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RF GA P GGLLGETTLEEKLLER QEKTANWVSEYWLNDMYLNN R
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80 KF GAPGGVGEAL QRKLLKRREKTTNWVYDYWLEDMYLNNR
 AFMMPGGEGETLQEKLLERREKMENWIHLYWLDDMYLNNR RFRAKGGAGELLQHKLLDRREKTNNWANDYWLNDMYLNNR


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D SPLMVNSNFYGMDALLTHFTNLQAARAGAVIYSClEQYRR
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 VPLPVNSNPGMVLPRQLFRDQADQLRFAARLISGILDYKV GPIMVNSNYFAM DFLYFTPTSVQAARAGNADHAILLYRR GPLMVNSNYYAM DLLYIVPTHIQAARAGNTIHAILLYRR GPLMVNSNYYAM DLLYILPTHIQAARAGNAIHAILLYRR DP VVYVSYFFAYKDDVKIRRNPATRAAADTTAALEFRR ESLLI Y NSGFVLPRMDFTDKQGQDRCAAKVIKAVLDFKT SPLMINSNFYAVDAGVFDNPTSRQASRAANLIYAMLDYRR






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LID 130
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 LLDARAL PVDYARGQLAGTAMCMEQYYRLET TYRLPGHER MLDRAQIK PLMLQ

 NTIPMCSAQYERMFNTSRIPGVDT KLDREE I QPDRLAS T MLDREEVKPMMVQ KLERGEHAPMRA


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MGGKP $P_{L}^{L}$
 MVVEKTLEPEYA KNGGEPMCMDSYKYMFNNCRDAHKPS ILLDTRSLLPDDRARHSRKGQPMCMEQYYRDFTSYRYPGKTK MVDNETLPVEY L
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 DLENQLKRIMQAATAAGDRCEPVGLLIAGNRTEWAKARQK EI EQQMEKI LADQSAPQPGEEKLAALTAGTRTPWANARDT
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L H G G GAE KNGANRWY DK SMQFIVVGMDG GCGVVCEHSPFEG

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Y AK S L L HGKCYDRWFDKTFTFIVFKNGKMGMNTEHSWADA Y A K A L L H G Q CHD R WF DK S F T LI I F R N G K L G VN A E H S WA D A
 Y A K SLL H GRCYDRWFDKS FTLVVVPNGKVGGNAEHSWADA LHGGGGSRWNS GNRWFDKT LQQFIVAEDGSCGGVYE HAPA E G YAK S LMMGKCYYDRWFDKSFNDI SYPNGKIGVNIEHSWADA Y ARALLHGRGYDRWFDKSFNLIVGSNGRVGFNAEHSWADA Y A K S L L H GK CY D R WF DK SFTFIVVFANGKVG LNAEHSWADA Y GK A L L H G NCYNRWFDKSFT LI SFKNGQL GLNTEHAWADA F GRTLLHGNGCNRWFDKSLTLCIGSNGRIGFNAEHSWADA Y GR L L H GK GYDRWFDKSFTLCIGNNGRTGFNAEHSWADA Y A K SLL H GKC Y DRWF DK SFTVVVYKNGKNGLNAE HS WA DA Y S K S L L H GQCCDDRWFDKSFSLVVYRNGKLGANAEHSWADA YGRNLLHGKGYDRWFDKSFTLDI GNNGRIGFNAEHSNADA LH G G GS QQHS GNRWFDK TLQFIVGEDGSCGANYEHAPAE G
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QF KSGPGKQLQDLLYDRQNKHTSY爵SEFWFDT YYLRSR EFQDTTGAPRLQKYLVFKSWWATNYVSDWWEEYVYLRAR NFENGDGRELHNHLVAKDKQNKHTYISGPWFDMYLQAR NE DFVVKD GPKLQELLQKRADALPNWLTPWWLNDAYLAAR SFLKSGTGKYLDSELRTFAKTRNSYIEQFWYD AYYNYD RFAKEKEGPGLQKLLEQRATTGNNWLTM PWLDVVAYLESR DFAKTSGEGDKWQAR EQYAQGYRNY SEFFWYE AYLTYR EFGKSGGLGEKKTQKLKERAKTHDNWVDDFWIRYAYLSVR EFLSSPGVGELGSRGVARSKDPSSWLDDWWNDLAYMAYR DFFKQDGDATNLQLRLQNLASGERNWLSTWWNNYAYLEYR DFVKSD QAKELQRRLQERAAKPENWLADWWNDAAYMGYR EFGAPGGVGEQLQARLEARAADREHWLEEWWDDMGYGKYR DF GHK EGPALHKDLDEYASTRASFIEEFWTESYYLSHS EFAGSGAEGGEYLQNEEKKRDYDKKENWVYDWWL EDMYMRNR
$E F G K P G G Q G E E L Q K L V Q S Q K Y E N W L S E W W L N A A Y M R Y R ~$ EFGKPGGQGEELQMKLVQRSQKYENWLSEWWLNAAYMDYR

A
S
EFRQSGAGAELQRRLEARAADPNNWLADWWNDAAYMGYR


S
$A F L A H D G A$
$S F$
$E G E K T$

## GF

RFLK
$\qquad$
TFLAS D G GP

## 

 EFVRPGGAGEALQQRRLNFAKGKDNWLAEFWDDYAYMSYR KMLKVDGPPLQEELKAKDAANRHTSYUSEPWFD MYLTDR AFAGATGPGRELQRRLVERASRPDVPNWEPFWEDMYLSFR$H F F K P D G L A Q K L Q S R L H Q L D D Q E T N W L D Q L W L Q K G Y L E Y R ~$
 SFRKNEAPGLHDALVASDKANKHTSYISAPWFEMYLETR AFVGSEGQGKVLQERLQARASDPNSWLSEWWNETAYMGYR EFESS LGKRLQWYLKLKALWASNYVSDWWEEYVYLRGR EFGKEG GPQLQESLIARANTHTSYINQWWLELYYLQDR EFAK GPAEELQRRLAERQAKTEHWLEEWWDDGGYLTY NF VESGQGKELQKRLETRAADSNNWLADWWNETAYMGYR
EFLRPDSPARTLHAALEEFASDGVRSWLDLEWPSRYLGRR



 QFA S GVGGKELHKKLVEKASKERNWLEKWWEEKGYLELG



 EFAH
$G \bigvee G K T L H A K L V D R S E K R K N W L E Q W W E E K A Y L E T R$

|  |  |
| :---: | :---: |
|  |  |
| UniRei90 UPIO004416E61 | DSVVVNVSYYYGFDHPPAHLPRDPASRAAGI |
| UniRef90-K5VHI | DSVVVNVS |
| UniRef90-H0VJ12 | VPSQLNVN |
| UniRef90 W6MN27 | SPVVLNLNPFILLEDDPTPLQSTQLSRAASLTTSSL |
| UniRef90-E9YY55 | KPLPINYNPFLVF |
| UniRef90-UPIOOO4561195 | DSVVLN |
| UniRef90-_R4S7C9 | A P V |
| Ref90_V5 |  |
| UniRet90-UPIO0033476AE | PLMVNSNY YSMDFVLVKNTEVQ |
| UniRef90-V8P9C3 | EPVILNFNPFMAFTPDPKPEYNDQLVKATNMTVAAL |
| UniRef90 A0A024JM26 | SPVVLNLNPFFLLEDDSTPYHTNQVQRAATLTTSSL |
| Ref90-Q17499 | S M S |
| E9C521 | S |
| A3L556 | PV |
| UniRef90- WQog7 | PVSPIVSPGLLHHKLLNSKDKKDQVTKAAKLASKAVEFME |
|  | DSVVISLNPFFVLSSDVTPRNDPQLSRAASLILSSLAF隹 |
| UniRef90-B3RPE6 | MI K CSPVLSII YRPVQTVDEQLRLAA |
| UniRef90-F4RG67 | PLIPFSSYYIAHLSTPQSKSQDGPTRASNL |
| UniRet90-K3WFS1 | SLMMNSNYYALRTRPGVSASKKPTAMAASL |
| UniRet90_W6MJ68 |  |
| UniRef90-H2V092 |  |
| UniRef90_L8WMT7 | DPV VVFVSYYYVHVEQGKRSQAERAARLIKAMLPFRE |
| UniRef90_M2 | PVVVNVSYFYVHMDD |
| UniRef90-UPIO004415329 | DSVVVNVSYYYGFTPHPEHLDSTPAHRAAAL |
| UniRet90-U5HGV2 | DSVVLSLNPFFILEDDPTPARGNQLMRASS |
| UniRef90-H3DRX8 | DPLPVVTSPGVNFPKFEYQGQTGQL |
| UniRe990-T1UM8 | VALPVNSPGMVFPKENFKNQDDQ R |
| UniRet90_UP10003F0 | $V V \mathrm{~V}$ SSPGVAFPLMDFKSEKDQLSF |
| UniRet90_K3WD | QPIVINYNPQVKLKEDPVAAKNTQNQR |
| UniRef90-G1k | EPITLNYNPFITLNPDPKSEYNTQVVRATNLIVSSLKFLN |
| UniRet90- YP10004449C83 | D SVvN |
| UniRef90 O29E44 | VPLPLNYNPLLVMKSDPRPEYQQQVVRATNLI SSSLRFWR |
| UniRef90 G6CJo5 | SALPINYNPLIVFQNDLRPDYNDQLLRTSNLLVSAVRFMM |
| UniRef90 ${ }^{\text {- W4JRZ }}$ | DPVVLALNPFFVLEDDPTPERGAQLPRAAAL |
| UniRef90-C9SL39 | V NLPFFLEDDTPARNO |
| UniRef90 W4ZB38 | EAIPMYSNY YCLDFCNFQPTLNQAARSAMVIHREMLFKM |
| UniRef90-K3WLZ3 | AVNINWFGVLPGNWGPRDMSQCEAAAIFSIAILKFRR |
| UniRef90-H3AFT6 | MPSQLNVNPAPYLEHYWPPKDGTQLERGSIAVYYMLQYWN |
| UniRef90_UP10003C9 | M |
| UniRet90_D3TMM6 | - |
| UniRef90_V9P9C2 | SPIMVNSNYYAMDFLYVFP TSIQAARAGNAIHAIMLYRR |
| UniRef90 E2BD91 | VIVNSSPGTVGPAITFKKPD |
|  | SPVVLNLNPFFLLEDDPFNNENPQIKRAAS |
| UniRef90 W4FYD5 | ASVVLNVNPFFVLEDDPTPSRANQVSRATSLIVSSL |
| UniRe90-3LV35 |  |
| UniRef90_V5Z1s9 | LPLPINSNPGMVFPRRHFVKMEEVADLGALFIDDLLDYKE |
| 11CN32 | VLNLNPFFLLEDDPTPLRNDQIRASSLYSTLTVME |
| iRef90_G3BCA4 | VVPYVSYFFSHKDVRNE GKSQVLKATALSYYT QFML |
| UniRef90 W1 Q996 | SPVVLNLNPF\|MLEDDP |
| UniRef90 M4BX81 | SSVVLNVNPFFVLEDDPTPSRNNQLSRAASLI LGALLKFVY |
| UniRef90-UPIo00455D930 | DPVVVFVSYFYVHVDDM RRRTPAKRAAAL |
|  | DPVVVFVSYFYVHVDDKLRKTPAARA |
| UniRef90-A5E413 |  |
| Ref90_Q00614 | DPVVPYVSYFFSHKDVKNIIGQDQLLKATLIAYYTIEFQE |
| UniRef90 A0AO? | RPLIPINYNPFLVFIDDPKGEYNDQLIRSANMVISSLRFMK |
| UPI00047859 |  |
| UniRef90 S2KBI4 | DPTVL NVNWWNQFRDQDGQVTDFQLKRSAGMIIAGLIDYSN |
| UniRef90-F8P446 | DSVVVNVSYYYGFDPHPSHLKQ |
| UniRef90 V2XF51 | DSVVVNVSYYYGFDAHPAHLEQTPAARAAALARGTMLFRQ |
| 9C8M0 | DPVVVNVNPFIJ |
| Ref90_UP100046 |  |
| UniRet90-S4RAW3 | PLAVYSSPGVVMPRQNFRDTQGQLKFAAKLISGVLDFKQ |
| UniRef90 UPI0003B63FAF | Pi MVN |
| UniRet90-FoX1 | RPLVVNYNPQMTLLEDPTPLKNSWTQRATSLITSSILRFYR |
| UniRet90_B353X0 | Q |
| UniRef90-S8EDA4 | D |
|  | $\mathrm{QP}$ |
| UniRef90_K5WNL8 | DPVVVYVSYFYVHQDDLIKP GQAKRAAQLLKGFLAFRS |
| C7 | DRIALL |
|  | QPLVINVNPQIKIKDDPAPEKNTQNQRAASLI ASSVRVFR |
| UniRef90-UPI0001757D4C | SPLPLNCNPVLVLNNDDKPEYNNQLIRATNLIVSSLRFYR |
| UniRef90_S8DZ | DPVVVYVSYFYVHVDDNHR |
| UniRef90 U6NXD9 | M |
| UniRet90_A3GG888 | F |
| UniRef90_K9R6Z2 | GGV |
| UniRef90-U1GVZ9 |  |
|  | E |
|  | TPMVPYMNPGPYVNHFWTPQRGTH |
| UniRef90-A7S1E0 | SPVAPLVNPFMMQEDVWPPAEGTLLKRAAFVIFALLDTWQ |
| 1270 |  |
| UniRef90_E9FY65 | QPIVLNYNPFISYVDDPKTAYNDQVIRAANFLISATRFRE |
| UniRef90 M5FP90 | DPVVLSLNPYFVLEDDPSPSRGOLTRAASLIAASLGFDH |
| UniRef90 ${ }^{\text {W }}$-4G2Y7 | DPVVFNVSYFFHFSDSVHLAQRSQVGRAASLLVASMAFRN |
|  |  |
| Uni | N |
| et9 | QESMWPPREGTQLERGAICLWHLLSFYQ |
| UniRef90 G30H28 |  |

## UniRef90 H3G9Q7 UniRef90-W3A588 UniRef90-UPIO004416E61 UniRef90-K5VHI1 UniRef90_HOVJ12

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UniRef90-M2PT06
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UniRef90-H3DRX8
UniRef90 T1IUM8
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UniRef90-K5X1Y6
UniRef90_UPI0004449C83
UniRef90_Q29E44
UniRef90_G6CJ05
UniRef90-W4JRZ8
UniRef90-C9SL39
UniRef90-W4ZB38
UniRef90-K3WLZ3
UniRef90 H3AFT6
UniRef90_UPI0003C91EE1
UniRef90_D3TMM6
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UniRef90-E2BD91
UniRef90_G8Y703
UniRef90_W4FYD5
UniRef90_l3LV35
UniRef90-V5Z1S9
UniRef90_I1CN32
UniRef90_G3BCA4
UniRef90_W1Q996
UniRef90-A0A015LV48
UniRef90-M4BX81
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UniRef90-D8PXF4
UniRef90_A5E413
UniRef90_Q00614
UniRef90-A0A023F332
UniRef90_UPIO0047859B9
UniRef90_S2KBI4
UniRef90-F8P446
UniRef90-V2XF51
UniRef90-E9C8M0
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UniRef90-S4RAW3
UniRef90_UPI0003B63FAF
UniRef90_F0X1Y1
UniRef90-B3S3X0
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UniRef90-W5U7W1
UniRef90-K5WNL8
UniRef9-C7MUH5
UniRef90-W4FG43
UniRef90-UPI0001757D4C
UniRef90-s8DZF3
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UniRet90_AKGG88
UniRef90_K9R6Z2
UniRef90_-U1GVZ9
UniRef90-K5X815
UniRef90-K1QDL5
UniRef90-A7S1E0
UniRef90-E1ZV70
UniRef90-E1ZV70
UniRef90_E9FY65
UniRef90-M5FP90
UniRef90-W4G2Y7
UniRef90 A8M1A8
UniRef90-A8M1A8
UniRef90_W4ZCK4
UniRef90_G3QH28

 | T | L | D | $K$ | $K$ | $L$ | $E$ | E |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | RLRQEKMPV AT ALRRRNELGGPDRLK SLKNNILEPEVFHMKFNGAPLDMDQYPKLFGSARIPSRTG



 TLRAGILEPEVFHYMVNAYPLDMSQYFRLFNSTRLPQPKK ALRREELBPDA RAKNNQLKMDMA


 Al QSETLIMA


| L |
| :--- |
| D |
| K |
| T | TLRTGLLEEPEVFHSMMNAYPLDMSQYARLFNTTRLIPRLRRQ

 KLKQGLLEPDAT KEGPICMDTWRWMFDCCRDPGQAD
 TLDNDRMPVDMSGGK NSFAFCMAQHYRLLTSYRRPDSPK V I D REKK

 SLQADLL EPEVYHMAFKAFPLDMSQYSRLIGGTARDPRLGR


ELEREKLQPDWVR
$\begin{array}{lll}\mathrm{NLL} L E E K F P V E & K \\ L \\ L\end{array}$
 $K$ KDRAQUKPLML MLHTDPMCSSQYERMFNTSRVPGVDT
 AL R T ETMKPDVWRT
 KLDRED!KPVMA MLDRGELPLERATSREK ALKTRHLEPDVIR
 TP L

LVDTETLPPDVTRS
 GKS PLDMSQYQFLEGTTARVPKVGG

N NGQPLCMYQY

LIKNNPFCMSQYKFMYGTTRIIPKKGC QSETLPVD R GTPLDMDQYERLFASCRVPTDMG
 RGAP A CMHQYKRLFGCARVPSDGV LTESGRLEPE KVRGAPLCMASYKWLFHSSRYPTKPS KVQTEVLEPEVI KGNPFCMNAFKYMFNNSRVPAPGS

 RVNNEQIPPDVSRSG
QVQGGSIKPDAT

PFCM

AL K K K GVLVAP $K E G P F C M D T F R W M F D C C R V M G P G A$
$K E G P F C M D T Y R W M F D C C R L P G P H G$
$K$ ALKKGVLAPDVFHYMKNAYPLDMSQYARLFASTRIPRVGR
 KLNKEEIKPWLLRSAV PCCSYQFERMFDTCRIPGALT

 FVESKELEPE KVKGTPLAMASYKWLFHACRYPVKPT RLDAEEIPPVVQRGK


 EVQNETLEPEVI KGNPFCMNAFRYMFNNSRVPAEGS KI KRRELEPDRDSPRNGNQPMCMDQYDNLFAWNRIPGVKR
 K EKLKVEVDN KGRKMCMNQMKRAFSTCRVPGVFR
 TMNAGLLEPEVYHMNPKKFPLDMSQYSSLFNSTRDPEDGK DLRHEILEPDSFR GRPLDMYQYTRLFGTARIP QVASGTRPPETLGK GQTPLCSTAYKYMFNACRIPRRDA RLDEERLP LI RTETLAP

 QKVGQTPLDMDQFRMLYCTCKVPGVTK


UniRef90 H3G9Q7
UniRef90_W3A588 UniRef90_UPI0004416E61 UniRef90_K5VHI1 UniRef90_HOVJ12 UniRef90_W6MN27
UniRef90 E9IY55 UniRef90-E91Y55 UniRef90_UPI0004561195 UniRef90_R4S7C9
UniRef90 V5G906 UniRef90_V5G906
UniRef90_UPI0003 UniRef90 V8P9C3 UniRef90_A0A024JM26 UniRef90-Q17499 UniRef90_E9C5Z1 UniRef90_A3LX56 UniRef90_U6Q097 UniRef90_W1QFL6 UniRef90_J6F2Y3 UniRef90_B3RPE6 UniRef90_F4RG67 UniRef90_K3WFS1 UniRef90_W6MJ68 UniRef90-H2V092
UniRef90-_8WMT7 UniRef90_L8WMT7
UniRef90-M2PT06 UniRef90_UPI0004415329 UniRef90_U5HGV2
UniRef90_H3DRX8
UniRef90 ${ }^{-}$T1IUM8 UniRef90-UPIO003F0A660 UniRef90_K3WDH9
UniRef90-G1KN22 UniRef90_K5X1Y6 UniRef90_UPI0004449C83 UniRef90_Q29E44 UniRef90_G6CJ05 UniRef90_W4JRZ8 UniRef90_C9SL39 UniRef90_W4ZB38 UniRef90-K3WLZ3
UniRef90-H3AFT6 UniRef90_UPI0003C91EE1 UniRef90_D3TMM6 UniRef90_V9P9C2 UniRef90_E2BD91 UniRef90_G8Y703 UniRef90_W4FYD5
UniRef90 I3LV35 UniRef90_V5Z1S9 UniRef90_I1CN32 UniRef90_G3BCA4 UniRef90_W1Q996 UniRef90_A0A015LV48 UniRef90 M4BX81 UniRef90_UPIO00455D930 UniRef90_D8PXF4 UniRef90_A5E413 UniRef90-Q00614 UniRef90_A0A023F332 UniRef90_UPI00047859B9 UniRef90_S2KBI4 UniRef90_F8P446 UniRef90_V2XF51 UniRef90_UPI00046227F8 UniRef90_S4RAW3 UniRef90_UPI0003B63FAF UniRef90_F0X1Y1 UniRef90_B3S3X0 UniRef90-S8EDA4 UniRef90_W5U7W1 UniRef90_K5WNL8
UniRef90_C7MUH5 UniRef90-W4FG43 UniRef90_UPI0001757D4C UniRef90_S8DZF3 UniRef90-U6NXD9 UniRef90_A3GG88 UniRef90_K9R6Z2
UniRef90_U1GVZ9 UniRef90_K5X815 UniRef90_K1QDL5 UniRef90-A7S1E0
UniRef90 E1ZV70 UniRef90_E9FY65 UniRef90-M5FP90 UniRef90-W4G2Y7
UniRef90-A8M1A8 UniRef90-A8M1A8 UniRef90_W4ZCK4
UniRef90_G3QH28 M26



4449C83
$\qquad$
 3C91
EE1 85989
 VMRNKFFQLELLDPRTQEGFE $V$ S P G S K H VVV QR G T K F Y T F DV LT A D G S A VP D L D WS T S Y AN ENP EHVVVVLRRK GRFWK VT A AK D GQVVLST G WSASYAKPGDDGTSGHIVVFRKGRVWRLDPWQNGRLLS D Y IM N Y F K TESESPSHI AVLCRGRVFVFEALHEGCLLTPP CVLQTDSF S RHIVVLLSRSQFYWFDVLDGDDDMTET
D

CVMQSDT $\quad$ DE
DEIRYGCDYKEK SSA
DS
D S
Q G
Q
HA
TS


## C I MQS D N K DE $\square R Y G C S$ D

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


 DTAK QFDPYQ $\begin{array}{lll}D T L & K L Y H H K S K H V A V L C N G R F F K M P L F E K G Q H G S K ~ F ~\end{array}$ DGSV K K F D S S HRYLTVLCRDRDYKVYHHDEGNVLSPA
 DTAR KFDAAAHNHVVFVRKNKFF LVVSLTDEGRELSAA WS YS HA RP D Q T G $\square D G H V V V$ FRRNSVWK E A A A E G R L L T T D
 DEDRYGADAAQ SARHAAVFRNGHAFRMDVVDRGDPLS LD $D \mathrm{D}$ VSTCP FHDGYH\|TVACKGQFYELKI TQNDQVISSN



 D E LVQQ $\quad$ D $\quad$ AP DSKHVLVMRRGHMYAVNVLDSGY I ES P S

 | $C Q$ | Q | D |
| :--- | :--- | :--- |
| $D ~ E ~$ | $V$ | $H$ |
| $D$ | $D$ | $L$ |


DE F M N Y P H DAKHI I ALLRNNCIWT I QVLDDNGNELPDL DSMDNYFESEGKCPTHLVVMCRGRVFAFDAVHDGRILTPP D Y R R H L R D D R HV AVVHRGRFFRVGTHSRNGLLPPR


\section*{

D

## 

## 




[^2]









HKFD $\begin{array}{lll}\text { D K A } & H \\ D V L Y Q D ~ T \\ D & I & K\end{array}$

C P E S K HIVTVQYK GRFYSFEVLVVNDQVSPT


[^3]| $D K$ | $L$ | $H$ |
| :--- | :--- | :--- | :--- |
| $V$ | $M$ | $S$ |

 D
$\qquad$ T Q K H F MV M C AS
$D E M R R$
$G R G R$
$D$
$\square$
H K
 DSLKHFCLDAPSETPVHAVVLYKGRMFSVDMVDDQEEPRPP D K L L H

D RL ARFEK

TQRRGCRMDSNE GS RHVVCVSRRGQQ MYYFDVLDSQSRPTER


UniRef90 H3G907 UniRef90-W3A588 UniRef90-UPIO004416E61 UniRef90-K5VHII UniRef90 HoVJ12 UniRef90 W6MN27 UniRef90-E9YY55 UniRef90_UPIO004561195 UniRef90-R4S7C9 UniRef90_V5G906 UniRef90-UPI00033476AE UniRef90-V8P9C3 UniRef90-A0A024JM26 UniRef90-Q17499 UniRef90-E9C5Z1 UniRef90-A3LX56 UniRef90-U6Q0977 UniRef90-W1QFL6
UniRef90 J6F2Y3 UniRef90-B3RPE6 UniRef90-F4RG67 UniRef90-K3WFS1 UniRef90-W6MJ68 UniRef90- H 2 V 092
UniRef90 $\mathrm{LBWMT7}$ UniRef90-L8WMT7
UniRef90
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UniRef90- W10996 UniRef90-A0A015LV48 UniRef90 M4BX81 UniRef90-UPIO00455D930 UniRef90-D8PXF4 UniRef90-A5E413 UniRef90_Q00614 UniRef90-A0Ао23F332 UniRef90_UPI00047859B9 UniRef90_S2KBI4 UniRef90-FPP446
UniRefo - V2XF51 UniRef90-E9C8M0 UniRef90-UPIOOO46227F8 UniRef90-S4RAW3 UniRef90-UPI0003B63FAF UniRef90-FOX1Y1 UniRef90 B3S3X0
UniRef90 S8EDA4 UniRef90-W5U7W1 UniRef90-K5WNL8 UniRef90-C7MUH5 UniRef90-W4FG43 UniRef90_UPIO001757D4C UniRet90 S8DZF3 UniRef90 UGNXD9 UniRef90-A3GG88 UniRef90-K9R6Z2
UniRef90_U1GVZ9 UniRef90-K5X815 UniRef90-K1QDL5 UniRef90-A7S1E0 UniRef90-E1ZV70 UniRef90-M5FP90 UniRef90-W4G2Y7
UniRef90 A8M1A8 UniRef90-H3DLYO UniRef90-W4ZCK4
UniRef90_G3QH28

210
220
230
240
A|L|CF Q|L|AR|IL|EAA GAKESA|V|GA|LTS QDRDSWADAREE EI LDANVEAILAEPTKSTPDEPGMGLMTTMNRDSWANAREK
 ELLRHLLSYI HEKCHQEPPG FGVAAALTTEERTQWAKARAY DI RLLNFKSI LLEDAESAPDTESSSFGVLTTENRKLWA GLRER
 A MLG NL Q A V V R D A E Q $\square$ A P GD GA M G L LTTEKRP DWS MYRD H
 D L E M Q F Q R L L D D P S PP QP GEERXXXXXXXXXXXXARARQA PLAFLTTENRDTWATLRQE

 ELSVNFTSIVQDSDHAD DAKSSFGVLTTENRRIWANVRNN AL S GFFSDVIRRQSHER KQHAVGIVVSDNRDRWAEVYE Q
 EILTNLQGIVAD ADKTDTAQSAVGILTTENRKIWSNLRNE
 EMQRQLSWI KEQSETLGPGEGNLAALTAAGRDEWAENREK E I H H QL Y EV LID A R S KPKVVSPLGILTSANRDVWATAYAE

 ELEKI YNHI YALLAAKRDWPE VGVLTASNRDVWAKDYAR ALLLSNLTAI VS DAARTPRNQSALGVLSTERRAIWAGHRER TLRQQLDEIVSASENR NLFPLGCMTAEKRDKWAEVRES SLS QELKKNIL A A AEDAPEAPVGVLTSEHRDNWTNNIK K
 EI QAHLDQI I HDADRDPGFE LDSYLTTEERNTWATERQQ ELEK QI QYI YDYT TMDDYPGA G GLTASNREVWAK DYNE





 E L L G R L N AVV K LDDESKNSAEVP LGDLTAADRNEWAE IRKH EIEQQMERILADDTSEPSAGEEKLAALTAGDRTPWAKARES


 EIAANLVAILRDKSTS KVGLGVLTTENRRQWAH\|RGQ QLYNQFQYI L H S S K K L G K G I GLLGAL T S L N R DE WL S S Y E A D I K L N LQ S I V E DSETRRDVAKSS FGVLT TENRRRDWA GLLREK D FE I Q L R Q I V D DVLK AK H DP P VGGVLTADDRD FWAVAREN E LLAN L RAI HD DAL KVVDASNAVGVLTTERRSTWACLRAK EL EVVQVERVVIQQA G ENKGAP I GALTSSENRDDWTEAREA DLEAQI NKVI QLAGDAADP HPVGALTSDNRDLWTDARSA



 A
 $A$



 QIIMDNI K FILLSD KT DSDKFPI GVLTTLERNKWATDR H ELEA QI EKVI S LIA GST KAPAVGALTSENRDDWADAREA
 EVEGQINWILENAS ANEPALGAT DLEKSLQHIVNDAQNADAFKNSVGLLTTMNAAMWAVRCRG ELELQRFNRIIAAAAGEKPDPHPVGALSGDNRDLWVDARQA EI QHQLTQI KEQCDREPPGI GLGALTGETRKKWAEMRSR DI ER QLEAVVVKMAKSRPDGPCIGALTAEDRTTWYQSRNR K L V T A l K D I A D R S CMM G K $\quad$ P V G IL T G N D R D T WA K D H N L D YACLKWI QQDPDS PSRDPIGYLTAENRDTWAKARRL E LTSNLQAI CADADSEQVSTNSIGGLTTENRKIWSSLRQT DDVIA GLLRQVHKA GLAQPATAA GHLTTMARAEWAATRQR E L F RQLLSCVRRCCE GKPEGD GVSALTTEERTRWAKARE Y
ERGQCVGALTGDDRPTYAKAFEH




$\square P \square A V L H D Y V L K Y$ VAS REND A RSECSKDFPRPEDLK FET HTVLRFVSDIYTDSILSFARSDNQNTPPDDPEPRKLEWDL HTVLRFASDVFTDTVIRFAQSISGTTQSFLTAPVRLEWKL
$\square A V I R L A E R A L A R A E V A D R P A P P P A L L P A P$ $\qquad$ HTVLRYVSDIYTDTILRFAKTINSQTQSFDHNPRK\EWNM TPTVQMNNWVLSEISKENPKNFIGEATPTDSAPELLEWDI




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 LP K QPVPDLEKTAKLYLQTLQPLLSDKEYQNTEKVVQ

QK S $\square P R \square P \square P K \square$

## Q Q Q Q

K N

## 元 <br> Q



K N T
Q D S L P P L P VP S IE K T K A R E D

QSKLPS LGVPELEQT DSKYLQTDKPYCSESEYARQELLCK QDGLPRLPI PKLKYTCQNYLNGIRPFLNDEQFDAAKKLVD






 Q S L M P K QP LP E L R A S M K R Y L E IVV E P L L T E E E Y H E T C QVV E K N T L D K Y L E SVV K P FV T A E E Y K Q T E A V V R


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S F L R P G G D G ${ }^{50} \mathrm{R}$ K LLHA A LERY A E A E DVR S WDD

70
80
$R$


EFQAKDGA
AFAGSD
Q F L A
$G P G P V L$

| D | $F$ | L | K | P |
| :--- | :--- | :--- | :--- | :--- |

QPVL

| L |
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| D |
| E |
| K |
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| E |
| D |
| E |
| P |
| S |

$D F V \quad D N L G P V L$
 AF A
 $N F L Q Q G M G P I L Q N R L D Q F S N D K R N W L S T F W D E Q A Y L Q Y N$







 D W
D W
E W
D W
D W
D W HA ALLERYAEDGVRSWLDTFWP ARY吕RR
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 SFL SDQGPALQE
E
H Q AF RRPGGPGRVLHAALEEYDATAGHSWLDTFWPYRYLGRR DFLKGGGSGETHHNLLWDKECNQPSWLEEFWNDSYVCM DFRK NEGPKLQKVLEKRYDETENWLAELWNKYLYLGSR EFGAPDGPGPALHAQLFDASEGVHSWLDEFW PARYLGRR DFLQSSGL QLQ GRGEHLDEASKREYNWLTERWTTATYLRHR SFRK NEGPQLQAHEEKKEKEEGSWLYEYWWNAAYGGNR EFKNTVASG Q QAK WMK GAKRNVSDWMDQGYMEVN EFQNDGEGAKLQKMLEDVASCSSNWLTPRWTNAAYLGYR QFLQPGGDGEKLQNELDEWNKHAPSNWSAAAWQDDYLESR DFGRPGGLGTQLQEGLEKRARLNKNWVCSRNEKSTGDSHT

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90
100



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## $\stackrel{T}{L}$

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 KSLVINSNVFYYLKSKLDENTRSQASMAAALISABYDFILA QPLLPNSHMAGTFALDAFQFQGGRSLWAARNITYYMDFWT LPLPVNSNPAYUFPQQNFNSLDEQLSYUSSLIRGFCDYKD DRDAGNANFFFLFQDAGPDEPQSQVARAAGLIAGAVGYKR DP TPVNVNFFFQFKPHPQHLLQNSQIGRAASLLHAAVEYKR GPLPVHSNYCCLGDFQYNDPGSNQLSQMANCIYYFMEYYG DRUALNANFFFLFRDAVPAPTGPQVERAAGLI AAALDYKL ,
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 DRIALNANF TFLFKDAGLP
 DRUALNANFDFLFEESDAGQTARAAG $\quad$ L AAAALDYKL MPTPVNSNPGYIFPKVKFETKEDHTKYTALLTRGLLEYKN DPVTVYVSPGMTFPRQEFKD ATVVLNVNPYFQLQDDPYGAHTVQVRRAARLTTSILKFDR SPVVI NANVPIVCPRDDFRDKQGQIRCAAKLIVALLEFKT ASVVLNVNPYFLLQDDCYGKYTCQVRRTAKLVFSILKFVR KPLPVNTNPCLITRRD PDKGDMLTRATFWI TSSVAFYR APLLINSNWWLLLQHDSTIPDHWQIRRAAWLVSRLMNFKE DPIA NVNF YMTSSUVPEVSSNCLARSTICLEAVTKYYE HSLPLTSNDAGFTPDHMWPSGVEPEDQVPLYLWVSMHLWK SVVLNLNPFFLLEDDPTPARNHQVTRAASLVVSALSFVR

UniRef90_UPI000361E6B7 UniRef90 $\mathbf{0} 59 \mathrm{H} 75$ UniRef90-UPIO0045DE7F9 UniRef90- 88 J 304 UniRef90_UP10004414269 UniRef90-W5KJR6 UniRef90-LIJ325 UniRef90-K7J3H7 UniRef90-B2W2E7 UniRef90-AOAO24TQC5 UniRef90 ${ }^{-}$A0A024G2R7 UniRef90 C3Z192 UniRef90-L7M7S0 UniRef90-BOCU67 UniRef90_J4U718 UniRef90 UPI000359FB26 UniRef90-R9ARGO UniRef90-B3S9R5 UniRef90-BoWDI7 UniRef90-C4R3G3 UniRef90-I1G411 UniRef90-F1KYG7 UniRef90-TOR8F2 UniRef90-M4BLBO UniRef90-V9KQR8 UniRef90-F2UR71 UniRef90-B4LQP3 UniRef90-F6TS86
UniRef90 J4GNG6 UniRef90-H2W3D6 UniRef90-H8G775 UniRef90-A8FU62 UniRef90-C3Zx32 UniRef90-F7F248 UniReffo-KOKKT5 UniRef90-F8AXV3 UniRef90-F4RHZ4 UniRef90-A0A016TYI4 UniRef90-UPIo00419F6C4 UniRef90-T1PK01 UniRef90-05KNV3 UniRef90 X6EC27 UniRef90 K K4DZO UniRef90_UPIOOO380B455 UniRef90-L7LT72 UniRef90-A8PQ37 UniRef90-K7E416 UniRef90-J1ZSV7 UniRef90_E1FZI6 UniRef90-DOA627 UniRef90-F7AW82 UniRet90_C5DPQ4 UniRef90_E3J3Y0 UniRef90-UPIO0034D8F57 UniRef90_UP100045615B4 UniRef90_UPIo0035F7F88 UniRef90 W5W844
UniRef90-UPIOOOOD9ED2C UniRef90-F6VG15 UniRef90-Q6CY95 UniRef90-U5EH62 UniRef90-Q17AX0 UniRef90-B4JQ29 UniRef90-W5TFP5 UniRef90-R7TK95 UniRef90-GONBC7 UniRef90-Q29L57 UniRef90-Q6LGH9 UniRef90-UPIO001FFEOF4 UniRef90 UPI0003AFDBFC UniRef90-UP100046C3C30 UniRef90-G8ZM64 UniRef90-E5S663 UniRef90-D1ADN8 UniRef90-J8PYM3 UniRef90_H2AT24 UniRef90-A8L3B9 UniRef90-P32756 UniRef90 P80235 UniRef90-UP10003AF407E UniRef90-S6E5Y5 UniRef90-G0VJ81 UniRef90-Q4E1B6 UniRef90-X8J4Z6
UniRef90 N1PB59 UniRef90 C3YW75 UniRef90_Qodov2
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LLDQELI PP ${ }^{130} \mathrm{~V} Q$ RLNRQE\|PPTLL

RLKRGETAPDAT
5vilume

 LSMAS

 RLKQGLIKPEATMA LLRAEKVADE

 AVHEESLAPEVI EYDAGR PNMMA SLDACLLEPEVF $\qquad$ $\mathrm{NT}_{\mathrm{G}}^{\mathrm{T}} \mathrm{V}_{\mathrm{P}}^{\mathrm{P}}$ | MC S |
| :--- |
| 1 CM |
| M |

$\qquad$ KKGQ CMYPYAMLLGTHRQPNKGD KMMGRPLCMHQYTRFFNSCVIPGEDC RMAGQPLCMYTYTRMFNSCVIPGEEC KDVLTGQPFCMNQFRSMFSAHRI PGVTM M MGRRPMCMDMFRRIFASCRIPQMPA TLRDGHLKPDVFHTNGAYPLDMSQYKHLFASTRVPKKGR TLRAGLLEPEIFHYMANAYPLDMSQYHRLFNSTRLPQPGR TLRDRQLSPDVYHTKFGAFALDMSQYANLFSSTRVPQPTK VDSGKIPVV KM KMGNELDNSQFGKVFGTCR1PRRGT

## LLRNQQLPPHKSGA <br> KLKLGQLEPEAT

 GQTLSMDQLRKPFNTCRIPHRGM
EGP CMDTVRWMFDCCRVPGQPA SLDENVFGPEVFHMNFNAYPLDMSQYKSLFCGTRIPKRGK RLDAETLPPVTQR LLRNKQ TLRAGLLEPEYYGQYLLK
 DLRNHQLEADSIR $\quad \square G$
$D F V K N T M K P D S$


| L |
| :--- |
|  |

 CLLD S E L L L E E P P
 LL RQERLK
 GRPLSMEQNKFLFSTTRI PGPEQ KMGKNELDNSQFSAVYGTCRIPRPEE

 DKVQMCMEQYDRMFRCYREPCTCV QLDQDLVPPVVQR GVGPMDMSPNFRLFNTARDPKFTR ALD A QCLTPEYGAAAFGAFP DSMVQNATLTSTTRIPGAQQ

 | $S$ | $D$ | $N G T V$ | $A R E F E R D A$ |
| :---: | :---: | :---: | :---: |

K I N N G S L A G M M Q $P \vee C M S$ Q Y R F V F S T S RV

 RLDAERIPRLV R R \begin{tabular}{l|llll|lllllllll}
$K$ \& $I$ \& $K$ \& $Y$ \& $R$ \& $E$ \& $L$ \& $E$ \& $P$ \& $D$ \& $R$ \& $D$ \& $V$ \& $F$ <br>
$R$ \& $L$ \& $R$ <br>
$R$ \& $D$ \& $E$ \& $D$ \& $I$ \& $M$ \& $P$ \& $D$ \& $A$ \& $S$ \& $R$ \& $A$ \& $G$

 

$R$ \& $L$ \& $D$ \& $S$ \& $E$ \& $D$ \& $I$ \& $M$ \& $P$ \& $D$ \& $A$ \& $S$ <br>
$R$ \& $L$ \& $D$ \& $D$ \& $E$ \& $R$ \& $V$ \& $P$ \& $P$ \& $V$ \& $V$ \& $Q$ <br>
$R$ \& $R$
\end{tabular} K L D E E L L A P V V

## 

## R S S



 LLKEEAPLVQRGAMNGF



\section*{D} $\frac{L}{D}$ | $K$ |
| :--- |
| 1 |


$\qquad$ KEGP CMDTYRWMFDCCRVPGPED A SGNTVLDMAQFKRQFGTTR1PKAGC NDKGTPLCTETYQFLFNSSRVPGKNS


UniRef90 UPI000361E6B7 UniRef90 O 59 H 75 UniRef90_UPIO0045DE7F9 UniRef90- 88 J 304 UniRef90-UP10004414269 UniRet90-W5KJR6 UniRef90-LIJ325 UniRef90-K7J3H7 UniRef90 B2W2E7 UniRef90-A0A024TQC5 UniRef90-A0A024G2R7 UniRef90 C3Z192 UniRef90-L7M7S0 UniRef90-BOCU67 UniRef90_J4U718 UniRef90_UPI000359FB26 UniRef90-R9ARG0 UniRef90-B3S9R5 UniRef90-B0WDI7 UniRef90-C4R3G3 UniRef90-11G411 UniRef90-F1KYG7 UniRef90-TOR8F2 UniRef90-M4BLBO UniRef90-V9KQR8
UniRef90-F2UR71 UniRef90-B4LQP3 UniRef90-F6TS86
UniRef90 J4GNG6 UniRef90-H2W3D6 UniRef90-H8G775 UniRef90-A8FU62 UniRef90-C3Z×32 UniRef90-F7F248
UniRef90 KOKKT5 UniRef90-K0F2K9 UniRef90_F8AXV3 UniRef90-F4RHZ4 UniRef90-AOAO16TYI4
UniRef90_UPIOOO419F6C4 UniRef90-T1PK01 UniRef90-Q5KNV3 UniRet90-×6EC27 UniRef90-16NDSO UniRef90-K4DZQ7 UniRef90_UPIOOO380B455 UniRef90-L7LT72 UniRef90-A8PQ37 UniRef90_K7E416 UniRef90-J1ZSV7 UniRef90-E1FZ16 UniRef90-DOA627 UniRef90-F7AW82 UniRef90-C5DPQ4 UniRef90_E3J3Y0 UniRef90_UPIO0034D8F57 UniRef90_UP100045615B4 UniRef90 UPI00035F7F88 UniRef90 W5W844
UniRef90-UPIOOOOD9ED2C UniRef90-F6VG15 UniRef90-Q6CY95 UniRef90-U5EH62 UniRef90-Q17AX0 UniRef90-B4JQ29 UniRef90-W5TFP5 UniRef90-R7TK95 UniRef90-GONBC7 UniRef90-Q29L57 UniRef90-Q6LGH9 UniRef90-UP10001FFEOF4 UniRef90-UP10003AFDBFC UniRef90-UP100046C3C30 UniRef90-G8ZM64 UniRef90-E5S663 UniRef90-D1ADN8 UniRef90-J8PYM3 UniRet90_H2AT24 UniRef90-A8L3B9 UniRef90-P32756 UniRef90-P80235 UniRef90_UPIOOO3AF407E UniRef90-S6E5Y5 UniRef90-G0VJ81 UniRef90-Q4E1B6 UniRef90-X8J4Z6 UniRef90-N1PB599 UniRef90-C3YW75 UniRef90_OODOV2


 DYIRH LLHDQHVAVFHRGRFFRMGTHSRNSLLSPR

## D

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## D

DY R R H Y RED
DTVRHFYS
DKIVSYFKTEKHCPSHHIVVFYRGNDFRMDVIPDGAPYAFE D L QQF
D SVRVPYSDEWPGPRHIVVEHHGAMFRMEVDAGGVAHAPE
D

## G D D D D D D

D S 1 EQ
DELKVSSSR
H
R LIP D A K F IV V V G G Y K G N F Y K
 DYIAHYG RSRRSPTHITTVVRNYQFFQLEVYNDGSRMTES
 D ODTNRSSKCENNY
DTVRAPYSDEHPGPRHLLVVFRGNMFRMEVLAEGRPHTDE DNQDTNDFYS IYENNFMTIAYKGKFYKLVTHNDNKPLSEN DSNVFYS Y YENNFMIISFKGNFFRVSTHDTDGKPLSAN DTVRTPYSEPSPGPRHIVVFHRGHMFRMDVVPEGHPHTGD
 CHLQT
D SVVFHAKDGNP C
D S
CHLQVDPTS DS R CHLQVDPTSHHVIVMYKSQFYWFDVLDVDNMPTPD
DEVRGFGF DMMNAQPPEKNG ARHVHIMMNDWCYTVQVYDGGRNDGAK

AP MVVAFRGQFYKJSTHSEDNVPLPN D QLVTYNDSKHCVIVSKGVYYRMEMYAKDHKGQLTRLNKP FRPIFCSESEGPSPTHDTVLCKGRVFKMECVDQGEPLTPA

| $C$ | $V$ |  |  |
| :--- | :--- | :--- | :--- |
| $D$ | $V$ | $L$ | $T$ |



UniRef90 UPIo00361E6B7 UniRef90-Q59H75 UniRef90_UPIo0045DE7F9 UniRef90- 88 J 304 UniRef90_UPIOOO4414269 UniRef90-W5KJR6 UniRef90-L1J325 UniRef90-K7J3H7 UniRef90-B2W2E7 UniRef90-A0A024TQC5 UniRef90-A0A024G2R7 UniRef90-C3Z192 UniRef90-L7M7S0 UniRef90_BOCU67 UniRef90_J4U718 UniRef90_UPI000359FB26 UniRef90-R9ARG0 UniRef90-B3S9R5 UniRef90-C4R3G3 UniRef90-I1G41 UniRef90-F1KYG7 UniRef90-TOR8F2 UniRef90-M4BLBO
UniRef90 V
VQR8 UniRef90-F2UR71 UniRef90-B4LQP3 UniRef90-F6TS86
UniRef90 J4GNG6 UniRef90-H2W3D6 UniRef90-H8G775
UniRef90 A8FU62 UniRef90_C3ZX32 UniRef90-F7F248 UniRef90-KOKKT5 UniRef90-F8AXV3 UniRef90-F4RHZ UniRef90-A0A016TYI4 UniRef90_UPIo00419F6C4 UniRef90-T1PK01 UniRef90- 05 KNV 3 UniRef90-X6EC27
UniRef90 UniRef90-K4DZQ7 UniRef90_UPIOOO380B455 UniRef90-L7LT72 UniRet90-A8PQ37 UniRef90-K7E416
UniRef90- $17 Z S V 7$ UniRef90-E1FZ16 UniRef90-DOA627 UniRef90-F7AW82 UniRef90-C5DPQ4 UniRef90_E3J3YO UniRef90-UPIO0034D8F57 UniRef90-UPIOOOO45615B4 UniRef90-UPI00035F7F88 UniRef90-W5W844 UniRef90-UP10000D9ED2C UniRef90-F6VGI5 UniRef90_Q6CY95 UniRet90-U5EH62 UniRet90-Q17AX0 UniRef90-B4JQ29 UniRef90-W5TFP5
UniRef90_R7TK95 UniRef90-C5DW60 UniRef90-GONBC7 UniRef90-Q29L57
UniRef90 O6LGH9 UniRef90-UPIO001FFEOF4 UniRef90 UPI0003AFDBFC UniRef90-UP100046C3C30 UniRet90-G8ZM64 UniRet90_-E5S663 UniRef90-D1ADN8 UniReftol-J8PYM3 UniRet90-H2AT24 UniRef90-P32756 UniRef90-B4MUL5 UniRet90-P80235 UniRef90-UPIOOO3AF407E UniRef90-S6E5Y5 UniRef90-G0VJ81 UniRef90-Q4E1B6 UniRef90-X8J4Z6 UniRef90-N1PB599 UniRef90_C3YW75 UniRef90_Q0DOV2
UniRef90_V9FD8

DLAAGLSAIIKKAGATRAAREEAVIGHLTTKARAEWAASRQA ALEQQFQRILDDPSPACPHEEHLAALTAAPRGTWAQVRTS E EQQDQR LDDPSEPQAGEAKLAALTAGERVPWARCRQA ELEVQTQKVTDAAGS SKALPVGALTSDNRDLWADARAE QPNTRRKTQLLSSDTSAHRRSLVLILTLGVRVPWACARDA ERQNQLDFVVGVGKPADAEANLPALTALNRTRWAEDREE DI ALNLQVIVDDAQEQDAAKGALGVLSTENRKVWAGLRDH DLVNAFEAVRAEATGDLERYPPVSVLTSENRTNWAKARTY D LRQFECVRQEATGLFTRHPPVSVLTSENRTNWAKTREH ELKTQLEVVKQQCENVCEG PHISVLTAGNRTEWAKTREK
 QI EAQLRKAVDAQDEARGAQPSVANLTAAHRDHWTKAREH El
NLESQLDHDIK DSY DRTGDAVGADTTENRDTWSDARQH EMRKQVKRLIEMSAEESE PIGGLTTAERAKWADDYEL DFLLYFQQI QHKVDSEDTSISGVPLLSNDDRTTWARNRSH DLYQQLTEIKKHSLVNKQGEAPVGVLSSSNRDVWYNNYSE LLKKQLERVMEMAGDEDD ETGVAAFTALPREEWAERRER DLERQLQFI YEYAHSFPTT LIAVGALTSAHRDVWTEAREA EL LANLEA LAEPMAAKSDETPVGLLTTGNRDVWADARLKK EIRAALEDI TSKPASTAAPPLGAATTMNRDKWATLRNK ALAKQLEDIME AEDDFGVPYGDLTTDSRDNWAEAYGQ Qi EKALQN KDKCVARANAADGVAALTADDRDRWADDRNH ELLKQIEYIYAHTAEE YPAVGLLTAGDRDAWTKDYDA DVQASLAWILK NGKEAKPEESVGALTSLDRDAWADARVE DLERGLAEVLAASGTR AEFPVGHLTTKARAEWAESRAA SIEFDLECIL SVQGKGQNLGLLTTMPRDAWAESRAA DAEEEQLIQMLKQQCENMSEGPHISALTAGNRTEWAKTREK EVGARLRSVLADGSPR EFPLAYLTGEDRDVWAGLRRE E1HKQLDKIIEDSNNLNTPKENIGGLTMGPRDQWYEAYTE DLAAGLEAIRKAGATPAAPDTAVGHLTTKARAEWAASRQT DLLNNLHSI IQDADQLPTAERSIGLLTTETPPDWASMRSE ELQRSLQQILDRDDTPQEGEKHLAALTAGPRDLWARIRRE ELAAGLGTVLK AEPSPEPSPGHLTTKARAEWAASRDA VLAEQLQQI ANSENKSGVP
 DMKAGLRLVMEAGVLRAEDDMALGALTTKARAEWAASREA QTWKQLYDVVHSASVREDTNAGVGLLTTLPRDEWHAAYSS ELVLALKQI ESFATSRKDPGAPVGLFTTLDRTDWFHTRER A EFELNCL LDASPSEKGQNLGLGSTMPRDQWAKSRAD EITSQLDCIDDACANLGPGDGVGVLTHGDRDSWAQNRKL EVHANLKYILSDKSPDPKKEPLTGLSTEKRDTWAKLRQ DLEAGLHAVLKAGAQPPAPDTSVGHLTTMARAEWAAARES EQVQACLSI I LSEQSHLLKPEDCVGSLTSLERDQWAEVRSE ELIVSLKYI EDFVTSRQNPGAPVGLLTTMDRTEWFHARER EI QGQLKVIMEDASKVEGEDQNPSIFTTTERTRWARMRNR PI EWNLYSI TMDSEQSEASRPPFGVFDTENRRVWSNVRDY ELATGLVDVLAAADTPAPDDTAVGLTTKARADWARSRAA A AQQINWI VENTHK GEPPVGVLTALPRERWVTVRSY TIEKAFWDIVEDAKKGD GAGVGVLSSDSRDTWTHTREH dLaAGDRAVRKAGAARADAGTAVGHLTTKARAEWASRAAL QI AAGLRAI QESGQVVEDRAAAVGHFTTKARADWASS RA ALEQQFQRUDDPSPACPHEEHLAALTAAPRGTWAQVRRS ALEQQFQRILDDPSPACPHEEHLAALTAAPRDMWAQVRRS VIYQQLNQIVNHDGSQGSANAGI GALTTLPRDEWAGAYQQ DVVDGLRAVLKGGTKPAATDTAVGHLTTKARAEWASSRAA DFLLCFQQI QYRVDSENVNDADVPVLTNDDRTSWARNRTH QLRKQLAKVIQSGR PAGPQIGLFTHDTRDNWTEAHEM DLADGLRAVLKAAPEQVADETSAGHLTTLARAEWAGVRGE ELKQQLVDVVEMA KQDKTRCGVAALTTLDRTQWAKHRE EI WQQLYTVVNELSEQETANGGVGALTALPRDEWRFAHAE ELEKTFQMILDKDHKSQSGEKYLSALT\|GPRDLWARDRRE SLADQLGSIL HCPMERGVPIGLLTHDNRDNWGEAYTY A A EDDLDCIVADS E:ADGLRA RDAYPGRAGLDEAVGSLTTLARAEWAGVRDR Q| HGQLDR RSQSWKTD KEPMGILTSEHRHTWGEAYNR A WTQFYSIVNEKSAHLNDETGVGLLTTLARDQWRSAYRD EIHASLEYILKD NRPVAENPVGLLTTIGREQWSLLRSQ ELAAGLQEIMKAG PPADEPVGPLTTKARAEWAASRQA EI WKQLYSVVFQGSQPESKLGGI GSLTSRPRDQWRKVHSD NI WQQLYSIVTLLNVQQD HIGCLTSLPRDEWRKSYAQ DLENGLDAILKAGAERAAPETSVGRLTTKARAAWATSRDS CLREQLQN LQ KETKHGVPYGDLTTDNRDNWATAYEQ QLEWNLYS:1MDAESAGSGSAPFGVETTESRRVWSNGRDY
 EI YARLKAIIDLNPMPPRVD IGVFTSTDRTTWHSVRTE E: ENRLWDVVKDVQKREAEGQRVSILTSDDRTQWANNREY E:MTQLKYUTEQTKDVENDNKVAALTTQNRSLWAKQRAK



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UniRef90 UniRef90-F2UR71 UniRef90-B4LQP3 Uniinefol-F6TSS6 UniRef90-J4GNG6 UniRef90-H2W3D6
UniRef90 H8G775 UniRef90-H8G775
UniRef90 A8FU62 UniRef90-C3ZX32 UniRef90-F7F248 UniRef90-KOKKT5 UniRef90_KOF2K9
UniRef90_F8AXVZ UniRef90-F4RHZ4 UniRef90-A0A016TYI4 UniRef90-UPIo00419F6C4 UniRef90-T1PK01 UniRef90-O5KNV3 UniRef90-X6EC27 UniRef90-I6NDSO
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UniRef90
Q6LGH9 UniRef90-UPI0001FFEOF4 UniRef90-UP10003AFDBFC UniRef90-UP100046C3C30 UniRef90-G8ZM64 UniRef90-E5S663 UniRef90_D1ADN8 UniReftol-J8PYM3 UniRet90-H2AT24 UniRef90-P32756 UniRef90-B4MUL5 UniRef90-P80235 UniRef90-UPIOOO3AF407E UniRef90_S6E5Y5 UniRef90-GoVJ81 UniRef90-Q4E1B6 UniRef90-X8J4Z6 UniRef90-N1PB599 UniRef90-Q0DOV2 UniRef90-V9FD81

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I

330
340
350
360
TT\| $\$ SFVDA ${ }^{330} \square G T P A E E Q S A R S G A S S Q G \quad$ LIPVVEPVEFVL PDSGHMWEFTCFQLGYSTDGHCKGHPDPTLPQPQRLQWDL TPTVRLCDEVLTDLHSQSFPHAGTSVSSPLPPPTPLDFTL TPTLRMNEFILGSMAKGKLDHGSAEVSSALLPPVELKFDEE
 VVVRTFAYCAKYVNDNFKKRDPESFGDVQTTPHKLEWDM

 TПSTSMSLYAMLSIFE DGMPDWSTPPKRLVKPVELVFD TPTLGLNDYVNKKLKSETYSFETASTSDK QWKF NWDU TVCSQTWEYMLQREEYDDEGHENDEDYPKNDQPKELKWN TVYRSVFEWLGRRYLSRNGSMDESTSSAFLPPPPTLLSFDV VAVLRLLNEVYWDSARRPGVTTSPGPADSARAVRKLEFVL VAVLRYFQEVYKESDATPTPDPRPK
 MVMVLFVEFTMSVLKPCNGVWMGSADCAEFPKPEELEFR L VAVLRLMEESFKDTNKNHFVSPDDVPRSHNPAVQP TTVLSFVDTVLTTEPTESAARESTGAAPVAP SVMLRLIGHI YDTTDKVSFTQGNTSTEKNVPTAEEIGFDGL MVAVYWGYFLFAQLQRIGPGHKAQVPARPVPKPEELDFDI VAVLRFFNEVFGDSTRAPAVSPHEPPAPADAAVRRLDFVL
T

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PISGHMWEFTCFHLGYSADGHCKGHPDPSLPHPQRLHWDL

 QPAATDMDYVQRHICNPKYGQEFSDPTSSSEELAELLE

 MDYVQVREYIKYHEQFESPYGPDGHSVDHVPQPERLCWDM QPLAMLMDFVQRNTTQPNYGCQCCSTSKTKSATVLCFDF SVMLRLVAHUYDTDDQDPFDDRNAPTRSQTSTAEELKFDGL PPVATLLDHV ADKVYCEKPDTKRAPQLPDPMPKKLYF | T |
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| :---: | :---: |
| UniRef90_UPI000361E6B7 | D DELLRADVLAASESFAA |
| UniRef90_Q59H75 | P D QUH S SIS L A L R G A K L S ENV |
| UniRef90_UPI00045DE7F9 | PEECQEVI EMSLNT A NLLA A DV |
| UniRef90-X8J304 | T P P L H T A D S A RKA G S DL VNS |
| UniRef90-UPI0004414269 | T P AVKELVA ASETRFDEL |
| UniRef90-W5KJR6 | PSECQSMISNSLDVA Q A L A D DV |
| UniRef90-L1J325 | WPEARDAILLEAA QLSAEQCKDL |
| UniRef90-K7J3H7 | D A S L E N AI EK A T F AVGD K L S D I |
| UniRef90-B2W2E7 | LP ELLSTALLRFAETRLADLIQ |
| UniRef90_A0A024TQC5 | D N NALTT AI E C A S A A I S KL I Q |
| UniRef90-A0A024G2R7 | D NQANSAIIECAS $\square$ AVVTKLI S |
| UniRef90_C3Z192 | D D E I R N D |
| UniRef90_L7M7S0 | NDSIK A DVQKAERNYEEHTG |
| UniRef90_B0CU67 | S P A S S A I S VA D A A A R D L T E S |
| UniRef90-J4U718 | DAEDVKSIIDEARDGANKLAS DL |
| UniRef90_UPI000359FB26 |  |
| UniRef90_R9ARG0 | D S K A L D Y $\quad$ T N A EKHHDA $\square \mathrm{M}$ |
| UniRef90_B3S9R5 | SEDIVK DI R E T A EVF D K AVDNV |
| UniRef90_B0WDI7 | D DEIVRGEI ERMTEVAHKLQNSV |
| UniRef90-C4R3G3 | T P A T Q A I K Q ELA T F D Q TVNSL |
| UniRef90-I1G4I1 |  |
| UniRef90-F1KYG7 | T D S L K S A I A EAQRDHSVS A S GL |
| UniRef90_T0R8F2 | P A HVGATIA DVSTAFA A |
| UniRef90-M4BLB0 | D GEMMNVLK Q AKMMYEKWM |
| UniRef90-V9KQR8 | DETVK A GVA R A GEKLRAAVGS L |
| UniRef90_F2UR71 | T DELSAELKTAAEEFDA |
| UniRef90_B4LQP3 | N ECVGGQ WI F Y A K R NVDRLVVHDL |
| UniRef90_F6TS86 | DEQVYYDAI E E GKKVHQT F DEDL |
| UniRef90-J4GNG6 | S P D TE $\square$ A I T R |
| UniRef90-H2W3D6 | T D S L R A K I Q A A Q S HVVSANS D L |
| UniRef90-H8G775 | D D A L R DV R |
| UniRef90-A8FU62 | D D TLR Q T I R A TVDWFS |
| UniRef90_C3ZX32 | D DEEI R D AV $\square$ H T EETE $\square$ KQASDM |
| UniRef90-F7F248 | NDAL R A GII AKARERFDAATGSL |
| UniRef90_K0KKT5 |  |
| UniRef90_K0F2K9 | DAAQRNDI A A A ADFARYAAD |
| UniRef90-F8AXV3 | DS DLRANI Q A A |
| UniRef90-F4RHZ4 | SNELKTALRFAETR |
| UniRef90-A0A016TYI4 | DSETLDA A NEAYS $\square$ S K GVAND |
| UniRef90_UPI000419F6C4 | D D A L R A DVR |
| UniRef90_T1PK01 | SPVLE QKL Q E A GKNVDKLAEDL |
| UniRef90-Q5KNV3 | D D KLK Q I I EQS K R GFEEEME |
| UniRef90-_X6EC27 | NDALRK DVR G A N D A F K D |
| UniRef90-I6NDS0 | T PFIQSII A SARTAFHEVI |
| UniRef90-K4DZQ7 | D NGLLDELMK A A F A D F K MLI E S |
| UniRef90_UPI000380B455 |  |
| UniRef90_L7LT72 | DETLAASEMER IK S EYY Y A C D NL |
| UniRef90_A8PQ37 | SSDARS ILQ K Q I EVFDDLA N L L |
| UniRef90_K7E416 | NDSLR A GI Q S A RVS Y D |
| UniRef90_J1ZSV7 | D D AL R A QVR S |
| UniRef90-E1FZI6 | T D S I R Q R I Q E A Q A K |
| UniRef90-D0A627 | D K Gll Y GVMK S A S E D F K A L $~$ Q N |
| UniRef90-F7AW82 |  |
| UniRef90-C5DPQ4 | D PF IL S S L H F A E T R $\square$ S D S V S |
| UniRef90_E3J3Y0 | D EALRADI R A A A A F |
| UniRef90-UPI00034D8F57 | DQTLLEEVAQALT DAESLSE |
| UniRef90-UPI00045615B4 | DQQTQASIA K SEAAA QQLIS |
| UniRef90-UPI00035F7F88 | D D GLR A DV H |
| UniRef90-W5W844 | D D ALR E D AREAGKSFA A Y A D |
| UniRef90-UPI0000D9ED2C |  |
| UniRef90-F6VGI5 | P D K VR P GV |
| UniRef90-Q6CY95 | T P TLLRNTLESAKLQF |
| UniRef90 - U5EH62 |  |
| UniRef90-Q17AX0 | D D Q \R TE IVR MKDVS D K V |
| UniRef90-B4JQ29 | A EIINDCID F W LMA A K R S $\square$ N |
| UniRef90-W5TFP5 | D E |
| UniRef90_R7TK95 | D G L E D TVN S A L S D Y K S K I D NL |
| UniRef90-C5DW60 | T PKVQDFINSARSQFHDNIYN |
| UniRef90_G0NBC7 | DQETLDAADEAYKASKHVADDF |
| UniRef90-Q29L57 | SDCVDLFLCEAKRNDDKICSRL |
| UniRef90-Q6LGH9 | D DALVQT TRAAVDLF |
| UniRef90_UPI0001FFE | D D DL RATVRRAHDDFAA |
| UniRef90_UPI0003AFDBFC | DREI KRDI EHAK Q |
| UniRef90_UPI00046C3C30 | NQNVLNDI ERAKERYSQQVSDL |
| UniRef90_G8ZM64 | TPAVKEWI NVAQDSFNAEI |
| UniRef90_E5S663 | TKPI EEAI KVA GENYREWCDSL |
| UniRef90-D1ADN8 | T D D R A D I R |
| UniRef90-J8PYM3 | T P KIINKAI ESA Q L Q F K E T D D |
| UniRef90-H2AT24 | NT SLLQRDI K L A K T K F K Q VM |
| UniRef90-A8L3B9 | D D DLR A DVLAA GDAFS |
| UniRef90-P32756 | SENSRNLLKKQAEVFDELANEL |
| UniRef90-B4MUL5 | D D S I N K SLA T A T T NTD KL VEKL |
| UniRef90-P80235 | DNFLQSSLHFAETRIS DLI S |
| UniRef90_UPI0003AF407E | TP DİKEII EQAKRSMDRNI Q N F |
| UniRef90_S6E5Y5 | D P F L L S SLHF A E T R $\square$ S D SV S |
| UniRef90_G0VJ81 | T P TILKS Qle S A Q N Q FQVQI N |
| UniRef90-Q4E1B6 | TPKLEQEGAKAKRR\DAD |
| UniRef90-X8J4Z6 | DSKIEAEIKQAEARAKTIVE |
| UniRef90-N1PB59 | T DEI Q A AI DVA Y A E Y CKRLD DL |
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| UniRef90-Q0D0V2 | VPEVSDAL R F A E S HLS DLLQ |
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QPNLLKYHVLP LEETLNRFMTTVEPLDPEEFQRQKGDTS KKRPIPDLNETLEKYLTRVEPLQDARQNRKTRKCVL QRSLRRLPIPKLSDSC

 E Q QAS QS | Q |
| :--- |
| Q |
| Q |

 ahe


QA QMPS SPDPEEKSVATY DQSVKPYVKD QSQQELLCK LPS SLPLPELRDTMERYYSCIQPFGTKEELAQARKTID HETMERYYESLKPFGTDEELASARKAlK
QPNPRDPVPQLNDTLEKYDRSVQPLDTPDEYKEHKKLVE QPNLPRLPIPSLEETUTKFPSYVAALQTPEQQTETRRLCD

PR RP TPG GESS EKY KS


ETMERYFACVQPFGTAEELAQTRKVID
 EDRLPRVPLPSLDDTCARVLEWCEPLDDADQRAATESAVA
 QPFTPSDPDSHNTLDRYLRLIAPVVSKEDFERTKLLVK
QPF
EDRL

QSLLPSLPVPKLSSTLKQWLESVRPLVSEEAFRRAEEAAK QDQLPSLPVPPLVETLEKYUNSASLLTADEKKRIEKEAH

EFNLPR DPVPVLTETDTRYYEGVAPFMDKKALVKHREVVK QDT SRYLETVEPILSKEEFDEVSELAR EAQLPRLPVPPLEHTLQLYLQTIAPYATPSALSQQRKLVE QDDVKKLPVMPLDYTIARYUNSVEPLLSSEEFTNVKNMAE QQELPSLPVPELKSTLDKYLQTIRPFCNGVEFERQQLLCK S


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UniRef90-E8WFE7 UniRef90 ${ }^{-}$F4RWY7 UniRef90 UPI00046B553E UniRef90_Q9VI16 UniRef90_G8ZTT7 UniRef90 A8P906 UniRef90_UPI000361EC95 UniRef90_Q6CUK6 UniRef90-R4SP29 UniRef90 L8HG13 UniRef90_W4YJ91 UniRef90-J7S3D1 UniRef90_W8ACl2 UniRef90_U6NMS0
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UniRef90 K3WKA5 UniRef90 UPIO003EE0140 UniRef90 F6WJY7 UniRef90-B4NAS3 UniRef90-R9AG16 UniRef90 UPI0004655E7C UniRef90-A8XQK3 UniRef90-B2HPX3 UniRef90_UPI0004413B90 UniRef90_G4VPS9 UniRef90-M5G4V0 UniRef90_L1J2S1 UniRet90_UPIO0030A1BB8 UniRef90_UPI000440F244 UniRef90-H3DWY4 UniRef90_F7GCD2 UniRef90_L1IPS6 UniRef90_A8WJI9 UniRef90-14YJ09 UniRef90 H0EFJ7 UniRef90-A0A024FZ30 UniRef90_F1KXX5 UniRef90_L2GWH6 UniRef90-W1QGR9 UniRef90-UPIO00161DEAE UniRef90_IIFN58 UniRef90-G2Y7A0 UniRef90-W9CPS6 UniRef90_K5X5Z79 UniRef90-M2P7K7 UniRef90_UPIO00441560E UniRef90_UPI0001CE20CA UniRef90_I1G978 UniRef90-A8Q978 UniRef90-W8C4X5 UniRef90-D7FX63 UniRef90_E3QIG0
 DF LQSP LSKSLQQRLIDRASPNNWLEDNFWLRKAYLEWR EFKAAGGDGEKLNALLWDKRCGQPSWDEEFW DDAYMNVR SKLDQ GVGRELHKELQDKDNNHTSYMSGPWDD MYLKNR DFAF NNGPRLQWYGKDKSWWATNYVSDWWEEY YY K RGR VFRQS GILGGKKLQERLVKRSEGMRNWIAEWWDNDAYMAYR
 QF LQ E EGPVI HDKLLEYDAMP DNSYDENFWEDAYLT QR



EFLKK $\quad$ QGRELQLLLLEETGSKEKNWLAHRWLKAA Y LTY R SDENVD LMMRTLHERLVQY D DVP QS S Y IVE QF WY DA Y L L Y D DFAAHDGPELQRELIL HDKRNLHTSFISEPWFD MYLSDR




 DFRKT
 EF M N NEGPMLLQAIL EKRERSEENWVA DLDWDKYA Y L V S R

 SALTGKDAMNTLQERLTKRAE GRENWLSDWWLSAAYMTYR
 $E L L$ SENGAGDFLQRKLEDFS QREDVANWEPFWUEAY L S E R
 $E F Q \quad N G V G A Q L H E Q L K K R A A G M R N W L G T W W E D Y G Y Y L I R$ EFQ $\quad$ NGIGAKLHTKLLKERASKMKNWLDQWWDDYAYMMLR D F GQ N R S VGRSS Q D E LI K QEFMYPYS Y DE A WWD A M Y L G GR DFLQ GVGPKLQQAL LEYHGTRGSY DEEFWNES YLAPD
A D DF REGGGKK LQ A R LKEKASPTNWLDDRWWDKVAY HTDR DF L NNKGCELQKLLQQEAGQADDNWLTERWTKVTY LRHR


 $D F A V S \quad L G P K L Q W Y L K L K S W W A T N Y V S D W W E E Y \square Y L R G R$ $D F Q \quad N G \square G P K L Q E K L K E R E G K M K N W L G T W W E D Y G Y H L L R$
 GFGDSEN GRKL QNFLELKSSSSKNWLEDWWYDAY T T N
 TFR D GLGGKTVQDRLDDKRSPYNWLDDNFWLRKAY LEVR


 EFE SSKFGKD LQVQUVKRSKQCSNWLEDWWVQDMYLSAR EFESSSKEGKDLGQQLVKRSKQCSNWLEDWWVQFAYLRQR

HFEL GEGRQLQDDLQTRSQSYPFSYDEEVWDKMYLCGR


EFSSKGSTGWRLHERLQDQANRHTNFTAEY LKNKYLKSR KTLQERLVKRAE GRESWLS DWWLSASYMSYR TFE S GVVGAELLQEKLVVKHAATRKNWVDEWWDKYAY HMLR RFLKK GDGP LLGS MVVEKDAA QKGYPHSYDEDDMYDEGR



DPVTVFVSPGMTFPKQNFRDSRAFVDYTARVIYGLGEFND ASVVLNSNPFFQLQDDPTDRDTSQVKRTAKLVTSILKFDR LPCPI NYNPFMVYAPDPDPVYNDQLTRATNLIDSYGRUKR
 VPSFINVNPFFVFKADPANPAQT ARAAQIVGSAVVFYK SPTMVNSNYYGMDGDADKPTCFQAARAANVTVALLQFRE ASVVLNVNPFFQDQDDPYGDHTVQDKRTAKLVTSMLKFDQ DRIALNANFFF FRDDTVSTTADQSERAAALITAAVNYKL




S



 R P V V LT H N P LI V L K D S T L S GY Q K P A I R A T N L L H H L V E F C R




 Q D T L L T Q N M G A 1 I P K S F M S N T S S Q I G M A S Q I I H H L M N Y WS
 D P L P I N S N W W L L L K D D A S R P T N W Q La A A A WV A WR A L i R R G














AP L L V N S N W WL A V K Y D Q S ViP E E WQ IAR R A A WF S WR V L D F K A A P L $\quad$ L $L$ N $\operatorname{T}$


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AFBF77
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 LLDKGLLEPEPAG K
 KEGE
G K

 TPYSSAQYK
TLMY $S Y K$
$S F K$
$Q Y Y$
LYK
 $Q T Y F S M N Q Y K K$
$G V P S M V Q N Q Y$

MVHANKTP V
KMGKNELDNSQFGKVF
EIRHGTLTKDM】R GK $\square P L S M D Q Y G K L F G S S R I$ ALDAECLARWYGAAFGAFPLDMSQYKSLFGGTRI

 KAVPLCSQQYERAFNTARI RLDKGEIP P A TQR KI DTKQLEREDSTGKV KQRHMCMAQNKFLFSETRDPGALQ GI DSGQNSTDFVGRGKNRKPMCATGYKYMFNSCRQPCRKE
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 LLHKATHKPLSSNGMVK KVKSGTEEQDPGARK KTGPMCMSGYKWLF

 $\stackrel{\mathrm{L}}{\mathrm{L}}$ QLRHKTLKPDKVR MLDRQEITPDSSRSARWQRHWILDSYYKL QLERG EVGYGYYNEQPISKDAYYWFF NATRIPNKPH LLRTNLLEPEYAAYFFNAYPLDMSQYPLLMFNTTRLPEPEK LLDSHS PTDCAKGQLSGQPLCMKQYYGGFSSYRLPGHTQ KVKSSELEAQDELG
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 NSCRYPLKPS

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L ALLSESIPPAVYR NVPQCMSQYMR SGCRIPGEMA
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|  | UniRef90_W8AVD6 |
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|  | UniRef90 ${ }^{\text {Q6CUK }}$ |
|  | iRet90-R4SP29 |

UniRef90_L8HG13 UniRef90_W4YJ91 UniRef90-J7S3D1 UniRef90-U6NMSO UniRef90-A0A024GIQ7 UniRef90-S2JSN9 UniRef90-H2Y163 UniRef90-F2UJI3
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UniRef90 E4Y2C7 UniRef90-G7V780 UniRef90-K7FG57 UniRef90-A7WPK4 UniRef90_Q9VB02 UniRef90-1PAT8 UniRef90-A0AO24U2Q7 UniRef90-B7G476 UniRef90-UPI0003AFBF77 UniRef90-14YYW0 UniRef90_GoVk18 UniRef90_J3Q8K5 UniRef90-A7ENM4 UniRef90-GYYWR8 UniRef90-K9XSG8 UniRef90-UPIO003EE0140 UniRef90-F6WJY7 UniRef90 B4NAS3
UniRef90 R9AG16 UniRef90_UPI0004655E7C UniRet90-A8XQK3 UniRef90-B2HPX3 UniRef90-UPIo004413B90 UniRef90 G4VPS9 UniRef90_M5G4V0 UniRef90-UPI00030A1BB8 UniRef90-UPIOOO440F244 UniRef90-H3DWY4 UniRef90_F7GCD2 UniRef90-L1IPS6 UniRef90-14YJ09 UniRef90-A7TI59 UniRef90-HOEFJ7 UniRef90-A0A024FZ30 UniRef90-F1KXX5 UniRet90_12GWH6 UniRef90 W1 QGR9 UniRef90-UPIOOO161DEAE UniRef90-IIFN58 UniRef90_B5VP87 UniRef90-G2Y7A0
UniRef90 W9CP6 UniRef90-K5X5Z9 UniRef90-M2P7K7 UniRef90-UPIO00441560E UniRef90-UP10001CE20CA UniRef90_11G978 UniRef90-A8Q978 UniRef90-W8C4X5 UniRef90-D7FX63




PTVGHLWE
TVSVSFATFMQLSLLEVPEPDWTEVENTRVVDWKELKFEL TQPQRVCDYVMESIQKADQDTVNAE RRDTQTPDPLPFNL TTVLSFVD
DSLFAPCDFAADQFDDDSEDSEKTENSSSTPTDEKDDFLL EAMMLLWEE RLLYERRFASAFDQKPTPPPSPPRRLVFEV LAPSLIAEWALEEPVDLSRVSFATHAAAD GWRRLDWDV IVAVRLDEHVLQYMKEVKWKLVRFPSVCELAYPRRGKWNL VVWNRWLSEVWDNMQGNQALGAPAPLPRDPSCPVALQFEI TTVLAFVDDL


দAVSRFDESTRKADSY
I TVEYLHEFINKAIIEH
LVPSIVCDYMHDDFFRGPPPRAVESTDVPDRRWRRLDFVV
LVPSMVAEYVENLYVEELEGATLPSGVPSTTGWERLDWVV



UniRef90-I1CKB5
UniRef90-B4K3A8 UniRef90-H3CZP4 UniRef90_G1NAY9 UniRef90_UPI00044073F7 UniRef90_K1WWS6 UniRef90-U5HI36 UniRef90-R9P591 UniRef90_B4M613 UniRef90_L1JBF2 UniRef90-EOVA16
UniRef90 E8WFE7 UniRef90-F4RWY7 UniRef90-UPI00046B553E UniRef90-Q9VI16 UniRef90_G8ZTTT
UniRef90-A8P906 UniRef90_UPIO00361EC95 UniRef90-Q6CUK6 UniRef90_R4SP29 UniRef90-L8HG13 UniRef90_W4YJ91 UniRef90-J7S3D1 UniRef90 U6NMSO UniRef90_A0A024GIQ7 UniRef90_S2JSN9 UniRef90- H2YI63 UniRef90-F2UJI3
UniRef90-F4CU7 UniRef90 F3K234 UniRef90-M5E8J6 UniRef90-U5H4Z5
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UniRef90 A7WPK4 UniRef90-Q9VB02 UniRef90-T1PAT8 UniRef90-M7BTL2 UniRef90-A0A024U2Q7 UniRef90 B7G476 UniRef90_UPI0003AFBF77 UniRef90-I4YIW0 UniRef90_B4LQP4 UniRef90-G0VK18 UniRef90-J3Q8K5 UniRef90_A7ENM4 UniRef90_G7YWR8 UniRef90-S9XSG8
UniRef90-K3WKA5 UniRef90-UPIO003EE0140
UniRef90 F6WJY7
UniRef90-B4NAS3
UniRef90_R9AG16 UniRef90 UPI0004655E70 UniRef90_A8XQK3 UniRef90-B2HPX3 UniRef90_UPI0004413B90
UniRef90 G4VPS9 UniRef90-M5G4V0 UniRef90_L1J2S1 UniRef90 UPIO0030A1BB8 UniRef90-UPI000440F244 UniRef90-H3DWY4 UniRef90_F7GCD2 UniRef90 L1IPS6 UniRef90-A8WJI9 UniRef90_I4YJ09 UniRef90-A7TI59 UniRef90 H0EFJ7 UniRef90-A0A024FZ30 UniRef90_F1KXX5 UniRef90 I2GWH6 UniRef90-W1QGR9 UniRef90-UPI000161DEAE UniRef90_ITFN58 UniRef90 B5VP87 UniRef90_G2Y7AO UniRef90_W9CPS6 UniRef90_K5X5Z9 UniRef90- M2P7K7 UniRef90-UPI000441560E UniRef90_UPI0001CE20CA UniRef90-|1G978 UniRef90-A8Q978 UniRef90_W8C4X5 UniRef90_D7FX63 UniRef90_E3QIGO UniRef90 A4HC81

DSIVDRCDREAQVMADETA
NAQVERRFAEAALTVDKADDNL
DSTVNE $\square \mathrm{MKKKAFRDYKQMIE}$
D S ELKKEGIKKAKDNIS
PEECQDVIERSLCSTARALADDV
DQKAKDD ITKKSKGF
DAQTKHAI EEGKKEFEKHV
DDSTKQSI EQSEQAALDRAAK DDRLLKSEIKRVLDEVEK

D DRLDEETN
DAAQRARVRSAAEAFAAYGND DSKVLETI ENAKETVQSISDD PEECQEALETALSSASLLADDV
DSFLLSSLHFAETRVSDVIS TDSVRQKIQEAQAKH

DPFLLSS L H F A ETK $\square$ S D L I S
GPE
SADGLEELRKQASE DDEETKEL
E GLKKPQ\SRCLANHQQMSSNI EPEAEP DLRQCVEKVEGD $\square$ A DL
DDR\RATV
SDTTKQNILKADMKFGRLM
SPE $\square$ SKAAKDASAGFVELMD
DA QAEKN $\square E G A \square Q T \square S D L A G D$
DEELEGKLAEAEK
NDALKAGIDKAKQNFDATMETL
TPKIA A S V D S A LT QFR DVM
DDTLKNEIKRVQKD $\mathrm{D}_{\mathrm{D}} \mathrm{D}$
DETVKSEI ERVKKDCDDRRTDV NDSIUSAUNAARMKFKETNEKL N
STFALERDHYAETALCDQ
TPDIKTALEESKQNVDKHAQDL
DGALVREAEGANERAKRLLDD
DEEC GCWWLTAAKKNDKKIVRRL
DKFLLLSSLHFAEATRISSDLIS

DDHILQNEMLIAREKYDAW
SNNLVEDVKKAESNFAKFTGNL

DDTMRGEDKRMRQE!DD
D GLQGS INDAWNE I KELANS
TGSVSSRTAEAEKQFFALSS
TPTLDRAI SAAVANARTLDDDV DDALLRGEI ARCQRETRAFAED DDNSKSMMDYALDNEDDK NDQVKEKIAESETMFDEVM DSAMENRMREARKRAEALT

D E Y $\square$ ARECVEAEKRAKE $\square$ A D TEAKERGVKFAER
NHS $\square$ RSAVDAARQKFKE
DPGMKQWL REAEEETRSLLSDF NEPLRHA SQADVDFYK ENGLETSTAEAWNETKNL DSFLSSSLHFAETRLSDLIS N K E V Q
 $\begin{array}{lllll}N D E M K A E I & E R C Y N A Y K P K D D D L \\ T P E E L T S L L & Q A H T E Y A V N C S E L\end{array}$



D D HI R RECVEAEERARKIVED
DEHVRQACADAEQRTVALVQD
DGAUVQACEETAMRAKVVVDD
 NADLSNASNAAGQDFASLMD DVELQKEDERTKVECDRRRNDV PYELKRELASARKEFDEACE T P A L DA R L L H VRQRFEEDUS
UniRef90_Q4S2G7
UniRef90_Q20278
UniRef90_UPI000398FA87
UniRef90_B7G5X2
UniRef90_T1HWF9
UniRef90_K1QLIX3
UniRef90_E5S365
UniRef90_F4NY05
UniRef90_C3ZW16
UniRef90_G4TSP3
UniRef90_D3W063
UniRef90_GOW7L3
UniRef90_W2TZ11
UniRef90_W6MS69
UniRef90_W2SHL2
UniRef90_B0D9S2
UniRef90_L5LMK6
UniRef90_D3TN13
UniRef90_H8X1B6
UniRef90_C5M318
UniRef90_A5DQ54
UniRef90_H9KN93
UniRef90_U6PW45
UniRef90_B7PPG9
UniRef90_B6QQX8
UniRef90_C8V468
UniRef90_Q7PW64
UniRef90_M7T776
UniRef90_G5EG54
UniRef90_E3M0H3
UniRef90_S9X2H1
UniRef90_D3L0





E A E LP G LP VP S $\square$ Q S T A E K Y L E T T R P HLLT P S E F R T T QLAVVN
 ESALDPNLPVPS LVSTAEHLLAALKPLIPAEEHQ\LLDRS】 $K \square P R \square P V P D \square R K T \square N K Y L T S L E P F L L E D E Y A L R K K V N$






## 



 QA A LPRRLPVPRVNDTDEKY LESVRRMLLSADLYRESMRAVE A




 $L K K L P V P E L L H E T L A T L N E W L C P L V T V E E L A A A G Q E A A$
$\square Q R \square P \square P E L R A T V E R W \square K S V E P L L E E D F E A L R K R S E$
$K \square P R \square P \square P P \square E A T A E R Y R A S \square Y P \square K S D E D V K S H L Q K F D$ QD TVDRYMESMKHFMPEKDYAKLLEMSR Q S QLR KAKVPLLA RTGLKRYLESSVKPCVLDA QFAATKI I V E


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

 DTVD RYMESMKNFMSEDDYGKLLEMSR
 K E LP RHP LVNLDEAVNDLLS S DGHFHTREEHAEDTRKAH
 Q V

$\square \mathrm{L}$ K K L P V P

F

| $L$ | $V$ |
| :--- | :--- |
| $V$ | $S$ |
| $L$ | $R$ |


| $\mathrm{K} N$ |
| :--- |
| N |
| N |


| S N |
| :--- |
| F | UniRef90_H2S2F8 UniRef90_A7E927

UniRef90_T1K5L4 UniRef90 H3EPD5 UniRef90_A8PQ35 UniRef90_W6KF43 UniRef90 H2S2F2 UniRef90_U6HZY9 UniRef90-A8DS09 UniRef90 E4XDV0 UniRef90 Q0V431 UniRef90_A2A8E8 UniRef90_G7YNG3 UniRef90 E1GG42 UniRef90_A4HHE2 UniRef90-W0TEE2 UniRef90_J9ECM5 UniRef90_W5MWK0 UniRef90_A8DRZ9 UniRef90_UPI00035A088A UniRef90_G8JW34 UniRef90_UPI0003F06982 UniRef90_U6HR03

UniRef90 Q4S2G7 UniRef90 ${ }^{-020278}$ UniRef90-UPIOOO398FA87 UniRet90 B7G5X2 UniRef90-T1HWF9 UniRef90-K101X3 UniRef90-E5S365 UniRef90-F4NY05 UniRef90_C3ZW16 UniRef90-G4TSP3 UniRef90-D3W063 UniRef90-W2TZ11 UniRef90-W6MS69 UniRef90_W2SHL2 UniRef90-B0D9S2 UniRef90-L5LMK6 UniRef90-D3TN13 UniRef90 H8X1B6 UniRef90_C5M318 UniRef90-A5DQ54 UniRef90-H9KN93 UniRef90-U6PW45 UniRef90-B7PPG9 UniRef90-B6QQX8 UniRef90-C8V468 UniRef90-Q7PW64 UniRef90-M7T776 UniRef90-G5EG54 UniRef90-E3MOH3
UniRef90 S9X2H1 UniRef90-D3LOV6 UniRef90-UPI0003B6C2B8 UniRef90-Q6BPW8 UniRef90-Q32L71 UniRef90_V2XLT4 UniRef90 C4Y9T7 UniRef90-A6QWG5 UniRef90-H6C4Y2 UniRef90 C9ZL75 UniRef90-E4ZTD8 UniRef90-N1RY90 UniRef90-T1 J4G2 UniRet90_R8BUM9 UniRef90-R2Q8P7 UniRef90-A0A016T4P7 UniRet90_S7Q492 UniRef90-B4QTZ5 UniRef90-F9WG58 UniRef90-A8X6W8

DFASSQN GQ LQRFLKEKT DSSKNWLEDWWYD AY TTNR EFKEKT APRLQKYLILKSWWTTNYVSSLSSSSAGVGDA RFEQASTLQERLLHRQQQHENANSSWLQHWWNTLGYLQVR KMLKSDGPPLQKELKADDAANRHTSYISRPWFDMYLTDR

HFYRT EGPQLQKRDEE DADQSSNWDNHFWLKAMY LENR DF ESGLGKDLHKRLEAHVQHNTSWLEA WWIKLAYLS WR DF DSSPLV RRLQTRDEERAASRNNWLSEWWNDVAYMAYR LRGR DF■ ENMGPLLQDRLDEFNNNGNNWLSSFWDNTAYLEYN GKPPSLSTKLFMDTMKVLSARARFFSFQDLLPWM DF VTSGLVRTLQQFLGESSHSSDGSN YWDAEGISAS EFAQK ELPTLQKLLEQRATKDNNWLTP WWLDVAYLQAR EFELVGG|GAVLQERLVDRFSPNNWLNDNFWMDKAYLEWR KFEKE GGTLHAKLNERSSKMKNWLEEWWEKYAYHTSR DFVNNDVIKLIQLHLETLYKNYPDKNYLNVVNNDMTYGE!
 GQKGUKLRYLILKSWWATNYVSDWWEEYVYLRGR

GAKDYKVLEAKAASTENWDSDWWDENAYLKYR TTKAPDSPARRAFQELHEHEKMSNGWYNDVLSDARWLSKR DFQTPGSUGRRLYDRLQMKAANPDTWYHDLYLQNQYL

 A LS DS QES LSVLQDRLLERKSPYNWDDDNDWTNTAY $\quad$ LERR SFVAHS GRELQTALVESDKVYPFSYDESAWDDMYLT NR EFVAANEGRSLQRYAWILHKFTDCYVTSSWEKYDYMAGR NFALLS AGKKYNEQLLENVEGSKDWQKTALPNYTHVFSQ

 MYLSVP AFQTPDGLGQQLQARLAKLSQGENNEVVDMYVRNKWLRGR QFVA NEGRSUQRYAWLLHKFSENYVTS LUETY $\ Y$ YAGR

EFLRL QASLLQWY LRLLKSWWASNYVREWWERP ELQTE
$A D A D P G S G G K \ Y N Q R A K A D D P S W D A G P L L K A D H \square K R$ DFASTGGLGRVLQERLKDLDHVSPNNWDTLWLALAYHTWR AF QDPD GLLGQKLQTRLKNMSEGENNEVVDMYVRNKWLRGR DFSKEGSDGSELQKRLMERDKMNSSFIADFWYD MYLKDR KWAKSEGRG CQRRLWVKTWDSGNYATDWWQSYNFLCHR $R F Q Q E G P L L Q Q Q L E Q H A E A G E D S W L A P W W L Q S Y L M T R$
 EF QEP GS LGTKLQDRLRERQNNPHCWLSDLYCKHVYLRNR
$M Y \square R \square R$
TF L G N SAPAYQKQ LEMDKAATYPYTYVESTMANARDSSR $\square F P S D S Q Y E F N Q S L V A V E Q W S P G N S L V S L P V V E L F V S A E P$ HFRRS FGSELQQKLRELHYSNPNYMSKILLDSHMLKDR
$M Y \underset{S}{L} \underset{S}{R}$
DF ENGDGKELHAHLQDKQNKHTSYDSVRFDKTLRAGLL DFETNEAV KLQRYLRLKRDWASNYVTDWWEEYVYLNGR

 $N F L K N E G W K L Q G L A W L Y W C F V D N Y V T S F W E K F A Y H Y S R$ LS D R
NF L N STA AKK LQAK $\square E E F H R S S A C Y \square D K \square H F D \square N N H A E$

UniRef90 Q4S2G7 UniRef90 Q 20278 UniRef90-UPIOOO398FA87 UniRef90-B7G5X2 UniRef90-T1HWF9 UniRef90-K101X3 UniRef90-E5S365 UniRef90-F4NY05 UniRef90-C3ZW16 6 UniRef90-G4TSP3 UniRef90-D3W063 UniRef90-GoW7L3 UniRef90- W2TZ11
UniRef90 W6MS69 UniRef90 ${ }^{-}$W2SHL2 UniRef90-B0D9S2 UniRef90-L5LMK6 UniRef90-D3TN13 UniRef90-H8X1B6 UniRef90-C5M318 UniRef90-A5DQ54 UniRef90-H9KN93 UniRef90-U6PW45 UniRef90-B7PPG9
UniRef90
B6QQX8 UniRef90_C8V468 UniRef90-Q7PW64 UniRef90-M7T776 UniRef90-G5EG54 UniRef90-ЕЗМОНЗ UniRef90- $59 \times 2 \mathrm{H} 1$ UniRef90-D3LOV6 UniRef90-UPI0003B6C2B8 UniRef90-Q6BPW8 UniRef90-Q32L71 UniRef90-V2XLT4 UniRef90-A6QWG5 UniRef90-H6C4Y2 UniRef90-C9ZL75 UniRef90-E4ZTD8 UniReffo-N1RY90 UniRef90-T1J4G2
UniRef90-R8BUM9 UniRef90-R2Q8P7 UniRef90-A0A016T4P7 UniRef90_S7Q492 UniRef90-B4QTZ5
UniRef90-F9WG58 UniRef90 ${ }^{-}$A8X6W8 UniRef90 UPI000359B984 UniRet90-GOTT61 UniR Refo-GOTY27 UniRef90-12JR46 UniRef90-O4DKK5 UniRef90 E2C7G6
UniRef90 G9MSW9 UniRef90-GOMS84 UniRef90-DOMT72 UniRef90-B3MNG9 UniRef90-G1QZR4 UniRef90_D8LBB6 UniRef90-B2W8J1 UniRef90_JgVIM7 UniRef90-G9P1G0 UniRef90-UP100021A4C32 UniRef90-U610Z6 UniRef90_K4ZIS0 UniRef90-GOMRL5 UniRef90-H2S2F8
UniRef90 A7E927 UniRef90-T1K5L4 UniRef90-H3EPD5 UniRef90-A8PQ35 UniRef90-W6KF43 UniRef90-H2S2F2 UniRef90-U6HZY9 UniRef90-A8DS099 UniRef90_QoV431 UniRef90-A2A8E8 UniRef90-G7YNG3 UniRef90-E1GG42 UniRef90-A4HHE2 UniRef90-WOTEE2 UniRef90-J9ECM5 UniRef90-W5MWK0 UniRet90-A8DRZ9 UniRef90_UPI00035A088A UniRef90-G8JW34 UniRef90_UPIooo3F06982 UniRef90_U6HRO3

DS LLTQNMGAVVPKFSVND SSQTESASHDIHHDMSYWS MVLPLSSVSFHGRDGDPDPSPWVGVSGGGDGGTGALAR KPLPGNYNPFLVFIDDPKPEYNHQLIRSANMVISSLRFMK
APDPLYSNPGYAFDYPNFHDKDVMFKY DA LF DQGLFDFKA EPLLVNSNWYMLVGEHPHPPTPFQDQRAAGYUSNLVDFKD

EPTMTHSNWWLAFYDD $\square N / V P T P W Q V R A A W L V H R L V D F K R$ DPLPINSNPGMVFPPRRFKTVHDVAHFAARLLDGLSHRE NPVLVHTNPADIAKKLK NAGDTQAAVGAAVVHGIARWVH YPLLI NSSVA QEQPLRSVVLPLMNDLWPAKEGTQLERSTLLTKLTLDFWK KP LVHTNQAIITKKQNAGDTQAAVAAAVVHSIVTWVYRA APLPLQRN ACFVTRYDRDKPDMLSRAAFWITSSJTFYH
APDPVNTNPATLIKKVK NAGETQPSVAASUVYG\|AKWVQ LDALPINSNPGVVVKTKRFTNQRESAVFLAARFLIELLNYQE DWRPRLRNFFATLPGQ DTARQPQADQAAQLTLGAYGYKL FQDFDRPVSQARRAAETI RYTCEYLE MSFPFQKFKSEKEFLLTYTAKALHAVVEFKE DPGLFPGGSYHGETYHYRAPRGSDMEGSSHSVAQAGVHWH YPLVPFSS FDGTHFDSAAPHSQSQRAAALTRALCEFKR APLLVNSNWWLCFAEDPSSTKESNATRAQTATTKVVQYEK DWRPRLRNFFATLPGQDTARQPQAQQAAQLSLGAYAYKL
 GNLQSETNIALTIHPDYHAHMGDRAHKAALLIERAVSIYL YSLAANSSUAQCVMYGENDDTQVYQ ETFLNNQSMIVNYKTDLKKVKNRSDLCRSHSRTVAPLGFLAC

पP पP VNSSPAYVFPKQTFQGEDDK
LPLEVNRNPGLVLKKGDKGTDGTQVGVAAADAYGVARWDE NILLSYDSVSSI KPALYDQTAKQSVKRAWITCKVVLGLRK KPVAVNHNSVYI FKQCSLGTYNDSVLRAANLVYSSLRFLE VPGPUNYNPVLIYVNQDDHAYNTQLIRATNMLISSVRFMK
 FPQEVNMNAAFVLQPG $\square P G A D R T Q A G V A S A L T Y G \square A C W I H$


RPVVLNHNPFMSFNPDPRPEYNDQLIRATNLVVSSLRYDK KQD ILPRNPFLILADDT DDDVAQEA RAGVVVYQLLLVWES

## UniRef90 Q4S2G7 UniRef90-Q20278 UniRef90_UPI000398FA87 UniRef90_B7G5X2

 UniRef90_K1QIX3 UniRef90-E5S365 UniRef90_F4NY05 UniRef90_C3ZW16 UniRef90_G4TSP3 UniRef90-G0W7L3 UniRef90_W2TZ11 UniRef90-W6MS69 UniRef90_W2SHL2 UniRef90_B0D9S2 UniRef90_L5LMK6 UniRef90_D3TN13 UniRef90_H8X1B6 UniRef90_C5M318UniRef90_A5DQ54 UniRef90_H9KN93 UniRef90_U6PW45 UniRef90_B7PPG9
UniRef90-B6QQX8 UniRef90_C8V468 UniRef90_Q7PW64 UniRef90-M7T776 UniRef90 E3M0H3 UniRef90_S9X2H1 UniRef90_D3L0V6 UniRef90_UPI0003B6C2B8 UniRef90_Q6BPW8 UniRef90-Q32L71 UniRef90_C4Y9T7 UniRef90_A6QWG5 UniRef90_H6C4Y2 UniRef90_C9ZL75 UniRef90_E4ZTD8 UniRef90_N1RY90 UniRef90_T1J4G2
UniRef90_R8BUM9 UniRef90_R2Q8P7 UniRef90_A0A016T4P7 UniRef90_S7Q492 UniRef90_B4QTZ5 UniRef90_F9WG58 UniRef90-UPI000359B984 UniRef90_GOTT61 UniRef90-G0TY27 UniRef90_I2JR46 UniRef90_Q4DKK5 UniRef90-E2C7G6
UniRef90-G9MSW9 UniRef90_G0MS84 UniRef90_D0MT72 UniRef90-B3MNG9 UniRef90_G1QZR4
UniRef90_D8LBB6 UniRef90_B2W8J1 UniRef90-J9VIM7 UniRef90_G9P1G0 UniRef90_UPI00021A4C32 UniRef90_U6IQZ6 UniRef90_K4ZIS0 UniRef90_G0MRL5 UniRef90_H2S2F8
UniRef90_A7E927 UniRef90-T1K5L4 UniRef90_H3EPD5 UniRef90_A8PQ35 UniRef90_W6KF43 UniRef90_H2S2F2 UniRef90_U6HZY9 UniRef90-A8DS09 UniRef90_Q0V431 UniRef90_A2A8E8 UniRef90_G7YNG3 UniRef90_E1GG42 UniRef90_A4HHE2
UniRef90_W0TEE2 UniRef90_J9ECM5 UniRef90_W5MWK0 UniRef90_A8DRZ9 UniRef90_UPI00035A088A UniRef90_G8JW34 UniRef90_UPI0003F06982 UniRef90_U6HR03

LS GN P ${ }^{140}$
150
160

LS S CR|I |P G P K R


 VVDRRELPSDYSTGLFGGSLMCMEQFWYLGSSYRHPRLGV RVENEDMK PESTRAG QV A R E E V R P I L V V


 D I F A L R L E Q I S P D VT P K K V M R D QL P Q D M A
 LL PR K GAGVK P L S S S D N L V N

## 

 NAYP LD M S QY F$G K \square K Y S S N L L Y K$

G T Q LE NTMKPGLVMG

 | $C$ | $E$ | $N$ | $G$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- |
| $L$ | $I$ | $P$ | $R$ |  |
| $D$ | $D$ | $G$ | $G$ | $K$ |
| $K$ | $P$ | $E$ |  |  |

A $L \vee N E Q P$ Q N S LL N DV

 KL E R G ELLE L L R A SLRNDTLQPDRTPK
 KVDA QEVVPDTTRTGVWFRENVS TMRNGKLKEDVTPK SGNPLTMNCYRNLF GTTRRVPGESY DLE NGHIG GQDSAAKHM VVLCRGQFY


 TLDDEGTVVQEE F
 S L A D E T YP $\square E Y$ T K K N Q HV
WY Q HA C
RLEK QEDYAET T R A G DWY QHA FSKVFNMCRIPRRGC MLD S GEL P LEERAASREKNQPLVMA QYYRLLGSCRRP GVK Q
 L L R E Q H L R P LT GD DKA
$Y$ V CMHSFRRKLF

 NVLKEGV応
 AL DAGTVQQDYY $T$ I A NLAL D R QKY LADVGDGLMSTRHYKNIYNGCRIPGAQY $R L K R Q L V P P E \quad$ TMGGHVVLCMNMFRRLIFSTCRIPDTPT
 AVRSETLP PD DLD Y R RLK P DF LLGERPNCGHSSLTWLGNALRREPNVGC
 A L D A GTI K Q D F Y H SLS D GVLRPEVFHYMIDN
 QLDS GRYPMEETA KG GAAVDMSYYRNI FKSCRDPA H GE

 A $\square$ DRKS $\square$ DREL $L$ T GA NK Q NMCMVQY DRVLGCYRQPRAE Q WY GAAAFGAFP LDMSQYKSLDGGTRDPQKEK $N \mathrm{~L} V R \mathrm{NGVEVVD}$
 EEHYLI I P F D T F K P KLLFLTI QSASMHMHLFEQRKWKF QSF



GAY L V N A Y P LD M S Q Y F R L F N S T R $\quad$ P K P S R
 RKACRKLDTREVVTGRDKVHMCMEQYERMFRSYREPCTPV E L R T NGL SVGADPAAR A FR Q N V L P P P Y G K
S $\square$ D Q E SLQ P
GVISLSLLWKCYAT TRVPGEIM
 Q L L S E DLE P L R $\square R \quad G T V P V C M A Q Y R R T F S T T$
$A L R R R V L S P D C G N D \quad G E P R S M T P Y M N L F G T T R C P V F E S$
VP L L L G D Q S F C Y Q C L Y T A Y S
HWGA

## UniRef90 Q4S2G7 <br> UniRef90-Q20278 UniRef90_UPI000398FA87 UniRef90-B7G5X2 UniRef90_T1HWF9 UniRef90_K1QIX3 UniRef90 E5S365 UniRef90-F4NY05

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UniRef90_M7T776 UniRef90-G5EG54 UniRef90_E3MOH3 UniRef90_S9X2H1
UniRef90_D3LOV6 UniRef90_UPI0003B6C2B8 UniRef90-Q6BPW8 UniRef90_Q32L71 UniRef90_V2XLT4 UniRef90_C4YW7 UniRef90-H6C4Y2 UniRef90-C9ZL75 UniRef90-E4ZTD8 UniRef90-N1RY90 UniRef90-R8BUM9 UniRef90_R2Q8P7

## UniRef90_A0A016T4P7

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UniRef90 G9MSW UniRef90-GOMS84 UniRef90-D0MT72 UniRef90-B3MNG9 UniRef90-D8LBB6 UniRef90_B2W8J1 UniRef90_J9VIM7

DTVMA 170
190
200 DRIVFRTEAEGKCPSHVIILCNGHVWKLETTCENSKFNI F DSYKIYDPARY ESKHLAVYHKGRFYKVWLYYGGQHLRPR DTLFH DNTTRHIIVMRGGHFFKVDVLDEGNULNAQ DSLISNNSKLDPDPEHI IVIDSKNQYFVLDVI DNFTRLSEE DTLERVDTNT PYK
 YIMTVMKDGK\|I DQD
DVLVGSFPSPYK HFMVMVRDQDY DTAK KYPADSHNHVVFIIRKNRFYEVVPVYFIGGLIRPC DTVQHWQ DSDYIVVYHKGRYFRLRVYQAGRLLSSPR NNELTNDFYSDYENNFMIVMYKGNFYFTHCQKTKKPLSDN
 D E: RYGYT NENQPRHIVVIHNGHVFSMPVLNAGQPDPDS
 GTi SMKKYKHINDSRHTI I LAAN NQYYSLEVLKHQILFHDH HDVKMRKYNHINDSRHILIISNNQFYTLEVIKHKI WFNDH HHI ILKKYKNLNDSRHILVICNNQYYKLEVLKHRIWFGDH DKIVIHYQ DSKHIVVYHKGKYFKVPI YHKNRILQPS DVMI R DPDARHI AVYSKKCWYKVNIFHGKRMIRPA


DHFQ WNPPSKHVLLVHKGTWYKVDTFDNGKLYSVD DLI E HEDS WNPPSRHALVVHKGTWYKVDTCDNGKLYSVD DR V R $\square$ T N KHLVVEHRGRYFQVWLYTGGRKVS QSATIQKFND IN DSRHMVI ICNNQYYCLEVVLKHKDWFS DY DVLSMPPSPTEPSAQCIVVVVNNWFYSLRTYEPQSSDSPE HEVT $\square$ QKYRH

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MRYPGKRHIIVLHDGHPYAVRVFDDKQVPLDR DKM DKM L] K KDES
 D GYRGPDRYPGNDFIVVMRKGHAWKVDITTDGKDTLKS DSFYRGEDQKAG NYVIMIF LNGVYFRLNVTDESGGDYPN
 DSQFPSRERLNDEDRHVVVICRNQMYCVVLQASDRGKSES
 DGDFRCTGKWNKPAKHVVVVGDCNWYKVDGCDGNMYGV

$\qquad$ $A P H V A V L Y R G Q Q Y D V T V A G D D C L P L P E$
$N R F M I V I S N G Y F Y K V Y H H D T G E R X S L G$ RHIIVLHDGHLYAVRVFDDQLVPLEQ

 DRFKRVDP ATVRHI TVVFCEDRVFVLRVYDADDELTIG
 D ADEMRVCEDSRHVVVLCKNQFYCFSALHPDGRITEE DKMMS IVSYQKLEATY
AFSTPSP LSTHLSSLVDDYYYA $\square D \square F S P P S S S A D G V P E P$
D E LVT
DEELTWTYPTTSD SRHVAMKRGHAYKIIPLKH
DEFYVGADTV ENNFVVVIVRNSHFYKGMVTVDRGRVVSPD DHFQ WNPPSRHALLVHKGTWYKVNTCDNGKLYSVD QTAKQSVKRAWDTCKVVLGLRKEEHYVFDTFKXGNLLKPT DRMKK
 D VQHVRNKNNRGDEHVTLMSDNQAFLI RTRDKGDLVPAA DWL DAIHTTPGT NELRDKSTNTQATVQVILTFRNNLYYVMDEFDDGNLLLKPT DRLETYYEACHVVVLSRGEFYTFDAFDDQNKMVSA DCI RRDES GRHIVVMRRGNFYVFDVMDNGNDRPPA DVIRKA ANEKANHVIVLTRGRFYMLDVLNNGPNRSVE DELFT C Q DTLWHDPT TPHHIVVLHRGRYFKVLI HNDNRWLDAR DVLHTNGKDGINCDEHILVMCNNQTFVVFTRDDGVPLSQA DLLHTTP L EKDRHIVVLHDGHPYMVRVFDEHQCVLDR
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## S $\quad$ A L SVL

KHYS


 E QRFSNYFL
 ELLAEIIQNIINESSAVDTVKNGVGAITTQTYHHWKSARAE

Q LLEAAFSSLLKDK AVVAKS DEYVKSKTPDADGVDPVGVLSSENRVLWARNYQK KLKTTYQSTI DLNLEE TLKATYQAIVDLDL HI YKCMKYIVED KVT GQLKEDFHVIQQ ERLEPDPVSYLTSENRNTWANAREQ QLYENLNYI HSLNSVPKQGENWASLMTGAEREHNQAREE QLYENLNY: HSLLNSVPKQGEALISYMTGTEREHSNLIVKG Ei QHQYDAI LKQEDEPQPVERHLAVLTAGERTHWAKTRRA D ASQQLYVLSDAPCLPAKPVPVGLLTAEPRSTWARDREL QLAKVVAELMGRDDKSAGFLRKIASLTTDRRTEWCANRQK VI RQSLEEMVRSMESGLIDEAPIGVLTSANKNKWSWARDV ALMQKSDEYILSDTPDSDNTTPVSVLTAGSRQTWASAYAE EIYARLRATTELNAAYPAVD VSVLTSLERTSWFAARTD QLYASISAVHNNSHQKPRCSNPIGILTASNRDVWATNYKH AV DQNCFEYILSDTPDTDNTTPVSVLTAGNREVWAGAYAE ELVQQLLMIME TKADPRTPPVGILTTAKRPVWAKAREE KLVS FQA SQHRPDGTNWTSLLTTANRDEWAWARDE ELAKITAEMMERDDKSTGFDRKVASLTTDGRTEWSVNRQK DLEVQL DH LLRHSARDVDLPQFVGALTAMRRDKWAESRQA ALRDQLEGIK CPVPKGEPFGLLTHDNRGNWAEAYTC ELEE VLAVQEDAAKAKTAANAVGVLTTQTRDDWAVARRR ETEKRFQAAVDDAKRRKERGERVGVLGADDRDNWTKNREH KLKNDFEGIIQQQTPEETNWTSLLT
LLQKMLQYVVDDSANEREKPFSPATLT NVPEETVSVESVAAGGDEWQGCRSD akelisadvyeo QLA SNO
 YKLEELFQLI DDLGAVKPPRKSI AGMTADRRDSWAKMRKM GVLRQLQEAVRVSANRKEIVVPIGAASVGDRADAAACWEE EQVQACLSAILSEQSNLKSEECVGSLTSLDERQWAKARSE E QAHLNYILTDLTPAPAF PIGILTSENRDVWAELRDK EQLVSNLAFIRNRPRGSTEKPSVGLLTTMNRDCAALLARQR ELLACLLYLNDSTPEPSF PLGGLTTEERNTWASARKH DI YTDIEKIIADAEKKGNTEFAVSALSNTDRDTWTANRKE DVAGNLQVIVEDAQEQDAAKGALGVLSTENRKTWAGLRDH E
EITKQLEKVIEMSRTDGNKMNDTGGGSAGDRDDAARFWSF KLIDQKAFELILTITPDQDNTSPVSVLTAGSRAVWGQAYQE QLSQAFQHEDDSTYSRKRATALGSLTAGSFANWKYAKKE ELSETFSELLTRKESAGEVEGRIGAALTTDYRNQWCLINRRR EVDMQIT YI RERCTSQPDG AGVSALTTEERTCWAKAREH SIHAHLSY L SQPSAPADNPI GVLTTENRDKWAAVRQQ ALESQLEWIVQDASQVPESERLVPALTATDRSDWARARTE DLSDIFLAVLDDSKKSYERSTALGSLTSYSFKNWKYARKR ELQRQLQYVKDTCENKPTHPSVGILTADDRTPWAQARDH

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UniRef90_R2Q8P7 UniRef90-A0A016T4P7 UniRef90_S7Q492 UniRef90-B4QTZ5
UniRef90 F9WG58 UniRef90-A8X6W8 UniRef90-UPI000359B984 UniRef90_GOTT61 UniRef90-GOTY27 UniRef90_I2JR46 UniRef90_Q4DKK5 UniRef90-E2C7G6
UniRef90 G9MSW UniRef90-GOMS84 UniRef90-D0MT72 UniRef90-B3MNG9 UniRef90-D8LBB6 UniRef90-B2W8J1 UniRef90-J9VIM7 UniRef90-G9P1G0 UniRef90-UPIO0021A4C32 UniRef90-U6IQZ6 UniRef90_K4ZIS0 UniRef90_GOMRL5 UniRef90_H2S2F8
UniRef90 A7E927 UniRef90-T1K5L4 UniRef90_H3EPD5 UniRef90-A8PQ35 UniRef90-W6KF43 UniRef90_H2S2F2 UniRef90-U6HZY9
UniRef90 A8DS09 UniRef90-E4XDV0 UniRef90_Q0V431 UniRef90-A2A8E8 UniRef90-E1GG42 UniRef90-A4HHE2 UniRef90-WOTEE2 UniRef90-W5MWK0 UniRef90-A8DRZ9 UniRef90_UPI00035A088A UniRef90_G8JW34 UniRef90_UPIO003F06982 UniRef90_U6HR03

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| :---: | :---: | :---: | :---: |
| UniRef90_Q4S2G7 |  | K S 1 F T V C C | D A P M P RVS DEMYQSRQM |
| UniRef90-Q20278 | MlQ NS N NVELFHDVD | S AVFCLTL | S DD F VENESEVVR |
| UniRef90_UPI000398FA87 | FFSHGKNKVSLDAI | ERAAFFLTL | DEDEH VMLA TD K |
| UniRef90-B7G5X2 | LLQ R S TVS DAL ERL | S GAVLLCL | D DV V A V S R L E M G Q L L |
| UniRef90-T1HWF9 | L E N T G N A EVLK Vil | S A I F CLIL | DESQP TR T ${ }^{\text {S }}$ |
| UniRef90_K1QIX3 | LMEESTNRDSLDAI | R S I F V CL | D T A A PVVRDDVSLA S Q M |
| UniRef90-E5S365 |  | KRSAFVVCL | DESSDKMMSKDHPASSS |
| UniRef90-F4NY05 | L V S L G G N K D T FKW W | T A L F S V S L | D DVA ${ }^{\text {V S P S L D D H A R A T F }}$ |
| UniRef90_C3ZW16 | FFS S GVNK S S L D T I | Q A AFFVTL | DEEEADYDTDGDNTMSS |
| UniRef90_G4TSP3 | LA S VGGN S K T L E R I | S A 1 VVI PL | D DTSPTSREELDS WACWT |
| UniRef90-D3W063 | YF S S GVN K R S L D Cl | EKA AFFVTL | DDEEQGMMGDDPAA L D R |
| UniRef90-G0W7L3 | L $\square$ K D P N S K E S L E T | HKASFIL A |  |
| UniRef90-W2TZ11 | K F S E G $\square$ N K E S L S Fil | N A L Elv V F | DGETGYDENDPAYYDR |
| UniRef90-W6MS69 | A ENEETLD | D NAL FVLC | HES P ET DVEKVQTVSH |
| UniRef90-W2SHL2 |  | E EVLFVI L | R R G F L E V |
| UniRef90-B0D9S2 | L L K P T N ERSYD A MV | V S V M GL SL | D H T T Y R T A A S QLLD A HL |
| UniRef90_L5LMK6 | LVS_A G NEETLRKV | S AVFCLCL | D F P |
| UniRef90-D3TN13 | L Q E $\square$ S H N G D $\mathrm{L}^{\text {L }}$ QLV | S S NIVVVL | D ENEPQDYEEDAQLV |
| UniRef90_H8X1B6 | L NKS NPEQLKL I | D D A F V V V L | DSNSPETDQESHGSSVL |
| UniRef90_C5M318 | LEQS NTENIKKı | D A L FVVI L | DSNTPETDGEKTAVISH |
| UniRef90-A5DQ54 | LEKS NAKFLETL | NALLFVVVL | V N S P E D Q K T K G T E |
| UniRef90_H9KN93 |  |  |  |
| UniRef90-U6PW45 | K F S E GVN K E S L S M |  |  |
| UniRef90-B7PPG9 | LCQNPKNAASVEAI | K R A If FVVCL | DQREGTDPYEVACPTQM |
| UniRef90-B6QQX8 | LS S S S T N A Y FRVI | S A M FVLC | D DGFPETPEERARQ |
| UniRef90-C8V | FMHLLSENASYIRTI | QSAFVVCL | D DGSPETPEERGRHFHF |
| UniRef90_Q7PV | LMA DA T NRASVES I | Q Q A L F V L S | D REDP GT DH $\square$ VTAS DLL |
| UniRef90-M7T | L K T L G S N A A T L EAI | S A AFVVSL | D DTAPQTSSERCTS ILL |
| UniRef90_G5EG54 | F F L N N N NKKLEII | T A Q FVV A | GT N HWGV E S T K QV S R |
| UniRef90-E3M0H3 | FFENRNNKKLL N V I | T A Q FVV | ETDEWGV ETVEKASR |
| UniRef90-S9X2H1 | $F$ L ${ }^{\text {L D P K N K T P L R V }}$ | K A MFVV S | EESTRTKR VENGLA ${ }^{\text {L }}$ |
| niRef90_D3L0V6 | LI Q CKEVARAI E A I | K S LFVLC | REMTLEE |
| niRef90-UPIO003B6C2B8 |  | K S L M H | GKCYD R WF D K S F NL D |
| Ref90-Q6BPW8 | LNK S N K K N L L L | D A L $\quad \triangle \mathrm{VVL}$ | P NLP D S D Q K T S G T S E |

$L L S \square S R N R V T H Q A \| V N S L M C L S L D S E T H G T T Q E N L D S H L H$ LASTSPDF LRRI DDALLFVVALDSNSPVSDQEKTQVISH K DRKSNNAECL N IVVDTALGFVLCLDDSTEPSNTSELCANMNE





MKEDK Q N Q K A L N WVQ S A LF GVCDD DH SE DK WSENYR GMHL


LI E D P N N GAI L E AI Q S S L F IV V SLD E A R P F S T P ENYTEMI L

FF S Q G V N K D T L K WV E S A V L H I V L D T H S Y D D


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UniRef90 D3W063 UniRef90-G0W7L3 UniRef90-W2TZ11 UniRef90-W6MS69 UniRef90-W2SHL2 UniRef90-B0D9S2 UniRef90_L5LMK6 UniRef90_D3TN13 UniRef90-H8X1B6 UniRef90-C5M318 UniRef90-A5DQ54 UniRef90_H9KN93 UniRef90_U6PW45 UniRef90-B7PPG9
UniRef90 B6QQX8 UniRef90_C8V468 UniRef90-Q7PW64 UniRef90-M7T776 UniRef90-E3MOH3 UniRef90-S9X2H1 UniRef90_D3L0V6 UniRef90_UPI0003B6C2B8 UniRef90_Q6BPW8 UniRef90-Q32L71 UniRef90-V2XLT4 UniRef90_C4Y9T7 UniRef90-A6QWG5
UniRef90 H6C4Y2 UniRef90-C9ZL75 UniRef90-E4ZTD8 UniRef90-N1RY90 UniRef90-T1J4G2
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UniRef90 A8X6W8 UniRef90-UPIO00359B984 UniRef90_GOTT61 UniRef90-GOTY27 UniRef90_I2JR46 UniRef90_Q4DKK5 UniRef90-E2C7G6 UniRef90_G9MSW9 UniRef90-G0MS84 UniRef90-DOMT72 UniRef90-B3MNG9 UniRef90-G1QZR4
UniRef90-D8LBB6 UniRef90_B2W8J1 UniRef90_-J9VIM7 UniRef90_G9P1G0 UniRef90_UPIO0021A4C32 UniRef90_U6IQZ6 UniRef90_K4ZISO UniRef90_GOMRL5 UniRef90_A7E927 UniRef90_T1K5L4 UniRef90_H3EPD5 UniRef90-A8PQ35 UniRef90-W6KF43 UniRef90-U6HZY9 UniRef90-A8DS09 UniRef90-E4XDV0 UniRef90_Q0V431 UniRef90-A2A8E8
UniRef90 G7YNG3 UniRef90_E1GG42 UniRef90-A4HHE2 UniRef90-WOTEE2 UniRef90_W5MWK0 UniRef90-A8DRZ9 UniRef90_UPI00035A088A UniRef90-G8JW34 UniRef90_UPIO003F06982 UniRef90_U6HR03
 LMKYS $\square F G S P L N A Y C D K N L N \| I V L R D G K T C L Q A E H G N V D A$ $\stackrel{F}{F}$ L $G$

LHGAGHNRWFDKSVQLVVTENGKAGLIGEHSMMDG LIRQYLHSDGTNRFV MGVFKN L HGLGTHDNSANRWYDKTMQFIISEDGACGLNYEHSPSEG LSYMISTVN NRWFDKTFQFVFTEDGFCGVNYEHSVAEG H GVVGTNRWFDKCMSVVVTRDARIGVNGEHSPCDA Y AESLLHGKTYDRWFDKSFTLVVYKNGR】GLNGEHSWADA GANGGSG PGNRWFDK HQLIVFDNARSGFLGEHSCM YAKSLLHGKCYDRWFDKSFTVVYYKNGDW NTRSSWHGDGDNRFYDKPLQFFVTGNGSSGFLAEHSKMDG EYEDALTGDGYKDWCDKPSVYSFTKNGRF IVNAEHSVVDA GTSGVQVGTATSRWYDK LQVVVTKNSVAGVDWESTSMDG

$\square G G D \square H S K W G D R S S I L I A Y K N G K F G L V G D H S C Y D G$ SESNIQSGTCTSRWYDK $G T S N V Q D G T C T S R W Y D K$
$L Q P G T S C G S C T S R W Y D K$
 EYQ $\square$ A $\square T G D G Y K \square W C D K P S V Y T F T R N G R F \square S N A E H S V V D A$ LVGGHDGVNAANRWCDKTVQ

GYIGDGSNRWFDKVLQFTVSENGRSGLITEHGGVDG L I DGSNRWHDKPI EFIIAANGASGVLGDHTGLDA $\frac{1}{N}$ HGGGSAANGGNRWYDKTI QLVVAPNGINGLTYEHSPAEG NDRHL YMKDMLAGDGTNRWFDKTMNYAVDETGRGGATGEHSPCDG
 $D C A E F L C G N G S N L W C D K S F N D V S R T D G Q V G L H V E H S W G D P$
$D S L S V L L G P P E S R W F D K S L Q V V V L G K G R I G U N F E H S Q R D G$
 S DRGVSS NV
N Y G
LHCALLGWK NQWFDKSVNFCVIF PNSRMSDHADWTCMDP YMKDMI TGDGTNKWFDKTMNYAI GANGRGGATGDHSPCDG MLHSLLLANGCNRWLDKSFSLQVSKSGEAGDCMEHSWGDG YGQTLLHGSGYDRWYDKSFDLIVVTNGESGHDFEHSMDDA LTGGGSRAHGLNRWYDAS $\square Q L V V R S D G L S G L C D E H S A A E G$ LCGGUSGGDARNRWFDKCFQLIVVAQGTAAINFEHSWGDG ML H S LL LA A GCNRWLDKSFS LQQVSKS GEAGICMEHSWGDG LVVTTLAGPGGSRWFDKSFSLLVDRSGTAALNFDCGWTDA LI RNFLHGDGTNRWFDKSLSLIVARDGWAAVN VLSSMLWGPSENRWVDKSFSII I KPDGTSGLNFEHAWGDG VERGVQVGTCTNRWYDK LQ\|IVCKNGSAGINFEHTGVDG

## LHGFGNKAAGLNRWYD LD $\square$ Q LIVASDGTNGDCDEHSVAEG

 HGSKEELENRWYDK HQMIVSEDGQVAFNFDATASDR QA LTGDPTARWGDKSYNII CFADGTFGSNCDHAPYDA LHGNGANRWFDKXFSLIMNKXGRACVNFEHS
RATHLLHGKTGTYWFDKS IEVVVMTDGHFGLNCEHSLGDA FYGGLQVGSCKSRWYDK LQLVITADAKAGI DWDSFTCDG FYGGILLFGNGHGRWFDKCYTLI SFENGTFGVNFDHSVMDG

UniRef90_Q4S2G7
UniRef90-Q20278 UniRef90_UPI000398FA87 UniRef90-B7G5X2 UniRef90-T1HWF9 UniRef90-K1QIX3 UniRef90-E5S365 UniRef90-F4NY05 UniRef90_C3ZW16 UniRef90_G4TSP3
UniRef90-D3W063 UniRef90 GOW7L3 UniRef90-W2TZ11 UniRef90-W6MS69 UniRef90_W2SHL2 UniRef90-B0D9S2 UniRef90_L5LMK6 UniRef90-D3TN13 UniRef90_H8X1B6 UniRef90_C5M318 UniRef90-A5DQ54 UniRef90-H9KN93 UniRef90_U6PW45 UniRef90-B7PPG9 UniRef90-B6QQX8 UniRef90-C8V468 UniRef90-Q7PW64 UniRef90_M7T7776 UniRef90 E3MOH3 UniRef90_S9X2H1 UniRef90_D3LOV6 UniRef90_UPI0003B6C2B8 UniRef90-Q6BPW8 UniRef90_Q32L71 UniRef90-V2XLT4 UniRef90_C4Y9T7 UniRef90-A6QWG5 UniRef90-H6C4Y2 UniRef90-C9ZL75 UniRef90-E4ZTD8 UniRef90-N1RY90 UniRef90-T1J4G2
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UniRef90 A7E927 UniRef90-T1K5L4 UniRef90-H3EPD5 UniRef90-A8PQ35 UniRef90-W6KF43 UniRef90_H2S2F2 UniRef90-U6HZY9 UniRef90-A8DS09 UniRef90 Q0V431 UniRef90-A2A8E8 UniRef90-G7YNG3 UniRef90_E1GG42 UniRef90-A4HHE2
UniRef90-W0TEE2 UniRef90-J9ECM5 UniRef90_W5MWK0 UniRef90-A8DRZ9 UniRef90_UPIO0035A088A UniRef90_G8JW34 UniRef90_UPIOO03F06982 UniRef90_U6HR03

$\square A V V Q L I E H L L K Y M E E V R K K \square A R M Q S \square C E L P Q P R R L Q W K \square$ MPMFKMVDH
LVPALAIDQAAKS EPAVDPSGAVIMSTPNAVHKLKWTV P $\square G H L W E H T M Y W \square G Y G E D K N T L G E A S \square P \square S P P L R L K W D L$

TPTLFLNTFVCQQLNK $\square$ NQDEFLSQSSSS LPPPSPLPF LK M I YV HVREYLKYHEAFDKPYGPDGNCDGE IP KPERLVWQL TSVLKFIS DVYDYT LWPK KETVK INDQUEKPNDRKGAFNL



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TTSARDSEW\AKADDEY DPRNDHHYENDQL EEVVLES GTVHELNTEIAEA $\operatorname{CRRHQDRRTLSNGTSCEVTVHPVRYS\square }$ QPIAVMTDFL
LSARQLSEY T DETFGT QSVGDKTTPPASAMRRLTDET




## LVPS VVAEY

TAILRFIDSDTFTDSTLKDAKNTNGAENTLFPRQKLLVPTK HTVLRFASDVYTDTILRFARTINGQAPSLWATPHKLEWDM $P T V Q G D N L A$
$V$
$V$
$V$ $\begin{array}{lllll}M & T \\ M\end{array}$
 TTFGGLINAVTAPIIEEDTRHENT


 $M Q W V R W V G D I D E S I E R P E G K V A A T E P A R V V S L V Q P L T L T F$ SVVRRYTQDVLHHSLMRNSGSMRRDAVAT EGIRQLRWHL TPTLRMNDWI TK Q TISKMSVTEFHDEK KTAPQYTXXVFEVV VQWARWVGDVLQSI ESKAVATTTAAAVDTTSLVEPLRVTF
 AEDDHLCENVLNVDKQUEDMKMSDEERKTGKLAKKL DFHE





WIFAGLLERLRVAETPDMYDHSTGDAVFDPDAPEPVKWQV VPVLNVVNQLFTQQDGTQQEESDSHQECSSELVTALCWQL AELDHLCE
$M T M T D L L G K \square Y K D S T E Q P Q V H P G A A A V D S A S A V H Q L Q F N L$ LDPDSRFDASI RKAILSHD
PIMAHLWEFIFANLGYDENGRCRVGNGFQPPAATRLKWEF TVII QMVETALRYMRKHEGNNDMFTTSTPLSNPRALTWVV VAVLRLMEESFRDAKQNHFVHPKETFNATAYLG ANFIL AHWARWIDDVLGDLAADAPSGVVSTSGVDGAQATQDMRHL


ACVLSYFNKVQEH DCTLNPD TKGMSSALSTDVPTEVKFVL $H T V L R F A S D V Y T D T \ L R F A R T \square N G S A P S L W A T P H K L E W D M$
$\square V L I N L V D Y T M Q F V K R N \square G K Q M W D D V K N V V P L Q Q H W T V$ V HWAKWIS DVLS ILKERGSGGLSTEGDDGAAGVRHLSVTY SVVLRFTSDI YAESDHFSDLWPQ DPKASSKDPWPKKLS WSF TSLI KYPKEVEEVVRPNNLSPMGKYAV $M V L V S M C Y Y I D Q K L K A S E G R W K G S V A A R E \square P P P E E L V F T V$
$P$ VIGGH $\square$ QEYYSEE GHATDPPDTK PTQPSELSKPTPDQWEV



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| UniRef90-Q20278 | T GSVSQKI SEAERDF |
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| UniRef90_F4NY05 |  |
| UniRef90_C3ZW16 | SEECNEVIECS |
| UniRef90_G4TSP3 |  |
| UniRef90-D3W063 |  |
| UniRef90-G0W7L3 |  |
| UniRef90-W2TZ11 | DSETLDAAITEAYSVSKQ1ADDF |
| UniRef90_W6MS69 | S AEMRTGL HLA ETRLT DLIN |
| UniRef90-W2SHL2 | NDAQRAQUEKSGKKMDKVADNL |
| UniRef90-B0D9S2 | DEHMWEQARASEQRAQ |
| UniRef90-L5LMK6 |  |
| UniRef90_D3TN13 | ND D R K E I ERVRCDCNSRSKDV |
| UniRef90-C5M318 | TKELQ Cl I HLLSETRLLA DLI N |
| UniRef90-A5DQ54 | TPELQNLIHLSETRLADLI |
| UniRef90_H9KN93 |  |
| UniRef90_U6PW45 | D DETVSA【K E A Y T F S K GVA D D F |
| UniRef90_B7PPG9 | EVDSHDD L K R |
| UniRef90-C8V468 |  |
| UniRef90_Q7PW64 |  |
| UniRef90-M7T776 | SPA $\square$ A Q A $\square$ S EQT AS N |
| UniRef90_G5EG54 | V D M M S El ERCYEAHTKSFNDL |
| UniRef90-E3MOH3 | VDGMESEVERCFESHLKK TK L L |
| UniRef90-S9X2H1 | HKSLAKVIREAHTS |
| UniRef90_D3L0V6 | K D IL LKAQKEAEKAFSKL |
| UniRef90_UPI0003B6C2B8 | PAQCQDVI HASYLLARHLADDV |
| UniRef90-Q6BPW8 | TPELLNLI RLSETRLADLDH |
| UniRef90_Q32L71 |  |
| UniRef90_V2XLT4 |  |
| UniRef90_C4Y9T7 | T PELLQNLVHLSETRLS DLLK |
| UniRef90_A6QWG5 | GPELSIALRFAES |
| UniRef90 H6C4Y2 | FPGSQTSIHRARKDYGES! D |
| UniRef90_C9ZL75 | GKTFAA HI RAARA |
| UniRef90 E4ZTD8 | D P A S L E EIP P L A S T |
| UniRef90-N1RY90 UniRef90- T1J4G2 | T E D I D GR\\|D T L R Q Y Y L A $\square$ T S |
| UniRef90-R8BUM9 |  |
| UniRef90-R2Q8P7 | T S Q M ITD S Lie EAR |
| UniRef90-A0A016T4P7 | PEPALNAIEVSMKVAQDLID DV |
| UniRef90-S7Q492 | DGAVEQACVVAEDAAKVIIAD |
| UniRef90_B4QTZ5 <br> UniRef90-F9WG58 | GKTFAAHIRAARA |
| UniRef90-A8X6W8 | VDGMESEI NRCFDQHQKASDDL |
| UniRef90_UPI000359B984 | NDF\\|EGEIETAKRTFASL |
| UniRef90_G0TT61 | GKTFASHIRSARAEALLDLI |
| UniRef90_G0TY27 | TQEL |
| UniRef90-12JR46 | DPFIQSQ\QKEKKAFKQVTESL |
| UniRef90-Q4DKK5 | GKTFAGHI RSARTEALDLIS N |
| UniRef90-E2C7G6 | SEQSLNDI RDAMMSIDALVEDL |
| UniRef90_G9MSW9 | PLTLLSSHISPLQAQHQR |
| UniRef90_G0MS84 | VEGMESEI NRCFEQHQNASDDL |
| UniRef90-D0MT72 | PEELLDTI PAAL |
| UniRef90-B3MNG9 | DDCVNLWLCEAKRN】QK\V |
| UniRef90_G1QZR4 | P D Q I H S Sil S LiAl R GAK\\|L S E NV |
| UniRef90_D8LBB6 | PKDMRRDI YFAETR |
| UniRef90-B2W8J1 | P TNTEAHI STLRDKYAAV |
| UniRef90-J9VIM7 | DEAILQEI EQVKQRNQKLIDD |
| UniRef90-G9P1G0 | PTALSK\I PALQTQHR |
| UniRef90-UPI00021A4C32 UniRef90 U6IQZ6 |  |
| UniRef90-U6IQZ6 | Y N EMDP VYKMA $\square$ K $\square$ CESE $\square$ K S L |
| UniRef90-K4ZIS0 UniRef90 GOMRL5 | DERVQSLLVQCSEQAQAEYDN |
| UniRef90-H2S2F8 | D S V L K N G $\square$ K K A N D NF D L HVS QL |
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| UniRef90-T1K5L4 | P E ELCCQTDD K Y V I M A Q ELVVDV |
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| UniRef90_U6HZY9 | DEAFYEKVLLQRDAYDALRDSL |
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| UniRef90_E4XDV0 | S D NLK S El Q S All S Y HNRQVNGL |
| UniRef90_Q0V431 | VPELS T ALLRFAETRLADLI Q |
| UniRef90-A2A8E8 |  |
| UniRef90_G7YNG3 |  |
| UniRef90-E1GG42 |  |
| UniRef90-A4HHE2 | GKSFVSHI RAARQEADAIVAD |
| UniRef90-W0TEE2 | SHILNTHVHLSETKL |
| UniRef90-J9ECM5 | NEQMKTEI NRCYVSYQEQINDV |
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| UniRef90-A8DRZ9 |  |
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| UniRef90-G8JW34 | SNVLNTHVHLSETKLT D 1 DS |
| UniRef90_UPI0003F06982 | D D DI TK TIISKAEEQYRNDADNV |
| UniRef90 U6HR03 | F D E MVIPIJY D R A L Q Q L C Q K |

QKS LDPRLP $L P V P P L G E T L S R F L T A A E P L V D R E V L E D T R R E V E$
QRSVPRDP DPP LGETDERY DRAAQP LQT DEEHAATRAAVA $K L P R L P V P T L D H T F D A Y R R S V V A L R P A E S D E V K A H F T K$ Q D Q $\square K K \square P \square P D L Q Q T C T N Y \square K V L R P L Q T D K E Y K C T E L A V K$


ATLDPRDPVPDLHQTLKRYTQS LVPFFLEQEHTALKTAAE HDTLQRYYDTI KPFGSPSEDEKSRR\IS LPKYPLPKLEEVCKKTGTMVKPLLSDAEYLKVVEAME ELP KQPI PEMQEMLQSFLTAVACI STPEELEKTKQHVQ MELLPNYPIPDLDVTLQEASRVLQLTLNPEQYQHYKTAL


LS QLP LDPDVATLLKRYVEFLDPLDGVDGKETAVDFAQ NS IP NLPTENFSDVLKRFLVWVKPLDNEKEYQDAKNEVK

##   $M A L V N Y P V P E L D A T L Q E V S R V L Q L T D S P D L Y L E F K S T L E$ QDNIIPNLPTEA PQVYLARFLEWVEPLVSKVKFVKAQAAVQ

DS LSNFPMPEMS $\square$ TACE $\square K$ QVLK $\square T \square E S K Q F \quad K Q F L S$

MPLLPFPEFSAA $\square$ NRFKFW $\operatorname{LDEPVGTD\quad RDVFNLID}$

$$
P \square P S \square D N T F R S L L A D L L P Y R T R W Q A W R S R \quad L A L
$$



H $\square$ NK K R NVVMQFNQS LVAVEQCDNLHWSSPFQLWNYLSRR RFSSH EGPRLQAALEEFARAEDAEGRSWLSRDWYLTVR QFFDTDGPG $L Q R$ LLEEADAHDSSY LEES LWYR LA Y L G PR EFDNSPS $\square$ GAF $L D D C L R K Y A A D K P S Y \square E Q F W Y D$ AY $\square N Y D$

QWLA GDAPVLQQRLLDFARREDAAGRSWDSREWYLRTR EFAAHD GPRAQEDLARRAEKADGDGASWLTDLWYLTTR

LS A R
K D R
ADKFEQGLGLTCQQRL $\quad$ VPDMVLQGR DFEC GUGTQLHRKLKERAAVKKNWLNEWWDKYAYHMLR DFDKE EGPKLQKVLEKRYDEHENWLAELDNKYLYDGSR EFMDPDSPGRQLHDRFVKFASDPSTMDNWFSDILVKKN LQQQRDALQEVQEHLKNHASGRENWVTEE FKKRLLSCY

 NFEQNG GQLLQQRLKEYANTQTNKGLSWLTENEYLSSDTV NYL S SNERQKDETIIKQRSQNPDNSWADWWLKYVYLTTR


QVCDRGGDGEVLEQYAREYKRDCNNLLRTSHMNSFY LGNR KFLDS KVSKTIQNFDENKAADPNSSWANWWVKYAYLISR

DFL $\quad$ NGVGRELHKELQDKLDNHTSYMSGPWLD MYLKNR


K D R
AFAEKEGKA $\square$ YEA $\square K \square Q M E A V S P A L W L V D L W R R Q F \square G \square H$
$G L L K \square A N V P V Q K K L L R D Q A E G P C D W F A E \quad S \square Q R T Y L E C R$
EWDKNLDH LSTLHSNF $\square$ EKVKEKENWATEEF $\square$ N Q QLLS $\square R$ GFQAREGV LLQRELQRTDKHTSY $\square$ CADWSDRY $\square M D R$ EWEKN $\square$ DY $\square S L L H S D F \square E R V K E K E N W T T E E F \square H K L L S N R$ HQREVLLEVQKKFTTLAKDQENWVTE $\square$ KKRSLLSCD


UniRef90 A8DRZ7 UniRef90_E4Y132 UniRef90_V5BJG0 UniRef90 H2S2F4 UniRef90_UPI0002E40ED8 UniRef90-U1MCX8 UniRef90-R1FN70 UniRef90- S9UXQ9 UniRef90-J3Q1K3 UniRef90-A5DVE4 UniRef90 E4XNF9 UniRef90-K1Q9B9 UniRef90-M2YDE3 UniRef90-H5UTA1 UniRef90-B4H3Y8 UniRef90-A8DRZ8 UniRef90-A8DS10 UniRef90-W4KBC9 UniRef90-A0A034WC74 UniRef90-H2Z318 UniRef90-B8MHH0 UniRef90_E7FA20 UniRef90-A8DS06 UniRef90-J6EQ61 UniRef90_C8NBL6 UniRef90 G0N1C0 UniRef90-UPI00036D1CCA UniRef90-W5L221 UniRef90 Q98PE8 UniRef90-GOUQZ6 UniRef90-M4KIX2 UniRef90_W8BSZ7 UniRef90 ${ }^{-}$K4DM62 UniRef90_UPI000471E670 UniRef90_G5E328 UniRef90 Q4T4E4 UniRef90-D7WD27 UniRef90-UPI0002A4B1BA UniRef90_UPI000443F1E1 UniRef90 P75448 UniRef90-A8DS00 UniRef90_F1L3T4 UniRef90 A8QEK7 UniRef90-U6IP87 UniRef90-H1XWF9 UniRef90 D1MY46 UniRef90 W2T1S4 UniRef90-F9W977 UniRef90-S9UMK4 UniRef90_D1MY47 UniRef90-B5VHF8 UniRef90-H3G1E8 UniRef90_G0V9A8 UniRef90-H2RUH1 UniRef90-A7RUR0 UniRef90_UPI000359739E UniRef90_G0WGL0 UniRef90_A5EV55 UniRef90_D2ZVX5 UniRef90-Q6FQ85 UniRef90 G8BY30 UniRef90-।2H628 UniRef90-B3PIM2 UniRef90-G9ZH47

$T Q \square G R A A S L L Y G A V A F H \square$ SQTNAE $\square G R L H S M C V L H A Q D T G R Q H S R C A L H A P Q V F D F H Q$ TPLPLTTSVGFQDAGNYGAP GVGRAAELVYRAVSVHLD
$S P \mathrm{~V} P \square \mathrm{HANPCFTLAPPSRHTPP} \mathrm{\quad} \mathrm{\square ERAAGLLAKAAQWAH}$ TPEVNMNSVF $\square L K P D A D K D H Q \square Q A A A A A R S L Y A \square G L W L Q$
$S P V V L N L N P F F L L E D D P F T Q K E T Q \square K R A T S \square T L S S \square K F \square Q$

TP PLP DNYNPFMAWKPDPTDEQNDP LIRASNMDISALRFRR QPLVLNYNPFMAFVDDPKLGYNDQVTRATNFLISSLRFMK SSSVLAAGITPWQVRRAAWLIHRTLEFKH $\square \mathrm{D}$ Y I I MAMPVNLEVINDPETPAFLLKNLLARLLYHTLEFWN GPLPVHSNYCCLGDKLYDDPRSNQVSKMANFMYYYMEYGG DPLPTSTADPSVLPSSKLKGDLAQLERATALLWAVAK

 EPLAPYVSFGALNTVYNCVDGGQVSRAADVLHHWLSVWD
 DPMPTSTADPSVLPPSKAKGEYAQLERASTLLWAAAKLYS

$S A L P F G W N Y T \square Y \square D G P S \square E Q P C Q Q L N R A A \square I G A A S F H L R R$ NPVSPE $\square$ NAPYY $\square D F K L N H \square S G Q Y C A S I C F E L M Q \amalg Y Y$

KS LLDMNVFMLLHQDPKTEYNQQLVRATNDTCSALRFMK SPLTLASNVGFQI AFGAAATNPADLDRAVEFIRRAAAVHLD
 D P LPTSTALPVVLLPSKVKGCSQLGRAAALLWAAAKLYSE GPVSPEVNAPYYLEL PTVGWSQAELAAALSAQLWHIYQ SPLPLNYNPF DAFTDDTNPGGSDQVTRAATLVSSAVRFMR

■ $\operatorname{NSVEPLLSSDVFVNVPANQAVRAAHVVLLET\square SML}$ DP!ILRNSAYVIYHSLISPGYNDSVIRAANLI YSSGRFFE ES S $\square P S S T S V P F L L K Q S Q N H N D Q T Y Y V S C L A M S \square G M L K$

# TP LIP $\square$ NRNFCF $\square$ TKRDVDKP DM $\square$ TRAAFW $\square$ TS SVNFQR A ALSFDT ES S DPNSTSVPFLLKQSQ\HKDQTFYVSCLAMSVGMLKK $V L P R N P F L V L A D D A L P N \square$ TQADRSAVLVHSAARF $\square S$ <br> $$
\text { E P } \square P \square A G N M V M K \square D W V L P \quad Q T G \square K L V A H F A A A M A Q V H C
$$ 

ES $\square$ AFFNAYQV H $\square Y$ TDEQKT $\square$ FERAAQVLAS

[^4]```
UniRef90 A8DRZ7
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UniRef90_U1MCX8
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UniRef90-A7RURO
UniRef90_UPIO00359739E
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UniRef90-B3PIM2
UniRef90_G9ZH47
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 VP CPMQYKRAFGTNRAPGKDK DFRFERLLCEF ERDRPICMCQNRFLCCTSRDPGRKR FTFHNKIPFRFSSLNTEGQDV RQVRGETPQQVDPr RGNPLSMEQWECDAGGVRHPLPER $\quad \begin{aligned} & R G G D G L L C A C H Y R K M Y A T T R D P G V R D V\end{aligned}$
 EVKA Q GVPPEEVS GQLHESCIDLSPLHHEFGRSLIPAADV


SLTENVLAPEDYHMNFKAFPDDMSQYQSWFASTRDPCKTK TLRAEILAPEVYHYLFKAFPLDMSQYTSLFNSTRIPEGGK KLDRQDLYPDTTHT GVWFRETVS KMENVCRIPCSQC

 GDVATARTQQSQVFGASR円PGKNQ


 KVKNGEDDF EPGLDEGDVPTERTQQSEVVAASRLPGNSQ LL NNPKFGTPEVQNQMPKQCRCQDQLTRLFRTVRGPHKGM MQARGQMPEERD FRDNPLSSTQWRCFNGGLRHPNVDR

 WRGRPLCPAQYHNFFGSCREPEYKR TLRAGLLEPWYGAHMVNAYPLDMSQYYRDFNSTRDPRRGR AAAADALPEDVDA RGNRITMNQWFVYAGGDRHPEEGE PLLLE GDAPVEHTQQSEVFAASRDPGREQ $P L L L E G B D V M E R T Q Q S E V F A A S R I P G K S R$ QVQKRQLTSFSVKDKL FS LDTQQSI FASCQI HRADG TYRDGKLQPELYHMNHK $\quad$ YFPDMSQYTRLFNTTRVPCKHK
 SLRHNKLN DDYGAYLFGVFPLDISSYHHLFQSSLI PSFDM D IRSGKLEQD R RWKGKPLEMGQYPNFFAANVVVDGKR SDDSVLTKYDNTKFSCSNLEKTQQSNMFSCRIPGKTK KSRGVIWDMYQYHCLFNSCRVPE WPK
 ALKQDLLPDDSVVLKKYDNTKFSSSQQSNMFGSCRUPGKTK

QSRPTSSNSAVSDDED
$L L W A A A K \square C A E P C L L E G S T S D E C T Q Q S E L F A A T R I P G R N Q$



VQK MVIT DDTFARSCRTYRVAEPEC

[^5]

## UniRef90_A8DRZ7

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UniRef90_H1XWF9 UniRef90 D1MY46 UniRef90 W2T1S4 UniRef90_F9W977 UniRef90_S9UMK4 UniRef90_D1MY47 UniRef90-B5VHF8 UniRef90-H3G1E8 UniRef90_G0V9A8 UniRef90_H2RUH1 UniRef90-A7RUR0 UniRef90_UPI000359739E UniRef90_G0WGL0 UniRef90_A5EV55 UniRef90_D2ZVX5 UniRef90_Q6FQ85 UniRef90_G8BY30 UniRef90-I2H628 UniRef90-B3PIM2



170 DPSARHVLVVRNGHFFTFDVDDDGN\|LPPS


 | D E | R R P GPAAS |
| :--- | :--- |
| $D R L$ | M S Y C |
| DVL | H S A S A P D A |

 VSRHMVAYHKGNFYKV
ANKHQDASARGASFS EELGHVVVLHDGFPYDMDPADKGAPLPPA C FGDSKHVVVMRRGQFYSFDVMDKRTLSLE
CMMQS

GPQE
 QET DAASRE IVVLHRGRGYAVQVSDDAGRVVPLL DRLQK YPDSKHVVLLKKGCYYTFQVLDDGNLKSPE DTLSTASLSASDAKKMLVMVNGYYAIEAYDDGNLPAK
 D ELL K K Y F K P

|  |  |
| :---: | :---: |
|  |  |



 DEYTFNSPKEHDPARHII:LYQGRGWSMDII HDDGGA:ASPA A GTYYYYAPKQTANRHISI FWQGHHFCLQQVTDDGNIYATS
 DS LR DEILRRCTKGAR SRRUGVLHEGRMWNVPDSDSGHALSUS
 D RVLLQPKHKTLPP HVTVCRNYQFFQMEVYNDGSPLTED DELVT HEEGRHIVVMRKGNMYVFDVVDRDSNLKPA


$\stackrel{D}{D E L A T}$
YF VN
Q Q
Y G
EVYCGTS RHFVVYYRGRYYKNAYDENRHS


DRIYRYFKTESDCPSHI TVVCRGK DWRVEMLEEGQLKTPD DEIRAFR
D A Q HVT PAERLRHVVVLHDGYPYLLDVFQPNPTGDAE DTIYGDEK SKHVLVLFKGCAFIVYILSKGETLNFS
 DTRHGDT IDRHPDSKH\|LVISKGQYYT\|EVLDNK\|LYTEG DEIK

VERHVTPRARARHVIVMDRGRDYQVQLVRRDDMPTYE D Y L R H L Q DSQHVAVFHRGRFFRLQTHSSNGLLSPR ESKHI LIISKGQYY IVVTVDHKNIYSTK
 DGFRF S PNGSRHI GVLHNGFYYRIAVLDEQFEAYHP



[^6]|  | UniRef90_A8DRZ7 |
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|  | UniRef90-J6EQ61 |
|  | UniRef90-C8NBL6 |
|  | UniRef90-G0N1C0 |
|  | UniRef90-UPI00036D1CCA |
|  | UniRef90-W5L221 |
|  | UniRef90_Q98PE8 |
|  | UniRef90-G0UQZ6 |
|  | UniRef90-M4KIX2 |
|  | UniRef90-W8BSZ7 |
|  | UniRef90-K4DM62 |
|  | UniRef90-UPI000471E670 |
|  | UniRef90-G5E328 |
|  | UniRef90-Q4T4E4 |
|  | UniRef90-D7WD27 |
|  | UniRef90-UPI0002A4B1BA |
|  | UniRef90_UPI000443F1E1 |
|  | UniRef90-P75448 |
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|  | UniRef90-F1L3T4 |
|  | UniRef90-A8QEK7 |
|  | UniRef90-U6IP87 |
|  | UniRef90-H1XWF9 |
|  | UniRef90-D1MY46 |
|  | UniRef90-W2T1S4 |
|  | UniRef90-F9W977 |
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|  | UniRef90_UPI000359739E |
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|  | UniRef90_G8BY30 |
|  | UniRef90-12H628 |
|  | UniRef90-B3PIM2 |
|  | Ref90-G9ZH47 |

VI HANUIRYI L LQDPST PSENPLGYLTTSENRDTWAGLRK 240 QLEFAFDSVQKSEPSEADKDNHLPAGTADSRDKWASLRRDV DI VVALKLI EERVVSHEEAGPPVGLLTTMNRSAWFEAREH E I QAHLNYILTDLTPAPAF PIGGLTSENRDVWAELRDK




E TFADFQA TQADGDARGFNDESDCPDSSAERDFWAETREL EIMS CVHQVMKDS SPPAPH PVGVFTAENRDTWATYRDK A Wl A QALRTIVAA PGGARDEDPFGAVSWLPADDAAE ILEE
 EI YSAI NYVWNV PDD YDKHSIGGLTTDLERDRWAGCREM
 EILIVLQRI RSDLDYEPMGD CVIVLTHDDRTTWA EI QGQLEFIMADAD
SLKATFEE I IRTAEGEQSG गPALTMDKRDNWAEMRAY DIHSQLVHAMSHQAATPEQDPSVCGLSSDNRQAWHSVRMD ETDAAMIKYLAEDLNEEANPYPLGGYFTADRRDRWATIRAN
 ELYNM
A E E A LRQLTE GNYAKPEFNFSALSALDSNKTATYDTE D $\operatorname{Y} A Q L A H V M S L A A Q P A Q D S S N D C G L S A L H R Q T W H S I R E E$ SLNKTFNSIIE NENKNKYNSNFLTAAIDAKKSEELFD E VANARRIL REASQLSQNRRSPLILAGGNRDVWARAFEE T RAALGKIVDAPAPEAEADAGFADMSYGGSGLLAEPFNE

 EI QAHLKYILDDLTPAPAF P $\square$ GVLSTENRDVWAHLRDK ALRDSLATVLELAAQPGEAAQDFNAPSLLGSGILADLLPM
 AQLQLSFVQULDNELSSHPPHWNLLTATTTTKAESQSLL


D 1 QRGFEY ILS $\square$ TPDSDNPSPVSVLTAANRTDWAKAYQE E YAQDKAITN YDGKNIPSVCKFTAANRNKWNKAYQE ELTTIFNHIDKDSSGDEKSTALGSDTSHSFRNWKYARKR DCS FVELNRANTKTEGAAGRI PAATTTDDRTQWYHNRQR RLSILFNQULTDSEESYSRSTALGSLTSHSFRNWKYARKR D Y NQLVGVMDQPRAAKENDPSVCSLSALGRKAWAASRED EVKRQLEKIF HSRHTSSALYVGALTALSADRFREEQGL ALEQQFQEI
QLKLFNHILFDSH
QLENVLYELVQTTNN NNELPFSLPSILPTEKALEIRAQ
 ELSLI FEYII NDSNLDSKKLDPSVGSLTSYSYKNWKYARKR DLAA FK SVVDDSSSDEEKSTALGSLLTSHSYKNWKYARKR

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lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm


LVKNG NKEALDDVDHSMICFTLDNYAYEDAGGCCSETYS LI GLG NEETLKLIDSAVFTLCLEDDQPTDPNDVTRKF $L$ LQDSANARTYDRLSRLVYTVDL VLADADNAAVHARLTDALFVLSLDDEADEDTHLRETGFRY FVSNPRNADLLQEVDAALFCVCLDSEEDGVYDDSHQ EP I NKNPVDAENLSLI DSALEVVCLDNTMNDTDPDIEASHNF LIANGNDQESFDLIDDAIFNLVLDEEIIGEDPVKA I LSSSTNHSTF GTLK DSLFALSLDHYTY
LCVHPANAKFLET $\quad$ ETAAFTLS LDDNEPDTQSE

 CSRGENAA IWQTVEKALFVLSIDDSHILDDEDA




[^7]


[^8]

A VMMHDTEEVQMDEYNPETGT LLGKDAKSNPKMD LLKWNS TATLRLCDHVFTESLIAELSTDASRRTRASVLITDLRWVL MTMTDI $\llcorner G K I$ YKDSTEQPQVHPGAAAVDSASAVHQLQFNL


VH WA Y W ATVLRFVGDIVTELIVQPSPWAQHASSKNLPSPQKLEWQL

AAVLSYMNY TEETLNDKSCILTPNFTTDKVSTПDEDEFSL VAVLRYFNEVFANSIDKSVVHPSTDVTANAGNVRKLEFKL
 GTVVGLAQDLPDDPDVPDEGDDGTPAGTGVGRVEPLRWRL VAVLRYFNELCRDTLRQPFESVHTPAEGDLGNVRPLDFEİ
$M \nabla A G L V V E R \square W Q L S E S E N M E M \square K T Q P N G \square A P H P K P L N$


 TATALLATSFI HYYCVSCEQASLHTVNMPKLPAEDLLNFND ATLVTALRRI QEVKVKDE A
 SLIASSUNNI APK IQNHNWKKSESE $S A V L T M L G H V \frac{1}{L} E Y C S R G P S L L P P R T P L L R H P P P K K \square Y F N F$

ATLVTADSRMQDELTDATDTTDAADSADASAEPEELAWDL MVATLVTERVYH
MVASLVTERIYHLSETVDLNLVNNDNTVHSACPKALEF
$S S V A T L A N \quad \square F V S K L Q K V N T E G A S A D T P T M L S F T V$
$\square D H D L F D E N F V T M D Y C \square S N D P V N A A K \square R G P T K \square E R \square N F D \square$ TPFVKY PKEVEEIVRPNNLSSMEKYAV SAILRFANSI YNDAETRPI ADPWSPQRLPRAMVRRMEWHL NVMMRGTAE QQKRARQ QQVQULPPSFDQSFPG KKMSWRV

VQWARWDDDVLRQVQEGAAPPPAADEAARAHYTRPDEDTF
YLMYVICQSLYYLGETCGEKTLIKK KSFDEIKFNF
 SVVLRFIS ETFEVNAGDPQFSLWWPNVMPSELAPKKI D WS
MVACLVAHCVYHNTTENMNGPSKENGDAALPAPGMFSFN



 SVVLRFDSEAHWPTVHDPCYNPRSNKPNS LKDVKK I DWSF

$S S L A A D G L A L A Q K N Q H D G K \square Q R K N T \square P D D \square N \square A P \quad \square D W Q \square$

[^9]UniRef90 A8DRZ7 UniRef90-E4Y132 UniRef90_V5BJG0 UniRef90 H2S2F4 UniRef90_UPI0002E40ED8 UniRef90-U1MCX8 UniRef90_R1FN70 UniRef90 S9UXQ9
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UniRef90-I2H628
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LE K T LE Q DS K E L P T $\square$ A DEDT NL DSTVNEIMKKAFRDYKQMI E DSVLKNGIKKANDNFDLHVSQL APRLREELVAAVAGYR NDEMKAEGERCYNAYKPK $\square D D \square$

GKSFAAH R NARLEAHH VEDL SNTLKASIRFAETRDSDLI

TPEDKSRПKQAEKEHDE
DQEMKDNVEQSVKKFNATVQSL TAEQAQRVRTGLEGVSQAAEPL SDDVRARLAA
DEATRSAVAEAYAKNAA V V G L
$S N \square L N T H V H \square S E T K \square A D L I S$ DKHTHKLIKDALDEYRHHAES

## ASR】QQD $\square$ QA VSA QA DQL

 SSRGLRNIEETRGVHLTMVKEL VPE
DVELQKEDERTKVECDRRRNDV

P
D DATQQT $\square$ S A Q $\square$ D D VRKAAGK

D Q D K Q K Y F K Q L S K N F K D Y VY N
NEEMKCEDMRCYQEYKPQADDD NEQMKAEI NRCYASYQEQDNDV D DAFYEEL
PKK L Y Q L A QK D LQR R $\square K D$
N
SSND VVS VDAEKNFCK L
GKSFATH $\square$ RNARTEAKA $\square$ VGNM N $P$
SN $\quad L N T H V H \square S E T K \square A D L I S$ DDEMASEI DRCYATQVKANNNL S N ILN T HVHLSETK L AADLIS

PEQ SNDLNTHVHLSETKLADLDS D
DVNLLKNWAQWQQNYAKQAD SNILNTHVHLSETKLAADLIS
 SNILNTHIHLSETKLADLI S
DKETKEQ $\square$ KEA $\square$ AEYRHHAES

[^10]


[^0]:    

[^1]:    TPTHRDNDYTNDQTFNNK乌DF GGSVRSHDPEPKAVKFTL

[^2]:    

    ## D D

[^3]:    

[^4]:    lupas_21
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    lupas_28
    jnet conf sol25 sol5 sol0 jhmm
    jhmm
    jpssm

[^5]:    lupas_21
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    jpssm

[^6]:    lupas_21
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    jhmm

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