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 RLAGRVAYGNVNARDLIQLRNSLYQIPKIKAILASIESDS RLVGRISYKSANPRDLVAFRSSLKMLPYLRELLREFHSPL
 RLAARISFGSANARDLTNVKRSLKMI PHLKRRLMRAGHDE R L LA RVABKTARPRDLATLRDSLALLPDLQQSLAGLESPD RUMTKISCKSANPRDLDAFKNSLEMUPHMKNQUGHFKCDV. RVVARLALCNARPRDLTRLRSALQALPPLHQLLNESNDER

 RI AGRIALLRNARPRDLSSLRDSLACLEELRRPLAGHPSPL RI LT RVAL R SARPRDLTRLRAALSQLPHLATALQAVDAPQ RLNSKIAMGHANAKDLVALRKSFEKLPRILQHLDELSAPG RLSGRVSYGNVNARDLI QVK Q S L Q KI PE:IKK L L SQRAHEE RLMGRISYGNCNGRDLI SLK K S S K K VI PDI K DIL L RTMSKIVYQTANGRDLISLKQSIAKLPDLKEVITNCQSDY

 RI LIARVALKSARPRDLVQLRFTLFLLPNLQNLLAQNTSLK RIMTRIVYGSANGRELRSLSTALKRLPGLLTLLEGCQATLL RLA GRVAFGNVNARDLDQLKKSLQQDPSLKDLLGQMDNDD RLTGKLVCGNLNARDLLALKNTVKHFPKIKELLAGCRSK L

 RVLARVALRSARPRDLERLKNAFQVLPELQDLLDTAQAPL


 RLLGRUSYKTANPRDLLAFKTSLSMLPHIKR LLNEFSCDL RLMSKAVYGNDNARDLIALKQSLGRLPRLNELALQGKAAR RILTRVALGSARPRDLTTLRDSLAELPNLQSELATLASPR
 $R L V G K I S T L S V N A K E L I F L K N S I E K L P G I K E I L K D S K S T L D$ RITARI ALRNARPRDFARLRQALGLLP


RIVSRI ALDRARPRDLSGLRDSLRGLTSLTPLLDGIDAPL
RLTARLSYGKASPRDMLALAATLACLPEVRKI I HQHQVLT

RLA GRVAYGNVNARDLDQLKHSLYQVPLLKETLKSMNQPN


R V




 RI TGGRLALLSARPRDLSSLRDTFAALPALRERVAEDAPNA RI TGRLA LLSARPRDLSSLRDTLARLPEIRRELLPQSDAAP R 1 $R L V G R V A L K S A R G R D M V A$ RLLSKVAYKSMNARDCLSLCASLQKVPKIRELLREAKSQA
 RLLGRI C Y K S A N P R D LI A FK Q S L K M L P DI DQELS QF D S K L
 RI ATRIALSSVRPKELAALRDTLSSLPQLNQII YEHFSDT
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| UniRef90-UP10003751E1A | A ELDV |
| UniRef90-F8FD35 | A T ADV |
| UniRef90-G4CMD9 | A ALDV |
| 1v17 |  |
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| 66SR09 |  |
| 4A1 |  |
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| UniRef90-W7C9D1 | D |
| UniRef90-Q9KAC0 | D V |
| UniRet90_R4K762 | CL |
| UniRet90-B8CJQ5 | AELDVLC |
| 21LT |  |
|  | A WTDV |
|  |  |
| UniRef90-E6U2G9 | A GL DV |
| UniRef90-UPIOOO3664FCF | A GL D V |
| UniRef90-FOSZ12 |  |
| UniRet90-R7G332 |  |
| UniRef90-A4G717 |  |
| W7CASO |  |
| UniRef90-25XB |  |
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| UniRef90-UPI0002E0E3D3 | AEFDVFANFAERAETLN |
| UniRef90_N2J3A2 | A ELDVL |
| UniRef90-R5D3K4 | A ELDCLC |
| UniRef90-S6HDZ2 | A |
| iRet90-UP100046E7B29 | V |
| UniRef90-UPIOOO373C0C4 | A EL D V |
| UniRef90 A0AO59NYH1 | SQI DV |
|  | V |
| 2ZD11 | S |
| UniRet90_UPIO0016A |  |
| UniRef90_B2U9E4 | V |
| UniRef90_C5W | SEIDV |
|  | A |
| UniRef90-UP100037CBF9E |  |
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| UniRef90_UPIO0036C3E2C |  |
| UniRef90-W3AT24 | A LI D C |
| niRef90_W6RUR9 |  |
| UniRef90 SoP3D4 |  |
| UniRef90-UP10003A33E2E |  |
| UniRet90 E5WCO7 | S E DV |
| 俍90-R6LCF5 |  |
|  |  |
| UniRet90_UPIOOO3B |  |
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UniRef90_UPI0003 UniRef90_UPI00030BAA93 UniRef90_S6BTH8 UniRef90-M7XBG9 UniRef90-B2GB17 UniRef90-A7BQ23 UniRef90-X8IPM3 UniRef90-W9DVU1 UniRef90_A4W4J7 UniRet90-H9ACR2 UniRef90-M7POD6 UniRef90-R6M0U2 UniRef90-R5J915 UniRef90_UPI00037DF052 UniRef90_F9DP35 UniRef90-A9HXL9 UniRef90-UPIO003620BE2 UniRef90-W3Y5A3 UniRef90-W1N4L1 UniRef90-UPIO00255C42F UniRef90-W2UCU3 UniRef90_UPIO003B307CD UniRef90-B9DPB9 UniRef90-D4J3I6 UniRef90_R5YN52 UniRef90_UPI0004032A6A UniRef90-G2SQM9 UniRef90_UPIO0024907EF UniRef90-S1RQW0 UniRef90 K8GKU6 UniRef90-A0A011NSS7 UniRef90-D3SXA0 UniRef90-K9VY94 UniRef90_Q035Z2 UniRef90-F7RWM2
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UniRef90_B7K5K2 UniRef90-V7IDS3 UniRef90-R5QJD2 UniRef90_R6X7K6 UniRef90_V4YRM4
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UniRef90_D1CBX3 D PATRRNLELTATMTDNKKGSLLGCLDRTATAMGARTLKQ
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 D $\square$ NTIRNLELTESLKKSRSYSLLWLLDKTKTAMGSRMLKN D YYSKRNLELTETVRKGKKGSLLWLLDETKTAMGGRLLKQ DPNTMRNLEELTQTLRGKKEGTLDWVLDETVTAMGARKLRM

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 DQDARSNLDI LQNSRTGRKGTLLSLLDSTKTAMGGRLLKQ

 D

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 Hatks SLDLLENARGKKHGSLYWLLDDTKTAMGTRLLKT DAATRRNLETETDRGQESPTLFSLLDHCRTAMGSRLLRH DPNTARNLELFRSARGERKGSLLSLLDETTTAMGGRLLKR DLYSKRNLETETVRSKKKGSLLWLLDETKTAMGGRLLKQ DLTARQTLELTETLRGKKKGSLLWVMDKTRTAMGHRLIRG DSSTRKNLELDETVRGKKQGTLYHVLDHTMTAMGGRHLKK DLNARRN ETETLRSKKKGSLLWVLDSTKTSMGRRLLKN DLQTKRNLELDSSMQDGTQGSLLQVIDRTRNPMGARLLRR DAMTRRNLELTEPLRSDSAHTLLSELDHCKTAMGSRLLRH DEATRRSUETRTFRSGREGSLLSVIDQTITPPGSRLLAD DRVSQRTLELVEPGRDSKNSTLYSVLDECSTPMGSRLLRE DATALRSLDVFENHAGGDDHTLVAVLDETTCALGRRELKA DAATRRNLELTFNLSGGVDHTLASILDHTVTPMGSRLLKR DHQTRRNLETTQTVRDGTIGSLLWALDKTTTAMGSRALKR DASTKRNLELTASUQGGTEGTLISRLDDTCTAMGGRLLRR DESSRANLEVLRSLRGGRKGSLLGVLDKTVTSLGARKLAR DAATRRNLELTRNLAGGHDNTLSAVLDCTATPMGSRLLKR DNVARRNLELTESMSGSRGSLLGLLDCAETAMGSRMLRK DANSRTNLEL DNNSKSSLLNI I DKCKTSLGSRLLRR NLELDKSAKTSKKGSLFWLLDKTSTAMGGRLLKS DYQSRRNLETGTVRDGTHGSLLWALDKTSTAMGGRALRR DPVTRKNLELVEPLFEHGT SLFQLI NDCQTAMGGRLLSR DHQTRRNLETQTVRDGTYGSLLWADRTCTAMGGRALRR DAATRRNLELTTTLSGKKEPTLFSTLDRCAGNMGSRLLTQ dVTATrNLELVRNMTDGSKGTLLQVLDFTNTSMGARRLRS ATTRRNLELTHTLRGETSPTLLSLLDTCATGMGSRMLRE DAATRRNETANLAGNYEHTLAAVLDRSQTAMGSRLLKR DALISRHNLELESMRRSQHGTLLEVLDETKTPMGGRKLVN DRSTIVNLELFSTIRGNKKGSLIHLLDRTKTSMGGRMLRQ








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| :---: | :---: |
| UniRef90_D9SM44 |  |
| UniRef90-UPI00030BAA93 | A MLDFLCSL |
| UniRef90 Govo | ARIDCL |
| UniRef90-S6BT | A ALDVLASLAAQARRLD |
| UniRef90-M7XBG9 | A ${ }^{\text {a }}$ D |
| UniRef90_B2GB17 | A ALDVIQ |
| UniRef90-A7BQ23 | AELDVLNNF |
| UniRef90-X8IPM3 | ALLDVLTAL |
| UniRef90-W9DVU1 | G TLDVL |
| UniRef90-A4M | A T D V |
| UniRet90-H1XA | A EL DVL |
| UniRef90 Q9PCR2 | SELDVL |
| UniRef90-M7P0D6 | A EIDVL |
| UniRef90-R6MOU2 | A $\square_{\text {L }}$ D L |
| UniRef90-R5J915 | A El DVL |
| UniRef90-UPI00037DFO! | SEI DV |
| UniRef90-F9 | SELDV |
| A9HXL9 | A EL ${ }^{\text {d }}$ |
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| UniRet90-W3Y5A3 | A DL DV |
| UniRef90-W1 N4L1 | A ALDVLC |
| UniRef90-UP1000255C4 | SSLDVLQSFASV |
| UniRet90-W2UCU3 | S EI DL |
| UniRef90-UPIO003B307CD | A EL DV |
| 9 |  |
| UniRef90-D4J31 |  |
| UniRef90_R5YN52 | V |
| UniRef90-UPIO004032A6A | SEI DVL |
| UniRef90_G2S |  |
| niRet90_UP100024 |  |
| S1RO |  |
|  |  |
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| - | A AVDVLCGLIE EAV |
| niRet90_Q035z2 | vLos A A A |
| UniRef90_F7RWM2 | A E A D |
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| 31RD9 | ${ }^{\text {A }}$ |
| P1000413 |  |
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| UniRef90-B1ZYC8 | V |
| 隹 |  |
| UniRei90 ${ }^{\circ}$ W1RWD1 | A QL ${ }_{\text {d }}$ |
| UniRei90-UPI000381EDB0 | A TVD |
| P10003 |  |
| 5FL |  |
| UniRef90-s3FFJ6 | S |
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| W7Vowo |  |
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| UniRef90-A6DUF8 |  |
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| MOMZ |  |
|  | S |
| UniRef90-K6YWU8 | A |
| UniRef90-K97 | - |
| UniRef90-UP1000476 | A ELDCLQGFAEVA |
| UniRef90-L8JLP6 | AT ${ }^{\text {a }}$ CL |
| UniRef90-Q1D5J6 | D |
| AOK | A ELDV |
|  | A AI DVLC |
|  | YL DS |
| UniRef90-F8GB49 |  |
| UniRef90_OO45Q5 | A S |
| UniRef90-UPI0003FF67F8 |  |
| UniRef90-N9BHK8 | A Q |
| UniRef90-K9VNS3 |  |
| UniRef90-Q0AY | A 1 LDV |
| UniRef90-B7K5 | A A |
| UniRef90_V7IDS3 | A AL D V |
| UniRef90_R5QJD2 | A |
|  |  |
| UniRef90-V4YRM4 | $\begin{gathered} S G \\ \hline \end{gathered}$ |
| UniRef90-l1E195 |  |
| UniRef90 UPI0004666336 |  |
| UniRet90_K2CIK9 | ASI D CLIS A ALS EQNN |
| ef90_17ZC39 |  |
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UniRef90-D2EK50
d

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A DRNSRANLELLTNOREKTYGSLLWVLDECKTSMGTRRLKKR DGNSRRNLETESIREKKKGSLLWVI DKSATSMGGRTLRK DKFTVRSLELIGSMNDGGS SLLHVIDKTMSPMGARLLK
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## \section*{D D D

} DSTARRNLELTETLRSKKKGSLLWVLDKTRTAMGHRLKRA DAVAVESLEFESVRGHENRTLVDTVDETACALGRRKLTD DIMTKRN KTETLRKQRQYSLLWLMDRTKTAPGARMLKN DSVAMSTLELVKNSRDGSKDTLYSVLNHTNTTMGARTLKK DAITLRNLE:TAGURGEGDGSLGSALDVTETSMGSRTMRS
 DHKVQKHLEII DSNTNNPKTTLLYWLDQTQTAMGSRKLKY DRFTIRNLELINPLNEGGK SLLNVLDKTISPMGSRLLRR DINSKRNLELIESLRDKKKGTLLWILDKTNTSMGARRLKS ATRTNDVKNARTKKGSLLGLIDETKTAMGGRLLKQ DAKTRNNLELTVSLSGGSKGTLFGVIDQTLTPMGGRLLKS DKWTRRNLELVESLRTSEKGTLFSTLNDTKAFGARLLRN DRFTDRNLELVSSANDNAVTLFEVLDQTSTPMGARLLHK DTTSQRNLELVAPMDSGPTLYSVLNKCKNPMGRRLLRQ DRFTDRSLELLAPMQEEGRSSLLSVIDRTVTPMGGRMLRR DQATRRNLELVTAGREREGSLLWVLDKTDTAMGARTLRR PYTKSQLEESRSGRSQKKGSLLWYLDRTKTAMGGRLLEAG

## DR

DKITRNEEINKTUNDDSPTLFSILDRCCTQMGSRLLRK DKFTVRNLELVPQHEGGVPLIQLLDQTVTPMGSRMMKK
 DDRSCRNLELKNOTSDKKGSLI SVLDCTDTAMGGRLLKA DTTTRRNLELTETMHGGGDGTLLGTLDHTATSAGQRQLRE
 DEVTERNLELFKRLDGKKKGTLLNVLDKTATPMGGRLLAV俭 DKATVRNLELLSSPYEEGKSSADELDYTTTPMGSRTLRR DENSRRNETETLRDKKGSLLWVMDRTNTAMGGRQLRK DSASVRNLELVEPLFSGESTTLEYTLDTCCTPMGKRLLRA DTAALKNLELNSMSGKTENSLLSVMDSTKTPMGARTVRQ DIHSTRNLELETLRKERTYSLIWLLDKCKTAMGSRKLKT DRFTIRNLELYNSASGVKADTLIDIIDKTTSAMGGRLLKR DGAALRSLEFENAQGDRSGTLFDVIDETVCALGRRRLES DKFTVRSLELGSPMNEGGK SLLDII DHTITPMGARRIRQ


UniRef90 UPIo002D82233 UniRef90-U1WZY3 UniRef90-R5BV51 UniRef90_BOPE00 UniRef90-K9WES9 UniRef90-W4QRF9 UniRef90-Q31F87 UniRef90_UPI00026C7C79 UniRef90-F21512 UniRef90-G8UMY4 UniRef90-I8UJ85 UniRef90_C7ND27 UniRef90-M5JC95 UniRef90_B2TIC3 UniRef90_Q5L7B7
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UniRef90_D2EK50
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 WMVFPLKDEKP I WL E R P L A A D V A A
 WL AMPSVDLNELNSRYDUVSSFTGNREKVQEHI GNDGDLD RLRQPWKEPGP WLKRPLKNLQN
 HL MQPLRDTKLLELRFEAI QMLLMDAPHLHKTVLK S VYDLE
 WL MLP M K K DRAGI

## $w$ $w$ $w$

 WI CMPLKKSPE KL $W L G R P L R D Q A V L$$W L G Q P L D D K G L$ w
S

## w

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WL GR P L KQQ S WDERPLLSPAA W E R H P L M D $\square$ H R WL HHP LR A Y ENPLRAR GVLPDSAARLADLLKRCADVE

 FLI A P L LGGKD AI EAR LD AVVEFFDHRQALRATLGDFADTE

WL L K P L

 WL WL N N P L DD KE IL WTVGP K KEAK P | $W$ |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $W$ | $E$ | $K$ | $L$ | $V$ | $L$ | $K$ |
| $W$ | $E$ | $E$ |  |  |  |  | $\begin{array}{lllll}W & L & R & P & L \\ W & R & D & D & V \\ W & R & L \\ R & D & T & E & D\end{array}$

 WV Q Q P L R D P E S WI I MPLKELKP WI L R P L LDVTE $\begin{array}{lllllllllll}W & L & V & F & P & L & K & E & V & V & P \\ Y & L & E & Q & P & L & Q & N & I & V & H\end{array}$ WLD QPLVDAGA WL D K P L QVKKEP WL T R P L R SRQT WL L S P L K N I E A

 WLNNPTQ T T S T | $W$ | $M$ | $V$ | $L$ | $P$ | $L$ | $K$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | WL V F P WI E EPLI DKSE

 NLMFPLVDKELI WMVMPLKEKVLI | $R$ | $L$ | $K$ | $Q$ | $P$ | $W$ | $R$ | $E$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | WIL H P L K D K K E WI CMPLKTPEK WL R Q P L L D VEA WI E QPLINSSSI WL NRPLANI QL T L L L R P $\begin{array}{lllllllllll}W & L & I & K & P & L & L & D & I & S & K \\ N & L & E & N & L & T & S & K & K & E\end{array}$ W ENP WL L NP L K D K N K

 WIVF P L KDPAR


## 


 ES R LDDVVEHFFRNPMLLEEQQL P LI G D L E H H R Q E A I E E L V N N L P L M E E A L K Q I Y D I E



 E K R L

 LK R H D A V E A L T K D S Y D D C D A L L N G I Y D L
 WLDRPLIRKDANARQSRVQVLLEHFFERQEELTK/VYDL|E

UniRef90 UPI0002D82233 UniRef90-U1WZY3 UniRef90-R5BV51 UniRef90- BOPE00 UniRef90-K9WES9 UniRet90-W4QRF9 UniRef90_Q31F87 UniRee90-UPI00026C7C79 UniRef90-F21512 UniRef90-G8UMY4 UniRef90-18UJ85 UniRef90-C7ND27 UniRef90-M5JC95 UniRe990-B2TIC3 UniRef90_Q5L7B7
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## D A

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 D A A T I R N L
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 D S T A L R S L L D R F TI R NLELYYQSTASNAV TLIDII DKTISPMGGRTLKR
 D K F T I R N L E E F F S A S A G G E GVVS LV S V I D K C C S P M G S R L L R G








D ATTRRNLELEYT TNGESKHSLIATDNRCSTAAGVRTLKR D GQTRRNL ELSESSRGERRHSLIAAVLDQTRTPMMGARMLRR
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 DNNSA $\square$ NLELTRTVRDDRYGSLEWLLDKTKTAMGARLLKK DPQTRRNLEIT QTVRDGVHGSLLWALDRSETSMGSRALRR

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 D S K T V D N L S






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WINQPLIQHEY LLERQEAVTALLTHADLDEKTLRATADI E WVGQPLLDLAELQDRQDAVAYFVDRRARLRDALGHVSDLE WVCHPLMDTKKI NARLDAVDSLNRDRDRFTSQMTKLPDLE RIILPLKSVNEINRRLSLIDGLNENDHLKYEQLKSISDLD





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| UniRef90_Q5BCM2 | S QLDCLI S L A K A S S SLG |
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D GQ T LI N LE VF S N S N G G S E G T LF S L L NK CV T P F GKR L FR S
 DAATRRNLEELTQALS GGREGSLLAAAVDRTVTAPGARRLER





 GNTVVNLEIVYNNTDTEKGSLFSVLNHTGTKFGQRLLKK








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 D S A A M D S L E L V K T L LQ G K R T D S L L D L L D R T S T S A G S RLLL T R GTTMKNLEILLQNXTDKTKGSLLWVLDHTKTSFGRRKLKK D A A T R R S L E L T R A LT G G R G G S L L A V V D R T V T P A G G R L L E Q G Q T L K N L L E V F S N S D G G D K G T L F F N L L C R C C V T P F G K R L F H T




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$R A|L| G R|L V A G R G S P R D| L|G Q| L|R D G| L|A G A R D| L \mid H E L L D R L E G P P$ R A I S R L S L N R G G P R D L A A I S N G L K V V T R S I F
 $R$ LT RVSTAKA GPRDLAA I A A ALQCGEQLVKAKLTGRR SKF
 $R A L S R D S L D R A G P R D L V S I R N G L L Q S S D I S K M L S G F A P K L$


 RAL T R L A L D R G GPRDL NAI GAAI GQAGDLAARLGQMGEAP
 $R V V N R V I Q G G A L P R D L V R L R E A L D V L P E L D A M L E D V S Q P A$ RLSTRI FLLNRATPKDFI ALLRQSLSALPAVRATLERPANPP
 $R L A G R A G A G Q A G A R D L V A D A D G L E R L P Q L A G L L R D R G P D W$
 $R L L S R V H A G R I K A Q D F V K V L E G F E Q I E Y T M S L L S E F G E G E$ RLSTRVTVVNRATPRDFIALGNSLAALPAVLAALTQPDDGK

 RIAAS R V A L R S A R P R D L S S L R D S L L R L P Q L A A QL P E A E F

 RALS RLLSLQRGGPRDLGNI RAALAAAAREVVALFAA QEAA P R L M T KFA T GLLA GP K DL G ML R D SLLSASASVVS QLS S FAPA F
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 $R$ L A S R V S F G K T N P K D L L Q L A T T L S S VPR I R A DL E GME QP T S DI G RI G L G S A K P T DL L K L R L S L A QALAL S K QL Q Q Y F D F N

 $R G L G S I V Y H K K C S T Q E F F L I V R S L C H L K S E F Q A L M P A V N S H$
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 $R M L S R V H S C T L K D Q Q F N K V I T G F E D D N T L V E Q L S S S T T L K$ $R$ LASRIHAGSCKAEDFVRVLEGFEQIVYTMGLLRVLNGGN $R L A S R T T H G S A D A G A L L R A R D S D A L V P E L A D L I A G D D R L A$ RALSRVALGGRS GPRDLAA IGGRGLITEGATISALIAAASPAPA K GLCRIHYGRSTPKELI QVLDALIDRISFLKAHEPRFSS DL

 $R L A M R F Q R K K A N L E D V V R V Y Q V V D R D P S L L G T L E G V M D E A$ RI STRRLVNRRGHPKEWLSLRRQGLVGVLPHLRRCFLEEEXPEE $R L L A R I$ HGGSGRFKDFLKVIEGFERISKLVDNLREFTSRE



 RLAKKFQRKAANLEDVVRAYQVVIRLPGFVEALETVVDEQ RALGRLSLGRGQPRDAVA R L L GLGVARE GGA L TRHDPP

 RLI N R V R S G K V L P R E LI T L R S S L E K I P E L K E S I E E D T L S W $R A L Q R L A D K R G Q H S D V G E V W S T L D T M R S I H K K L K D A D S E N$
 RALSRLALDRGGPRDLAAVRNTLIQSEAISDLCRADMPAL $R L I S R V H A G R S K P S D F V R V L E G F Q K D S L T F Q Q L Q T E F Q D I$


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 LAHLLVPDPDLLTLAQTiRHQLIDTPPLSLSEGGLIHDGV LTD L DAALTALHDRLDTALVAEPPTLARDGGFVASGA YHELLKGWDDLADCAHLLRSALVDSPPVVITDGGLFKAGY FLTNKCLTSSSKSLDEALSTDLLQELPGKVSEGNIFADGY SFLLPMDFETLSTLADSLLPALMDNPSTSLNEGNITREGY FQGLAQALAPDDA HALLAAABLPEPSVVLREGGVIADGY
 QTAMAALRRPSRDLAQEFSRALADDLPMMKRDGGFVREGY AQEDAELAACDGELERADATRLADDPPLDKRAGNFIAQGF
 QEADAALRKPSRDLAEILARALAEQLPLSKRDGGEVRERY
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M G KL K E L S S F LIG K L A E M V E T T V D L D P P A A L D R H E F I I K P E F FKSNMDNTSDAPGMKTAVQSFLDEFSHQAAGKDDKYNFFL
 LLRLLSSLDSHPEAARYI AESAFDYEK GQSFEHGGVVREGF QNTLLEDPELLSPVKHYLKDLNEEAAKTGDKTQLFKDLTD AKLLAQLIDSAPNMQDELQSWTRAFNWRKASEEGVFEPGF SVLLKDVLIQMPSLLEGGUDSFLASUNEKAVRDGDFADPSQ MEAARADSALPQDLRFALRATLRDELPLQRRDGGFVREGA QSKLLCEDGLFPDLTPELNRWDTAFDHQKARTTGVITPGF LNDLLSPGKGLPDVSSILDYFRDAFDWSEADHNGRIIPGC LQHAASALLGHDALYALLDAALVAEPPPLLPRDGGGIDAAGY QMLLMEVFSNP GKEVLMDFSKYQEMVETTLDMKQVEQHEF
RGAVEKLKKLPQSLEKTLSSMLSDDLPTFKRDGGFLUDGA VA MLCTGAGLPDVSSULDRFRDAFDWSDADSNGVIPREGC TDKLANSF

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E NAEALDDLRGLAGDGRRAI AALEAKYREQTGISGLKIVHNG NARLATVVRIESESDKLMQDLRDKYRKLTGIGSLKMAYNS APELDQLRSLRDDSRKITAGLQGDYARQTEISTLKIKHNN SAELDELRALTTDGKNWI ARYQAQEDTRTGIGSLKVGYNE


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 FPVIRKKKEEDQDVLSKI QLHLDRDIRKQUKNPSAEYVTVS


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| UniRef90-M4X7W6 | A AL ${ }^{\text {d }}$ |  |
| UniRef90-Q05UL4 | AGLDALSSLADVAATEG |  |
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| UniRef90 UPIO004798 | A A L DVFAAL |  |
| UniRet90-F4L | A D D ${ }^{\text {P }}$ |  |
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| Ref | C |  |
| UniRef90-V4NIN1 | CALDVACANAGW |  |
| UniRef90-B9X473 | AY $\$ DLVVNFGYL  \hline UniRef90-x1H127 &  \hline $1 \mathrm{CRH7}$ |  |
| UniRef90-UPIO003991092 UniRet90-17DVP8 | N |  |
| Unit | ACLDCFFSLSQAAAALIG |  |
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| UniRef90-R9PM47 | AEDDCLLSLAKASYAMG |  |
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| OP9 |  |  |
| Unil |  |  |
| UniRef90-F2E4 UniRef90 UPIO | A E: DVLVSLA IA |  |
| UniRef90-UPIO003C373EEE |  |  |
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| UniRef90-K3ZQ |  |  |
| G6A15 | H |  |
| UniRet90_R5XPW0 | A |  |
| Ref90-H7ELI7 | A Y |  |
| Ref90-H2AMS5 | A S VID CLITALITRTS ECLLG |  |

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| UniRef90 $\times 5 \mathrm{M} 8 \mathrm{~W} 7$ |

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UniRef90 M5FUS9 UniRef90-N6Y Yl 18 UniRef90-H2YND7


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 DASTLQALEVVQNSTDSTKGTLFWLLDYTKTKMGKRLLKK YATKSSLDLLENARGKKHGSLYWLLDQTKTAMGMRLLRA DLSTVSSELI QNLQKKSKESLFGLLNETLTPMGARLLRA DLATIVSLELIQNLQNKSKDCLFGILNETLTPMGARLLRS DNSALRALNLEPGQTGSSKNSVYGLLNRCRTGQGQRLLGQ

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 PNTLESLEI FENQTDTTRGSLMWILDHTRTPYGYRLLRE DSAALRALNVESKTDNKNFSLFGLMNRTCTAMGKRLLHM DAATRASLELLESAQGGRAGSLDGAVDRCVTGAGSRLLAE DPATARNLELVYNLRDQSKNSLEGALNKTKTSMGARLLRII DAATRANLEVVRTLAGQREGSLDDAVDACVTAGGSRLLGA DSAAVRALNIVEGKTDNKNFSLFGLMNRTCTAMGKRLLNK ASTLTNLEVFQNQTTTKKGSLWGLLDRTETTFGSRLLKD GNTHNENNGTGEKTLFRAVDFTSTPGQRLLRK GTTLESLEYRNSTDHTKGSLLWALDKTRTRFGQRMLRK DSVTLENLELTSNFNGTLEGTLLERLDSCCTPFGRRLLRYANALQQLEVLKNNSDGSEGSLFQTMNNTCTAFGSRLFRH TID TLD D F S N DADSARNLELDNNLTHKKSHSLFGULNDCFTPMAARULRA

D S VT LTS NLE IITYNSRGEREGT LLDKLDSCRTPFGKRLLKQ


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 WI KQPLMDKNRI EERLNLVETFVVRQCLQEDLLRRFPDLN RLAAPLTDPEAISARLDAVSAFVENRGEIRNYLGAAPDMA WL LHPLFKDDEI NARYDSIDYMNDRSVIQDTLFTDPDLE WVGRPL DDQQLLEARLNAVEELGEKQSTIPVSQKTKTDLE WLKQPLMDVREI ERRQQLVEAFVVMRQTMQEEHLRSIPDLY
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 NVAAPLTDPARIAARLDAVAAFEAVRGTLRGDLKAVPDADE RLMAPLTDPAA AARLDSVSFFRRLCQAVRSSLKSVADMP WVAMPLVSRNLI QDRLDAIDDRSRGYNNFIDSLKNKIKSL WI DRPLDSKEAVDQRQEIVQVLLDNFDERSDSLKGVYDU SILQPSTERVKLTARYNAVEDLATKEDMFRQALKGFIDAD WLKQPLVNVHAIKERQNLVEIFVNDNNTREDYLKLMMDDMH
 WLKQPLVNLHEIEQRQMLVNELLHBRGQLQEDHLKKLPDLET NV DQPVTNQDTLNKRYDAVEELEDMFFNVRSALKPFLDID DLASPLTDRAA LDRLDLVDLAQWRGDLRAALRALPDAG
$\stackrel{N}{N}$ WL KOPLVNLHEI
 DLSAPLLDAGAlE SVLQPLFVLKGFLDRDAVQWROR RKRDLRADG RLAGPLVDVAVRRRHDAVAAF EEPRAVRSALAGAPDLA WLKQPLIDVNE NNRLDMVQAFAEDPQGLRQQLKRISDID WI GRPLVDRARLQERLDAVEEGRHLIDQLRELLKRYPDLA WVGRPLLKKDELVRRQEAVTELKKDEDSTRDGRQRVGTDGE


WLTHPLCDRNLICARHDADSEDSESMGSRQDMLGRSLDSQ WI SRPLLNAEE NDRLDAVECMQHFFES $G G N L L K G M P D L L$ N L LA P VTNLNA INQRLDAVQELTDMEDRFTSUKESUVSEA

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UniRef90- X5M8W7
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 $R$ I V S R I H A G T C K V K D F L K V L E S F K K L N N G L S G L A E K A S C F







 R A L S R L A L G R G GP R D L GAVVAA A I K G GA DV A A L L D P PA G R A




 $R S L S R L T L G R G S P R D L A A V R E A L G A A A E D R G R L P L P A G L A$

 R LAAK K FQ R Q A A N L Q D CY RMF QA DN QL P NVV QA LQ K H E GA H



 K $\quad$ L


 R LLA RLALDRTARPR DLARMRHAFQQLP EL RAQQLENVVDSAP


 $R A L A R L S L E R G G P R D L A A D R D G L D A A A A V L A D A L D S D P P A B$ R LLLA R I H GK TGLK F R D F L K V I E S F E S I A KL S T K L K D F A NVE


 $R L L S R V H V G N C K L S D L D S L L D A F D A V S G Q D E G C V G S L D P N$
 $K$ T L T Q L I L S P V S I N N V I M L K Q F VAA L I S P V Y E A L T G S R S D M R D CK R F QK S A A S L E DVVVRVYQ AV L K L E GL I S S L D G L E T T D
 K NLDRI YYGKCTRPELLDTVLQTVQTI AQEYA DVVSPEDDNG
 RAL GRLAA GRGSPRDLGQLRD GLMRADEI RDRLADVGPPPM
 RALSRLALNRGGPRDLLGALRAGFEAAGAIAEIPAATALPH
 RLSSRVSFGKVNPKDLLQLGHTLAQVPTIKALIESMDDPA K $V$ V L R V L T A L TVV I P T K P S F L F A E Q S I N N V I M L K T F L C S P R N Y E


 $K I L T Q L I L V P A N P N N V I M L K H F V T L I R P V V E S L T G S R S E M$ $R A L G R L V A R R G G P R D L A Q L R D A L G G A R S L R E R L R A D L P P L$ P K Q D T V K T A E S K I S N I I Y L K H T L E L V E P L K A A L R R C N T S L $R$ R $\quad$ Y K R F Q K G V A T L A I M F E G S T Y S K R I ID D F T T T L A A K F E D V L K F F I E L L F D D F K S N L
 $R A L G R V V A G R G S P R D L G Q L R D G G L S E A G R L H N W L A G A P D G P$ II I L K HI L L Q TM P RAA QR A FGRGGPRDLAA IRDA LRAAEA LAARRVPAAAEL
 R LTH A LRRKKSANLQPVVK LYQ S CSRI PY K K GVLQQ YMT R F
 K NL L R I Y Y G K C T R P E L L TVVL Q T L Q Q I A T E F S H V K S M A R E S








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S S KHLQR LGYHA DLID KLTRALAEELPFYTREGNFDAEGY
 $L L H L L T P G G S L D N S S$ IK Y F KD A LNTALQDLRAPKSEVSAFVSALHPNARSNSKVSLYT RTPLLGFED VLAD LHATLVEEPPARLSDGGAVRPEA


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 NEANAKAVAERSEECSRKINEELLGWHRKVYDVTDAEDSPG VSEALASLPRUREVVSSMNR1NPDAARKNDKYEFFRDES AGEQAGDMEVPPALVSLLQEALVDNPPLTVKEGGMFRSGY SSQHRTVHSSANAVKLLSCGLDKAADQGDMIINLLISSVDQ SINNLRIKETSISNLLSMINVSSVLDKSVEKQTLEFFNLNN


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 DEEYDCACKTVEEFESSLKKHLKEQRKLLGDASVNYVTVG HAELDEWRMLSDGATQYLENLEKRERESTGDDTLK GGFNA



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NAKYLIELTLAKAKS DPKDWVLVNGTTK LGRYQTPK VVGL GVEYLI EVKNAHMNLVPKDWFKINSTKAVGRFHSPFI QDK



 VLGYF
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ARQYY DC DPATELGPDPDVEDNVYRKRNRTECQTLDLVKL GRHYYFRVRSTDLKGVPDIFINVYRKKAYVEFQTLDLVKM


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 QFGHVFRITKKEEPKVRKHFVVLETRKDGVKFTNTKLKKL TSQYQMQLGEDQNKRLPAEFTNSTKKRKQUTFTSLKLMSQ VLGYFDEVPQAHGERLDETFVHRQTMAGAMRFTTTELGDL PFGHVFRWSKKDEQKVRKNY II ETRKDGVKFTSAKLKKL SDEYVVEIEKSANDAVPEDWDLVSRTKKYSRYRSAGAAKL TGKEIFQUEVPKEIKAPSDYY MSSTKTTNRYYSRDLKKL GlEYLDEVENSQMKK PASWRKISGTKKVSRFHPPEVVNL GIEYLIEVPNTEDRKVPASWAKUSGTKKLSRFHTPEVVRL VFGYYI EVTRPNLSLVPDNYIPKQTLVNAERFDTEELKSY GTAYLI ELPVD RRVPSNWMKVNSTKKTIRYHTPEVLKN EKDYLIEVRNQVKGLPSDWVKVSSTKMVGRFQTPNVTKL VHGFYIEVSRANTDKVPK EYYRRRNAKGKNAERYDTPELKAF NKRFQLELEDVASRKLPHDY
250
260
270
280



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A ELDVLISLAFASDSY SELDVLVNLAERADTLN A T I DVLTSLARVA AAI DVSVALAEKAATRG AHLDVIVSLAHCAEN
 A HLDVI VSFAHVSV
ATLDCLLSLAEIS
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A E
A $1 \quad \square D C \square M S \square A E V A K Q$
A V L D
A TLLDCLVS LAT $\square A S Q$
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A RLDV
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A ELDCLLSLAQASRTNN
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G A LD C LD S LA A LA K
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S QL D CL L S
ATIDALDSLSVIAA Q
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A HLDVI ${ }^{\text {L }}$ LA HVAVN
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1
A A R A L HVLESKNDNKNSTLFGLMNHTSTAMGKRLLNR DATAHEALQIVFQTGRAKEGFSVFGMMNKCVTPMGRRLLRN

| $G V T L$ |  | SCKTAFGKRL |
| :---: | :---: | :---: |
| S A 1 Q S L | E I MQ N LR N S K K D S L F G | H T S T P M G S R L |
| DV S A I I S L | EILLQ NLR S K S K D S L F G l L | $R \mathrm{~T} P \mathrm{M}$ G S R V |
| D GVT L T N L |  | D TCSTP F GKR L |
| G N T L T S L | EI Y Q NQ T D H T K G S L L W T | D H T S T K Y G Q R L L |
| M A S L | $E L I Q N L Q N K S R E C L T C L$ | NETMTPMGA |
| S D | $E L L Q S$ D G S E E S R L L K | N R CVT S F G K R L |
| GV L LA N |  |  |

## D M A T S R N L E L L Q N L R P K S H H T LF G T L N F T K T P G G T R L LR S

D P A TRAS LE IDDTAMQGGRKGT LLATVDLTLTAPGARLFAD DSNTLKSIEI LNNNTNGEEGSLLWLLDHTRTKFGYRLLRK ANTLSNLE L YRNQTDTMRGSLMWVLNRTKTTFGARLLKS
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 VYK QANGKKEGSLYGILNHCRCKWGEKLMRLL D
D
D
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D
D
D S S S A Q N
 D HA A ARALNLEPGSSGNTQSSLSGLLNKCKTPQGQRLVNQ D S S S A Q N L E L L V N N Q D Y R N H T L F G G V L N Y T K T P G G S R R L R S DETAQA HLELVRAAD GGRRGTLLDVIDCTVTPGGARLLRR

 DNAAVRALNLVQGSPGDGTHSLAGLLNKCRTPQGQRLLHQ DSAA I K AL NLEPRLNGNAPTSILLNLDKCRTPQGHRLLAQ PNVLR QLEVETSSAGT
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 D T A A HEALQ I FQ Q GRAKEGFSVVGMMNKCVTPMGRRLLRN D A ATRA N L E L T R TLLS GERAGS L LAA A DD RTV GA A GAR L L A E D HAAVRALNLFQGSPDDTSGSLEGLLNKCRTPQGQRLVNQ A N A L Q Q L EVVLQNNS D G S E G S L L Q I MN RTMT DF GS R L L R H


DASALRALNLVQSGQSNKNTTLLGLLNKCKTAQGTRMLGT D G A T IT N L E L L C N E D G N T K G T L F S F L N K C Q TAF G Q R R L K E DS TMKALN LPNGTQRADTSIFELF KCKTLAGSRLLAQ

 GTTLRNNLE I FKNSTDTEKGCLVGVLNYTVSKYGCRLLKS

 DSAALNALHLLPTSGENKYDSVYGVLNHCRTPQGQRLLAQ DVIS T V Y



$N \square L Q P P S D V E T \square R \square R Q D V I S E L V E K E D \square F Y E H L I S A C V M \square$
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 WIA K PLI NIDQUQ
 WLKQPLLSLNSINERQD VVEAFCDNTELRQDHLKQVPDLH
 WVTHPL RDRML
 WLLQPLRNAEDI
 WI LHPSTDSLI I E
$\qquad$ W4 $03 C 36323$

47C7E98

B29 58ZYI5
IM9 R19


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 $R$ T T R K L E R R K A S L M D L C R L Y Q A SAA A L P HMAA E A L E R C E G R H
 $R$ L I N R V R N G K V M P R E L I T L L R S S L E K I P P E L K A V M E V G D S V D

 $R$ S L I R I Y Y G K C T R P E L L S V L Q I L Q R I A M Q F S T I K S E K D T G A H C T K L Q T G R G S Y V E WK C L V D A L T A A L E DR N F M C G DA T P V




 LI L K R M A L S N T K V S D WQ A L Y K T V Y S A V C L R D K C R S L P S T $\quad$ I






 D R V L C H F C F K P K I







 $R$ R S K K L H R Q S A T L Q D C Y R V Y Q A V G H I P A L V T A L D R H A G S H V L A K K L A R K K A T L Q D C Y R I Y Y T C M S H L





 $L$ D K L I C S LIA S S E AR E M L N L R N IV V N V L P G I A K A L E G S R S Q M

 LL L K K F D S P S C T S F D WTA L L K S I C A ML H V N K I F Y L N L D
 R G ITT R IFF H C T A T P S E F V A I I Q A I L S A G K R L Q Q L N I G E G D D

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 K L L

 R L A R R L Q M S K A K L Q D V Y R V Y R V V G L I P E A I S H L Q G S D N R H




## UniRef90 D8R655 UniRef90-V4USY7 UniRef90-R5LEA0 UniRef90-K3W080 UniRef90-H1VJX8 UniRef90 Q5FWN5 UniRef90-U111K8 UniRef90-V9DSW4 UniRef90-J3PWR4 UniRef90_V8PFLO UniRef90_R6LPQ3 UniRef90_V4CPC0

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UniRef90 $\times 6 \mathrm{M} 3 R 3$ UniRef90-B9WF67 UniRef90-G4YKA6 UniRef90-TORMS4 UniRef90-R7QRIO UniRef90_V4B4P5
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 LSENGYK

 M R RLCEPANYSNI ENLI RCSINEDVSYSAKPDFA DKVGC

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 GDY RKKYSHDGRFEALLEAAAVDLSKDPDEYVICASYDAE

 F A S PLF S
 NDKLLMDEEDINEHFSNLRILI TATVDLSSDENTTRINPEF


 | R |
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## A





 L R E L R D K E A S L S K Y S Q M V E Q T L D L D D QLDDN HN Y V V K P D Y D E


 RWLY S PGCGGVS K GARDK LN Y F LLGEAF DARAA E E I LDP NRGA K D S E L LT K I F QE LPE LLYYD TT TYS QNINETAARENDKTK L LVQQRNNCRTENSTTDQFIDEVINEDVTYRNQRTYAVKAGV
 SALLEHVFVRDLQAAVENFSKFMQMDESTLDLEAAKEGEF
 NNAVADLPRGKAPVQKYLQQISIMEARANNKADLFLDPER

170
180
190
200
SLLKTTKADRDTVEEETREAHEQAANDDDDPDKSLKLLDKT CDELDEDRQDYEELPEFLEEVASLEHLCKEMFVPCVVYDH NQDVDEYKKASTQGQDWLMELEAKEKERTGDKWLRVGYNR NGMLDTARQTYKELTEEIHLHIDALNETHKLNTLRYDNGR NGLLDVARQAYKENTNDVHSHVEELSKEYGLEADDLRYDT DPDYDEALKDVKQAEQDLNEYLDKQRKRLGCKTVVYWGTA NCFLDVARQAYKELHDDVNTYFDELKKQYDMENLDVKFEH DESYDMALEEEREAEKALKAELKAAKKLLKTEDVVYKDIGG DSDYDKALADISEGEESLRQYLEKQRKRLGVRAVMYWGAG KCFLDVARRTYSEGINDDSEMINQLGQECNLPMLKLAYYT
 FFDYDKПKRKVQEDETLLEKELITNRQ\|LKRPSMEY\|SNN YPEVDDLKMAIMVVESELADHLKTMNLDEVDILLPFSKSE

4422702
UniRef90 D8R655 UniRef90-V4USY7 UniRef90-R5LEAO UniRef90-T1FPG7 UniRef90_K3W080 UniRef90-H1VJX8
UniRef90 O5FWN UniRef90 U111K8 UniRef90_V9DSW4 UniRef90-J3PWR4 UniRef90-V8PFLO UniRef90_V4CPC UniRef90- XoWRP1 UniRef90_UPIO004773A94 UniRef90 C4QY98 UniRef90_UP10004409577 UniRef90-S4RVU6 UniRef90 T1IP55 UniRef90-A4RQJ8 UniRef90-Q759V4 4 UniRef90-X1PPT3 UniRef90-V2XD57 UniRef90-N4VNA2 UniRef90-05KNU2 UniRef90-D8SD53 UniRef90-S8CRX1 UniRef90-Q4DBN2 UniRef90_C3Z1V1 UniRef90-A5DEV6 UniRef90-GoWFN4 UniRef90_UP10004422702 UniRef90-UP10002 UniRef90- $\mathrm{O55LV} 3$ UniRef90_h9JL60 UniRet90-V9G1W8 UniRef90-F8PAY2 UniRef90_A0A031 HUR2 UniRef90_G8JUW4 UniRef 90 - 11 GHP2 UniRef90-UPIo003C36323 UniRef90_W9RXX5 UniRef90-G3VXW8 UniRef90-UPI00047C7E98 UniRef90_O01B29 UniRef90-G1KPF5
UniRef90G G1TB80 UniRef90-A0A058ZYI5 UniRef90_A9GIM9 UniRef90_U4KXX1 UniR Refo-OOMR19 UniRe990_u9T635 UniRef90_S8DV95
UniRef90 H3CD73 UniRef90-H9К2т8 UniRef90_U1M7E1 UniRef90-A4RVX7 UniRef90-L8FNM5 UniRef90-A0A022QCU4 UniRet90_L8GTM6 UniRef90-H9JPN5 UniRef90_UPIO0044492AE UniRet90_J4GRQ3 UniRef90-A0A044U217 UniRef90-A0A010QFH6 UniRef90_T TGJY4 UniRef90 K7M410 UniRef90-B0UC39 UniRef90-16M4A6 UniRet90_UPIO0032A5B90 UniRef90-C4YAS1 UniRef90-B8MYK7 UniRef90_UPIO00328928A UniRef90_N6ZVX1 UniRef90-D8Q8X1 UniRef90-×6M3R3 UniRef90-G4YKA6 UniRef90-TORMS4 UniRef90-R7QRIO UniRef90_V4B4P5 UniRef90-G2XY89 UniRef90_B3S3R6 UniRef90-U6HA82 UniRet90-ROJH95 UniRef90-UPI000456155B UniRef90_Q7RKG5 UniRef90-W6MG43
UniRef90-J3QDZ9


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| :---: | :---: |
| Unit | $\begin{aligned} & \text { SER } \\ & \text { DNL } \end{aligned}$ |
| UniRef90－R51 | EELKQDEDKILGAQEKLLFCEVRENVAKQV |
| T1FPG7 | FAKLMDAEDRRDEA |
| K3W080 | R |
| UniRef90－H1VJX8 |  |
| UniRef90－Q5FWN5 | FGDLVNAEERRDAALKDCMRRLFYNFDKNYKEWQTAVECF |
| UniRef90－U111K8 | VRERDQHKEALAAACDDAFRDLLADTSTKYQLFRDCIQNL |
| UniRef90－V9DS | NQKLKDTHGEVITLADST |
|  | KKLKA |
| UniRef90－V8PFL0 | LNDIDNAEERRDAAQKDCMKRLFYDF |
| UniRef90－R6LPQ3 | LKELENTILTAKDRDTSLETQVRQTLADAAPRVG |
| UniRet90－V4CPC0 |  |
| UniRet90＿XowRP1 | VNAERYVTPELKEYEEKLFENLQKQVLTQAREVQENARVL |
| UniRef90－UPIO00477 | Y |
| UniRef90－C4C | SCFSSFLHSIKSQRPYLSRIVVSAL |
| UniRef90－S4RVU4 | AEERRDDAMRDCMRRLFYNFDASYKQWSAAMHCM |
| UniRef90－T11P55 | NEEHLSVYGEYQEQQKSVVDAIMQVAMGYAEPMHELND IT |
| UniRef90－A4RQJ8 | SEQRVSLDRSYDAKQRHLVDRVVDVAATFSE円FLIVSAMT |
| UniRef90－Q75974 |  |
| X1PPT3 |  |
| UniRef90－V2＞ |  |
| UniRef90 S2JNY9 | SEQHRDLSAQYEDKQRGMVKEL S S VATYCPSLEALGGSVL |
| UniRef90－N4NA2 | 隹 |
| UniRef90－D8SD53 | SERMALAKEQLNISCAKAWDMFLTDFTSYHMEFRAAVQ |
| UniRef90－S8CRX1 | S DLYQKVLEEYKDCQKVLVARVVQTAASFAEVFEGVAC |
| UniRet90－Q4DBN2 | SEQYKGIRKVYDVRQQDLKQKLVSTVVTYLPVLDDAKELI |
| UniRef90＿C3Z1V1 | RTRESLNEIYLMTNVVVSELLNEVRDQUGCLYK |
| 5D | ELLYHQEKLIQQCDEAFATFLKDI DSHYTYFSRL |
| UniRet90－GoWFN4 | VEKLQYHKDLLVQECEKQYTVFICRLTNEYSILKNV |
| Un | C E |
| P10002 |  |
| U6HLR6 | A |
| 55LV3 |  |
| UniRef90＿－h9JL60 | SHYAQWEAAVHCL |
| UniRef90－V9G1W8 | DESUGDIYGYULDLQRELLEELTMALLEYEGSUHEMTWIM |
| UniRef90－8PAY2 |  |
| UniRef90－G8JJWW4 | SAKLQYHKELLENTAEAEYAAFLKRTTNEYVGLKSATNKL |
| UniRef90－G8JUW4 |  |
| UniRef90－UPIO003C36323 | NDEFVTLRSQYEEQQKTIVEEIIKVAVGYASPLTSLINNEF |
| UniRef90－w9 | NVRNKSASSECYKRTELCLEALVDAI REDVSVLTLLAEVL |
|  | QESLREITYHMTYMVVCQLLGEIYPLVHCLYKLSDVV |
| UniRef90－UPI00047C7E98 | EAKMSSAAEEALAREQAIFEELAAQA\ASEAEIKR |
| UniRef90－O01B29 | VAALLERANERHMMSADAAWKEFLSSFRENYA |
| UniRet90＿G1KPF5 | EYITKRKEYEEMQDVVVKET |
| UniRef90＿G1TB80 | QESLIREYYMTYMVCK |
| A0A |  |
|  | K1 EHAGARAL ERETALFDRL |
| UniRet90＿U4KXX1 | NLKINDCLLTEVLLMSDNAVTQLVEDVTQEISGLFKVGEGII |
| UniRef90＿Q0MR19 | NQR ADSHHEVISMSDQAVQELLEKICEGVPSLERISEAL |
| 91635 |  |
| UniRet90＿S8DV95 |  |
| H3CD73 |  |
| UniRet90＿H9K218 |  |
|  |  |
| UniRet90－A4RVX7 | AAALECANERHMFAADAAWKEFLSSFRDNYAAFRSATSAV |
| UniRef90 L8FNM5 | NQR EDSHQEVVLMSDKTVTQLI DNVRAEVQPLFRVS |
| AOAO220 | FADLEKARTDLERCRLGLTARANQKFSENHREWSLAVACM |
| UniRet90－L8GTM6 |  |
| iRet90＿h9JPN5 |  |
| UniRet90＿UPIO0044492AE | II |
| UniRef90＿J4G | V |
| UniRet90＿A0A044U217 |  |
| A0A0100FH6 |  |
| T1GJY4 | $\stackrel{v}{v}$ |
| UniRef90＿K7M410 | DSLLGDЏHHK\｜LDMERA】TRDLFSR\｜LLFQTHLIKIVATFA |
| iRe990＿B0UC39 |  |
| UniRef90＿16M4A6 |  |
| UniRee990 UPIOOO32A5B90 | GLSLA |
| iRef90＿C4YAS1 | ELQYHNDMLLMACDECFNFFLSEVDSEYITYLRR |
| UniRef90－B8MYK7 | A HNEVINMSDQTVHELLIEDISRES |
| UniRef90－UP1000328 | EYTKNKTEYEAQNA VKEVNVSGYV |
| UniRef90＿N6ZVX1 | ， |
| UniRet90＿D8Q8X1 | A DHKELTQAYSRKQSGLVKEIVAIA ATY STVMESLDSVI |
| UniRef90 X6M3R3 | T DLL |
| UniRef90－G9WF67 |  |
| TORMS4 | RrLMAAEDRKEDA |
| UniRef90－R7QRIO | RKHIEASEAHETASASVVRDMTGQFDAEYDTWAADTRVS |
| UniRef90－V4B4P5 | VKRLNQLIKEELVIVCNKLWLQLLLEFGSYFV |
| UniRef90－G2XY89 |  |
|  |  |
|  |  |
|  |  |
| OJH95 |  |
| UniRef90－UPI000456155B | TKKRDQHKETLQAEAEAAYHELVRTICEHYVELRN |
| Q7RKG5 | VEMLEDIEQEKKDADYPFFQKI FHLFYEHYEKYISACRLI |
| UniRef90 W6MG43 | $\overline{\mathrm{L}}$ |
|  |  |


| UniRef90 D8R655 | A ELLDVLL\|S FADVAVS |
| :---: | :---: |
| UniRef90 V4USY7 |  |
| UniRef90-R5LEA0 | STLDVI AS FAKVAVDN |
| UniRef90-T1FPG7 | A VLDVL LS S S V Y |
| UniRef90-K3W080 | ALI D M I S S A QLA T TRD |
| UniRef90-H1VJX8 |  |
| UniRef90-Q5FWN5 | AVLDVLISLS Q Y |
| UniRef90-U111K8 | A TLIDCLLALLATTAQQ |
| UniRef90-V9DSW4 | ATLDMMAAFA |
| UniRef90-J3PWR4 | A QLDCVLSLA K A S $\square$ A L G |
| UniRef90-V8PFL0 | A VLDVLLCLACYSQ |
| UniRef90_R6LPQ3 | A AI DVLA D F A A V A V H N H |
| UniRef90_V4CPC0 | SMID ML VS FT H |
| UniRef90-XOWRP1 | A MVD 1 A T G LiA DVAVRNN |
| UniRef90_UPIO004773A94 |  |
| UniRef90-C4QY98 | A T LD CLISL T A S S N |
| UniRef90-UPI0004409577 | AVADCLFSLAEVASQGN |
| UniRef90-S4RVU6 | AVLDVLLSLA HYSEQ |
| UniRef90-T1IP55 | S RLDVLLS FAFVAEK |
| UniRef90-A4RQJ8 | A EIDVVLASFAEVAVS |
| UniRef90-Q759V4 |  |
| UniRef90-X1PPT3 | A Q 1 D T FCGLAEVAARY |
| UniRef90-V2XD57 | A ELDCLLAFAEVSRTH |
| UniRef90-S2JNY9 | A HMDVLLSFAHV |
| UniRef90-N4VNA2 | A T LD CLL SLS RVAA |
| UniRef90-Q5KNU2 | A ELDCILALARAARDFG |
| UniRef90-D8SD53 | A ALDCLYSLAV |
| UniRef90-S8CRX1 | S ELDVLLS FADLASS |
| UniRef90-Q4DBN2 | A ALDVFVA WA TV |
| UniRef90-C3Z1V1 | ATLDMLVSFAHA |
| UniRef90-A5DEV6 | A EID CLLSLKATSSSN |
| UniRef90_G0WFN4 | A TYDCILSLSAVSCNMG |
| UniRef90-UPI0004422702 | A HLDVLLS MAVMARENG |
| UniRef90-UPI0002C351AF | A SLDCLHSLAVLSRNKN |
| UniRef90-U6HLR6 | TELDCI CALATAA $\square$ R M N |
| UniRef90-Q55LV3 | A SLDMI ASFAFSAFNSN |
| UniRef90-H9JL60 | ASLDVLLAFAEFARQQH |
| UniRef90-V9G1W8 | SNLDCLISFASCAKSFN |
| UniRef90-F8PAY2 | ALVDLLWSFAHAS IVRN |
| UniRef90-A0A031HUR2 |  |
| UniRef90-G8JUW4 |  |
| UniRef90-U1GHP2 | A MLD MI ASFAQL |
| UniRef90-UPI0003C36323 | A QLDCLVSFA!AAQS |
| UniRef90_W9RXX5 | CLLDMLVSFA |
| UniRef90-G3VXW8 | S MLD MLLS F A HV |
| UniRef90_UPI00047C7E98 |  |
| UniRef90-Q01B29 | A S LD A L H A $\square$ A $\\|$ VAR |
| UniRef90-G1KPF5 | A QLDAVVSFAQAS |
| UniRef90_G1TB80 | SMLDMLLSFA |
| UniRef90-A0A058ZYI5 | A A L D CL H L A L L R R K N |
| UniRef90-A9GIM9 |  |
| UniRef90_U4KXX1 | GMLD MLLCS F A HL |
| UniRef90-Q0MR19 | ATLDMLSAFAHL |
| UniRef90_U9T635 | A ELDCLLSLAESARKF |
| UniRef90-S8DV95 | A ILD MLWS F A HVS 1 L L N |
| UniRef90-H3CD73 |  |
| UniRef90-H9K2T8 | A S $\square$ DVLTAFASAA $\square$ C A N |
| UniRef90-U1M7E1 |  |
| UniRef90-A4RVX7 |  |
| UniRef90_L8FNM5 | A MLD MLA AFAQL |
| UniRef90-A0A022QCU4 | A TLDCI Y S LAML S R NKD |
| UniRef90-L8GTM6 | A EVDCLHSLAlTTSSSLG |
| UniRef90-H9JPN5 | S RLDVLVSFAVAASS |
| UniRef90-UPI00044492AE | AELDCLLCFAEASNAYG |
| UniRef90-J4GRQ3 | A 1 LD MLWCFA HVS |
| UniRef90-A0A044U217 | A TLIDCI I S L ALTAAREYD |
| UniRef90-A0A010QFH6 | A T L D CLLSLS |
| UniRef90-T1GJY4 | S ILDILCALADYAKNLTN |
| UniRef90-K7M4IO | A ELDCFLS MALVARQNN |
| UniRef90-B0UC39 |  |
| UniRef90-16M4A6 | A Q LD |
| UniRef90_UPI00032A5B90 | A ALDCLHSLA L L R N |
| UniRef90-C4YAS1 | A T FDCL $\square$ SLA RSA |
| UniRef90-B8MYK7 | A MLD MLSAFAQLATNYD |
| UniRef90-UPIO00328928A | A QLD AVVS F A HVS |
| UniRef90_N6ZVX1 |  |
| UniRef90-D8Q8X1 | A H LDVI I S F A HVSVN |
| UniRef90-X6M3R3 | A DL D CLL L S S Y V S |
| UniRef90-B9WF67 | A HLDVITS FATTAMLN |
| UniRef90-G4YKA6 |  |
| UniRef90_TORMS4 | A TLDCLI SLALI S |
| UniRef90-R7QRI0 | A ELDALI GLAATSR |
| UniRef90_V4B4P5 | A TI D C |
| UniRef90-G2XY89 | AMLDMMTSFGQLVTNQD |
| UniRef90-B3S3R6 | AELDVACALGDGAHERG |
| UniRef90-P40965 | A ILDLVCS FTYNLKENN |
| UniRef90_U6HA82 | A QLDVI V S L Alla AVS |
| UniRef90_R0JH95 | A MLD MVLA F A HL |
| UniRef90 UPI000456155B |  |
| UniRef90-Q7RKG5 | SELDCLQAFA Y VA $\square$ N |
| UniRef90-W6MG43 | S ILDVLTSFAHVS |
| UniRef90_J3QDZ9 | A $\mathrm{H} \mathrm{L} \mid \mathrm{D} \mathrm{L}$ I |

UniRef90 17MDR6 UniRef90-L2GQ54 UniRef90-W3XPM4 UniRef90_E2AZDD UniRef90-A9TGP2
UniRef9OAOO15LZP6 UniRef90-G8ZR48 UniRef90-T1ICM6 UniRef90-G2YZN3 UniReffo-O9TXR4 UniRef90-V4LVQ4
UniRef90 AOAO16TAX0 UniRef90-U5EW91
UniRef90 H2ARX7 UniRef90-H2ARX7 UniRef90-UP10003DE754C UniRef90-171PV4
UniRef90 U4LBP7 UniRef90-G3NYX2 UniRef90-C5DR76 UniRef90-12GY78
UniRef90 C9ZLC0 UniRef90-C9ZLC0
UniRef90-UPIOOO2B44AD2 UniRef90-B8MAX1 UniRef90-M5FTU9 UniRef90-UPIO0047B497B UniRef90-X1QXZ3 UniRef90-A0AO24GDU5 UniRef90-B8BUC4 UniRef90-GOVD32 UniRef90-GOPHRO UniRef90_W6KUR4 UniRef90-K4E2L3 UniRef90-F8XMA9 UniRef90-J5K1M5 UniRef90-X1U9V8 UniRef90-H1VCD8
UniRef90-E2BKC3 UniRef90 UPIOO042B722D UniRef90-F7FIJ9 UniRef90-W9S4U9 UniRef90-C5GTJ6 UniRef90-×1×5V3 UniRef90-GOU260 UniRef90-K7N3P4 UniRef90-K4BF62 UniRef90-G3B7U44 UniRef90-D0MX98 UniRef90_UPIo001A6229B UniRef90-UPIO000220878 UniRef90-K1PAT4 UniRef90-K5X5W2 UniRef90-D8LZT2 UniRet90_J3P6U5 UniRef90-G6CQN5 UniRef90-H2WHC0 UniRef90-Q4POK2 UniRef90-H3GQ03 UniRef90-K8EEW3 UniRef90-G4YWY7 UniRef90_W71HZ5 UniRef90-A0A016WTQ2 UniRef90-UPIO00328F5B0 UniRef90-R8BCV1 UniRef90-L5N4N8 UniRef90OUPIOOO34449DC UniRef90_B9WL06 UniRef90-H2YRN3 UniRef90_G3VWQ2 UniRef90-G7KST2
UniRef90 N4VIV6 UniRef90-H8WVK4 UniRef90-R7TCG1 UniRef90-UP10002C35BC8 UniRef90-T11ET7 UniRef90_UPIO0032B1016 UniRef90 H3HD43 UniRef90-GOUXM7 UniRef90-UPIO003DED562 UniRef90-A9VAJ6 UniRef90-C4R218 UniRef90-M1VFK9 UniRef90_UPLO00467F66B UniRef90_Q6FUM7 UniRef90-Q17M46 UniRef90-WOTEL6 UniRef90-Q0UX05 UniRef90-M1VEH2 UniRef90 B6QR48 Unirergorao_D3B1YO

1
10
20
30
40 DGSTLVNLDILTNNFDSTEHSLFKSINYCSTPFGQRLLRK
 DGTSVQNLELVESLHQKKRGCLFEMLKTTKTAGGTRLLRA A Y ALCSLQ FERARSKEGLSLFGULNNTRTTSGKQLLKQ DSKTIRGLELVDNVVEKKGLSFFKFLDCTCTKMGQRLLRN DAVTLKNLNVLDNGSGGRQGTLLHRIEHCCTAFGKRLLHQ
 ANTLQQLEVVRNNSDGSEGSLFHNMNQTLTVYGSRLLRH DGDTLENLNLVPGDNRDAQASLYSTVNKCQTPFGKRLLRQ

 HLEMFTTTLGEKKNSFFQFIDKTSTAFGSRLLRR DSTSAANLELVVNNRDHRSGTLLGVLNHTKTPGGARRLRS DASAlKALNLFPQTAGTKVSSLFQLLNHCRTNAGVRLLNE DASAI KAMNLFRTANSGKVTSLFQLLNHCKTNAGSRLLNE

GNTLTSLETYQNQTDSSKGSLFWIMDRTRTRFGQRLLRK DSHTIKALEIREEMEGGAKGSLLSVVKRTITTSGTRLLAR DAATRASLELASARGGSEAGSLLGAIKRTVSPAGARLLAH

DYSAWKSLELSTSLS GDKSSSLFHTTNKTVTAAGSR\|LAS DRSTMVNLELMDNAKTGRNHSLVGTI DCTKTSVGGGRLLRT DPKTINGLELVENIIDKRGMSFWKFLNTTCTKMGERSLRN
 $T L S G L Q L L R T G R A K E G L S L L S V V D R T C S V L G R A L L R Q$

DKSSMRSLE TKQT $\square R D G N R G S L L H A \square R R T V T R S G A R L L N D$ D IIESARSLELVVSQSKHSAVSLLGTMDRCLTSMGRRLLRV AN TLQQLELLVNNSDGSEGSLLQQMNHTLTDYGSRLLRRH ANALQQLEVLRNNSDGGSQSLAALLNNRCKTPQGQRLVNQ DLSTHISLELIQNLQNSKSDCLFGVLNETLTPMGSRLLRS DANTALRLELVLNSSLNAKNTLFDVLNKCATVGGQRRLRS
 ANALQQLELMNNFDGSESGSLFHCMNQTLTLFGSRLLRBH


 D Y S T I Q A DPETVKNLELVKNMNDKSSSHTLFGTLNYSFTAMGGRLLRVG)

 DF VSWESGLEVVDTDDASKKRTLMSVLNHTVTYNGGYRLLRS
 DAAALSGLEILENTEGGRSGSLLELVSRAASAPGTRVLRM A EAAHRDLDLFVNSTTKRGGSLLSVLNHTKTNAGARKLRD
 $D L S T I H S L E L I Q N I E N K S K A C D Y G L G N Q T V T P M G A R M L R S$

DQDTYSVLQDFKSAS GLKEGSLFGDLNRCRCKWGEKLLRLD DDCTVRDL ELVDSSS ERGTTLYG FLNCCLTKMGTRLLRTM

$T \square T S Q V F Q S M S G Q G S S S L F G L F Q P L V T P Q G R V K L R R$ DSCTIRDLELVSSLNGNGT TLFSFLNKCTTKMGQRLLRT DKNAFSVLQIFQSYSGSSKEGLDAAVRHCRGSNTVVVFRS

TLSSLLDRCRTSHGHRLLNQ
NHTLFGVLNYTKTPGGCRRLRS DSSAWRGLELAKSLNGSKASSLLQAIDSTTTPGGARLLAA ANALQQLEVLKNNSDGSEGSLLQDMNRTLT\|MGSRGMRQ $D G Q T L Q N L E I L T N N V D T S K G S L F E L L C H T V T P F G K R L F R D$
 DAAA LKAL HVLASPSSPPPGSLWCLLDRCRTPMGSRLLRT GSTLRALEI FQSS DGHK GSLLLSLLGHCDTLQGARTLRLL

 DQEALEALQQIFENMSSSGKNTIFDLLNYTTSEVGKSLLKK DVSTIHSLELVQNLQNSKKDCLYGGLLNETLTPMGARLLRN $N T L S S L Q D M Q T S R A K E D L S L Y G L F Q H L L T P Q G G S R R L R Q$


UniRef90_I7MDR6 UniRef90_L2GQ54
UniRef90_W3XPM4 UniRef90_E2AZD3 UniRef90_A9TGP2 UniRef90-A0A015LZP6 UniRef90-G8ZR48 UniRef90_T1CME
UniRef90_G2YZN3 UniRef90-Q9TXR4 UniRef90-V4LVQ4 UniRef90-A0A016TAXO UniRef90-U5EW91
UniRef90 H2ARX7 UniRef90-H2ARX7
UniRef90-UPI0003DE754C UniRef90-I7IPV4 UniRef90-U4LBP7 UniRef90-G3NYX2 UniRef90 C5DR76 UniRef90_I2GY78 UniRef90_C9ZLC0 UniRef90_UPI0002B44AD2 UniRef90-B8MAX1 UniRef90-M5FTU9 UniRef90_UPIO0047B497B UniRef90-X1QXZ3 UniRef90-A0A024GDU5 UniRef90-B8BUC4 UniRef90-G0VD32 UniRef90-GOPHRO UniRef90_W6KUR4 UniRef90-K4E2L3 UniRef90-F8XMA9 UniRef90-J5K1M5 UniRef90 X1U9V8 UniRef90-E2BKC3 UniRef90_UPIO0042B722D UniRef90_F7FIJ9 UniRef90-W9S4U9 UniRef90-C5GTJ6 UniRef90-ㅈ1 $\times 5 \mathrm{~V} 3$ UniRef90-G0U260 UniRef90-K7N3P4 UniRef90-K4BF62 UniRef90-G3B7U4 UniRef90-M3AW17 UniRef90-DOMX98 UniRef90_UPI0001A6229B UniRef90_UPI0000220878
UniRef90-K1PAT4
UniRef90-K5X5W2
UniRef90_D8LZT2
UniRef90-J3P6U5
UniRef90-G6CQN5
UniRef90-H2WHC0
UniRef90-Q4P0K2
UniRef90-H3GQ03
UniRef90-K8EEW3
UniRef90-G4YWY7
UniRef90-W7IHZ5
UniRef90-A0A016WTQ2
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UniRef90-L5N4N8
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UniRef90-H8WVK4
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UniRef90-T1IET7
UniRef90_UPI00032B1016
UniRef90-H3HD43
UniRef90_GOUXM7
UniRef90_UPI0003DED562
UniRef90-A9VAJ6
UniRef90-C4R218
UniRef90 M1VFK9
UniRef90-W6L370
UniRef90_UPIO00467F66B
UniRef90-Q6FUM7
UniRef90-W0TEL6
UniRef90-Q0UX05
UniRef90-M1 VEH2
UniRef90-B6QR48
UniRef90_R7QMJ88
UniRef90_D3B1Y0


HLASPDMK LETMRDRQDTVEYFCSQEKPLRKQLANTFDLE NLMAPPTRLDTIHARLDLVDSLEEFFYVVMEHLEDLPDVD NILQPLTDEKSI IMRQEAVEQLRKHMKVYQDLDRIFVKLL
 WFLLPVRDESELRRRYDVVSFFTMQMMQLRRALRHLRITN

WLSAPSTSLDVIKLRQDLGARFVEDPDLRDGVLRRSHDSQ SILQPPCDERSIVDRQSCVAELVDNRSLCAQPVVQRLFGT






 WFKNPTTDRAVLLSRQKCVVYFKQDWNKIASMLGKVTALN
N
N N
W
S

| W |
| :---: |
| S |





 | $S L E E D N A R Q D A I S$ |
| :---: |
| $T$ |
| $I$ |
| $I$ |

## WF T R P T Q D LGEELNSR LDVIQFFLLP QNLD $\quad$ QA QMLH

 WL M R P T Q D L E E L L N R L
 S II Q P L M N V D S I K L R L K S V T E L L S Q E N PL LA II K NV L K N F WFLQPSRDLETLTQRHNAVAFLIVEMTSAMSSCIGNVTDVS
$W$ WK Q P LK D I N LISER HD IVEEVFLNRQSLYEEHLRKMPDFQ

 WLLQPLQNTEEINQRLS LVE $\square M V E N P$ LIVRSQVLRRCSDMD WV S H P
EVA $\square L M K S L P D L E R L L A R V H A G S C K L K D F L E D L D A F A R A B$ WL SAPSAELS II QERLS LVELGRMLSEELRLLMKDTADDK AL DE P LG N REAI E R RLD L LVELLVVH DVIDARRRHLKGFADLD WL A A P L A S R S D I M E R Q S V I A Y L K D A V Q N L L REC G K L G DV E




 WLLL


UniRef90_X1QXZ3 UniRef90-AOAO24GDU5
UniRef90-B8BUC4 UniRef90-GOVD32 UniRef90-GOPHRO UniRef90_W6KUR4
UniRef90 K4E2L3 UniRef90-F8XMA9 UniRef90-J5K1M5 UniRef90 - X1U9V8
UniRef90
H1 VCD UniRef90 ${ }^{-}$E2BKC3 UniRef90_UPIo0042B722D UniRef90-F7FIJ9 UniRef90-W9S4U9 UniRef90-C5GTJ6 UniRef90- $\times 1 \times 5 \mathrm{~V} 3$ UniRef90-GOU260 UniRef90_K7N3P4 UniRef90_KABF62
UniRef90 G3B7U4 UniRef90-M3AW17 UniRef90-DOMX98 UniRef90-UPI0001A6229B UniRef90-UPI0000220878 UniRef90 K1PAT4 UniRef90-K5×5W2 UniR Ref90-D8LZTT UniRet90_J3P6U5 UniRef90_G6CON5
UniRef90-H2WHC0 UniRef90-Q4POK2 UniRef90-H3GQ03 UniRef90-K8EEW3 UniRef90-G4YWY7 UniRef90-W7IHZ5 UniRef90-A0A016WTQ2 UniRef90-UPIO00328F5B0 UniRef90-R8BCV1 UniRef90 L5N4N8 UniRef90-UPIO0034449DC UniRef90-B9WLO6 UniRef90_H2YRN3 UniRef90_G3VWQ2 UniRef90-G7KST2
UniRef90 N4VIV6 UniRef90-H8WVK4 UniRef90-R7TCG1 UniRef90-UP10002C35BC8 UniRef90-T11ET7 UniRet90_UPIO0032B1016 UniRef90 H3HD43 UniRef90-G0UXM7 UniRef90-UPIO003DED562 UniRef90-A9VAJ6 UniRef90-C4R218
UniRef90 M1VFK9 UniRef90-W6L370 UniRef90-UP1000467F66B UniRef90-Q6FUM7 UniRef90-WOTEL6 UniRef90-Q0UX05 UniRef90-M1VEH2 UniRef90 B6QR48

RSLQRVTVHMGTPKD RNDA DSVQKAMGDTSLILSSRPPD KMLAYVALAPRKKRQTRDASRG|SALVCIKS LSLIPSFA SVNHNAIKAEQKIVYVILLKDSLITTQRLKALLEPIEFEQ RLLQKIHTDGLKYRSEKHPDSRALFFDTIKTNLCNKLRKE S $\|$ FTK $\backslash R A A K H T T N D Y E S L R T V R G F L R \square A S L L T P R A H D S$

## 

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

 QLYWLCTKVSKNTQQLSKLQTTLEADPALVDDLSEPVKSDK ATLGKLQAQRCSTVEYIRLLQAVKTSHALSVVFMLSHDSV RGI TRIFHCTATPSEFVAVIQAILSAGKQLQQLNI GEGNN RGLTRIFHRKATAAEFIAVIQAILTAAKQLQRLFITEDRS
 PDLGRLAKKHAKDTDLVSVYDAAVGMPRVLK LLKATEAGG PDLQRLGRRLKK KDVYRLYQAVLRLPYAVSLLNQYTGSK NVFQRFQSGTAKLLHWECFVSTVNALVDVVHILRQTPIAK DLDHVLSMCEANINNULYLKHELEEVVPLRNALSNCENRL KDI AKKARVRARPLQQMLNVRSQGVSKLNREKRALAGSESQL KVVSQL DFIRGNDEDLAMTHEQKSMINCLLQULAKCDVLI ELDRVIAMCEAKINQUIKLMQTLKVI QGI RTLLDDANVKS HTLSCTQRAGADPRSLLSLRALLRSLEVRAALCDASSEL KYLQQTHLGKATPVQAVGALQVLQDIEGHVGALKAMFADH RCVARCVSNRNADRVVLYEDMRKAKLNDFLAALESVRAVR KTLAKLSKGGASTRTWSSIYQFAYNAIKIRNFVAEMDGTQ
 RGLCSUYHKKCSTQEFFELVKTLYHLKSEFQTLSHVRSNW
$R L L S H D K N V P T V Y S A \square G R D A C R S \square P Q S T Q L F Q D D A Q E F$ KVFSTFLEPRGTLNREQEVNNDLLKTVLQNTFVIRKSEE

$R P L E Q L Q \square G A D A P T V W W T \square A R F S D H F T K \square R D A V L Q L Q D F V$ PDLDRLFASFDNPESIIGQEQMINNTLSLKSTLLLCGELL RDLTRMTKAEASDTDWKNDYKTVYA\|IIUADUCSSCDADV
VLSKKVQRRKANMQDCYRTYQGDAK DPSLLSTDQEYRREG LDTEQLLSVLVQDPKQDTISLKNCNTPLLRA YYGSDE SIGVATPKDLKNVASTDDEAKRLVAD DCCSG KLNRKLQRRTVALKDLQSVLLFANTVPQAVEVLRKYHGGR LLCDQTLISARLHAVSEIAQSMGSCNSVKNLVRVEEDPD
 TIARRLARDKTSLRQLVRLYQSLVRLPALRSELEDRPRCC AI IAKI HSQRCTVLEYLRLLRMSRNLYAGASILASSTPPT RULRRLQLKKGHPLELLDYLNTSLESMLNDKEAQFKKDNTP IVFSKLLTVTQKINYALLIKDALKTLEDVRQLILLKFHPKS RIINTLNKTVSKFNAWVQWHRFCEKALDIDKLCHDIYODS RILTQLQTTEQSTNHIIMMKYFVGSVKPIYEALTGTGSSM NLWRRLVSGAATAEDWAALHGCNVAVAGLFNGFSDLVQUV PVMTTLHKGLSSATDWGSLLNFATHTLDLQEAVREMGCQD UniRef90_D3B1Yo

## UniRef90 17MDR6

 UniRef90-L2GQ54 UniRef90-W3XPM4 UniRef90_E2AZD3 UniRef90_A9TGP2 UniRef90 A0AOO15LZP6 UniRef90-G8ZR48 UniRef90_T1ICM6 UniRef90-G2YZN3UniRef90 O9TXR4 UniRef90-V4LVQ4 UniRee90 ${ }^{-}$A0A016TAX0 UniRet90_U5EW91 UniRef90-H2ARX7 UniRef90-UPIO003DE754C UniRef90-17IPV4 UniRef90-U4LBP7 UniRef90-G3NYX2 UniRef90-C5DR76 UniRef90_12GY78
UniRef90-C9ZLCO UniRef90-UPI0002B44AD2 UniRef90-B8MAX1 UniRef90-M5FTU9 UniRef90-UPlo0047B497B UniRef90-X1QXZ3 UniRef90-A0A024GDU5 UniRef90-B8BUC4 UniRef90-GOVD32 UniRef90-GOPHRO UniRef90_W6KUR4 UniRef90-K4E2L3 UniRef90-F8XMA9 UniRef90-J5K1M5 UniRef90- $\mathbf{X 1 U 9 V 8}$
UniRef90 UniRef90-E2BKC3 UniRef90 UPIOO042B722D UniRef90-F7FIJ9 UniRef90-W9S4U9 UniRef90-C5GTJ6 UniRef90-×1×5V3 UniRef90-GOU260 UniRet90-K7N3P4 UniRef90-K4BF62 UniRef90-G3B7U44 UniRef90-M3AW17 UniRef90-DOMX98 UniRef90-UPIO001A6229B UniRef90_UPIO000220878
UniRef90 K1PAT4 UniRef90-K5X5W2 UniRef90-D8LZT2 UniRet90_J3P6U5 UniRef90-G6CQN5 UniRef90-H2WHCO UniRef90-Q4POK2 UniRef90-H3GQ03 UniRef90-K8EEW3 UniRef90-G4YWY7 UniRef90-W71HZ5 UniRef90-A0A016WTQ2 UniRef90-UPIO00328F5B0 UniRef90-R8BCV1 UniRef90-L5N4N8 UniRef90 UPIOOO34449DC UniRef90_B9WL06 UniRef90_H2YRN3 UniRef90-G3VWQ2 UniRet90-G7KST2 UniRef90-N4VIV6 UniRef90-H8WVK4 UniRef90_R7TCG1 UniRef90-UP10002C35BC8 UniRef90-T11ET7 UniRef90-UPI00032B1016 UniRef90-H3HD43 UniRef90-GoUXM7 UniRef90-UPI0003DED562 UniRef90-A9VAJJ UniRef90-C4R218 UniRef90-M1VFK9 UniRef90-UPI000467F66B UniRef90_Q6FUM7 UniRef90-Q17M46 UniRef90-WOTEL6 UniRef90 QOUX05
UniRef90- M1VEH2 UniRef90-M1VEH2 UniRef90-R7QMJ8
UniRef90_D3B1Y0



 N I K DICA NPSFRLLLQRIEEVI NEDIVHRTQQCFAVKSGI NIQQFTKNSMIVCLKYCTLTEVNDFDESVKENRIVVKSGI
 PMELAQA TEAADEEGLVQQHRDEEYYNQESEAWIMKPSA LKSMQSATVRSSLLRKLISPAVVDNAAKLLSGLNKEGVVR DTN KILLTGESDFFCK QKKLERSVTGYTSSNMQRCFAIRAGD SLRCLINDKNSNYLATVVYDAHFMDKLKVVDKQCYPQRGF DLKSEQLKTVVNEDTTYLKGSLN GTERTQKCYAVRPDU QGSASTWLEPLMSHTEPLTKLLEM LQPLTAHIDPLTKFQEMIETTVDLEVYEENNEYMIRVEFN GVVNKICETFTDKLLHDLMKQIDDFEESLYVNHFVVKEGV SEAlAALPT\|QDDVIMFLDK\NAYAAEHDDKYEFFRESEE
 TNFPNLLKRYCRDLVEK GEAI ADEPSSSLGEGNVIRKGF HPALARVLDAVTNIFTESTTYNKNSHAMRHQECFALKPNT EVKKIFFNESITEIEQCINKYDNEDCDLKNQQTYAVNDSA YMKVQQEGEGCEILDELLGNTEQMEEVDENDMFFFFAYNF
 P $\square R E L C S L E R \square G A M S Q K I$ HTVLVSTVPMTQRDGGYVRAGH NWLRDELKPCPEFATLIAEALVDQPPAGLDEGGVIRPGF NSEFKVMKDKIMTVAHADARFVKGSTSSSMQRCFATKAGD SKKVRVGIVQSALLKRLILTAKEAADKGDLTNLIIISNNQ
 I FSGRKTLSNSRYSKMLEIIEETGNKESTRSRGFSQSQFQ NTLRPNDSVIGNAAKMLSSLNLDSADLGDLTKLIIASEGQ TN LQRETLHSVLLRKLIS IAKEAADRQDLHNLFIISDGK ELLDLAE NFDIESIHLNFISSTYGNSDSKEQKYQYFNLDY
NEATFSLPQLSDDVLDYLGRMNLQAKKNDKYNFRSEHE DNDLATLVKEKFATPLEKVLADLEGYTDLVRPTLVVNAKH EFPVENS LLTEVSEDALIASSI NNAASRDQGRVTVNPA MKHFYKSLDDGRYMKAKISSVIHDDTHMRTQKCFAVKGSI
 CEPDAELNNDLEKFQQMI ETTVDLEAVDRDRALNLHLGCK LQSUSTFFEEVDEAAEALQETADEDVAFLASRSAKMRVGG ATLEVRLLGSYPMLDPRLSDLLNEDVEDTAQRRLRRKPSQ
 GRTDLEESLGSVRYLRNQRVYAVKAGV SDDLHHTAS RQLLLDFEKFTEMLDSTLDFKMVGWVERHEYMVKCDFDPE FRDUAQEFSDDGCHDACLDNKVVDFEGSDAENRFTVRPND DWVEANNSGRIIPHEGV

 AHATLLAVIVEPLKDCLNDGEKYQWVEANSSGRIIPREGV DKRFGIILEKIKTVINDDARYMKGCLNMRTQKCYAVRSND $L K A T E Q Q R E D I A N A A E E R Y A A L K D D Y A S L N S K S G F A E K G Y$
$D N K L L L E E E D I A E H F V N L R T L I G A T V N L S D E N N A R D N P E F$ DNKLLLEEEDIAEHFVNLRTLIGATVNLSDENNARGNPEF DHEKALADGLMEPTMGALS QKLLLPLYQTVIDVENLGKKTENRGDTTVIRKYWSUTETV LLESLLRSVTTPALKKFLHEHAAEMDFSVTAPDQLFTGKG KNLYDECEELLKALNSTFLLLDSCAKFRKEQADENLFGEGUG TLLSEDRNSFVNCTLQDFGI LIQKYDKPDSSWASNSLE GQ IVCELLKKLKYHVDKAVLGQLLQKTEQMDDQKQIVIKDNV LPVWRERSAFLQENAQELTPVLDPEWYTSVATRIGACDGF $M V S F R E R M G S L H A V G R L I Y Q T V D D E D S Q E A Q R T V I K Q G V$
$F A H A T S V S E T H R Q C V D W I D A V V D F E E S T A S G K L V V A Q G F$

|  |  |
| :---: | :---: |
| UniRef90-L2GQ54 | QVEIQDKLQKFLKSLKKSTGFND |
| UniRef90-W3XPM4 | GLLDVARQTYKEGVDDVFEHVEKVK |
| UniRef90-E2AZD3 | DSHLDKLHHTRGTLSETLTRMGEKDM |
| UniRef90-A9TGP2 | DGYLDVAREVFSSTSEAI HELARRYREEFNLPN |
| UniRef90-A0A015LZP6 | DEELDHMKRTYDGLDDFLSEVAREDSTM |
| UniRef90_G8ZR48 | EIISRQVYKNIIDQI IKHVED |
| UniRef90-T1ICM6 | YV |
| UniRef90 G2YZN3 | TPTLKRLHKELSSLANQKTALAASLCD |
| UniRef90-Q9TXR4 | VPEI QEISEKLEQMERVAEKLRKKYSAKFECDNLKLD |
| UniRef90-V4LVQ4 | GDLLDLITTS |
| UniRef90-A0A | KGQDEEYDRACQSVAEAMRQLEVYRKEQESK |
| UniRef90-U5EW | DEQLQELKNKMDETDAKMEKQLSKAANDGSVKLDHVS |
| UniRef90-H2ARX7 |  |
| UniRef90-UP10003DE754C | NDLLDIARQTYCEL!DDMKTMVENLASKYKF NLSLS |
| UniRef90-17IPV4 | HEKSDKVFERTDLI IQQLHNELCNLSNSLKTELKFV |
| UniRef90_U4LBP7 |  |
| UniRef90 G3NYX2 | NEFLDIARR |
| UniRef90 C5DR76 | IKVELNEGL |
| UniRef90-12GY78 | RIRQKLDELKNDI HTIHLEEDLGFDPEK |
| UniRef90-C9ZLC0 | DPELDELIREHFAHLDELLTRVAEEEKQHWRPG |
| UniRef90-UPI0002B44AD2 | DSQLDEKKRTFDGI |
| UniRet90_B8MAX1 | SEDITEQKMGITASVEHDLEQHQSVVAE\\|LGKKKVEYVTSA |
| UniRet90_M5FTU9 |  |
| UniRet90-UPIO0047B49 | DGELDAERALLDDTRRIIAEFQSELAQRYKVASLKIKHHA |
| UniRef90 X10 | ELDNLRLVSQNAKQYLANLERQEQEKTGL |
| UniRef90-A0A024GDU5 | ELDEWRA S KCLDRTKHSLQQKYRSLLSSNRARV |
| UniRef90-B8BUC | MMDVLRKAFLANVDDTYRLADEYAEAYD ${ }^{\text {L }}$ |
| UniRef90-G0VD32 |  |
| UniRet90_Gophro |  |
| UniRef90-W6KUR4 | QVLKF |
| UniRef90_K4E2L3 |  |
| UniRet90-F8XM |  |
| UniRet90_J5K1M5 | SGVLDVSRQAYKELTEEIHNYVEQLNEKYNV |
| UniRe90-X1U968 | SQDL Still |
|  | MMVLRQLA ADLAALHAEKETLAQTLSDKHGATSLTLRWS |
| E2BKC3 | - |
| niRet90_UPIO0042B | C |
| UniRef90-F7FIJ9 |  |
|  |  |
| UniRet90-C5GTJ6 | AVKTYKEANDDVVALAAQLGDEYDLAF |
| UniRef90- ${ }^{-1 \times 51}$ V3 | RCFLDVARTDYSELIEEFHDEVKLLGEQLETEYLIPQNSC |
| UniRer90_K70 260 |  |
| ef90-K7N3P4 | FPEVIDAREAFKLAVEQLDSMI DFYRKQLGMKNLEFDSIS |
| UniRef90_K4BF62 | E |
| UniRef90 G3B7U4 | N |
| UniRet90-M3AW17 | DITDHKCG |
| UniRef90-Dom; | NLQALRDEWDGLLADIEEEHRNALDTIGG |
| UniRef90-UPI0001A6229B | LQEI RNKLDNLEERIRDEFRRCAKILNLEQNKSIKLESNE |
| UniRet90_UPIO000220878 |  |
| ef90-K1PAT4 | NGLLDGRGTYAGIIEDINNVANQLAEEYSLP VTSYNS |
| 俍ef90_K5X5W2 | NKLLVARETYKENVSDIYELNKMLADEHELPITLMYQDG |
| UniRef90 D8LZT2 | A |
| UniRef90 J3 |  |
| UniRef90-G6CON5 | PNGDFLVKPSFDEELKTTKLENNP |
| UniRef90-H2WHC0 | AVQLDLARQTYEELVSQVEQTGAREDAEHFHNNLSFSQQR |
|  |  |
| Ret90-H3GQ03 |  |
| Ref90-K8EEW3 |  |
| UniRef90 G4YWY7 |  |
|  |  |
| UniRef90 ${ }^{-} \mathrm{AOAO16W}$ WQ2 | SVNLDVARRAYEELVRDIQSQEEVLAKYLPGQD |
| UniRef90_UP1000328F5B0 | DFPLIKKRKDE\\|QEAKDKIQ |
| UniRef90 R8BCV1 | QGLLDVARKTNKEATDDLHQHVEDLNADLG\\|AEIRFDNGR |
| UniRef90-L5N4N883 | GL |
| Ret90-UP100034 |  |
| UniRef90-B9WL06 |  |
|  |  |
| UniRet90-G3VWQ2 | DPDLDEKKRRLMGLPSFLTEVARKETLDSRIPSCCVLYIP |
| UniRef90-G7KST2 | DKEYDSAGKAVNEIESSLLDHLKEQRKLLGSTSTSYVGIG |
| UniRef90-N4VIV6 | NQELDDLKRLYHGLNSLLNELSRDLPQWARQHVIGCVFWP |
| UniRef90-H8WVK4 | - |
| UniRef90-R7TCG1 | RTYSGLPDFM |
| UniRef90-UPIO002C35BO | D |
|  | Y |
| UniRef90-UPI00032B1016 | N |
| UniRet90_H3HD43 |  |
| UniRet90_GOUXM | DDDLHALIEQQRQSVIKSIEREHQRVQFRWTEKQMKCEYHT |
| UniRet90-UPIOOO3D |  |
| UniRef90_A9VAJ6 |  |
| UniRef90-C4R218 |  |
| UniRet90-M1VFK9 |  |
| UniRef90-W6L370 | ITVPDPLRKHLEDAQEALTRELERVREVLRLPGLEYRTLA |
| UniRet90_UP1000467F66B | HPQIDKI INNKRESFQSIEKI ALHLFEDNSKNAVSUGWLD |
| ef90-Q6FUM7 | NQRLYCLNEESNSLLGTLRSLYSKISEEILNDISCFGEKH |
| UniRet90_Q17M46 |  |
| UniRet90-WOTEL6 |  |
| UniRef90 Qol |  |
| UniRef90 M1 |  |
| UniRef90-B6QR48 | D R D |
| iRet90_R7QMJ8 | EI DEMKRCHSGLDDFLTSV |
| UniRef90 D3B1Y0 | DSQLDKDREVYNSMGSTLTQSGEEEKSYFGITSFHFVYY |

## UniRef90 17MDR6

 UniRef90 L2GQ54 UniRef90-W3XPM4 UniRef90-A9TGP? UniRef90 A0AOO15LZP6 UniRef90-G8ZR48 UniRef90_T1ICM6 UniRef90-G2YZN3UniRef90 O9TXR4 UniRef90 V4LVQ4 UniRef90-A0A016TAX0 UniRef90_U5EW91 UniRef90-H2ARX7 UniRef90-I7IPV4 UniRef90-U4LBP7 UniRef90-G3NYX2 UniRef90-C5DR76 UniRef90_12GY78 UniRef90-C9ZLC0 UniRef90-UPI0002B44AD2 UniRef90-B8MAX1 UniRef90-M5FTU9 UniRef90_UPIo0047B497B UniRef90-X1QXZ3 UniRef90-A0A024GDU5 UniRef90-B8BUC4 4 UniRef90-GOVD32 UniRef90-GOPHRO UniRef90-W6KUR4 UniRef90-K4E2L3
UniRef90 F8XMA9 UniRef90-J5K1M5 UniRef90-X1U9V8 UniRef90-E2BKC3 UniRef90 UPIOO042B722D UniRef90-F7FIJ9 UniRef90-W9S4U9 UniRef90-C5GTJ6 UniRef90-×1×5V3 UniRef90-GoU260 UniRef90-K7N3P4 UniRef90-K4BF62 UniRef90-G3B7U44
UniRef90 M 3 AW17 UniRef90-DOMX98 UniRef90-UPI0001A6229B UniRef90_UPIO000220878 UniRef90 K1PAT4 UniRef90-K5X5W2 UniRef90-D8LZT2 UniRet90_J3P6U5 UniRet90-G6CQN5 UniRef90-H2WHCO UniRefefo-24POK2 UniRef90 H3GQ03 UniRef90_K8EEW3
UniRef90-G4YWY7 UniRef90-G4YWY7
UniRet90_W7IHZ5 UniRef90-A0A016WTQ2 UniRef90-UPIO00328F5B0 UniRef90-R8BCV1 UniRef90-L5N4N8 UniRef90-UPIO0034449DC UniRef90-B9WLO6 UniRef90_H2YRN3 UniRef90_G3VWQ2 UniRef90-G7KST2
UniRef90
N4VIV6 UniRef90-H8WVK4 UniRef90-R7TCG1 UniRef90-UP10002C35BC8 UniRef90-T11ET7 UniRef90-UPIo0032B1016 UniRef90-H3HD43
UniRef90 GOUXM7 UniRef90-GOUXM7 UniRef90-UPIO003DED562 UniRef90_A9VAJ6
UniRef90_C4R218 UniRef90-M1VFK9 UniRef90 W6L370 UniRef90-UP1000467F66B UniRef90-Q6FUM7 UniRef90-Q17M46 UniRef90-WOTEL6 UniRef90-QOUXO5
UniRef90-M1VEH2 UniRef90-B6QR48 UniRef90-R7QMJ8
UniRef90_D3B1Y0


 QLGYLITVPLKPEWKKEDDFKDDGLYYQFSTATTDRMKEL NHGFYIKIKRHDMRDLPDVFDNRSVKKTRDECTTMDUIKM GLGHQCHVKGRDVNLDIDPEARTDSSSKSTRSLHEPEWTSFL VSGITHLIELPVDAKVPMNWVKVNSTKKTIRYHPPEIDAG SGKNRFQMEIPESVNPPRSYELKSRRKGFGRYTTEELDEL


 ARGFFIQMK LEPEGKLPPEFMKVTKHKNNYGFTHADGIKM LHGWCMRLTRTDAKELRKHYLELSTVKAGUYFSTKELREEL



| UniRef90_17MDR6 | A EII DCLITS LS QVS |
| :---: | :---: |
| UniRef90-L2GQ54 | A C I D CL |
| UniRef90-W3XPM4 | ALLDMLAAFGQ |
| UniRef90-E2AZD3 | A ELDTLLAFYVVAREYN |
| UniRef90_A9TGP2 | ALLD M M V S F A NL |
| UniRef90-A0A015LZP6 | A ELDCLLSLAES |
| UniRef90-G8ZR48 | SMLDLMCCFAHNANKHN |
| UniRef90-T1ICM6 | A 1 LDI LMGLAKY |
| UniRef90-G2YZN3 | DEI DI ACSLATLDANERG |
| UniRef90-Q9TXR4 | A TLDVFVSLST |
| UniRef90_V4LVQ4 | A ALDCLHSLATLSSNKN |
| UniRef90-A0A016TA) | A QVDVLL |
| UniRef90-U5EW91 | AQLDCFLS FAV |
| UniRef90-H2ARX7 | A NLDVLSSFAH |
| UniRef90-UPI0003DE754C | A ELDLI T S La Q |
| UniRef90-17IPV4 | A EIDCLSTFAYHVLCNN |
| UniRef90_U4LBP7 | SELDCLMALAESAARY |
| UniRef90-G3NYX2 | S MLD ML LS |
| UniRef90-C5DR76 | ANLDVLCSFAHA |
| UniRef90-I2GY78 | ANI DVLSAFA |
| UniRef90-C9ZLC0 | A ELDCLIG |
| UniRef90-UPI0002B44AD2 | AELDClLALTTSAAKEFN |
| UniRef90-B8MAX1 |  |
| UniRef90-M5FTU9 | DEVDVTIGG A NA |
| UniRef90-UPI00047B497B | A L A DVLQGAA Q |
| UniRef90_X1QXZ3 | ANIDTFSSLLAEVAVRY |
| UniRef90-A0A024GDU5 | A IL DVLGSHAQV |
| UniRef90-B8BUC4 | ALLDMCHCFA |
| UniRef90-G0VD32 | SULDLLCSFAFKSFKEN |
| UniRef90-G0PHR0 | S T F DVLT S LA |
| UniRef90-W6KUR4 | A A 1 D AL Y S L S LVS SANG |
| UniRef90-K4E2L3 | A ELDCLMGFALVA |
| UniRef90_F8XMA9 | AELDAL |
| UniRef90-J5K1M5 | GLIDMLAS FTQ |
| UniRef90_X1U9V8 | A NVDV |
| UniRef90-H1VCD8 | DELDVTTSFATLAVEQG |
| UniRef90-E2BKC3 | A ELDLVLS LA |
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| UniRef90-F7FIJ9 | A QL D A MVS FA HVA |
| UniRef90-W9S4U9 | A ALDCLHSLALLSRNEN |
| UniRef90-C5GTJ6 | A LLD MLA |
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| UniRef90-G0U260 | A TI D ALRCLATASSA |
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| UniRef90_K4BF62 | A SLDCLNSLA |
| UniRef90-G3B7U4 | S K F D CLL ${ }^{\text {S }}$ |
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| UniRef90_UPI0001A6229B | A F L V V V DA |
| UniRef90-UP10000220878 | ARID ALIS MGLVA AENG |
| UniRef90-K1PAT4 | SMI DMLQSFAH |
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| UniRef90-J3P6U5 | G Y L D M L A L A HVVT A N D |
| UniRef90_G6CQN5 | S KLDVLVSLSVVAST |
| UniRef90-H2WHC0 | STI DFLCGLATYSDLRD |
| UniRef90-Q4P0K2 | ALLD MIVSMAIVSRAND |
| UniRef90-H3GQ03 | A SLDVLCSLA |
| UniRef90-K8EEW3 | A EVDALGA |
| UniRef90-G4YWY7 | A NLDALCSLATVIA |
| UniRef90-W7IHZ5 | GELDSIL ${ }^{\text {S }}$ L A Q A A M Y N |
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| UniRef90-H2YRN3 | AKLDVLLS |
| UniRef90-G3VWQ2 | S RLDVLLALAGAARDYG |
| UniRef90-G7KST2 | AELDVLINLA |
| UniRef90-N4VIV6 | GELDCLVALANAAQKYG |
| UniRef90-H8WVK4 | A TVDLLCSYA |
| UniRef90-R7TCG1 | A QLDCLLS FACCAKNYN |
| UniRef90-UPI0002C35BC8 | A ELDVLIS |
| UniRef90-T1IET7 | A QLDVLCSFAVVA |
| UniRef90-UPI00032B1016 | S MLD ML LS F A HA |
| UniRef90-H3HD43 | SQI DVVCSHAQVALDR |
| UniRef90-G0UXM7 | a ALDVFVa wal V |
| UniRef90_UPI0003DED562 | A ALDCLHSLAILSRN |
| UniRef90-A9V/ | A EVDCLLS |
| UniRef90-C4R218 |  |
| UniRef90-M1VFK9 | A LLDD MLVAFAMISAER |
| UniRef90-W6L370 | A AMDVLYS L S VAS S |
| UniRef90-UPI000467F66B | GTLDVALS NAKCANLY N |
| UniRef90-Q6FUM7 | ALLDLLCCFAHNA |
| UniRef90-Q17M46 | T DLDVLQS LTVVS |
| UniRef90-W0TEL6 | A ELEVLVGFARASEDHN |
| UniRef90-Q0UX05 | A LL M ${ }^{\text {c }}$ |
| UniRef90-M1VEH2 | A EI D C WLS F A L S A M R |
| UniRef90-B6QR48 | GELDCYLAMAKTAEAY |
| UniRef90-R7QMJ8 | L D CLQAFACA |
| UniRef90_D3B1Y0 | SELDA I I S MAIVSKES |


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|  | UniRef90-13E |
|  | UniRef90-G5CSS8 |

DAETARHLDLEPDPVNPRESS LLGLLDTTETPMGARLLRE DRAAFGSLSILPDNTANQKVSVYDLLNKCRTS DGSQLLKM DSKT D SKT A A D Q L $D L S T G V S L E D Q N Q N S K S R D C L F G V L N E T F T P M G S R L L R S$


DAETWENLRVTSAAKGKDRRTMFSMLASTLTGAGARLLRV GTTLSALDVFHSSDGAKGSLLALLDHSITVAGLRKLRA DDDTLAALHI FKP TTKTGYSSVVDLLNHTTSELGKRLLKS DSRTSTA LELHSTVRNNRKGTLLSSIRRTATPSGTRLLTQ DSRTSAALELHSTVRDNKKGSLLSSURRTVTPSGTRLLSQ


DSTSVQTLEI DDPLTSNKKKSLFQMLKTTKTTGGSRLLRA DQDTYSVLQI FKSASGLKEGSLFGILNRCRSKWGEKLLRLD DKNSMRSLEIKQTDRDGNKGSLLHAIRRTVTKSGARLLNE
 LELEYTQEGTTKNSLEDYMNNTATSFGERMLRT SKDRNEFTLLKMLDKSATADGRRLLKE


## K Y N S L Y DVINKTSTPMGKRHLKY

 MSS $\square K \| V D Y Q S S T R K T L Y S U L N K T V T Q Q G A L Q L L R$ DPRTREA LETTERSTAGRRGTVVSTTRKTVTPSGTRMLSQ DKASFSALNIF NKNGPSLYNLLNNCRTLIGSRRLYRA D T LS S $\square$ Q $\square$ Q S S TS GSKES $\square$ F G $\square F Y H \square S T P Q G R Q K \square R K$ DNAAVGALNLFPVSVTPIIHSLLSLLGANNLRDMK MLRS R S DVSAIQSLELVQNLRNSRKDSGVGGLNQTLTPMGARKLKS

## DAASHEA LQ Q $\square \mathrm{F}$ Q $\square$ GRAKEGFSVFGMMNKCVTPMGRRLLRQ

[^0]

WILRPLRAAAKAESRQRADVEDSGRESEDRK LLTDDRDDE WI SQPLVDPEQDRKRHDCVEVFRSMYRTIQECLRKVQNMD RLFNPIKDEEELKKRYKAVNFMDNRFKKFEELLKDI YDLE NLLQPLINEKLI NMRYEAVKELATLCDQDRAVLKEFHDLD


WLLSPLVNTESTNQRSECVTFDMEHNSFSQQQLKAFPDLE



 AFLRPSMDVVLI NTRGDFISGF DKNMRNTTTLLRKGIEGG QFLRPSLNMDVINERLNTVGVFTRPDNDFVQNLKH $L$ GNMR



W TN SP L LD DET LNYRYDFVEAFRAD DQGLRANLSKVGDFD WISQPLTSIKEISQRHDVVESFANDPCCCRQFLRKVPDLD
 WMLAPLTDPNEI NHRLDTVQFFSDQSNEATDQLKRFRDIS WLRQPLMDKNRI EERLNLVEAFVTRQCLLQEDLLRRFPDLN

 WF TRPTREDRELNSRGDVTQFFLMMAQMLHRLLSHTKNVP SILQPSCDECLIAYRQSCVAELPVVQRFGTDRLDMLAIKP


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UniRef90_G5CSS8


DKVLCHFCFKPK\SD\|IVLKTALDA\PFDSKVLKGANSFL LILLKRMKLSHTKVSDWQVLYKTVYSALGLRDACRSLDQQLU RLVQKFALGRGDPDDLQVALA NTVHATENNSQLLSDAPDDS
 S L H R Q WA I C A S S P K K L S Q IVY H S Y LiF A S QL I S K L D S N K Wi N


PE LDDK $\square$ NHYEM $\square L K D \| V K \square Y Y A \square L D F K Q \square Y F L L V S \square N G K H$
 KTLRAYARARQSSTAFSQLLD $\square Y$ VFMRDTYDLI IDDGCGV
$R S V Q R D S F G T G S V S H D A A D A D G Y K L D R V E E L L Q Q K R S K D$
S II IIVVKNSSQLLSFEDVYRGYECIGATEHLLNCDDHKE
 AI FLKIRQRSASARDWCNLYRSIISFMSSRSYIQEIVQSW RLAKKFQRQTANLQDCYRLYQAVNQLPGVIQAIEKYEVIG

$H L L K K F D S P S C T S T D W A A L L K S \square S A L L H V N K \square F E V G \square S E G$
LILKRMKDSHTKVSDWQVLYKTVYSALGLRDACRSLPQQL LHVNDMQNAERNLNYALLLKSCLDTVPELEALLATGVHPF


[^1]
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UniRef90_D5RR17
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UniRef90_I3EMG2
UniRef90_G5CSS8

 N S F I L K N N E IT Q E I R V LI D S S L N D D C D L Q N Q K C Y A V R A GA
 L F CLLQVENHEF LV KP S F






 LQNDYCENPKYGSMRKRワREVIDE


 KETLLNE ILIKP LLHD I L NKFSKF LDD EYYSA DNDA WIMMK S G A
 DQF $\square$ NKFHDFYNDY NDXDSNSTETSTKLQDLQMEALDFDTGLADPGEDYYLSPGY
 VIE S YFTNPLIE IVGRFKQYQLLVEQTVDFTQAAMGNY VL GK L LGETTRPND LLSTGGQATETVNFERSVEQHRVTVRQGV

 THQMLDFSKFQEMIETTLDMDQVENHEFLVKASFDPNLTE LVVKI RCRPEMTEQQVQDLI SEADNA D K KLI H T LIE PA S L VVVVGD M $\square N K$ T $\square D F E Q S K A R H R S S V R T G \square$ $R Y C I L S G V$ $\begin{array}{llllllllll}R & N Q R T & F & A & K & A & G \\ E & K & G & P & T & V & V & K & E & G\end{array}$



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| UniRef90-J8011 |  |
| UniRef90-W9) |  |
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| UniRef90 $\mathrm{N4V}$ |  |
| UniRef90-J7M |  |
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| UniRef90-V7P |  |
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| UniRet90-N1RR |  |
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[^2]UniRef90 UPI00039A54D7 UniRef90-U2YT34 UniRef90-T1B370
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UniRef90 C1H5X8 UniRef90-UPI000273CE5E UniRef90-C9ZXQ8 UniRef90-A6DEE3 UniRef90 ${ }^{-}$T0JXU7 UniRef90-LOAXW0 UniRef90-F6YW13 UniRef90_H3EZG2 UniRef90_GOUTR3 UniRef90_Q6CT05 UniRef90-G0W6R0 UniRef90_J8Q1E4 UniRef90_W9XDT2 UniRef90-R018V5
UniRef90-L8FY92
UniRef90-M0WIM6 UniRef90-UPI000332F670 UniRef90-N4VWK7 UniRef90_L5L5M8 UniRef90-J7M8B8 UniRef90_Q197L7 UniRef90-B6BMZ0 UniRef90_L7JOFO UniRef90_V7PJG4 UniRef90-W7MGJ4 UniRef90-E5RUN9 UniRef90 C6LYF9 UniRef90-E6RDK5 UniRef90-A5DAL7 UniRef90-17J6U5 UniRef90-H2MNA6 UniRef90-G2YKM5 UniRef90-A0A024GPP8 UniRef90_F6X6V7 UniRef90_C9SA63 UniRef90_N1RRP5 UniRef90_J5J1G6 UniRef90_W7MBT2 UniRef90_G7K3K2
UniRef90-D5RP17 UniRef90_UPI0003D6E810 UniRef90_W4WKK8 UniRef90-I3EMG2

ETKDANAADRALIS|E LAAIFEELIURHTVENADA|IRAGAAALL EEEULNASARADDLELDLFRDVRREVGEAAERVQRVADAL
CTQYKNTMAEYEECQK $\square M V N R T F K V A C T Y W A L L E R F D K V V$ SDKIIT LDNKILKKTTKLYLKKDDEISREFDVLQS LSDE:
 AESQKAYKEFLLLDISNNC





 GYKYGDLH GI G H E L G D
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$\qquad$

AEEQRVFQKLREEVIKMLVKLRRNATVL
DALLGDLHCE $\square R D Q E T L L M Y Q \square Q C Q V L A R A A V L T R V$


DEEYGDMYCQDGDREVED DEAYGDDYSQI GDREVELLHKLAGNVLEYSSQLMLASQLS N LRLSDTSNEVVDRSDKVI QDLLKELRSD DPHLFRVCESV DNLL GD DYHKIL
DRKLSAAGEQAAKREALVVRHLRGLCLKAARQVDAAAMAM $D T L L G D L H C E D R D Q E T L L M Y Q L Q C Q V L A R A S V L T R V L D L A$ NKQCKNACEEIYMMSN

[^3]c c c c c c c c c c c


| UniRef90 UPI00039A54D7 | $G V M D V S A A L^{290} G \mid A D E Q G$ |
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| UniRef90-J4C2M2 | A T LDVLTAFAEVSTDFN |
| UniRef90-UPI0004655F22 |  |
| UniRef90-12H7D5 | S I L DLLT C |
| UniRef90-K5W838 | A V A D CLS S L G R VA LD S N |
| UniRef90-C1H5X8 |  |
| UniRef90-UPI000273CE5E | A Q LD A VVS F A HVS |
| UniRef90-C9ZXQ8 | AVLDALHCLAVASSA |
| UniRef90-A6DEE3 | A KI D V A $\square$ S S A K V A L K Y N |
| UniRef90-T0JXU7 | DELDIATSFAKLAEEQG |
| UniRef90-LOAXW0 | SQFDCLSSLATVAKN |
| UniRef90-F6YW13 | A QLD A V V S F A NVA |
| UniRef90-H3EZG2 | STLDFLCALVVYATERD |
| UniRef90-G0UTR3 | A T L Dal R CLA Q A S SA |
| UniRef90-Q6CT05 | A ELEVLVS FAKTA $\square$ S Q N |
| UniRef90-G0W6R0 | GYLDVMLS F A S L A K K K N |
| UniRef90_J8Q1E4 | GYLDTLSSFAVLANEKN |
| UniRef90-W9XDT2 | GELDCSLAFAHVAHQ |
| UniRef90-R018V5 | GELDSLLALA Q GAKMY |
| UniRef90_L8FY92 | DELDVACSFATHANDQG |
| UniRef90-M0WIM6 |  |
| UniRef90-UPI000332F670 |  |
| UniRef90-N4VWK7 |  |
| UniRef90-L5L5M8 | S R LDVLLA FASAARDYG |
| UniRef90-J7M8B8 | A ALDCLSS L A TVARN |
| UniRef90_Q197L7 | S RLDVALS GAVAAVK F N |
| UniRef90-B6BMZ0 | A DLDVGVS S S KVS QEY |
| UniRef90-L7J0F0 | DELDVVTGMACLAHERG |
| UniRef90_V7PJG4 | S TLDVLVS F S VV |
| UniRef90-W7MGJ4 | DELDITTTSFAKLAREQN |
| UniRef90-E5RUN9 | SKI DVFVS L A QVSKEN |
| UniRef90_C6LYF9 | SEIDCLASFSYVSA |
| UniRef90-E6RDK5 | DELDLSLS F A Q NAVEMN |
| UniRef90-A5DAL7 | DFLDVTSSFGLLAHE |
| UniRef90-17J6U5 | SKLDILLGFATlL |
| UniRef90-H2MNA6 | SMLDMLLSLANA |
| UniRef90-G2YKM5 | GELDSLVALALDGA $\square \mathrm{K}$ Y |
| UniRef90_A0A024GPP8 | GFLDVYMALAECARN |
| UniRef90_F6X6V7 | A QLD A AVS F A YV S |
| UniRef90_C9SA63 |  |
| UniRef90-N1RRP5 | GEFDA\LALALGAEKYD |
| UniRef90_J5J1G6 | GELDAI LAALALGAQKYG |
| UniRef90-W7MBT2 | ALVDMITS FA QLA T T R D |
| UniRef90-G7K3K2 |  |
| UniRef90-D5RP17 | A E 1 D |
| UniRef90_UPI0003D6E810 | S RLDVLLA LA S A A R D Y G |
| UniRef90-W4WKK8 |  |
| UniRef90-I3EMG2 |  |
| UniRef90_G5CSS8 | A E $\square$ D F $\square$ T S G A $\square$ V A D Q F |
| lupas_21 |  |
| lupas_14 | c c c |
| lupas_28 |  |
| jnet |  |
| conf | 88489999999987289 |
| sol25 | B B B B B B B B B B |
| sol5 | B B B B B B B B |
| sol0 | B $\quad \mathrm{B} \quad \mathrm{B} \quad \mathrm{B} B \mathrm{~B}$ |
| jhmm |  |
| jpssm |  |


[^0]:    lupas 21
    lupas_14
    lupas_28
    jnet

    ## conf

    sol25 sol5 sol0 jhmmjpssm

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^2]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^3]:    

