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UniRef90- M3X119
UniRef90 H2L2SO UniRef90-H9KLG4
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UniRef90-UPIO00287BB89 UniRef90_K7GAL6 UniRef90-F7NLD2 UniRef90_V9W819 UniRef90_-19MG14 UniRef90_UPIO0028A2216 UniRef90_J3AL93 UniRefofo-F2NCE5 UniRef90-C4JXS5 UniRef90-UPIo002DC4119 UniRef90_UPIO00379D4EE UniRef90_K5C141 UniRef90_S3CBTO UniRef90-F6CKU3 UniRef90 Q1 Q4V6 UniRef90-S2JSQ5 UniRef90-K4Z8F0 UniRef90-UPIO00225BE16 UniRef90-UPIOOO440E328 UniRef90-A1CE64 UniRef90-W6LW75 UniRef90 C7RFA0 UniRet90-Q8DJJ9 UniR Refo-TOMQ38 UniRef90-Q8PU16 UniRef90_B14x9
UniRef90_-D9TTV6 UniRef90-P37278 UniRef90 UPI000470A79D UniRef90_UPI0002D8120A UniRef90-Q5WFK1
UniRef90_G9QMK9
UniRef90 A8Q2N9 UniRef90_UPIO003B37693 UniRef90-E3GQB7 UniRef90-K2FSD4 UniRef90-Q8PWW5 UniRef90-F81HAO UniRef90-UPIO003672686 UniRef90-F9XG85 UniRet90-B7G7U6 UniRef90-17LIU1 UniRef90-UPI000422CF22 UniRef90-F2NJV8 UniRef90-H1FZY UniRef90-C8WGX7 UniRef90-W2RS15 UniRef90-W9EI36 UniRef90-G8PAS4 UniRef90_MOB469
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MCKMF DKVDGDFCSLNEFSTTGSTYAPEGEVLKNDK MSVCRMFVVAEAEAGACRLHEFTISGTTYTPEGQVLQGEQ MSVCKMFVVDQUGGTDCSLHEFDVTGSTYTPEGDVLKNDK MSVCRMF VDSVSGETCSLINFSVTGSTYAPEGEVFRDGV MSVSRMFVVDKIEGNDSSFHEFEVTGSTYEPVGEVELRGK MSVCRMFVVDKAELSSCSLHEFSHGGSTYAPEGQULKGDR
 MSVCRMFVVDKVMADGAAFHEFKISGSYEPDGEVMKNGD MSVCRMFI LDRVEGDTCSDNEFTITGSTYAPDGEVHKDDK LT QNKMVV QSVYTAADGKSF QSVYTAADGKSFRVTGEGYAPTGEFKLQEA MSVAKVCVVESAKRGPVTVSEYSVSGTTYAPEGIIFDSTQ MTVNHLWTLDS LT QNKMVV QQVEAVQHSWFI MSVSKICVVQSMHHMPVDAEYNVGEGYQPTGNFLNQQQ MSVSRFLTIDASG SPQEFTVEGTTFAPHGSVNSAGG MSVSKVCVVHSVQRGPLDAEYNVSGTTYAPEGDIEDSGT MSVTHLW LTQNKMVV QRDETPANSLTVTGEGYAPMGNFLLQDT MSVNKMVFLSEDGSG GVLEEFDVQGTSFAPEGQVSLQGK
 MSVSKVCVVRSVHQRPTT DEYS MTVSNIWIAG

RNYSV
MTVRRTYQWDMT
MSVTHLW
MTVVKV
MTVTHLW
MTVNHIWTL
MTVRRLY
SLSQMFVVDKVMADGAE MSVERUVYLDEAGNGGAMEETMK

MSGRLLE
$T M G K K S F E$
$S G G R L L E$
QQEYD
HRVT $T L G R A T V D C S D K T G T L T K N E M T V A$ MTVKSMFTNSEV届QTGSGYPEGEDTDDEG MSVNKIVYIQEGGKG $\quad$ TVEEDTVEGTTFSPRGSIVTNETV TVICSDKTGTLTQNEMTVTG
MTVRKDFANGKT MCVSKVAFF MTVTRUWT MTENQMTV QTGNGT $\square Q E L N V G G G Y E P E G L V T M A G K$ MCVSKFFVAGSSG
 MT ПTKIYADGK LT QNKMVV MTVKELWTLEKS MTVEKVYVNG MTVQVI FVGGVT MTVRE\| WTP LT QNKMVV

TI ICSDKQUHTLDANRMTV
TVVCDKTGTLTENMTVEVYYNGQFLSTHKGE MTVKQLWANNEW MTQNKM MSVANMY VGEAAD
$\qquad$


TVIC TVICSDKTGTLTLNQMTVEKIVYDDDQIHDADD VVASVTNIIAGRDEFAVDGEGYAKQGSFYSFAG
TVI CSDKTGTLTQNRMTVTGSGHQDQGEFVANGR ST CSDKTGTLTRNEMT MSVNSIAYINEAQSG LEEMQ MTVVSLVLLEHDEVGEVSLRERG ■T QNK

T

 mSVERTVYLNEAGNG MSVOKVVYLNENGTD MTVTHLWLPAE MTVNHL WLPGK MTVQRIAANREV MSAVGCSVVQSCAAGGAS पMEFEVV MSVERVLYLDPTGQG FEEDDVE

VSI CSDKTGTDTONKMTVETTAAPVGALKKHGK TVICSDKTGTLTQNQMTVTGSGY VTVICSDKTGTLTRNEMTVQGVGYGPYGEFRLDDC MTVRSILGDKG
 $M I V R Q A W I P S S N P N D P T K G R V F D V P D E K L N I S S P K Q P Q ~$ mTTVRLWVDE

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UniRef90_L5M133 UniRef90-H3BDY4 UniRef90-H2L2SO UniRef90-H9KLG4 UniRef90-Q4SLG7 UniRef90_G7YHT8 UniRef90_J0XIB1 UniRef90-UPIO001A63FA1 UniRef90_H2ZGA3 UniRef90 G7N5G3 UniRef90_UPI00031BD67E UniRef90-B0K4E0
UniRef90-K7KI34 UniRef90-F7NMP0 UniRef90-H1ANC0 UniRef90-B9R6Y5 UniRef90-R7RZW6 UniRef90-W9S941 UniRef90-F8FC41 UniRef90_UPI00040C3E75 UniRef90-B2WFN2 UniRef90-A0A022R7F2 UniRef90_B7KF67 UniRef90-W5ETR5 UniRef90_UPI000287BB89 UniRef90-K7GAL6 UniRef90-F7NLD2 UniRef90_V9W819 UniRef90-19MG14 UniRef90_UPI00028A2216 UniRef90_J3AL93 UniRef90-F2NCE5
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UniRef90_D8U3K0 UniRef90-B8MKD7 UniRef90-R6NI19 UniRef90-UPIO0035F572D UniRef90-UPI00037F846D UniRef90-Q3B4C2 UniRef90_G2FQL0 UniRef90-G9MF31 UniRef90-J3M3F0 UniRef90_14C2J8 UniRef90-A4XRC4
UniRef90_N6ZNM2

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 ALDLA QHPELQILLRACVLCNDA VLRREAQEFVI IGDP $P V Q A A Q Y D T V R Q L C E V T A L C N D A A L A Y D S K N E T Y S L V G E P$ $D T Q P A N S Q C L L H T S M C S A L C N D S V I Q Y N P D K R C Y E K I ~ G E S$
$R Y K ~ T E Y Q D V Q L L L R A C V L C N D A L D Q Q E K Q G S W E I I G D P ~$
 LVKCHQYDGLVELAMDCALCNDSSLDYNEAKGVYEKVGEA

 TVDVRREPMLEKMMYVSSFCNNAELYEEDQETKWTVKGDP PI QVSD DPSLNWLIRGAALCNASDEPPHGDQTRYTVLGDP
 ENLAATSSTIRQMAEVLAMCNDSALSYDSKSGTYSNIGEP S EPKDYPELEQLLFACVLCNDAV LQKKHSEWEVLGDP
 A DLA QT SSTVRQMTEVAALCNDARLEYDSDSNAFSNIGEA P WI RTPAAERLMQVMVLCNDARLAE $S L L G D D Q K A L E K T L E I ~ G V L C N N T$
 KLSSDHPNLEKMLLYGQLCNHAELQV KKGKYYVDGDP KDASADLHSMQRLAEISAICNDSKIVYLQEKDAYANVGEP VLQAATSSTVRHMAEVMALCNSATLAHDAKSGVFSCIGEP VVASEAAADLLADARAGQLCNDA VLREQDGDWQMEGDP EIVVENHDQUKLLMTDASLCNDANLTR EDDDYKDTGDP T DDPLALYERHLLLLAGALCNDALLKQHAA EWVI LGDP HVFAKDNDTLKEVLLGGVFDNAKIQAPDKKHLRYQILGDP $P V S E D D H$ L HKLLVTGALCNDAG LVEEEGDGDIIGDP $P V R$ LLKDHPALRTCLRAGLLANESRLGFEKERG WYPQGDP $K I D S K N L P D S L L L K I G G L C N N S R L V R P T D E N P S W S I I G D P$ IIVPNDYRDLMLLLAAGAVCNDAALVASGE HWSUVGDP KEKS LDDHLKLLVTTGVLCNDTQMVV EGEKKKTIGDP $P V D L K Q A P S L K E C L V A G L L C N D S H D E E Q K N G N W V V I G D P$


 A AAEAHPEVYRELMVAADLCNDASFDPDQEGA K IDPRNFPQLQMLLQIGVWCNDS ALSEQNGK ISISGDP EKDDGDLQ FEFVRALAAADRASNAVLQERGGRWVVHGDP RIEPGRRAALKSLVEGAAVCNQAHLEPGADGASVQVKGDP DI DPDEDPFLDEVLRAGLLCNDAQLYHKGDD WVMEGDP VI EAATSKTI AQMMEVAAI CCDAELSYDSETNLDTSIGEP EVKEDPDGSVADVAAVCALCNDAKVLGDDSEKAFQRVGEP A 1 DPGDYPGLRQFLRAVLLCNHATUAHDGVGG WRIIFGTP

 PAEAEEHPDLFYLAFAAVLCNDAAFAPAEEGGAQAFIGDP AMRAVSSSTVLQMAEVLALCNESSLSYDQKTGAYSSI GEP QVEAVTSSTI RQMSEVLALCNESRLSYDAKTRAYTNVGEP
 ATGEAQ VAEILRCGMLCNNVDRGTREEQEERTYLGDP AVRPADSPCLDHLAMASSLCNDSALVYRPDKGTYQRIGEA

 $P I D P L V Q S D L P D L L R A G L L C N D A R L E R D A D G Q W R I V G D P$ EVDLALHPDLRMLAHVSLLCNDA VLEQEEGRWVLSGDP KESUQDCPELQQLARIAVLCNDSK QLMQENESWTTKGDP
 $T V D L K E Y P A A L T A L W S S V L A S D A Y I M E S D E S E T Y R I I G D P$
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UniRef90_H3BDY4
UniRef90_M3XI19
UniRef90 H2L2S0 UniRef90_H9KLG4 UniRef90_Q4SLG7 UniRef90 G7YHT8 UniRef90-J0XIB1 UniRef90_-UPI0001A63FA1 UniRef90_H2ZGA3
UniRef90 G7N5G3 UniRef90_UPI00031BD67E UniRef90_B0K4E0
UniRef90-K7KI34 UniRef90 ${ }^{-}$F7NMP0 UniRef90_H1ANC0 UniRef90_K9XYC9 UniRef90_B9R6Y5 UniRef90_R7RZW6 UniRef90-W9S941 UniRet90_F8FC4 UniRef90_UPI00040C3E75 UniRef90_B2WFN2 UniRef90_A0A022R7F2 UniRef90 B7KF67 UniRef90 ${ }^{-}$W5ETR5 UniRef90_UPI000287BB89 UniRef90_K7GAL6 UniRef90-F7NLD2 UniRef90_V9W819 UniRef90_I9MG14 UniRef90 UPIO0028A2216 UniRef90_J3AL93 UniRef90_F2NCE5 UniRef90_H2ZLD UniRef90 C4JXS5 UniRef90-UPI0002DC4119 UniRef90_UPI000379D4EE UniRef90 K5C141 UniRef90 53 SBT0 UniRef90_F6CKU3 UniRef90_H3SDB7 UniRef90 Q1Q4V6 UniRef90_S2JSQ5 UniRef90_K4Z8F0 UniRef90 UPI000225BE16 UniRef90-UPIO00440E328 UniRef90_A1CE64 UniRef90_W6LW75 UniRef90 C7RFA0 UniRef90_Q8DJJ9 UniRef90_TOMQ38 UniRef90 ${ }^{-}$Q8PU16 UniRef90 B1I4X9 UniRef90_D9TTV6 UniRef90_P37278 UniRef90 UPI000470A79D UniRef90_UPI0002D8120A UniRef90_Q5WFK1 UniRef90_G9QMK9 UniRef90 A8Q2N9 UniRef90_UPIO003B37693 UniRef90_E3GQB7 UniRef90_K2FSD4 UniRef90 ${ }^{-}$Q8PWW5 UniRef90_F8IHA0 UniRef90_UPIO003672686 UniRef90 F9XG85 UniRef90_B7G7U6 UniRef90_I7LIU1 UniRef90 UPI000422CF22 UniRef90_F2NJV8 UniRef90_H1FZY5 UniRef90_C8WGX7 UniRef90_A6R3G4 UniRef90_W2RSI5 UniRef90-W9EI36 UniRef90-M0B469 UniRef90_D8U3K0 UniRef90_B8MKD7 UniRef90 R6NI19 UniRef90_UPIO0035F572D UniRef90_UPI00037F846D UniRef90_Q3B4C2 UniRef90_G2FQL0 UniRef90_G9MF31 UniRef90_J3M3F0 UniRef90 I4C2J8 UniRef90_A4XRC4

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TETALTTMVEKMNVFNTEVRNLSKVERANACNSVIRQLMK
TETALTCLVEKMNVFDTNLQNLSLVERAGACNAVI RQLMR

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TE T E GALVTAGKGGIEKDQW
EGALVVAAAKA Gl F V E
EVAL RVLAEKFNSMPS SLNMLTKHERASYCNHYWEEQFR
EGALIVAAAKAGY SRQTLNDAHP
EACLEVVAK KAEDD
EGALLSLAGKAGFNQQ
M T L N N R Q
EVAL RVLAEKVGSMPSALHMLSKHERASYCNHYWENQFK EAALKVLAEKLPCPDAELAKNPPADRANAVNQCYERALP

EGALLSLAGKGGFFAE
TLQATWP
EGALRVLVEKVGTHNATRANTSPEQRLDFSTKHYQSQYS E VA L R V L A E K I G SMP S A LN MLDS KHERASYCNRYWENQFK E GAL L SLA GKA G I Y Q E A LT P S LDP EVAL RVLVEKVGSMPS ALNMLTKHERASYCNHYWENQFR EAALVVLAKKGGLNLETM$K K E Q D P$ ETALTGLVEKMNVFDTEDKGLSRDERANACNSVIKQLMK

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E SSMN LT
ACLSVLAQKAGIDDTD
E GAALS
$\square G$ TMGLKAG
 TE GAALLSVVAGKAGMQQA TETAA L LTTLA T K L L G F N F E EACN L L V A A A KANDWPD DCRKP WQ TEGAL RVLAEKIGG VAPADTKPHDLVHYASSWYEKKYA

TEGA LSAAGKTGDWKEMANANDPQDKQFP

$Y Y D N Y T$

TEGALLTLAVKAGLDPAAET
TEGAMLTLSEKWNINQE
E GSLLPLAAKGGI
$N$ LNENHP

EGALVVAAAKKGI WR
EVSLIVAARKAGMDPDQET

ETALVQLGLKVG
EAALI A A NKAGLR
EGAI, 1 A A L K A GF TKG
E GALLVAAMKAGLTRE
E A A L QVLVEK $\square$ GFHDA $\square$ QQA HLPDLRAGAVCEMYTS S LP TE TALVQF G $\square$ D HK $\square$
E GA L L Y M T RAF G
EGALIVAARKA GLEAE
E $\square A L L V L A H K A G F T Q P D$
E GALI TILARKAG
YLDPHLEEERLP
EAALC A EKLGGMSHYHFDVPPSVLASANVESWR AHP
E G A L
TEGA LVVAAAKAGLSRDDAPAA
gatla a a mka grot Re
E GALI VAAMKAG
E GALLTAG
E GALL VLAARDNG $\quad \square K$ A A DPTALDRSTYP
TEGALLRVLVEKDGTDNKKDRQLPPSERLHMASRYYENSLP TE GALRRVLVEKIGGADAATNKVRDQERVHFASQWYENQIP

TE IALAFVAAQKAGF DHEELFEA YP


T E GA L L VA A H KA G L H Q A GVS VD H P
TEGALAVLAAKAG
TEGALLSFGMKAGY
TEGALLTFAAKF GLWQEKMVV
$T E \backsim A L Q V F A H R F N Y$ G
TEAAL K V L VEKM G DPE GKNGLSSLDPSETDGCCQQWWSNVAK
TE G
TE GA L H T LAALKAG
TEGALRALSHKAGFDA

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UniRef90-K7KI34 UniRef90-F7NMP0 UniRef90-H1ANC0 UniRef90-B9R6Y5 UniRef90-R7RZW6 UniRef90-W9S941 UniRef90-F8FC41 UniRef90_UPI00040C3E75 UniRef90-B2WFN2 UniRef90-A0A022R7F2 UniRef90_B7KF67 UniRef90-W5ETR5 UniRef90_UPI000287BB89 UniRef90-K7GAL6 UniRef90-F7NLD2 UniRef90_V9W819 UniRef90-19MG14 UniRef90-UPIO0028A2216 UniRef90_J3AL93 UniRef90-F2NCE5 UniRef90_H2ZLD7
UniRef90-C4JXS5 UniRef90_UPIO002DC4119 UniRef90_UPI000379D4EE UniRef90-K5C141 UniRef90-S3CBT0 UniRef90-F6CKU3 UniRef90-Q1Q4V6 UniRef90_S2JSQ5 UniRef90_K4Z8F0 UniRef90_UPI000225BE16 UniRef90_UPIO00440E328 UniRef90-A1CE64 UniRef90-W6LW75 UniRef90-C7RFA0 UniRef90_Q8DJJ9 UniRef90-TOMQ38 UniRef90-Q8PU16 UniRef90_B114X9
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UniRef90_D8U3K0 UniRef90-B8MKD7 UniRef90-R6NI19 UniRef90_UPIO0035F572D UniRef90_UPI00037F846D UniRef90-Q3B4C2 UniRef90_G2FQL0 UniRef90_G9MF31
UniRef90- J3M3F0 UniRef90-14C2J8 UniRef90-A4XRC4


140
150 KEFTLEFSRDRKSMSVYCTPTRPGQAAQGSKMFVKGAPES KDFTLEFSRDRKSMSVHCTHVASNNQGSGSKMFVKKGAPES

 KEFTLEFSRDRKSMSTFVTPBKSRGDGSHGKMFVKGAPES
 ( RVGEFPFSSERKRMSVITKVEQHLVNSEGYDMFTKGSPEL RLNETPFDSDRKLMTTIH PFDGKY AYTK K HIVLEF S R DRKMMSVLCSSRNQ

 RVTEFPFSSERKRMSVVCRNSE KVSADEFSRDRKMMSVLCSRKQTE RLLTFEFSRDRKMMSVLVKRGASGS KV V IADFTRDRKMMSVLCSRN RVHELPFDSERKRMSVVVEHQGG RLGEFPFSSERKRMSVICEMPPGEQEDKPMVCTKGAPDL RLATYEFSRDRKSMSVLVKSGNSQ KVSVLEFTRDRKMMSVLCNRKQ RVGEI PFSSERKRMSVVVEGVMLDPEQEP

 KEFTLEFSRDRKSMSVYCT PNKPSR KVAEFPFESERRRMSVLYRDP | $R$ | $T$ | $E F P F D S D R K R M S V I V S H Q G G K$ |
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R RVA EFPFD A N R K R M S T F Y R R E S D L P A K E P Y WM $\square$ TK G S P EL





 RLSTMDFTRDRKMMSTFVRRTEGHDARLLVKGAAES




 V D E F S F D S T R K RM TVIVYRED D G $\quad$ G

 $V$ QATYEFSRDRKSMSVLV GNGKQKLLAKGAPES
 RLGE 1 EFTSARKRMTTVHETPDGDP RNATLEFTRDRKMMSVLA VGDARSVVLYMKGAPET LKATYEFSRDRKSMSVLVGEGKEQ RYSEVPFDSDRKMMSTLHTLKEG RLDAI P F ES QHQFMATLHHL

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 RI A T L E F D R T RKS M GVVVVKSKS GSNA $R V C E V P F D S E R K C M S T V M S M S N P S P N G N L Y V T A C K G A P D V$



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UniRef90_K7KI34 UniRef90-F7NMP0 UniRef90-H1ANC0 UniRef90-K9XYC9 UniRef90_B9R6Y5 UniRef90-R7RZW6
UniRef90 W9S941 UniRef90 F8FC41 UniRef90-UPI00040C3E75 UniRef90-B2WFN2 UniRef90-A0A022R7F2 UniRef90_B7KF67 UniRef90-W5ETR5 UniRef90_UPI000287BB89 UniRef90_K7GAL6 UniRef90-F7NLD2 UniRef90_V9W819
UniRef90-19MG14 UniRef90-19MG14
UniRef90 UPI00028A2216 UniRef90-J3AL93 UniRef90-F2NCE5 UniRef90_H2ZLD7 UniRef90_UPIOOO2DC4119 UniRef90_UPIO00379D4EE UniRef90-K5C141 UniRef90-S3CBT0 UniRef90-F6CKU3 UniRef90-H3SDB7 UniRef90-Q1Q4V6 UniRef90_S2JSQ5 UniRef90_K4Z8F0 UniRef90_UPIO00225BE16 UniRef90_UPIO00440E328 UniRef90-A1CE64 UniRef90-W6LW75 UniRef90 C7RFA0 UniRef90-Q8DJJ9 UniRef90-TOMQ38 UniRef90-Q8PU16 UniRef90_B114X9
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UniRef90 B8MKD7 UniRef90-R6NI19 UniRef90-UPIO0035F572D UniRef90_UPI00037F846D UniRef90_Q3B4C2 UniRef90_G2FQL0 UniRef90_G9MF31
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VLGFAYKPLTEDPA
CLALAMKQMPTGQQSLSFDD
 VL GLLA YRDL VLGFSQRYLSEDPE AQAEAIAEQEMVWLGLVGM VI AVASDDLASSPLLSNAKTTKEYTQLEQNMTLI GLVGGM CL A L A L K R MPVEQQALS SDDD VLGFACRADEEDPSLESEEDA
 PPRREEMN EDSY TDRRVE VLAMAYRRVP

 VLALACRQLDKTADGP $V L G L A Y R R L S D R P E$ CLA G T DRTPD SPS
 VLGFAYKPLDTVPTILLDEKTT VLAVACRPL ADQELRTEORELIWIGLVGM SVTNGNQDEQVE VI A LASDDVSGNPDSRSAKDSSE $V \operatorname{L} A L A A W C R L G G P A P P G E L T E$ VLALAYRDAE VLGVAYKPLDRETTNPVPD TVEREMIFVGLLAM CI A L A K KVENDDLASMDQKNQSRFAQYESDMVFDGLVGM VLGLAYREMKPREN TVENENAVEAQLVFTGLAGM

 VMAYAFRSLD
$V L G G A H R Y W S E D P P P E S V V Q D$
$V$


VLAFAYRKESAAVETLDW VLAMAYKDMDNENKEYTVEDT

PASV VLGFAYRP

SADADVDEDAE

 NVK KDGDDAE
 VLAALA YK T TADTKPTELL VLGFATRQLEEDPED VLAFAERSLDGVNSDQY L MY EAE EGQYEQNLSLVGLVGM TLGVSFRVFPKK AMKQEDFDEGEKDLIWVGMMGM NLGFAYRRFRSAEE ARABDE LLAVAVRDTDTERRELNFDDVEAG VI ALAS DSNVTGDVQNAKTSKDYLQLE
 VLAGA YR P VLGMAYREIPAEQVEDTAKD VLAVACMPADPGHRELKFSD VLAFATRALPGVPGDV VI ALASSVDVIPSLFRTAESTKDYAD VI AL A S EDITGHPLLK SAKTTKEYAQL SLAFAYREATDADQGKYADSTA SLGDAYRT $\quad$ NTKTSSMPANKDWT LDDTE VMGALAYKPMVSGTKALRAPAD

ETVE

VI ALATSDVSTNPLLHTAKTSEEYAQLE VLAFAYKRVP VLAFARADHH VLACAFQADPEERRDL LLADACKPVTTRRSTLGFGDVAR VLAFAYC PTEWIDGQPTEPKDD VLAVA YRPWESKQSSSAEEDEQLRSTAEQNLVYVGGLMGM CLGFAYKDGENHPAHKLLLDPANYAADETNLIFTGLVGL VLA VA Y R DTD S P PA E V LLAIASRTVSAEQRSLS



## QUERY

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M P L LRSVVLAND T K I QID PHQQNTLQALLMVAVLCNNATLPDGTDKNTGDIGDP LDHNKALE KDLI LMALLCNDAVTVKNKEDG L DLLSNQLH $\quad R Y L L Y D A V L N N D S S I K D G Q$

 EVDPAVLQEARMVLAGGSFANNAQLREHQESQPWQLHGDP
 ILLLT LKS P LL QVII DGIVANSKANGVKGDDNNKNKEY A





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K DNDTMKALLNVTAMANLAHLHQSATEG WQARGEP




 KGSTT WF LLA R AA ALCNRADFKPNQETAKRATTGDA VASTEP $⿴ 囗 十 ⺝ ⿱ 丆 贝$ DKNSPTWTA LSRVVAGLCNRAVFKPGQEEDKRDTAGDA


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QAWP
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TE $\square$ AL QVFSHRFK $\mathrm{L} G K K S L E G H G$
TEAALKVMVEKMGFPGGLSKESSVHEDVLACCRDWNTMEQ ESALL KCIEVCCGSVMEMREKYS

EVALI AFSNKNNK NYNEDRERY乌
EVAL RVLTEK DGAMPSADT RDSKKERAGYCAEYWAGQFK TEAALLVMSEKFGAMPSALANGKGDSAVNAFRTGCEGKWK
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EVALVVVA A Q S K G $\square K K$ K
KCME LI $\square$ GSVSAFRQRNP
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D $\square \mathrm{A}$ I QVFAARFDWGRERWTT GDKPV
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TAGALKVLAAKAGVRHDDAR
SESALKKF
$T E T A L V Q F G \square D H Q \square D L A D C L$
SESALL

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R2QLX7 UniRef90-W5L3X0 UniRef90 R6VCB3

130

 RSDSIPFESQHRFMATAHRDDAGTPW IFAKGAPEK RLSEYPFDSDRKRMTTVHEDNNEY VAYTKGADDE RTDATPFDAKHRFMATL RTDELPFDSDRKMMSTLHTCSKDDHFSEKQILIVKGAVDV RTDALPFDAKHRFMATLHHNHDQHAS
RLATLEFDRDRKMGVIVDSGGKRS RIAELPFDSDRKMMSTI HAMDNG RVATLEFDRVRKSMSVIAREPTGHN RVYEI DFTSERKMMTTIHKHNEKYF RIATLEFDRDRKSMGVMV DSSSGKLVFKGATEV QLAEFPFDSSDKRMSVVYEVPEHSETAEVWLVFTKGAVER RIATLEFDRDRKSMGVIVNSSSGKKS KI VEIPFNSTNKYQLSI HKNPN ASEPKHLLVMKGAPER RIATLEFDRDRKSMGVIV KLHE:PFESERKRMSVIIEE RGKELPFDSERKLMSTVHTGSEAFDGQKAMLTKGGPDV RVAALDFTRDRKMMSVLASRK GQS LETKGAAET KNATLEFTRKRKSMSVHVTSTTGSPASSTNNLFVKGAPEE RVADLPFDSDRKLMSTIHQQEDGRY RLAE:PFSSESKRMTTFNKLDDGDVLDSELVAFSKGAPEVV


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RLQELPFDSDRKLMSTLHE
 KVCEIPFNSTNKYHVTVHETEDPDDPS YILCMKGAPER RVDEVPFDSDRKMMTTVHRDKGGY S RVITKGAPDK QKAEYPFDSSDKKMSVIFESAE RLTVLPFDSDRKRMTVMRRQGNT RLDEQPFSSETKRMDTLHRSDEG RFAKIPFDSAYKYMARRC RVYDIPFDSTRKMMSVIMRENGKEDVDGESLIYYKKGAPDV RLQEWPFNSDTKYMAVKCVPRD QKGPEVFYVKGAVEP
RVDATPFESEHQFMATLHSGE RVGTLEFDRTRKSMGVIVKKAET RVAEIPFDSDRKLMTTVHELKTGGF RVAEAPFDSVRKMMSTVHKES RVAEVPFDSAYKFMATAHWMPWRGQRSGVEVVVKGGPDV KFDEIPFDFVRRRMSVVVEE
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| UniRef90-A0A014NQU6 | LLGLACKRAAPAGQGLAFAD SAYASVAQGYTLLAMVGU |
| Ref90-D7 | VLGFASKNM |
| UniRef90-V9DJP8 | VLALASVEVSGNTLLENAKSSKEYLQLEQKMTLIGLVGM |
| UniRefolo-FGGFM5 | VLAFAVKPVQSEHTVL |
| UniRet90-R5TFV2 | VLAFAYRELI |
| UniReef90-UPIO00463EB58 | VLALIAVRQVPPGHTVLEFEDVQGR |
| UniRef90-IIJPG1 | CLGGA GKDELPKFENYSGNDPSNYSSDESEL |
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| UniRet90-C7 | VLSLAYKEMD |
| UniRef90-P9299, |  |
| UniRef90 N4VEU9 | VLADGYRDWDGKFNDKDAQEDQVRSEVEQ |
|  | CLGFAYKEDEDHPA ${ }^{\text {V }}$, |
| UniRet90-Q3UCH8 | CLGFAYKDELPDPA |
| UniRef90 ${ }^{\text {F3Z }}$ (1B0 | VLaLARRELPRSFTLPDNPDLLPQEAVETDLDFLGLAAM |
| UniRef90-W7 | (kRLDGSQPDVDLDD |
| UniRef90-B5B | ALACRDYDDE S ${ }^{\text {S }}$ |
| UniRef90 C1M | ERDLTFLGFVGM |
|  |  |
| C9AB87 | GFSFRPFEEGPSPEKTSSKTPVEVAENDMVFSGLVGM |
|  | VMAFALKKRLPEGFSPEKVSSKALDAERAEEDMVFSGLLAGM |
| UniRef90- ${ }^{\text {U1C }}$ | TLAVGYKQikd k |
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| UniRef90- ToC | CLAVAQKTSNHHAAHKTLEQTDNFASDESGLTFLGLTGM |
|  | VLAFAEKTLPENR PLTLED |
| UniRef90-SONQ | VLGMAYKYIDSVPEKL |
| UniRef90-A0AO23FXW4 | KLPTDKYPPGYPDADEQNFPLTGLRFLGLVSM |
| UniRet90 OPIOO047CA907 |  |
| UniRef90- UPIO0045EB07F | VLAVARRPLPDSRG A AEQIEGEL |
| UniRef90-B4SA | VNQVSEVRG ADEGM |
|  | MLAAAYKPTPGAGHEUDHDD |
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| UniRe90-RVEJ7 |  |
| UniRe90-S9Q717 |  |
| UniRef90_0941M7 | GFAYKDGE EHPA HKYLLDPAYYSSTESNL |
| UniRet90_D4MC07 | AYKYVETPPAEMS SELVEKDLTFAGLVGM |
|  | VLASAFKQTDSLPENUSPE |
| UniRet90-F4H0X7 | T |
| UniRef90-K9V12 |  |
| UniRef90-A0A024Lzx0 | VLAAARRP AGSSDTVD何VSDGLEFLGVVGI |
| UniRet90-UPIO004705740 |  |
| UniRef90 W90VN | CVAlDaYRTYELERVPTDE |
|  | A $\mathrm{O}^{\text {K }}$ L |
| UniRet90_C0XFY1 | VLAFAYRMVDKVPTELTSDAQ EHDMIIFTGLIGM |
| UniRet90_M1NJ53 | $V L A F A C V R L P A R T M T 1 D H A D ~ V A S G L T F L G L Q G M ~$ |
| UniRet90-H2ZLD9 |  |
| UniRet90 RONC20 |  |
| UniRef90- G7M0C9 |  |
| UniRef90_17L9M3 | VLTFAYKE KDEEDS DENENGFTFIGLVA |
| UniRef9 | VLAFAYKKMEDER DLCLED |
| UniRef90_C4LFM4 | LALAAEDTADAA |
| UniRef90_UPI000462 | LGEAYRPLETPKAGQAADVAEQADVIEHDLI WTGMVGil |
| UniRef90 ${ }^{\text {D } 2 W 237}$ | TICLAYRDVNPEVEFSSRADEENYLELEQDLV |
| UniRet90-O801M8 | VLGFCHLYY LPEDEYPDSYPDTESMNFPTSNLCFVGLMSM |
| UniRef90_U1K. | QELVFLGLQAM |
| UniRef90_A0A015LLG7 | VLGLLAYRDL |
| UniRet90-14M3H4 | TLAMAYRPLVSNAAGQIADVAEQSDVLESDL WNGMVAM |
| UniRet90_UPlo00289DC7F | VLAFAYKPVDSL ELSFDD |
| UniRef90- T0QAP7 | TLCLAYRDIDASMDDik |
| UniRef90 ${ }^{-}$F9W2W4 | DNEDHPAHQLLLDPNNYSSIEDEL |
| UniReef90 W6KWS8 | CIGFAFSPCLPVK ELKLSNPDNFEAUESDLIFLGVCGM |
| UniRet90- Q2LSG8 | VLYGAMRRWDHLPEDMSHGN TEKELTLTGLVGM |
| UniRef90-U1NHA2 | $V L G F C D F R L D A R R F P R G Y E N T E D V N F P V E G L R F V G L V S M ~$ |
| UniRef90_A9BUH0 | EVPPHKSD |
| UniRef90_COC | VLCAAKRDWNALIP EN |
| UniRef90_K9GB |  |
|  | KKEELHHPAHKLLENTEEFAA ESGLTFVGLASM |
|  | M |
| UniRef90_F2J10 | M |
| Ref90-11MC84 | CVALAYRSYDLDKDPSNEEELDQWSLP HEELVLLA GM |
| UniRet90-G7XXL | VLALAQREGSTDR L DAMRALDADQAERELVFLGLVGM |
| UniRef90-81Y298 |  |
| UniRet90-A4HMM8 |  |
| UniRee90 Uploou3692A9F |  |
| $90^{-R 2 O L X 7}$ |  |
| ef90-W5L3X0 | QMCFLGLMSM |
| ef90_R6VCB3 | G 1 A M |
| Ref90 R6T1Z2 |  |

UniRef90 A4RRP9
UniRef90-A0A014NQU6
UniRef90-D7V714
UniRef90 V9DJP8
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UniRef90-B9HPP7
UniRef90_Q3UCH8
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UniRef90_M1NJ53
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UniRef90- H3BIX7
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UniRef90 F71466 UniRef90-K9T2D4
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UniRef90-D8PJ88
UniRef90_T1G939
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UniRef90 O6W965 UniRef90-F4WDE3 UniRef90-R8BWC2
UniRef90-UPIO00379C75C UniRef90-S8CHL5 UniRef90 E7NPF9 UniRef90-B9E030 UniRefofolite 08 UniRef90_C7XKK5 UniRef90-S6BTU6 UniRef90-V4S3E0 UniRef90-C7SP03 UniRef90-H2Z2K8 UniRef90_l4MY06
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 $m T \nabla Q A \square W_{T}^{T}$ TVVCSDKTGTLTENKMTVTGKIVADEKDL
 VICTDKTGTLTQ
VTVICSDKTGTLTRNEMTVKKIIIDNKIIESRDYS
 VSVICSDKTGTLTQNKMTVKQVYVNNK VICSDKTGTLTQNKMTAKEVYLNGREYGNTED
 TMGNATAICSDKTGTLTMNRMTVVQAYIGDTHYKTVPEE MVVKKAWIPARGTYSVGSSNSADLSHTATPPKDQNASAEK VSVICSDKTGTLTQNKMTVTKRYDD

QASAEE K
KHCVDD
KYG TMGNATAlCSDKTGTLTTNRMTVYVECYGAGKHYSNGL
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 MTVAHMWFDDHDVEADTSDDQ SNATYD
TMGNATVICSDKTGTLTQNKMTVVAGTFG TGQRFSQDR KGADAMSEK MVVRKAWI CGTDTGTLTQNKMTVVOHFLADGQSGEFSKD MVAKKAWVPSMGTFSVGTSNEPEGGDGGFDNLPPSQMDPD MTVICSDKTGTLTMNEMTVEGDSYAPVGAMHPVDS
 VTRMWI PGUGTYSVNTDDPYNVTFIHAEPREVSSDEGS MTVAHMWFDKMUVEADTTEDQSGV

GDISHNEKEPHKVAYNDKDKRTSYAE TTTCSDKTGTLTDNQMTVVEAY $\square G G R K \square N H D E$ TTICTDKTGTLTMNDMKVT TCICTDKTGTLTTNHMEVDK $\square W \square C E D \square K C S N S E S$

## VICSDKTGTDTKNEMTVTGAGYNGVGEDHTRKC

 $\square T Q N K M Q V V A G T V G T S F G G N Q A S D E K P P T T P G T P A S P D D A$$F F F G L S V A V G L T P E M L P V V V T A N D A K G A T S M A R K$ F FGGGSVAVGLTPEMLPDVVTANGAKGAASMARK
SRVSATCTDKVGAFSKNKMET VKAYDSNGFTDVNEE VI CSDKTGTGTGNRMTVAHMWYDGKVFGANTDE T回GKVNVICSDKTGTLTDNKMTVTMKYNQVGVTRTANN


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UniRef90_LOIHS0 UniRef90-LOIHSO
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$E \square S N P A$ L L M MVLAN DT KIENGGN QMLSAD VTSLIVEGIAQNTSGSIF EPAENNT VT S LIVEGGA Q N T S GSI EVDL NDELGNYLI SSSILCNDSTSKNGVEDG

FVGS VDL NDELGNYLI SSS DLCNDSTSKNGVEDGTGKLIGGP DLSNGSY KLLLDNIMLCNDATYNENSKTG

QSSETWRAL CRVLTLDCRAAFKSGQDADVR\|VIGDA S $\square D S P$ NESTTLALLATLI AVDTMDETTMDYDKGKVTSTGNP EATDDD $\square$ NS L S WL CRAALLCNDAR LTERDNSWH DQGDP E LEVLDRNPAVADI A AVSSLCNDARDKGNNNPEAFDRIGEP A S GEKK STTTWYAL SRRVATGLCNRAEFKADQEDKKRECTGDA QTTEAGDPDLSALLVPDLVACNDSRVVDDK $P K P T A Q L N T A A D W I A L N G T A N S T A N L E E K E G K T V V I G N S$
 GDDLTA GKDAE QLI KSFVVLCSDATSNGNESTGGM D



VLRVMNYANDT
K VD A S G KL I G D P KFYDTKSEAFQRLLQQVATLCNNAEYDTKNEDGSYDDLKAE HGTVSPFEALESCLTAGVLCNDARLQQMKDD TWSVVGDP $P$ V S A V R K R EFP K L M E GF L L C N N S IL G K QE
 DAHTSNFELQNRLAQLMLLANDSQESDQGLVGGB



 ELLEKE ELLKDYNKMMKA LVYCNDCNY DFTKDDMLEVVHGEP





 TF ANNSDTWFTGAQ $\square$ A G L L CNRADFKPHQETAKRATTGDA PENAEAS WQVHLLLA GSALCSNARLIHLTHPSRWQEDGDP
 KNSATWMALAR DAMLCNRAEFKQGQDQLKRECNGDA

 E EMVLQQSRVLIDDYFN A SLAANDANVHKTAE GEWHARGDP A P L S P E N NAL ETV LN A A AMANLSHVYK SETGQWHARGEP $P$ VSVVA GS LLE E RYLRT IDDCNDS QL M QDENGHWQVT G GP
 $P V T P E S E P V L K E Y L T V A S L A N L A K V T K T G G A W Q A H G D P$ $N \mathrm{~N}$ I G $\square Y S E D V L K L A N V A V L C N D T T F G E D G G R K I L L G D P$

 ILLEMEISSESVLLSLLAQVI FQNTACE DSKDEN GKNKULGGTP
 $N$ ITPPAESADI RELLLIKSIVLNSTAF EGEADGQQTFIGSK
 $K$ F QLP S GVVSLLVEGIAAQNTTGSVFVPEGGALEDS GSP
 TPNNP LIPPTWNY L A A N I GLL CNRAYFKENQTG DDK E C DG D A

 SV SPNVIDKLIQE GVALDNT TGSVVYRETSSVS GE FS G S P TWASLSAVAALCNRAEFKDNQEDIKRECTGDA



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R G GEIPFDSQRKMMTTFCSSEK
EVAEYPFDSDDKRMSVIMKHNAT
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QKMEYPFDSSDK RMSVVYSK PG
$R V A E L P F D S D R K L M S T V K E A D G S Y F$
$R \mathrm{~V} Q \mathrm{E} \mathrm{V}$
VPFDRKLMSTVNKDGKY
ILL HVFPF NSEKKRGGVAVYMAGSEVH RLGELPFDSDRKLMSTLHKFDNK
 $\begin{array}{llll}K V C E I P F N S T N K F Q L S D H T L E D P R \\ E G K Q & \text { GFSSARKMMSWAVPSEGGGY}\end{array}$ RHDEI PFDAAHKYMATLHSDHQG

 LRYQMHFSSDRKRMTSVAE
VVFEDPFSSDRKAMSVVARVDDTKLF


## ,

 EI K N FPFDSSKRKLM M SLL VKDQQGQH W
 RKAEYPFSSEQK WRMAVKVVGTPQ




 A GNY LVAVKGAAPDR KVSEIPFNSTDKFQA VHKDGNVMCGKHETAYVKGACDY



> 保

R K K ELP F D STRKMMSI NSENH
 VGHMLTFSSTKKRMTVVVRTS RVY DVVPF DSTRKMMSVIVNEN


FFTRRRMSVVVEDRQGKRQ

## 

FNSSRKSMSTVLKNADGSF
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A QDDRR LLLVMKGAPER E 1 P F

 STNKYQMSI HFREDS K ATTCRVVFTK
GKEVCYAK
DGTKRMLI K
 RTMTHVLMMKGAPER
 RMGEIPFDADRKRMTTLH WSEGRLLAFTKGAPES KICEIPFNSTNKYQASIHEMETEN SHYLLVMKGAPER
 IIDQQKIMVTKGGPD I
 RVAFVPFDSQYKYMATHNAGGDERY— II HA FPFNSEKKRGGVAVKLLDSEVH EI AEFPFDSS DK LMSMLYTNDPTSRVS RVDEVPFDSTRKMMTTVNSMKNEEK LLAEIPFNSTDKFQASVHEDAD LLVEFPFDSDVKKMSVIYRD

## D

 E $\stackrel{L}{\mathrm{~L}}_{\mathrm{H}}^{\mathrm{H}}$$$
\stackrel{\mathrm{L}}{\mathrm{~V}} \mathrm{H}
$$

 $M L N V E P F N S V R K K M S V L V A L D P G E L$
 LLQLIPFDSGRKCMGVVVQDPNGKA






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                    D Q
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$\square$ D Q R Y
$\qquad$ L TVKGAPDE
HWKGAAE
I
FTKGAV
F
$M V C T K G A V E S$ DKRYLLVMKGAPER V HWK GAAEI ILHVEAFNSKKKS SGVMMKKKTDNTSH KL DEIP FNSTNKYQVSVHKTDDPN

[^0]D G H HV QWKGAA E M
$R A F C K G A S E$ RAFCKGASE



|  |  |
| :---: | :---: |
|  |  |
| UniRet90-B1WPR5 | V NRCPEDARPDASLLPMNEGQKSETCTANDD |
| UniRef90 E9FWM |  |
| UniRef90- U2NSK9 | I MDRCSHLEDGKIKPLTQTKKKETLMIVD |
| iRef90-B1V9Q8 | $\checkmark \mathrm{LQRCTHIEDQGQ1} \mathrm{I}$ KKTPADQK\LETQUNQL TQKS |
| UniRef90-G2Q | VI RVCTKYHTEDGVAEMTDEFRQHILSNMEVFFAGL |
| UniRef90-H2TYR2 | VIRLCTSYNSRGSTLPLTTHQQRELYQQQVSYMGSA |
| UniRef90-W9VMF5 | 1 I DLCTSVGVGGHEETMTPADKESILDQMTFL AEQG |
| UniRet90-E1M5067 | LLKRVTHIEVNGEVRPTTEEDKQA: LATNKDL AKQA |
| UniRef90-E9C | LCSHIATPQGAlPITPDHKAYITSNDQRM ASD |
|  | KRVKYVSEKGQ\KP |
| UniRef90-K7U611 | ILDSCTWVDTGGSKHSMTPEKVAEFKKFDEDMAAA |
| UniRef90-F5ZH866 | LLKRVTQ EENGQVRP TDQDKQTILDTNK SLA |
| UniRef90_R9CLE3 | LLDRIVK KTSTGVREITYEDKQNIINANKQLISQS |
| Ref90-UP10002881 | LLKITNKINIDGHLQDLTEDITKT |
| 20648 | RCSSLKGQELPLDEQW |
| Uni | RCNQHLVNDTSEE |
| UniRef90-UP10003708F64 | IVLALCSSVYVSDTEAALDTTDWQQQVEHI |
| UniRef90 KoQZV2 | LLPRCTHAMRDGSVVKLDGKLIRRQLEQKTSDL AS |
| A7S6M |  |
| UP10003755 | VLSRCKQWHTGDGERALRAS |
| UniRet90_UP10002 | VLSHCTHWLDESSKAELTSED |
| UniRet90-V71370 | VLKKSRNILVEGKVMTLTDDMKYQILKANEMESMSNQA |
| UniRef90-UPI0002C34AD2 | DSDDQVAAMDDDKRMFFRKSDEEMASGS |
| UniRef90-B1QYA8 | LLERTVNI KTSSGIRKFTKEDADNTNAANKNDST |
| UniRef90-UP100037E3E94 |  |
| UniRef90_G9ZN | RVT QVLDN |
| H3BIX7 | YCTY NSKGQTLA |
| UniRet90_G2JLM9 | CRYVEVNG |
| R6EJ | YVRCSD |
| UniRef90_R6QN81 | LLNRVTKIQKGTEVCQUTQEDKEAI ENQNQEFSRS |
| UniRef90-UPI00037C149E | LLKRVTQLEENGAIRPITDADKETI |
| UniRet90-Q01GZ3 | VLAKCTSYFANGKTSSKTSDFENTY |
| UniRef90_K9ERB7 | RCSYMMDA |
| UniRef90_R6NH77 |  |
| UniRef90_UP10002 | CSTVAFDN |
| UniRef90_AOAC | LLKRTTKIEEDGQVRSLTDKDSKR\\|LE凹NH SLA |
| UniRef90-Q1CYB0 | VLRRCALEDGCSSSSVL AEVDGLARQG |
| UniRef90-VFRJ60 |  |
| P10002629 | CS ${ }^{\text {cos }}$ |
| UniRet90 R6ZKN0 | LDRCDQ HDKKRP EEDUKLIKEQNE |
| UP100045 |  |
|  |  |
|  | N |
|  | S |
| UniRef90-W9APP9 | MFERAAWVLVDGEEKTMTDELLNDLQQANESF SEQA |
| UniRef90-UP1000471177AC | MLEDCTFA |
|  | V RKCSH Lida |
|  |  |
|  |  |
|  | SILDQSGES\\|KFTVADRN |
| UniRef90-UPIO002893407 | LLEMCHKVRGADGDSELDQQEWEE |
| UniRef90_10V4K8 | VLDLCAGQLSDGTVSPLDR |
|  |  |
|  |  |
| K9T2D4 | VLRHCHFILRDGQLKELT |
|  | S |
|  |  |
|  | 1 ERSQT LLMNGVDEKMTEKWKDA |
| UniRet90-A1CKH3 | M |
|  | SVCT |
| UniRef90_R2P4B5 | VFERSS |
| 2GCA7 | SCPKIQMGDEVVDLTKDIEND |
| UniRe990 C5F | CTTUDKDTGAVPMTDE\RDQL |
| UniRet90-WOHU81 | LFRLCCREQTENG |
| UniRef90-Q03E19 | LLLKRTTQYVEKNQL L PMND |
| UniRet90-G3LY22 | V S ACST DSENTP |
| UniRef90- R5L207 | 1 LEVCKYVLLNGKVENLTSKM |
| UniRef90-UPIooo2B45801 | 1 LDRCSTILINGNEYPIDDEDKRSYNHAYEEL GGLGER |
| UniRef90-N1QN83 | VIASCTSYENDKPAVEMTEAYREQLLENME ALIAK |
| UniRet90-MOS | VLA SCTS WLD |
|  | KMC K |
| UniRet90-Q6W965 | II L RCSTIVMKGEELPMDENWKESFEKA |
| UniRef90-F4WDE3 | I LPQCTKYYENGQVYPLSQK |
| UniRef90-R8BV | $V L S K C T Q L L S D P S K A P L T D D H R E T V S R L I E H Y$ A TQS |
| UniRef90-UP1000379C75C | ULSNCTLVSSNGQMPLTS |
| UniRef90_S8CH | 1 LCCOSSYIDSHGLVPMDDHKLS |
| UniRei90-B9EO30 | II ARCTHWFKNGV |
| UniRef90-I1EDQ8 | ILSRCTTYLLDGEEMQVTNDFSKDFNDA YMELGGMGER |
| UniRef90-W6A9A1 | QKCSRAVVGGEIVKLTPQTKKQV |
| UniRef90-C7XKK5 | TPQDKKQIAHLSHQMQ ADA |
| UniRef90_S6 |  |
| Un | AMCSSFYDAS |
| UniRefol-H272K | ( ${ }^{\text {d }}$ |
| iRef90_I4MY06 |  |



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UniRef90 U2NSK9 UniRef90-B1V9Q8
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HMWFDNQDHEADTTEDQ SGAAFD
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MTVAHMWFDNQDHEADTTEDQ TGLGFD
VSVICSDKTGTLTQNRMCP QK】YADGRDTSCEDY VICSDKTGTLTQNNMQV

Vs MTVTRL
TMGNATATCSDKTGTLTMNRMTVVQAYDTGRFYKNVPED VTT CSDKTGTLTDNDMRLT LTQNRMTVVKKDIGKSI NSDDFVENGKSYNDSGKVWAGGQ


 M पTENKMVVKKAVIGD NEELIVTGAPYERHGLFLDRDY
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VSVICSDKTGTLTKNEMTVT EAYAVDETDF DDPS $\square T$ RNEMT


TTCSDKTGTLTQNRMTVTHDWFDPNDHFHGEKR
T $\square G E V T T D C S D K G T L T Y N E M R V E G E G Y R P V G R I T D E R T$ MGATTVICTDKT GTLTQNQMQVYQTNFYALANQKLGED CICSDKTGTLTQNRMTVAHLWCDDSIIDADEDD
 CICTDKTGTLTTNHMVVNK ПWICDETKSIGSNQ MTVTNV MTVTNIVTSDGW ETTQSQYEVTGTGYALKVRLTKRNS QVKYLVICSKKTGTGTQNQMRVHEVNFPALNPQRPD

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QLLGQAMTLLCNDAYTNDDNK ${ }^{70}$
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HENTDDKNLLAKAMALCCDA KVIVKHLDADONFGAMDILCTDKTGTDTQDNSDTVAGEP KVIVKHLDAIQNFGAMDILCTDKTGTLTQDKIVLENHTDV TAPGSGNVQVRATLLSAVLCSNTQLKQQEVDGVWVPFGNS KVVVKLDALQNFGAMDLLCTDKTGTLTQDKIVLENHTDIV TFDPNEDQRLKTALEVGVLCNNASLPDEGEGD ETTGDP TVLAQNDCDLRRALEAAVCSNARIQRRMGTRSLQVDGEP SVDLENFNSEDMLNVCTVALCNATVNEDGKEDKALGDP DEHPELEGYLNIATLANLAKVHKSDEG WKATGDP
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D KI YANSTKQILELAAMC

NDCELQS四PKKEPKIIGEP ALNTKILDLIVNGISNSTYYTDKHKPPEKEGGLPRQVGNK VVSTDETGALGSRIDSGLLCNNARDKPNEKDNVVDFVGDP
 LDTKENTSKLRYLVEGMLLCNDATSKDGSQTG NNVEMAKTNTTNLLEDGAVCNNAYUQNGTLLGQYOLGT TPNMSSNEVAVETLLESTFNNTSGEVVTNQDGKYQDLGTP
 LIPVK $\square D L L V L G \| G V N C A Y T T K \square M P P E K E G G L P R Q V G N K$ RQAVAALDEHAPLLRALLLCND AYEGAVDETAHALGDP EMEMLSNSRMLTLLAEGISLNSTAYDEKHTDRLNDHIGSK VI NQSEKEFTLELSSMC AVSGTEEGQLNDLLKMMKTCNDA DLQEEDGTWSVNGEP PFDSAHDSKPAATLGDIMTLNNDSQLTAEG KSSSEPDSTLKVLDQCIFNNTGGDIVKNKDDRDEILGTP FNGSQLAKNDKTFATSMVLNNESKLIFF DKNRVNRSGLP
 NVKISLSPSHKFLSQAATLCNNSK LVQEKDKWKM1GDP DTPQDVAETMIEGI SVNSAFTSRVLPSLEPGGPPTQVGNK EVKSQIPDVATKMLLQSTFNNTGGEVVTNQDGKLNTLGTP VPPPSVSETFSDTLCQSMAVNSDANLSYKDNGTVEHLGSK KVQPGRFSALKALHMVARLCNGAKFNAASENEEPTVKGDP KVFQKCSSSVRDLDTKGVALNSTAFEEDREGQRDFVGSK KVVVKRLNALQNLGAMDVLCTDKTGTLTEDRDVLDRYHGA OSSVAALL!EGIAQNTADVFLSEDGGVAEVTGSP KVVGEGLTDLRPLLLPMALCSDSSVREAALVGADERHDDP EQVERTNKLLYEFMRCAALCSTTVLQVDADDDRLTGAGNP NINPYMYDELLKLIHVSVLCNESEVSRV DGEYVVTGSA ALPPKSLDLLVNAISINSAYTTKILPPDKEGGLPKQVGNK
NFSSKLPEAALELLLESIFNNTAGEVVINQDGHRQLGGTP PYNGSVSPAIKRAMDDGAICNNASLERNEDGN GFVGQS RVDVSSTLPLSDFLRAGVLCNDTE LHQQAGQYQ\|YGDP VLVPKVLDLLVNGISSNSAYTSRILPPEKEGGLPRQVGNM YLENDSYQKLLRCATLCSRSHFRVPEFDVPLAKRVVNGDA $G L P G G T A D D M L A V V A A M A R C N D S A L V E S Q G G E W S L V G T P$
$Q T S$ DVVIEPHEHTWNALSRIAMLCNRAVFKSNEANVPITRRGC AIDSSGAEAVEETLMVGTIANDGDLHWQVDQGHWQIVGDP APPAGATGGLRNLLLQAGVLCSDAELKQEPDGRWEVLGDP AMAPKVLELFQQ GVGLNTTGSIYKSSSTSEHEISGSP KSETKVDDVLKQFLTCVHICNDA ELKRQDEAGWMII DGDP SSDSETASSIYNVLEVGCVCNNAA SP FKFIQAFI AEAIAANSTADLEKKPLSPPHFLGNA PLPPPTAPCLQEFLTLLAVCHTVVPEKDGDNDYQAS SP DKTTPSWKALARUACLCNRSEFKAGQESVNRETTGDA P REDASPQLQTTLNEALCLNSTAFEDKDEDGKLDFVGSK LVQLAEYPDFKEFLTAVKTVNEA NLRCDEQGYWVISGDA KITELKSERAMEULVQGIFVNTGSEVVKGDDGKRT LGGTP
 SDSSEDAANVLALLQYSSLCCDGKIVEIGSDGTEHHIGDP KVIIKRLIA QNIGAMDVLCTDKTGTLTMDKIVLERHANQ DAHPEDHAVLMEFARTAALCNDSVLRVRGEDGWHVEGDP AADEKDNMALK IMNYANDTKIAQDGTL GDP NQTGPEEPGVRDMDNDCTLNTKAKFDRVDPVSQRQLLGDA KVSSDDHDSALALLLESIFNNTGGEVVKNKDEKIELLGSP QLQSGKEPEVRQFFFLLAVCHTVMVDRIDVERHLNYQASP RTSPGFKADAKIAALCNRAEFKPGQEDKKRQVNGDA


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I Q
Q Y T KGAPDV KI VIETPFNSTNKYQLSTHE NGKPEESRYLLVMKGAPER RISELAFDSDRKMMSTEHR GKVDGKAVMFSKGADDT RVAEIPFDSERKLMTTV NNHHGKYLDTVKGAPDE RVAEAPFDS LRKMMSTVHKTDKG
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KVYT
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RVDEI PFDSDRKLMTTVNKYDNKDS
RLEEI PFDSDRKLMSTKYELHD
RI QEYPFSSEQKMMAVKCIHKYNNNKEE
IVKVEPFNSTKKRMSTILELPGGGYRAHC
RMEEEPFDSDTRCMTVLAR
$K V C E P R N S T K Y Q V S I H E T E D K N S G S R C T A$
K V Y
FNSVRKSMSTVHKNEDKN
$R V A E D P$
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RVYT FNSVRKSMSTVIPYKGGY
LVKVEPFNSTEKRMGVVIQDP
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KTFEIPFNSRNKWMTVVNHCQESGEKGSEPWLLVKGAPDV

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| :--- | :--- | :--- | :--- | LLQ QNARSENRNDMSTIHETHNGHKF KVYT FNSVRKSMSTVIKLPDGSF

ERY $\mathrm{K} G \stackrel{\mathrm{~S}}{\mathrm{~S}}$ GFYMMYTK SKGYMFTKGAPEVV

[^1] D
 DV
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KVYT FNSVRKSMSTVIQKPGGGY
KVLETPFNSSNKYQVSI HEGDDPN KI GEIPFNSTNKYQLSIHPMSDKQN RIATLPFASANKFMAVVDRNP VVEQFTFSTERKYMATI VKASQGEQ KVAEMPFNSTQKFQVSI HRNETENQ
 VLHVETFNSEKKRSGVAIRTKTNNTVH

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ILSKIPFNSDYKYMAALVEKEQSKW
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 RIGELPFDSDRKLMSTIHQLSNGKY KVFEIPFNSDNKWAMTI H LVKVEPFNSDKKRMGVVLQDPDGGFRAHC VLAULDFNSDRKRMSIIVRTPEG KVCEVPFNSTNKYQVSVMESDNPD
KVEGPFDFQRRRMSVVVEDGGKRQ

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| :---: | :---: |
| UniRef90－H6LGJ8 Uni U |  |
| UniRef90－H7CE96 |  |
| UniRef90 G9 | $V L A F A F Q N S D E V P G K M T ~ S K L V E Q N L V F A G F V A M ~$ |
| UniRef90－UP10004661F1B |  |
| UniRef90 G9W | VVAVATKYLPAREGDYQRID |
| UniRee90－H3GQ | TJLCLAYRDLDPAEDTMNWSD（ EDVEKNLTCVAV VGU |
| UniReef90 Q4LB3 | VLA A MQPM HLLPFANDCEDDDKFAVLSQP |
| UniRet90＿R9VRN3 | VVACAYKY |
| UniRef90－UP100037FA7B0 | ILALAQKTVDNPDTEPY KNLTLVGIVGL |
| UniRet90－R6BF | VLALCWRKV |
| UniRef90－Q6CA9 | VMALAYK ${ }^{\text {V }}$ |
| UniRet90－R5IZX7 | GYRQMDEGK KDGDEDEDKF |
| UniRef90－K1WT01 | VLALANKEW HGPMGKNEQENREEVETDLIFQGLIGD |
| niRet90＿Q8QFW0 |  |
| UniRef90－E3GQ74 | AFAYRELPGVR DLS DED |
| UniRef90－R5N | VI AVAYKDISG ENTKDTEDLEKNLKFVGLIGM |
| UniRef90－K9J7K1 | T CLAYRDFPSDSEP NWDNEDIELSDLICLAVVGM |
| UniRef90－AOD9N4 |  |
| UniRef90＿10WWW8 | TLAVAYRRLEVTVPPPL DESLERNLVYAG\｜AGI］ |
| UniRet90＿S6EJI3 | LEKDLIFVGLMGM |
|  | NEKDFI F L GLI SM |
| UniRef90 M9P9 | VLALAKGRS |
| UniRef90－D4LAC9 | VLALAYREMEEGF TEKDCDSLSAPAQGMIGGVGM |
| UniRef90－16NW79 | VLGFCDYSDPADKYPDGYPDADNVNFPVHGLRFVGLMSM |
| UniRet90＿Q4RS72 |  |
| UniRef90＿A5FXK1 | G |
|  | TLVLAYKE【NNEP S SEDEAKVITGGLTELGLVGI |
| UniRee90－UP10004795D1C | VLAVA M |
| iRef90－D6XSC8 |  |
| UniRef90－A6D267 | KALSEADLERDHS |
| UniRet90＿UPIo0021 |  |
|  | C |
| UniRet90＿UP100006D0502 | TVA CVKYDPSHPA |
| UniRef90－13JG82 | AL |
| UniRef90－K2A625 | VLGFA |
| UniRef90－A7S310 | T CMAYRDFPPKDHDDTPPDWDDEAGILSEMTAI A AGM |
| UniRef90－G6CX43 | T SVA VRDFVPGKADUNEPNWDDEDNI VNNLT |
|  |  |
| UniRef90－F8F | VLALCRKQLDGIKTNVSPNDMEEMMYAEQGLTLV |
| UniRef90 STZHQ3 | RGM |
| UniRef90 D9W2J2 | A A M M M |
| UniRet90－J3MY | CVAFAY CPYELKMVPREELDEWQLPEEDLILLGMVGI |
| UniRef90－UP1000364ADF8 | VLAVARRQ1 PAR |
| UniRef90－Q2KW | V AVA ${ }^{\text {V }}$ RLPADHGPYKVGD |
| UniRef90－Q860H888 |  |
| UniRef90－Q4RX17 | Tl CVGYRDFSADPEP NWDDENNILSDLTAICVVG1 |
| UniRef90－K4A597 | TLCLAYKEMDGGF |
| iRef90＿A8N6V1 |  |
| F7SRY8 |  |
| UniRef90 S7Q4B0 | T CLGAYRDFNDVEPPWDHE |
|  |  |
| UniRef90－UPIOOO3160ACC | ILAAATRPAPEVRDS |
| UniRef90 R5UTR8 | GFAYKTANCKGGDCIEK FAESDL |
| $\begin{aligned} & \text { UniRef90-G7Y6D9 } \\ & \text { UniRef90 K4INF2 } \end{aligned}$ | VLGFCDYELPASQYDETYFDTEEVNFPLDDGLRFVGLVIS |
| UniRef90－K9P3 |  |
| UniRef90－V7CYV3 | C AFAHMQ\｜S ED\｜DYNDKEKAHQILRGLTLLGI |
| UniRef90－W7Z3P3 | VIGAAYKK，GSAMDSTGHHDLDE |
| UniRef90－E9GFD7 | VIGMARGDSMEA |
| UniRet90－K9WBB7 | TLGLAYQDMSPDASEDDTDD |
| UniRef90－UPI0003EDD3BA | CVAYADLSEHEYEEWLK配ECYETIEKNL |
|  | VLGF CDLIMLPSDKFPLLGFKDCDEPNFPLNGMRFVGLMSM |
| niRef900－Q6V | VLGFCQYFLP |
| er90－UP100004774 |  |
| iRef90－E7RH37 |  |
| UniRef90－UPIOOO37AA977 |  |
| UniRef90－M0X4M2 | T |
| iRef90＿M4N134 | GV |
| UniRet90－F4GK | VLGVAYKVIDTVPEQPTSD ELENGL |
|  | － |
| UniRef90－K2JD17 | L |
| UniRef90－H012S6 |  |
|  | VLAMAFKYDDEDPQTDT |
|  | QDLLPENEYPSGFKDKSAKNYPMSGMTFVALCSL |
| UniRef90－Q9FVE7 UniRef90 F7H0D9 | AYLD HDKDTHRDEAFSVGTADPTRGYTCLGIVGI |
| UniRe990－T1QE94 |  |
| UniRef90 G6AU54 | VLA【AQKS FLSKENNFA凹ED EKDMVLIGYMA |

UniRef90 H6LGJ8
UniRef90-H7CE96
UniRef90-G5ILR6
UniRef90 G9WI78
UniRef90 UPI0004661F1B
UniRef90-G9WEA7
UniRef90_H3GQ90
UniRef90_Q4LB38
UniRef90-R9VRN3
UniRef90-K3WEF3
UniRef90 UPI00037FA7B0
UniRef90 R6BF82
UniRef90-Q6CA91
UniRef90-E3GXR9
UniRef90_R5IZX7
UniRef90 ${ }^{-}$K1WT0
UniRef90-Q8QFW0
UniRef90 E3GQ74
UniRef90 R5N7D3
UniRef90 ${ }^{-}$K9J7K 1
UniRef90-K2B4L4
UniRef90 A0D9N
UniRef90 I0WWW8
UniRef90-S6EJI3
UniRef90-R6JUJ
UniRef90 M9PG15
UniRef90 Q6ATV4
UniRef90-D4LAC9
UniRef90 - I6NW79
UniRef90 Q4RS72
UniRef90-A5FXK1
UniRef90-Q54HG6
UniRef90 UPIO004795D1C
UniRef90 ${ }^{-}$R5YILO
UniRef90_D6XSC8
UniRef90 A6D267
UniRef90 UPI000219579E
UniRef90-UPI0002C33E87
UniRef90-UPI00006D0502
UniRef90_Q03XK2
UniRef90-13JG82
UniRef90-K2A625
UniRef90 A7S310
UniRef90 G6CX43
UniRef90 K4ENZ7
UniRef90-A4S2L3
UniRef90_F8PMS3
UniRef90-S7ZHQ3
UniRef90_D9W2J2
UniRef90 ${ }^{-}$W4KCC8
UniRef90 J3MYU8
UniRef90_UPI000364ADF8
UniRef90-Q2KW03
UniRef90 Q86QH8
UniRef90 Q3M3D9
UniRef90_Q4RX17
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UniRef90-F7SRY8
UniRef90-S7Q4B0
UniRef90 A8BCW
UniRef90 G0P9G8
UniRef90_UPIO003160ACC
UniRef90_R5UTR8
UniRef90 G7Y6D9
UniRef90-K4INF2
UniRef90-K9P3H7
UniRef90 V7CYV3
UniRef90 B9SCP3
UniRef90-W7Z3P2
UniRef90-E9GFD7
UniRef90_K9WBB7
UniRef90-UPI0003EDD3BA
UniRef90_Q6W966
UniRef90 Q6W98
UniRef90 UPI0003F48E16
UniRef90-UPI0004777F4B
UniRef90-E7RH37
UniRef90 UPI00037AA977
UniRef90 ${ }^{-}$M0X4M2
UniRef90-M4NI34
UniRef90 F4GKF
UniRef90 UPI00042B0534
UniRef90- TOME9
UniRef90-K2JD17
UniRef90 H0I2S6
UniRef90 R2R3LO
UniRef90-S2JVU7
UniRef90-Q9FVE
UniRef90 F7H0D9
UniRef90 T1QE94
UniRef90 G6AU5
 UniRef90-W5K9G8 UniRef90-B2WNZ4 UniRef90-H3D5A4 UniRef90-F1A2S2 UniRef90-A8BCV2 UniRef90_E2NI29 UniRef90_M9LIW1 UniRef90-Q2NOZ2 UniRef90-UPI0003D701FD UniRef90_I3LT88 UniRef90_LOICJ1 UniRef90_A0A058Z5T6 UniRef90-UPI0002B463FF UniRef90-UPI00024917FC UniRef90-A0A034W478 UniRef90-UPI000381C581 UniRef90-UPI00036F4701 UniRef90-J3N2P8
UniRef90-F4P737 UniRef90_Q043M5 UniRef90_A0A010ZDY5 UniRef90-F4H5W8 UniRef90_D8P414 UniRef90_C3WE19 UniRef90-V9K893
UniRef90 J8NT26 UniRef90_D8QTC2 UniRef90-C5MFZ8 UniRef90-W9W815 UniRef90-H0X0E3 UniRef90-10ZA71 UniRef90-S3CRD9 UniRef90_C4JFD9 UniRef90_L8M9E8 UniRef90_C5P516
UniRef90_U4T035 UniRef90-S7TYM0 UniRef90-S3BZL4 UniRef90-LORX34 UniRef90-F21736 UniRef90-UPI0003F49D91 UniRef90 K9GYW7 UniRef90-A0A059AVS6 UniRef90-UPI00032A8CE6 UniRef90_K4B6Q4 UniRef90-W5ML85 UniRef90-H8XBD9 UniRef90_I7MMM2 UniRef90-E6UH68 UniRef90_COS4A8 UniRef90_A0A022PY01 UniRef90_J4G4A9 UniRef90-UPI00046295FC UniRef90-B9M7B8 UniRef90_Q69ZR1 UniRef90_G0MIP9 UniRef90-A5G6N9 UniRef90-W5BCK6 UniRef90-F5WUM2 UniRef90_Q835S1 UniRef90-D8Q9P2 UniRef90-Q5FWP6 UniRef90-UPI0004622E00 UniRef90-X0VXI7 UniRef90-E5R1L0 UniRef90-K9Q370 UniRef90_U3JJT5 UniRef90_K8EL80 UniRef90-H1V6F3 UniRef90-A9RXA7 UniRef90-W4ZW77 UniRef90-G3ARX5 UniRef90-N1R862 UniRef90 K6DDE0 UniRef90-R6NEG3 UniRef90-A8BCV7 UniRef90_A8J4M4 UniRef90-J2JPW2 UniRef90_G3IV83

VHD ${ }^{10}$ N DEEQSLNAE Q T SQQQTIN ${ }^{30}$
 VICA DKTGTMTENRMTVGVLDVAEHRLELKLAE
 GGDACGTIAKPED TT C C DKTGTLTTNHMTVVKACDAKEVNGPDAAM M S V S K L

TTI CSDKTGTLTTNRMTVVKTCFCMDDQKPSDAS LT QNKMTVVAGTFGTWPNFGENGPSSTQQDANENNQSSET
 MTA VK I W VICSDKTGTGT QNKMTUVD AFDGSQLRSNN
T LASVNVVCTDKTGTDTTNHMTVTKDWFDQSTPDDVKEK CDRSMEDFSNDPSNSNTSTEFDDPTLIQQNIEE $\square T L I A S D K T G T G T Q N R M T V S H M W Y D N T \square F R A D E N G$

VICSDKTGTDTENKMSVAS $\square$ GF VDQETTRDD

## SCTNDSCDFNDPRLLKN

MTVRRDWVNDAVVAGEVTHETESAGTH
TTICS DKTGTDTQNRMTVVQVRHAASFTD】EGSR $\square$ C S D K T G T ITT T R M TVVVK S C $\square C M N V K E S C N N A$
$M T V T D D I F A D K T V Q W G T G Y T P E G E D T E N G Q$
TM GNATA DCSDKTGT LTT TNRMTVVQSYDCEKLC KVL


 QATLFALSDAVGLTPEMDPMDVTGTCDAKGAVAMSKE $V T \mathrm{~T} \square \mathrm{C}$ S D K T G T L T K $V$ I C S D K T G T LT QNKMTV K K VYVS GRVLE D S G

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

 LT QNK MKVVVA GTF G GTVEMLA EADPK GKQA HPDTVENVPA Q V V C S D K T GT L T L N H M TVVTMWHF DAEEPF EICQKE
TVI CSDKTGTLTQNQMQVKEVNF
$L T$ Q N K M TVV A GTFGTASRFGDN V A A A S S GPDQSENS Q G T

 TTNLVK GSQTMAKG FSDKTGTUTCNEMEFSVFGTMYAQTFE LDRQKA $S \boxtimes S T \square F T$ D T T $\square C T D K T G T L T M N Q M K V T K F W V G Q D S V A$ D GNVAE $\$ VSAAKSS IKGGFNF DDER $\square M N G N$ $T T D C S D K T G T L T T N R M T V V K T C F C N D V S K P G D A S$ MTFNKCS I NGKAYG $\quad$ TD TLGS QPKMTEFSFNPDSRFSFCDQ $M \square A K K V W L P N Q N S N E P Y N P T E G D V R Y A P Y S P D L H D K Q T D E Q$





 TVICSDKTGTLT QNVMTVVKEHWTE
MFAIATADVGLTPEMLPMDVTMSNVKGSREMAKE D GKS D GWRTFA EMKLLETSSNNPFADPGSS GG MTFKKCTDNGNTYGDNTDDKQVDFSWNPDADPSFTFHDNE

LT Q GK M $\square$ ARKA W $\square P$ GT GT LT $\square H$ D T N SPFNPSSGGLLQQGQ


 $\vee$ HEK GFNFDDTRRIMRGA GF HT F NE L HQDLK
LT Q NKMTVVAATLGKTTSFG $G T B P P M M D K S$
$G E G Y G K ~ Q ~ G ~ E ~$

K G A V K M S K K
LT K N E M T V V A L R T A A T E Y T V S G VG Y E P VGE FA M

UniRef90 S2J9M0 UniRef90-Q60A66 UniRef90-H8GL91 UniRef90-A0A022RSF2 UniRe990_G2X154 UniRef90_O37145
UniRef90 M8AS38 UniRef90-M8AS388 UniRef90-F2PMW7 UniRef90-C4JTY4 UniRef90-F8NQSO UniRef90-FoW8L7 UniRef90-UPIOOO3614964 UniRef90-W5K9G8 UniRef90-B2WNZ4 UniRet90-H3D5A4 UniRef90-F1A2S2
UniRef90 A8BCV2 UniRef90-E2NI29 UniRef90-M9LIW1 UniRef90-Q2NOZ2 UniRef90-UPI0003D701FD UniRef90_13LT88 UniRef90-LOICJI UniRef90-A0A058Z5T6 UniRef90_UPIo002B463FF UniRef90-UPI00024917FC UniRef90-A0A034W478 UniRef90_UPIOOO381C581 UniRef90-UPI00036F4701 UniRef90-J3N2P8
UniRef90-F4P737
UniRef90-A0AO10ZDY5
UniRef90-F4H5W8 UniRef90_D8P414 UniRef90 C3WE19 UniRef90_V9K893
UniRef90_J8NT26 UniRef90-D8QTC2 UniRef90-C5MFZ8 UniRef90-W9W815 UniRet90-HOXOE3 UniRef90-10ZA71 UniRef90_S3CRD9 UniRef90-C4JFD9 UniRef90-C5P516 UniRef90_U4T035 UniRef90_S7TYMO UniRef90_S3BZL4 UniRee90-LORX3
UniRef90-
F21736 UniRef90_UPI0003F49D91 UniRef90_K9GYW7 UniRef90-A0A059AVS6 UniRef90-UPIO0032A8CE6 UniRet90_K4B6Q4 UniRef90-W5ML85 UniRef90-H8XBD9 UniRef90-E6UH68 UniRef90_C0S4A8 UniRef90-A0A022PY01 UniRef90-J4G4A9 UniRef90-UPIO0046295FC UniRef90-B9M7B8 UniRef90-Q69ZR1 UniRet90_GOMIP9 UniRef90-A5G6N9
UniRet90 ${ }^{\text {W5BCK }}$ UniRef90-F5WUM2 UniRef90_O835S1 UniRef90-D8099P2 2 UniRef90-Q5FWP6 UniRef90_UPIO004622E00 UniRef90-X0VX17 UniRef90 UniRef90-K9Q370 UniRef90_U3JJT5
UniRef90_K8ELB0 UniRef90-H1V6F3 UniRef90 A9RXA7 UniRef90_W4ZW77

UniRef90-G3ARX5 UniRef90-N1R862 UniRef90-K6DDE0 | UniRef90-R6NEG3 |
| :--- |
| UniRef90 | UniRef90-A8BCV7 UniRef90-J2JPW2 UniRef90_G3IV83

 PDSGGLHPAIDLLLIGGALCNDGLLENPEDHGAYRVRGEP DDGNFPSLLLRAFALNNDDRCGRNG PENV SEKVKKTLMHSLFLNTGAEVVKGKDGKTEVLGSP MVKDSQN SLGDFLQVASLANDAT JVTQKEDRWDARGDP $K F A S G D P E S A V K L L L Q S I F T N T G G E D V V G K G N K T E I L G T P$ PAGRMDANLEMI AKVAAVLVEKMGVPEGKNGLSSVDPSE SLCSEDPDSVLKTLLQSIFNNTGGEVVATKHGKPD LGGTP DCISSLSPSVKELLLNSISLNSTAFESDENGAATFVGSK PSTESGSPAVRKALEVGSLCNNASTSSNEDGGVVLVGQS

HDSADLDPPTRN【LR【GNTVNNARLLSDQAASASTAAVSS NHPTSPQTCEFLTMMAVCHTVVPEREDSQIIIYQAS SP GTDDRTLPTCSNLIRVGACCNRADFDRLLEGNMERLLGDA KTIVKNLNATQNFGAMNTLCTDKTGTGTCDK\VLEKYIUA $\square A S V E Q T I A F D H L K H G M A L C N D A F F D P A T D N A E R T I Q G N A$ EDQDKGSSTWKALAKGGGLCNRAEFKEGQEDGRKECNGDAA
 SDFSSDLPSVVKLLLQSIFNNTGGEVVINQSGKRELLGTP S TQPDQ NLKLFLEAGYQANDT VLLKENDQWTINGEP $P T L N D D P Q H V G N L T M G T S V N S A Y M P G Q N P G D L P D Q V G N K$ VVTPEHHFHLTRMLGFSVLCSDTEDRVEENGQYRIQGLP HSVAAVAGGVVSSLCQGAGLNTAGSVYRPDNVSLETTGSP AVPLDMDHAVNELIHMSLLCSRARFESNDGPITRPLGGA ETIVKRMNSIQNFGSADILCTDKTGTLTQDKVVLERHYNAL
 LDSTRLAEDI ILKESVLCNDATTEVG IVMPFSNVSVRKLVEAGCLCNNAVIREDENMVVLMGQP $R V \operatorname{PVVSRSSREMVLEGIFQNTSGEVVVCPGEAYEVIGTP}$ PYPDPMPKTMHDWLMTATLANDATVSQTKDEESGEMVWKA TMF SNLSAEVKALLRLSTLLNSTAF EGEEKGVPTFIGSK VIKEFSNVSVGKLVEAGCVANNAVIRKNA VVGVKSLDNLEAIAEVCAVCNEARLEC KEGVFKAAGAP EVISSLDPTVKKMLLGSTVMNSTAFEGVAD GVSTFDGSK DAPATLTAAARTTLRVGNI ANNSRLSRAHANSPATASSAA ADSSEVPPAVKNVLKQSITLNSTAF EAEEDGEDTFVGSK
GFADGRDEALRETLLAGILCNETTIEAGELGVT VSGDP GVEVGIIHDHIDQFLSLLATCHTVIPERDEKGKIKYQAASP DVESNQTPENSKALSYFVACCDASVSL KEDGEYDEVGDP GTIVKNDNADQSFGAMDVLCTDKTGTLTKDKDVLEMHLNC A\ESLDDPLLRRFLSTGALCNEAA LEQKDDEWTПAGDP NTCSSVSRFVLDLIQDGVALNTTGSVYRSSVGEYEFSGSP
WVKEPNANVIQNFLRLLAVCHTATDEVDEDTGEVSYESP ALCSELEKSVVKTLLQSIFNNTSGEVVATKGKKVEMLGTP SLLEADDPATHEFFRLLSLCHTVMAEEKSEGELLYKAQSP PHPDPMPQSMHDWLMTATLANDATVNQSKDEESGELVWKA QFNLRQDQNMEQIFKEQIAVNSAALDRPSQKG SK TLDKDKHDTLIKGLMLC NDASIASDGTEV G GD GLSPTVRDLLVKGTA TNSTAF EGEEKGQRTFTGSK EDGAQLHATISSLLDEGLAQNTSGSVF LSKKGAMEVSGSP LLDAAAPAGLKPLQM|ARLCNGAKFDSTTEDEDRMGKGDP
LVQQWSHPETAEFFRLLSSLCHTVMSEEKNEGELYYKKAQS RFEPEELEKGQ MVASLCNNAHLKPDDPTAQQYDGDP
 GTDMKNDNAIQNFGGMDVLCTDKTGTDTQDKVILEYHYNQ AGGEREKEVVREFLLLLSVCHTVIPEMKDGKMVYQAS SP EAFSDSSPGMREMVD AALNSHVKFDRTDPFDQRK GLGDA LLLNCGLLCNNAVVGKPDENQKKKYIGDP PNNLEQNPSLTKFLHTVALCNLSSVYNPDKGGDWVAVGEP FSDVSLLENLQEFLTMMAVCHTAVPEREGDKIIYQAA SP GTDIKNINSIQNFGADDVLCTDKTGTMTGDKUVLEYHDDK SIDQEVNTQVTEIIFQSVCLLNNGNVFFPKGGGPPEVSGSP WRNEPNPEACMEFFRCLADCHTVLPEGEEETPEKITYQSP NTNTQQSADVEFLTLLSTCHTVIPEDTESDKIKYQAASP SVTDQNKQTLERLFTASTLCADTVLHSDEEPNKWKVIGDP PEKSASGWKALAQVATLCNRAEFKEGQDDLRRECTGDA VPVPAPETSAGRAARAVVACCSAEDRMPSNGAE SGDP
DSAVDDLADLGLALCNNSHRGKQAVG

| UniRef90_S2J9M0 | $T E V A \mid T V A A 90 \text { Q A GLLGR T Y W N } \quad 100 \quad 110 \quad \text { E LTGY K }$ |
| :---: | :---: |
| UniRef90_Q60A66 | TEAALVLAAARGGRLK T A L EATLP |
| UniRef90-H8GL91 | TEMAL Y Y A A A D A Y D A QLA KEAP |
| UniRef90-A0A022RSF2 | TETALLEFGLLF ERDFDAERDELK |
| UniRef90_G2XI54 | $T E \square A M Q V F S T R F G W N R H E R T A$ |
| UniRef90_Q37145 | TETALLEFGLSLG GDFQEVRQASN |
| UniRef90-M8AS38 | T L G C CRWWS NAAK |
| UniRef90-K4BD41 | TETAILLQFGLSLGG GDFQKERQA GK |
| UniRef90_F2PMW7 | TETALLTFAH NYLALGSLNEARSNAE |
| UniRef90_C4JTY4 | TETALLGFARDF LALGGLLNEERSNSE |
| UniRef90-F8NQS0 | T DVAL L NVLSVVF G IP D Q R S S F T |
| UniRef90_F0W8L7 | SEAPLIVAAAKHGL D R E ELLKK Y P |
| UniRef90_UPI0003614964 | TE $\square$ A FLVELEK F S NFK Y K N N |
| UniRef90-W5K9G8 | M EMRDKYP |
| UniRef90-B2WNZ4 | T Q G D N S L A K S RWVGQP T DVALLDLLMDAFEED DVRERLGE |
| UniRef90-H3D5A4 | DE GALVKGAKGLGFVVF TARTP DSVI DEARGK EMSYE |
| UniRef90-F1A2S2 | SESALVRLCHK】G |
| UniRef90-A8BCV2 | SESALLKCVE L L S G HVETMREKNK |
| UniRef90_E2NI29 | D S K RI L R H A F NS Y F Q G L K N L M K Al LS HVKEHLK A Y T |
| UniRef90-M9LIW1 | T D GAVLRLSASL P P G Dilk A P R |
| UniRef90-Q2N0Z2 | SETAILKKVVE L L V G NVMDMRAKDK |
| UniRef90_UPI0003D701FD | DEAALVKGAKKLGFVFTGRTPYSVII EAMGQ E Q T F G |
| UniRef90_I3LT88 | ELCCGSVK EMRERYT |
| UniRef90_LOICJ1 |  |
| UniRef90_A0A058Z5T6 |  |
| UniRef90_UPI0002B463FF | TE TALLEFGLSLGG GDFQAERQA GK |
| UniRef90_UPI00024917FC | T D GAFI T LYHK V V P Y GESDHYQ |
| UniRef90-A0A034W478 | T E CALL GF VQ G L G VK Y Q S $\square$ R DEDT E DKF T |
| UniRef90-UPI000381C581 | TEGAVVVAAAKAGI TAKTLQKDFS |
| UniRef90_UPI00036F4701 | REVALLAIA A A S C GLLWKA K L E Q A P P |
| UniRef90_J3N2P8 | TEKALLS WA VEELGMDAGALKKKCK |
| UniRef90-F4P737 | TEAGLLRNGAA KLVDFESVEDRFP |
| UniRef90-Q043M5 |  |
| UniRef90-A0A010ZDY5 | E DARVLRHAFLNSYYQTGLLKNLMDVAVIERTLEEQKDQFT |
| UniRef90-F4H5W8 | TEGALTTLA L K A G G S T D G A |
| UniRef90-D8P4I4 |  |
| UniRef90-C3WE19 | TEDALINLAEKYS VGYKELKEKYP |
| UniRef90_V9K893 | TEGALI AL GMKM |
| UniRef90_J8NT26 | K S D EVL KLA Y L N G Y F H A Y K N E $\square$ D L S VMR Y VRD S SES Q Y S |
| UniRef90-D8QTC2 | T E T ALLQF GLDLLA GNWQ GLVSEVRSRSR |
| UniRef90-C5MFZ8 |  |
| UniRef90-W9W8I5 | TEVALLLQLAKEN L L L D D A AERSSYK |
| UniRef90-H0X0E3 | TEGAL I AL A M K M |
| UniRef90_IOZA71 | TEAALVVLAEK $L$ G $\square$ P H A Q Q S A A $\square$ A A A R R G VQRCGWC CRWR |
| UniRef90_S3CRD9 | TETALLEEFA |
| UniRef90_C4JFD9 | S S T A DRSSGAVRSRWVGQPTDVALLDLLDVVLGEDDVRLNA |
| UniRef90_L8M9E8 | TE GSLLLWL NQDNLDYLTYRNQFE |
| UniRef90_C5P5I6 | TETALLGFARD Y L G G L NEERSNS |
| UniRef90_U4T035 | TETALLCFGEKQGFHKK DLDMKYV |
| UniRef90_S7TYM0 | TEAALLVAASKAGLDRAAQS ARLP |
| UniRef90_S3BZL4 |  |
| UniRef90_L0RX34 | TET GI LTY G L Q Y Y S D I F Y S Y H T |
| UniRef90_F2I736 | D G D GVL R H A Y L N Y Y Q T GLK N L M DVAlliEATHRELDNYY H |
| UniRef90_UPI0003F49D91 |  |
| UniRef90_K9GYW7 | TEGALVVAAAKAGM DLEDLHRKAE |
| UniRef90-A0A059AVS6 | T EKALLSWA ${ }^{\text {L }}$ VLQLSMDMEETKKSCE |
| UniRef90-UPI00032A8CE6 | DEAAFV IAA REDGFYERT Q T T $\square$ S L HEFHY |
| UniRef90-K4B6Q4 | TETAILEF GLLALGG |
| UniRef90-W5ML85 | DEGALVTAARNFGFVFRSRTPGTDTVQELGRPV |
| UniRef90-H8XBD9 | HGDA |
| UniRef90-I7MMM2 |  |
| UniRef90_E6UH68 |  |
| UniRef90_C0S4A8 | TEVAMLNFAQN Y L |
| UniRef90_A0A022PY01 | TEKAVLQWGVKLGMKF D |
| UniRef90_J4G4A9 | T D T A L R S ESLL $\quad$ R I P S L GLDASTLLA S HE |
| UniRef90_UPI00046295FC | DEGALVTAARNFGFVFRGRTPKT】TVQELGRPV |
| UniRef90-B9M7B8 | TE GALLVFCSRFQ |
| UniRef90-Q69ZR1 |  |
| UniRef90_G0MIP9 | TEGAIVVLAKK A QLEGVRTQYK |
| UniRef90-A5G6N9 | TEGALLVFSQRFHDVNVCQAACP |
| UniRef90-W5BCK6 | TEKAILS WGLQLGMKFS |
| UniRef90_F5WUM2 | TETALSAWAEAL |
| UniRef90_Q835S1 | E DQKVLDLLAFLNSYFQTGLLRNLMDNAVIQAATQESDD DFY |
| UniRef90-D8Q9P2 | DEAALVAGAEILGYQFHTRKPKSVFVNVMGQDQEVVE |
| UniRef90_Q5FWP6 | DEGALVTAARNFGFVFLDSRTQST |
| UniRef90_UPI0004622E00 | TETGLI RFAGKH $\quad$ IAD Y NGYQKQHP |
| UniRef90-X0VXI7 | TEDALLVSARKASLKP D E E Y V |
| UniRef90-E5R1L0 | TElAL HVLADRFN S GKGTVLENNGLE |
| UniRef90_K9Q370 |  |
| UniRef90_U3JJT5 | DE GALVRA A R N L R F VFF T GRTPDSVIIESLGQ |
| UniRef90-K8EL80 | ENDRVLKHAFFNSYYQTGLKNLMDLAII EA S Q E L L N E Y E |
| UniRef90_H1V6F3 | TETALLLLARD YLGMRPVAEERENAK |
| UniRef90-A9RXA7 | TEQAVLSWGVKDGG AKFDEVKKSCT |
| UniRef90_W4ZW77 | DEAALVAAAKNFGFFFYRRTPTTVMVRESHVDRMGSMQYE |
| UniRef90-G3ARX5 |  |
| UniRef90 ${ }^{-}$N1R862 | TEVALLTY CR HLGGAGPI QEDRSSAN |
| UniRef90-K6DDE0 |  |
| UniRef90-R6NEG3 |  |
| UniRef90_A8BCV7 | SESALLKCVE LVRIGGVLETRKRNP |
| UniRef90_A8J4M4 | TEVALLTAAEKAG LIPPAAELIKAAVP |
| UniRef90_J2JPW2 | TEVALLHAALSSLGA T E D A A Al |
|  |  |


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| :---: | :---: |
| UniRef90_S2J9M0 | RAFDSERKLMSSVIFTQPG AGSTELL |
| UniRef90-H8GL91 | RLAEPPFDAGRRLMTMV |
| UniRef90 A0A022RSF2 | EPFNSVKKKMSVLVALQGGGV |
| UniRe | DSDVKRMSVVMKHNGT GQDHAYTKGAVER |
| UniRef90_Q371 | VKVEPFNSTKKRMGVVIELIPE SHER |
| UniRef90_M8AS38 | RII ATLEFDRMRKSMGIIVTSK SGGNTLLVKGAVET |
| UniRef90-K4BD41 | LIKVEPFNSTRKRMGVVLELPEGGL RAHTKGASET |
| UniRef90-F2PMW7 | IVQLVPFDSGRKCMAAVIKLP SGKYRMLVKGASE |
| UniRef90-C4JTY4 | VVQVVPFDSGRKCMA |
| Un | RLSERPFNSEHKYMAVSGIHAYSYSGGPREIYYIKGSIDA |
|  | LVDEIPFNSTRKMMITIHFENVHLLPLVDMDACVKGAPNY |
| UniRef90-UPIOOO3614964 | RLHLFPFDSDRKMKSVINQNDNNYW ATVMGAPEIT |
| UniRet90 W5K9G8 |  |
| B2WN | FETPFSSERKWMGVVVGGTSGSHTPGAEHSYIKGALER |
| UniRef90-H3D5A4 UniRef90 F1A2S2 | LKVIVLIEFSSNRKRMSVVVRTPGGTL SSSRILYMCKGADNV |
| UniRef90-A8BCV2 | KVAEIPFNSTNKYQVSVHELEN ENQYLLVMKGAPER |
| UniRef90-E2N129 | KVDE:PFDFDRRRMSVVDEDKQGKRQ |
| UniRef90-M9LIW1 | V |
| Q2NOZ2 | NV |
| UniRef90-UPI0003D701FL |  |
|  | RSDEIPFSSDRKWMGTVH DDVGYVKGAPEI |
| UniRef90-A0A058z5T6 | SSDRKRMSTVVRLLNNGYY RLYCKGAAEM |
| UniRet90 UPI0002B463FF | NSLKKRMGVVLQFPEGGY RAHTKGASE\\| |
| 000 | DSEYRYUAQLNDENNY QQTLFIKGSPDK |
| UniRet90_AOA |  |
| UniRet90-UP1000381C5 | RTHPFDSGRKMMSVVVQDDHGQHHE |
| UniRet90-UP100036F4701 UniRei90 J3N2P8 | RVSEIPFDSRRQRMTTIHQFPVQWHWSQAALIFSKGRVNS |
| UniRef90_F4P737 | NSENKWAMTIHQKK HANGEMMAYLKGAPER |
| UniRet90_Q043M5 | KIDEIPFDFKRRRMSVVV MNQQHEHIL |
| UniRef90-A0AO10ZDY5 | KVDEIPFDFERRRMSVV |
| UniRet90-F4H5W8 |  |
| UniRet90-D8P414 | EMPFDFERRRMSVLGRDD |
| UniRef90-C3WE19 |  |
| UniRef90-J81 | RRVSVVAETN ANERI |
| UniRef90-D8QTC2 | V1RVEPFNSVKKMMGVLVAVNGGGEQSAPYRVHWKGASEI |
| UniRef90-C5MFZ |  |
| UniRei90_W9w815 | VKQLIPFDSARKCMGIVIKHKGGY |
| UniRe990_H0x0 ${ }^{\text {a }}$ | , |
| UniRet90_10ZA71 | MVICAPPSTLRASGGNVLLVKGAAES |
| UniRef90_S3CR | FISGRKCMGVVKTEEGKF |
|  | SRVPSSETKYMATI |
| UniRef90-C5P516 | V V Q |
| UniRef90-U4T035 | RVNEIPFDSNRKRMTTIHQHERE VVAYTKGALEK |
| UniRef90 S7TYM0 | RLDTLPFESQHQYMATLHGRGDG APPVVYFKGSVEA |
| UniRef90_S3BZL4 | M |
| ORX | DSDRKVMSVL |
|  | DEIPFDFERRRMSVVVEDKVGKRQ L |
| UniRef90-UPIO003F49D91 | FNSTRKRMSTVVRGPDGTD KLYTKGADTV |
|  |  |
| UniRef90-AOAO59AVS | V QVEAFNSQKKRSGVLTRKSEGLDNTFHVHWKGAAEM |
| UniRef90 K4B604 | LIKIIPFNSTKKRMSVVLELPEGM GLRAHTKGA |
| UniRet90-W5ML85 | DFNNTRKRMSV |
|  | KRMSAIYKDK SGETKVYTKGAVER |
| UniRet90_17MMM2 | RLYVKGASEL |
| UniRef90-E6UH68 | - |
|  | TVQLTPFDSARKCMGVVRQPPG DYRLHVKGAAET |
| A0A022 | NSTKKRGGVAVRGKTGSQVH 1 HWKG |
| UniRef90 J4GG4A9 | NSRNKWMLTVVREEKGIINGEPQTWMLVKGAPDK |
| UniRef90_UPIO0046295FC |  |
| UniRef90-Q69 | RMSVI VRNPEGK】 |
| UniRef90-Gomil | RLREMPFSSETKWMGVQCADTQG OTVYFIKGALDR |
| UniRet90 A5G6N9 |  |
| UniRet90_W5BCK6 | ULQVFPFNSEKKRGGVAVQLGDSEVH |
| UniRet90_F5WUM2 | NEVPFDSGRKRMSTI |
| UniRef90-0835S1 | DEIPFDFNRRRMSVITKEFKTRET RLITKGAVEE |
| UniRef90_D80 | VLNVCEFNSTRKRMSTVVRLIPNGKD |
| UniRei90-UPIOOO4622E00 | RVFEIPFNSSNKWALVIL EKTHKEGLLTAYDKGAPER |
| UniRef90-x0VX17 | RVDEIPFSSERKKMTTVHKKDKEL LVFTKGAPEV |
| UniRef90_E5R1L0 | LVSEFPFDSAITKRMTVVYRKAGSEHAAA YSKGATES |
| UniRef90_K9Q370 |  |
| UniRef90_U3JJT5 |  |
| K8EL8 | DEI PFDFNRRRMSVVIRNQDGKTQ MITKGAVEE |
| UniRef90-H1V6F3 | QLIPFDSGRKCMGVVVQLPDGRA RVYVKGASEI |
| A9 | FNSTKKKMG |
| UniRet90-W4ZW77 | NVCEFNSTRKRMSAIERCPDGV1 MLYCKGADNV |
| UniRet90_G3ARX: | V OTVEFNSKNKYSAVIVKCPDGVI SGKYRVYCKGADT |
|  |  |
| UniReeso- | STARRRLSVIVSD ${ }^{\text {d }}$ |
| f90 A8BC | KVEEIPFNSTNKYQVSIHKSDDPN DKRQMVMMKGAPER |
| A8 | R |
| UniRef90-J2JPW2 | E |
| Ref90_G31V83 | RVAETPFDAEHKFMATFHRQGD QVKIFlKGAPEV |

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UniRef90 E5R1LO UniRef90 K9Q370 UniRef90_U3JJT5 UniRef90-K8EL80 UniRef90-A9RXA7 UniRef90_W4ZW77
UniRef90-G3ARX5 UniRef90-N1R862 UniRef90 K6DDE0 UniRef90-R6NEG3
UniRef90- A8BCV7 UniRef90-A8J4M4 UniRef90_J2JPW2

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 ILGMCDKMEGRNGESASDSEEQRKNI TNADNDFANEALR


俭
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 VLANCDSYLSPPGSVSLSRSSSIRRSYLVSTESFANNALR LLPPTFKKNDPNFDI LIM SKWTKVVEDY SQGKR MLKKCSF PYGHDGVLEKFTRDMQERLIREVIEPMACDGLR LLEVCDCUWVNGEAKPLDQNWRQRIS S AHEQLVQNGLQ VLASCSTYVGADGVRELGVEQRRKLEQVINDMAAAS KGLR MLACSNRVEDDGSISPLDEDQRQK LTEMDEMNQ DGLR MLSVCSYAEYEGKVMPLTDDIKTYILKKVNDLNGEDGMR I FAVCTRYAVDGQAHDMDAGHFAAAQTHTGDLNA ADGFR
 VGLGLCDYWYGERTEVKLTDDDUKLIEE NMAADSSQGLR MLAHSTKYDKQYEVTDLTGEEKETIGADVEEYRMQHSLR R LLERSTQVLEDGSVVALTEAAKREMMAAVDAMAARA IVLKRCDTYLTKDGREVILDERRRQSARQATESMAQEGLR LISKCSRILRDPTADLSDUALSEKHRSTLNVMHYASQSLR LLAMCTSVWQDGKAVRMSNYEKQR LEASRQ VASEDAQR

VFSRSINQDNKYDK
MLA SSUVLKQGQADPLTDDGRREDRQQVKDLNSEDGLR
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 VLASCTKWHKKQDDQULPI DEKTRQKMLESDKNMADKALR LLMRCTHVRVNGTVRETTNEDMALISNAMSEMSFSKEALR LLASCSQYVDVNGSLQSIEEEKELLKDALNDMAS KS K SLR
 LLERLDDSLINGMA HPGNQEMYNVTTRALLNE E VLDQCTYYSADNQRKQCDQYSRQHTLDHLGKEY AGGRGR

 IVYERLHP ILAKCSTYLKDGEEVPTTDAFKAEYDEAYDYM ASRGHR MLPRLS IYDRLAEEVYMGEVTVLNSKYKENTLKHLEQFNATEGLR VLGKCTQIIFRDPSQAQMTEPNFQTITTLINTY A SRSLR VLDFCSKILQPDGTMPLDPEKMVELKLILSSFANS ALRR R R R

MLEKCTKCDE NVSQVPLNEADRDMIGMIISSY VIDHCRYMKEGQAVTLTQEEKDQI NAYKDEM AGEGYR ILEDCNMVDYKGQLSPITNKIKDNGKQ\AKKLNGKDGLR


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TLGAYMELDKGFSPAA
TI GI IYRDWPPQGAPTQKEDRKQFDRVVEGYIGGVG

 VLAVA L PLAKLPYDQECETDEKLSYIPNTCTFMGGG


## $T$

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 VLGFCHLDFLS DEX
VLGMA
AI CMAYRDFEADEDESLTCDEADA
TLCLAYMELENGF
VI AVGYRDAPSDATDATHE

TLAVAHRPLQDNEIDLDAE
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VVLLGYKENPAPVGEFSIDD $\begin{array}{lll}V I & A V A Q K T N P S P V G T F S V A D \\ V L A A A T R P A G S S R P T L E V E D D D\end{array}$
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PK GLLTLL
ENELTLV
ESDMVLV EADLVLLGYIA ENGYINFVASLVGM
VV A VA Y K Q L K S D K VG S Y S $\square D D$ E S
VLAFATKELGS
TI GMLYK K WPP A GAKTLESDDSEREQVEESHETFQGLI GI
$V L A$ L A S GPELGR



VLAMAEKELPQGTRTDDHAD




E EADLEREDGKK DEEDS LT L LGGVGD
TL LLA YRKLDEEEYDDFNKEEEVSEKIEKDLVLLGATA TLCLA Y DDLENGF

TLVCAYKDIPDNAD VLSLAVRE
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VLLLA YCEVAPREAWENKDLPSG
TLVLA YKDLDEEYYEEWAEDAS $\square$ YE E EVES VLGFA
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CVVAAYRPCEMSDVPK EDQRADWVLPED
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VLAI A DKKVEAAEWEYTTKD


V A C A Q K L L


| S S |
| :--- |
| M |


E $\square E$ S E LTFVGLVVGM
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UniRef90_H1V6F3
UniRef90 A9RXA7 UniRef90-W4ZW77
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UniRef90_N1R862
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UniRef90_A8BCV7
UniRef90 A8J4M4
UniRef90-J2JPW2
UniRef90 G3IV83

## UniRef90 B8MHR4

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 MTVTRपWLPGGAGA AAQVVEVSGSGHATAGELSEGGR EDKDNUEEDTETKPSUKGYNFDDERITNGN

MVAKKAWDPSKVSSEPFNPEAGNVTFDAGEPRNKNADSKE MTVSK $\quad$ WCDLDSMESKSNALVLDKPRSTNYRNYLT

TICMDKTGTlTANRMTAVELCTDNKCIQVGHDQ
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 VTT DCSDKTGTLTQNHMH A ELLLAAQGQRWAPGD
$M T V T Q L V T S D G V V A D V G V G Y N G Q G T V H P A K E$ $T M G N A T A D C S D K T G T L T T N R M T V V Q Q A G G G S H F G R P$ $T$ CSDK T GT T T Q N K M QVVA GT DGTTHRRFGGQRP
 T T C L A K GAVSMAKK K GAVRMS K K K
MTVSK $\begin{aligned} & \text { WCLGSMKSNVLS } \square E K N K\end{aligned}$
KGFNFRDER $\square$ MNGH
TMSNCTNDCSDKTGTLTENRMTVVNGWFGGDKMETRDQK MTVTD IVLAD NRRVKVTGIGYSSHGQ\|LFGNH

 $M \square F N K C S \square N G K S Y G D V Y T G Q R \square D \square S E H K D P V D F R F V F Y D H$ FSDKTGTLTCNVMEFTIGGQQYDTNG\HDFNRL S GERFTVSGEGYAGEGEVTQNGE $\square$ CSDKTGTLTTNRMTVVQSY $\square$ NE $\square$ HYKETPKE
MTFKKCCDAGVIYGPDEDKEESPCQENPYDWDGKLLYRNS QVKY DFSDKTGTLT CNLRKDSDAGFVYSAKSGEFADQK $\square$ CSDKTGTLTTNRMTVVQS FDCGVHHKSS
 QVKYVFSDKTGTLTRNVMEFSIAGKVYGDEGHGFDDTN

V I CSDK T GTLT QNRMTVVETWDDGNVNAGAYER MGATTVICTDKT GTLTQNQMRIHETRF FGLNPQ VRKMHACETMGATTCTDKTGTLTQNKMQVYQSNFYDLK MTFKKCS $\square$ NGR $T$ YGEVTDMTKFSVSPQADRTFQFFDHHLM MTVVAD $\quad$ EVTPAGGTVAYVPEGVLRRD GVV K GAMSMSKK
TVICSDKTGT $\quad$ TTNKMKVDQ TCFTPDGEVDAKSG ■TRNKMVFKNCSVGG VKQESFNPR MVLSDDK

MTVAHMWFDGK VEXDTSDDQ
T NAAY
KGAVAMARR SVQVMCLD KTGTDTENRMTVTGKSYKPKDNFSPAPQ

> VFSDKTGTLTCNMMEFKDAGDQYAGEDFKQLREN
> TICSDKT GTLTQNQMTVQGWVYKPDAKMLNEYK
VQTNAPT DKGFNFKDERDMEGN

MCFNKCS $\square$ NGKSYGDVYDMEKVDFSYNQLADPKFVFYDHS
SR L $\square \square R G K S G S \square T P T P T N N S P S C P N P G P E S Y E E T S S \square$ LT P EMLPMIVVTNGVKGA TKMAK G TMANATAVCTDKTGTLTQNVMSVSDEKYTGGNFTVDSN MTFKKCC $\square$ S GR $\square$ Y G GTCPKENPY Y WNEFADGK LS FFNAER $C I C T D K T G T L T T N H M V V H K \square W \square C G K A E E \square K G S E$
 $V L C S D K T G T L T Q N R M H V E N A T M N N E K I Q S I A K D$ VK G F N L K D P R $\square$ M D G N V I C T D K T G T ITT LN K M T V
 K GAI S L S K K $\square T$ T NQMCVSNVAY LDESGPVP DDVSGDDFKPEGSVTKNGK


$M \square F N K C S \square N G K F Y G D V Y D K N G Q R V D V S S Y N A D P K F S F Y D K$ TMMNATTICSDKTGTLT QNKMTVVATTGGADDSFDGAEE


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UniRef90_C5E450 UniRef90-UPI00047BFBAC UniRef90-V5XL22 UniRef90-R6J763 UniRef90-A0A044V5F3 UniRef90-JODJZ2 UniRef90_UPI00029A41D5 UniRef90_UPI0003C8EEB9 UniRef90-F1Q6Y4 UniRef90-Q12YQ7 UniRef90-K5VPX5 UniRef90_UPI000465AEF5 UniRef90_Q6FT10 UniRet90-G5BJE9
UniRef90 UPI0003 UniRef90_UP10003958E7E UniRef90-UPI000370AD93 UniRef90-I1A1V3 UniRef90_C3WDT1 UniRef90-R7GC61 UniRef90-A7TIY1 UniRef90-M5WXZ1 UniRef90-M2S147 UniRef90-T2MEA1 UniRef90_Q4TBR1 UniRef90_G4L2Z7 UniRef90_11GJH2 UniRef90_UPIO002B4B1DE UniRef90-M4APD1 UniRef90-H6CAD6 UniRef90-B1IOR8 UniRef90_UPI0001E44A15 UniRef90-GOZCU0 UniRef90-G1LEX7 UniRef90-T2M5B3 UniRef90_A0A023FKH4 UniRef90-DONPP8 UniRef90_A2DSU9 UniRef90_B3RXA9
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UniRef90_Q2T5D5
 P A AP GPALMA MP WVNEPRADVI QNFLRLLAVCHTARDAPPGEEGGWRVIGDP

NLETKENASLESFLNVASLANDA VVQK SGTGEWSARGDP EDVKATLTVSNFCNNASF P $\square$ NPYENEQLLKLI HVLTLCNESE VEQSQEHCKHLGNP MTNSA $K V I I K N L N S T Q N L G S D D D L C T D K T G T L T Q D K V V L E Y H L D K$ NLSDEKANSI KEFLRMMAICHTVVPGRDKNGGLQYQASSP QLNDKTRQLLDEGISLNSGYNSQVILPEKQGTQRTQLGNK GAAALD LVVALLELPEVHAFFRLLALCHTCMAEEKKEGCVGHLVYQP
 PLPG PVHAEALRAAALCNDAARHARSDDNPTDWQGDP TTNSDDCKI IDEFLTLLATCHTVIPEFQADGSDKYQAASP


 SSSDGDANAVKELLVKSIVSLNSTAF EGEVDGEKTYVGSK ESEPATSKALSYLVACCDASVT
 WVNEPRADDIQKFLQLLAI CHTADPDDDEETGRVSYEESP VS I A K E Y E ELLINM NISI N S S P STTLDS ENGEI NVIGNK AVKDGKAESVQDFFRLLALLCHTVMPEEKKEGELNYQAQSA EIVPENNQDLMQFIQSGVLCNTA HDDQNEDGQYEVVGDP SVTCDAHKDIFETIEDGCI CNNAQFRDNTFKGQ WVKEPRANVI QKFLQLLAI CHTAQPEDDEKTGKDSYEESP
 K ENAASARSRVEALARAGIVCNEATLLRRDDGETWTGHGDA SLNKETRDLLVNLDSDNSSYASQVVPAKNPGEQLTQLGNK
AVRHNEDKVVREFWRLLADCHTVMVQEKDNQLVYQAASP LQDDYENRDI REFFTLLSVCHTVVPERDNENPSEDIYQSP PRYENLPPTVAEKIVYGUSVNSAYTPPESQGELPKQVGNK


[^2]
## UniRef90 B8MHR4

 UniRef90-A0A024IB28 UniRet90-F6GTG7 UniRef90-12JRA4 UniRet90 W7TTR4 UniRef90-G1XEV2 UniRef90-C5E450 UniRef90-UPI00047BFBAC UniRef90_V5XL22 UniRef90-R6J763 UniRef90-A0A044V5F3 UniRef90 JoDJZ2 UniRef90-UPIO0029A41D5 UniRef90-UP10003C8EEB9 UniRef90-F106Y4 UniRef90-Q12YQ7 UniRef90-K5VPX5 UniRef90-UPI000465AEF5 UniRef90_Q6FT10 UniRef90-G5BJE9 UniRef90-UPIO003958E7E UniRef90 E3QRQ4 UniRef90 UPI000370AD93 UniRef90-I1A1V3 UniRef90-C3WDT1 UniRef90-R7GC61 UniRef90 ${ }^{-}$ATTIY1 UniRef90-M5WXZ1 UniRef90-M2S147 UniRef90-T2MEA1 UniRef90-Q4TBR1 UniRef90-G4L2Z7 UniRef90-11GJH2 UniRef90-UPI0002B4B1DE UniRef90-M4APD1 UniRef90-H6CAD6 UniRef90 B110R8 UniRef90-UPIO001E44A15 UniRef90-GOZCUO UniRef90-G1LEX7 UniRef90-T2M5B3 UniRef90-А0Ао23FKH4 UniRef90-DONPP8 UniRef90-A2DSU9 UniRet90-B3RXA9 UniRef90-R5PMM4 UniRef90-D2UX95 UniRef90-9GGPC0UniRef90_UP1000469B80E UniRef90-F1MMX5 UniRef90-D5PIH2 UniRef90-E8U150 UniRef90-A7AUB0 UniRef90_H3ECK9 UniRef90_WOGMC7 UniRef90-C9SCN1 UniRef90-B3F730 UniRef90_Q88JK4 UniRef90-F8A9A3 UniRef90-87SL38 UniRet90_M7TDGO UniRef90 D8LUR0 UniRef90-A0A024J1Z8 UniRef90-D4AN82 UniRef90-S1NZ15 UniRef90-F2ROF1 UniRef90-D8TF22 UniRef90 E1BVN3 UniRef90-ROL1G4 UniRef90-H2MV2O UniRef90-D2EIX6 UniRef90-R9ANV0 UniRef90-UPIOOO444689C UniRef90-G5BW55 UniRef90 D7THS9 UniRef90-U7Q172 UniRef90-SONF61 UniRef90-M2RS83 UniRef90_R7WOUO
UniRef90-D3L1Y4 UniRef90-H2BWP9 UniRef90 - V607717
UniRef90 A0A024JDS 7 UniRe990AOADO24JS27 UniRef90-R7H1N6 UniRef90-W5FBB3 UniRef90-M7XLQ4 UniRet90-F1SG08 UniRef90-F9GBB9 UniRef90-E5S1F3

AMERLVQQ GNATDGASLIKFVESVEDGSCQRDRDVNP TEGALLVLA DEAAFVI GARELGFEFYERTQTSTHELDPMSGRKVARTYK TE $\square A \square Q V F T A R V G H S R T K \rrbracket V D E A G M$ FCNLFKDDETTREEYP
TETA TQVFASRFDHNRLKLTTGDTP
TDiALLENLSK
TENALIDVAIKGG
TEAAIVRAVEENYHTKE
EAPRVLRHAFLNSYYQTGDKNDMDTADISRTKDEEEENYQ
DEGALVRAAATLGFVFHTRKPRSDLVTELGEV

ECALGVLDLGQYENDRKKPESL
TEAALLVLAAKTG
DDT GADHARTP
DEGALVTAARNFGFVFRSRTSET
TEGALLMYASKF
DEAALVAGAELLGYQFHTRKPRSVFVSVRGKDY
 $A P G A L P R Q V G N K T E C A L L G \square A \square A \square G R D P E A E R A Q V P E D V$ TETALLLLARD Y TELALLQAAAQVGПDPH RSKDD TETGLLVYGLQNQN HNNRVLRHAFLNSWFQTGLKNLLDLSDIEKTHEELEKMYT NGDRILKHAFLNSYFQTGLKGNIDEAVIERGMDEIKEKYK TDDALVEQLSKF DEAAFV $A$ AAREDGFEFYKRTQ
TEGALLMYVKERGVDYLEDRK
DEGALVTAGRNFGFVFRSRTPES\|VVVEMGRKVVYE
TDGALVTLGKKVGLDREDLEN
TETALLSLGSKLNLF NDREAFE
DEAAFVIAAREFGFEFYERSQTSTSDREPTSAKKVERSFH

VDLAFLALGYKLGLEPE
SVRRGVT
LRCCQWWNNAAK
DEEALVTAARNFGYVFMARTQDS DEGALVKGASEFGFVFNTRTPTSVIINING DEGALVKGASEFGFVFNTRTPTSVIINIVG TECALLGFVLD $\square$ GK DYQSVRDD DPE EMLHKVYT
TECALLRFV
DEDAIVCAARNDGFTFTARTPNTVTI RIVLGK QQLRIAFP
EDLSILLEYAY LNSYFGTGMKTLVDRAIITRNVKDIDQEYT
SETALIKFVETRND TATLLGIRGAHT


TEGAMLVVAAKAG
ENIKVLKYGFLNSYYQTGLKNLLD\S\|INMEDRSLEEDYK
TEVAILHMVDNLHAFVTGVKGQ
DEYALVGFASAAGFKFHTRTPSMDMFTEEDDSSVTERSFE

TE $\square$ A QVLATRFGRTSPLLASSS
SESALLKCVE
T DKHILEAKW LNSHHQSG $\square R N \square M D Q A V L H F A G Q D H Q F Q Y A$
TETALLEIAFKAG LDIEALRKAFP
DEAALVAGAELLGYQFHTRKPKSVFVNVHGQSLEYE
DEGALVEGAA LGGYTFDARKPRS DEVAMLKWARRMGDDYVKMRTELPQKKEDDGKPGVIKLYMP
TEVAMLHGAQRYG
ENQAVLAMTYLNSHYQTGWKNDMDDAVLNYFEENNGRLPRF

EDDEVLKWAY LDNSFHQTGLGKNLDDKHVELHDYLKVEEQYLL
DEGALVTAARNFGFVFRARTPET

TDEETLKWAYLNSRYQTGFNNPLDQAVIDAAKPEVKAQYQ
TETALLRFAKERQWD
DEGSLVTAARNFGFVFHSRTSET DTVVEMGEPRVYQ DEEALVTAARNFGYVFLSRTQDT $\square T V E L G E Q R V Y E$
TESA ASRT

LLE FG
EGALLLWLADFS
TEDAIVRSIQENYH
TDVAVLRFAYRMKTSEA
DEAAFV $\operatorname{AAARELGFEFYKRTQTS\| VIRERDPNQNVARKYE~}$ MEVALLKWAYDNGF DPDEIRREYP MDVALLGMSYKFGLDPENSSSEKDPPDLI
MDNHVLSMAYLNSKYQTGWKNLDDHAVI NYYDKFPEKHEF

TDVALLNVLP LFGLTDQ
TEGALLLWLHNKGI

EGA M RAVREGAH

$S D \square A L M K F V E$
ELGAGPVQEERENA
LA E GDVNEDRDRNR

|  |  |
| :---: | :---: |
| UniRef90 A0A024IB28 | ARLMATRHRGPDG |
| UniRef90-F6GTG7 | NIEFSSARKRMSVIVRNEEG |
| UniRef90-12JF | A EYPFDSSVKMMSTI YKEQE |
| Ref90-W7TTR4 | QLY ITPFNSRLKYMKTI HRPP PTQADQRA |
| ef90-G1XEV2 | QLAEFPFDSDVKKMSVIFHNS QVQNKFVFTKGAVER |
| UniRef90-C5E450 | KVHETPFNSRKKFMA |
| UniRef90-UPI00047BFBAC | RLK ISHRSQERNYMTTLHATPD ERQNLIAVKGSPSE |
| UniRef90-V5XL22 | RVDELPFDSDRKMMTTVHKMGNK Y |
| UniRef90-R6J763 | KVDELPFDFERRRMSVVVEDRNGKTQ Milk |
| UniRef90-A0A044V5F3 | $\square$ IVVEFTSERKRMGVVVQCPDGVL KLYTKGADSV |
| UniRef90-JoDJza |  |
| UniRef90 | RTGEVPFDPAVKYMATFHHDAD OVASVRVHVKGAVD |
| UniRef90-F106Y4 | LLALLDFNNVRKRMSVIVRNPEGKLS MYCKAD |
| UniRet90-Q12YQ7 | RLKEYSFDSLKERMQVIYHTDPGEQES Y |
| UniRef90-K5VPX5 | ILNVCEFNSTRKRMSTVVRCPDGKD KVFTKGAD |
| UniRef90-UPI000465AEF5 | RVQEQPFDSDRKRMTTFHRCGNG GSGFVAYTKGAPES |
|  | NDCEFNSTRKRMSADFRFPDDS $\square$ |
| UniRef90-GGBJE9 | RQEEDPFSSAQKWMAVRCHSS |
| Ret90 UPIO003958E7E | KVFT |
| UniRet90 E3QRQ4 |  |
| UniRe990 UPioou370A |  |
| UniRef90-11A1V3 | KV |
| UniRef90-C3WDT1 UniRef90 R7GC61 | KVDEPPFDFSRRRMTVVVEDKSGKRQGTKKQMITKGAVEE |
| Ref90-A7TIY1 | KEIPFNSKRKFMATKI DDSEKKCG |
| UniRef90-M5WXZ1 |  |
| UniRet90_M2S147 |  |
| UniRet90-_T2MEA1 |  |
| UniRet90_Q4TBR1 | LLALLDFNNVRKRMSVIVRSPEGKLS |
| UniRef90_G4L227 | K AEVPFSSENKYMIVVYEKEDQRQ |
| UniRef90-11GJ | RVDERSFSSEQKWMAVHVQRKCPMIDNDNEGVWFMGALSSV |
| UniRefao M | LAM |
| UniRef90-H6CAD | LLAVCEFNSTRKRMSTIFRCPDGKD EGKGYYCKGADTV |
| UniRef90-B110R8 |  |
| niRef90_UP10001E | KVYT FNSVRKSMSTVIELIRDGNLLTGY RVFSKGASEII |
| UniRet90_G0ZO | RVATLEFDRTRKSMGVMV DSSSGKKLLLVKGAVEN |
| UniRef90-G1LEX7 |  |
| UniRef90-ADAO23FKH4 |  |
| UniRef90-DoNPP8 | NSTNKWQLVVVPAPGEKTTQRNFDVFMKGAPEV |
| UniRet90_-A2DSU9 | ( GMYRTFVKGAPDE |
| UniRef90_B3RXA9 | M |
| UniRet90 R5P | KIDEIPFDYTRKRMSVVVKSNKN NGYRMLTKGALEE |
| UniRef90-D2UX95 | Sty |
| UniRei90-UPIO00469B80E | RLDEVPFSTERKYMATIVKSG ITGKRILFVKGAPEI |
| UniRef90-F1MMX5 | LLAFLDFNNFRKRMS |
| UniRef90_D5P1H2 | R |
| et90_E8U150 |  |
| UniRet90 A7AUB0 | KDATLEFCRDRKMMS |
| UniRef90 H3ECK9 | VLQVLEFDSVCKRMGMVVKREDG |
| UniRet90-WOGMC7 | O |
| UniRef90-B3F730 | KICETPFNSTNKYQVSIHETENP NDARCILVMKGAPER |
| UniRef90-Q88JK4 |  |
| UniRef90-F8A9A3 | RVRIVHRAENRLYMVTVHSLPP SGKFLYAlKGMPTQ |
| UniRef90-R7S | FNSTRKRMSTVVRCPDGR! KLICKGADTV |
| UniRef90-M7TDGO | AlCEFNSTRKRMSSIYRCPDGKI RCYCKGADTV |
| UniRef90 D8LUR0 | RTPFHSNRKRSSCLVRLPNGKY SGEMVVKGAPEM |
| UniRef90_A0A024J12 | D |
| UniRet90-S1NZ15 |  |
| UniRef90-F2RQF1 | LLAVCEFNSTRKRMSTIFRCPDG KTRIYCKGADTV |
| UniRef90-D8TF22 |  |
| UniRef | KVDEIPFDFERRRMSVILKKHDG KHLLICKGAVEE |
| UniRef90 - 1 18VN3 | LLALULDFNNVRKRMSVIVRSPEGDL |
| UniRef90-ROLG4 | KLYVLP |
| UniRet90-D2EIX6 | KVDEIPFDFERRRMTVILKDQSQRHYEGEVYTKGADEE |
| UniRet90-R9ANVO | AQMIPFSSARKAMGMVVKDSDG HYRLYVKGASEV |
| UniRef90-UPIO00444689C | LLALLDFNAVRKRMSVIVRTPDDRV VLFCKGADTl |
| UniRef90-G5B | VLALMDFNSVRKRMSVLVRTPEGSIC C C M M |
| iRef90- y (17172 | HOLAFTSERKYMTTGASPST GRSVLHCKGAPD |
| UniRef90-SoNF61 | RIGEIPFDSTRKMMTTVHKRGKK Y |
| UniRef90-M2RS83 | F |
| UniRef90_R7WOUO | LLNVLEFSSSRRRMSVIVKEPEP EGRILLFSKGADSV |
| UniRef90 D3L1Y4 |  |
|  | ( DLKGAVET |
| UniRef90 | KDDEPRDFTRRRLTVAAEV DGRQLMVTKGAVEE |
| UniRetgo-ADAO24JD | NA |
| UniRef90 R7H1N6 | VVEELPFTTERKFMATIV ESVLMPGKRMLYVKGAPET |
| UniRet90-W5FBB3 | KMA |
| UniRet90-M7XLQ4 | FSSERKCMG |
|  | SNVRKRMSVIVRPEDRV MLFCKGADT1 |
| UniRef90-F | QVPFDSAEKFMASVIKLIPTG K K RAYVKGASED |
| UniRef90_E5STIF3 UniRef90 Q2T50 | PFDFVRRRLSVVVEDARGTH |

## UniRef90 B8MHR4

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VKY


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GA $\square$ R MARM
MTFKKCS DNGRDYAGEVHDENFSVKPQTDKTFQFCDHSDM $V 1 \operatorname{CSDKTGTLTQNQMRVSSAAFADLTRMLEEEE~}$ $K P S$ KGFSFEDSRMMGGN VK GFNFRDERVMDGN
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 $\square T$ QNA $\square$ FARE $\quad$ VWTPDGS $\square E \square G G N G Y E K E G K V S G$ VGFYSFDNLHEHLK
 KPS $\square$ KGFSFEDGRVMNGN SGKGFSF MTFNKAS $\square G G R K F G E \square K D M N V M D \square T E D T F S A N T M C E P G F K$ VKGFNFKDPRIMDGN MTFKKCT $\square A G \square 1 Y G N D T D \square R K \square S V I T E S C E F N D P R L L Y N F$ MSVVQAWTPPGTA TVTGDGYQPTAEVT MGATT\ICTDKTAGTDONQMQVYKTNFFGEPSD MGATTUI CTDKT GTGTLTQNQMQVYKTNFFGEPSD


VSVLCSDKTGTDTKN $\quad$ VMTVSD $\square T \square G S E E \square E N E S M$ $V T V V A S D K T G T L T E G R M S V S G T G Y A P S G$ $V S Y I C T D K T G T I T Q N K M T V V D C W V P E A K$ $M T V V K V W \quad Y D F D T V G K G F A P T G D V L L D G K$ $M T L N Q M T A V E \square A \square P G \quad R R Y S V G G T G Y S T R G R I T H V A G$ A QVSVICTDKVGAFSTNKMKVA K VYSDEGSLIAMGKA MTFKKCTIAGIDYGGETSQTEMTLMSDRPCPDTESSELSD LT QSKM AATDAWLPGD GLYR』SGNGFSPEGKDYRCGD MSVLCSDKTGTLTEGKMAVQDVAFADEVVQIDNGP TVI GSDKTGTLTENRMTVGEAGPAAVTPYWGNDT $M T \nabla T R V F T V A R G V$
$\square P V S G Q G Y S G H G A V L V D G A$ KGFNFKDDRLTGKS MTAVECTMDATDKTGTLTMNELTVTDAGHDLDRCELHAPG QVKF DMSDKTGTLTRNVMKFKRVS GFDDPRLIDDYER MGATTVICTDKTGTLTQNQMRVVMMQANR $V$ VVICTDKTGTLTEGRMLLSHTSNNEFDDGEDNLI


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$L L Q T G D E A N L I D D E L T L L A T C H T V I P E T Q A D G S I V Y Q A A S P$
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 Q LK E

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| UniRef90-M7SY35 |  |
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| UniRef90-W7SY82 | TEGALVVLAEKGG LDA K S SRER FP |
| UniRef90-N9U062 |  |
| UniRef90-D6MGS4 |  |
| UniRef90-I3LGF0 |  |
| UniRef90_U9U4H0 | TESALQVFA HKA GLPKSVLT A EPFF |
| UniRef90-D4E4M7 | S N GQVLQLA WLN SVVHQS GMKNLMD Q A V IGGRDKPGПEARYR |
| UniRef90_UPI0004411A16 | TDAAIL R FAE TSPHDDDLVARHK |
| UniRef90_Q47KE9 | TEVALLEAAY DAELLHTARDVRFP |
| UniRef90_E9C2J0 | TE GALI A A A M K VGGLT DQ |
| UniRef90-F6H2R8 | EEVAFL DAS QEFGFKF LR R T Q MVLKELDPSSGFEVEREYK |
| UniRef90_UPI00037B6273 | V D I A LL A A R K A G |
| UniRef90_H2W2L3 | DEAALVRGAASQKVSFHTRQPQKVICRV F C D RDET DE |
| UniRef90-R9XMP5 |  |
| UniRef90-I1YUF9 |  |
| UniRef90_K2EBL7 |  |
| UniRef90-R9A5Q7 |  |
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| UniRef90 UPI000200244A |  |
| :---: | :---: |
| UniRef90_Q27829 |  |
| UniRef90-E1ZY51 | LENCTT L LTA DGETKEMSFHDHAI SRRAACMELGYLGER |
| UniRef90-D8T4Q6 | L D L C ENWL D GEGTEKLSSEMVS S I H GT LTHM A A STMR |
| UniRef90_UPI0003C25E35 |  |
| UniRef90_UPI0003C87831 | I YER |
| UniRef90_UPI0003DE8839 | I Y E R L S PVSLENSDPEQNSLD D F R DVT LE HL E A F A S E G L R |
| UniRef90-G4MR41 | V L A S CDT Y L GEG REFVLDSNRRQEA Q A A EMAAKGL R |
| UniRef90_UPI00027420DE |  |
| UniRef90_K0KY93 |  |
| UniRef90-UPI0004697056 | $V Y G L C C K Q T E G N V S K A E \square D G Q L K K ~ C Q E Q A M R ~$ |
| UniRef90-K6V5W1 |  |
| UniRef90_S2R2Q6 |  |
| UniRef90_UPI0003EBEDA4 | IFER RLHPSCNKLMEVV T T NHLNEYAGDGDR |
| UniRef90-UPI0004756C1C | MLA IT T H LQQ G QVVAlDEAWRAE\\|IQRAADFNQ Q G Y R |
| UniRef90-Q2RAS0 | IL QMCDMMVD GDGNIPLSEAQRKNILDT I N S F A S A ALR |
| UniRef90-Q46DM1 |  |
| UniRef90_UPI0002989AFC |  |
| UniRef90-H3FYV9 | LA R S T F MLGAGGRLESFGKDQLARMTREVIEPMASDGLR |
| UniRef90-R7YPG8 |  |
| UniRef90_UPI0002490431 | I M QKAT D N GVKDD QEYWDR EMSA】TKQGMR |
| UniRef90_UPI00042AD762 |  |
| UniRef90-T1JVS1 |  |
| UniRef90-M2NHI7 | LER LGQRDEVVEK TLL L HLEEYAAEGL R |
| UniRef90-UPI0002A4CDD0 |  |
| UniRef90-M8ARW7 |  |
| UniRef90_UPI00037ACD1D | VLARTTTARSDGATVPFDAPLRERAEAELVRMERAGR R |
| UniRef90_S3YAZ5 | $V Y R M C N S S S A N D S K S E V D .0 ~ N Q L Q A Y Q K K A M R ~$ |
| UniRef90-U9UCP6 | LERLSS ENNPFTEQTLQHLEE Y T T E G L R |
| UniRef90-R4U256 | VVVKNCT Q $\square$ Y Y Q G K V Q P LT N D HLR M |
| UniRef90_N6W4Q3 | YERLSAQ D RQYRDRTLQHLEEF ASEGLR |
| UniRef90-C7M4Y1 | VMTFCC |
| UniRef90-R5F0H1 |  |
| UniRef90-11MU14 | MFEQIA K N GRDFEEK |
| UniRef90-I3JNV0 | F ERLD P P S ENLMYT T SEHLSEF A GEGLR |
| UniRef90-M5AEF2 | L P P I WTS SQAAAAKRVHDEFGRQAL R |
| UniRef90-W2S205 |  |
| UniRef90_D3D564 | V L A RVT T A R S G D GTVP WD A RLREWAEA HVERM G GEGKR |
| UniRef90_UPI000328E0C2 | LFEKLHP SNQDLLSLLTSDHLSEF |
| UniRef90 ${ }^{-}$M5DID6 | VGLCTHYETEGAEQPRPVDETALAADDRGQYHALEEEGFR |
| UniRef90_UPI00032B25F5 | $L$ FEKL $\quad$ LPF NEDLR SLLTS DHDSEF A GEGLR |
| UniRef90-U7PYH2 |  |
| UniRef90-A0A059AIS8 | I FERLAKNGRTYEE STTRHLNEYGEA GLR |
| UniRef90- F2CUA4 |  |
| UniRef90-G0QTN5 |  |
| UniRef90-A0A059AVT2 | $\\|$ L ATCSSFYDRS GVKDLDEDERKKFKQII QGMRAS GMR |
| UniRef90-J3LWZ6 |  |
| UniRef90-H2YBK1 |  |
| UniRef90_T1FN27 | VFERCS T I L V N GAEQRTN T WRLA F H N S FLALGELGES |
| UniRef90-W7BA27 |  |
| UniRef90-K2DFD2 |  |
| UniRef90-UPI0002C66C03 | LC Q R L H S CRS LG DVT M E H LD D F Al E GL R |
| UniRef90-R7S767 | I MERL R R GQEAFMRETEDHL MEFASEGLR |
| UniRef90-M0TVD9 |  |
| UniRef90_UPI000237F649 | I Y DRLH G GQEDLKARTQD HL $\quad$ NKFA GE GL R |
| UniRef90-E9J0U3 |  |
| UniRef90-UPI000287AF19 | V L A R CGY LF KEGKEDA A D D A D A HVVRTMNDQM A GKGFR |
| UniRef90 ${ }^{-}$B5RU83 | I LERLLS D D GRPFVDATLS H HLESFAAEGDR |
| UniRef90-R7K812 | \|VLNASS Lid EDKRAEDCALIE ECQKKAMR |
| UniRef90-W9QE44 | I FECLSKNGRMYEE S T T K HL NEYGEA GLDR |
| UniRef90_B3F353 | LDRCST IL L Q GKEQPLDDEDKEAFQNA YEEL G G L GER |
| UniRef90_W4XMX0 | 1 YERLG S S S D A LREDT NEHLNDFANDGLR |
| UniRef90-J3MEA0 | MFKRLAPSGRKFEEE T K K H |
| UniRef90_UPI0003443C26 | IYERLSE D S RFMKETLTHLEYF AKEGLR |
| UniRef90-A1T4V9 | 1 V LPLCSSAPG A A A L A A M T R GLR |
| UniRef90-19G2K1 |  |
| UniRef90-M2N9U8 | V LGRCDRYLD A Q GEVVLD DKARRRVEEAAD TMA A E E GLR |
| UniRef90_UPI0003C131BF | I YER L S ENSLLTVEET LVVHLENFAREGL R |
| UniRef90_R2RAR8 | LFPMAK |
| UniRef90-L9JAV3 | LRKCNRILDDQK GEALPFKNKDRDDMVRTVI EPMASEGDR |
| UniRef90-G8YSS9 |  |
| UniRef90-D3PXI8 | LLP D DAPSIRRERAEEL A R G GR |
| UniRef90_S7VH62 |  |
| UniRef90-M7SY35 |  |
| UniRef90-A0A024TVL0 |  |
| UniRef90-W7SY82 | L LARAAT TVDDDFRARYLAENRRLGERGLR |
| UniRef90-N9U062 |  |
| UniRef90_D6MGS4 |  |
| UniRef90-13LGF0 | I Y ER |
| UniRef90_U9U4H0 | VLNQCTK\QFGENEANLDREKFGPEL Y N L L E K LAS K G M R |
| UniRef90-D4E4M7 |  |
| UniRef90_UPI0004411A16 | LFDCCTSIAANGDVVAFDAAHYRSIQDK WASEGQR |
| UniRef90_Q47KE9 | $V$ VEMCDAQVGRVEAGRWQPAA LRPGEDHAAGERMAAE GL R |
| UniRef90_E9C2J0 |  |
| UniRef90-F6H2R8 | I L D RLD |
| UniRef90-UPI00037B6273 |  |
| UniRef90-H2W2L3 | I FERLKK G S E IVVEHCTEHLEDY A S F GYR |
| UniRef90-R9XMP5 | I Y SRLDRSRNDPKLLERT A A H LEQFATE GLR |
| UniRef90-I1YUF9 |  |
| UniRef90-K2EBL7 |  |
| UniRef90-R9A5Q7 |  |
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UniRef90-UPIOOO27420DE
UniRef90_KOKY93
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UniRef90 K6V5W1
UniRef90- S2R2Q6
UniRef90_UPI0003EBEDA4
UniRef90 UPI0004756C1C UniRef90-Q2RASO
UniRef90_Q46DM1
UniRef90-UPI0002989AFC
UniRef90 H3FYV9
UniRef90-R7YPG8
UniRef90-UPI0002490431
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UniRef90-C7M4Y1
UniRef90 R5FOH1
UniRef90-11MU14
UniRef90-I3JNV0
UniRef90 M5AEF2
UniRef90_W2S205
UniRef90-D3D564
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UniRef90-UPI00032B25F5
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UniRef90 R2RAR8
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UniRef90-A0A024TVLO
UniRef90 W7SY82
UniRef90-N9U062
UniRef90-D6MGS4
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UniRef90_M3IGG5

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UniRef90 ${ }^{-}$T5AIA5 UniRef90_G3WD25 UniRef90_A0A059C590 UniRef90 B3MNF3 UniRef90_Q23ZA9 UniRef90-C5RANO UniRef90-K8P7G7 UniRef90- J3P2C7 UniRef90-D2W0N6 UniRef90_17ME52 UniRef90 UPI0003340AE2 UniRef90-D4YGK4 UniRef90_UPI00038BCC9E UniRef90_F0XT75 UniRef90 B4NLP3 UniRef90_V2YLD3 UniRef90-UPI0003D0D103 UniRef90 F7EFZ5 UniRef90_H2SXQ6 UniRef90_R9P3X4

MAFSKCS $\square$ NGQTYGDVYDEFNQK|VEDTSFNPDKAFKFYDC
MTVTNLWSGEKMYTAF QACVAFSSFFADLTVLLWGE
VICSDKTGTDTQNKMIIQQ GGFSF DMRMGGN VVCTDKTGTLTMNHMTATQMWYRPVELQADDDF SDKTGTLTENRMC DSD ILYGENNEDADKDA K GAVAMSRR
TTLI $\quad$ TDKT GTLTENRMEVERDT CLAKGALAMAKD
SDKTGT LTQNDMQFRQCS $\square Y G K R Y K E \square D G N$ $\square T$ QNKMAVVQGMADDKTFEQDRKGQPSGAGRAEPWPVDKQ TVICTDKTGTLTDNRMEARVA VCAGR TVI CTDKTGTLTENRMTVVAVHAAG RTVDE

$T$ GTLT QNKMSVI QVYTEGKTHNALE VICSDKTGTLTQNRMHVHSASFGPDEVADFNKQ FNFYDERLMGDA
ПCSDKTGTLTTNRMTVVQSYTNDTHYKDTPKD T $\square$ GSVSVICSDKTGTLTQNRMTVEN LY C GNGRFDEDKK AKINFVLTDKTGTLTENKMNLVSFVDHSGVHSQYFS GALRMAKR FRRCC $\square \mathrm{NG} \square \mathrm{F}$ Y GNES GNA $\square \mathrm{K}$ D T

K GA $\square R M S R S$
S $\square$ KGFNFYDERIMDGR K GALAMARD
TEALFFSLAVAVGLTPEMLPMDVSTNLAKGAMALASR KGADA A A K TPEMLP VIVTTNLVRGATALARE

TCDCTDMTGTLTLNKP VSNDWYDDKARLAKNKQ TVICTDKTGTLTENRMRVVVRMARPEGAEGANGA

 $\square T E N K M V F R R C S D A G Q E Y G H E G D P E E T D V V P D N F Y K K Y E T$ NKQS $\square K G F S F M D N R \square M N G N$

DFCFDKTG TDEEGDDVWGVME G GPAGFSEM TMGA ITVICTDKTGTLTQNLMQVVYDA LTMNQMTAVE

VLTPTDRYTVSGTGYGLEGR\HHA
EDVTFVAPDFVADLGG
TNMPTTDSDERDDVSVCSRDYSTDG GYKSSTWDQGD VT F VSNEYVEDTVTPDA
T $\square 1$ CS DKTGTLTKNEMTVTDVEYNK GMAFYTEQK
T $\square$ GHVSVICSDKTGTLTQNKMEVEKDWAGSE
A AK
LTLLATDKTGTLTRNQMTVTNLWNGDKMFSAFQDT GFNFKDARLEGDK
VSVICSDKTGTLTKNKMFVTECTHSMTPQSARDEM


VSVICSDKTGTLTQNEQTVSQVFVVDHIVNVETGF
 TMGNATVVICSDKTGTMLTENKMTVVVAGMDLQEAQPDGDDY


TVVDSDEQDDLSSNSCYSTGDSYQSSSREEVMGK SIKGFNFRDDRLMNGR VQ $\square C C F D K T \quad G T \square T T D N L M V E G 1 G L A P N G V C V$

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

LT QNEMWTD GMYYSEKSNPGSMKEK LVQYHQFGK DD DENQ MTVKH DWDNDTVFETPYLLH LDQKGQQPPYDTND\GFKTDQ

UniRef90 M4A9M7 UniRef90-K5WR21 UniRef90-J4GT94
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niref90_R9P3X4

SLVVEAQESAAODFFRLLALLCHTVMPEEKS ${ }^{60}$ DNTVVQAQS ${ }^{80}$ FRALALCHTALLSDKPEPTTNPYLLNYKAESP MVD $\square$ AA $\square \mathrm{NSRVKFDKTDVPF}$ DQRTLLGDA WSKEPNADVIELFLRILAVCHTADPERNEEGGFNYEAESP AETKPDAATLRILRIGNIANNARVAHKYRDGGSAAARAVL RLLDANDPDIVKFLMVMALCNTVVPIKSNDGTITYQAQSQ KVVVKRLNAI QNFGAMDILCTDKTGTLTQDKII LERHVNP RCIVKSLRSIRDMGSMDLLCDDKGSLTMNHALMVNHLDY FI RVAGLCNNAKLYESPPG GYGDP ESLEDSSDSLQQFLIALAVCHTVKTHEASTDSIVYQASSP GQSQSLSTDAIKMFLDALALNSTAYRSENNEGEITFVGSK EQDQSGQPATLPHSLRAVASLCQTLQRGEVDGRQVLVGDP WADPG TVKEEVIVDKEMLNYDCALCNEGLIINNEYKG EVTQNTQDLI WFTAKDPEVIEMFFRLLAVCHTVIPDPTEPHTDKYEAESP STNKETRDLMUNLLSUNSSYASQVIPSKQPGGQLTQLGNK EID EYFIKNCLINSTAHINF ENGKFNYLGNS QFSAEDKEKSADMLLSFVLNNSVIVYNSPNGIEYNAEGSP NVIVKRDAATHDLGAMSVLCTDGSSGEDSEDELLYEAESP RLHAK GSPA HRLGAMSVLCTDKTGTVTSAELTLARSVGP NHHSAP LLREFLTLMADCHTMQPESFSEAGLLSHTHPC VEQASAPGLREFLTLMAGCHTV KVVVKHLNAIQNFGAMDVLCTDKTGTLTQDRIILEHHNGR WMYEVHSDT QWFFRVLALCHTADPDINRDTGEISYEESP KVVVKKANA: RDMGSMDLLCDDKTGTLTMNRNHLDUGWGLA KVIVKRLVSIQNFGAMDVLCTDKTGTLTQDRILLKRHLDE RVVVRRLDA QDGGAMTVLCVDKTGTLTEDRUVYAHSIDD PEDDQQKIGANEKMFALALCNTVMTEENPLDPTLRDFKSP
$\square A \square P T E D K T L \square E L M Y C A T \square C N D S N F D D R \square P Q Q \square I K E V V N N$ GVTAE LAGLDAVAAGCHS LRADADAEGG YAGDP GGDSPDRSTFGQLGALAALCNAAELDASQADTQRNDFGDA DDWSGGPKMARLLRVAVLCNDASLAHGGQGAGQGSGDP EKPSNSASALYRAAELCHDASFDPTSDHDPPRDRQVQGNA
 WFTQPNPDS\|LLFFR\|LSVCHTA!PEQNEETGTFSYEESP HHFMLALADCHSVLTEQSEKNPHKLVAQSP VPDPKLLPHGHMLSGLACCHTVTLFKDQPGGDPGELKMGE G 1 AANSTAFLEGE EAGEEQRRANEQFMLTLALCHTVITERTPGNKDEFKAQSP IVGSGEAPPLKEVLEAPVPGLASPEFCYEAE
$K K G G K G K E V N E L F M L A L S L C H T V I T E E N K K D S K R D F K S ~$ KVSAKEDNLLQQILLYGAM

GEQLEGTNP
SVKHELNQTEKELTKYFYLASSANQNRDPDDELLYEAESP PNFALDAPGMNDMVSTAALNSRTKFDRTDPFTNREVLGDA WRSLPDAEHTRDFFRILGVCHTVTPEGEATRETDCYQESP ASSGRNNTAISQMRLITGLCNSGEFDASTMHSERKDNGDA KSFSTKAPGMQQLVDNAALNSRDKFDRTDPLDQRVIMGDA SEVSEDSKEFQ LVMRFMGLATDAQD, KEVDGEKVEMGDS GTRANQNPAVRKTLLSLGGLCNNAFREKIPGDPARLIFQSP DKTQIKEIVKMGYVNNEARLEY DGKQWKHSGDA

 QTRVVDNPKLLDFLYCLSLCNSCTIERSDDGDYSYSSFSP RLVSSNEPDVVKFLMVMALCNTVVPIKSNDGAMSYKAQSQ


QDLLGAGSSSDEDVLDSVIPEPEFCYEAE WTCNS PIDQAEPNTVQVLACCHSLA LLDDGLVGDPLEKA HLKQGEDPDFKTLQKAAMLSSEARF DTSTIKEKENDDY

 QAAMDSSEAVFDLSSLQDQTNVDYLKCP VIGDA KVTSDNKAVLLKMDTDGY $\square S S D A R L I E R D N Q D P Y T G K D P$ EEELRYEAESP PEQQAANERFMLALALCHTVLSEKQPGSPPR\|IFKAQSP TGTLTTDNLMVEGIAGLTSNSTCQPIEDAPPQSIQVLACC FRALAVCHTVLADRPDPQHEPFHLEYKAESP

NREELF पRALCDCHTVETKTNDAVDGATESAELTYПSSSP LAEERRPSDLEQAFSPVPPCNNGKAWNHEEGELRYEAESP

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 DEAALVSAARDAGFPF $\square$ GKSKEAVD $\square E V M G Q \square$ V TETGLTRFA DEGSFLVAAREFGFEFCKRTHTSVHVRERYVSQPVEREYQ TESAII RLLLEEKGT

 $M Q E K V L R Y A F L N S Y F K T D Q K Y P L D D A \| L A F V Y S N G P S K W R$
$M E V A L L R A G S F A G L E R P A Q \square$
$V$ $M E V A L L R A G S F A G L E R P A Q \square$
$T E G A L L V F A N S F$
$V$ DEKALVEAASKFGVSFRDCVDNAHVVLVHGKL

TE DALLTAA
TECALLLLCEQYDYART
TETS
TDAAVLRFAAGAKGNDFGTAIVP
DEAALVVAAKAFGFFFYKRTNTTVSVREHTARGDHDVEYE DEAALVKGVKKLGFVFTTRMPTSVTVEAMGENFTFE
 TECALLSYLQQ E E W WYQDERKENK DEAAFVKFASECNWVLKARNPARDA $\square E V N G V Y$ V

DEEAPRAAELGADAAADGGDRGSDDAALIAGADHAASGWS
DERALVYGAKRFGYVFHTRTPSYVEVGAGLG V


 DSDRVLEFAFMANSHFQSGLKNLDDRAVLAEHHELAQEHQFE
DEGALVAVARDLGI
VFKERLRKS
DEAALVHAARAYKCTLQSRTPDQDTVELESVGOPG KKMSFEWDDWPCS
MEVALVECAAAWG
TDTAILRFSE
MEQALLRAGETAGLERASLLLDQP

| $M E Q A L L R A G R T A G L$ |
| :--- | :--- |
| $T E D A L H V L D L R F H F$ |

D SAVLRF
VIA A GMQGDSTPRRP
DEAALVHAARAYQCTLVARN PEQVVIDMNYMGDLTFQ
DEGAFLVAAREFGFEFCRRTQSS $\square Y V R E K Y F Q E P T E R E Y K$ DEAALVYAARAYSCALVGRD PEQVTLEDPYVGKDTFE
 TE IDALL LWLNGKGK DYMS LIREAAK TEGALLVLAHKAG $\quad$ LDVDASRDRDP DEAALVATARDVGFTVLGRADDG VIVNMGDERKYQ DEAALVVAAHAYSFTLVSRT PREQVTVRLPQGTCLTFD DENALVSAARDVGDEFKMRQRSKDTVQKYGRDMEFEE
TEQAMVNAAKQAG DTSSAH DEAALVHAAHAY RCT $\square R G R S A E G L L V E \square P G M G P D A V Q$ TELDA LDDALDQ TETGLARFAGRY DESAFVVAAKRFGFFFKSRTTSGMEDEEDPDYDAYLKSHR


## $S \square A D G N V G Y \frac{F}{F}$

1
$V$
$F$
0




 A NLP
 ETALLVAARSAGLDHERSLI ECALLGFAMNDHGDY
 S K E KVV Q

 | $D E A A L V H A A$ |
| :--- |
| $E E V A F L D A Y N F T L V S R T P D Q V T V R D P Q G T L L T F D$ | EEVAFLDTSQEFGFQFCKRTQSVMVLKEFDPDLGVKREYK LTCPVLGDATETGUI RFYQYIEDVNSFRER YRVAKNPDG TEVAMVNALGEYSEYEA M W TETALLEDARS Y L LGMGPVNEERENAN S S DALLLEAATNNGFKVIQRTNEG

$D E A A L V Y A A R A Y R C T L Q S R T P E Q V V V D L A A D G P D \quad T F Q$ TDGALVVLGHKVGLSPQWEKDN DEAALVSTARDMGFTVLGNTGDGVSE LI RNDMGEERYYP HS S A L L D D GLVGDPLEKATLAAVDWHLTKTDSVIPKRAQM

D0D103
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UniRef90_K5WR21
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UniRef90_F6HXZ3
UniRef90_E3ZEE6
UniRef90_F0XR74
UniRef90_B9FEL5
UniRef90_B8J1J3
UniRef90_V7CR18
UniRef90_UPI000472471C
UniRef90_Q8PXZ7
UniRef90_B3RTZ4
UniRef90_A9V3G8
UniRef90_U1ZUH4
UniRef90_UPI0002625996
UniRef90_F2JGU2
UniRef90_R6Y6R5
UniRef90_J9HRH4
UniRef90_M1WWEL8
UniRef90_D8TWU44

UniRef90_M4A9M7
UniRef90_K5WR21
UniRef90_J4GT94
UniRef90_F6HXZ3
UniRef90_E3ZEE6
UniRef90_F0XR74
UniRef90_B9FEL5
UniRef90_B8J1J3
UniRef90_V7CR18
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UniRef90_Q8PXZ7
UniRef90_B3RTZ4
UniRef90_A9V3G8
UniRef90_U1ZUH4
UniRef90_UPI0002625996
UniRef90_F2JGU2
UniRef90_R6Y6R5
UniRef90_J9HRH4
UniRef90_M1WEL8
UniRef90_D8TWUU4
UniRef90_UPIW0

PS SE ${ }^{180}$
S SEDLMYATSEHDSE
200 Y ARLCNTFADESEREQE GQLREQTSKDMEHF ANNGRRR
 I PVDFSEILLSEAERVLNESGESGLR $V L E A C D T Y V A G D G R E F V L D S K Q K Q K A R D E A E K D A S Q A L R$
 VLKVCSFIENFDKDEDCDFSSDDYORDLNDSEDDRDGFR VLK K C S F ENFDKDEDCLF SSDD Y QRILNLSEDUSNE GLR
 V L SRAK MEAGTVRELDE VLSRAK


 V L A R C S A E L G E D G E R P L D T T A E V V H R A Q A E $\quad$ I
 LLPTCTKYWSQKTNSVQVMDEAARAAFKSYQDTLSRNAER I Y E R L D P K Y GPNEAMKESTGRHME E K G GA A G L R
 ILSNATHEILNNGSKELTKERKNEDMQD DQKLQA KSMR I $\begin{aligned} & \text { Y P R C R E V V F F } \\ & M D L A A \\ & I\end{aligned}$ $V 1 P L C T Q Q R Q G G T V A P I D D E G G A A D S A R V H \quad A L A Q E G L R$









 | $V$ | $L$ | $A$ | $A$ | $S$ | $W$ | $H$ | $V$ | $D$ | $D$ | $G$ | $E$ | $R$ | $D$ | $R$ | $P$ | $L$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $E$ | $V$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $V$ | $P$ | $H$ | $L$ | $S$ | $I$ | $A$ | $E$ | $T$ | $E$ | $K$ | $Q$ | $T$ | $I$ | $R$ | $D$ | $T$ | $A$ |

A MARRGLR L L P A C THYWSRDSVQQPLDLAARAAFKAF QDK RMA GE G G L HSRLAER

 I Y D RL S K T D N D P N MLLE MTAK HLLE E Y A S K GLLR I YDRLSKT DNDPNMLEMTAKHLEE YAK D GLLR





 VLGKCS TY L K Q G Q L L P DD DVFA QNYETAYNYMAAS RGHR
 $V$ L A K C S T Y LKK D D A T V
 $\qquad$
 C A
 LL GRCSRWHSSHDTKEMDDQQRSNLLQRVK








 VLGRCKTILDT DPTAEELDEETRAELRETVGCSYAVQMLR $\overline{M L K R C R A R}$ K K E Y V H ELLKSAL $L$ L N SVVQGL R I WS Y C S TVVY S N N QL N E DD N Q WQQK F K QV NL Q
 I Y S RLLKRGEQA ELLRKTTAEHLEMFAAREGLRR
I Q K M L T T T V P E D Y E K V Y $\quad$ L DHDTTDKERTNKDMEE





UniRef90 M4A9M7
UniRef90-K5WR21
UniRef90-J4GT94
UniRef90 ${ }^{-}$F6HXZ3
UniRef90 E3ZEE6
UniRef90-FOXR74
UniRef90-B9FEL5
UniRef90_B8J1J3
UniRef90 V7CR18
UniRef90-UPI000472471C
UniRef90 Q8PXZ7
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UniRef90-A9V3G8
UniRef90_U1ZUH4
UniRef90 UPI0002625996
UniRef90 F2JGU2
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UniRef90 G7LY35
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UniRef90 B9RVV5
UniRef90_UPI0003C46871
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UniRef90 H2ZKH0
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UniRef90 W9RTN5
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UniRef90_UPI0003688AAF
UniRef90 UPI00035C6E6D
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UniRef90-J4UMP2
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UniRef90-UPI00045E1B14
UniRef90 G8YUV4
UniRef90 UPI00036020E0
UniRef90-G3PIH6
UniRef90 ${ }^{-}$K8E1J2
UniRef90 W4KJA5
UniRef90-C1FFT3
UniRef90-M7URI3
UniRef90_A8P9Q9
UniRef90_UPI000375ADAD
UniRef90_U7PZC6
UniRef90 ${ }^{-}$L8WN8
UniRef90-R7IYF4
UniRef90-UPI00038C04B7
UniRef90_A3YZD7
UniRef90 F4PVG7
UniRef90 B0E9T2
UniRef90-11IWT0
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UniRef90 UPI0003AF8B65
UniRef90 T5AIA5
UniRef90_G3WD25
UniRef90-A0A059C590
UniRef90 B3MNF3
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UniRef90 K8P7G7
UniRef90 J3P2C7
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UniRef90 B4NLP3
UniRef90-V2YLD3
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UniRef90 R9P3X4

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UniRef90_W6WDN5
UniRef90-L5L247
UniRef90-F2LJ34 UniRef90-Q03TP5 UniRef90 UPIO00161C456 UniRef90-Q23UC9 UniRef90-M2TK92 UniRef90-TOSIC8 UniRef90 ${ }^{-}$B4NDR3 UniRef90_UPI0002233601 UniRef90-UPI000465CD10 UniRef90 UPI0003B5E530 UniRef90-G2XQW0 UniRef90-M7WQL1 UniRef90_V5I3T8
UniRef90- G6Y615 UniRef90_UPIO0047D3AB4 UniRef90-M0UC15 UniRef90 E9QPP7 UniRef90-H3CU53 UniRef90-DOMYD9 UniRef90_UPIO003624FA2 UniRef90-UPI00045E9518 UniRef90-G3PGL4 UniRef90_W9WDM 1 UniRef90 A8NE20 UniRef90_G8ZLH1 UniRef90-X1ZB34 UniRef90_F6Y972 UniRef90 H2LMD7 UniRef90-B5RV27 UniRef90_13L9A2 UniRef90_A1A5E5 UniRef90_F2TVR5 UniRef90-R7YWP3 UniRef90_B4WT03 UniRef90_K7VE31 UniRef90_F9WIB3 UniRef90_J5QTD9 UniRef90_A4H514 UniRef90_UPI000441D7CA UniRef90_DONRR5 UniRef90_Q16LR7 UniRef90_G7MW73 UniRef90-10G145 UniRef90-UPI0003703476 UniRef90_F7T322 UniRef90_Q54U08 UniRef90_GOU055 UniRef90-E4ZNL8 UniRef90 A9KSD9 UniRef90-X7Y016 UniRef90_Q2U763 UniRef90-M9LQZ1 UniRef90_K6QDZ0 UniRef90-X8J9F5 UniRef90-W5B5T0 UniRef90 UPI000479DFC6 UniRef90_A0E4U7 UniRef90-H2SFV3 UniRef90_L1J922 UniRef90- Q95049 UniRef90_S8CSP9 UniRef90-J3PRH6 UniRef90_HOVL95 UniRef90-F8NBT0 UniRef90_B4N5L9

GALRMAGR
TE $\square C T D K T G T \square T Q N R M H V T G Q G Y D P D A H I E G R G T$ T F A $\square$ A $V A V G L T P E M L P M \| V S A N L A K G A V A M A R R$ VCSDKTGTLT QNVMSVVMRGFSVADPGDCPHP T F VAPD Y $\square \mathrm{DDLAGE}$

LT RNQMTVVD A WTSAGS VT VDGAGYGPTAQLVWS $\square C S D K T G T D T Q N K M T V V A G M \square G T T G K F I D P Q Q$ $V 1$ AS DKTGT $\square$ T QNRMTVT HFWPYGKE $\square H K \nabla A$


CSDKTGT LT QNVMSVKNMWFKDKDYMCKNKV $\square$ CCFDKTGTGTSDDMEFS GFGGLSDSGD IEK

TMGAVTVICTDKTGTLTQNRMRVGADS LNPA


UniRef90 S9Vm93 UniRef90－UPI0003C27688 UniRef90－WOA2Z2 UniRef90－UP100036ABDB5 UniRef90 Q1QFM9 UniRef90－A0AO34VC76 UniRef90－T3QV27 UniRef90－C5FVH7 UniRef90＿W4FP09 UniRef90－M7AZ35 UniRef90 H2VQ96 UniRef90 G3JA06 UniRef90－W4G782 UniRef90－UPIO004627266 UniRef90＿UPIO00478A1B1 UniRef90＿UPI000443D4BE UniRef90－J7S917 UniRef90－A4X482 UniRef90 O36028 UniRef90－UPIO003D74006 UniRef90－P98205 UniRef90 B3LZN9 UniRef90－U2DIZO UniRef90－UPIOOO3679578 UniRef90－R5AWC3 UniRef90 ${ }^{-}$W6WDN5 UniRef90－L5L247 UniRef90－F2LJ34 UniRet90＿Q03TP5 UniRef90－UPIO00161C456 UniRef90－Q23UC9 UniRef90－M2TK92 UniRet90－TOSIC8 UniRef90－B4NDR3
UniRef90＿UPIOOO2233601 UniRef90－UPIO00465CD10 UniRef90 UPIo003B5E530 UniRef90－G2XQW0 UniRef90－M7WQL1 UniRef90＿V5I3T8 UniRef90 G6Y615 UniRef90－UPIO0047D3AB4 UniRef90－MOUC15
UniRet90＿E9QPP7
UniRef90－H3CU53
UniRef9O－DOMYD9 UniRef90－UPI0003624FA2 UniRef90－UPIO0045E9518 UniRef90－G3PGL4 UniRef90＿W9WDM1 UniRet90－A8NE20 UniRef90－G8ZLH1 UniRef90－X1ZB344 UniRef90－H2LMD7 UniRef90－B5RV27 UniRef90－13L9A2 UniRef90 A1A5E5 UniRef90－F2TVR5 UniRef90－R7YWP3 UniRef90－B4WT03 UniRef90＿K7VE31 UniRef90－F9WIB3 UniRefolo－J5QTD9 UniRef90－UPIOOO441D7CA UniRef90－DONRR5 UniRef90＿Q16LR7 UniRet90＿G7MW73 UniRef90－10G145 UniRef90－UPIOOO3703476 UniRef90＿F7T322 UniRef90－Q54U08 UniRef90－GoU055 UniRef90－E4ZNL 8 UniRet90＿A9KSD9 UniRef90－X7YO16
UniRef90 Q2U763 UniRef90－M9LQZ1 UniRet90－K6QDZO UniRef90－×8，99F5 UniRef90－W5B5T0 UniRef90 UPI000479DFC6 UniRet90－AOE4U7 UniR Refo－H2SFV3 UniRef90－L1．j922 UniRef90＿O95049
UniRef9O＿S8CSPP UniRef90－J3PRH6 UniRef90－HoVL95 UniRef90－F8NBT0 UniRef90 B4N5L9
 EPRCLPDGPLLYSLSTCHTVSDPVDLKMMESTGWILEKAE RVVVKRLSATHDLGEMDVLCTDKTGTKMMESTGWNVEKAE KVIVKKLSAI QNLGEMTVFCSDKTGTLTEGNNALGIEGTP KVIVKRLASUHDLGAMTVLCTDKTGTLTSAEDTLARSDDA Y TESSEEETNSYFEENCMTNSTADVEHNDGDTKY DGSA RCKSQNNTALERTHILGALCNAAEIDASTGKQSMKDHGDP

QS P
$R V R Q R Q \square D F W C L L C H S V A E T D D D D T N F M A \square R Y Q A S S P$ KVLVKQLAA DEDFGS DD LCTDKTGTDTEGEDVLDRHVDK

QAFSAFSPQYDEKPPDHPEEGELRYEAESP
AARVEDDGADRWSLLAGVGCNDARDAERDEGYYVVLGDP
$Q L L N A T S T D V T R F L T V M A T C N T V L P V Q S K A G D T V Y K A Q S Q$ TLLDADEEHSHVFFRLLALCHTVMAETVDGKLEYQAQ SP QTiVKNDNAMQSFGSMDVLCVDKTGTLTGDEVILEYYDDE पSPAEARDRAEKLLTGMALNSTAQLDF SGAEPKALGNP
 RVAWQEDPDLEWLVQ\｜AGQTSDAEF HEEDGQWVLTGEP KDTTKGLHEVAEFWRLLALCHTSMPERKNGRLEYQAQSS KVESKDQKTLDLLHCVLELCHNDHSNNPMLSDDVHYSASSP MEQKRANEDFMLALLALCHTVVTERTPGDPPKIEFKAQSP LLDAVRSDEEHTHI FFRLLALCHTVMAETVDGRLEYQQSP ILGSGEGPPLEEVLEGPALGLTSPELCYEAE
AM ALEVAVAARAASQGRVVKEGREWVANGDP
 PEQQHATERFMLALALCHTVIAEEVPGDVMTFKAQSP PTDP VHSALNQLISVAAVCNDATFVGKEDENDRKVVGDA
 RVIVKRLAAVHDLGAMDVLCADKTGTLTEARDRLVAHDDP GFQAVHSKALPQGPLCAAMASCHSLILLDGTUQGDPADLK KVIVKHLSATQNLGSVDVLCSDKTGTLTGGVMKLDQSLDA KVIVKRLTALHDLGAMTVLCTDKTGTLTSAEVVLAGSEDAB SGEAQQAAAEHFMIALALCHTVITETTPGDPPKIEFKQSP

EVQQNCCEHFMLALALCHSVLVEPHKTDPSRLELQAQSP K I IPVREAPAQTLHVLATCHSLAQLDD
$S$ PGVSGKEREELFFRAVCLCHTVQMSPDSSKSCDYUSS
KEIVFEDMVDDTKF河TDTMRAGEHETDNGKFLIGP PTMDSSEGNSSYFSSISHRATSSSFRTSPENETEYYASMA MLSALASCHSVALLGGQALGDP LE LKMIDESTGWEDTEPEN HDTASVIRREWLTLLAVCHTVIPERDRTDPDVIVYQAA SP NSEDDYSNEQFMLALALCHTVITEKTPGDPPRIDFQSP P IGEERLSAHDFFLTLAACNTVIPVNTEGSHDLTNEVDP SVNSSSEKVWGGDEAGTENACKWVWREGKG PLSDMRAASLRRLSEGITAVNSSSEKVVSTTDKEGHRRGNK SNSSQLNNNGYSSQQATWTSEPEAEEGEGRYEAESP
$E E Q K E K U M Q F F E H L A V C H T V I P E K G E S G E V R U S A S S P$ PERELRYEAESP KVIVKRDAADHDLGAMTVLCTDKTGTLTSAEITLAKSLDA ARAAQAALAARTASQGRAELHD KVVVKRLNSVQNFGAMDVLCTDKTGTLTQDR\ILEHHFNV HAKNEQSRLIEEFFYVLSICHSVIPP LQEDGKVSYITATSP IVLENVAGEARQLLVESLVLNSSSEKVLEESHVWRWRVDK SGPEQKEANDNFMIVLALCHTVVTERTPGDPPKDEFKQSP DNKWHEKPSELSSNWIVHNDCLNTTADTSKDGTFDGNP ADNDATDPDTRSLLRQSGSGNSTAFESGEAGGKSYVGSK

KTKपSANDT RFFKYपGLATNAHपTADDEPDロ GDA
ELVADNTPHVIKFLTVMALCNTVIPTKSPSGTTSYKAQSQ KVIVKRLASIHDLGAMTVLCTDKTGTLTSAEITLARSLDP
UniRef90_S9VM93
UniRef90_UPIO003C27688
UniRef90_W0A2Z2
UniRe90_UPIO0036ABDB5
UniRef90_Q1QFM9
UniRefol-A0A034VC76
UniRef90_T3QV27
UniRefo_C5FVH7
UniRef90-W4FP09
UniRef90_M7AZ35

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## UniRef90 S9VM93 UniRef90-UPIO003C27688 UniRef90-W0A2Z2 UniRef90-UPI00036ABDB5

 UniRef90_Q1QFM9 UniRef9O-A0A034VC76 UniRef90-T3QV27 UniRef90 ${ }^{-}$C5FVH7 UniRef90-W4FP09 UniRef90-M7AZ35 UniRef90-H2VQ96 UniRef90_G3JA06 UniRef90-W4G782 UniRef90_UPIO004627266 UniRef90-UPI000478A1B1 UniRef90_UPI000443D4B6 UniRef90-J7S917 UniRef90-A4X482 UniRef90 O36028 UniRef90-UPI0003D74006 UniRef90-P98205 UniRef90-B3LZN9 UniRef90_U2DIZ0 UniRef90-UPIOOO3679578 UniRef90-R5AWC3 UniRef90-W6WDN5 UniRef90_L5L247 UniRef90-F2LJ34 UniRef90_Q03TP5 $V A S L C$ NKETVPGDFSQMLRHYTT ML

 1 I PRCK




 I FPR LLS GQNN IIEK
 I L Y P Y A A A A GQED D $\square$ KARTQD
IVYRQHGGQEDGKARTQDTADSGGTHAVVDENK EFALKKGLR VLLSKSSGSQSEQQQWINQASQLAKKGQR

| 1 | $R$ | $S$ | $M$ | $L$ | $V$ | $E$ | $V$ | $P$ | $E$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $I$ | $Y$ | $D$ | $E$ | $V$ | $Y$ | $V$ | $D$ |  |  |  |
| 1 | $F$ | $P$ | $R$ | $V$ | $T$ | $E$ | $G$ | $K$ | $\square$ | $D$ |







$\mid$
 $V$ MDL LGQPCSSVDARGRHQKKIRSKTQNYLYAA E GLR V L A L C T M

ML A V S S GVVM DD GQERP LDDA AMRGRRLKE QVEVVM
IFD KLLAPNQPNADT





 $V L A L C S T Q R T G D T S I R V G E P E R A Q A D I D R V M$ A Q L G L R D T S R A LA G D L R
 L R P L LAPNQVGETVAHI D WS YCNSVMINGQPS QID Q T WQKKFKAVNLTFGKG

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


UniRef90-J7S917
UniRef90-A4X482
UniRef90 O36028
UniRef90_UPI0003D74006
UniRef90-P98205
UniRef90-B3LZN9
UniRef90-U2DIZ0
UniRef90_UPIOO03679578
UniRef90-R5AWC3
UniRef90_W6WDN5
UniRef90-L5L247
UniRef90-F2LJ34
UniRef90_Q03TP5
UniRef90_UPI000161C456
UniRef90-Q23UC9
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VEAHPATREDAEVLYRCGTATDGAG
S P
D P
$\mathrm{S} P \mathrm{P}$
 D $\square$ Y GETSDPVLRVLFGMALCHNVTPS $\square$ MANGQ DDFQSS SV GDDARAHANVRAALASAVLCCSTTLNRVEDEMVWTPKGNS AEKSREEDFLRALCLCHIKDCDRDDGPTRGTEYTYDSSSP VIVKRLPALHDLGAVDVLCLDKTGTLTEDRPVVAAAVDP DTDSEHNRHLTNFGRCLALCHTVLVENLEEGCI EYQAQSP
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