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UniRef90 R7UU94
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N WR P A QP LK NRQDKASFK NYRPPQPLKGRLVRASFK NYRPP QP L K GR R $V$ R A S F K $N Y R P P Q P L K G R E V R R N$ NYRPPQPLKGRAVRASFK $N F R P P Q P L K G R D V Q A S F Q$
 $N$ YRPP QPLKGRMVRASFK NYRPPQPIKGRKVRSNFK NNRPPQPLKGRIVRASF NWRPCQPLKGREVRASFQ NHRPPQPLKGRTVRASF NFRP T QP L K G RLL R A N F K NWRPCQPLKSREVRASFQ NWRPCCP L K N REIIRAS F Q

 NFRPPQPLKGRKVQASFK NHRPPQPLKGRKVRASF NFRPPQPLKGRKVRSS NFRPPQPLKGRRVRSS NFRP LQPLMNRTVRSSFR NWRPCQPLHGRELRANFR NYRPLQPLMDRKVHASFQ NFRPLQPLMNRTVRSSFR NWRPPQPRYYRMVSSSF NYRPLQPLMNRKVRSSFR NWRPVQNLSGRKI RRSFR NNRPVQPLMNREI RSSFQ NHRPLQPLMGRQVRASF NYRPLQPLMDREVRSSFR

 $N F R P P Q P L K G R V V K A S F R$ NWRPPQPI KGRVVRASFK
 $N C R P L Q P L M N R K V R A S F Q$ A ARPAQP
$N$ CRPRQPLMGRRVRSSFR NHRLPQPLKGRQVRT
NWRPAQPLKNRQIKASFK NHRPPQPLKGRKVRASFR N NRPPQPLKGRTVKASF NWRPQQPLKGRVVRASFK NFRPPQPLNNRKVY
NFRPLQPLMNRTVHSSFE NYRPPCPVHSRTVAASFK NFRPPQPLNGRVVR
NFRPVQPLNGRVVQANFN N F R P V Q P L A D R L V L H N NYRPPQPLKGRSVRASF NFRPPVPLGSRVIQGN NFRPVQKLNSRIVYAS $N Y P T Q P V K G R T V R A S F$ $N Y R V L Q P L N Q R T V L A S F N$ $N Y R P L Q P L N D R T V Y S S$
 $N$ YRRTSPRNNRVVEANFK NYRPPVPLNDRQVDSSFR NYRPTQELL GREVTSTF NYRPTRKRSSRPVYAS
 $\begin{array}{lllllllllllllll}N & F & R & P & T & Q & P & L & S & D & R & V & I & R & A \\ N & A \\ N & R & P & P & Q & P & L & N & D & R & V & V & Y & N\end{array}$ NFRNVQEFRERLVGISFR NYRKLQDGDDRRILVSFR
 NFRPD Q P L H S RKVVYA S

 $N F R R V Q K F D E R L V R V S F$ DFRPTQHLNHRFVYAS

 $N Y R L V Q D L H R R Q V L A S F Q$ NFRPVQPLNDRELKRSF NFRPPLPL NKRKVYAS N F R P A QLL $N$ N G R K V Y WS NFRPQQPLGGRRVSAS NFRPPQPLKGRVVKASFQ $N Y R P V Q P L Y G R S V$
NFRPFQVLNGRVVKKSFK
NYRRTQPLN RTVEASF




## UiRego-F6XBZ7 UniRef90_UPIOO04422694

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UniRef90_W5LF33
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UniRef90_R7V8T6
UniRef90_G6CL91
UniRef90-Q8MPH8
UniRef90_UPI00034F33E7
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UniRef90-A0A023F836
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UniRef90_B4KZ41
UniRef90-S7N6G2
UniRet90_W5L934
UniRef90_V4AOP3
UniRef90_UPIO0045E44EB
UniRef90_UPIO00194DE56
UniRef90-G3QA26
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UniRef90-K1QSG0
UniRef90-R7TB34
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UniRef90_UPIOO03832134
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UniRef90- T1FN58

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UniRef90_L5KFT9 UniRef90_UPIO003F13719 UniRef90-G3WKA7
UniRef90-S4RYI8
UniRef90_Q9VTU8
UniRef90_UPIO003F0BB1F UniRef90_UPI000333C7BF UniRef90-H9GlI6 UniRef90-G1TJV1 UniRef90_UPIO003F0E346 UniRef90_Q7SYW3 UniRef90-G6D8Z4 UniRef90_A0A016TAD1 UniRef90-B3RKE2 UniRef90_W5M5J7 UniRef90-Q2M0R9 UniRef90_UPIO003340D0A UniRef90-Q32LW3 UniRef90-T1J6C9 UniRef90-V4BIL1
UniRef90 S9XFN9 UniRef90_UPI00032885EE UniRef90-UPI00038C0EEB UniRef90-G6D9N9 UniRef90_UPIO00383AE2B UniRef90-HOVSR1 UniRef90-UPI00022F4F82 UniRef90-S7MHN2 UniRef90_V3ZZS6 UniRef90-UPIO0036D6A4F UniRef90-H9KLF5 UniRef90-B7QEN3 UniRef90-H2M6L2 UniRef90-E9FWT4
UniRef90-T1FZE7

60
 DLPMVQPRGYEQPPWQLSNNGHTVQQS





 DMLQLELSGYDAQQGTMTNNGHTVQIDLPPTMVITE ELPALQPHGYEQPGTELHNNGHTVQLSLPPSLYLE

 S LVPLGFQGYSNQQFVLTNNGHSVKLKLPKDMHDQQ RLTPFTFTYQEAFHSLITNNGRTVQVDLPATAKVVNGHGG
 STSALVASYNPAASNTLTNTGLSFQVSVDGTLS G G G G



 KLRPFIMN PVKVSGTLLNTGHDIVLKLNDTSPKINITGG
 SLKALNLTGYQSGDFLMTNNGHTVQISDPPTMRMTTAEG
 TLGPFIFQGYPPGPWTLENNGHTVRLNLDSGPQSRMRGAG
 DLPDFNDSNNUEGVEQHLENVFGHTAEVKYGGTNLTDSGG
 QLKPFQ $\square$ NYSTEKNAEVSNTGSSIKVQIKEVSEI KGG NLGNIT FTGYSATTY ILENNGHTAKVGFQSSTSMS $\square$ SDGG SLVPLKFQGYNDREFNLTNNGHSVKLSDPPDMHLQ
QLLQLEDSGYDKGDFTMTNNGHSVQI DLPPTMHISR
RLTPFRFTYQTVFDGTLKNNGHSVQVSIPVPATIS G
 QLEELTGYDGPQKGNSLMTNNGHSVQQNLPPSMVITQ YPKLEFHNFNEPKAMLVTNNGHTVLVKMSFNEGKPRVKGG TLGPIELEGYEDPWFTLANNGHTVEMALPSSGGTTAD TLGPFIFQGYPPGPWTLENDGHTVLLHVDGPQNPLKIWGA



 GLGPLHTHYHRSGPMLLYNNGYSFLAEYPDNCSANGTWVG F PKLEF FNFKVPDNLQMTNNGHTVLVKMSYNEDDPSVRGG ELKLEGFNVESSNKTWMKNTGKTVAULLK DDYFVSGA


 SLKDLKSYGVS IRQLNVTNNGHSAQVDLPPGDEDS G G LPD\|VF\|GFDDP DDDVTNNGHTVLIEVENEPHPRVSGG | $L H R M H F V H Y D H A G P V N I S N N G H T V V A D G F E T W G D P Y I Q G A$ |
| :--- | :--- |
| $G L T D D L F G F E E T D T Q T L D N N G H T A Q V N G G G H T T P S D Y S P D$ |


 RLTPVQFDYQERDNAVIVNNGHTVQI NLPDRAKD FDP TIFKGYDTKKS IVMKNNGHDI YIDVGYPGALPVMSDG $N$ N Q Q K LD SRKVEGILLNTGYDITFRLNTTGLPYFTFGG $N L R P F S F S Y D K K Q K W T V Q N N G H T V M V L L G D E A T I A E$ EGCPELA G $\square S G G$

ALTPLELMGYQAGQFPMTNNGHTVQITLPE SMRLAG ALQPLELLGYPLPELSLSNNGHTVQLTLPPGLKMALGPG NLGPFSFSYDKKQKWTLQNNGHSVMVSLGNEATMA G G G A EPLQLRYMPSTASVVNNGHTIQVDLDPASPNTLTVRG
 NMGPLRFNNYHRADKS! VNNGHTGRMVSGTPDREVYVEGN $R L T P L F Q N Y Q H \prod F R G L I K N N G H S V Q I \quad G \square S H P S T I S G G$



UniRef90 F6XBZ7 UniRef90_UPI0004422694 UniRef90_U4UVT4 UniRef90_UPI000331672E UniRef90 V3ZXK9 UniRef90_UPI000383485F UniRef90_UPI000258E6C7 UniRef90_UPI0003B5AEF7 UniRef90_F1NIF0 UniRef90_X1Y1A2 UniRef90_UPI000334007A UniRef90_F7ADM5 UniRef90-H3CIH9 UniRef90_UPI000333C0D3 UniRef90_K1RCM3 UniRef90_W5LF33 UniRef90_H2ZGZ4 UniRef90_UPI0002BD121F UniRef90_V4B4H5 UniRef90_Q6R4A UniRef90_R7V8T6 UniRef90_G6CL91
UniRef90 Q8MPH8 UniRef90_UPI00034F33E7 UniRef90_UPI0003D0B559 UniRef90 G1MPV7 UniRef90_A0A023F836 UniRef90_UPI0002659BA1 UniRef90_F7FPM0 UniRef90_UPI00026578A6 UniRef90_A1L3H6 UniRef90-B4KZ41 UniRef90_S7N6G2 UniRef90_W5L934
UniRef90_V4A0P3 UniRef90 UPI00045E44EB UniRef90 UPI000194DE56 UniRef90_G3QA26 UniRef90_V4AH94 UniRef90_H2T655 UniRef90_UPI000331641C UniRef90_UPI000389174A UniRef90_K1QSG0

## UniRef90 R7TB34

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UniRef90_G6D8Z4 UniRef90_A0A016TAD1 UniRef90_B3RKE2 UniRef90_W5M5J7 UniRef90_Q2M0R9
UniRef90_UPIO003340D0A UniRef90_Q32LW3 UniRef90_T1J6C9 UniRef90_V4BIL1

## UniRef90_S9XFN9

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UniRef90 B7QEN3 UniRef90_H2M6L2 UniRef90-E9FWT4

[^0] MKNVS K GEFDE/LD T
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190
200
MKNVSLKGEFELDSTFPLEMLDPPHDYYRYQGS|LTTPDC
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250
NFRTPQP|LKGRVVAS NFRVPQFLNQRVVFSSF $N F R P T L P L G Q R E V K$
$N Y R \square P Q P L N Q R T V F A S F$
$N Y R P V Q L L H S R K V Y S S$
 NFRQDQSLHRRWVLAS F E NFRPP LEELGNRQL R NFRQVQKFE ER LVV IS FR NYRAP QP L N HRLLVVASF D Y R $\square A Q P L$ N D RVVVES F
 $N Y R K P Q L M D N R V V L V S F Q$ $N Y R P V Q P \square N G R A V F$ NFRQQVQKFDERRVVVSFR NSRPVMPLNHRVVRTNDN $T Y R P V Q P L N G R P V Y R S$ NYRPTQPLEGRNVMRSFE NYRPTLPLGNRELR NFRPTLGLCGRQVSSSF

 NFRPDQP L R GRNVRSSFQ NFRDPQDLNQRPVLASF $N Y R P P L P L G N R V L R$ NYRDCQPLEGRVIRRCS DWRPREEL $N V R P L Q A L N N R V V Y T N \square$ $N$ YRQLQS HGERLVSVSFR NFRPTQPLLDRIVYRN VYRKAQPLNDRVVEANFE TFRPVQPRKGRVVYRS $N \square R P R Q P \square N Q R T V R T N \square N$ $N F R P Q Q P L G G R R V A A S$ $N Y R P V Q N L H G R R V L A S F Q$ | $T$ | $F$ | $R$ | $P$ | $V$ | $Q$ | $P$ | $L$ | $N$ | $G$ | $R$ | $Q$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $D$ | $F$ | $R$ | $R$ | $S$ |  |  |  |  |  |  |  |  |
|  | $Q$ | $G$ | $L$ | $N$ | $N$ | $R$ | $A$ | $V$ | $K$ | $T$ | $N$ |  |

NFRRVQKFDER VVYVS Q NFRPVQP LNDRVVYRS NYRPPCALCGRSVKAS NTRPLQNLNGRDITASW NFRQVQKFDKRQVHVSFR D Y R H AQP L H GRVVEASFR TFRPVQPRNGRVVYRS NYRPPNPLNDRKIVSS NFR LT Q S L H GRKV L A N F Q D Y R V A Q S L N D RVV ES S F $N Y R H Q Q Y T F S G Q V F S S Y$ NFRPTQPLNDRPVYSN $N$ VRMVQPLNHRVVKA S F $N F R P Q Q P$ E GRRI FAS $N F R P V Q P L N G R R I L A S F$ $N F R H V Q K F D E R W V V Y I S F Q$




UniRef90 G3VH83
UniRef90_Q478T1
UniRef90-G7NI02 UniRef90_A0A026WEW3 UniRef90_UPIO00376293C UniRef90_C3Z8B0
UniRef90 UPIO00258EDE1 UniRef90-T1IRQ8
UniRef90-U3QVM8 UniRef90-A0A034WPA1 UniRef90-X1Y3H5 UniRef90_T1J9N1 UniRef90_F6UPK3 UniRef90_UPIO004755F48

HWCYESQANPGKWGGN CQKDRQSPINIVTRKAKMDK HWCYQDQLGPAQWGGE CQKSQQSPIDIVTNKARLDY FGYAHQNGPHTWKDLYPDSSGSYQSPINIITRLADVVQ HWSYDEETGPDHWAELEDCATGASQSPVNI DHTQLVRSG WGYSGRYGPENWGVLEPYCAGRAQSPI DLVYRTTVKRT WS YWGDHGPSQWGGL CATGKKQSPI NVVTEDTVKTD EWTYHGPTGPRHWCSLFDTCCGRSQSPLNLRKHDVTLKQ
H WSYTGPTGAPHWAELDACA LGKHQSPIDDIRTGKAKR A WS Y S GK T GPE YWGDLKKCKIGKNQSPI DIKTSTQTFNT
QWDYRDTN $\quad$ R W W NHWEYSDQ

HWCYE $\square$ QA GPS $\mathrm{L} W \mathrm{~W} D \mathrm{D}$

WGYEGENGPENWAKLSPACSGKNQSPIDDLSGFDQ A
UniRef90_D2A110 UniRe990-J9JLX4 UniRef90-UPIooo393F9C5 UniRef90-F1L837 UniRef90_K1PH96 UniRef90-B4M267 UniRef90-UP100038ECFB9 UniRef90-UPI00045431F1 UniRef90-UPIo003289BBD UniRef90-M4A089

## UniRef90-UPI0003F16E8A

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UniRef90 H2SZ86
UniRee90-UPI00034FFF33 UniRef90 G3PDD8
UniRef90-UP1000359E6B6 UniRef90-UP10003DOFDE7 UniRef90-H2U9P5 UniRef90-G4VP62 UniRef90-F1QK51 UniRef90-E9FXL5 UniRef90-K1QLS9 UniRef90-UPI00038706EC UniRef90-T1K4A7
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## UniRef90_E9FX53

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UniRef90-UPIOOO3F1204F UniRet90_UPIOOO3F1204F
UniRef90-E9FXL4 UniRef90-V8PGP5 UniRet90-R7U445 UniRef90-BOWFA3 UniRef90-UP1000469C8ED UniRef90 UPIOOO3C27679 UniRef90_UPIOOO45DD5AO
UniRef90-H3A5V0 UniRef90_UPI0003343B35 UniRef90-T1K010 UniRef90-M3Y4R6 UniRef90_UPIOOO441070C UniRef90_A0A011 Q316 UniRef90-E5RQ31 UniRef90-T1LO47 UniRef90-Howms5 UniRef90-G5AX21 UniRef90_G3RXC0
UniRef90_K1QC23
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UniRef90-Q7PQV5
UniRef90_UPIO00333839D
UniRef90-MOS5S5
UniRef90-E1G722
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UniRef90-Q478T1
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UniRef9O-U3QVM8
UniRef90-A6DCH2
UniRef90-A0AO34WPA1
UniRet90-X1Y3H5
UniRef90-T1J9N1
UniRef90-F6UPK3
UniRef90_UPIO004755F48
UniRef90_H8FMZ4

UniRef90_H8FMZ4
 FLKNLHIDKDKVSGTIENTGQSLVFRVDKESKYVLNITG

 ELELDKFNTESSNQTTMKNTGKTVALLLK NLKPFQFSGYEVTDPVVHNNGHTVQVGFTNDASIS GGG NLRQVHDDKHRUSGDISNTGHSVIFNYDGMQTPVNDSGG NLKPFSFSYDKKEKRTVKNNGHTVMVSLEPDARISNUGG NLKKLKFQGWDKVAAEIHNTGKTVEINL TNDYRLSGG | $K L G R F S F G Y D R K N E K V V E N N G H T V M V S L A A G T E D A$ |
| :--- |
| $A$ |
| $A$ | TLKRLNLIGYEAQKGTMTNNGHTVQDQLPPTMHMTRLDGG LPRIHFINYAHSGPDTMENNGHSVMASDKWGDKRPY円YGG DLPALQPHGYDQPGTELHNNGHTVQLSDP DESSTVGG HLRPVHVDKHKVSGH L HNTGQFLVFRADKESKRVNITGG NLDPFHYNAEQASDWHIVNNGHTVQVNLDGSAKISS GG NLGPFSFSYDKKQQWRVQNNGHSVMVLLDQEASNAASSGG NKRPRQLVGQTPQAMRLQNDGHSAKFSLWSQGDRPYLRGG

 DDFVFHNYNATPLVTTVYYNGHTGQFQVTVPSDTLMI HGG WLRETQFD KHKVSGVLQNTGQSLVFRVEDSKHQVNISGG NLTPLTYSQHGNKPFTMYNSGHTVVDELPEWMGI
DLKPFTFHYDQKKKWVVKNDGHSVKMM QLQPTHLSGYNSEQLTLKNNGHTVVLRLPATLTMSGSNG GLKPLRLKYDPSTSLDILNNGHSFQVTFADDSDSSTLTEG SLTPINVDFNELQNQTLHVKDHNFSVEVKGNAVLS YPRLSFVNYDKVFPETI TNNGHTVTLQUHKHDDPPYTKDG T LNDFALWHDPPSYFDVTNNGHTLQV DTVGPFYVSNG EYQELQFDNESSNKTWMKNTGKTHYYTDRGTNDDYFVSGA ECQELTLDGFESNRTTMKNTGKTVQLIVLKDSKPNLTGTA SLGPLDLHYYEVRDHEVTNNGHTVQYNFEEGDYOSLWDV YPKFYFGNYGNDDRMTVTNNGHTVLFSLPSSESIPFITGG GLKPLRLKYDPSTSLDILNNGHSFQVTFADDSDSSTLTEG HSPLEFHHYDAKGRVTAVNNGHTELVQFQSWTEQPYISGG KLGKFNRTTFDPDKMTLLNNGHALQVNGEGGGTVSDRN LLKPLNDTYEKEGDFPMTNNGHTVQITLPHTMRMTASDG SMKIDFIGGFQKLYQAFIVENGHTVQLGVVESTKPVLIGGG NGGPFSFSYDKKQKWAVQNNGHSVMVLLGDKASDA VGG KLKPFSFSYDKKHMWTVKNNGHSVMVSLENKASEAYVSGG YPRFHFHNYDRVFPEMVTNNGHTVMMRLGSNQDLPFDNGG TLLPVELEGYNVSSDVLTNNGHSVKMNLSSAMRIRNF DLAPLKLQYSRAREEKMHNTGATCAVRUVWNSESYATGG
 NLKKLQFHGWEKGDTYIHNTGKTVEINLTTNDYYVSGG ALKDLKLTGEAQEGEFPMTNNGHTVEIKDPTMRMMTTD FLPPLRLSLSKKGNGTLHNTGRHVSLRPDGNQMMNDSGG HLRPLILHGYQEGAFPMTNNGHTVQUT P SLKALNLTGYQEGEFHMDNNGHTVQUSLPP DOMRMTA DLEAIEFNYRQSPFRVVDNGHTVQVEVSGNSDRLH QLHPLSVNYTTSRETDILNDGQNVI VYPRYKGVISGGPL HLVARPLRYEFPTNLEMVNSGHGWTVNIPPHADKTALTDG GLENTEFNYKTDAVG TVNNGHTTQVDVKEGSS\|K\|D TLGHFDFSYDKKEKRNVSNNGHSVEVTLK NDNIEDSGG SLGDFSFSYDKKQRRTVQNNGHSVMVSLESGVED NGG QLKPLRVSYDAASCDYVWNTGYLFQVEFDDATEASGDSGG SLERLLRFTYRRSQGRVIDNGHTVQVDVGGSN
 KLTPFRLHDFDKPNDTMKNNKHTVQVDVEGGSTLMVSGGG ELEQTSFDY RPSSFNVVDNGHTVQVGVSGGNYITVQ
 SLPALEFLGYNVSAEELTNNGHSVKLND DVDMBDQ
 DLEPTKFKY QPSTFRTVDNGHTVQVEVGDGS TG KLGRFSFSYDKKQTWTVQNNGHSVMMLLGNKAS $\square$ S GG NLGDFSFSYDKKHSRLVQNNGHSVMVSLEPD GVTVNGG PSELLQWSNFNSGPLSMTITNDGHAVNLRGFWTSTMWQGG ESKPIEPHYGKLSDASVINNGHTIQVVNVGGDHYMTLDG MGPLKFARYDFAYSAKVTNNGHSVKVQ EVVPTQL KGS
 DLKPIGFAYAAAPATVVNNGHTVQVNLPAAGQVELDGVP ALKFRNYAQPFAGRLTLVNNGHTADIVLPERGPRPTITGG



## UniRef90 D2A110 UniRef90_J9JLX4 UniRef90_UPI000393F9C5 UniRef90_F1L837 UniRef90_K1PH96 UniRef90_B4M267 UniRef90_UPI00038ECFB9 UniRef90_UPI00045431F1 UniRef90_UPI0003289BBD UniRef90_M4A089 UniRef90_UPI0003F16E8A UniRef90 F1L093

 UniRef90_UPI00045D6423 UniRef90_UPI00046CA8B8 UniRef90 H9GLZ6 UniRef90_UPI0003347A4E UniRef90_E2RBS1 UniRef90-T1E247 UniRef90_X4ZYM8 UniRef90_T1G9D7 UniRef90_H2SZ86 UniRef90_UPI00034FFF33 UniRef90 G3PDD8 UniRef90_UPIO00359E6B6 UniRef90_UPI0003D0FDE7 UniRef90 H2U9P5 UniRef90 G4VP62 UniRef90_F1QK5 UniRef90_E9FXL5 UniRef90_K1QLS9 UniRef90_UPIO0038706EC UniRef90_T1K4A7UniRef90 A5PLI9 UniRef90_UPI000364C98E UniRef90_I3E032
UniRef90_E9FX53
UniRef90 H2U9P6 UniRef90_A0A016WE16 UniRef90_H2YZZ8 UniRef90 UPI0003331C54 UniRef90_W5UF12 UniRef90-T1K4A8 UniRef90-UPI00042C4BE0 UniRef90_UPI0003C127E0 UniRef90_UPIO003F1204F UniRef90_E9FXL4 UniRef90_V8PGP5 UniRef90_R7U445
UniRef90 B0WFA3 UniRef90_UPI000469C8ED UniRef90 UPI0003C27679 UniRef90_UPI00045DD5A0 UniRef90_H3A5V0 UniRef90_UPI0003343B35 UniRef90_T1K0I0 UniRef90_M3Y4R6 UniRef90_UPI000441070C UniRef90_A0A011Q3I6 UniRef90_E5RQ31 UniRef90_T1L047 UniRef90-H0WMS5 UniRef90_G5AX21
UniRef90_G3RXC0 UniRef90_A0A011PUS7 UniRef90_UPI00042AEBBB UniRef90_E9FXY0 UniRef90_E9FXL0 UniRef90_K1QC23
UniRef90_A0A031GXM4 UniRef90_UPIO004728CC0 UniRef90 Q7PQV5 UniRef90_UPI000333839D UniRef90_M0S5S5 UniRef90_E1G722 UniRef90_G3VH83 UniRef90_Q478T1
UniRef90-G7NI02 UniRef90_A0A026WEW3 UniRef90_UPIO00376293C UniRef90_C3Z8B0
 PLTYRYQFQEFY T HFGTDNNLGSEHKIQGYSFPAEIQLYG GLPGRFKAEKMEFHWGSNGSAGSEHSVNGRRFPVEMQVYG
 PLSYRYRFHEDHVHYGLNDQFGSEHSVDGYTFPAEGQIFG

 ALPGHYRAAQFHFHWGGSGTKGSEHTIDGERFPMELHIVH
 GLPRKYVAAQLHLHWGQKGSPGSEHQINSEATVAE
PLAYHYQFEEIYUHYGQDDNHGSEHRVNNYAFPAETQLYG GLSGKYKAMQFHFHWGNDAEKGSEHSI DGERYPMELLHIVG GLDAQYQATQLHLHWSKK LD WGSEHSLDGEHFAMEMHVVH
 $\boxed{L}$ KTYTGKQFHFHL
 GLTSSYKAVQFHDHWGKDGGPGSEHTDDGEQYPMELHIVH PLSYRYQFEEDYFHYGMEDNRGSEHQIDHHTFPGEIQLYG GLP WLFTAVQMHLHWGGPSHGGSEHTINGLSADAELHVVH DLPAQYQAVQLHLHWSQEFDKGSEHSVDGKHAAMEMHVVH $P \prod T G Q Y R L K Q F H F H W G A S D D K G X P Q M V D G S R S$
PLTSEYKLTQFHLHWGSGNNWGSEHMING $\square$ S CPAELHCVF GLKGKYKAVQFHLHWGENGSQGSEHSVDGERYPMELHIVY GLSDRY DF Y QLHFHWGSNNRDGSEHRI ANKRYPAELHIVVH GLPAVYSTAQFHFHWGHENDHGSEHLI DGRASPLELHVVS GLPGRFKAEKVEFHWGSNGSAGSEHSIINGKRFPVEMQIVF
$V N G K L Y E F A Q L H F H W G E K S D R G S E H S V V D S V F Y P A E M H M V F$ GLPGRFKAEKVEFHWGSNGSAGSEHSINGKKFPVEMQUYF RYDLKQIHFH EAAEHTLNGVRYPLEMHMVH
 PI T G $\square$ YRLKQFHFHWGASDDKGRSASV


VFAAQQMHFHWGSWEVSGSEHTIDGSRRVIEVHVVH VDNKTYKA QLHLHWGVDDGPGSEHTVDGEQYPMELHIVH
 GL DSRFKASRITFHWGKCNASGSEHSLDGRKFPLEMQIYC GLTTHYLAKQLHDHWSEVLNKGSEHSLDGKRFAMEMHIVH GLS GRFNFFQLHFHWGKDPMRGSEHLLNDWQYSAELHMVH PLGSHYTLREFHFHWGDSNQCGSEHTVRGKAYSAELHLVH PLGSHYTVREFHFHWGDSNQCGSEHTVRGKAYSAEELHLV KEYKLLQMHFH

KPS HQ NGLSFEMEGHLVH GLDTVFKASK】T FHWGKCNRSGSEHSLEGQKFPLEMQIYC GTEYIAEQMHFHWGGGSSEMSGSEHTIDG』RSMIEDHVVH P LLYNHRLEEDRLHFGSADEHGSEHLVNEKGFSAEVQML H VDNEAFHFTQMHEHWGSKELSGSEATVNGMRYVAEIHIVH PDGTQYTAEQMHFHWGSSEDRGSEHTIVGDRFDAEDHVVH GLPGRFKAEKVEFHWGQSNGS

GKTYDLI Q FHFH
 PSGYEFELSEDRFHWGRYSTRGSEHKVNGKAFPMEVQLVH PLTYKYKLVQFHAHWGCDSSCGSEHTI DGHSYAAELHFVH

GTVFNLKQFHFH
TPSENMI EGKSFPLELLHFV GLPTGYQATQLHLHWSSEMNAGSEHSIDGKRFAMEMHVVH GLATHYRATQLHLHWSEKVDKGSEHSLDGQHFAMEMHUVH PLENHYRLKQFHFHWGAVNEGGSEHTVDGHAYPAEQHDFY LLGKTYDLVQFHFH GLPDEFNFAQLHFHWGGDSGR NRYDSEQLHFHWGPS GVS G G
H S YKVA QF HF HWGSDNTKGSEHTYNGISYPMEI N



KNYTLIQMHWH
V V G
GFDQAYR VQYHFHWGLHDN
 LTGKTYELVQQFHFH RPSEEKVNGQRFDMVVHLVMH GLPARYQATQLHLHWSNFLDKGSEHSLDGEHFAMEVHIVH GLATLYQATQLHLHWSEDLNNGSEHALDGERFAMEMHIVGH
 LPGDNYRLAQFHDHWSFNMGAGSEHVLNGQDYPAELHLVH NLPTKY L E QMHFHW


LLD GVYEAQSVHFHWGAPGGRGSEHTVNGYRYDVEVHVVMB
 $\begin{array}{rl}G L N A Q Y R A Q Q L H L H W S N K M D R G S E H T F D R H R F A M E M H V V & H \\ G K V F E L K Q F H F H & A P S E N L I K G K S Y P L E G H L V\end{array}$

[^1]$\qquad$

|  |  |
| :---: | :---: |
| UniRef90-J9JLX4 | NTDYSNMSEAQMKSQGIVGGVSLMVQiGGQTTNEFQMVTNE |
| UniRef90-UPI000393F9C5 | YNPDFDSLSAATKERRIVAAMAIFFELGQDNPA |
| UniRef90-F1L837 | $\square R E D L$ SVSEASVVEGGSAVLA |
| UniRef90-K1Ph | YNTKYPSLTEAVDKVDGLAVLGFFTEVGPIHNCNFALTNV |
| UniRef90-B4 | YNSQYANFSDALNRAQGIVGVSILLQLGDSNPELRMLTDQ |
| UniRet90_UPI00038ECFB9 | EKDTAK EEAPNPKDKIAVLAFLVKEGNEFNEGFRLLEA |
| UniRef90 UPIO004543 | YDDQFSSFEEAVKEKGKLRALSILFEVGLEDNMDYKVING |
| UniRet90-UP10003289 | QKEKGTSRAEEAAQDDEI AVLAFLVEAGDQ |
| UniRef90-M44089 | EPYS SLEEAEHDMAG\|ALLALFFEETDDHP |
| UniRef9-UP10003F16E8A | YNSKYKSYDUAKDAPDGLAVLAALCEAHNAE |
| UniRef90-F1L093 | MKKGFKAGD KLEGDSIAVVGV |
| UniRef90-UPI00046CA8B8 | FNAEYHNMSEAQHKSQGLVATSLMVQLGDPNPELRПITSV |
| UniRef90-H9GLZ66 |  |
| UP1000334 | KKEAQDS |
| UniRet90-E2RBS | EKEAQDSK |
| Ref90 T1E247 |  |
| Uni | VLVLINSGAE |
| UniRef90-T1G9D7 | WK SKYSNL |
| UniRef90-UPIooo34FFF | FNKEYHNMSEAQHKSQGVVGISLMVQDGEPTNKEDRI TSA |
| UniRef90-G3PDD8 | YNSEYPNVSTAMTQSDGLAVLGILIVTGEETNAFNNI |
| UniRef9-UP1000: | EKATSSNKAQ DSQDKNAVLAFMVEVGDEMNQFQPL |
| UniRef90-UPIC |  |
| 22 | VNLITSSSKLLTVTPGHPRADLECLVGDYSQSSKNKNRK |
| UniRef90_G4V | S ${ }^{\text {d }}$ |
|  |  |
| UniRef90-K9FXL5 | G |
| UniRef90-UPIO003870 | YNPDEFDSFGTAVLENRVVMAVFFQVSQRDNPALLDP |
| UniRef90 | YRKQYGDIETAVKYKDGLAVVGVFLQNSKT |
| UniRef90-A5PL19 | YNSDDFDSLSTALKERR1 1 MAVFFQVATKDNLIAAEP |
| UniRefo- 3 E0032 | ANEGKAVGVVMDOEGKENEKLASVWDV |
| UniRef90-E9FK53 | YNTKYGSFSEATKYDDGLAVLGVLI KVGKK |
| UniRef90-H2U9P6 | SSSKLTGRRLVQWRACASCVNRNWLLITSYQLTVTPIHPR |
| UniRet90-A0A016W | S |
| UniRet90_H2YZZ8 |  |
| UniRef90_UPI0003331C54 | YNDRYGSYDEAKDKPDGLAVLAAFAEIQEYNTYYSNFISE |
| UniRet90 | AMNDIEGVAGLAFFYQVSTEENQFNQVIQA |
| Un | RKEYESFDKALNSSGLVVVIFKHEENALDRLKG |
| - | YODHVNTFDEAMKGHGKDKALSTLFETGVNDNDYDAIISG |
| UniRef90-UPIO0003F1204F | EKDKSGNKKEDQNPQDEI AVLAFLVEAGSKNDGFQP |
| UniRef90-E9FXL4 | YNAKYGSFNEAVPHPDGLAVLGIVMELEARD |
|  | YNTDQYDLKSAVDKPNGLAVLAILMEEGDFNPSFEKIFSH |
| UniRet90-R7U445 | WNSDAYNTFEEAQEKDDGLLVVALFIDCCNSSN |
| Uniref90-BOWFA3 | - |
| P1000469C8ED |  |
| UniRef90 UPI0004 | YNDEYKNFEEAVKRSGKLR |
| UniRef90 H3A5VO | YNQEYNNVSEASRSPNGLAVMSGFVKVGDSCN |
| UniRef90-UPIC |  |
| UniRef90-T1K010 | YNQKYKDF NEASTKVD |
|  | EPDGLAVLAALIEVKDHN |
|  | KNEDFDSLIAADREKRVAAMAVFFQVGQDNP |
| UniRei90 E5RQ31 | WNS SQYQSYETALGKDGVVILSLFVQTGKDNSGLRS |
| UniRef90-T1L047 | YNSTFSSFGEAVQKDLGL |
|  | AS |
|  | NKKVTKSAKEAQNTGDDIAVLAFLVKEGPKENEFWPLVEA |
| UniRef90-G5AX21 | EKEMSLKEENPKDKDAVLAFLV EEGNELNEGFWP |
|  |  |
| UniRef90-A0A0111 | Q |
| UniRef90 E9FXY0 | YNSKYGSFAKACKHKDGVAVLAIFMEI GPTD |
| UniRef90-E9p | GNFVNATKHNDGLAVLGl LIDLQDRD |
| UniRef90_K1C | DKNCNYSPLVDL |
| UniRef90 - UPIOOO4728CC0 | QTSAPFRF |
| UniRet90-Q7PQV5 | SFAAAREQVDGDAVVGLFYEDYDHANT |
| UniRet90-UPIO00333839D |  |
| UniRef90-M0S5S5 <br> UniRef90-E1G722 | SSDDGN■TVVALDYRFGHPDPFVSQ KNKVAELAKEVCAG EGLTDPNKDAVIGVFFVLGDDDKALYOECTL |
| UniRef90-G3VH83 | GESGLAVIGVELKLGAEHKELQKLVNI |
| UniRet90_Q478T1 | GQLAVVAVLLERGTENPFIQTLWNN |
| -900 G7 | EKEKGTSRNEAQDPEDE AVLAFLVEAGPQENGFRPLVEA |
| UniRef90 HowAL8 | QIAVLAFLV EEGSEHNDGFRV |
| UniRet90 A0A026WEW3 | G GEKAVVGVLQNPGEDNSAYDY |
|  | ADQHSDLMDAVGHGS |
| Ref90-UPIO00258EDE1 | QHDNG\| |
| UniRet90_T11RQ | YSEEFSSLALAUDSNDALAV |
|  |  |
| eftoo |  |
| UniRef90 |  |
|  | $V$ |
|  | D |
| UniRet90_F6UPK3 |  |
|  | DGNLTVLAMEKGKANKALAQA |
|  |  |

 UniRef90－B4M267 UniRef90＿UPI00038ECFB9 UniRef90＿UPI00045431F1 UniRef90＿UPIO003289BBD UniRef90－M4A089 UniRef90＿UPIO003F16E8A UniRef90－F1L093 UniRef90＿UPI00045D6423 UniRef90＿UPI00046CA8B8 UniRef90－H9GLZ6 UniRef90－UPIO003347A4E UniRef90－E2RBS1 UniRef90－T1E247 UniRef90－X4ZYM8 UniRef90－T1G9D7
UniRef90－H2SZ86 UniRef90＿UPI00034FFF33 UniRef90－G3PDD8 UniRef90＿UPI000359E6B6 UniRef90＿UPI0003D0FDE7 UniRef90－H2U9P5 UniRef90－G4VP62 UniRef90－F1QK51 UniRef90－E9FXL5 UniRef90－K1QLS9 UniRef90－UPIO0038706EC UniRef90－T1K4A7 UniRef90－A5PLI9 UniRef90＿UPLIO00364C98E UniRef90－I3E032 UniRef90－E9FX53 UniRef90＿H2U9P6 UniRef90－AOAO16WE16 UniRef90－H2YZZ8 UniRef90＿UPIO003331C54 UniRef90－W5UF12 UniRef90－UPI00042C4BE0 UniRef90＿UPIO003C127E0 UniRef90＿UPI0003F1204F
UniRef90＿E9FXL4 UniRef90 V8PGP5 UniRef90－R7U445 UniRef90－BOWFA3 UniRef90＿UPI000469C8ED UniRef90＿UP10003C27679
UniRef90＿UP100045DD5A0 UniRef90－H3A5V0 UniRef90＿UPIO003343B35 UniRef90＿T1KO10 UniRef90－M3Y4R6 UniRef90－UPIOOO441070C UniRef90＿A0A011Q316 UniRef90＿E5RQ31 UniRef90－T1L047 UniRef90＿H0WMS5 UniRef90－G5AX21 UniRef90＿G3RXC0 UniRef90－A0A011PUS7 UniRef90 UPIO0042AEBBB UniRef90－E9FXY0 UniRef90－E9FXL0 UniRef90＿K1QC23 UniRef90－AOA031GXM4
UniRef90－UPI0004728CC UniRef90＿UPI0004728CC0 UniRef90＿UPI00033 UniRef90－MOS5S5 UniRef90－E1G722 UniRef90＿G3VH83 UniRef90＿Q478T1
UniRef90－G7NIO2 UniRef90－HOWAL8 UniRef90＿A0A026WEW3 UniRef90－UPIO00376293C UniRef90－C3Z8B0

## L <br> L

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FSTVMYKG 170
180
190
E G S T THP G ${ }^{2}$ FGKLLYKGS LRTIKDIS REMLPDDKYYMTYEGSTTHPGC
 QPGVSQYS DNTTANPFKLRHVEPMQTDYYRYMGSLTTPTC







 $\begin{array}{ll}L & S S V P R P K M N T T M K E F D L D P K K E K D R H Y Y R Y L G S \\ \text { L }\end{array}$ LPKEESEEATVIGGTF DLDSALLPDNLHSYRYQGSLTTPPCC




 MNTVRDPGAKVRIDAQALRNFLPEDTSYFRYNGSLTTPGC


 ADLFCLVGGDYSQSCVTSLSNLGD

LK SIIKYKEEKTTMEADSHAGFFPEKKSYFTYEGSLT
LAHIPKPGMDTEMREFSLWDMLPKERHYFRYQGSLT

LPEVPVVPAPTSRMQSKPRLSSSPCCTFGSFSAVGQMKVI F D G I K K K N E K L P Y S V P L K DL L L P S N





| UniR |  |
| :---: | :---: |
| UniRef90－－J9Jl | NSRPTQDLRERTVRTNIN |
| UniRef90－UP1000393F9C5 | NFRPLQDLG |
| UniRef90－F1L837 | NLRGVQELN |
| UniRef90－K1PH96 | NWRPPQPLN |
| UniRef90－B4M267 | NYRPPQP |
| UniRef90－UPIo | NVRP |
| UniRef90－UP100045431 | NFRE |
| UniRef90－UP10003289BE |  |
| UniRef90＿M4A089 |  |
| UniRef90－UP10003F16E8A | DYRMDQPLNRRVVEANFK |
| UniRe990－F1L093 | NYRPTQP |
| UniRef90－UP1000 | NYRAPQP |
| UniRef90 UP100046CA8B8 | NSRPLIEELH |
| UniRef90－H9GLZ66 | NFRPTQPLGD |
| UniRef90 UPIOOO3347A4E | NVR |
| E2 | P |
| 進90－T11247 | R |
| UniRet90－X4ZYM8 | RPVPPD |
| UniRef90 T1G9 | TNRPVQPLYREV |
| UniRef90－H2SZ | TFRPVQPLNGRQVFHS |
| UniRef90 G3PDD8 | NYRATQPINHRVAFASF |
| UniRef90－UPIO0035 | NVRPL |
| UniRet90－UP10003DOFDE7 |  |
| UniRet90＿H2U9P5 | NYRPPQPLKGRSVRASFK |
| G4V | NFRP CP G |
| UniRet90－F1QR5 | RPVQNL |
| UniRet90－E9F |  |
|  |  |
| UniRet90－－T10003870 |  |
| UniRef90＿1／${ }^{\text {d }}$ 4A7 |  |
| niRet90－A5PL19 |  |
| UniRet90－UP1000364C | NYRGEQP |
| UniRef90－13E032 | NHRPVRP |
| UniRef90－E9Fx53 |  |
| H2U9P6 | 俍 |
| UniRef90－AOAO16WE1 |  |
| UniRef90 UPI0003331－54 | GYRRTQPLHGRRVEANF |
| UniRef90－W5UF | NFRPVQKLNGR |
|  | NYREQSPLN |
| UniRef90－UP100042C4BE0 |  |
| UniRet90 UPIOO |  |
| UniRef90 UPloou3 |  |
| UniRet90＿E9FXL4 |  |
| UniRet90＿V8PGP5 | Q |
| UniRef90 R7U445 | N |
| UniRef90 UPI000469C8ED |  |
| UniRef90－UPI0003C | N |
| UniRef90 UPIO0045DD5A0 | DYRRTQPLNNRVVEANFN |
| UniRef90－H3A5V0 |  |
| 90＿UP10003343B35 |  |
| UniRet90－T1K | VTRQL |
| UniRef90－M3Y4 | DYRS |
| UniRef90－A0A011 Q316 | NARPVQPSEGRMIKES |
| UniRef90－E5RQ31 | NFRPVQP岛DR\VRSSFQ |
| UniRef90－T1L047 | NYRLPQP |
| Q30R67 |  |
| UniRef90－HOWMS5 | NVRPVQR |
|  |  |
| UniRef90－G3R | NFRPLQPLMNRKVWASFQ |
| UniRef90 A0A011PUS7 | NARPVQPRHS |
| UniRet90－E9FXY0 | NYRPDQEDHGR |
| UniRef90 E9FXL0 | NVRPTQHEHDRI |
| Unil | NYRPVQPLINGRS |
| UniRet90－A0A031GXN | NARPV |
| UniRef90 UP10004728C | NYRNEQPLNGREV |
| UniRef90 Q7PQV5 | NYRPVQKLNHR |
| UniRef90－UP1000333 |  |
| UniRef90 MoS5S5 | NSRPTQPLN |
|  | NFRPL |
| UniRef90＇Q4 |  |
| UniRef90－G7N102 | NПRPLQRPGQRVVLRS |
| UniRef90－HOWAL\＆ | NVRPLQQLGDRLVYTS |
| UniRef90－A0A026WEW | NCRPVQPLNDRN |
| UniRet90＿UP1000376293C | N |
| UniRef90＿C3Z8BC | NFRPPQPLNGRT |
| UniRef90－UP1000258EDE1 | N |
| UniRef90－T11R | NYRPLQDEN |
| UniRet90－U3Q | NRPV |
| UniRef90－A0A034WPA1 | NYRPLQTLNRRQVYR |
|  |  |
| UniRef90－T1 19N1 | YRQVQALHRRNVY |
|  | PLQD |
| iRef90＿UP10004755F48 | Q SV |
| SiRef90－H8FMZ4 | NARPVQP\INRRFI |

UniRefigo UPIooozz8E7CF UniRefio-UPloooza4C3B1 UniRe90-D5V5J1 UniRefoo-E8MAY9 UniRef90 K8B3E4 Unifere90-UPIOOO45725A1 UniRei90 $-3 \mathrm{M}=\mathrm{H} 1$
UniRei90 - F2F999
UniRef90-Dozol1
Uniret90-R7TGJ8
Unirete90-O9KFW1
Uniret90-H2UY/4
UniRetio-W508z5
UniRef90-K90 FY1
UniRefi90-UPI00046D6B51
UniRe $190-\mathrm{ABY} 3 \mathrm{G} 7$
UniRer90-F6W107
Unirietefo-UPIOOO45DF3FC
Unirefoo-Tignas
UniRefi90-UPIOOO4720F00
UniRef90-Q16XM2
UniRe90-M4A326
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Uniref90-F5RFAO
Unifere90-A AOAO16XEC4
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UniRef90_T1IM50
UniRef90-W6JGV9
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UniRef90-H2U9F4
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UniRef90-B4W0E2
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UniRef90_S2LH63
UniRef90_UPI000478EFF3
UniRef90-B0XGA9
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UniRef90_G3QX28
UniRef90_Q3SGX3
UniRef90_UPIO0034
UniRef90_G7SRK1
UniRef90-E9FXN3
UniRef90-K9RLW0
UniRef90_UPIO0034FEFAF
UniRef90_F4QQ42
UniRef90_W9RG31
UniRef90-F6Z111
UniRef90_UPI0003EACADF UniRef90_A0A059KL89 UniRef90_UPIO00443EF63 UniRef90-A3KNU9
UniRef90-E9G343
UniRef90_UPIO003200179 UniRef90_UPI0003BBB8D3 UniRef90_U0ELA4 UniRef90-I3LA69
UniRef90_G3P1C4
UniRef90-A8NED9

H GWRYKNE $\quad{ }^{10}$ GPRSWLAEYSTCNGNKQSPI HWSYEGNNGPKFWGTAN HWSYEGNNGPKFWGTDNPCENGERQSPD N I TKEATVATN

 HWCYDSCLGPNQWGGD CQKNHQSPVNVVTRKAVNQN WSYEESTGPEHWGELHPCVNGSEQSPINVEFPEVKADG

HWS YTGDT
GPEHWAE
$L D$
$K$
$K$
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EWGYWGKYGPKTWSEL
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FSYDE
WTHNG\|SGPNFWG』VNP
HVF GYSEPN
WCYF $Q A K E R R$ ARHCAGKTQ
P SFWGLLVNS
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WQEPLA
HWAYSGDAGPENWAK LTP
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WS Y A GT LNQNNWAKKFPSCSNAKQSP
WTYDNDGGPDFWGLLSKCAKGKMQS


[^2]

 K H $\begin{array}{lll}P & V & D \\ P & V & D \\ P & N\end{array}$


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

 ..... A A
and



QR $\sim$ WA RHHGHCAGK TQ





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A DKA GELGVVGVFFKLGDYNSSLQKVLKF YEAERFNSFADAVEGEGTKALAVLEEDSPEDNDYDSVLSG EKEKGTRSNEKDDQTDQTAVLAFLVQEGDETNQFQPLVEA S D

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QAGNLAVVGVFLKSGEFNPNLQTI WDA WNSKYKTFAEAAKAPDGLAVLGVFLKVGKAHEEMDKI ARL FNTDYPNFTAASKSPHGIAILSVLVDFGAQTNQETKLTIA

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KNAA GE: AVVAVMFETGKANNELEKLWQA RNTNYQSDEEARNQTDGLAVLAVLFKVVRTNYPHYQPLLH YNSIYGNYTQAKSSTYGLAVLSVLCKIGNESNEEFQVLKE RNKKYATDGEALNHPDGAAVLGFFFNLDEDEPGLYTI ARH EKG TSSKEVQDSKDKNAVLAFMVEVGDERNEFQPLVDA YDKSKYADAVTSLQWDADTDLVVMI EVGESNPAFDSVLSY YNQDYANYSEAAKSPHGIAVVSIFIKHHTVAGDWQKVISAW
 K D A $D$ KD
KDDDGN QQGNLAVLALMMFEGGANAALSRLWDA ASDDGN MNS VTVVAMLYRFGRPDP LLWQDQDKLAALHA YNSDYPNDSMAVDKSDGLAVLGVLDEVRPQMCDFLFLKFL YDNQYANFSVAAEHENGVVVIAVLFEDSNEENPDLSVINM MKHHYTDDTTALADPEGVAVLGFFYESNSANRKYEPLVNS KS QASDQSMSVVAVLFQFGKDDIISKDKDKLTE ESPK TNGKSKMA RNKKYATLGEALNHPD RNAA KNAK ESTN AVLGFFFDEGQGLVTI NRHLHLL ADKD
 Y N
Q
D QDSKyksydTAQDADGGLAVLGMMFE KDAS R ADNE MSTGTLGVVGVLMQEGKSNPAFAKIVAT YNSKYGSFNGATSHDGLALLGVLD KNEKYGSNGALSHDDGLAAVVGVFLKEGKANPTLQKVWKA YNPDDFDSFGTA $\square S E H G V S C L A R S N E P E L L Q N L M Q Y L T E E$ QNEH GDLLVIGVMSDIGNADPMLASLWTY QAADATपSVVS\|LYNYTSDDDSVDPFLAEQDEEQLVELPN YNSQYHNWTQAAQESNGGAVDAVLIHIETTATSFNSIVKS VRDKFQKLEKA
 LM
FDDDEFESDDEAMSSGGKTVAVLFEASTEDNODYAA!RF FDDLEFESIDDAMSSGGKIVAVLFEASTEDNQDYAALIEG RSAD GKLAVLAVLFDLGKENRTLQPVFAN WNTKYGDFGTAVKQPDGLAVLGVFLEVGDAKPGLQKVVDA ADKDGNDAVVAVMYNAAPG WNAKYSTFGEAASAPDGLAVVGVFLETGDEHPSMNRLTDA YDAHFASGDETDKAGGRITALAVLFETSVNDNLNFAI DDG YNTDLYSNFTTALTRGDAAVSIIVLVDKHTNEELSKI TES


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 A LP KUSY QPGGNEI LNNGHTVQVNYGAGSSITVDGU

 N F G PGTQQITNNGHTVQVNVGPGNTLLLD NLDKVKVDNHTMNGF LMNTGQHLKFRVATNVSPPMNWGG TLKPLIIDGVSSKAFGVVNAGQDVYFQPEPNESSVYFRDG NLDTLNRTYAAVPATLINDGHDIKLEFGSKVGTLTVNG KLPAIKVNY KPSMVDVENNGHTIQVNYPEGGNTLTVNG NLGTLLLSYS AVPLVVRNTGHSIGLDGHDGGTMATG FAPFLFSNYMNPIRNQLTNTGHS Q1 DSTDPSVTLYGG HLKPINGTFGVDETFVMSNNGHTLVVNПDSCHYFLNLQDT SLGAFSFTNDKNA $\square$ MYIVNTGHSVKCVLKD DTVEVSGG YLTPLK HLMPINDEGNDVEAVFENTGQLPVVTVKDDPNRPTDNDT ELGPLSKEYY SVNATLMNSGYS:GVHYEGKAGELNING DLKDQFHT DTETIVNNGHTIMITVRDDDHLLLD LGPFVLDGYDENTNMDLVNNGRGVADQLEEVEDLYKLSGG QLPPVGFHYYQPGGEEENNGHS:QLDYAKGSNISEN RLKSFTFTKDKHATEYITNTGHAVKCTLKQDAAVEISGG ALEMLGYHDFLSLPLIFKNNGHTVSVRVKHHRRFPYIFGA NLKGLDRDY VPTNATFIDNGFNVELRYEGGGAGKMTVDG QLEVPRFHY ATSRVRMLNTGHTVQFTYDNGSTVRVG ELGPFDLINFNLPHTMKMLRNNGHTVECKDKAGVVGVQGG NLGHLRRSY RPAMA IVENRGHDDMLKWEDEAGVIWING QLPPIQFDY RPSGFNVLDNGHTVQVNPAAGNSITVN NLKPLKLLQKFPA KEVLQTNHSUQLNFRDGNLVAGDNTT KLGSLRSHY LPSNTTMKNRGHDIMLKFKGGNQGFGIIIG YGPMEIVNYDEASAQILLTNAGTTVVADLHKDPKAKISGA ELGSLVYWTYNPQYATVSNRGHDVAVEWGGGAGS円DIDGS GLGYLNHSY VPANATIVNRGHDIMVKFEGDAGSVSI AGT KLKPLTMQYNHSEVATLVDNGFNVGIKYGENAGSLTVDG LPALSIQYVDGPTRFRSINHTLQATMSRYTANYINIDDGGG
 H|SPAETHYDDGPVGRLTNNGHT:QASVAENADTRDSD DLSA:TFNY QPVPLRLVNTGHT:QRNVDAGNTVVLD
 HLGRLIRDYEAASNAT:KNRGHD:MLKFEDGAGSIKIN
 DLADLMVEY QGQVAQLLNNGHTVEAKVAGTNQLLLD RLPPIGFHYKPGGHDEV NNGHTVQVDYDAGSTITD SPANIEFNYKPTPLSVVNNGNTIQVNYQPGSTIKIN QLGELKRSYY PCNATVKNRGHDUSVYWYGKPGSVEDNG HFKVLEMSGYENPPIKVTNDGHSANVNLRPGAWLS GG NLGKLKRDYKPAPA VRNRGHDDTVMWKGDAGKINNG



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| :---: | :---: |
|  |  |
| H2CFR5 | SKS AVIGV |
| UniRef90-K4GO | KDGYPT AEAKNHSDG! AVLSF |
| UniRef90-V4UE | SQDGKIAVVGT |
|  | TDNGKITVVSV |
| UniRef90-A8AQF88 | KNTN QEGEIAVVA |
| UniRef90-D7TJ76 | R TDDGNIAVVGILYQYGDADPLL |
| UniRef90-H2IU | MDAD GEIAVIAVMFETGQANPELEKIWQQ |
| UniRef90-UPIO0037A0 | SDAS |
| UniRef90-111A81 | NTDDGNDTVVS LYRYGKPDHFLFQUKDELAE |
| UniRef90 A0 | RNKKYATLADALEFADGAAVLG |
| UniRet900 B4K | QNCAYGTK EALCAPDGYVVGLMLKAAAEPVNPKALN |
| UniRef90-MOS | KNDDGNDAVVAITMY |
| UniRef90-W8BS | RNKRYANVTMASNFKDGLTVITAV |
| UniRef90-E9Q2) | YNHEYTNVTEAAKSPNGLVV |
| UniRef90-A0AO | EGL NETNAHHVVGGV |
| Uni | YNPDFQSLDDA臬EQGGRVAAL |
| UniRef90-1117V6 | E |
| UniRef90 W5U8N7 | G |
| UniRef90-W5 Jt | HSTLYPTLNDAVAVKNGVAVIGVLFHVAAQPNMHIILETA |
|  |  |
|  | QSAD ${ }^{\text {a }}$ ( GKLAVIGVFFKEGTENPVFKEAFAQ |
| UniRef90 U6NS | YNTDYRNFSSAFRSPHG1AGMSVLVDYGKET |
| UniRef90- Moz | FSEDGNISVVSIL |
| UniRef90-\9NXZ22 | MNTRYQS EEARSHPDGLAV |
|  | KRKDLT |
| UniRef90-F9O8R | QAEDKS |
| Uni |  |
|  | WNSQYSSFEEATKHSDGLAVIGVLLK ${ }_{\text {WGEP }}$ |
| UniRef90-A0A059DGG9 |  |
| UniRef90-UPIOOO2739 |  |
| UniRef90-C2U612 | QNDQ GQLAVVGIM ${ }^{\text {aKEGQKN }}$ |
|  |  |
| UniRef90 B3P7Q7 | KDGLAVVA |
|  | Q |
| UniRef90-T1G212 | GIALTSLLGQTDKRSNTEDTLLKK |
| UniRet90-U6HVS5 | YNSDYHNFTLAVSRPNGLAAV |
|  |  |
|  | LDENK GQPLVLAVLYEAGKTNGRLSSSWNV |
| UniRet90-G2LXT7 | NAVAVIGVDF VSNODNTHMDVVQD |
| UniRe | ANSEASKGVNGL |
| UniRef90-G3NYN9 | KRKDL TLDEALETPNGL |
| UniRef90- 018932 | YNSAYPNFSVAMTSPRGLALVSVIV |
| UniRef90-V4S7G7 |  |
|  |  |
| UniRef90_UPI0000E480B3 | YDKSKYANGPAASQWDAVTL |
|  | VDKNDNLAV |
| UniRef90-H2S4 | d |
| UniRef90-K71XZ2 | RNTKYPNLENALRHEDGLTV |
| niRef90-B3M219 | RNNKYLTLIEA QLH S D |
| M H | KTDCG |
| UniRet90 H8 | RRTNGND SAASRVPDGFAVMGFF |
| UniRef90-MOSCH2 | ESADKN |
| UniReef90-UPIO003B631 | KDAE GHLAVV |
| Ref9 |  |
| UniReef90-V4 | ES KNGKYAVVAFLLYNVGAPDAFLLSLDRH |
| UniRef90_G9 <br> UniRet90-V7 | YSSTYSNLLEEAAHQPEGLAVVLGFFFTVSTVN |
|  |  |
| UniRef90-M1AHU3 |  |
| UniRef90-R8US77 | HGD A VAVMFD ${ }^{\text {d }}$ DEPNADQNL |
| UniRef90-W5LPH2 |  |
| UniRef90-B0UN | AQSGSLG |
| UniRef90-D6DN | $\begin{aligned} & \text { KNAD } \\ & \text { SNDN } \end{aligned}$ <br> GELTVVAVMFDQGAANTELDKLWGV |
| UniRef90-L8MOM47406 | RNEA GELAVVGVMLTKGAENPLIATI WKA |
| UniRef90-UP10003654F | SNAQ GELAVVGVMIEVGDENPTIDTLWEN |
| UniReef90 M4DQ | KNQNKE GKNGRMAVVTVLYKDGRADTEIRSLEKE |
| UniRef90-EOUHC7 | KNQNKE KKDSGSVAVV |
|  |  |
| UP100046FB5A4 | GQ |
| UniRet90_D3RV11 | E G |
| ef90 UPIOOO476 |  |
| Ref90-UP100023432 |  |
| UniRer90 UPIOOO365CAEA |  |
| UniRef90-A0A059A215 | L |
| UniRef90_R9TE22 | S |
| КЗ | QSAE GKAAlV IGGVLYEVIGAHDAF\|LIHALLEPA |

UniRef90_U6HA77
UniRef90_UPI000373F418
UniRef90_H2CFR5
UniRef90_K4G033
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UniRef90_E4SRT0
UniRef90_A8AQF8
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UniRef90_D7TJ76
UniRef90_H2IUB4
UniRef90_UPI00037A0849
UniRef90_IIIA81
UniRef90_A0A034W935
UniRef90_B4K4I7
UniRef90_B3M1T1
UniRef90_M0S9M6
UniRef90_W8BS66
UniRef90_E9Q2V1

SMK S S K P GCr ${ }^{170}$
180
190
200
SMK S S K P G C E T S VVKG|IDDNG|LDPNNSRYFTYGGS|LTTPPC
L LT QVA GSNERETVAGMDPRG\|KIG
MPQAANTETDDLSQAI SPDDFYPENKDYYNFEGS
1 P A T P G


CKEKGDPFPA GVVNMRELRQGAQGYFRY $\square G S$




ID S SVS R F GK S A SVVEAF T LDRSLLDPNNTNDYY DYNGSSLTAPP C



M P S

## $\stackrel{T}{1}$

EA C R A R K G A S GS L E A FS L R S L L P T N T D Y F DY NG S M T A P P



$\stackrel{L}{\mathrm{~L}}$
1P Q Q G GEKNALP
I PAQVNNQAE E V R
VINVT GAEVAVNNTFSI GDVI GDVNLIT

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


$\square R$ D A A GK S A P L K G K L S P P H N P P L P K K N R T S Y F R Y E G S

 S Q S I N Y K GQTTNLTD F Q P S ALL LP K TS S H Y V T Y E G S L T F P G C SCTSNPKTS DVDVGMMDRDYSRQP LQQGYYRYHGSSLTTPPC FPAKK N Y P Q V L NH G D D S Q L LPA D Q S Y Y R F S G S L T T P P C

M
PSNTCSKAEVTEEI SIIDDLLGSVNRNAFYRYNGSLTTPQC

LGAYNSSYTLPENLTLDSLMSNLNRGQFYTYRGSL
$\begin{array}{ll}D E L A M G A R A ~ Q V P V G G & R \\ L & P H M G E E S S S A G A \\ D & I \\ N\end{array}$



L K R I T D H E G E A NV G S I D DP K K I S F E S K Q Y Y R Y S G S


FPTMTDNS MPIFSPVNDNQLLPDDKTYWRYSGS L


LDCA GNEEA RDPV GVLDN KLL L RKNTRKYYRYVGS
MVSATASSSMSAMEQVNPYSMLPADGTYYNYLGSLTTPPC








250
NFRPPVP|VNREVVCSF NYRNEQPLNDRVVKLNY NARPVQPMQGRVLES NFRPTMARNGRAVWAS NARPQQP $\square N Q R \square V K$ S NNRPDQDANGRKIKA
 NSRPLQPLNGRRDQ NNRPVQGLHGRVVVA VRPAQKVEGRVI RES NCRPTQRLNGRTVQ

 NARPVQQUNGRCVQ NYRDLQKVNNRPV NFRPVQPLNNRCI RTN $\square \mathrm{N}$ NWRTVQPMNGRKLYL NFREQQQQFMGQVFASY
NARPRQETNNRVI NARPRQETNNRVI
 NYRSVQPLNARLVYA NARPIQALNGRTLEVS NARPTFPLNGRKI $N R R A V Q E F N S R L V R T N D Q$
$N F R L L Q Q Q Q F A G Q V F A S Y$ NFRLQQQQFAGQVFASY NNRPTQPLDGRTVQ

```
NARPLLQPLNRRF ILLES
N NRRPLLQ P L N K R H I E
NARPA QKLLDRRFVLLRS
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NSRPVQPLNRRET
NFRPTQPLSDRVI RAAFQ


N Y
NNRPDQPDNGRVI
VFRPTQNLNNRQVAS
NFRPLQMTHSRPVRTNTN
NYRPVQKSNNRFI RTNI
DYRPTQPTNGRKVQ
NNRPVQPLNARVV
NARPLQPLDRRFLLKS
NFRSLQPL NAR
NYRKLKSINSRVIFRSWN
VFRPTQPLHDRIVYT

AYRPLKSLNGRLVRTNIN
NSRPVQPLNDRK
N NRP: QPALHERMDY



NSRPLQPLNGQTVQ NNRPLQPLNGRTV $V Y R P Q Q S L N K R T V Y$
$N A R P T Q Q Q$
$N$
$N A R P T$
$N A R P V Q P A D G R L I$
$N$

TARPLQPLNERKTQ
NARPRQEVNSRY,
NARPTQPLNGRQIQ NNRPLQPLNERKI TDSY NFRGVQPLNGRVITS NARPVQERHRRFVLVS NSRPVQPLHGRLV NARPVQAQHRRILDES
ARPIQPSNGRVIQ
NARPLQPLNGRMVES
NARPVQPINKRMV
NARPVQPLDQHKI
NSRPVQSLKGRTIE
NARPPQPTNGRMVY
N NRPLQA INARLV


NARPLQPLNSREI
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NFRPAQPLGRRKVLR
NARPTQQLGGRAV
NNRPTQNLNGRKI

## UniRef90_W9SAK2 UniRef90-H6CCW2 UniRef90-A6QR75 UniRef90-K7MZ34 UniRef90-I3IND1 UniRef90-EVVMU8 UniRef90 D6W9D0 UniRef90_UPI0000DB7CE2 UniRef90-R0IKZ9 UniRef90_K4C9M1 UniRef90_UPIO0032A7512 UniRef90_W0DWJ7 UniRef90_Q63839 UniRef90-K0G6H9 UniRef90_UPI0001D61F5F UniRef90-C3KI41 UniRef90-D7NOZ7 UniRef90-I2FLL8 UniRef90-F2E858 UniRef90 10 FX 45 UniRef90-HOHXF3 UniRef90-I3YH20 UniRef90_B4I013 UniRef90-H9KAK5 UniRef90-E1W3U0 UniRef90_UPI0003B79B70

 UniRef90 A0A059D5R4 UniRef90-H2S428 UniRef90_G2E2U1 UniRef90-V8D7S6 UniRef90-A0A044SAL5 UniRef90_I1L9E1 UniRef90-Q4RZ57 UniRef90 T1E1N0 UniRef90_UPIO003113BA4 UniRef90_J3N638 UniRef90_W2TU13 UniRef90_G4VIP8 UniRef90_Q28XJ3 UniRef90_UPI0003B4FE78 UniRef90_F7IMS5 UniRef90-L8GPJ9 UniRef90_Q0QBU9 UniRef90_W9GWP2 UniRef90 C5LW05 UniRef90_UPI000329819B UniRef90-E4XRR7 UniRef90 UPI00047D800F UniRef90- B3M084 UniRef90_UPI000328E110 UniRef90_F6HS79 UniRef90 G1LNI9 UniRef90-ROFPJ4 UniRef90-B3U4N2 UniRef90 B9H9J2 UniRef90-A0A011RJ28 UniRef90_B7JY43 UniRef90_M5WH96 UniRef90-M1 X0B4 UniRef90-V7AFC0 UniRef90_UPI000273A560 UniRef90_E0UL07 UniRef90-A0A022PT22 UniRef90_UPI0002C2FDB8 UniRef90_G7YCA4 UniRef90_UPIO003769350 UniRef90_UPI0003D7392E UniRef90_UPI0003F0929A UniRef90 K9H2S2 UniRef90-UPIO003EDE8C4 UniRef90_Q6YZ76 UniRef90_UPI00042BAF27 UniRef90_G6CMD6 UniRef90-A6CYG3 UniRef90-Q3U3I1 UniRef90-A6YC19 UniRef90_N8ZT21 UniRef90_I3KW09 UniRef90-G0MAD1 UniRef90-UPI0003D0DB2E UniRef90-G6YIH4 UniRef90_UPIO0029899B9 UniRef90-E5SAH7 UniRef90 F6MHT6 UniRef90-B4K4I8UniRef90 UniRef90-Q9W2Q2 UniRef90_UPI0002A4CA15

1

10
EFNYESEKGPDRWGE\| RPCSNGTLQSP\| D|LDDKR|V|E\| IS HWSYKGNEGPEHWGELAACGNGQEQSPVNI EYTRLEASQ
YHFGYSNQDD WK N K C P EYGYNEKNGPQHWGDLAA HWSYEGECGPEHWGDLCK QFDYC I Y L HA D S WGGU
 QFNYEGDKGPENWGKLKPCGKGNMQSPIDLTDKRVLVDH EFSYDEENGPANWSNIHPCKTGKMQSPI DFANNKI ENVS
 YWAYSGAYGPEHWVTSSVSCGGSHQSP



HWS YGGKNGPEHWGA LDACSAGAQQSP DNDT GA $\square K A D \square P$ WS YAGESGPAHWGDLDACVKGLSQSPVDLAQTQP EWNYLKNG KDWEDL CSTGKHQSPI LLDTKTAHKLV HWGYQGDNAPENWGNLQTCASGKTQSPIDIFDS KNNK HWSYNGKESPEHWGDLYQTCKGKVQSPVNLEADNGMKVA EFNYDSERGPARWGEVRACGSGHEQSPIDLHAVSDVAGS WAYSGSQGPEHWGDLDACRGGERQSPVNDRKGSVGVVVDE WA YSGSQGPEHWGD DDACRTGRLQSPI DI DRVHRVP WTYHGDHGPAHWGEFGSCAQGAQQSPI DVEIKKVRPVK NFSYAGPNGPEYWGSLSPCSHGKSQSPVELMKTDIVINK WS S S GVS GPEEWALAYPECREKNQSPVNIVDQDAKVSA S Y G S GLQNWGLISKFCDGNSQSPIDFDINQVQNRL HWSYTSPTGPDEWGDLHDCNTGTQQSP:INTVANTPGRLP WHYKEGGGPSHWGQWSACYQGKRQSPI DIRSDVVCHDP
 EWGYETENGPNVWAQLSPCAEGRHQSPIDLVNPTPAAA HWRYGGD PP WPQVSPACGSRFQSPVNI RPQLAAFCP WS Y DGPT GPQYWGTLTPCSSGGRQSP DI I EFRTSRR

WTYEGAEGPERWGVLTPCSLGLEQTPDDDNKA IRAETG YDDQN SWPGM CTIGESQSPI SIETGAIDDQSV
 FAYTGDNGPGFWGEISPACTSVRQSPIDIDR VVLDQ

QFSY DEDTGPKRWGQ DNPCGNGAMQSP\DLLDARVQVLP HWCYD DQLGPSQWGGD CQKNSQSPI NIVTTKAQVDP FGYRGKNGPKRWGHDNPCAVGKLQSPAIDIVRRQTFYNR
 FSY E A T GPSKWGQLDPCGDGKLQSP: D:LDQNVKVLY
HEWNYEE
PHKWGE LTACK
WD YF GKK GAKNWGKLSPCRLGQSQSPI NLTSAMSASIP EFTYDSKSGPENWGDIEPCKKGSMQSPINFLNGVQKVN

WDYDDPD TEWPSПAPDASGNFQSPVNDTQTPSПNLG FTYAAQTGPNNWGSLNPCKNGRLQSPIDLDDQRVVLLP EFDYDSEKGPKHWGELRACKTGRLQSPVDLHSEDVEVHP EWGYHDDKAPRHWAE $\square$ YN WGY
 DPKCGPTHWMEMAFACGGPAQSPIN D DHLVQQDP QF GYGTPRGPENWGSLKPCSSGEMQSPINLGLLDLTLAP

QS WGYGADNGPAHWGSFSSTCSGKNQSPIA WCYE $\square$ TGGPEKWPG ACKENQQSPINVVTARTKVNP CGGNRQSPI NI DTRDTKANN HWGYQGEVSAEHWGALSDCATGKNQSPI NI QGTYHSTDQ QGWCYHQNVDEPNWPKNYTHCSGTRQSPINIVSESAKPND GVFKKAANQRQSPIDIIPQHVCYDN HWGYAGSVGPEHWADLDKCSAGTHQSPI DIAGAVKADDP GQTEWSQHFPACGGSSQSPVDVATTRTRFDP E WT Y QQPYGPSDWHKGYPDCGKKAQSP:IDLAADETVVKG
 Y N Y D WD Q GPHTW DTACN

NQSP1 CNGTRQSP N M M

_Refori000328E110
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UniRef90_Q3U3I1 UniRef90_A6YCI9 UniRef90_N8ZT21 UniRef90_I3KW09
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UniRef90 UniRef90_Q9W2Q2 UniRef90_UPI0002A4CA15 UniRef90_UPI0002C3080D


HLEDTKRNY KPSNATLKNRGHD\|MLKWNSGEAGY\|IED G

 K L G GLK Y WN Y K P Q HA T VSNRGHDVAVIWE GDAGSDEI NGT
 F L P E I C H H Y E $\square$ K Q K F M I K N T G H T V Q L A L Q N K S A K P F I H L G TLDFTS
 $N L G \square L Q K L Y$ $N L G K L N R S Y$ KPQHATII SNRGHDIAVVSEADAGSIDDNG E LQLYGFDNESSNKTWMKNTGKTVAALLK

 YPTLSFSGATNETDWTIQNNGHS VAALPTADIWLSGGP

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

 VPALHWD AGEGSVTDNGHTAKVGEDGSLHLD
 GSAS DLN $\square$ S Y GVSSSLKVVNNGHTVQANVTD GETVTTFK KLKKLK F S Y TVGGDLKTIVVTGEGFSCKTDDGCTSELTAS




 DLGPFS F S Y DK K Q K WKV QN S GHSVMMVLLEDEASDA G G RLESLHRDYYF TNATVVDHVCNVAMIVGEGAGDVIIDD GHD GLLVVHTAAPGHVVTSH H TII EV DFQS GE S L EVV



 $G Q P C \mid R G G$
Q Y LS $\square$ N Y S GQQA DF I K N T G L N F D LE Y HP GNANF I NVSG

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

 S LDP LVFKGYWDNNSNLVNTGQTAYFTFDTPS RPRLSGG EMTPLEFDYSGS $\quad$ GNVVNNGHTDQ $\quad$ NNVA GSNTLKLD
 $H \quad P \quad I \quad Q \square D Y A E N P E N D V F N$ GHTVQVNAKNSQNNKVTDDG

 R GLT P LTYDQHGHKP FTMUNNNGHTAVVELPDWM GLLS

 D LA P VEFD YRRSG FRI R DTGNTVQV DVGEGLS IVVR



## UniRef90 W9SAK2 UniRet90-H6CCW2 UniRef90-A6QR75 UniRef90-K7MZ34 UniRef90 ${ }^{-13131 N D 1}$ UniRet90-EOVMU8 UniRef90-D6W9D0

 UniRef90-UPIO000DB7CE2 UniRef90-ROIKZ9 UniRef90-UPIOOO32A7512 UniRef90-WODWJ7 UniRet90-Q63839 UniRef90-K0G6H9 UniRef90_UP10001D61F5F UniRef90-C3K141 UniRef90-D7NOZ7 UniRef90-ㄹ2FLL8 UniRef90-F2E8588 UniRef90-IOFX45 UniRef90-HOHXF3 UniRef90-13YH20 UniRef90-H9KAK5 UniRef90-E1W3U0 UniRef90-UPIOOO3B79B70 UniRef90-A0A059D5R4 UniRef90-H2S428 UniRef90-G2E2U1 UniRef90-V8D756 UniRef90-A0A044SAL5 UniRef90-11L9E1 UniRef90-Q4RZ57 UniRef90 T1E1NO UniRef90-UPIo003113BA4 UniRef90-J3N638 UniRef90-W2TU13 UniRef90-G4VIP8UniRef90 O28XJ3 UniRet90-UPI0003B4FE78 UniRef90_F7IMS5 UniRef90_L8GPJ9 UniRef90-Q0QBU9 UniRef90-C5LW05 UniRef90-UPLOOO329819B UniRef90-E4XRR7
UniRef90_UPI00047D800F UniRef90-взм084 UniRef90_UPIOO0328E110 UniRef90_F6HS79 UniRef90_G1LN19 UniRef90-ROFPJ4 4 UniRef90-в9н9」2 UniRef90 A0A011RJ28 UniRef90-B7JY43
UniRet90
M5WH96 UniRef90-M1 $\times \mathbf{O B 4} 4$ UniRef90-V7AFC0 UniRef90-UPIO00273A560 UniRef90 EOUL07 UniRef90-A0A022PT22 UniRef90-UP10002C2FDB8 UniRef90_G7YCA4 UniRef90_UPIO003769350 UniRef90-UPIOOO3D7392E
UniRef90 UPIOOO3F0929A UniRef90-K9H2S2 UniRef90-UPIO003EDE8C4 UniRef90-Q6YZ76 UniRef90-UPIOOO42BAF27 UniRef90 G6CMD6 UniRef90_A6CYG3
UniRef90 Q3U311 UniRef90-A6YCl9 UniRef90-N8ZT21 UniRef90-I3KW09 UniRef90-UPIO003DODB2E UniRef90-G6YIH4 UniRef90_UPIO0029899B9 UniRef90_E5SAH7 UniRef90-F6MHT6 UniRef90 - B4K418
UniRet90 N6YKC3 UniRef90-Q9W2Q2 UniRee90-UPIO002A4CA15

TQYLIQQCHWH
100
110
SPSEHTIINGNKFDDELHAVV|H
TKFTLKQFHFH HPSEHQIDGKNADMELHFVH RNHNSFKFLQFHFHWGPKNTKGSEHTVDGGAYNGEMHFVF HLKGDFKFAQFHFHWGGENKVGSEHLLSGIASPIEVHLVH

NKRYELDQFHFHC YGGKYVFEQLHFHWDAE HLPAEFRLDQI HGHWGSKTDCGTEHSDDYHKYAAEVHFVF PLCDEYKLFSI RFRWGPNDEEGSEHMIDMRRYAMELQVTY GVNQEYELDHLHFHWGAKNNKGSEHDLNGVRYPMEMHVVH
$\qquad$ TQYFLQTTHWHW
GSAYDLSYDFH
GLPGRFKAEKVEFHWGHNGS KQFVLKQFHFH PLSDSYRLLFQFHFHWGSTNEHGSEHTVRGKKFSAEAFVH GLGYVYSTLQFHFHWGSENSDGSEHKVDSKRYPMEMHIVN

LGSKVYKVYN H $\quad$ HFGNSSF TAYHLRQVHWH
TEYFLKQCHWH
GKTYDLLQFHFH
GDAYDLEEFNFH
R■KGRYFADGLHFHWGSYKS
NKTYK LVQFHAH
$\square N N K P F Y L K Q F H F H \quad$ TPS
DRDYDLVQFHFHAGSE
TWYLLKQCHWH
GLKHVYSTLQFHFHWGSGDS

> HTDD

GDVYDLDEFVFH DGSEHTVDSHRYDLELMHMV
GREYRLVQFHFH
HपPDVYKLWEFHAHWGTDKNCGSEHLINGKGFSAELHFVV
KNYSLK KLHWH
GLPGRFKAEKVEFHWGPQQRFRWLRAQHQRPALPQMQIYA PLNGTFKFVSLHFHWQSE

YDLVQMHFH
HTTNNNHFPLEDLLVF
GKVYSFKRVNWH
HLPGTFELAQFHAHWSKDGSC $P L V Y D Y R L E G A D I K F G S K S S$
$D L L A S Y T F V E V R F H W G W C N S ~$
LLASYTFVEVRFHWGWCNS
QEYRALQLHLHWGAAGRPGSEHTVAGKPFDMEAHFVH ПYEDQYHDVSMHLH GLPFDAKPAQLHFHWGTTPERGSEHTVDGMAYSAEVHLVH YDSDRHELLQFHFHWGLTDEFSSEHLLSGKAFQMECHFVH DDSEQYDSLQFHLHWGNSSVPGSEHTVDGKRYPMELGVVN D DANYKFHSWHIHWGSDTEPGSEHKMEDKQFDAEAHLVH

ALSEHTVQGQYGALELHVVF
LLNGRF IAEGFHFHWGSTNQRGSEHSVNKQRFDVEMHIVH
TYFKLQQCHWH GAGRSSEHTFNGSRYNLELHVI H
GLAA QYRAVQLHLHWSEELNNKNYTVVQMHWH NGGEHADDGGRFAMEMHIVH
$\qquad$ RTYTLKEFHFH
LLGKSYELIQFHFH
GEKFDLLQFHFH
GETYLEKQCHWH
GETLI
GETYELIURHFH
GLP
HVYRALQDHFHWGDPTASPSEHAIDGTRDDQELHMVH
ERFDLQQFHFHYESETANGSEHTLDGQRQPMEMHVVHN
TEYKLLQCHWH TPSEHTVGKRFKMELHM1 H
STПADYEVYQ円HFHWGSNVC
NRRYELTHYEFH
PLLYSHRLSELRLLFGARDGA
AGLSEYKAHYFHFHWGSDNS
AGLSEYKAHYFHFHWGSDNS
LPLPAYRALQLHFHWGGPRRG
VINGTYRLRQVHWH WGSNGS
PLTGEYTFEQMHFHWSVDDFAGSEHSI NGKRFPVEMQIYF QQTFTLKQFHFH RYEAVQLLHLLH WSNGND
$T Y V L Q Q Q F H W G R S S ~$
ENYYLKQFHFH
NLSDVYETLQFHFHWGNSSVP
LPS SFELAQRHAHWGCNSKE
VP
DRVYELVQFHFH
S G S

APSEHHVAGKSFPMEAHFVH
GLP WLFTAVQMHLHWGGPSHGGSEHTINGLSADAELHLVH
LNSYKYKASKLILRYGDKNYMGSEHTIDGETFSGETVLYG
FKGERYNLLQUHMHWGSSSSKGSEHMUGGSEHSAEVHWVH
GTRYALERFTLHRPSQDRDGGMAH
DLDGRFDFREDSFRWSWASSLGSEHTDDHHHSPDEMQCDH GSQKYTVVGVF KTDRSAKNVPVKWQK VSPQPDGTINKTA VVGVLYKYGSPDPLLSKLGKY
 WNTTY DAEEALSRPDGLTVVAVFLKVGKHNDDYAHI TGA CSCKCTDMAKSIKTCAVI II SYMFEVTDVDNPYDETI IQG KNK VYSNLSNALNYKDGLVVLGDFFQLQEKDNKKYSIVNH QSKDGRN ETNDGKNDA
$V$ S PQPR
$V$

A V V AF
DG ${ }^{2} N K T T V V G V L Y K F G S P D P F L S K M G K Y$ HD Q GHAVVAVGLRAA E
 WSAKYSSLAEAVSKAGLAVAVMFKQGKDPALTPLI TK WNSKYSS LAEAVSKADGLAVIGVLMKVGEANPKLQKVLDA KRKDL TLEEALETPNGLAVLGFLDEAKDAHNSNSELISA QAEDGT YDRTFSNDGEAVASNRGFGVLAQAQTGQTYDAGDTSGINM LSAQNKT
 K N $\mathrm{K} N$
$\mathrm{R} D$
R A VI AVLYKI GRANSFLSTLTRH
$\qquad$
$R \mathrm{RE}$ RNEKYKNDAEADR QAADHSN QSEDKA ASDD RHKDGLAVVVAVRAG A SDD

LVI AVFVQEGKENSYFEKLLSVF ES L N GHLAVVGVFFEEGAANPALDAIWAA KRKDLTGEGVAVVGIMYKLGRPDTFLSMMMKH RN Q D P D
 QUGRLLVIGLMVKEGHNNQALAALWKQ

 YNS $\square$ YGS LL QAAYQPDGLAVLGYFFENSTSAKPKRWi DA RDAA G GNLAVIALLFDVGAKNKVLAPLFSN A AADGSDAVDADLYKFGAPDSFYF Q WNTKYGTFSDAAEKEDGLAVVGVFDKEGAHSANYEPLFNV FNY RASSGMSRSCTSSYDLLT L $\operatorname{L}$ STAFAKVDKALGRPGGGAVLAAAFLQEGPEENAYEQLLSH Y NLKYGSVGDAKGKTGGLAVI GVLFEIGKANKEIEKILDA
 ADPSLT KLAVIGVIYRVGRSNGFLQKILAA RNARYSDLTEAVKHKDGVAVLGVMFKVNRFFPGINKVLSE LSTAFAELEDAVGRPGGLAVLAAFLQEGPEENAYEQLLSH LS S DEK EKEKGTSRNEKQDSKDELAVLAFLVEAGSEENDFQPLVEA QAKDGSFAVVASL FKIGAEEPFLSQMKEKVVKLKE RDET VNS $\operatorname{R}$ GAT GHLVVLAVLMDLGNESASWSAVWDR SED GRLAVVVAVLLEKGMEHPLIQTVWNN Q N L P N P N VTT N K $\square$ A K S KQGTLAVLAVFLKEGQENTHLKALWEA KRGVAALYKDGRPDSFLTKLTRD $K R G F \square A V V G V F L K Q G N Y N Q L L E S L W Q M$ QTPS M NTRYKSLGEARGHP GEYAVL GI I YRAGREDPFVSLLSKG MNTRYKS LGEARGHPGGLAVLAFFFKVQTEDNNYHTIVTG RHAN KSSE GHI $R \square P G P N V G N N \square V$ YKKPYRNFETALTKNDGDAVVAYLYKTGKPDMFLSQVSQD (TVAVLSFLHKLDDGAPPSKNQISY KDGE GNHVVVAVLFREGDEHEHLATVLEN F NQEYGNDSAASRGPNGLALLSLFVNVAGSSNPFLSRLDT YNEDYGSYTNAGGKKGGUAVLGFLI EAGEPNSAFDALLNE MSTMYQSLGEARSHP MSTRYQS
LN TQNQ

LGEARSHP D G $\quad$ B YNSKYQSSF GAAMLENRIIMAVFFHVSQRDNPALDPGIHG
 $K K D T S S K E D A M S D G K A V D A F M D E V G D K V N G F Q P L V E A$ LK QGASQNGTAGDTYSVVAVLCEAADIGDKVPGRGVWRNL ANAQ GQLTVLAVMVENGQANPEWTKLWKD TKEMYNRCDADASKDPGFFI EVMSDNSTGQPESWRNLTSY WNTSYASFNEADEKPDGLAVVGVFLKEGKYNDNYHGLIDS Y NQEYSNASEAARSPSGLAI I SLLVS $\square$ GPNSNPF LDNRET $K D T \quad Q S D T L G V L S V F L T P G A N N A N F A R L A A A$ Y NSEYPNMSAAMTQRDGLAVLAILIVTGETNPAYDSILNY YNMNYNNFSEAMRKPNGIVGIAYFNI DTFTNSEDRYLVSA VKEGTEDQLLVVGVLFDTTDYGSNVEIEH L WDV KNLDRSDKKTEASEYWDGLAVLGVMLKAVNRVLSPHGISNQ

T D




250
NARPI QETNGRTVIK

NYRSVTALNKRKVK
NARPLQPLNQRAI Q
DARPI QPQHGRIVKESY
NYRPVQKLNGRNVF
NFRDI QPLNGRKI YSSCQ
NTRPVQNANNRDV
NYRKLQQ IGGRKVY
NARPLQRNNNRPVK
NARPIQQLNGRTIKFN
NARPVQLLNQEIE
NARPVQPRNGREVLA
N N R P VQP $\square$ N S R $【$ V
VYRPTQS LHNR पIYT
NNRPVQPLNGREV
NTRPLQALNGRTVSRSF
NARPLQKVNDRDIR

NARPPQPLNGRLVABS

TYRIVVQGLNDRTVF
NNRPVQPLNNRIIENN
NNRPTQPLNQRDVE
NFRPVHALHARTLSA

NARPVQPLNDREVF
NHRPAQPVNQREV
NCRLQYPLNERRVKRSFK
NARPLQQLNGRKI Q
NFRPIQSLDNRQIFKS
NYRPLQKLNDRQV
NARPIQPSNDRAVK
NARPPQPLNGRTVM

NYR I Q K I NRRSVRTN■
NSRPVQALGNRSI
N NRPVQPLNGRKLF
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NARPVQGRNRRFLLESF
NYRDVQPLNGRSIY
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NFRNVQDVGDRTI
DFRPLQKRNGRVVKA
NFRFTQPRNGRPVY
NFRATQP LNGRVI EASF
NARPSQEVDGRTV
$N \nabla R P$
NSRPCQPLNGRRVE
NARPVQSLNEREI
NARPVQPLNGRAV
NARPIQPSFGRMVKES
NARPTQPDNRRFILSY I
NARPVQPLNLREI
NARPVQELNSRFLLQS

NFRPVQPLGARRVLAS
NNRPLQDLNGRQ
NARPTQ
NARPLQA $\square$ NGRDV
NARPVQPMKARTLLKSW NGRPLQPLAHRALRGN

NARPVQPLGRR
NFRPQQPLQGRRVLAS NARPLQDVNNRNI NFRPQQSLNDRVVSKS NVRPTQPPGHSVI Y NARP IQPBNARLI $N V R A P$
NFRKLQRLHGRDVF
NNRPVQVQNGR\|V
VYRRIQNQTDRIVWT
NHRECQDRCGREI RSSYN $N$ LRPPQPLHQRSLCSN NARP $\square R S$ PNRF I

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UniRef90 K2K7G1 UniRef90_UPIOOO3C13106 UniRet90-W7DJN3 UniRef90-A0BLV3 UniRe990 I3KTV7 UniRef90-B4GYZ4
UniRef90-НЗСМіс
UniRef90 B4N9L8 UniRef90- UPI00045E7B14 UniRef90-K7LQE2 UniRef90-UPI0003599CAA UniRef90 B4JY83 UniRef90-W5KQS8 UniRef90-UPIO003BCADCD UniRef90_H2TUX0 UniRef90-M4CZ32 UniRef90-B4P842 UniRet90-W5DT05 UniRef90 F1L8Q7 UniRef90-C6XQK9 UniRef90-Q29CG6 UniRef90-B3MIQ8 UniRef90_-J3MT25 UniRef90-V8PE92
UniRef90 - B9T345 UniRef90-UPIO003BD8991 UniRef90-C5LTV5 UniRef90_UPIo0036A0D86 UniRef90 11 INH4 UniRef90- UPI000333847F UniRef90-V9G1Q3
UniRef90-B4J986
UniRef90-A7E338
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UniRe99-HPIO003C106E4 UniRef90-Q81MV4 UniRef90 B4ME63 UniRef90-F1RSH3 UniRef90-D8R409
UniRef90 O9V9Y7 UniRef90-H9JZE2 UniRef90-11GXD3 UniRef90-V7BZX1 UniRef90 K7JIMM UniRef90-B7QDR3
UniRef90 F6Y4R2 UniRef90_UPloo038ED93F UniRef90 B4N9V3 UniRef90-K9UJB1 UniRef90-Q65RJ8 UniRef90- W7DDC1 UniRef90 UPI0002246B49 UniRef90-Q4SE53 UniRef90-UP1000359ACCA UniRef90 LiJPB0 UniRef90 - T1J5K0 UniRef90-UPI0003EBD170 UniRet90_V5HFI7 UniRef90 W9S2N6 UniRef90-UPIO002B40E47 UniRef90-H3GIU2 UniRef90-H9GFB7 UniRef90-B4KQM3
UniRef90-UP1000392EEB9 UniRef90_R2T5J6 UniRef90 V9G2V1 UniRef90-MOTQC9 UniRef90-E2ALI6 UniRef90 U1Z6R5 UniRef90-11FAY2 UniRef90-C7RSX9 UniRef90_V9G2H5 UniRef90 IOERK6 UniRef90_W4XL56

 WSYANA ATWADFVVTCGGSFQSPID\|VTSGSTQES

NEWGYNNKDAPPDWGGL
NEWGYSNPNEPPKWGGL HWTYEGHGGPQEWGSLSA EFNYDSEDGPFNWGH K P C WAYDG\|SGPHYWGLLNR
HGWGYPDQDEPPKWGGI
YCYET DNPY CDNGRRQSPINLHVKGSLKGE
 EWCYHADCNDTRWPN\|VPYCNGSRQSPI NIVSANAETND HYKKGADADPSKWSEWKICGTGKRQSPIDLSPGDARLVH
 SHEYDGSSGEHQSPI NIVKQIVDYDP HWAYSGPRGPAHWGEKDPCKTGTQQSPI DMQHTISAFAN FNYDKQ FDYGMERGPHTWDT

EYRYDEASGPSRWAELNPC
GPOGO
$P N N H V H S E E L L P E V T G Q R Q S P I N_{1} Q T$
WGYHGAHGPEHWGEI SACSAGHQQSPVDLHNA HAGDG
YQYTAGTKAGPENWFKLSPA
WCYGDQLGPERWAGD
WGYKTNDGPAQWADHYPTCGGSRQSP:IDVTSKAKLRE
FDYSVRRGPHTWQT
WGYGERDGPVHWNEFFP $\square A$
EWSYSGHNAPDHWGGYATCAKGTH
E LVVTCGGSYQSP\|D\|VT TGASQQP WGYQGETAPAHWSELATCAEGRRQSPIDLRPTVGALAE QYDYGPDNGPHNWR CSDANQSPINDIEENVQKLP


DPNHWATQFPKCGGLRQSP: NDVTSKVHID


HWGYSDANGPTEWSKQFAQCGSSNQSP $\square \mathrm{D} \| \mathrm{V}$ SNET TPVK WGYDE PERWGEDKPCSAGKNQSPVDIS

QF TYEEEEGPKNWGK $\square$ NPCGKGKMQSPDDVLDRRDEVFP SPINLQVSRNRSLD WK GPASVPGGTRQSPI NI RWRDSVYDP


Y D Y S N N S PR GP QRWA S LHRCSSGSLQSPDNLTKETVLRDK EWNYL KNGKD WEDL CSSGKHQSPI LL DS RTV S I S L E Y T Y GADNGPERWGDWAACYWGRQQSPVDVPGGSSAPGP N GPSHWGD IHPCNNGSMQSPIDDLNERVE VVS WD Y Q DLN A WGAVAP $\square C N G S N Q S P$ D D L RPDVL GQNS


Q WG Y E G DL N P D A WGK IS T CDLGKY Q S P I D IQ GA HWGYTGDVSPE YWGGLS DCAVGQKQSPVNIQVQKAT DK HLD Y GK Q

S D WK VE S GKF Q S P I N I D T T K A VP M K
WS YA GTLN Q NHWAKKFPSCSNAKQSP I N I E ENLAQQVHQ HFDYDGSTVVSNWAA DSSCCSSPRRSPRDDLDLSADPT QY HWEFRGEDGPSTWGKYYFTCD GMEQSPVNNI ESSHAAATP
 FDYESTRGPSNWSKIVYPKAAGEKMSPDVDVQKNVQSDP
 WGYKHNDSPEQWAEHYP TCGGSKQSPIDIVEVFGGCNA

> D Y G A Q N G P H A WQ T

A $\square$ N N Q S P $\square \mathrm{N} \square \mathrm{D} \mathrm{T} \mathrm{Q} \mathrm{D} \mathrm{E} \mathrm{Q} \square \mathrm{CM}$
HFEYDEQ E DWEQVAGKMQSPIDLPTADVEKMT E WGYSSMASPDQWSEHYPTCGGLKQSPVDLEDSAGCY G
 ERGPETWGDHHPACEGAAQSPVDIRRRGSAVDA YHFSYSMQWD WKNKCPDCGHNLQSPINIDTYRAITNP

 WDYK GEHGP H HWDK LHKCKS GKS QSP I D I EHYYGHTEDK

| $D$ | L | D | S | $Y$ |
| :--- | :--- | :--- | :--- | :--- |
| D | $\mathrm{G} Q \mathrm{~A}$ | E | K |  |

UniRef90_K2K7G1
UniRefo-UPIOOO3C13106
Unirefon WWDN3
UniRef90 AOBLV
 AKVSTGYKY QPTMFKVTRKDKMVQVVAQPAKGRADSKDT VQPQUNYKSKDANTAYEEANKPYTKEYEGEYSEDEVTDAS FDADKFQKYYVQKNLEMYNNGHSVSLRLDKKHLVNISGG KLTAFTFSNYGSTTKSIQNTGHTVKVSFDFDDVGVMEGG FEELKFENYDHQTALQMVNNGHSIQMSGGFNHDLTLSGG GPVLAWK QPAYKVVNNGHT QADVTGDGGTATMGG HLGTLQMNY QPSNATLKNRGHD KLGWLAGT FDALKKENGDEHQKSQMVNNGHS Q DGFGFAHDLTGSGG
 KLTEFTFDNYSSTTKSIQNTGKTVKVSF GD NSTKLIQTYYKPVEATLKNRGYDIMVSWDDDAGKIVIN DRELLNWNHYDPASATLENTGQTLMLRAQFHGNAPT SGA DLDPLTRTY VATDATLINNGKEISMTFNGKPGGVTIGGA APQLDDTPIDKGEVINNGHTLQLNVHDAGGLVQN ARQLVFFNYTKPYKPYLTHNGHTVRMNVSETVEKQNPAGS CVMEWGHYNDMPMGDRIENSGHTLILRAAFRHVTPY円GGA RLGYLNYTYQNA NASVVNRGHDIMVRFDGDAGSLLING NLKQLKFKGWEEETDEIVNTGKTVEIKLK APGDLHLAY QSAPATVKSRGHDIMVSWTGDAGSTQVNG TLRPIEVQNYNLSPNTLGNNGHSVQLSLSPMMSISS GVPPFSVNYGDARGVTVGAEVDLALEVPDANNFTVRGVYG DLDPLTRNY DASDATLVNDGKHDSASPGLIMLAGKPGT DLKPFSFSYDRKHKWTVQNNGHSVMVLLGEGISISE ATRTLSFSGECASFNLTQTTDTFKASVAGGSCAASANGA LNNPLMWDGYEPVGHRLENNGHTLLLHAAFQGETPYDDGA AASASLSFNYQRSPLDVVNNGHSDQTNVQGDNSLVLD
VQPKDYYKNKASDVGYEEVNTPYTKEYEGEYSSTQVLDAS HLSFA YRSSPLSLVNDG RLITWGDHLAGSHLI IRELLCWNHYDPSGIMLENNGHTVVLRACFSGNTPTVSGA HLGQLKNKY KPSIALIKNRGHDDSVKWEEDAGSDEDNG SLKSISTSYNSA TAKEIVNПGHFFTVHFEDKDNQANEP NLDEWTGFDDAPRKDKMSNTGYTVILSAKWQNGAPYDSGG
 RCQQLYYDYFSSNATVGNRGHDLAVYWKGDAGSIHDNG MMSLEGESMMEHDNDTSG
TVSPFKYFGKCV MGNVTKLPYSYVVYपRNSSCGVIREG ELPAVGMNYS SGGHEVINNGHTDQVNYKPGSKASVD MKQI SS WMDRDYCNVQ NLGKDRRDYQAAPAAVKNRGHDDTVIWKDAGKDTDN SLHLEGFEDIQAGHWTLQNDGHSVILQVGSGMSVSGGG QLKPLGVSYKAEACLYVWNTGYLFQVEFDDSTEGSGISGG
俍 ThHKDDSNYNSTADATVLDWKEDVVLNFPDNAGDLMI NA DIP FPALIMSHWNNDGEAKMRNDGTTVRVTLEGNRSPATIQGG TRYGRLSQHYRPAPATMVNRGHDIMVRFDGDAGGLLI DGL QLGRLQMNY QPSNASIRNRGHDIMLEWVAGAGHLQ GNRALQFLNYRPRQFSVNNEGHTIQLTGAWQANAPS: TGS LPRLHFKHFRSPANPVIQNTGRTVRGKMSSMPKPIISGG HVDTGPQNPLKTWGAG
GQPVQTAFNYKSSPGSVVNNGHSTQVNYNSGSTTSID DLPALNDNY DASKATVVNNGHSUQTDTDENSTLTDNG DEGALDLNYNDKVLNQVDNGHSIQVNDEGUAEINGRQ FPPLLQGHLSSKSCAKMTNTGNTVKIEFPEGREPIVRGGP ELTFEGWDQPTTSRTSMKNDGKTGTFLKDPVVHETYYVGGG CSRPFSDQYHHSASQQLYNNGHAPNDDTTYPAFLTGVPY LSAMKWFKGKMISVHQKEETYDSHKFDLKDHEKPTLQMEE

 KLRRIKDTFPGESSSTLKNNGHTLQLSTGKNKPKLVAFDS KLRRLKIVTFPGESSSTLKNNGHTLQLSSVGKNKPKVVAFDS
Gपs पM WVGYDEPVGDRपENNGHTLLLRACFEGDTPFVDGA
DAGATELDYSTK SKAENNGHSTQVTDSGTAT TN EPRPLTFTG ACTEYNLTQTSETFKATVNNGSCVVSAN SLWILRTGYDTRPAF LQNKGHEILVNWTESPGDLMMG

 EKRSLTFSGSCADFNEASVNGGSCAVTANGAA
A DLQFKYAASKPKAVYFTSHTLKASFEPTNHTNYR SPNGLADMGFDKTNGIVNNTGRGSFFPDPANVYDSRG
 UniRef90_UPIO0036A0D86 UniRef90-I1INH4 UniRef90_UPI000333847F UniRef90-V9G1Q3
UniRef90_B4J986
UniRef90_A7E338
UniRef90_UPIO0025571FB
UniRef90-H9IZG2
UniRef90-A0B144
UniRef90_LOGWR7
UniRef90 W8BVI4
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UniRef90_UPIO0042CB219 UniRef90_A0A024G8R5 UniRef90_Q2SNS4 UniRef90_UPIOOO4548739 UniRef90-B9IHX3 UniRef90-H2TG38 UniRef90_UPIO003C106E4 UniRef90_Q8IMV4
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UniRef90_VBZXX1 UniRef90-K7J8M3 UniRef90_B7QDR3
UniRef90-F6Y4R2 UniRef90-UPIO0038ED93F UniRef90-B4N9V3 UniRef90_K9UJB1 UniRef90-W7DDC1 UniRef90_UPIO002246B49 UniRef90_Q4SE53 UniRef90_UPIO00359ACCA UniRet90_L1JPB0 UniRef90-T1J5K0
UniRef90-UPI0003EBD170 UniRef90_V5HFI7
UniRef90_W9S2N6
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UniRef90-H3GIU2
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UniRef90-B4KQM3
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UniRef90-R2T5J6
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UniRef90-I1FAY2
UniRef90_C7RSX9
UniRef90-C7RSX9
UniRef90-V9G2H5
UniRef90-IOERK6
UniRef90-W4XL56

246B49

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N6

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## 3

392EEB9

PRDVLDSGWSAYNDRHTDTRVPAEHRDDGREFAAELLQLVIH 120 SDGTQYDAKQMHFHWGSSEISGSEHTVDGMRYVIEIHVVH SDGTQYLAKQMHFHWGSSEISGSEMTVDGMRYVIEEMVVH GSVIRYYAKQFHI H
 PMTYSHR\EETRLHFGSEDGLGSE GLAHEYELEQIHLHWWS GLSESYDGLQFHLHWGNSSVPGSE

 ALLS DFVVEQ IDL HWWSE KTYALKQFHFH $\qquad$ APSEHADDGKRTAMEAHFVVH
HWSHGDQ
SPSEH $\qquad$

| $H$ |
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| $H$ |
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GLGSDYVVEQTHMHWWS
 DLSETYDSLQFHLHWGNSSVPGSEHTVDGKHYPMELGHVN NTDYQLVQSHWH APSEHFLNGERLAMELHMVH $\begin{array}{rl}D L L A S Y T F L E L R F H W G W C N S E G S E H T & N H R K F P L E M Q V M H \\ K A F S L K K L R W K\end{array}$ HLSTAYRFREFHGHWGDTEEDGSEHRISGRAFSGELHFMF GKTYKLIQFHFH TPSEHTIHGRHFPMEAHFVH NLKTVY LAAQQLHFHWGSEKSQGSEHTUDSQRYDGELHDVH DLLGRFEFREI RFRWSWFNSSGSEHTFDNRHFPLEMQCLH STYH LRQLHWH TPSEHTDDGRRYDMEDHMVH

 LGED DFRLTYMDMHWSMDSSRGSEHQFNGTSYAFEYHFAN Y NLIQFHFH VTDGGKAFGLKKLRW HTPSEHLINGKRHPLELQMVH GLPAKYQAKQLHLHWSRELDSGSEHSLDGERFAMEMHVVH SYNMAQFHIH DLLGSFSFHEDCFRWSWYSGTGSEHTLDNEHFPMEVQCMH $P L T G S Y R L R Q F H D H W G S T D D H G S E H V V D G V R Y S A E L H V V H$ GKTYQLLQFHFH SOS S H L L YNGKHFPMEMHWVN
 FDERRYE LVVRYFH TPSEHRIDGRAADMEVQLVH


TDYLLQQAHWH
KHFSYSSLLFSVNRYG
T $\square S N$ N PLA GKYMFAQVHFHWGENEMEGSEHSVDDARMPMELHAVH
 DLSEQYDSLQFHLHWGNSSVPGAEHTVDGKRYPMELHVVN GL R DKYRALQFHFHWGSLTGNGSEHTIDGHQYPMEMHIV $\operatorname{V}$


$$
K R Y A \backslash L Q \square H P H
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GREFELKQFHFH
D GTYTAVQLHFH
VPAEHR DDGRQYD
APSENTVDGKSFPDEAHFVH
$\square P D V$ SPSEHTFNGSRHDLELHLVH PLENHYRLKQFHFHWGAVN NGSEHTVDRRRYPMEMHIVN

 PMTYSHRLEEI RLRFGSEDS

TQYKLVQI RVM

$R L K G R Y Y A D G L H F H W G S Y K S$ PLTD LYELSEEVVFRWGSSNCKGSEHLINKRRFDAE IHUVH ETKYVLNQCHWH | V |
| :--- |
| GL |
| G $L$ |
| $L$ |




 GLKHTYNLYSLIFHWGSE
DLSEQYDTLQFHLLHWGNSSVPGSEHTVDGKRYPMELHVVN PLHHNYQMVQFHSHWGTCSKMGSEHTVDGEHYAGELHLV H TQYLLQQLHWH S L S SEHTINGRRFDLELHMVH


 SAAYNMLQFHDH



NHYRFKFLKFQFHWGKDSGK
TQRYALQQRHFH
GHONMLQFHMH

GHYRAAQFHGHWGGNGR
 H
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H

ETKYVLNQCHWH
SDEYTFSNAHVHWG



KRYNLI AFHGH P PSEHTLNQEYFA IDEWHLVH

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UniRef90 K2K7G1 UniRef90-UPI0003C13106 UniRef90-W7DJN3 UniRef90_AOBLV3 UniRe990 I3KTV7 UniRef90-B4GYZ4 UniRef90-HBCMIO UniRef90_B4N9L8 UniRef90-UPI00045E7B14 UniRef90-K7LQE2 UniRef90-UPIo003599CAA UniRef90 B4JY83 UniRef90-W5KQS8 UniRef90-UPIO003BCADCD UniRef90_H2TUX0 UniRef90-M4CZ32 UniRef90-B4P842 UniRef90-W5DT05 UniRef90-F1L8Q7 UniRef90-C6XQK9 UniRef90-O29CG6 UniRef90_B3MIQ8 UniRef90-J3MT25
UniRef90 V8PE92 UniRef90-B9T345 UniRee90-UPI0003BD8991 UniRef90-C5LTV5 UniRef90_UPIO0036A0D86 UniRef90-111NH4 UniRef90- UPI000333847F UniRef90-V9G1Q3 UniRef90-B4J986 UniRef90-A7E338 UniRee90-UPIo0025571FB UniRef90-H91ZG2 UniRef90_AOBI44 UniRef90_LoGWR7 UniRef90_W8BVI4
UniRef90 UP 100021 UniRef90-G3W8R2 UniRef90_UPIO00258EF23 UniRef90-UPIO003AF40D5 UniRef90-V7BFM6 UniRet90_UPIO003299A95 UniRef90-UPI0003DOF41C UniRef90_UPIO0042CB219 UniRef90-A0A024G8R5 UniRef90_Q2SNS4 UniRef90-UPIOOO4548739 UniRef90-B91HX3 UniRef90-H2TG38 UniRef90-UPIO003C106E4 UniRef90-O8IMV4 UniRef90-B4ME63 UniRef90-FIRSH3
UniRef90-D8R409 UniRef90-Q9VgY7 UniRef90-H9JZE2 UniRef90-11GXD3 UniRef90-V7BZX1 UniRef90-B7QDR3 UniRef90-F6Y4R2 UniRef90-UP100038ED93F UniRef90 B4N9V3 UniRef90-K9UJB1 UniRef90 W7DDC1 UniRef90_UPIO002246B49 UniRet90_Q4SE53 UniRef90-UPIO00359ACCA UniRef90-LTJPB0 UniRef90-T1J5K0 UniRef90-UPIO003EBD170 UniRef90-V5HF17 UniRef90-W9S2N6 UniRef90-UPIOOO2B40E47 UniRef90-H3GIU2 UniRef90-H9GFB7 UniRef90_B4KQM3
UniRef90 UPIOOO392EEB9 UniRef90-R2T5J6 UniRef90-V9G2V1 UniRef90-MOTQC9 UniRef90-E2ALI6 UniRef90_U1Z6R5 UniRef90_IIFAY2
UniRef90_C7RSX9 UniRef90-V9G2H5 UniRef90-10ERK6 UniRef90 W4XL566

QRAD
$\mathrm{GH} \mathrm{V}|\mathrm{A}|$ LM A Y

RPNGlldriv̄A
YNSKYNSYEEAQKKPDGLAVLAVEVKDYTENAYYSKFISH $\checkmark$ VAD QADQDDEQDCNKVKNKLTVFGIMFQESSSATDYDVFKPW YNHEYTNYTEAAKSPNGLVIVSIFMK RNKIYPNMTDATNFKDGLVVLGVLFHVSNTPNDGIA DKSSYNGNTTLADADSGFLIDVMDGNATGSPASWKTLISY RNK $\square Y P N D T M A A N F P D G I V V D V L Y H M S S V A N E D V K S L G A$ AAPE GGLLVAGVFMVP
 RNKIYYNSTMAANFDDGITVAAVVKVSNATHPHFERIHKV RNK VAPGYKDVKSAMNQQSGVAMLGVFIDIGPVNNVHFK G SDA KSSYNGNTTLGVADSEGLAALGFFIEETGSPASWKTLTSY KSEA
 WNPEYKKYERCLKKPDGVAILAVFVLMDAENNEHHPLDA KNDAYESNQEAVAEDGSLAVVGVMFAEGANNTQLDPLWWS KNDAYESNQEAVLHPDGFVVLAVMQMESPAMNEICKEVKL LNAQ YDSNEFSDDDKADEGNGRLRLSVLFEVGLEDNDYNSIIEG SNSA YNSDYPNDSTAVDKSDGLAVLGVLVEVGMFNPAFDHILKF YNSKYRDFAEALEHSDGVVAIGVLYTVGDPAPGLNEVLDS
ESESGSGEVAILYKNGNLAVVGVFFEEGAENAELAKIWSA EKEKGRREDEDRNAGDG円AVLAFLVQAGSKHKGFQALVEV SNADGS ADMVVGVFLQVANGGATDPWMVSVLDG KDAVNREQT SSCSLLMVSYMYAVSTENPFLDVLIQH WNSDYPSFVEAAHEPDGLAVLGDFLQVWRW
QAADGS WNSKYHSFGEAAGKPDGLAVLGVLLMVGSKHRELDKVVQL QNADQDEEQDCNKVKNSLTVVGLMFTESASATDYEAFKPW RDAV GHFLIVAVMVEAGRRSNSILRRTAE RTGPSGDCT SSYDILMI GYFFETSSNNPYLDPVVQN QSSNPNAKYPDA VVGFFYKI GRPDSFLSKLNRK WNSKYA IFCEAAQQFDGLAIVDVFMKUGQVNLFLKKI IGA FKDEYSNLDAALRRPDGVTVAVYFFKQDEPNPFIEEIVRS VKEPYSSLAEAEHDTAGIALLAFGFESGHNKGYSVLATL KSSYNGNTSLADKDSTGLAALGFFIEVREAKKTQQPPLLF MNDQYKSDAEAKGHPNGLAVLSFLFKASDTDNSNY WNSKYPSFADAASQADGLALIGVLVKVGQANPNLQKVLDA SNSEAK LFVIAVL ANEN GELAVLSVLYEEGEHNEQLAKVWEH YNSQYASYEDADHQPNGLAVLAALFVAGNAENTYYQFLKH YSSQ GGI AVVAlVYKYGRPDRFLSKLLRH MKGVYPNVTAALGDPTGLAVLGVFIDVSRRQPTRSLVVHF WNAKYQNYTDAVMGADGLAVVGVFLKLGARHKELQELVAV KNASYKSNKEAGLQPNGFAVLALF 1 RETPAMNMLCKQVSS TDAANTENA GSSLLMVSYMFAVSAENPFMDVIVQH QNKPLFTNTKSSNESREGGVITFDKDKDSKDPFRRKILNR NSTDDSSRIA RNEKYRNIAQAVRQKDGLAVVA $\square M V A \backslash R K D N A K S T P L S R$ FNKRYETUERCWHENDGLAICSYFLQTWDEHPSFSKITDD QTDKPSNKSFAVVAQLFR\GRRGDATLRMLEPYIERIED ETPSGQTTVIGILYKIGRTPDSFDSSLTSHGKVISNSTEA KRTPSARADCKVCPPAFVSVATQFQTINDNFPGMEUFSSQ MKEKFANLSMALASSDRDAFAVLGFLINQKHEGFQDILDA DSTKYQSMGEARCHPDGLAVLAVLLEQEQDNSNFSAGVSV RNVIRYDDLLKEAIVKHDDGIAVLGIMFKIVRNPDRIYPGLNN RNAA GKLAVVGVMMNEGRENSIVSKVWQA VAKDGGIVVVAVLYEDGGENAQLADI WAG

## Q S

 QAGRLAVIGVFFKEGKANPGFQAVLEH WNTSYGSPDKCYERDDGI AVVAFLFQVIGCQGMVDNLISH YCYQPQSSDESVKAGGRIAALAVLFEISSSEDNSNYAIVDGYKEKYGSMANAVLKEDGLAVIGAFQIIEPSKRLDLELEMF MAPGPKYMVISSMLKRGGSRCEGDGSFDCWDDQISKI LQK YNSKFSDVHSAVGEPDALADIAVFYWLGRDAPEVHTITSE
 QNDMYSRASEAACSDKGLSVIGLF LKKGQPMEELQKDTDS QD NTGVLSVVGVLFNEQIPSNETNNDFESPAYLLLSK SNTDGS
$\qquad$ ALLVVGVEFKAVDGGETDDWVASVLDA TSSNEGDEV SSRSLLVISYMFDIAAENPFLDVIVQY WNPKYSNYLDAVRRTDGUAVLADFLQVGTPKPEMKRILEE Q
SNTDGS
TTPE
YKSDYETQVAA LRQN

## K

K S P S
SNADSSALLV
KDAK
FNDDYDSYGQAEKSPGRLLUALGFEEGKENPALTPILEA
FNDDYDSYGQAEKSP
MNE A

| UniRef90_K2K7G1 UniRef90-UPI0003C UniRef90_W7DJN3 UniRef90-AOBLV3 UniRef90-B4GYZ4 UniRef90-H3CMIO |
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LLPSGSGLERTILPDQSFSAHELLDPDDLSYARYTGSLTVIVPC值


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AEAVDWFVFPTPLDVPKELWKHFWQLR DSRDQRVLN HRGAEWFI YPQPI AI SERQLHEFRKLR SRSGARIGR YETASWII MNKPVYITRMQMHS LRLLSQNQPSQDFLSMSD



SEDVLWLVFRKPSYI GREQVKLFRRLYAFSEDSCNAHLVA


SE GVNWT I LTT TPITISSS S QLAQEFKKFYP IDD
S E GVVNWTILLTTPIT I S S S QLQEFKKFYP DD
TEGVVDWIVLK
TECVTWUVIPRSVKISARQANAFRD DYY NSQGER\LR

 NEVVVWTVFKDPNFDSLIQLKKFYAVKTVTKRPAYGPLDH NEAVVWTVFKEP $\square K V S K D L C L I R P T L A C T L S M D G A E W L$

TQSVVWUVLQQTRPVAREQVRLLRMAVRDGSAT
TEGVHWNVIADPKPVQQDFMNYLRKLQSDTNHEANGLLCD
SEDVDWWVIKEPVKIS TTDLERLQSQLKEDPDTDDGK
FQTVVNWTIFNQTLRLSPQQITVLEDTLDRGDGDHPLHG
HRGAEWFINPDPLAISERQLHEFRKLRSRSGSRDSR
TENVEWYVLKNPVQVSKEQQKKFQEFYD H

GE P V TWWTV M K EVVKSVVTES Q



T E GV A WFVVEEPLEVSAKQLTEIKKHMKNSP


250
N A R P LQPRNGREI
NYRRTQPLNHRDVEANF

NNRPIQHLNGRKILK
$N \boxtimes R P V Q P L N N R C I R T N \square N$
NFRNLQSINNRAV
$\square$ YR S V Q T N N
NYRELQRENSRAV


NYRELQAENNRAV
NYRPIQ
NHRLLQP
$\checkmark Y R S V Q$
NARPAQPLNKRVVYLN
NSRPVQNMGNRVVSLN
NARPVQPLNGRVV
NAREMQNVYTRRVRSSFK
NARPTQPLYRRYV
TYRDLQAPNARPVY
NARPVQGLTNRTVYLN
NARPLQDVNNREI
$N A R P L Q P \square Y G R T$
NYRQTQALNGRR\|DS
NARPVQDLHGREVF
NARPVQPINGRVV

$N S R P V Q P L D D R T V L F N Y$
NHRPAAA $\square$ NQRE!
NYRPTLPLGNRELR
NNRP QHLNGRKI
NARPVQPVAGRPV
NSRPVQNIN
NARPIQPHNGRHI
$N H R L S Q \square L R G R V V T A L F$
NSRPRQPRNQRD
VYRSLQP
NFRS PQPLKNRKVYGS
NNRPPQPLKGRTVRASF
NARPLQPLNDRKVYS
T NRPVQGVNAR\|I
DYRETQPLNSRVVESSFQ
NARPTQP
NFRHVHPTFSRVVSMS

NFRPVQPLNNRCI RTN $\square N$
NARPMQPANGREIEA
NYRIVVQDLDNRTVF
$N C R D V Q K L N G R M V Y$
NARPLQDANGRAV
NARPLQLINNR
N 1 RTLQQ\| N NRLVE
NLRPLQDMGKRVLYRTFK
NFRPQQPLEGRRTFAS
NYRSTQPLNGRSVF
NNRKVQPLNGRS\|LK
NFRSQQKIHERKYRT
$N \nabla R D L Q D N P Q P V E T N F$ $N N R P \| Q P L S D R V V Q A A \square$ NYRKTQELYNRTV

NARPLQRKHGRSVQ
NSRPIQ
NARPVHPLNGRVVTA
$N F R L P Q D L Y G R T V L A S F$
$N A R P V Q E L G N R T V$
$V$
NNREVQPLNERVV
NARPVHPLNGRVVTA
NARPVQPNGRNVY
$\begin{array}{lll}N C Q P L & K D R G D R N V F \\ N A R P V Q P L G G R P V\end{array}$
NYRATQPLNARKLWSCY
NARAVQPLNARVVMES
NARPVQPLNGRVV
NQRPVQPDYNTVI DK S NYRPPQRDGTRTVRTND

UniRef90 Q82WQ7 UniRef90-A0AO15JWN9 UniRef90-H3F1Y9 UniRef90_W2RFM4 UniRef90-A9QW24 UniRef90-V9EOBO UniRef90-AOBQJ5 UniRef90 L11A38 UniRef90-UPI000368A190 UniRef90-H2ZT50 UniRee90-UPI0002A4C504 UniRef90 UPI00021A7D4B UniRef90-E6ZH26
UniRef90-K4CONO
UniRef90-A1SDL8 UniRe99OA1SDL8
UniRef90_A0AO26X039 UniRef90_-J9NZ52 UniRef90 V9L7W7 UniRef90-W9QKC3 UniRef90-Q20781 UniRef90 ${ }^{-}$F4JIK2 UniRef90 UPI0003AE96E3 UniRef90-T1DDD4 UniRef90-Q4SJA6 UniRef90 K7HII6 UniRet90-B4PNC3 UniRef90-D8RZ19 UniRef90-UPI00046CFBBB UniRef90_UP100046B97C8 UniRet90-DONW76
UniRef90-L5LU70
UniRef90-LOD781 UniRef90-UPIO00328F097 UniRef90-UPIO004545DC7 UniRef90_V7BYT1 UniRef90 F4NWE5 UniRef90-E6ZH27 UniRef90_UPIOO0425CA14 UniRef90_F8GLT6 UniRef90 D7UXI2 UniRef90-A0A026WQ71 UniRef90-A8U813 UniRef90 M7ZZ37 UniRef90-FoW1D2 UniRef90-H2YZZ9 UniRef90-MOVQL3 UniRef90-E4YQ23 UniRef90-A7SHT0 UniRef90-E2C911 UniRet90 B8BB32 UniRef90-H7F4T3 UniRef90-L8H518 UniRef90-M9VOL7 UniRef90_H3CZD4 UniRef90-I0EPA3 UniRef90-U9SXA8 UniRef90_D8RJ33 UniRef90-E2J7F9 UniRef90-I3T4R6 UniRef90-UPIO003BDOB3E UniRef90 17M2W0 UniRef90-UPIO0035AOBBE UniRef90-B0JU65 UniRef90-F6QKX6 UniRef90 K3YIQ9 UniRef90-L1JJW8 UniRef90-DONW73 UniRef90-T1NE94 UniRef90_U7PIM5 UniRef90-H9GKR1 UniRef90_GOUI30 UniRef90-Q0D1L8 UniRef90-Q2YBU8 UniRet90_T1ES70 UniRef90 A0A021 W0L3 UniRef90-W4XYY9 UniRef90-UPIOOO3C36583 UniRef90-UPI0002C2F438 UniRet90-K2PBQ8 UniRef90-W7X170 UniRef90-N4VD31 UniRef90 A1ZQG9 UniRef90-G6CMD5
UniRef90
Q4A3V5 UniRef90-K7VFT8 UniRef90-GOUC72 UniRef90-A8JX26 UniRef90-R7QTH7 UniRef90-G3XQ64 UniRef90_C5XTF4
UniRef90_GoYYQ2

1
HWSYDEE 10 P $\quad$ WGA|I YPC G $\square$ GQHQSP|V|D|L|ADAK|IVSAK E F G Y VG S LG P D F WH K L S A C E T G T K Q S P WGYK TNDGPA QWADHYPTCGGSRQSP D T T T T T G G N A WGYDE E LGP A DWK ESYPTCGGSHQSPDNI PVRKLSHND WNY L NSND WKSKVVTCGASFQSPI NIVTTTATKES HWDYSPEHGPEHWAS LTPCGSGKLQS P I NLRTSKYELGR


RQSP $\square \mathrm{N} \square \mathrm{L}$ E T A T WS K K
SEK GPSKWGD LNKCKNGKMQSPDD\SSCRVKNMR
 HWSYDDV EAWEE ACATGREQSPVDLAGATSRDLP

HWCYDS QCGPKHWKEDQS TCGGKSQSP TNTDMSNVDRDN FTYGSGKGPKEWGEVDPCDKGKLQSPIDLLDQRVQVFP F T YEQEK GPE GWGK\NPCNTGRYQSPDDLTNERDSLIH EWGYEE GVE WGLVFPDANGEYQSPINLNSREARYDP

YCYNEPHDPYAWGDLVPSCHEEHHSP $\square D L D G R M N Q S L D$

F GYQDNSGPGQWGCLSTCRTGTQQSP TNDKTRDA TDDC K Q S PVDLSPMYTLHQN HWRYGGD PPWPQVAPTCAGRFQSPVDRRPEHTALSP WGYCANDNTDKWADSWSACGGKRQSPIDIVTSAKSGKG

NWNYNGPVGPAAWAT $\square T$ P A GTLP FESP $\square N \square S G P P \square D \square S$
WCYDSQDGPTHWKEMAPACGGPSQSPINIDLHRVQRDP WTYGGPDGEKAWSRSYPFCGGQLQSSPI DFHSDULKYDS EFNYDSPNGPPNWGNTWPDCDGSTQSPI DRRDSRANVTY EFGYEGNLGPTHWAALDPCSTGKHQSPINFEDRSMLQNP WCYHKP SCNDTWPTIAAAYCN GTRQSPDI NVVSASAELDA
 WD Y H GERGPEMWGHLCPADTGREQSPID DQQDQLQK
E WN Y Q GD R GPD NWK T $\square Y$ Q A E TES LQQS P $\square$ A LD D D Q $\square K L T \square$ FSYDAENGPAHWGD $\square$ S TCGKGNMQSPIDLASPRVSLVR WGYSENLKPSEWSKKFDQCGSKLQSPIN VSNETMPIK

EFSYGRDTSPDRWGLLRPCYWGRQQSPDRVPSAGRVVGP SQNG DNWTG TCATGQSQSPIVIVPSFVKQTT
 Y S Y G S P R GP Q N WG S $L$ K P C S S G K M Q S P I N L G L L D D



WD Y D GA R GAE NWDK L H K C G N GK S Q S P $\$ N $\square E H Y Y$ Q TEDK
 DATSGLKHQSPIALSFRGSVGTP NF S Y $\square$ GP N GP L K WG T LAA C S N G K A Q S P V D L A M T N IVVVN N G S WP C S SHQ S P N D K N N AVPD S
 WNYQND D HWGELSRCTT GKQQTPI DL S I VTEKE LTY WTYEGALDEAHWPKYYPHCGGQRQSPI DLQRTKVRYNP HEFSYDAENGP DGWGE $\quad$ K P C S D GRWQS P I D L Y H HRA $\square R R$ EWTY KNDGPS $\square W G K W K A C A S G K E Q S P I N V V S N V K S G T$ GPAQWADHFPTCGGSRQSPIDITTTTG
EFSYDAENGPAHWGEISACGSGEMQSPIDLAGPRVSLV



## E Q WQA A HDKSQSP $\square \mathrm{D} \square \mathrm{V}$ T A SA母D A A

QWTYAGQKD WGKYFVHCGDETQSPDNVVEEEVVPGT EWTYDGVLDEAHWPREYPDCGGKRQSP I DLQREKVVYNP QWGYTNLLTA CWPTL CQTGKQQSPVELGQPHEVVHRK

## F D Y N DLK GPLNWHESSLCATGKQQSPDNLNDTSANLVK

 HNSEVAYCLTHHRQSPINLNTPGKKAAH T D Q H DWPRRYPDCGGRSQSPVNDVTPGVKAKE HWDYSGGSHGAEWG


UniRef90 Q82WQ7 UniRef90-A0A015JWN9 UniRef90-H3F1Y9 UniRef90-W2RFM4 UniRef90-A9QW24 UniRef90-V9E0B0
UniRef90-A0BQJ5 UniRef90-A0BQJ5
UniRef90-L1IA38 UniRef90-UPIO00368A190 UniRef90-H2ZT50 UniRef90_UPI0002A4C504 UniRef90_UPI00021A7D4B UniRef90-E6ZH26 UniRef90-K4CQNO UniRef90_N8QN10 UniRef90-A1SDL8 UniRef90-A0A026X039 UniRef90_J9NZ52 UniRef90-V9L7W7 UniRef90-W9QKC3 UniRef90_Q20781 UniRef90-F4JIK2 UniRef90_UPI0003AE96E3 UniRef90-T1DDD4 UniRef90_Q4SJA6 UniRef90-K7HII6 UniRef90-B4PNC3
UniRef90-D8RZ19 UniRef90-UPI00046CFBBB UniRef90-UPI00046B97C8 UniRef90_D0NW76 UniRef90-L5LU70 UniRef90-LOD781 UniRef90_UPI000328F097 UniRef90_UPIO004545DC7 UniRef90_V7BYT1 UniRef90-F4NWE5 UniRef90-E6ZH27 UniRef90-UPIO00425CA14 UniRef90-F8GLT6 UniRef90_D7UXI2 UniRef90-A0A026WQ71 UniRef90-A8U813 UniRef90-M7ZZ37 UniRef90-FOW1D2 UniRef90-H2YZZ9 UniRef90-MOVQL3 UniRef90-E4YQ23 UniRef90-A7SHT0 UniRef90-E2C911 UniRef90-H7F4T3 UniRef90-L8H518 UniRef90_M9V0L7 UniRef90-H3CZD4 UniRef90-10EPA3 UniRef90_D8RJ33 UniRef90-E2J7F9 UniRef90-I3T4R6 UniRef90-UPI0003BD0B3E UniRef90-17M2W0 UniRef90_UPI00035A0BBE UniRef90-B0JU65 UniRef90-F6QKX6 UniRef90-K3YIQ9 UniRef90-L1 JJW8
UniRef90-D0NW73 UniRef90-T1NE94 UniRef90-U7PIM5 UniRef90-H9GKR1 UniRef90-Q0D1L8 UniRef90-Q2YBU8 UniRef90-T1ES70 UniRef90_A0A021W0L3 UniRef90-W4XYY9 UniRef90_UPI0003C36583 UniRef90_UPI0002C2F438 UniRef90-K2PBQ8 UniRef90-W7X170 UniRef90-N4VD31 UniRef90-A1ZQG9 Uniref90_G6CMD5
UniRef90-Q4A3V5 UniRef90-K7VFT8 UniRef90-G0UC72 UniRef90-A8JX26
UniRef90-R7QTH7 UniRef90-G3XQ64 UniRef90_C5XTF4 UniRef90_G0YYQ2
 EPPSPKFDDACDVESDHNGNTVEISSGKEEVPLPAEIT
 R LH K K R VA Y S D DQ DSELSNNGYSWKAQV GNGRSSDRGGP WHAPLKYGGDCS KFTLKKDEDLYKWEINGDEHCTVKS 1 TFPAI NYILKSSTKNYFEAQRDYTKEEEGEYDFMTAFDLS KI DELQPNY MEIPGSLTNNGHTIR R ANTSKGKLN GLGLLNFEGEQSVGANLQNNGHTIVVTPWAHFTLQEVSV
FPP $\square$ YMTNYWNEGTATMTNTGKTVS $\square E F S D R T \square P T M R G G P$
 DLAPLDFDYKTAATSIVKDPHTLQANFHQGSYLSLE DLGFA YRPAPATVVDNGHTVQASVEGAGSLELLD

NLQHFVFEGYPPGQWSTANNGHSVQVTLDTNVS IS $\quad$ V GG SLGKLKRDY KPAPATIVKNGHDIVTVKWKGDAGKININGG DQA WTRQYKPAPAVITNRGHDIMVSWKGDAGKMT!R S LVRLSSPNYVVCRDCEVTNDGHTVQVILK SKSVLS GGPL KIVNNGASAMI TFSDRPFKPFIIGG $S$ LLLEGFQEVQTGPWLLQNDGHSVILQVGSGMSVR GG

KMKYMNYEMNGTDELKNTGRTGSGFKDWKSKRPR
 FPPLLQGHLSSKSCAKMTNTGNTVKI EFPEGREPDVRGGP


 GQGYLNHSY VPANATVIVNGHDVMLKFEGDAGSVSDAGT MTLI NNGHSLQVDLAGGYTDSNSQ RNGHLARTY RSSPATLVNRGHDVMVRFDGDAGSLEMDGV FEDFKVIGYDAPQTWSI TNKGTTVQLDPQDSSAMELS GG YMKDNFNNYNGGLACFLSNDGKTLDFKD GLGNLNYTYQNA NASVVNRGHDIMVRFDGDAGSLKING SP DDFHYTNTKFTMKRVENSVHLFPHEKDQHVMFR YMGELQFNYSSNSRGELWNNGHS $\square Q Y R V D N S T G H S T M W G G$ $S L N G L N V D G A Q A D G \square T G T N E Q G M K V T F D Q P A N L P T \square E \square G$
 A $\square K L P N V N F D K Q N T P N V K F P T D S M K K E G H A T K F L P Q Q L D G$ G $V$ VVDTTYRSSSAVFENGGDKDHRELTVGFGGDAGQFN



 A LKGLNDT GYESQVGEMVNNGHTVQI SLDPDMRDTDANG DLGYLNYSY KPAEAS VVNRGHDUMVKFKGDAGSLVIDG DMAPLEWKCDGKPCQGDQNVTVSHFLEDTDFADDKNPSMK
R【GHLNHSYAPANAS $\quad$ VNRGHDIMVRFEGDAGSVSIVG STASLNFSVPAVASAKFENLGTNVEVVINGTLVTSNLT
EDELLQFEGYEQGSFTMNNNGHSGEVTLCDVTGLAVVRSK
F Q
RLPALNFNLSSDTSLDVINNGSPDPEKTAVRGNVNPGAGS
DNEPRA $\square$ QFEHTRGAVDSVEDNGHAVQVDTHATQAT $\square R G$
LPPMQFFNFD DDHKLTLFNDGHS VVGVVENDLLRPYVLIG SLRALNLSGYEVQHFLMINNGHTVQVSLPPTMCMTAANG

GSSLEFNVPGDPGGAVFENLGSTLEVVADNGTLLRDGRL TLTF NYVSSHEVVKNLGGHTVELEYDKGSSAVFD S RQLMF LNYDVPKKLMLCNDGKRIA LEWKPDNQPLIYGGA S LGKLDAKYRKRVHATLYNSGHGAEVSMPAGSGRLRIGG RSGRLGRSY RPAAASLVNRGHSDMVRFNSNPGGVVI DGV



QL E P L

## UniRef90＿Q82WQ7

 UniRef90－AOAO15JWNM UniRef90－H3F1Y9 UniRef90－W2RFM4UniRef90 A9QW24 UniRef90－V9EOBO UniRef90－AOBQJ5 UniRef90－L11A38 UniRef90－UPIO00368A190 UniRef90－H2ZT50 UniRef90－UPI0002A4C504 UniRee90－UPIo0021A7D4B UniRef90－E6ZH26 UniRef90－K4CQNO UniRef90－N8QN10
UniRef90 A1SDL8 UniRe990＿A1SDL8
UniRef90＿A0AO26X039 UniRef90－J9NZ52 UniRef90－V9L7W7 UniRef90－W9QKC3 UniRef90－Q20781 UniRef90 ${ }^{-}$F4JIK2 UniRef90－UPIO003AE96E3 UniRef90－T1DDD4
UniRef90 ${ }^{\text {Q4SJA6 }}$ UniRef90 ${ }^{\text {K7HIII6 }}$ UniRef90－B4PNC3 UniRef90－D8RZ19 UniRef90－UP100046CFBBB UniRet90＿UPIOO046B97C8 UniRef90－DONW76 UniRef90－L5LU70 UniRef90＿UPIOOO328F097 UniRef90－UPIO004545DC7 UniRet90＿V7BYT1
UniRef90－F4NWE5
UniRef90－E6ZH27
UniRef90＿UPIOOO425CA14 UniRef90－F8GLT6 UniRef90－D7UX12 UniRef90－A0A026WQ71 UniRef90－A8U813 UniRef90 M7ZZ37 UniRef90－FOW1D2
UniRef $90-\mathrm{H}$ Y YZZ9
UniRet90－MoVQL3
UniRef90－A7SHTO
UniRef90－E2C911
UniRef90－H7F4T3
UniRef9－L8H518
UniRef90－M9VOL7
UniRef90－H3CZD4 4
UniRef90 $10 \in P A 3$
UniRef90－U9SXA8
UniRef90－D8RJ33
UniRef90－E2J7F9
UniRef90－－13T4R6
UniRef90－UPI0003BDOB3E
UniRef90 17M2W0
UniRef90－UPIO0035A0BBE
UniRef90－BOJU65
UniRef90－F6QKX6
UniRef90－K3YIO9
UniRef90 LIJJW8
UniRef90－DONW73
UniRef90－TINE94
UniRef90－H9GKR1
UniRef90－GoUl30
UniRef90＿QOD1L8
UniRef9O－Q2YBU8
UniRef90－T1ES70
UniRe990＿A0A021 WOL3 UniRef90－W4XYY9 UniRef90－UP10003C36583 UniRef90－UPI0002C2F438 UniRef90－K2PBQ8 UniRef90－W7X170 UniRef90－A1ZQG9 UniRef90－G6CMD5

UniRef90－ 4 ABV5 UniRef90－K7VFT8 UniRef90－GOUC72 | UniRef90－A8JX26 |
| :--- |
| UniRef90 |
| $100 T H 7$ | UniRef90－G3XQ64 UniRef90－C5XTF4

UniRef90＿GOYQ2

LGDDEYVLEQFHPHWGKTNE FDEREYGLLAQFHMH NSQYKYYARQFHDH GYFTWFELLQFHFH FGNNEYDLLQFHFH PNTFLLSSHFHFGSGCS PLDNPYRLKKOHFHWGGKGC
GLS GTYSTTQFHFHWSSEHD
DTNYPLI QDHWH
CETFELRQLHFH
KQNQHYEMEQLHFHWGTKNNR
FKASKISFHWGKCNMS
GLVGKYKALQLHFHWGNGLS
KTDFNLQQCHWH
PQGHEFELYEVRFHWGRENQ PLNNKYVFEQLHFHWGVEDDSGCEHILEGNSYSMEADGL GLPDVYHTAQLHFHWGGPASNGSEHTVDRRAYPMEMHVVN RLSGRYHAVGLHUHWGSKNSAGSEHSLKRFRYDAEVHIVC M
LQSDEYRFGELQFRWGPSDA
REYRALQLHLHWGSAGR ■NDASYNLAQFHLH

## HMSEQDKATATG

QTYELLSQLHYDTAEN GLPARFSAAE HMHWGNDPRGSEHSLDGWRHAMEMHLVH GLe TQHLLQGHWH
VPQNVYNLAQFHVHDPSEHHKG DLSEAYDSLQFHLHWGKSSTPGSEHTVKRQYELEVHFVN
 EESYPKLFAFHAHT EPSEHVLGDKKFPAELLHFVH RTARWNT RDRRLLISAAENAAARFTVSSFLFSQLQDFGF FNHKKYFLEDLHFHLSAR PSEHVINHESFPLEFHLVH
REKQRYALLQLHPH
FLPKNYKAMQFHFHWGSSF
SPTEHSVNGRRYDMELHMFH
SYRLRQMHWH F LGDDYNLLQMHFHWPTSGRPSEHALDGRRYDGELHMLH DPHDRYQLETVRFHFGCNDWLGSEHAVDGRRHPGEIGMI F PFESSYVFSQIHFHWGETDMN TAYQLRQMHWH DDKYTLQAFHAHM
 TPSEHTIDGRRYDMELHMVH GLSSRFRVGRTAFHWGHCNT NHTY LDNVHFH SSF

| A G S |
| :--- |
| T P |
| T |

LLRKNTYNDENVHEHM N Y StKQLHWH EGSEHRIDNKKFSMEAHFVF GLGHDYTILQFHFHWGSDTSEGSEHTVDSKRYPMEMHIVS
 SLPDTYK LDQFHFHWGKVDKRGSEHSLNNHHYPMEMHIVH GENWDLLQFHFH WGS DTH $\square D$ TVYHLKQLHWH TPS ETVDGDRHVIE：HIVH TPTEHALNGHRFSMELHMVH
TAYHLRQLHWH YALAQFHFH G $\square P G V F T A V Q L H L H W G G R D Q$ GNRPFTLKQFH Hi H
LTLS GHDWELAQFHF APTEHSVNGRRYDMELHMVH TPSEHRLDEEYFPLEAHFVF TPSEHTMNKQAYDAE HFVH TPSEHRVNDEYYPMEVHFVF

RHFT पAQFHFHAASE

SKDFKFHQWQSRWDKDGERSSEHSDNGQFFDWESHMI F PDSPEYHFVSMHFHWSLEI

DKTYNKQFHFH
AHSRRYLFHSTLH
ETYRPVQFHLHM
$\qquad$
HTPS

PCTVADRLDQMPYHQGMHDH
PLGSEFKAASFHFRWDKSSA
FKDKTYSLINDHFH
NNTYTLAQFHFH
KYKLKQLHWH

100 S PV G 110

信 TPSEHRIGGRHFEVEQHLVF HGKTNERGSEHTIDGACYPAELHVVH ATSEHALDDYHYDAEEAHEVH保

QVAGYTYPMEEHFVN



 GSEHTVVGHRFPAEVHVVH苗
 GSEHSLDGWRAMEMHLVH RGSEHT：AGKHFAAELHIVH
$\qquad$ v
UniRef90_Q82WQ7
UniRef90_A0A015JWN9
UniRef90_H3F1Y9
UniRef90_W2RFM4
UniRef90_A9QW24
UniRef90_V9E0B0
UniRef90_A0BQJ5
UniRef90_L1IA38
UniRef90_UPI000368A190
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UniRef90_UPIO002A4C504
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UniRef90_E6ZH26
UniRef90_K4CQN0
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UniRef90_J9NZ52
UniRef90_V9L7W7
UniRef90_W9QKC3
UniRef90_Q20781
UniRef90_F4JIK2
UniRef90_UPI0003AF96E3
UniRef90_T1DDD4

K S E S E K $\square$ S VVAV LY NVGGEKASAFMAP VNNLPEKAGNSTK Y N S D Y E NYTVAAESQPR G L LAA IAAVIVD IVGTTHPELLDRMTKA S NADGSA QVANGGATDPWMVSVLDGMEAVTPAAPTTMSLG WNTKFSSFAQAAASEGGLAVLGMFLAVGREHPEMAK CNL
 K S GTAD

QSNNY LV S N S K Y K S $\square$ K E A M A H Y D G LAAVLGGVLVFEDGAPN E GLLKP I T Q A WNAKYCSFGEASTAPDGLAVLGI FLLETGDDHRWLHMITDA WN T R Y G S $\square E K C$ F D K P D GI A V L S Y L M Q V I G C N P S L T K I T D N

ASEK
GELAVVAVIYEQGKKNQALDGLWQQ
E GT D
$G R L A V V A V L V Q E G S A N P V V A A L L D Q$
 F DARFSSSFEEAVVKAK GK L RAL S V LIF E VVGME ENLDD YK I I D G MSERYTD $\square R D A L K K T D G L A V L G F M L E$
K S S S Y P F T SASKSPGEI AVI A IVVYEYGHPDPFDTRMGEH

TSARGRT
AVI GVLVKLGEPNEF LTKLLNG

 | $A$ | $V$ | $T$ | $G$ | $F$ | $F$ | $V$ | $H$ | $A$ | $F$ | $G$ | $E$ | $T$ | $D$ | $C$ | $P$ | $E$ | $F$ | $D$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $I$ | $V$ | $N$ | $G$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $G$ | $L$ | $A$ | $V$ | $L$ | $G$ | $V$ | $F$ | $I$ | $D$ | $V$ | $A$ | $Y$ | $A$ | $D$ | $N$ | $V$ | $H$ | $F$ | $H$ |
| $I$ | $S$ | $Q$ | $K$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

VKAVHPNT TAALGDPTGLAVLGVFDDVAYADNVHFBISQK I REGHDF QSAS KLPN G I AVV AVL I EK SHD LIDANRFA HIE E YSEKYK D $\square$ MEAVQQHKGG』AVAA DFLA A DKTGRTHDHGL S K RAMDNSSR WNTSYGSPDKCYERDDGIAVVAFLFQVIGCQPDFACIADN LSTAFATVDEALGRPGGLAVLAAFLQEGEENSAYEQLLSH


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

 SKSTFNGNTGUAVVKDSGFFUESMSGNS TQQPASWNTMTSY ENNKKS I IT

ENENQE
$\square$ GED GK I VV, $G V L V D S G R L D K E F Q K I L D N A$ V A A V N VGEANATFQTILD N
 RSA KNELLV
E S A Q GKAAMEPYLEM■AD

—A

Y D T A H A DIVNAAI NKP Q G LAAVI Q K S ESS S D L WVS R Y $\square K M L E D$ QS DKASNKYAVVAQLFQ

 $L N A Q N Q A A V I G G L Y T V G T T P D E F L Q K$
ENARGEKLVI GAFMEVGTNDSIDLTNDRRAFPEVVKD F

 K D EQ


 $\begin{array}{lll}\text { Q NVVKT } & \text { V K K L A V F G I FMQE T E N E A E E T QLDF K K Y E F A G E }\end{array}$

 YNSKYQSYETAKDAEDGLAVLAAFVEVSRNHP
Q T P E K K K T A V V $V G \square L Y$
SNADGS ALLMVVGVFLQVANAGTTDPWMGSVLKQ
QSAQKA AV I GVLYE $\quad$ GGARDPFLHKL EP Y

Y NSAYSSFQEAKDKPNGLAVLAFLGVVRCF
EASD GRLAVVAAAMVEAGHKSATYEAVLQH



 Y N SKYKSYDQAQKAPDGLAVLAA
A H T Q Q S RQP H LMMVVVVQLVASDKINSTSVAALKHILLDGS Q NDQ Q GRLAVVAVLDDPGAANDLVHKVWTH EADAEFNKGSAGPSNSVVGFL I EVVDSSSPSPFLAGVFTN QAADST FLVISSLLFEEKKENTFLKSFIND


S R R GA G GTP H FMVVVAVQLVVSNGATSTAA RA LDBHILVDGP HNSKASSVADAANVDGGLAVLADVVQPGAANAE IQKLVDV
Q D

## UniRef90 Q82WQ7

 UniRef90-A0A015JWN9 UniRef90-H3FYY UniRef90 W2RFM4UniRef90 A9QW24 UniRef90-V9EOBO UniRef90-A0BQJ5 UniRef90 L11A38 UniRef90_UPIO00368A190 UniRef90-H2ZT50 UniRef90_UPI0002A4C504 UniRef90-UPI00021A7D4B UniRef90-E6ZH26 UniRef90-K4CONO UniRef90-N8QN10 UniRef90-A1SDL8 UniRef90-A0А026X039 UniRef90_-J9NZ52 UniRef90-V9L7W7 UniRef90_W9QKC3 UniRef90-Q20781 UniRef90- F4JIK2 UniRef90 UPI0003AE96E3 UniRef90-T1DDD4 UniRef90-Q4SJA6 UniRe990-K7HII6 UniRet90-B4PNC3
UniRef90-D8RZ19 UniRef90-UP100046CFBBB UniRef90-UP100046B97C8 UniRet90-DONW76 UniRef90-L5LU70 UniRef90 LoD781 UniRef90_UPIO00328F097 UniRef90-UPIO004545DC7 UniRef90_V7BYT1 UniRef90-F4NWE5 UniRef90-E6ZH27 UniRef90-UPI000425CA14 UniRef90-F8GLT6 UniRef90_D7UXI2 UniRef90-A0A026WQ71 UniRef90-A8U813 UniRef90-M7ZZ37 UniRef90-FoW1D2 UniRef90-H2YZZ9 UniRef90-MOVQL3 UniRet90-E4YQ23 UniRef90-A7SHTO UniRef90-E2C911
UniRef90 B8BB32 UniRef90-H7F4T3 UniRef90-L8H518 UniRef90-M9V0L7 UniRef90-H3CZD4 UniRef90-10EPA3
UniRef90 U9SXA8 UniRef90-D8RJ33 UniRef90-E2J7F9 UniRef90-13T4R6 UniRef90-UP10003BDOB3E UniRef90-17M2W0 UniRef90-UPIO0035AOBBE UniRef90-B0JU65 UniRef90-F6OKX6 UniRet90_K3Y1Q9 UniRef90-L1JJW8
UniRef90 DoNW73 UniRef90-T1NE94 UniRef90-U7PIM5
UniRef90 H9GKR1 UniRef90-H9GKR1
UniRef90 GOU130 UniRef90-Q0D1L8 UniRef90-O2YBU8 UniRef90-T1ES70 UniRef90-A0A021 W0L3 UniRef90-W4XYY9 UniRef90-UPI0003C36583 UniRef90-UPI0002C2F438 UniRef90-K2PBQ8 UniRef90-W7X170 UniRef90-N4VD31 UniRef90-A1ZQG9 UniRef90-G6CMD5
UniRef90

Q4A3V5 UniRef90-K7VFT8 UniRef90-GOUC72 | UniRef90-A8JX26 |
| :--- |
| UniRef90 | UniRef90-G3XQ64 UniRef90-C5XTF4

UniRef90-GOYYQ2


ПKSTSHEERE LGUVNPGDTKFGSRKYYRYПGSLTVPPC TASISYKDQRVQLADFEPWRLDPFTRDDITYEGSLTSPGC TKAVGNKE $\backslash$ NLGMDDPREI RFQTRKFYRY臬GSGTVPPC LQDIQYKGKSKTIPCFNPNTLLPGKRS
KYVSKPDTQTEVDADCLSWMGLQDRHYYTYKGSLTTPPY LS VVAYKGQTTKIKPFPLLMLLPK KNQYYRYYGSLTTPPC FRDASARTPDYESNATIPGSYSLKDMQFYSYDGSMTTPGC LSRIKDPDRSVELPPGCLNWMADACPGYYTYNGSLSTPPY LKEVAEEG FMLHSLSDSLWGPEDS TDERSAAVVVQMKSYSTMVRQACRTGGDYNYPGSDTTPGC ASAHAPNSTTTIDTPUDFAGLLPSNLQGWFYEGSMTTPPCL
FQNDKYKG
ENQTRVTQLGIVDPEDVAGTT GNKYFRYNGSLTVPPC KTTGSTVSIGSVDMSSLNAGLQSPRAKFWSYSGSLTTPPC LANGTNSGDSVSTAPDDDLLVGVDRTKYYRYLGGSLTTPNC
 DFNKVFPDEQQRTMQLSVEDFLPKERAYYHYMGSLTTPPT RALNPRVVKRGLTVPDELDRLLPKSKEFYHYTGSLTTPPS HQNGTKPDDRNGNSSKAPTDARGKASVYYRYLLGSLTTPPC TSAGMNKNAQKTLTPFPISDLLPKNSGYYRYSGSLITPPC KVRTKDDTTAEQLFGWSAAQMLPKDLDFWRYEGS LTTPTC DKGAGKRCDPTPSFSDLIKGMYRGMLPYYSYKGSQTAPAC ISNQEGKEKMV VGGADPNVAKGKDTVYYRYMGSFTTPPC FDYTVSKGERERELTANVDDFLPEEKAFFSYEGSLITPPPT TGDGTASYGDTGVSDDNINQLLPSSLKYAGYDGSLTTPGC IS SiVSRFGKSGSLEAFTLRSLLPRNTDYFDYNGSLTAPPC AKTKNDKKAK DPNAKDNVPVDINSEVFSHI
LASSPEESNAVFIRTINPELLQTPSDMFFRYNGSLTPNC FRKRNTYSKNTVTISVVLGVLFDKSDNYFTYSGSLTTPPY ENHAGNKNANDALGTFDVNELNKKIYRYYRYVGSLTTPPC NVNDLSPKFELDFTSMLNLVFSQQNKAY ZYQ GSSTTPTC
पPQEPSPEMIIPDTWVNAGLLPENSDFYEYRGSपSTPPC DERDR GKEEP TGKVNPNHVGDTGSSYRYMGS TTPPC EAVMRARCGSATSLDFKAVATSUSDEHFYRYTGSLTSPPC MEAVTPAAATTMNLGSYANVVNTNAARTYYPGSLTTPGC LEMI TEQEREEKVGVVDARAARGRASVYYRYVGSLTPPPC LDDiATPGTFTKTGPLDFAGLHFNDHGVYAYTGSLTTPPC
MNE
 VLEDEEPGAFTHEMDFAGLTHHDYMHGDYQYSGSLTTPPC I P QNTSETLHDDFNLNTLPSNLESFRYSGSLTTPPF LDKVTYRGQKVRVNNFMI ADILPYTDQYVTYEGSLTKPGC LKPKKKKAKPAQGHEDDDEGLLPKSRGYYHYGGSLTTPPG LKKALNKNCTAPVEGFDPSCLLPENKDYWTYEGSLTTPPC

पPPKRAVTTCTLTEDMTTAGFLPQSGSYFAYNGSLTTPPC LPPKRAVTTCTLTEDMTLAGFLPQSGSYFAYNGSLTTPPC MPLDTGDRVPLPAGLIDMKDLLPQDQRYYQFMGSLTTPPCC LLKAGAKDSNEKSMSELDLGKFFPPPDQRFYTYSGSLTTPPY VPSSNSPGVKVDLGH पPPKHASTTCTLVEDTAVQGMLPDRGSYVTYNGSDTTPPC LPSC
LVNITSGEKSFVVDVASFVGGF EYDHYDGSLTTPPC VDESSEPGSSTELGDFSSVTRHFSNNDUYTYSGSLTTPPC LAELYAEGCKAEKGDPLPIGV

UniRef90 Q82WQ7 UniRef90-A0A015JWN9 UniRef90-H3F1Y9 UniRef90_W2RFM4 UniRet90_A9QW24 UniRef90-V9EOBO UniRef90-A0BQJ5 UniRef90-L11A38 UniRef90-UPI000368A190 UniRef90-H2ZT50 UniRef90-UPI0002A4C504 UniRee90 UPI00021A7D4B UniRef90-E6ZH26 UniRef90-K4CQNO UniRef90- N8QN10 UniRef90-A1SDL8 UniRef90-A0А026X039 UniRef90_-J9NZ52 UniRef90 V9L7W7 UniRef90-W9QKC3 UniRef90-Q20781 UniRef90 ${ }^{-}$F4JIK2 UniRef90 UPI0003AE96E3 UniRef90-T1DDD4 UniRef90-Q4SJA6 UniRef90 K7HII6 UniRef90-B4PNC3
UniRef90-D8RZ19 UniRef90-UPIO0046CFBBB UniRef90_UP100046B97C8 UniRet90-DONW76
UniRef90-L5LU70
UniRef90-LOD781

UniRef90_UPIO00328F097 UniRef90-UPIO004545DC7 UniRef90_V7BYT1 UniRef90 F4NWE5 UniRef90-E6ZH27 UniRef90-UPI000425CA14 UniRef90_F8GLT6 UniRef90_D7UXI2 UniRef90-A0A026WQ71 UniRef90-A8U813 UniRef90 M7ZZ37 UniRef90-FoW1D2 UniRef90-H2YZZ9 UniRef90-MOVQL3 UniRef90-E4YQ23 UniRef90-A7SHTO UniRef90_E2C911 UniRet90 B8BB32 UniRef90-H7F4T3 UniRef90-L8H518 UniRef90-H3CZD4 UniRef90-I0EPA3 UniRef90-U9SXA8 UniRef90-D8RJ33 UniRef90-E2J7F9 UniRef90-13T4R6 UniRef90-UPI0003BDOB3E UniRef90 17M2W0 UniRef90-UPIO0035AOBBE UniRef90-B0JU65 UniRef90-F6QKX6 UniRef90-K3YIQ9 UniRef90-L1JJW8 UniRef90 ${ }^{-}$T1NE94 UniRef90-U7PIM5 UniRef90-H9GKR1 UniRef90-GOUl30 UniRef90_ODD1L8 UniRef90-Q2YBU8 UniRef90-T1ES70 UniRef90 A0A021 W0L3 UniRef90-W4XYY9 UniRef90-UPI0003C36583 UniRef90-UPI0002C2F438 UniRef90-K2PBQ8 UniRef90-W7X170 UniRef90-A1ZQG9 UniRef90_G6CMD5 UniRef90-Q4A3V5 UniRef90-K7VFT8 UniRef90 GOUC72 | UniRef90-A8JX26 |
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| UniRef90 |
| $100 T H 7$ | UniRef90-G3XQ64 UniRef90-C5XTF4

UniRef90_G0YYQ2

YESVTWIVFEEPLQVSEGQ
SEVVDWWV NN NPISUSYDELHQLKKAYGDDPATNDAS
SQTVNWYVFTSPLPISKSQFKQFQDFLDNDDYFPNKA SEGVQWFVLQDGEVSEQQURDFSSKFYH CQG
HESVIWIVLKEPIAVSEKQ
SEAVMWTVFQEPDNVSKNGTKKFPM



TEGVIWTlVKKVRTASREQVHADRQAVHD
HETVTWIILNQPIFIKKEHFEEWSHLYLSMEGAEKVPVAP TEGVIWTVVKRVNTISMEQDTADRQAVDDGFET

YESVTWDVYKTPVYVSRAQ AAFRERQSCPKDS NKK』VN SQAVVWTLYEVPVHISWSQVGLSRHV
EESVI WTVLQKP A A SQDELDLLRELQNEKNVTSRT RESVIWNVFSKAVLVSFDGFARLWKLRDHS GNRLIN TECVTWIVIPRSVKПSARQKFTSRS IKMD TYNSQGERILR GENADWWVVQNPTKTS SVDFGRLHQDLVEYHTTDNGN YETASWIIMNKPVYITRMQMHSLRLLSQNQPSQUFLSMSD SQPIVNWLVLSTPITLDAQQ

LQQYEAVANGAGFLP

DE VVWHVFKNPVK』SKKTLDKFKE DWFNQSGEDKS G
SEDVLWLVWQNA DE $\square$ SPQQपQQ
TEGDIWTVIPTDRLVASDQDDLREAVDDGFEM
TEGVMWNILKFPMDMSQDDWTVIAALQ $D E \square V D W W V V Q Q P M S D A A A B T D F R L Q T Q L K E S V T D N G N$ AQGVDWTIVKRV
SENVAWY SSTEPVP LVNQTYNAVKKVVKF
TENVEWYVLKTPVTDSQEQDTHDMAFYS
SEDVAWYLSTEPLPRMSSEQTNAFSSLTVPEGYNVKKVLKY
SEGVNWVMLSQPLFMSSEQDNAFSSLFPEGD
HESVTWIVYNKPIYASREFMDALRSLMGSSAEDPKRSDGN YESVSFYLMKAAVEMSKEQLDQVLRNDQDHCDGESFEKVRN

$T E G V L F V V T S P Q I S$ KTELERLVEAFQRARPGNHNG TEGVLWMVLKQPVTVSRDQLKKLFARLFP
TEGLAWNVVSEPLTIDDVTFRAAKKI MKF
TEGVRWVLFKQPVSCSKAQLDAFKKTE
AEGVTWLLLFNFQTASAEQLAKLRA
TEGVRFIVMSTPQFISKLALERLQEMLAVSQSQKVPD D
SEGVMWFNARQRQNVATGQDA LYESTTGSDEFA
$T E G V A W Y V S G L P L$
VLDVDTYNQVKKVLKF
$P E S V L W Q L I K Q P\|R\| S R A Q Q T A L Q N M H T H F P G V L I D K E H G$

N A R S A Q S LL N ERS\|LSN
N N

DNRPTQSLNDREDK
NNRPTQNLNGRTLYASFN
N NRP $\square \mathrm{QPL}$ NERTV
NARAEQKLNGRV
NFRPVQPLNGRQV

NYRPTQHLNERRVFAS
NARPLQPNNNREI QLLF
NNRPVQATNARLV
SHRPPQPRDGRV
NFRRGQD $\square$ GQRKIY
NFREQQYKFSRQVFSSY

NSRPVQDSKGRSV
NYREVQ
YRPAQP $L N G R R V L A$
NFRTVQALNNRTVYYR $\mathrm{L}_{\mathrm{K}}$
NARPLQRTNRREVY
NFRSQQKIHSRNSRAKFK
NFRATQPLNGRTIEASF
NARPVQPLNSRRV
NFRPVQPLNNRCIRTN $\square \mathrm{N}$
NNRPLQPTDGRQVNQS

ARPVQPRNGRPVQ
NMDP PGSFN
N W
NSRPVQPLNDRDLFESW
NARTPQALNGRVI SS
TVRPVQPLHGRTVVES
NFRPPQPLHHRPVRTND
NRPLQPINNRPIYTS
N A R P $\square$ QP $\square$ HERK VFS
NARPLQEANGRGV

T NRP $\square \mathrm{QE} \square \mathrm{L}$ NGRK $\square$
NNRMDQDLGDREVYK
NFRLQQQQFAGQVFASY
NQRPTQPDYNTVI I RS
NSRPTQPRNGRK
NARALQPLNNRLVQ
NFREIQPLTDRVLVCS
VYRPTQPL
NYRTTVPLNGRTVK
NARN $\square \mathrm{QP} \square \mathrm{NGRS} \square \mathrm{L}$ HS
NARPDQEVNHRTI
NNRPRQSIHDRLVY
NARPVLPLNGRTV
NARYTQ
NNRD LQALNERP $\square$ VS S
NARYTQ
ARGDQDLNGR VVLT
NFRHLAPLNNRIVTNI
NNRNI QPLNGRP
NYRPLCDLNGRVVRATFE
$N V R Y L Q K V G L R Q V L G S$
NHRPTQPLNGRVVY
NARPVQALNGRVVR
NSRYTQNVNSRVVLNS
NARKLQPMNLRKLE
$C L R E P Q P L N D R R V Y$
NNRPT
NRRPLQEANGRA!
NHRPPQS L N GRTV
N A R P M QP L N G R S L T A
N S R Y TQ
$N S R P L Q Q L N G R M V Q$
$N L R P L Q K L N G R T V Y A N I$

UniRef90_J9NZB3 UniRef90_A4HG87 UniRefololi3WBE5 UniRef90-W2TQM6 UniRef90-Q2YBV2 UniRef90-GOYYQ3 UniRef90_K1RPZ2 UniRef90-H1VM65 UniRef90-H2ST54 UniRef90-C5RAI5 UniRef90-UPIO003292A29 UniRef90_UPIO0027F8DE6 UniRef90 S6DFU0 UniRef90-S4P9N1 UniRef90-F9WEC6 UniRef90_V8PG90 UniRef90 A0A059DG13 UniRef90-S3DM93 UniRef90-B1XJX0 UniRef90-UPI0003EB06DB UniRef90 Q4RXD7 UniRef90-R2XVC6 UniRef90-B0W4B1 UniRef90-R2R3A0 UniRef90-ROJJ42 UniRef90-C4B8E1 UniRef90_D3Z4J8 UniRef90 B3RKE0 UniRef90-A0A024TT14 UniRef90-B1K7U3 UniRef90_JoKWI4 UniRef90-A0AX20 UniRef90-A5BPG6 UniRef90-A0A024UBR3 UniRef90 E1Z634 UniRef90-W4WLD8 UniRef90-K7HSJ2 UniRef90 DOHVE2 UniRef90-G9NLT4 UniRef90-W9Z7X8 UniRef90-A0A022TYE4 UniRef90 H2ST55 UniRef90-C7Z076 UniRef90-W4G104 UniRef90 G7XIV0 UniRef90_W4WJL6 UniRef90-W6T636 UniRef90-F4X622 UniRet90_C5GR37 UniRet90-V2WJB1 UniReffo-K3YZL1 UniRet90_MOTAT2 UniRef90_W7XIU8 UniRef90-N6TY38 UniRet90-UPI000443B4D2 UniRef90-UPI00042B9C6C UniRef90-RoGQ04 UniRef90-T1FN46 UniRef90-E9D713 UniRef90-Q8MS01 UniRef90-C6VJJ3 UniRef90 W4FXP9 UniRef90-K2SFN4 UniRef90-FOWTD8 UniRef90-UPIO003C1A691 UniRef90 W7DJM3 UniRef90-W1K5V9 UniRef90-E3RZZ1 UniRef90_UPIO004415EC9 UniRef90-G4Z2S6 UniRef90-L8G1U1 UniRef90-H8LE60 UniRef90 A0A024UBYO UniRef90-W5DNN3 UniRef90-BoDLT3 UniRef90_A2YW47 UniRef90_Q7USW3 UniRef90-B3RKE1 UniRet90-J3MFR5 UniRef90-M4C2A5 UniRef90-D5G5Z1 UniRef90-I0YLJ8 UniRef90-S4RBN9 UniRet90_Q9SWA2 UniRet90-F8VJ51 UniRef90_S1RNT9 UniRef90 H3CKP7 UniRef90_L1IJJ4

WES 20 KH S S 30
WNYANLN


HYSNEETDDQNDWTG■ CADGNNQSPVDLALSAAELVN
 NYNPSSCLGPPFWAVLTPCCDFTSQSPVNIRTFDSSRQT FDYNDLTGP LNWHAHSKCATGTQQSPLNLNDTSATLVP

DKWPRVSGNMQSP $\square A \square S D D L V V K N D$
$P \square P W G R R Q S P \square N \square R A R D S \square H D P$

EWSYANLTA WPPL CHTGTQQSPVSLNESQVQCTT

 HWRYGGD PPWPRVSPACAGRFQSPVDIRPQLAAFCP

HQGDWHP QGGQTQSP $\square$ D $\square$ QTSMTETYE

## GDWEP Q G GQRQSP $\quad$ D $\square Q T S Q T E T N D$

F G Y GP L N GP F NWAS LAPCKNGTNQSPI NIDDSK円PLAK S





 GPSTWVTKFPMAA GSRQSPVVIVETKRVESDH

F GYNDLIGPDNWYSLNKCATGQHQSP VLDSS SATAHG

 TS QQQ S P I DVNPMKATKEVV

 NF GYGPYNGPTNWHTDSACG $\quad$ GGRTQSPDNDDDSVVMVVA FSYS GERGPLNWGWLNPCRTGTTQSPIIIDNSISKLSN

HWRY GASPP WPQVSPACAGRFQSPVDПRPELAAFCP EFSYEGKK GPAKWGTLKECGKGKMQSPIDLRDKNVVVTH HW DDS $\square$ CYNGTSSQSPTNIHT DPASEED
 NEWGYNNQDEPPKWGGLGDSSGKQSPINLHVKGALKGE DWPMTS GQHQSP I D 1 QTQHVQQSS Q

 Y WA Y S GT Y GP DS WA $\square$ S N T D CR G T L Q S P I D L LD Q N T K VG E E WGYS GDRGPE HWAE LCDWAAFS LQS P DQL TTCEETGE FGY GP LDD GAMNWASSLDACKM GKNQSPDINVDDS WS Y S S ET GP L L WA GLLS A C RLGGTH QS P VVVI YTA SPD WTP

 T QQS P I DI DPHAVR EFSYDAENGPAHWGDDSACGK GNMQSPI DLASPRVSVVR


$H \square W G Y R A R D K T S N W N T N W A A C G G A H Q S P D N \prod V T T A K S G K G$
 G D G G Q VT WP T T IP EFNY KLGGDDWPGL



## UniRef90 J9NZB3 UniRef90-A4HG8 UniRef90 $13 W B F 5$ UniRef90_G7YE72 UniRet90-W2TQME UniRef90-GOYYQ3 UniRef90_K1RPZ2 UniRef90-H1VM65 UniRef90-H2ST54 UniRef90 ${ }^{-}$Q9MZT3

 UniRef90_UPIO003292A29 UniRef90_UPI00027F8DE6 UniRef90 S6DFU0 UniRef90_S4P9N1 UniRef90-F9WEC6 UniRef90_V8PG90 UniRef90_A0A059DG13 UniRef90_S3DM93 UniRef90-B1XJX0 UniRef90_UPI0003EB06DB UniRef90_Q4RXD7 UniRef90-R2XVC6UniRef90-B0W4B1 UniRef90-R2R3A0 UniRef90-R0JJ42 UniRef90_C4B8E1 UniRef90_D3Z4J8 UniRef90_B3RKE0
UniRef90_A0A024TTI4 UniRef90-B1K7U3 UniRef90_JOKWI4 UniRef90 A0AX20 UniRef90-A5BPG6 UniRef90_A0A024UBR3 UniRef90 E1Z634 UniRef90-W4WLD8 UniRef90-K7HSJ2 UniRef90-DOHVE2 UniRef90-G9NLT4 UniRef90-W9Z7X8 UniRef90-A0A022TYE4 UniRef90 H2ST55 UniRef90-C7Z076 UniRef90-W4G104 UniRef90 G7XIV0 UniRef90-W4WJL6 UniRef90-W6T636 UniRef90-F4X622
UniRef90 C5GR37 UniRef90-V2WJB1 UniRef90-K3YZL1 UniRef90-MOTAT2 UniRef90-W7XIU8 UniRef90-N6TY38
UniRef90_UPI000443B4D2 UniRef90 UPI00042B9C6C UniRef90-ROGQ04 UniRef90-T1FN46 UniRef90-E9D713 UniRef90-Q8MS01 UniRef90-C6VJJ3 UniRef90_W4FXP9 UniRef90-K2SFN4 UniRef90-FOWTD8 UniRef90-UPI0003C1A691 UniRef90_W7DJM3 UniRef90-W1K5V9 UniRef90-E3RZZ1 UniRef90_UPIO004415EC9 UniRef90_G4Z2S6 UniRef90_L8G1U1 UniRef90-H8LE60 UniRef90-A0A024UBY0 UniRef90-W5DNN3 UniRef90-B0DLT3 UniRef90-A2YW47 UniRef90_Q7USW3 UniRef90-B3RKE1 UniRef90-M4C2A5 UniRef90-D5G5Z1 UniRef90-IOYLJ8 UniRef90-S4RBN9 UniRef90_Q9SWA2 UniRef90-F8VJ51
UniRef90-S1RNT9 UniRef90 H3CKP7 UniRef90_UPI0002A479D5 UniRef90_L1IJJ4

 $Y D R \square T F N N Y H \square T G S V F V D N S G H S \quad G G$ $N D P K L N F N N S D T A L T V D N N G S P D H E S T D R A N V S P G G G T G$ RYHRLGYHPGHVINGLLENDGYYPNDAGDLTSAVLQGVPG G LGAFTFNDDLQFPVALTNKGFKSEYKVNVSPQILLNQFG GTSLGFDVPDLLDGAEFENLGSTLEVVAQNGTLTRHGR

$G \square R P \square R \nabla A Y D A A S C \square Y$ A WN T G Y LVQVEFADPARGSG■SGG
 MNRGHDLRLRWDDGRAGS DEVDG A GKDKMDFPHDEGAEFENLGSTVEVIMEGKNATTTVDG

ALLAPVQVNFSDTTATFFNNGQNLQLLGAGQALIN
T $\square$ A NDEVNFSETTATFFNNGQNDQLLAAGQASFNNRL



 RYEDENVA DDVHTRAKAIDNGHTVQIVPA GGSATIRGR HLGRLQQSY KPSQATLKNRGHDMKLSWEGDAGSI $N D A G Q D H V L L G A A G G C I Q H S G S N F K V N W T G D G K S V L R L R D$ $A D P P E A R N F G V A D G Q R I E N T G R T V Q V E W D D S N A S V V P L G G T$
$S S K P L R W K Y P A T A S R K L V N P G Y W R V D T D G G E G T F L S G G$
 YMNYEMNGTDELQNTGRTGSGFKNWKNKRPWIE
 GSSFGFTAPAYMKGAEDENLGTGVVQVYVNGSATVA

ASEMTDEDPDFTEGAEFENDGTTVEVIAEEAGGGSLEDG MDKRVGHI HLALGGSASGHMEYLDTNFRVNWCGDAKSVLTL NSTVTLYY I PTVSDLEEFENLGTTQEVPLTNGTVVVG FPPILNGHWLKDGNATLFNDGKKAII FLNGDRGPSTDSGG

 NSAPVVK』 PTITEATFENIGSTLDAIV SGGTTMYQGK
 SMT DDVS $\square Y N Q N V Q T S V V K D Q S G L S S A G D F G S \square Y A K D \square N$ FHPFSLHGYGQSASALLRNNGHSEHRSPHCPWRR
A LQPDLEFEDPDPELRLRNNGHTVQLTLPPGLEMALGPG RLGSLRSQY LPSNTTVKNGHDIMLKFKGGNKGUGVTVN FHKFHMPVGNKELQLYLVNNNGSVAALVGPKPSCTPDGDY

E PVGFVRSSDPRQD LIFENDGTTAEVVLNGTTLVRG FDALKFENYDEHQKNRMVNNGHS $\square Q L S$ GFDHELTVSGG LSA A S WRGLYQAKTDTGEAT

GFDHELTTLSGG ANTGNFSVVFNTASAVVSHEGTKVRATWSAG


AT SRPVIS IPPEVDSMDFLNLGGTIEEVVVNGTTSYA
$\square \square P T V A H D D D V A A G C A V L E N L N T T L V V P V H G R G S \square A D R D P D$ TLSSAETSGSASAEDQLVHGGDNFQVNWSDHDQNFLVLNG $A A D V K L Q D N D M P E G T E F E N G G T T V E V V S K G G T D E V G$
$E G D T L S F H Y Q K Q R F T D K E F K N T I H L V P F D Q L S Y V E F K$




$K K \square P L K F S G R C G Q F \quad N D T E P H E P D E V D V A G G N C A V S$ APKMVIKDVEAA EFENLGTTVEVICNGTTTF
G $\square P G N H L I R F G S V T A T S D D E V E V L S A N W T T K D F D D P V C G G$
TLQP VVLHGFESAAYRMRNNGHTVKVYIPESMSVTTMT



TMYNTGRHVSLRLD KEHLVNDSGG

Unipgonzs

|  |  |
| :---: | :---: |
|  |  |
| UniRef90_A4HG87 <br> UniRef90 $13 W \mathrm{BFF}$ | TTNDEKEKTRKTLTVAVMLKASTTSNSTSVRTLRHULVDG |
| UniRef90 G7YE72 | FKEGYGSDFDAMKHPDGLAVLGSFLQLGNDNPTFERLLNN |
| UniRef90-W2TQM6 | IS DRY DPTLNMSLSGKVAVIA ${ }^{\text {SPFQVGD }}$ |
| UniRef90-Q2Y | SDAANN |
| UniRef90-G0 | LSTRYGQHSPELDAILNRVSQIQDYTGGQVCPERPCTRNM |
| UniRef90 K1RPZ2 | YNTQYGDFKTALGQSDGLVVISVLVQENQFSGCVNTQANV |
| UniRef90-H1VM65 | EADAEQLKNSSGPSNSVLGFL IEVDNSAPSSFLKNVFAH |
| UniRef90-H2ST54 | ПKEKYPSISEALKDRTGVAV |
|  | EADDGRLAVVAAVVRAGNASATYDAVLQHMNE |
| UniRef90-C9MZT3 | FNQEYGNLTAASRGPNGLALLSLFVNVAGNSNSFLSRLDT |
| UniRef90-UPI000329: | WNSKYPNYQEAVMGENGLAVIGVFLKSSWAHTTRRCRNWW |
| UniRef90-UP100027F8DE6 | YRALVQECDEAAHGELRAVVLDLRVKDYPENTYYSNFISH |
| UniRef90 S6DFU0 | QS |
| UniRef90 ${ }^{\text {F9WEC6 }}$ | KAENEGSSVPVVVVAVQLVVSDAANTSATQALHH HILLD |
| UniRef90-V8PG90 | WR |
| UniRef90-A0A | G |
| UniRef90-S3[ | AVIAAVPFQLCEEAGGSNPLL |
|  |  |
| UniRet90_UP | NSDDFDSLLGAAIVKRRGIISAMAVFFELGKDNPAVDPIT |
| UniRet90-R2XVC6 | QSPNGQT |
| UniRef90-B0W4B1 | RNKKYKNVAEALGYSDGLTVLGFFYQVVEQESSEDGYL |
| UniRet90-R2R3 | QSPS |
| UniRef90_RO | QGVVDNTKLAVIGLMFQVSAGKS |
| UniRef90-C4B8E1 | VRDGGNASGSVAGQAVVAVFLST RQGQYSPQLDAILDW |
| UniRef90-D3Z4J8 | YDSQYSSLSEAAQKPQGLAVLGILIEVGTENPAYDHILSR |
| UniRef90 B3RKE0 | WNTRFGDLQTALYESDGLA |
| UniRef90-B1K7U3 | R AQDGRLAVVAVLYRAGAKNAQFAS |
| UniRef90-Joky | QNM |
| UniRef90-A0AX20 | RS QDGRLAVVAVFYRTGSENAQFAAVMDA |
| UniRef90-A5BPC | ETPSGKT ${ }_{\text {a }}$ |
| UniRef90-A0AO24 |  |
| UniRef90 ${ }^{-}$W 4 WLD 8 | WNSKYKTFAEAAKASDGLAVLGVFGKLKM |
| UniRef90-K7HSJ2 | IREGYDFQAASKLPNGIAVVA |
| UniRef90-DOH |  |
| UniRef90-G9NLT4 | STPDKST |
| UniRet90-w9Z7) |  |
| UniRef90-A0AO22TYE4 | EYOSSAKM |
| UniRef90-C7Z076 | AAAASSAKSHHARGRAKRAALEPRQSAATASTVLETVLGS |
| UniRet90-W4G104 |  |
| UniRef90-G7XIVC | DEDGSTAVVGFLIDLLTSTKDHSTPLLNTVFADVNETAELL |
| UniRef90 W4WJL6 | WNQKYLTFEECLKHRDGLCVLTYLFLV |
| UniRet90-F4X622 |  |
| UniRef90-C5GR37 | VGKHNHKELAVVS |
| UniRet90-V2WJB1 | LFQLSEDGCTTELVASSIEN |
| UniRef90 | $\checkmark$ V ${ }^{\text {a }}$ |
| UniRef90-MOTAT2 | QSADNKT |
| UniRef90-N6TY38 | SKHRNLTEAVKHPAGVAVLGLSPDDDEDFQPLLEIIIDN |
| UniRef90-UPI000443 | YNQDYANYSEAAKSPHGIAVVSIFTKLSENSNAFMLNRDT |
| UniRef90-UPIOOO42B9C6C |  |
| UniRef90-ROGQ04 | ESEDER |
| UniRet90-T1F | AN MADPNKNRNHLDKSILVVILANIGKV |
| UniRet90_E2AGI | YDKQYANSSIAAQHEDGITVV |
|  | SVANPSQUAVI |
| UniRef90-Q8MS01 | RNNЏYPNMTMAANFKDG【VVIGVLYHVSNTPNE\GSIIKS |
| UniRef90_C6VJJ3 |  |
| UniRef90_W44XP9 | SDKDK |
| niRef90_K2SFN4 | AEGGFVVLGL |
| UniRet90_FowTD8 | DGSLAVF GILFELGEESSFLAQFWDH |
| UniRef90_UP10003C1A691 | YNPDDFDNपETA】SENR! |
| UniRei90 W1K5 | KNAKKENLVVGVM FILSTVKQGEKNQAVGDLTTV |
| UniRef90-E3RZZ1 | QGVNDPTQLAVI ALMFQVSAGKSSSTVSSLSSS |
| UniRef90-UPIO004415EC9 | QADSGALAVVGVL |
| UniRef90_G4Z2S6 |  |
| UniRef90-L8G1U1 | VDLDNGVAASAPRADSHLSAIVQLFS S |
| UniRet90-H8LE | $V G V M Y Q ~ L T M V Q E G W L Y N Q E N G E S W N$ |
| UniRef90-W5DNN3 |  |
| UniRet90-B0DLT3 | ( TALDGTYLVLAALFELSLNGTNAKFLDPLLS |
|  | DDGNSNT |
| UniRef90_Q7USW3 | D GKLAVLGMMIEADNS |
| UniRef90_B3RKE1 | ANTRYNEFLEAANSSDG |
| UniRef90_J3M | QSDSSGRYAVVAQLFEIGRR |
| UniRefoo- D5 |  |
| UniRef90-10YLJ8 | DTNV |
| UniRet90_S4RBN9 |  |
| UniRef90 Q9SWA2 | G |
| UniRe990-_8V551 | S |
| Unii | Y KHEYTNYVEAAKSPKGVKARKLFCQQFQTCMDODEATTH |
| UniRet90-UPlooo2A479D5 | VK |
| UniRef90-L11JJ4 | SKSTSTQMAFAVVFALEEKSTPQVHALSETLYRA |

## UniRef90_J9NZB3 UniRef90-A4HG87 UniRef90-G7YE72 UniRet90_W2TQME UniRef90_Q2YBV2 UniRef90 GOYYQ3 UniRef90-K1RPZ2 UniRef90-H1VM65 UniRef90-H2ST54 UniRef90 Q9MZT3

 UniRef90-UPIOOO3292A29 UniRef90-UPI00027F8DE6 UniRef90-S6DFU0 UniRef90-S4P9N1 UniRef90-F9WEC6 UniRef90_V8PG90 UniRef90_A0A059DG13 UniRet90_S3DM93 UniRef90-B1XJX0 UniRef90-UPIO003EB06DB UniRef90 Q4RXD7 UniRef90 R2XVC6UniRef90 Bow4B1 UniRef90-R2R3A0 UniRef90 ROJJ42
UniRef90 C4B8E1 UniRef90_C4B8E1
UniRef90 $\mathrm{D} 3 Z 4 J 8$ UniRef90-B3RKE0 UniRef90-A0A024TT14 UniRef90-B1K7U3 UniRef90-JoKW14 UniRef90-AOAX20
UniRef90 A5BPG6 UniRef90-A0A024UBR3 UniRef90_E1Z634 UniRef90-W4WLD8 UniRet90-K7HSJ2 UniRef90-DOHVE2 UniRef90-G9NLT4
UniRef90 W9Z7 $\times 8$ UniRef90 ${ }^{-}$A0AO22TYE4 UniRef90_H2ST55 UniRef90-C7Z076 UniRef90-W4G104 UniRef90-G7XIVO UniRef90 W4WJL6 UniRef90 W6T636 UniRef90 - F4X622
UniRef90
C5GR37 UniRef90-V2WJB1 UniRef90-K3YZL1 UniRef90-MOTAT2 UniRef90-W7XIU8
UniRef90 N6TY38 UniRef90-UPIOOO443B4D2 UniRef90 UPI00042B9C6C UniRef90-ROGQ04 UniRef90-T1FN46
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UniRef90 E3RZZ1 UniRef90-UPIO004415EC9 UniRef90-G4Z2S6 UniRef90-L8G1U1 UniRef90-H8LE60 UniRe90-A0A024UBYO UniRef90-W5DNN3 UniRef90-B0DLT3 UniRef90-Q7USW3 UniRef90-B3RKE1 UniRef90-J3MFR5 UniRef90-D5G5Z1 UniRef90-10YLJ8 UniRef90-S4RBN9 UniRet90 Q9SWA2 UniRef90-F8VJ51
UniRef90
S1RNT9 UniRef90-H3CKP7 UniRef90_UPI0002A479D5
 LPMRHAMTTCFLKEDLALTSLIPARESYLLYDGSQTHPPC LLPMRHAMTTCFLKEDLALTSLIPARESYLLYDGSQTHPPC LVGLKAGEKKSVNPVIKGSEFLPRNSKYYTYPGSLTTPPC LI A DLPKTTEETDNDEHFNDNNLPDYDGSFRYSGSLTTPPF KRRMFNRMANQRACPFQPDLLLPRSRDFYYYYGSLTTPTL LTAGSGTGPVITNNDALKDLLPTNQSDYYTYRGSLTTPPCC LKNITQPTNSTTGKGVTEEMFTPPQKNYFRYDGSLTTPNC DTRDSYKNDAYFLQDLSLELLFPESFGFDTYQGSLSTPPC KSCRK
LANDKYPGQSTTLTGDDVQDLPENQHYYSYQGS TTPPC LVEVSGTQRDKLLNMVNPSLLKMRSSGYYRYDGSLTVPPC LENVTEPHSSVVMSNPFLNLLPLDLTRYFTYRGSLTTPPC LPPHQATTTCTLEKDMSLDGMLPYRHSYVTYSGSLTTPPC DMCETHAGEEDEVGVIDPREVRGEHSYYRYMGSGTTPPC MEADREPGKVTETGPIDDSGLLLEVQPLURYSGSLTTPPC
पRRVVHHEKETSLRSFILRDLLPSSDGYYRYTGSLTTPPC
 GTKTSTKGGDDYKDVISABDRE LHEIRYK

FS QLASPGDSFTDDS DD S S DVTNSNVYRYPGS TTEPY ARR DVASPLASFNAARLMPDDLDYHHYLGSLTTPPL FPVNESEKDPFSATLSLNNLIASLGSGVYHYLGSLTTPPL L LEALSDSDQERDVGVVDPRHVKMGSRKYYRYMGSLTTPPC $V$ VDTVGAAAATHLPGLDLSSLLLPEDLTYVAYNGSLTTPPC
LFELKYVGNKTKDEKFSPE LLLPSDSWFYRYEGSLTTPGC $1 P \| K G N S T Q L T Q G D P L A D W U P E S K H Y Y R F N G S L T T P P C$ VNEDATPGETTLTGPFAALENHLKSNADFTYSGSLTTPPC LPNAGDDTTTGALRDFRGLQSHLSRSDVFTYDGSLTTPPC LFYFIMSANSTTGKGVTGEMFTPPQKNYFRYDGSLTTPNC

DDQETPKASHDLTEPVDLTKLLPDTGTVYHY LGSSTTGPPL LPFIQAANSSTRLDPFPI DNIMPCQRDYFVYWGSVTLTN VHQVATPGKEVTIPRLDLADLTYNKHPLYTYTGSLTTPPC I EHVREPGTKTGRLDFTEDEDAFATGGLYAYTGSLTTPPC



 LPRVTRPYSETKKMGLDLSKFLSHSKSFYQYKGSTSKFTC VPRMSPGQTVGLRGFDILSRTISSMPMFRYVGSLTPPPC


VSKLENGKTAMMKSATSTLGLTPENGDMYRYEGSFTTPAT RENGDSWDVEKHEHWTNPIVLFPEQKSHYHYVGSLTTPPT LPKDATPGTKTPUIDFSDVESKLKSSA LQYSGSLTTPPC

 LEKHEH
LQA DEKPGSSAYTGPDDFSDTFFTTVPLFKYTGSLTTPPC IRRUADKDKSEPDGVVDPQLAKSPDAVYYKYMGSLTTPPC METMAKDDKFMDFKTNPHEWLPPNTQHFYRYEGSLTTPEY LKYWKHRAQSYPFSGLKDRSTNQNAASFAFNGSLTTPEC VAKKRKMHEVEVDGEVDPRRPVSGSGVYYRYTGSFTTPPC LDAK\|ATPGTVTETGPFAEVINHVQTTPLFQYTGSLTTPPC
EWPVQTGASMEANGSLNFDQLLPQNPHYMLYSGSLTTPPC $\square P S V L E K R A$ TLFAPVD $\square$ NLLLPVDKTYWRLNGSPSSPSC HHUQWFNPDUFLPNQKSYYHYVGSGTPPT
 SSVAYKGQTAKVKPFPGMGLLPRHN
SSIRLDFGLLSLEILSQTQRIDPNAE


E H DRTVTKK QVKLLRVAVHDASDS
UniRef90_R0GQ04
UniRef90- T1FN46
UniRef90 ${ }^{-}$E2AGD3
UniRef90 E9D7I3
UniRef90_Q8MS01
UniRef90_C6VJJ3
UniRef90 W4FXP9
UniRef90-K2SFN4
UniRef90_FOWTD8
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UniRef90-W1K5V9
UniRef90_E3RZZ1
UniRef90 UPI0004415EC9
UniRef90_G4Z2S6
UniRef90_L8G1U1 UniRef90 H8LE60
UniRef90 A0A024UBY0
UniRef90_W5DNN3
UniRef90_B0DLT3
UniRef90-Q7USW3
UniRef90_B3RKE1 UniRef90_J3MFR5 UniRef90_M4C2A5 UniRef90_D5G5Z UniRef90-IOYLJ8 UniRef90_S4RBN9 UniRef90_Q9SWA2 UniRef90_F8VJ51
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UniRef90_L1IJJ4

UniRef90＿J9NZB3 UniRef90－A4HG87 UniRef90－13WBF5 UniRef90 ${ }^{-}$W2TQME UniRef90－Q2YBV2 UniRet90－GOYYQ3 UniRef90－K1RPZ2 UniRef90－H1VM65 UniRef90－H2ST54
UniRef90＿C5RAIS
UniRef90－UPIOOO3292A29
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UniRef90－S6DFUO
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UniRef90＿V8PG90
UniRef90 A0A059DG13
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UniRef90 B1XJX0
UniRee90－UPI0003EB06DB
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UniRef90－R2XVC6
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UniRef90－B3RKEO
UniRef90－A0A024TT14
UniRef90－B1K7U3
UniRef90＿JoKWI4
UniRef90－A0AX20
UniRef90－A5BPG6
UniRef90－A0A024UBR3
UniRef90 E1Z634 UniRef90－W4WLD8 UniRef90－K7HSJ2 UniRef90＿DOHVE2 UniRef90－G9NLT4 UniRef90－W9Z7X8 UniRet90＿A0A022TYE4 UniRef90 H2ST55 UniRef90－C7Z076 UniRef90－W4G104 UniRef90＿G7XIV0 UniRef90＿W4WJL6 UniRef90－W6T636
UniRef90－F4X622
UniRef90 C5GR37
UniRef90＿V2WJB1
UniRef90－K3YZL1
UniRefgo－Motat
UniRef90－N6TY38
UniRef90－UPIO00443B4D2
UniRef90 UPIo0042B9C6C
UniRef90－ROGQ04
UniRef90－T1FN46
UniRef90－E9D713
UniRef90－Q8MS01
UniRef90－C6VJJ3
UniRef90 W4FXP9
UniRef90－K2SFN4
UniRef90－FoWTD8
UniRef90＿UPIO003C1A691
UniRef90 W7DJM3
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UniRef90－G4Z2S6
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UniRef90 H8LE60
UniRef90 A0A024UBYO
UniRef90－W5DNN3
UniRef90－BoDLT3 UniRet90＿A2YW47
UniRef90 Q7USW3
UniRef90－B3RKE1
UniRef90＿J3MFR5
UniRef90 M4C2A5
UniRef90－D5G5Z1
UniRef90－10YLJ8
UniRef90 S4RBN9
UniRef90 Q9SWA2
UniRef90－F8V J51
UniRef90＿S1RNTS
UniRef90 H3CKP7
UniRef90－UPIO002A479D5
UniRe90＿L1／JJ4

ARPPOTTNSRHTR NNRVIQNKAGRPVYSS

DYRRTQPLNHRVESNF
NARPLQPLNNRNVQLRDK
NFRPIQPI GDRVVFYN
NRRPTQPLNGRKV
NFRPQQSLNNRUVSK
NARPMQPLNGRElQ
NSRFVQ
NARPRQ
NFRPPQDLYNRKTFKS
NNRTCQSLNRKVLS
NYRALQPI GNRRVF
NSRKCQLINDRKVLS
NSRFVQ
NHRPTQP【RGRR $\square L A N$
NARPLQP【NGRSVK
NARATQPLNGRP
NAREIQPTNGRKI
NARIVVQPLGRP
NARETQPTRG
NNRVLQPVGDRELFVS
NNRPVQPHNARLV
NARYTQ
NARNVQ
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NARYTQ
TYRPVLPGNGRQVYYS NARYPQ
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NSRYTQ
NWRNVQPLRGQQ
NARAVQPLNDRPVIA
NARFLQNN
NSRYIQ
NSRPLQALNGRMVQ

NYRSLQHLNGRTLY
NTRPAQPLLQRCIRTNDN
NARPLQPTNKRVV
SFREQQALNDRKVYS
NNRPTQELNDRKVY
NNRKTQPTNDRPT】A
NARELQALLNGRV
NARPDQP■NKRK■Q
NNRPTQK【NNRTTFSN
NNRPIQPLKNREI
NARYTQ
NARDTQK■NGRKV
NARYLQ
NNRPiQPLNGRETY
NARDLQPLED
NARYVQ

$$
\text { AR R } \square \mathrm{P} \text { QP } \square \mathrm{NRRFVLSNF}
$$

NARPDQEANGRAV
NARP
NSRYTQ
NNRMMQP पNDRT $\square K$
NNRR $\square$ QP $\square$ NNRD
NNRPLQKRKGRLTY
NVRPVQP $\square N N R C \downarrow R T N \square N$

## UniRef90_D8RK96

 UniRef90_C5ML18 UniRef90-H6PAL9UniRef90 ${ }^{\text {M5AHQ7 }}$ UniRef90-E9FXM8 UniRef90-K2RX95 UniRef90-K1R175 UniRef90 ${ }^{-}$M1ZJS5 UniRef90-B7GA80 UniRef90-W4WIH3 UniRef90-UPI0003F0E353 UniRef90_UPI0003DEAAA1 UniRef90_M4BS01 UniRef90-B3AOP2 UniRef90-K1XKD9
UniRef90_UPIO0020D9F84 UniRef90_W9CGG1 UniRef90-H9JVL5 UniRef90-J9NGU5 UniRef90-R7QGM2 UniRef90-W5IBX2 UniRef90 UPIO0016210D8 UniRef90_Q5BY01 UniRef90-K91A07 UniRef90_U4U6D7 UniRef90 UPIO00441189D
UniRef90_N4VXI5
UniRef90_Q7XZA2
UniRef90 C0JA68 UniRef90-P24258 UniRef90-Q8IMV3 UniRef90_T1F5N2 UniRef90- S6C5R5 UniRef90-D5GNW1 UniRef90_C7ZG66 UniRef90 F5B6X4 UniRef90-A0A023CZ55 UniRef90-J9FNU0 UniRef90-UPI0003DF80E1
UniRef90_B4GYZ3
UniRef90_J9G541
UniRef90-K1RJ02 UniRef90_G3MPX3 UniRef90-L1IV56 UniRef90-K1W8C6 UniRef90_B8A119 UniRef90 B4NNJ4 UniRef90-T1F9E8 UniRef90-U6K5U5 UniRef90-17L3W5 UniRef90-EOVMAO UniRef90_V7ZSS8 UniRef90-C6SYF7 UniRef90 K1QVX6 UniRef90_Q0V177 UniRef90-W71281 UniRef90_H2YIF4

## SWSNGFGFQQSP $\square \mathrm{D} \square \mathrm{R}$

WAYEASY NWGRLNPCQTGTQQSP IALLRRSDATNNH HFGYTEAHGPTHWHQIWRFCGRSTQSPVNIGTTSSIYRP RQPSPI DI PKNTVIRRQ
WTYEASYD WGKVNKCQDGTHQSPI PLAMGNGLAQS FSYNDEYSPDNWYRLD DACRGPRNSP ALLESTPCDAYE

$$
\text { GPN } \square W W D Q F E E C A G \square K Q S V S \square A V D Q C F E D \square
$$



WVYEASY NWGRTNPCQTGTQQSP\PLALKQGLS $\square E$ YSYDRPNGPRSWGEFSACGAGEQQSPQNFPASPGADGP

EFD Y DGPHGPASWGCLNTCSDGMVQSP\|A\|IPQ\|IVTSK WHYKE $\square$ GGPSDWGQWSACYQGKMQSPINI STKHLVFDS NHQDQWKKEDR TTQSPILI EKAELEGKQ
HEFPY GPAYWGLMNPCSRGRRQSPVNVEPDKLLYDP NFGYSGENGPLDWAGLDPANNSRVQSPIVLDDAVPRAAS WAYEASFD WGRVNPCQAGTQQSPI ALGLGNGDAVE YSYDGENGPGEWGDSSTCKTGQDQSPIDFPTE EFSYGDDDGPERWGDWAACSFGRRQSPI HIAGGGYEHHR HWDHS LNG ENWGNPWVCKTGRKQSPINLDGKGSK DAT
 HHQDTWPNGFGQQQSP WGYHYHSGP $\square$ SWHRLSPCKTGQRQSPI NI HQA LKRP T WAYEASF NWGRLNPCQTGTQQSPI ALSQNNGLSLN FSYQRDQGPYYWHTUSACASKKRQSPI NI WSHRAVFVP QSPIDIE TKQVEQKN

HFSYDQNHGPMKWHQCWSTCGSYQSPDNDNETSQDIVQ S YDQNHGPMKWHQCWSTCGSNRQSPINIQTAETIREG CGKGDAQSPI ILPA DEDDKVM WGYSGDTGPAKWGSDHGCDKGPTQSPVNVTSDDKADL WTYEGAR TWGGSEVCQLGMTQSPINLPFGQYSRVH FSYRRNNGPARWGLIWATCNGLLQSPIGLSDTLAGLAD
YRWGYSNDRGPETWWVYYPSASGGMQSPI DLI TEEVTWDP EWDYKEHGADWTQGK CKTGTRQSPVDLHDEGLEEPP ( EWSYTGNDGPEHWHT LCDWAKFAYQSP』ALEKESAETV|

[^6]|  | UniRef90_D8RK96 |
| :---: | :---: |
|  | UniRef90-C5ML18 |
|  | UniRef90-H6PAL9 |
|  | UniRef90-M5AHQ7 |
|  | UniRef90-E9FXM8 |
|  | UniRef90-K2RX95 |
|  | UniRef90-K1R175 |
|  | UniRef90-B4PA09 |
|  | UniRef90-M1ZJS5 |
|  | UniRef90-B7GA80 |
|  | UniRef90-W4WIH3 |
|  | UniRef90-UPI0003F0E353 |
|  | UniRef90-UPI0003DEAAA1 |
|  | UniRef90-M4BS01 |
|  | UniRef90-B3A0P2 |
|  | UniRef90-K1XKD9 |
|  | UniRef90-UPI00020D9F84 |
|  | UniRef90 W9CGG1 |
|  | UniRef90-H9JVL5 |
|  | UniRef90-J9NGU5 |
|  | UniRef90-R7QGM2 |
|  | UniRef90-W5IBX2 |
|  | UniRef90-UPI00016210D8 |
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|  | UniRef90-K91A07 |
|  | UniRef90-U4U6D7 |
|  | UniRef90_UPIO00441189D |
|  | UniRef90 N4VXI5 |
|  | UniRef90-Q7XZA2 |
|  | UniRef90-C0JA68 |
|  | UniRef90-P24258 |
|  | UniRef90-Q8IMV3 |
|  | UniRef90-T1F5N2 |
|  | UniRef90- S6C5R5 |
|  | UniRef90-D5GNW1 |
|  | UniRef90-C7ZG66 |
|  | UniRef90-F5B6X4 |
|  | UniRef90-A0A023CZ55 |
|  | UniRef90-J9FNU0 |
|  | UniRef90-UPI0003DF80E1 |
|  | UniRef90-B4GYZ3 |
|  | UniRef90-J9G541 |
|  | UniRef90-K1RJ02 |
|  | UniRef90-G3MPX3 |
|  | UniRef90-L1IV56 |
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|  | UniRef90-B8A119 |
|  | UniRef90-B4NNJ4 |
|  | UniRef90-T1F9E8 |
|  | UniRef90-U6K5U5 |
|  | UniRef90-17L3W5 |
|  | UniRef90-EOVMA0 |
|  | UniRef90-V7ZSS8 |
|  | UniRef90-C6SYF7 |
|  | UniRef90-K1QVX6 |
|  | UniRef90-Q0V177 |
|  | UniRef90-W71281 |
|  | UniRef90-H2YIF4 | UniRef90-W4WIH3 UniRef90_UPI0003DEAAA UniRef90-M4BSO1 UniRef90-K1XKD9 UniRef90-UPIO0020D9F84 UiRe9-H9 GK UniRef90-J9NGU5 UniRef90- W5IBX2 UniRef90 UPI00016210D8 UniRef90_Q5BY01 UniRef90 U4U6D7 UniRef90-UPI000441189D UniRef90_N4VXI5 UniRefo-Q7XZA UniRef90-P24258 UniRefgo - T1F5 UniRef90 S6C5R5 UniRef90-D5GNW1 UniRef90-C5KG6 UniRef90_A0A023CZ55 UniRef90_J9FNU0 UniRef90-B4GYZ3 UniRef90-J9G541 URRe_K1RO2 UniRef90-L1IV56 UniRef90-K1W8C6 UniRef90 B4NNJ4 UniRef90-T1F9E8 UniRefo-17 3 W UniRef90_EOVMA0 UniRef90-V7ZSS8 UniRef90-K1QVX6 UniRef90-W71281 UniRef90-H2YIF4


QAKPTSVTNFMVT DPW $\square$ A DRE $\square \mathrm{DDQVT} \mathrm{\square Q} \mathrm{\square}$
ARTPRFTGYRGTWAGQYFNWGYGSAFNLDHPENDYTTLPS DLKAFFRNDCDRDPARDRNNGHSPHFDTENEAVGDYNVPG LRLPDKWTHYEPMATVLENNGRTVIMRDYTDNFMPHLSGA HVPRFDYNGSVKGTFFNTGYGPGFTVHHEDNDWTRHPS $\mathbb{I}^{T}$

K LT G F G T T P P VGATMTLTNNGHTVKMS■ S GDY LVDGG
CNCGDS
PQK DRYSS RKFVGHDENTGDQPAFKRKVGADKVYGDGS VPTFNYAMDTVCGSLTNSGYGPAFTDTAMEQDDVDEHPSF HRPTF NYPTSTDGSLYNWGYGAAFSLTSNTTDLSGNPT
$H \square \square K E W N Y P N E V T V N F F N W G Y G P A F T V Q T E D G \square W T R N P S$ QPKLVRANYTLGSG SWNWALACHEERACGYTM

KFKDLEVDYHHAVPANDSNNGHSVALKDPDGSVELSDKG NLRPLR\|LGDKE』DVEMVNTGQDLQUK\|LDSTTQUVFSEG NQVISRTKPYAATEVHNNLNNLSLTANGEDKSDRR Y LRHIHDDKHKVS GTDHNTGQSLVFRVEDTKQHVNDSGG $A P Q \| T I A \quad A V A E A E F E N L G T T L E T V V N G T T V F E$ H Q $\quad$ KFNYPSKTAGTFYNWNYGPAFTITHPEGDFTGNPS RPGHLLIRSYRPAAASLVNRGHDワMVRFDGDAGGVVVDG GLQTQWSYPDLMSNGSVI NNGHTIQVQWTYDYDVLEMRPN KLKF LINYHKSLCDPLSVINNGLTVLMRDPDGSRPSLCDST SAVESWSVKE GDTTVPMRAF DAYDRLNFYSMYN PND HVN TLTIEEP GLKLRRGDYREYG ILENEGQTVS $\square K P Q E E D A K Y G Y Q L Y P G$ HI PEFNYPDSVAGNFYNWGYGPAFTVTHEDGVWDQNPSFS DLPRLKFKPHMKSLDTEVSNHQNHAPEFDSEDEKPRVKLK $\square$ IQTPLVF LTDYVFESVISKGNNDQFNGRGRMKLK


[^7]| UniRef90_D8RK96 |
| :---: |
| UniRef90_C5ML18 |
| UniRef90-H6PAL9 |
| UniRef90-M5AHQ7 |
| UniRef90-E9FXM8 |
| UniRef90-K2RX95 |
| UniRef90-K1R175 |
| UniRef90-B4PA09 |
| UniRef90-M1ZJS5 |
| UniRef90-B7GA80 |
| UniRef90-W4WIH3 |
| UniRef90-UPI0003F0E353 |
| UniRef90_UPI0003DEAAA1 |
| UniRef90-M4BS01 |
| UniRef90-B3A0P2 |
| UniRef90-K1XKD9 |
| UniRef90-UPI00020D9F84 |
| UniRef90-W9CGG1 |
| UniRef90_H9JVL5 |
| UniRef90-J9NGU5 |
| UniRef90-R7QGM2 |
| UniRef90-W5IBX2 |
| UniRef90-UPI00016210D8 |
| UniRef90-Q5BY01 |
| UniRef90-K91A07 |
| UniRef90-U4U6D7 |
| UniRef90-UPIO00441189D |
| UniRef90_N4VXI5 |
| UniRef90-Q7XZA2 |
| UniRef90-C0JA68 |
| UniRef90-P24258 |
| UniRef90_Q8IMV3 |
| UniRef90-T1F5N2 |
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| UniRef90-D5GNW1 |
| UniRef90-C7ZG66 |
| UniRef90-F5B6X4 |
| UniRef90-A0A023CZ55 |
| UniRef90_J9FNU0 |
| UniRef90-UPI0003DF80E1 |
| UniRef90-B4GYZ3 |
| UniRef90-J9G541 |
| UniRef90-K1RJ02 |
| UniRef90-G3MPX3 |
| UniRef90-L1IV56 |
| UniRef90-K1W8C6 |
| UniRef90-B8A119 |
| UniRef90-B4NNJ4 |
| UniRef90-T1F9E8 |
| UniRef90_U6K5U5 |
| UniRef90_17L3W5 |
| UniRef90-EOVMA0 |
| UniRef90_V7ZSS8 |
| UniRef90-C6SYF7 |
| UniRef90-K1QVX6 |
| UniRef90 Q0V177 |
| UniRef90-W71281 |
| UniRef90- H2YIF4 |




YDSRFGSDAEAVGEDGGLAVLGFLIEV
VLELHMVHETPSGQTAVI GILYKGRRPDPFLSLLTNHLMV $V D$ D IREDFGDLKEAANHPQGLLVI SIGLSTSKGERRRDGFDDL GDKDGNAIGV
Q Q ATSSGEERAVVADRDDPDAYGTTANSTFFESFPLTSIPAF VKTGVP VDEALKRPDGLAVIGVMCQDYSNEESQFALEQQ QSEDGNLAVVIATVFDYPPEADYPSTDKAANKMDYGVNPYLC ESAQ F NFALEAHLVLISAAGK】AVVAWLITLGPVSPFFDQFINN F N
YGSDKQ PVVVSVFK!GPKNEEFEK!LDA FNKEYHNMSEAQHKSQGIVAISLMVQVSR\|Y EGAD GA A VIVADFQLTEDGSTTALLTSVIEN V V N E E

DADAYPVRVYENANMLYGTNPFLKS
QSEDHGGRR
Y A VVAQL F D
$K V T D K D E A C K G G C F S V T G G$
$Y K S N K E A G L Q P N G F A V L A$
KNASYKSNKEAGLQPNGFAVLA

 RHDEKK
Q NN $\qquad$ GQPLVVALFVELGQDNS ILQPFYEK RQYATNKKVVLS ILFDQELTVGVGKQKSC RNESAASLKEALNQTKG LVI P IVDEATWRVNEMNS I DLVDGPDHENYDEKKAVISVLFKLADKNHPVME Y DSSFDNDGVAKPVNDSLVVLGVMIK
LKAGKEGLEEALDEPSSAVVLSVLYKADDAAPDEKADAAL
 APADALARAERARHQRAQVRPGAADGAPERHQQLERYIRR
$\square E E \square R G L P S E K \square L R T L L M A D \square S N K Q A Q G D S Q L L E \square P H P \square N$ QHEDQTLVLASFGDVSANVTTGAVQNDYDN YKTTYLTQERAMYEKDGTIV FVSETPSTSDSQVTKL MNDAGENLVVGCL
 Y $\|$ LMVGGFSESHMLQDAVKTAFSTKK VDAS GHEAAVMA RIDD GN
$V$ DAKGKPRAVLA R R DPGSCNSRS GH
$1 \quad 1$


[^8]
lupas_21
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## UniRef90 D8RK96

 UniRef90 C5ML18 UniRef90-H6PAL9 UniRef90-M5AHQ7 UniRef90 E9FXM8 UniRef90-K2RX95 UniRef90-K1R175 UniRef90_B4PA09 UniRef90-M1ZJS5 UniRef90-B7GA80 UniRef90-W4WIH3 UniRef90-UPIO003F0E353 UniRef90_UPI0003DEAAA1 UniRef90-M4BS01 UniRef90-B3A0P2 UniRef90_K1XKD9 UniRef90_UPI00020D9F84 UniRef90_W9CGG1 UniRef90-H9JVL5 UniRef90-J9NGU5 UniRef90-R7QGM2 UniRef90-W5IBX2 UniRef90 UPIO0016210D8 UniRef90_-Q5BY01 UniRef90-K9IA07 UniRef90_U4U6D7 UniRef90-UPIO00441189D UniRef90_N4VXI5 UniRef90_Q7XZA2 UniRef90 C0JA68 UniRef90-P24258 UniRef90-Q8IMV3 UniRef90-T1F5N2 UniRef90- S6C5R5 UniRef90_D5GNW1 UniRef90-C7ZG66 UniRef90 F5B6X4 UniRef90-A0A023CZ55 UniRef90-J9FNU0 UniRef90_UPI0003DF80E1 UniRef90_B4GYZ3 UniRef90-J9G541 UniRef90-K1RJ02 UniRef90-G3MPX3 UniRef90-L1IV56 UniRef90-K1W8C6 UniRef90 B8A119 UniRef90 B4NNJ4 UniRef90-T1F9E8 UniRef90-U6K5U5 UniRef90-17L3W5 UniRef90-EOVMAO UniRef90_V7ZSS8 UniRef90-C6SYF7 UniRef90-K1QVX6 UniRef90-Q0V177 UniRef90-W71281 UniRef90_H2YIF4

VLPTTWLINPTDST DSSRQLAHFEGMY GKDGSTNWS TEGIRWFVARQIMFTSVKEMQDILGASSYSARSEQAVWQH SE IVWWSVADTVMRDSTGQYAELMTMDTTGPWSVASPSGS

$T E D \square A W T M \square K E V K S V S K E Q \square R L L R D A V H D D F D A$ EENADWWVVESPIKISS IDFGRLHQDLVEYPDTEDGD

SEGKRWWVSGQTVT $\square$ SPAQWEDLQAV
GQNVT WLVLAQPISMSAADAALLHA RYPE TEGI R WFV A GTKMSVGTEQMQELLAVSTESAREEQG QESVT WDVMDKPLI I A DT QLS QMSIFFYQYQVFSKVDVGD T E GIVRF FVVARQLFTSVQQMR
TEGVTFLMQMNIATVSRRQVHDY
SEGVV WTVVKRVRTVSRHQLELLREAVHDD V MEK TENVVWTVL

TEGVEWLVFENAPT\DLQQLNRYTAVFAAP
A E G L T F LVLEKPMALDVRTFNTLKS $\square$ KFNARYSQNTLGQT TEGMRWFVARQDMFLGDGQM

SEGLLWHVMTQPQRISFGQWNRYR
PENVDTRVYKHP VY
 HEGIR WFVARQ $\square M F T G V Q Q M R$

SRGVEWWVLQQPLVVS $\square M Q L K A L Q$ ES F NG
 I ENVEWIVKASVQSLSRDQMDTLCNVGGEGSSGARAHM HS MVN WYVLKKHVLPLQKS LLQNLLESHCDHHEYFS

TQGDK WVVL
GEGLRWWVAENVLQVSDTQMQNL
TEGVTWVVAHQVKRLSTATNVCVRHLRPDTAGD
K $\square \mathrm{A} T \mathrm{QWFINSR} \mathrm{\| CG} \mathrm{\| GLEQLNKFGELC} \mathrm{\quad GVNGKT} \mathrm{\square SQ}$
EENVRWYVARQP LPVATDTMLRFYKMLNPKTLKSVKEKDG RHDI QWLVLTEPVALSSEDKAVLHDHYP

T E G
$F$ GTVQW VVMRCP $\quad$ R $\square$ SREA YEA $\square A N D S E T Q H W E \square D$
TEGI R WF V ARQAL Y T S V V Q MQ
SEGVRWFVARNVLYVGDKQMQ
DENVVVWT I FPRALQLSTRRQMTLLRNDRMEHGMKMAG

[^9]UniRef90 D8RK96 UniRef90 C5ML18 UniRef90-H6PAL9 UniRef90-M5AHQ7 UniRef90 E9FXM8 UniRef90-K2RX95 UniRef90-K1R175 UniRef90-B4PA09 UniRef90 M1ZJS5 UniRef90-B7GA80 UniRef90-W4WIH3 UniRef90 UPI0003F0E353 UniRef90-UPI0003DEAAA1 UniRef90_M4BS01
UniRef90 B3AOP2
UniRef90 K1XKD9 UniRef90-UPI00020D9F84 UniRef90-W9CGG1
UniRef90-H9JVL5
UniRef90-J9NGU5
UniRef90-R7QGM2
UniRef90-W5IBX2
UniRef90 UPI00016210D8
UniRef90_-Q5BY01
UniRef90-K91A07
UniRef90 U4U6D7
UniRef90 UPIO00441189D
UniRef90_N4VXI5
UniRef90 Q7XZA2
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UniRef90-D5GNW1
UniRef90-C7ZG66
UniRef90 F5B6X4
UniRef90-A0A023CZ55
UniRef90-J9FNU0
UniRef90 UPI0003DF80E1
UniRef90 B4GYZ3
UniRef90-J9G541
UniRef90-K1RJ02
UniRef90 G3MPX3
UniRef90-L1IV56
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UniRef90 B8A119
UniRef90 B4NNJ4 UniRef90 ${ }^{-}$T1F9E8 UniRef90-U6K5US UniRef90-17L3W5 UniRef90-EOVMAO UniRef90_V7ZSS8 UniRef90-C6SYF7 UniRef90 K1QVX6 UniRef90-Q0V177 UniRef90-W71281 UniRef90-H2YIF4

NARPTQDLLRGRQVSKNF TARP NNRP TQDANSRK TKA NNRQVQAANQRPVLR

NGRQEQPLGSRNVYLN
TSRPLQARNGRPV
NFRPPQPLHHRPVRTNI
NARPLQP $\square N N R L V Q L N$ NSRPVQPLNGRLV

NYRDVQPLAGRELLS
NYRNLQQVNRVVYS

NARPRQEVNSRDI

N NRAGQNLNGRS $\square$ EK
N
NARP $\square \mathrm{QE} \square \mathrm{L}$ GRQVTCY C K
NARPMQAANGRGV

SRNELKEPNGRKT
NHRQLQARNDRPVLR
NARYPQ

NARETQRKSGRKI
NFRNDNNVGNRTVFDS
N $\square$ RPVKPRQEKSVF
SYRQLQNSNSRRVF
NFCTIQPLYGRKIAKNFK

NTRK $\square R$ PMGNRSV
NFRELQNVEG
NYRD $\_$QA $\square$ NERT $\square$

N S R P T Q
lupas 21
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conf sol25
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sol0
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[^2]:    G

[^3]:    20

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[^5]:     O

[^6]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol5
    jolo
    jpssm

[^7]:    lupas 21
    lupas_14
    lupas_28
    jne
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^8]:    lupas_21
    lupas_14
    lupas_28
    jnet conf
    sol25
    sol5
    jhmm
    jpssm

[^9]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

