

UniRef90_G8COU8
UniRet90 G8JOP1 UniRef90_G8JQP1
UniRef90-A0A024S8A8 UniRef90_ROKFV6 UniRef90_H6C1R2
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UniRef90_M2NJF0 UniRef90_B6JYN5 UniRef90_G8B5K7 UniRef90_C4JGZ8 UniRef90_M9LSC4 UniRef90_M3J1K2 UniRef90_A3LUV9 UniRef90_F4P1F4
UniRef90_Q01D48 UniRef90_UPI000444A361 UniRef90_UPI0002B4929D UniRef90_V4MJH3 UniRef90_H1XWG7
UniRef90_B4VJF6 UniRef90_W9QI47 UniRef90-D5SUU5
UniRef90-Q114M3 UniRef90_UPI0002C350FB UniRef90_A1C949 UniRef90_K1W3N5 UniRef90_A0A059B9V0 UniRef90_UPI000365FB21 UniRef90_Q5AXE6 UniRef90_D8U9Y8 UniRef90_E0U796 UniRef90_U5DI66 UniRef90-K9WE43
UniRef90-F2CUF8 UniRef90_A0A022R1D1 UniRef90-W5F5H6 UniRef90_G1XTM6 UniRef90_11KRI3 UniRef90_UPI00030724FC UniRef90_UPI00042B1187 UniRef90_G4UZ49 UniRef90_A1S540 UniRef90_E9FAT1 UniRef90_UPIO00465CBC2 UniRef90_W1P118 UniRef90_UPIO00366ED4C UniRef90_Q47FF3 UniRef90_J4WKP1 UniRef90_E6RJL8 UniRef90_B7VHG7
UniRef90_Q9CNV8 UniRef90_U9VK79 UniRef90_E8T648 UniRef90_UPI00035EB955 UniRef90_UPI000463AB42 UniRef90_D5H8T6 UniRef90_E1SRP4 UniRef90_UPIO00476864B UniRef90-U2XRR3 UniRef90_UPI00035F708F UniRef90_D1P3S6 UniRef90-T1IQ47 UniRef90_Q2JP57 UniRef90_D8SQT0 UniRef90_R9PJD8 UniRef90_B9HRJ2 UniRef90_UPI000395B0AA UniRef90_U1K7Y0 UniRef90_UPI000471DE1E UniRef90_H8FXR8 UniRef90_K7M0G4 UniRef90-I4L0B4 UniRef90_A4BVM9 UniRef90_UPI000478D143 UniRef90_B5EPY6 UniRef90_UPI00037C683F UniRef90_UPI000410E587 UniRef90_R9PF75 UniRef90_D7DJX5 UniRef90_G7J7Q5 UniRef90-E3ECM2 UniRef90-I3S8Q4 UniRef90_UPI00047AFB87 UniRef90_E3BJ12 UniRef90_UPI000371E3AD UniRef90_L8J774 UniRef90_R8ATQ2 UniRef90_D0Z0P9

ALERELLVAT QAVRKAS LLTKRIQSEVISHKDSTT\|TKND AFEKELLVATQAVRKASLLTKRIQQRVIAHKDSSTLIKSD A F E R E

 A Y EK ELLKVA QLAVARRAAILTTK SVVF HQKAKGTVVSKD
 Y D K E L N A A L L A V Q R A T L L T K S V F
 S Y Q K E L L V A QLLA $V$ QRA S L L T Q NVVFHE SYF A E K QV A I A A V R R A C AL T S SVVFNK LVVRET L R T K D D A L E R R A I A I S A V
 Y Y K E L E I A T L A V K K R A S L L T K K L S D S I GVT QK S G T Q T K D D

 HS KELDIAVRVVHLACALCRRVQEGLLENGNAQVKAKDD
 S Y E Q E KQV A I EAALT A A KLC E QVVRQEQVT EAMEKS D


 Y A K E L Q LA C LA VARA T L L T K R L LEA V D | V | $H$ S K S D |  |
| :--- | :--- | :--- |
| $\mathrm{S} L \mathrm{D}$ | K | S |

 Y S R R E L L D V A V R A V V Q I A C W



A Y E A E E L Q V $A$ A M A A T

 YHKELE A AMEVVERACRLCLDVQRSLFS DEGRMLEKN D
MHPMLT $\square$ AVRAARAAGQT $\square$ MRAYTD■ DRVEVSTKG $\quad$ V Y A K E L A TS S R A LQQRAA QL L S Q S LA SAA DKGVLDEK D D





 A YEKEKEI AI A AVQAAA IVGEKVRAEMVP EADIEKS D

 A Y D RERTVAFRAVQTAAELDQSVRADLR MHPMLNIAVRAARNAGNVIARAFEDL



$\qquad$ M H P M L N I A I RAAARKA N H DA K N Y E TP Q NVVVVTQK G S F E Y Y L TVAV DLLAKKA GE ICRRDGAAVLLK SAETKEI HTK S P Q DLA ALLPEVCRLAEAAGQA ILPFYRQKS LPI QLKAD
 SHSQFDDVANKLADASGEVI RKYF RKKFEVLDDED



 P F WRANVNVNHKAD QLAESLI ILAEEAGER MRVYQ MEPMVVMAARAAQTVGSELLKAHQNR HK

 M H P MLS N A V K A A R R A G N DVANKAANAAGDVI RKYFRKNNFD1 I HKND
 $F L A S A I D A A Q K A G E L I R K G F \quad Y Q T H D V E H K G V$
 AVAVNCASKAGEWIKSKIIGNFAEPDDKQSMH
QHLSAILD $\square$ A RSAGQQI VD I YNSQDYKAYTKSD A VAI NSASKA GEWI KS RLLGT $\square H D L N T K Q Q S P$ LS NLLPSVI D DA RAS GQVI LDD $\square \quad Y$ QRGQFEKMVK T D


 $\mathrm{G} \square$

NDAQLCDQVYNLVVSSAADAVASGGGDGEALASPSSVDEM AVIRDTILRSYPDHC

EMAPRLAQVTN


VLS E E D
EDSSALRADANADVRAHLLEEVRAHHPDVN PK H T $\square 1 \quad$ E $\square$ RK S Y ${ }^{\text {P D D H A }}$
IPLLSEES

F
1 I ID D IKK K Y P D H T

SSTDASELLEAVVK IVNECLAEVPRFGFEEPKSALGTSEV $\square P \square L S E E$


Al I EVLRRAYPEHG]



 UniRef90-UPIO0035EB955 UniRef90-UP1000463AB42 UniRef90-D5H8T6 UniRef90-E1SRP4 UniRef90-UPIO00476864B UniRef90_U2XRR3 UniRef90_UPIO0035F708F UniRef90-D1P3S6 UniRef90-T11Q47 UniRef90-Q2JP57 UniRet90_R9PJD8 UniRet90_B9HRJ2 UniRef90-MPIo00395B0AA UniRef90 U1K7YO UniRef90-UP1000471DE1E UniRef90-H8FXR8 UniRef90-K7MOG4 UniRef90-14LOB4 UniRef90_UPIOOO478D143 UniRef90-B5EPY6 UniRef90-UPI00037C683F UniRef90_UPIOOO410E587 UniRef90-R9PF75 UniRef90-D7DJX5 UniRef90-G7J705 UniRef90_13S8Q4 UniRef90-F5LSF3 UniRef90-UPIO0047AFB87 UniRef90-E3BJ12 UniRef90-UPIO00371E3AD UniRef90-L8J774 UniRef90-R8ATQ2
UniRef90_Dozopg E
 RGQGAFYQPNTDNSHWTTCHVRQLQDAQQMISLEGVEKAH AGQGAYYSVA DQNEWNADTVRDLKDTSEVVALEGYEKSH LGHGATSRPLADPELGKPISMRADDDLTGANFCESVEAGH SGQGATSQP SRGSQGQPVHVSKVSDVSQAVMCESVEAGH QGEGAYSRPLQKGEAAKKIGMKPISNIADATFCESVEAAH RSRGCYQYEHKDGYEGERVQMRPVTRSSDAKFCEGVEPGH KGQGATSRPLSQGPEGKAUSMRPVTDUSQACFCEGVEAGH RGHGAFQLPLRPAGEALQPQDPRFTPERLNLLESVEKAHA $R G Q G A F Q R R I E G G E E Q K \square S M R S \square Q S \square S E A S F C E S V E A G H$ TGVGSYYSELFKPAQQKPIKMQSHTDPKDLKVVEGVEKGH KGVGSFYTALFDSPLSKQERTKMTTNTSPASIGHSSHSTQ RGQGAFERLMDSNLEHQTRVLQEDNPAGTQFCESFEAAHS RGKGAYMFPTDPTLEPVKVSVSEAFDPRKAKFTEPVMKAN SCNGAWMQPLVHGDKKDEWQVSSIDDPAHALFCEPVEKRN TGLLGTYMEPLQGNSPPQKVRVSSNENLEEAKFLESYHRPD KGEGAFTLPLGGGEAKQVHVSDNDPEDVVRFLESVEAGHA KGSGAWMQSLTHGANKDEWRVSSTDDPALATSCEPVEKTN RGTGAFVTSLDGHHLPRPDHVSTSHNDHEYRVCESAEATH RGEGAAMMPAGGELTPIQVVQADDTAHLRFVESVESSHG LGGAGTFMQPLDGSSDLKVHVSATENPEDASLFESYEAAHS TGHGAWKRKMGRGALLPAEKIASRPQITEPKDLDFVDCGS EGSGAWMQPLLHKNKSLEWRVSSIDNPALATFCEPVEKAN QGKGATMGQLN GCNPQFLKVRQTDTTRQLQAIESIESAH AGEGAWTRPMGGGPATKIQPVEQTVDPKDIRFVDCKSATS RNHGAYAEPWDESSAPVQ\|RVEDVSDPRDARFMESVESRH RGKGAQLLPFGSQAARPIRVVDPDDAANLRFVESVESAHG RGQGATMDPAGGAPRPIHVTDASEESLRRFARSDVSEHS QPLIRFDKRLDWPNSAKLIRVSSVDDPALATFCEPVEKSN DGCGAEVESLEGSPPQKISVCTVDNPVNASFFESYEGAHT VGDGTYM RGQGATQVPLKGGNPTRLKVVSSEDVAHFRFVESVESSHG VGCGTWTKRLKDSSDWTRCFVDGCCLVPEARFCDSDSQTW RGQGAKVNPLGGV RGHGAYVRSMDD $A \vee V R$ RVSNVQDLNGTIIATGFP

## RGQGAQLN

VGCGTWMDFLVIHDGWTR
RGRGAFLNNHR\|RVS
GGGAFLNRERRDRVSRRTRLGESLIGTGFPYRMFDKL KGQGATI RRFPSAATTAAAAENSLTSRLVDCQRSTSTN RGQGAQLN SKRLRVSKTVELAGSVLATGFPFKQKHH SGKGAWKIPDLNDSVKIKTHAGRHELPNQSITMADSRRQ RGEGA MMMDMDGSNPEKISVTSSTDAENFRFVESVAHSD GKGAFKVESEG SPKRLPLFSPVEGVVRVVASRSHLSE RGAGAF LDNRRLRVSRRTRDEDSLI GTGFPFRRGDDLL GLGA WREERGGEPEA $D E V R S S P E D V F V V A S K R H S S P$ RGEGTVQQPLTPDTDPTP RПRVANKRDLKGTILGTGFPFKQRQ HM RGLGASRNASGAGPEADRVGRRRRHPVVAGSRSHGTERMG GSGAYFNDKRMRVAGR SRLSDAVLACGIPHGERAG RGKGAQLN GYRlRASKPRDLTNTILATGLPFKDKTK RGQGSQLN GGYRLRTAEKRDLEGALVATGFPFKHKQH QEDFAQALIGSELGSHRDMAVRTFLQNFEKVQSATHGYYA
 NGRRTTLNGEETSTRACAKLSQAYDYTTSPHLF HRKGAFLNGNPПKVSSQSELVKSL LVTEAGTQRDKLTL RGSGAQLNNKRI GAFKECDEAR DE पKVTRKANQGT

## GYGAW

 RQGEEELVQLPLAVTSPQVI RVVGSRS GAGAFLNERR乌RVSAR RKLEDSVLATGIPFHGRGG RGSGAWNNKSVWPNHAKQVSVSSIDNLAMATFCQPVEKAN GLGAWRGDKGGQPLPDAVRDTLAPGEAFTVVASRRHTSP RGNGAWRISGGVRTPIHTRVLPEDGPPMLVVVASRSRS DVSGTQRRIRMTPKDTLQDTFLAVGYPYATVRNGEVVSYA GAGAWRQDAVQGTQKLPDHVNDSREQKLTVVASKSHRSP GRGAFLN DRRMRVSKRIRDNESLIGTGFPFREFDHV GRGAF LiN

GKGAY
 GKGAYLKAAKLGGVSESALSESLVGTGFPADR RGKGAY
$H D L I G A W K D M P S N E K H K R M H V S N E R T L R Q S L V A T G F P A D Y$
R HDLGA YKIMPSNEKVRUNDHQHSGPKHPUAMAVS R R R R QGKGAWKMTPEGETVRПSTHKHELPTQSTAVAIS RGSGAQLN
RGQGAFKLLPNGERQRAGDAKDLTGTVLATGFPFKAKQH





UniRef90-M7ZYX4 UniRef90-DOYZK3 UniRef90_UPI00036FD3D4 UniRef90 F5S932 UniRef90_UPIO002557D5D UniRef90-S5Y2W1 UniRef90 ${ }^{-}$W7THA6 UniRef90_UPI00036988F7 UniRef90-X7F6W9 UniRef90-M4R8A8 UniRef90-UPI000237D416 UniRef90-K9XTL5
UniRef90_K9WT50
UniRef90-I1QBJ8 UniRef90_V4NFV8 UniRef90-A3SU91 UniRef90-R4G4P3 UniRef90_16S5X2 UniRef90-D2VMQ2 UniRef90-A9A515 UniRef90_UPI000225A987 UniRef90 K6ZN70 UniRef90_UPIO003748A9E UniRef90-B9KXJ1
UniRef90-W8KRC1
UniRef90-M2VWT2
UniRef90_UPIO0047097B0 UniRef90_A3V295 UniRef90 Q01U20
UniRef90_UPIO0047655AA UniRef90_N2JKE9
UniRef90-K9VDT1
UniRef90_UPIO003764330 UniRef90-M1YZY8 UniRef90-M9RCW2 UniRef90_W9V0N2 UniRef90-UPI000464133F UniRef90-B2AEU6 UniRef90-K5XCY1 UniRef90-18T540
UniRef90_UPI00014D3743 UniRef90_V4T7S9 UniRef90 G7FWI8 UniRef90_UPI00045EC3BF UniRef90_UPI000404B92E UniRef90- F4S2C0 UniRef90_UPI0003703125 UniRef90-Q985Q3 UniRef90-F9QAM1
UniRef90-UPI0003193EEF
UniRef90-S4Y9D2
UniRef90_W5M287
UniRef90_UPI000463AA68
UniRef90-P54927
UniRef90-X5JBJ6
UniRef90- F4AJR4
UniRef90-F4AJR4
UniRef90-W6M568
UniRef90-I3DBK1
UniRef90-I1YFB9
UniRef90- Q9HXI4
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UniRef90_UPI0003F06A76
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UniRef90_EOVZU8
UniRef90_D8MMMB7
UniRef90_UPIO003A633B1
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UniRef90-LOA5L3
UniRef90-K2BJH0
UniRef90-A0A011R252
UniRef90_A8TXC8
UniRef90_R7JKF9
UniRef90_UPI0003B6E52B
$\qquad$
MHPM $\square N \square A \square R A A R K A G D \quad H V \square K S \square E K T Q A \square T V A K K G$ MSPDYPQVIEAAEQAGQLIMQVYQ REFAVEHKGD LS PALNVAFKAARKAGDFMLRASSND SSDKIDSKAS YEKLVTVMRALAALEAGEKDM AKMVNSDDFEVKTKSD FEPMVAEMRRLALLAGEKIM EVYGSEDFEVRSKSD QKELETAENAARNAGELI MASDRARQSRPCLAVESKGG

 LQ $\mathrm{Q}_{\mathrm{L}} \mathrm{D}$ A TEAVMTAGVVLQNNWNKDE SSQDFSAl EMK S D

$D \square Q A L N A L A V A A G T E I L R I$
Y S TDFAV ${ }^{\text {T K G D }}$ YEQLVTVMRRLSIEAGDKIMEDYGANDFEVKTKSD
 DLDQALQVALKACELAAIEDKQHFASQQKAFLTKST
 NVMVAAA QKS GRALIRDFGED
QPLIQNII D IS HLAGDKIMNDYQN

 DFTIYEKSD
 RKTLKI QDKQP DYELLTSVVMRRAALEAGDALMQVYAAADVTNEKSSS LETAVD I AREAGALLANYFERRVA $M L D A E E A A V A A G K A L D D V$ V LQNFLEDATEAALAAGSVLKS
 MNPMLNIA $\square R$ A ARRAGNVIAKNYER

RDT
FDKLSEDMREDSLEAGD\IM NDYNSDDFDVRSKSD LELVRNAGDAIMEV YHQDEWDTQLKAD【AVRAGEVIMSVRADACRPD YKAD
HPYLPAVIELVRAAGAADLDPYWRELAVQTKAD YTDLLESALCIIATQAGERI MA $\square Y R S$ MHPTVNDAVRAARAAGDVILRYHNQV VD DA LDAGKEILRH MNKLLEPCI ELAERAGDAIMAD
$P L I T V M V Q A V R K A G R T L A R D F G E V$ $M N Q V I$ QAALDAGAA I MDDYK MHPMLN AVVKARRAGQLINASLDL



 MEEFVDVAlIEAAKKAGE\IRHGF
 YGDE EVDRKGD EQLQVSMKGP KDFDVEYKED RQTGKGTTVNDKKN TQ $\square \mathrm{AHQAGEA} \square \mathrm{ME} \square \mathrm{Y} Q$ LS S LTE EVAKKAARDAGQEILKIYDT
$\qquad$ DLI IQVSQKQH HA GCA V DRKSD
RD D I
TORKG PRGLRRVEGKDD K

YK S KHIE HK G[V


RDFATYEKSD

 MQPMLN AL RAARSAGELI FRSIERLDVISVNEKDA
 MPDYLTTCETAARAAGQVLLD WQGKFRI REKGR DECFHAAVDVARKAGEEIVVAFS MHP LIINAVKAARRAGGII TRASQDV
 EKRI QTKS S EQFLAVAEEAAKNAGEIIRKGF MHPMLTIATRAARAAGQTIMRAYTEL YQTKNVEHKGQ MHPMLNIADKAARKAGSDINRASDDV DRVEVSAKGLD MEPMLNIALRAARKAGELI ERAWERG DLMKFEEKSR
 MSVDLDKCYEVVVKSAKHVGKI DKERDWDSKLKIETKSS
 D DLMAVMQQAALEAGHEIMR
 GQAPMDVAHKSD


SGAF EVDFKSD


EPF TN TA TQAARTAGNП MMRAVDRD DK DQ TEKQP MHPVLNI LIKAARRASKII NQASMDLEH

L Q I T T K R Q
ENLQVSKK GP $N V V F K A C Q K A S R S L K R D F G E V$


UniRef90 R5TX42 UniRef90_M7ZYX4
UniRef90_DOYZK3 UniRef90-UPIo0036FD3D4 UniRef90 F5S932 UniRef90_UPIo002557D5D UniRet90-S5Y2W1 UniRef90-W7THA6 UniRef90-UPI00036988F7 UniRef90- 77 F6W9 UniRef90-M4R8A8 UniRef90-UPI000237D416 UniRef90-K9XTL5 UniRet 90 -K9WT50 UniRef90-11QBJ8 UniRef90-V4NFV8 UniRef90-A3SU91 UniRef90-R4G4P3 UniRef90_1655X2 UniRef90-D2VMQ2
UniRet90 A9A515 UniRef90-UPIO00225A987 UniRef90 K6ZN70 UniRef90_UPIo003748A9E UniRef90-B9KXJ1 UniRef90_W8KRC1 UniRef90-M2VWT2 UniRef90_UPIO0047097B0 UniRef90-A3V295 UniRef90 Q01 U20 UniRef90_UPIo0047655AA UniRef90-N2JKE9 UniRef90-K9VDT1 UniRef90-UPIO003764330 UniRef90-M1 YZY8 UniRef90-M9RCW2 UniRef90 W9V0N2 UniRef90-UPIO00464133F UniRef90-B2AEU6 UniRef90-K5XCY1 UniRef90 187540 UniRef90_UPIO0014D3743 UniRef90_V4T7S9 UniRef90 G7FWI8 UniRef90-UPIO0045EC3BF UniRef90_UPIO00404B92E UniRef90 F4S2C0 UniRef90-UPIO003703125 UniRef90-Q98503 UniRef90-F9QAM1 UniRef90 UPI0003193EEF UniRef90-S4Y9D2 UniRef90-W5M287 UniRef90-UPI000463AA68 UniRef90-P54927 UniRef90-X5JBJ6
UniRef90-F4AJR4 UniRef90-R7ZYK5 UniRet90-W6M568 UniRef90-I3DBK1
UniRefollill UniRef90 ${ }^{-09 H X I 4}$ UniRef90-UPIOOO37A04A1 UniRef90_UPIO003F06A76 UniRef90-A3ZYJ6 UniRef90-C3Z103 UniRef90-C6X6U3 UniRef90-A0A031LTX5 UniRef90 S6F047 UniRef90-UPIO00350E0C6 UniRef90-Q12P87 UniRef90-Q473E0 UniRef90_UPIO002558A58 UniRef90_UPIO0047C4024 UniRef90_S9ZMU8
UniRet90 E0VZU8 UniRef90-D8MMB7 UniRef90-UPIO003A633B1 UniRef90_W2UPF2 UniRet90-A3WJ66 UniRef90-W6VV86 UniRee90-UPI00046455B4 UniRef90-HЗАКК7 UniRef90-16YWTO

NSPlLTTADRKSHQIIVQELLSA
NDVVTNDDLEAEA!I IETILKSYPDHC
NS PLTEADLAAHKSI QKALERLTPDDPVLSE NDFVSDVDRQSESILINAI QEAYPHHR
 VDLVTEVDRACEKEI TQAGRAEYPTHAFDGEESDFLST ADFVSNADRKAEEVYQELSRARPEWGFLM ASPVTEADEAADALISAGLRAAF NDYVTAVDKAAEE
DSPLTUADKRSHEVIVNVL GDLVTEADKQAEKAI I QVLNR QTLVTVADFGVQALISLELQQSFPSTPLVAEEDSASLRSS ESPVTLADQAAEALILDGLKNLAPDVPV
 ADFVTESDQRVEKFIVSSLSKEFPD
 KPb ADFVSQADKRTEKTLFEELSRARPDFGFGM

## V

 NDFVTEVDRNAERELVRVIQRAYPDHGMMAEESGEHDTNR D S PVVT A A D D L A A A D A V $V$ IFDLVTEADRASEKLVVERLRSHFPTHGПMAE
SSPVTDADESAEKVILDRLAAAFPDDPVVAEEAVSAGYVP ASPVTAADLDAHRIISEGLAALTPDIPVLSE GDLVTEADKASEAVILEILGR
NDYVTNVDKLAE
DSPVTAADEAADVHTS A GLRAAF
QSPVTAADLAAERILAQGLSVLTPD
 ESPVTAADMAAHRLLFDGL

 DSPVTVADRAAEKVI LD RLLRAFFPF
 H D F V K A DLA A N
 R DLVVTET D QAVEKLVAK SI K GKFPDHKFI GEESFAA G
 H D Y V T S VD K A A EAEI I E II R K S Y P E HT II I S E E S P V T S A D Y A A N E V L T V DL V T E T D Q Q V
 VDLVTETDKACEVLIFNHL

ES P LT EA DLLAAHNCVVNGLQ

 N D F V S D Vid RLAE QE I I S VI K K AYP D HA $\square$ MAEES GEQ GD S D K D Y V T EV
 A DLVTET DHLVEDLLIDSELRTRFPSHRFIAEESAAS GAKC ADLVTEADVEAQKAI QK VVLADFPEHGF
A DLVVTETDVKVVENMIIS TLKKEKFPTHSFTGE

E G P V V T R V D R Y V
 N D F V T T S V D K E A E A T T L V Q $N D Y V T E V D K A S E Q$ $V D L V T I A D R T V E K L I R T R L G E A F P D H G \square Y G E E G T R E R L D Q$ AS PV T EA DECAEALI LPA A A S LT P D DP I

 D S P L T K A D L A S H QVi IMS F L
ESPVTTADLKASEFIVASLKKAFPN
RS P V T EA DERAEEVI LA ELLSQAFPETPVIDAEES
A S PV T $\square$ A D E K A E E I I L L G H L V S A F P D D P V V A E E S V A A G R V P A DLVTET DQKVESMI ISTIVKEKFPSHRFGTRSSTR

ND LQTEA DRCAQRC IAASLSHQFPNDT D IGEEE HS PVT QA D Y RVN QF ITTDALNKAFP

ND Y VTE VDQHAERE 1 DA $\square$ I R K A HPNHS $\square$ I GE E SDFVTEVDKKAEAA
VD F V S T A D HQAERILKEELSRARPDFG

VAFPTHGПYGEEGTRDS $\square$ D S


NADNSSNVLVES $\square$ S SAVADNVSNTN

VSDFP【LSES
$\square$ QAAFPEHA
EF $\square$ WV IDP $\operatorname{LD}$ G T
LS NETC
S F E E EA
$D \square E G K$
HVPD H G
 $P D$ DA
$\square \mathrm{P}$ \LSEEAQ
$S \square R H N P D L C S Q V F D L V S T T Y L S D P A E A L L G P R P G S \square P E M$ LD A G P V L S E E D C

1 PLLSEED
GKTL G D D DF
$\square P$ IMS E E T P

E S D Y
T D L G
Lᄂ E E S


F L
K QCFPSHKF IGE
A VSS D LiP HL S P E E H A
$\square \mathrm{P}$ VLS E E N C
$\mathrm{T} V \mathrm{~W} \square \mathrm{D}$ D L D G T T
D R A A E Q T $\square$ VA A $\square$ R K A Y P T H A $\square \mathrm{M}$
$\qquad$
L
$\begin{array}{r}\text { D } N \\ \hline \text { L }\end{array}$

QLWQVDLVTETDKACEDLIFNH
$\square$ RKHFPDHK $\underset{P}{\operatorname{C}} \underset{\mathrm{D}}{\mathrm{D}} \mathrm{G} \underset{\mathrm{T}}{\mathrm{E}}$
E $\square \mathrm{Y}$ H LRKA Y P K H S
EFRWYVDP LDGTTNFAHGLPHFCDS LGLEQR
NFTN
LE $\square$ R N C
$\square \mathrm{P} \square \mathrm{L}$ S E E D P
E K T D D P V L S E E G K VARGRIDP $\square E$
$D \square E G K A$

 1 DEVLREAYPEYGSVL

GPTR $\square$ P $\|$ LSEEGR
E YRWYVDPDDGTTNFAHGFPAFAVVLGLEHRPAGLKQD

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| :---: | :---: | :---: |
|  |  |  |
| UniRef90 DoYZK3 | SAESGVVKEGRDKDCQWII DPI D | DGTRNFSRGYP |
| UniRef90-UPIooo36FD3D4 | ECADDSWNTRQAWREYWLVDPL | D |
| UniRef90-F5s | VSGSERAEFE | D G T |
| UniRef90-UP10002557D5D | LVTEEQSASHGQSAPTFLIVDPLD | DGTKEFINRRDFTVNTA |
| UniRef90-S5Y2V | VTEEQAATHGQSVATFL V V | G |
| UniRef90-W7THA6 | LSSSSAPFGLPGESAPTWI I DPI D | D G T |
| UniRef90-UP100036988F7 | ERGTVEGRDPQHRWIVDPL |  |
| UniRef90-X7F | LVTEEQAASHDQDVATFLIVD |  |
| UniRef90-M4 | IIAEESGLNAGDNTDVQWI I D | GTTNFVKRLP HCVSIA |
| UniRef90-UP1000237D416 | P ${ }^{\text {PPFSERQKWA }}$ | D G T |
| UniRef90 K9XTL5 <br> UniRef90 K9WT5C | 1 LAEESGKLGADESEYLWAMDPLD | D G ${ }_{\text {d }}$ |
| UniRet90-19BJ8 | LRALIDKGGKDSASPATYWVLDPI | DGTQGFSKVDDYV |
| UniRef90-V4NFV8 | AEEEAAAGRDPHTDGLFWLVDPLD | DGTKEFVKNGEFTVN |
| UniRef90-A3SU91 | LVTEEQSATHSASGDTFLIVD | dGTKEFINRRDFTVN |
| UniRef90-R4G | W | D |
| UniRef90-16S5X2 | R RWWLVDPLD | DGTKEFISG |
| UniRef90 D2VMQ2 | NNHDTTLILNGYSW1 | DGTTNFVHRN |
| UniRet90-UP |  | DGTSDF DKTEFT |
| UniRe90_UP1000225 | ESGTIRGEDADN WL V |  |
| UniRet90-K6ZN70 |  |  |
| UniRef90 UPIO0037 | HGEVKGKRDDVRFII P PL |  |
| UniRef90_BgKXJ1 |  | DGT NYAHGYPMC S A A |
|  |  |  |
| UniRef90 - UPI00047097B0 | VP FLWIVD | NFMHOTPFTVS\| A |
| UniRef90-A3V295 | QAASHMVQATTFFIVDPL | DGTKEFVQRRDFTVN |
| UniRef90-Q01 ${ }^{\text {a } 20}$ | HESPSEFRWFVDPLD | DGTTNFAHSFPMFVT |
| UniRef90-UPIO004 | P F | GRNDDFVN |
| UniRef90 N2JKE9 | RCWWVVDPLD | DGTKEFUSGEEFTVN1 |
| UniRef90-KVVDT, | EETGAIGGKESDIOWII DP | DGTRNFMNGLPHFVSI |
| UniRef90-M1YZY8 | EESGETVGHADHLWVI D | DGT ${ }^{\text {d Y Y A GYPCCV }}$ |
| UniRef90 M9RCW2 | QAESHSVTANTFMIVD | DGTKEFIHRRDFTVN |
| UniRet90-W9VON2 | RQGWARYWL | dGTreflqrneftVNLA |
| UniRet90 UPIOO | L | F |
|  | GCGRGTRGKRCWS | S AF |
| UniRef90-K5XCY |  | F |
| UniRef90-187540 | diay |  |
| UniRef90 V4T7S9 | Vdsrfalvoptid | GTKEFISRNETVN |
| UniRef90 G7FWI8 | RQDWQRYWLLDPMD | DGTGEFIESGDFAVN |
| UniRet90_UPIOO | GTDPANTWVV |  |
|  | RAA WK DLIFL |  |
| UniRef90-F4S2C0 | DLT NDPTWI | GT T NFVHGFPVIC |
| UP903 |  |  |
| Q985 |  | RTDFTVN |
| 9PA |  |  |
| UP100331 | ERKT WQAY WL | V S |
| 4Y9 | AEPRGGLLVWYVD |  |
|  | DSPTWI | D G C |
| UniRef90 UPI000463AA68 | DDDQ RWIVDP |  |
| UniRet90-P54927 |  |  |
|  | SERQQWDKYWLVD | dotk |
| UniRet90-R7ZYK5 | GERSEWDYFWMVD | DGTKFURKNGEFTVN |
| UniRet90-W6M568 | ERSQWQRYWLVD | GTKEF |
| UniRef90-I3DBK1 | RKQWQAYWLIDPID | DGTQQFISHTDQFVMl |
| UniRef90 O9HXI4 | Degsgegady | DGTTNFTHGVPHFVSI |
| UniRef90-UP100037A04A1 | SWD ${ }^{\text {WR Q W WQRYWLV }}$ | F |
|  | WI |  |
| UniRef90_A3 | QYEYRWI |  |
| UniRef90-C32 | GEKVELTDNPTWU |  |
| UniRef90-C6X6U3 |  | H |
| UniRef90- S6F047 | AGKGHDADWC WV D P | DGIONF |
| UniRef90-UPIO00350E0C6 | GATADLTDDPTwivdrtid | dGTTNFVHGFPFCVS |
| UniRef90 Q12P87 | VVGEESGEHRGDNKDYVWI VDPL | DGTNNFVRGlPHFVS |
| UniRef90-Q473 | AEGEDQHEYTWVIDPLD | DGTTNFlHGFPQYVS1A |
| UniRef90-UP1000 | GVIEGAEPEYEWIIID | GTTNF $\downarrow$ HMPHF |
| UniRef90 UPI0004 |  |  |
| UniRef90-S9ZMU88 UniRef90 E0VZU8 | AEEAVAAGHDPSVGERFWLVDPLD | DGTKEFINRNEFTVNDA |
| UniRet90-D8MMB | AGWEE RQHWQRYWLVDPL | DGTKEFIKRNEFTVNIA |
| UniRef90-UP10003A633B1 |  | DGTKEFVLRNDFTVN |
| UniRet90_W2UPF2 | 硡 |  |
| UniRet90_A3WJ66 | GWS S Y FL | diterlarsofavil A |
|  |  | NI A |
| UniRef90-UP100046455B4 | F | KFINKREDFTVNI A |
| 䢕 | F |  |
| UniRet90 | SVEADESGUKERDSEYKWMVDP |  |
| UniRe90- N9C007 |  |  |
| UniRef90-LOA | WVV | VNYAHGFPYCVSİG |
|  |  |  |
| 52 | SGQTAGIAAGSEYQWI | A |
| UniRet90_A8TXC8 | AADDQGRRWIVDPLD | DGTLNFLHGIPHFISVA |
|  | EERCNWELFWLVDPLD | DGTVEFIKGNEFTVNLA |



| UniRef90_R5TX42 |  |
| :---: | :---: |
| UniRef90-M7ZYX4 | $\square \mathrm{D}$ CGAEVESLEGSPPQKKLGV |
| UniRef90-DOYZK3 | R NLLAETVVAT GL |
| UniRef90-UPI00036FD3D4 | GATQA R VA DVPld S S WC\\|VGSRS |
| UniRef90-F5S932 |  |
| UniRef90-UPI0002557D5D | RVAAS DNGALM |
| UniRef90-S5Y2W1 | K GPFGEAPGELTPIGVNHTVDNRALMVVASKS |
| UniRef90-W7THA6 | RGGGARCNDGPLLKVSGAQS |
| UniRef90-UPI0003698 |  |
| UniRef90-X7F6W9 | PGE |
| UniRef90-M4R8A8 | RGEGAK $\square$ NEFR\RTD TERRDLNGA L L A T GFPFKATQYRA |
| UniRef90-UPI000237D416 | DGLL |
| UniRef90-K9XTL5 | GLGASCNRRPDQVSQTQE LSKSLLVTGFAYDRRETT |
| UniRef90-K9WT50 | GLGATRNRRPIRVSKTSE LSKSLLTTGFAYDRRET |
| UniRef90-I1QBJ8 | EGCGAWTQFTTSKDTWNRCFVDSCSVVHKA |
| UniRef90-V4NFV8 | VT D GVVGETEAI RVRTAGDGVVAl G S R S H G |
| UniRef90-A3SU91 | VQP 1 SVS TPDNAALMVVASKSHRDQ |
| UniRef90-R4G4P3 |  |
| UniRef90-16S5X2 | GLGAWREEADGRAQP ISVRLEPEEAFTVVASKRHGSP |
| UniRef90-D2VMQ2 | EKNVIS QCESDEGSLLSSNFPYGRTEEILGMVEKKYG |
| UniRef90-A9A515 |  |
| UniRef90_UPI000225A987 | GSGAFLNQRRLRVSGRQH DDEALDACNTPYGKRGNS |
| UniRef90-K6ZN70 | GQGAYKITAGVKTE $\quad$ ISPKAWTKGETWK\\|VGSRSH |
| UniRef90-UPI000374 | GQGAYLNESRLRVSGRN KMEDALLATGDPFKGRGN |
| UniRef90-B9KXJ1 | RGVGAFLN GERLDVSQHADLLHSALLATGFPYDRER |
| UniRef90-W8KRC1 | RGAGAFLNN |
| UniRef90-M2VWT2 | NDTP $\square$ S NTLQRESCSQ DQLRDCVLYATSPDMF |
| UniRef90_UPI00047097B0 | PI TVSDANRDEQLMIGTGFPTDEGAR |
| UniRef90-A3V295 | VGG NLRAILVSEPDNAALMVVASKSHRDQ |
| UniRef90-Q01U20 | RGAGAYLNNRRDHVSA ARRLQDVLASTGFPSRKRHQ |
| UniRef90_UPI00047655AA |  |
| UniRef90-N2JKE9 | P |
| UniRef90-K9VDT1 | G LGATCNRSPDEVSQ\SE LRTSLLVTGFAYDRRETA |
| UniRef90-UPIO003764330 | RGEGAK L EVVRL |
| UniRef90-M1YZY8 | GKGATMNGKPLAVSPLANLKESLLVTGFAYDIHTATHNN |
| UniRef90-M9RCW2 | VGG |
| UniRef90-W9V0N2 | RATEHTVHLLTSRRHG |
| UniRef90-UPI000464133F | SKMHPISVRRVPPEGCRAVVSRSHLDPATRQ |
| UniRef90-B2AEU6 | EGCALVRSMGKAGLLNKQRELRTEELHFVDSRVSCATDS |
| UniRef90-K5XCY1 | A WCGEVDGT LRPDRTRRQPVGAFTVVA |
| UniRef90-18T540 |  |
| UniRef90-UPI00014D3743 | GEGAYLNNER\ RVTDSKGLEDTLIGTGFPFKNPQ |
| UniRef90-V4T7S9 | SEPGDHLI GWRRIEARAAGMSPVAVA |
| UniRef90-G7FWI8 | E EKSDTRIVYAPPESLT LAVSRRQKDESV |
| UniRef90-UPI00045EC3BF | RRI RVAARRKLAECVVCCGVPHMH |
| UniRef90-UPI000404B92E | E $\square$ REGESWFSHGTRLPEQEPQQNKAR VVASRSHMSE |
| UniRef90-F4S2C0 | Y PD QLPLNKLS DALVGVEWGSDRSKNVMD K K S R S V V |
| UniRef90-UPI0003703125 | RGRGAYLN DRRIRVGRRDRLADSLIGTGFPFRENDRLL |
| UniRef90-Q985Q3 | S VR A A A S Pla VVa |
| UniRef90-F9QAM1 | RVDNKQELNGAIIATGFPFKQ |
| UniRef90-UPI0003193EEF |  |
| UniRef90-S4Y9D2 | AGE ARRNGERCAVSATASLAHAMVATGFPTVR |
| UniRef90-W5M287 | KGHGAFCNGLRLQVS KEKDVSKALILLTE $\mathrm{C}_{\text {G }}$ |
| UniRef90-UPI000463AA68 | RGGGAFMND R R L RVAARAKLSDAVIT TG |
| UniRef90-P54927 |  |
| UniRef90-X5JBJ6 | LGATLRRSLQVSKT TELSKSLVT |
| UniRef90-F4AJR4 |  |
| UniRef90-R7ZYK5 |  |
| UniRef90-W6M568 | QPD T P VRVVGSRS |
| UniRef90-I3DBK1 |  |
| UniRef90-I1YFB9 | AQLN GRRLRVTKRRDLTDALIA TGFPFKY |
| UniRef90-Q9HXI4 | GRRLRVSGRKSLEGALLGTGFPFRD |
| UniRef90-UPI00037A04A1 |  |
| UniRef90-UPI0003F06A | CGQGAFCNGQQLQASRETD LSKALVLTEDGPKRDPATDK |
| UniRef90-A3ZYJ6 | RGKGATRN GAKDQVSEITDLEGALVAASFAAGDDRD |
| UniRef90-C3Z103 | LGKGAFMNGKP DHVSGQ\\|KKTLLIAELGKSRDAKVLDIDF |
| UniRef90-C6X6U3 | RGRGAFLND |
| UniRef90-A0A031LTX5 | RGRGAMMNQRR】RVNVKDSLDRTVGHAYRAKRDGEVVSYA |
| UniRef90-S6F047 | GGGAYKKTSHKT TALLPQALDFTQP\R\AVG S |
| UniRef90-UPI000350E0C6 |  |
| UniRef90_Q12P87 | L DFRLRVTNVTELNNTLI GTGFPFKARQH |
| UniRef90_Q473E0 | GAGAFLNNRRDRVTRRDKLADC |
| UniRef90-UPI0002558A58 | RGRGA ALNGRRIRVSNRQGLNGALIGTG\PFSG |
| UniRef90-UPI00047( | HVSRTSDLAESLVATGFPSRKRHD |
| UniRef90-S9ZMU8 | R N $\square$ A CRSEPAAGLTVVASRSHGD |
| UniRef90-EOVZU8 | AKLN GRTIHVSKETELSRCLLGFECG |
| UniRef90-D8M |  |
| UniRef90-UPI0003A633B1 | P HALTGADRLQVRECGEQKTAVA SRS |
| UniRef90-W2UPF2 | V NELTQLGEKLPLDVPKEKYTVVASKSHLSP |
| UniRef90-A3WJ66 |  |
| UniRef90-W6VV86 | GVASRAPIVARRVETRPVCVASRSHNSA |
| UniRef90-UPI00046455B4 | GDGAEKDSLKDGRVAGAVAVSCRAAGQNLDAVASRSHNS |
| UniRef90-HЗАКК7 | GKGAFCNGQKDKVSGQEDITKSLI ITEVGSCRKPEF |
| UniRef90-16YWT0 | GGGAFCN GRKLKVSLNDDLRKSLLVTGFPYN |
| UniRef90-UPI000258E3D8 | GFGGF |
| UniRef90-N9CQ07 | VPVENHSAVQVGLS QS S Q |
| UniRef90-L0A5L3 | EGAFLNGQQDQVSTTE P P L A TPALLATGFPYNVAQD |
| UniRef90-K2BJH0 | GAELND RR\RVSKHKTLEESLLGTGFPHRH |
| UniRef90-A0A011R252 | RGSGAFLNE R RIIRVSKCLRLEDALIGGGFPYR】 |
| UniRef90-A8TXC8 | LRVS GRRNLQEAVFATGDPVTGLGGDHDR |
| UniRef90-R7J | YS YGQIVESMRRLPVESARHEHPRVAVSRSHKSP |
|  |  |





UniRef90 G9EUC1 UniRet90-C8RXA2 UniRef90-B3QFX2 UniRef90_UPIO003652757 UniRef90 C8WBK2 UniRef90-F2P5H6 UniRef90-Q3B2Z2 UniRef90 B8C1K8 UniRef90-UPI000371C8B9 UniRef90-U7QD81 UniRef90_C4LC85 UniRef90-A0A024SFC9 UniRef90-F8NFC5 UniRef90_UPI00038159E9 UniRef90 I1G077 UniRef90 ${ }^{-}$K2BMB5 UniRef90_WORSA2 UniRef90-F6QQQ1 UniRef90 W4YIT6 UniRef90-I2GHI2 UniRef90-14YTS8 UniRef90-A8N3K1 UniRef90-R4XC02 UniRef90-TOMIQ1 UniRef90-GOJ8H5 UniRef90_Q2LVM7 UniRef90_-_9E2T1
UniRef90_W6RX69 UniRef90-UPI0000DB71AE UniRef90 - M4NJU1 UniRef90_UPIOO047657A4 UniRef90-C8X038
UniRef90-D7DEP5
UniRef90-UPIO003685B67
UniRef90-K9VHM1
UniRef90-S6B1P2
UniRef90 UPIO003B6A3EE
UniRef90-C1DBE1
UniRef90-C6XRN3
UniRef90 ${ }^{-}$Q ${ }^{\circ} \mathrm{KBX1}$
UniRef90-M7ZQ08
UniRef90-M7NZL2
UniRef90-13YZG3
UniRef90-QOALG9
UniRef90-U3 3954
UniRef90-U2TWL7
UniRef90-LoFWJ3
UniRef90-LOA542
UniRef90_UPIO003F8EEOF
UniRef90 Q07TS
UniRef90-F8A955
UniRef90-D6V3F4
UniRef90_B8B7F6
UniRef90_W9VAY1
UniRef90_UPIOOO31D6FF3
UniRef90-BoBQP6
UniRef90-A4EHB6
UniRef90-K6YH32
Uniinefo-JOUSH8
UniRef90- UPI000402684E
UniRef90-D5AMW3
UniRef90-LODKN5
UniRef90-F6DB97
UniRef90-X0SRV2
UniRef90-A6F9Y6
UniRef90-LOLN80
UniRef90_A0A059C660
UniRef90-A6VR84
UniRef90-B4QJQ2
UniRef90_B6K2U1
UniRef90- ${ }^{-10 J T 37}$
UniRef90-UPIOOO3797631
UniRef90-E8LLE3
UniRef90 F5J3Q9
UniRef90-B8KWC3
UniRef90-UPIOOO35E432E
UniRef90-F6SDP5
UniRef90-C6HV45
UniRef90-H8GVK9
UniRef90-D5V7G3
UniRet90_LOG6H6
UniRet90-Q3A1S9
UniRef90-D2R7R8
UniRef90-A0A044V8T9
UniRet90 D3PL12
UniRef90-V4JBP8
UniRef90-R9JNJ1
UniRef90-UPIooo37C1B6C
UniRef90-C7Q8Q4
UniRef90-E7QQK


पGTAMRAALAAGE
RMSARYDTELVVETKS MLETFERAALEAGKATMQVYREGCPSA MRKD EFA $\square \mathrm{K}$ LTHDAAH $\square \mathrm{LKEA} \square \mathrm{NGV}$ KK QAYMTVMVAAARKAGRSTVRDFGEDEHTEVQVSKKGP AAETVVMQAMLSLLMRYRKAHKFDPFWKKPD
LEETSEDARSTAWSASDTLQSYYRQDSNTPNDDTQEKKD HPLLSAVVDLVRQAGDVIL PYWDEELDVTEKDD

VYESDFAVSTKDD
$\square M \square E A A Q A A G R K L L R D F G E V \quad E Q \square Q \square S K K G P$
MKTNLS TATIKAADDAGDE\|LKVYE
ELI DLAHRLADDAAEVTTKYFRRGLLRH
 MQSELQMAEQLAREASQLLLDHV RRGFVVEEKTP $\square R L A H V M A D S V D A Q T M D R F K A Q D L K V E S K A D$
LQREFFDKEVEVRHKGE
$C R \square C D D V K R T L L S G D K K \square L E K N D$

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

## पN पM पKAARKAGRA LVKDFREVENLQVSSKGP

YQAWLPEVCHLARYAGTVIMD\YQCPDCHVEQKQD MHPMLTVAVRAVREAGDVIMAHFGDPSHGEKRIVYKEG

MLATFEKAALEAGKAILEVYRAGYA VAGKQD QLAEVVETAAKTGAQVVMDAVN YKPRNVFYKGL


 MHPMLN $\|$ AVRAARAAGN $\square$ TIRNLGQNDQFE

```
S \(\square D A F V E K V F D T C H R A D E L L R S Y Y S ~ N P D A V D V S Q K A D\)
    MADMQQVFLDAADEAGRAIMS IYENGD DAVDVYKED
        QECMDYAVTLAARRAGEVVCDAQKNEMN DVMSKED
```




```
    MADF \(\square T V C E A A A R A G G R V L L D W Q H R \quad F T P K E K S P\)
        DRFFNFALLNGNEAGALVRAAFEQPCS EVHTKSN
```

SYVLELETVTRLAREAGALLLRHR
A A GLTVEHKSA $\square R$ LA VVADSADADTMGRYKARDLVVESKPD ESRDEDAERAATAGSEDAADGFRS

UniRef90 G9EUC1 UniRet90－C8RXA2 UniRet90－B3QFX2 UniRef90－UPIO003652757 UniRef90 C8WBK2 UniRef90－F2P5H6 UniRef90＿O3B2Z2 UniRef90 B8C1K8 UniRef90 UPI000371C8B9 UniRef90－U7QD81 UniRef90＿C4LC85 UniRef90 A0A024SFC9 UniRef90 ${ }^{-}$F8NFC5 UniRef90－UPIOOO38159E9 UniRef90 I1G077 UniRef90－K2BMB5 UniRef90－WORSA2 UniRef90－F6QQQ1 UniRef90 W4YIT6 UniRef90－I2GHI2 UniRef90－14YTS8 UniRef90－A8N3K1 UniRef90－R4XC02 UniRef90－TOMIQ1 UniRef90－GOJ8H5 UniRef90 Q2LVM7 UniRef90－＿9EE2T1
UniRef90 W6RX69 UniRef90－UPIO000DB71AE UniRef90－M4NJU1 UniRef90－UPIO0047657A4 UniRef90－C8X038 UniRef90 D7DEP5 UniRef90－UPIO003685B67 UniRef90－K9VHM1 UniRef90 S6B1P2 UniRef90 UPIO003B6A3EE UniRef90－C1DBE1 UniRet90－C6XRN3 UniRef90－M7ZQ08 UniRef90－M7NZL2 UniRef90－13YZG3 UniRef90 loYSU4 UniRef90－Q0ALG9
UniRef90 U3U954 UniRef90－U2TWL7 UniRef90 LoFWJ3 UniRef90－LOA542 UniRef90＿UPI0003F8EEOF UniRef90 Q07TS UniRef90－F8A955 UniRef90－D6V3F4 UniRef90＿B8B7F6 UniRef90 W9VAY1 UniRef90＿UPIo0031D6FF3 UniRef90－BOBQP6 UniRef90 A4EHB6 UniRef90－K6YH32 UniRef90－JOUSH8 UniRef90 UPI000402684E UniRef90＿D5AMW3 UniRef90－LODKN5 UniRef90－F6DB97 UniRef90－X0SRV2 UniRef90－A6F9Y6 UniRef90－LOLN80 UniRef90 A0A059C660 UniRef90－A6VR84 UniRef90－B4QJQ2 UniRef90 B6K2U1 UniRef90 ${ }^{\text {BO }}$－${ }^{\prime \prime} 37$ UniRef90－UPIO003797631 UniRef90－E8LLE3 UniRef90 F5J3Q9 UniRef90－B8KWC3 UniRef90－UPIO0035E432E UniRef90－F6SDP5 UniRef90 C 6 HV 45 UniRef90－H8GVK9 UniRef90＿D5V7G3 UniRef90 LoG6H6 UniRef90－O3A1S9 UniRef90－D2R7R8 UniRef90 D3PL12 UniRef90－V4JBP8 UniRef90－R9JNJ1 UniRef90 UPI00037C1B6D UniRef90－C70804
UniRef90－E7QQK̈

QSPVTEADLAVNALLSDLLGGARPDYGWLSE
ANFVSRADKRAEEMLYEDLSKARPGYGFLGEEGGVREGAD VDLVTEADRASEKLIVEKLRETFPNHGYYGEEGTRARLEA DS PVTQADREAEAII LQGLKKLQPGVAVIAE SSPVTDADLLAANEVVAKLKQLTPD SSPVTEADRRAEELIRRGMAAQHPHDGLFGE RTPDGKA GDFLSSADDKLCEKTLRETVLATFPNHDFLG GDLVTEADKASE
ESPLTQADKASHQLIEQKLREDTPEWQVVSE
ATPVTKADFGAQALLMASLRSFFPEDSFVGEEDAEAVWAL VDLVTEYDVAVEELVKSELAKAYPHFKFIGE NDPQTEADRRAQRCI SATI QSRFPEINLIGEEDVAVESDD HNYVSEVDRLAEKEIISTLRNSFPHHALLGEESGSIAGDD GSPLTLADEAAHHVIVDALRAWTPDVPVVSE
VDLVTETDHFVEELIISALREKFPDHRFIGEESTSAGSKC VDLVTETDQNVEKMI SGALREKFPDHCFIGEESVAAGQKI NNLVSYVDKEAEKQLVARLHE
GDFVSAADRKAEKILREALEKARPGYGFVM
VDLVTEYDVRVEELLLKELKNGYPNFKFIGEESYSAG VDLVTEVDQAVEAFII QEIKQRYPEHKFUGEETY INLVTEMDHKSEDLI LKSLTEDFP
ADVVTDVDRACEAATRDETHKSFPGHDVLGEEGVAPG NSPVT DADERAERTITAQLEAAFP WDLVTEYDRKDEDLIIGQLKTKFPDHKF A SPLTAADLAAQQVIMAGLAADEPVLPVLSEEAKADPW ADFVSNADHKAEQIVFDELSKARPGYGFLM

$G P D T A A D V A V N S Y \square L D Q \square Q S$
ASPVT
ASPLTQAD DRAHRA $\square 1$ DG GT Q $\square$ TPD $\square \mathrm{PC}$
ADFVSAADRKAEE $\square$ CFDR $\square S K K R P G Y G F \square M$

NSPLTQADKNANEVINGY【KPT GTQUISEENRQLDYSE ASPVTEADRQAEEAMRALLTQNVPTHADFGEEGGMQ ADFVSVADHKAED IYDRLSQARPGYGFLM
HSPVTLADUEAHKVITKGLKKISPE
MGPVTEADERANAFIVEALRTAFPS
DDPVTVADREASSLVAGLRAAFPDDGLS पTPVTDADRTAEEVIRGQLSR
पDLVTE 1 D पKSEKLIVD【LKS
QTPVTVADFGVQALIS $\square E \square Q R \square F P S \square P L V A E$
HTPVTEADGFTSQFVTEKLRQLTPDVPПYYHQA
GDFVSEADVQAEKVIFDHLMQAFPDYGWLGEET
GSPVTSADLASNELLRAACMALFP
NDPVTAADLAVNHFILEKLQA
GDFVSKADREAER पIKEE $\square R G A R P T Y G W \square G E E T G E E A G E D$
GSPVTAADRMADQLПREGLAK LTP
RSTVTDVDVLAEEKULALLQYEYP
NDFVTNVEKEAE
MSPVTLADERAEN【LRHLERDFPH DPA $\square$ AEEQVSAGK $\square$ P TDLVTETDKMSEAAI LDVVRKNF DSPVTAADLAAHKVILAGLQALTPD
NDIVTPTDNIVEESFIKAISSRYPNHQFTAE
TDLVTETDVEVEQLVKRSLAQRFPEYAFVGEESYAAG
GGPVTAADLAANNYLGELQTNFSDIDFGY
ADF VSQADQRCEQTLYEELSKARPDWGFLME


LSPLTDADQRSHEVLFEGLPR

DSPLTRADKAAHHClLEILQET
RDLVTQADLESQRATRKVILTAFPDHDFLGE
TDLVTETDQAVEKMLIENLSKEFPDHKFIGEESVAGGAKD

DDPVTAADREASALIVAGLRSAFPADG


VI ${ }^{110}{ }^{1} \mathrm{~N}$ T $\square$ R K A Y PE ${ }^{120}$
K S HRW
EYRWYVDPLDGTTNFAHGFPYFCVS $\square G \square E H R P P G \square K P D E$

$$
\square \mathrm{P} \square \mathrm{~L} \text { S E E S A }
$$

$S A \square A \square D A K \square S N N$
AAVLD【LKRHAPDHA
 YTLVKPDEE SDDVL HVWI DDPLDGTT
$\stackrel{V}{\mathrm{~V} L}$
LLP EAGF

HHSLLSEE $N L D P$ LSSE E E G K K

KTP【1 A E ES V

EPTEVPLLSEE

 HRE $\square V A K E Y K D F V T E D D K Q C E A T \square T A T \square T E S F P D D$ LT H D D V

RK D WT R C
$\square \mathrm{P} \square \mathrm{L}$ SEEDP
EHKGFNDLVSYVDKEAEK $\square V$ V $G \square Q E$
TRPRDAVLGEEEEL
DNKSGSDFDPVTEADRAGEAVMRRLIKANFPQH

EDSAS $\square R S S N T D D N S S N V L V E S \square S S A V A E K$
SNYN LEVQYKQNEPVT $\square$ ADVAVNHY ILENLQVVLGHEDFA L] E ENC S Y P D H

PTRRW\VDPLDGT
RS FPGH
$\mathrm{H} \square \mathrm{P} V \mathrm{~V}$ S EEN A A $\square$ I T $\square$ K K K Y Y P E H T
PDHIL
$\square \mathrm{P} V \mathrm{~L}$ S E E S
E

RKDDLVTDVDRECEQT $\square$ TS $\square$ LLKSYRDH $\prod_{i} \mathrm{P}$ ■LDVPVLSEEGR
 E D A

QADHESEAAIRELIASRHPD $I$ S S Y P E H LLS E E EV

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UniRef9_C8RXA2 UniRef90_C8RXA2
UniRef90_B3QFX2 UniRef90_UPI0003652757 UniRef90_C8WBK2 UniRef90-F2P5H6 UniRef90-Q3B2Z2 UniRef90-B8C1K8 UniRef90_UPI000371C8B9 UniRef90_U7QD81 UniRef90-C4LC85 UniRef90_A0A024SFC9 UniRef90-F8NFC5 UniRef90_UPI00038159E9 UniRef90-I1G077 UniRef90-K2BMB5 UniRef90-WORSA2 UniRef90-F6QQQ1
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UniRef90-X0SRV2
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UniRef90_LOLN80
UniRef90_A0A059C660
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UniRef90-C6HV45
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UniRef90-D2R7R8
UniRef90-A0A044V8T9
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UniRef90 R9JNJ1
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UniRef90_C7Q8Q4
UniRef90_E7QQK3

EEYAKTKKGYNTDSFFLVDP DDGTQEFNKRDEFTVNTA TDWQERQHWDSFWLVDPLDGTKF IRKNGEFTVNIA EFDEQPSGTGRRWII DPP DGTRAF DGGVPYGVMIG
LE E S G VVGSDK S HVWY DPLDGTTNFLHGLPDF DSIG
 ELLDLAGRGQPGPRGRFWIMDPVDGTASFLRGQQYAVSLA TDEPTFCVDPIDGTTNFVHGFPFCISLG
 KETCPPDLVNLKENDLTVWVDPLDGTKEFTEGFPETVLIGG EGE $\square P$ DASVRQSWRRFWLVDPLDGTKEFLHRNDFTVNVA TDSPTWI I DPIDGTCNFVHRFPPVVSIG $\square$ IEEGTTGTQADPTALNWIIDPLDGTTNFIHNDPVYVSVG
 SASGQTASILNDEPTWIVDPIDGTTNFIHGFPFVVSIG REVIVER SSYYKWIVDPLDGTTNFAHSDPFCVTVA SIGY SERKNWEYFWMVDPLDGTKEFVKRNEFTVNIA

 GEES $\square$ GKELPELTNDPTWI I DPIDGTTNFVHAFPHCIVIGG EERG SERRHWPRYWLVDPLDGTREFIKRNEFTVNIA G
Y
V
K KSYEGTTGSGSDRAGLNWI DD AA A DNGQ ADISYEMRRNWTRYWLI DPL
LAEESGGAALDGEFVWII DPLDGTEFMRNDFVNIA EEGGIVEGGSDKSHVFIVDPLDGTTNYLIHGYPQYVS: A GLLCEEGTSGSGASGRTWIVDPLDGTLNFI HSFPVFISIA A LRADDRGGKDASNPATYWVLDPIDGTKGFLKGDDYVVGLA
 A GEPEEDGSDSGF $\square W V L D P I D G T K S F I T G E H F G T L I A$ EERG【VEGSDRSHRWIVDPLDGTLNFLHGMPHFVSIA PFWE VAEESDNSAGASRFERCWFVDPMDGTQEFVVRNEFAI HI G LPEAGFDTEEGTGEVYNWIVDPLDGTTNFVHGVPVFVSIA ADSPERLSRER $V$ VWI DPI DGTREFVKGSDYAVSIG GSSGAGSRRWI DPI DGTKNFMRGVPVWASIA GIVGEEFGNENADAEYVWVLDPI DGTKSFDAGFPIWTLIAA RTE
 EESGEQGSGDYQWI I DPLDGTTNYLHGFPQYVSIA Y 1 SEETYTAEQAKQEWVWI I DPLD GTRDFI EKTEYAI HI A $N$ i A L
 TFLGEEGGUVQGNDEFKWII DPLDGTTNFIKGIPHFVSIAA A
 GF $\square$ AEEGTSDEKHEVYNWIIDDPLDGTTNFIHGVPFCVVSIG EVMGEEEQQGDANAEHDWIVDPLDGTSNFAHKDPHFVSIA A LANTPYEQRQCWSCFWLVDP $D \backslash A$ AKDSGATTGADSPY ILGEFGG\|I GDSSSGY WWGI ILGEEGGIIGDSSSGYLWCIDPLDGTTNFAHGYPSFVSVA SEERQVTFEERSKWPVLWIVDPLDGTKEFIKKNEFSI NI A R $\square$ SKSETGMVTLTDEPTWIIDPD DGTMNFVHHFPYCISVA LSEETHQGNEAIPKDWVWI I DPLDGTRDFI NKTEYAL HI A ERGElEGDPTKPRFIVDPLDGTSNFLHGIPHFI SIA $A V L G E E G G V Q G K D S Q F Q W I I D P V D G T T N F V Q G V P H V V S I A$ RYCWVI DPLDGTTNFIHDNPYCVSIA
 SVVA A E K SVLT DNPTWI I DP I

E ETDD A ERSSWQTFWSADPL

EEVPYAVRKNWRKFWLVVD

HVVLGEEQGQDKEGAFRWIVDPLDGTVNYAHGFPFYVSIGG


TGLQEMTGDSFWI
DSPERLNHERVWI
VGEEEDALLKEVPTEGDVWVIDPIDGTNNFVRGIPWTTSVA


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UniRef90 B3QFX2 UniRef90－UPIOOO3652757 UniRef90＿C8WBK2 UniRef90－F2P5H6 UniRef90－Q3B2Z2 UniRef90＿B8C1K8 UniRef90＿UPI000371C8B9 UniRef90＿U7QD81 UniRef90－C4LC85 UniRef90－A0A024SFC9 UniRef90－F8NFC5 UniRef90＿UPI00038159E9 UniRef90＿IGG077 UniRef90－K2BMB5 UniRef90－W0RSA2 UniRef90－F6QQQ1
UniRef90－W4YIT6 UniRef90－।2GHI2 UniRef90－14YTS8 UniRef90－A8N3K1 UniRef90＿R4XC02 UniRef90－TOMIQ1
UniRef90－G0J8H5 UniRef90－Q2LVM7 UniRef90－J9E2T1
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UniRef90_Q8KBX1
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UniRef90-U2TWL7
UniRef90_LOFWJ3
UniRef90_LOA542
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UniRef90_Q07TS1
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UniRef90_B8KWC3
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RGKGAFLND GSGAYLN
】ENRNSI Q $\square$ REAGEKW
NGEKAWLETKAGREP $\square K$ RGGGAFMNDDP
RGRGAYMNNER川TVGQQ GQGAWGNSHRLRVAAR
 $R$ MADAALIACGAPHПGK $\quad$ K GLGATRNYQPLQVSKTDH LANSLLVTGFAYDRRETS DETGSRADHVTTKPEQAMLRVVGSRSHVNA
RGEGTDYRPTGLGPARKLDRLSPPADLSALRFVDCLASKS

## GDPG

$R G Q G A Q L N D$
GA WV EAPDAPPTRV
KGHGAFCNEERLHVT NET
GKGAYCNDAQQ NCSG
QGGGAYCN GNP QVSP
$\square P \square A S P P K P \square S S L H G A V R G R V A A R T D V P D A V V A C G L P H D G$ GQGSFLNDQKLPLNSPAPKDGGLGNCVVAVEWGSDRTED

$G Q G A W L N$ A WLT QPDAK $\square P G R K$ V
KGRGAF L NDKP
GQGAWLQTQAEAPWQ
GRGCFVNDRRLRVSGRRHFHRMRSRPLGQPALVAGSRSH
ADLDS LRAQSVELVQP RAGMGMVSPRALVIVGSRSHATP
AAKGEGLTDCNPTHSFPFSLHEDFQPTCKFCEASDSARNH GAGAYCARGTASPERIRVSAATQLSDSLIATGFPYYR
 GKKTA $\square$ HTRATPAKPMLLVVKSHRDAAL

 VGCGTWSRHLGQLTTAQDVWKRCFVDACSVVHMARFCDPD
 GRGAW $\quad \square A D R R \square R V A E R K H F D E A V D A T G T P Y D G K P G Q$ GQGGFVEDATGRRALRVSDTTEPSSLRLVVSRSHRSRLT GGGAFCNDTP $\square G V S P T$ GEGVWKN TPUG GTGAFTGKSLAAAD QGASYR GP
$R G Q G A Y L N$
VGCGTWSRHLG GRTGKKRKLKV
RGQGAQLNDRK】RVSSRQ

$A G N G A F L Q E N G E \square R P L V G H Q$
KGAGAYLNGRK $\quad$ TVSAAVPDGAAGLLQDNRLK VTMGAS
GAGAQLN GFRIRTGKAKDLANTVLATAFPFKAKET GGQRRSDPRPFARRRHPDALVSRSHL
GGGAFVETRD RQTTPLKVSSRERDEDLTLVVSRSHRN

RGQGAFYN
GERDQVA
$T$ LA QDGRLQRLTYRVPAKAPIKVTASRRH G
$G Q G A F$
$R G K G A Q L N D S P L A$
$N$ A D RLT TIA VREPPANLTALAA

SRC

$\begin{array}{ll}\square G K G A Q M N \\ K T E E H A V R R Q P D G P V N E M V R T T G Q T N D S A A M V L Q E Y S S G G \\ V & \text { V }\end{array}$
KTEEHAVRRQPDGPVNTSVVTCEWGSDRSGNNFEAKCACF

 K G GNAYLNGKQDSVSATND MNKALVGLDLPYNDKEYK FRSAEGLRNPTTDKLTDFGSNSGVTLLASARHHPG GAEKLIVTDGVVARSETVRCRPRGEVLTAVASRSHNS SGLPAV DVLARSQRDDSDRASAEKEWVLIGSVSHGG GAGVTKNGKAAGFSARPDYVISVSGT
KGGGAYKN
NSR $\square F N$ NSKRKDLIGG
D S N F
LG QVQKEQVGTMVVSLSHPSARTR
RGQGALLN
RGQGATLNGNRDESS $\square$ CDVDPGQAMVAVVFSPNVHRE ATKGNNLNRCLI AQSHGDQNLVKFGEKWLKITDDNHGRQC GGGAYLNGRPIRVSTRSTLVGSL LATGFPYDVSKD
 GKGSFLN GGGAF TGRSLASAQRCHVSKVAADADASLAYSSAL


## UniRef90_G9EUC1 UniRef90-C8RXA2 UniRet90 B3QF2 UniRef90_UPI0003652757 UniRef90_C8WBK2 UniRef90-F2P5H6 UniRef90 Q3B2Z2 UniRef90-B8C1K8 UniRef90-UPIO00371C8B9 UniRef90-U7QD81 UniRef90-C4LC85 UniRef90-F8NFC5 UniRef90_UPIOOO38159E9 UniRef90 I1G077

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UniRef90-M7NZL2 UniRef90-13YZG3 UniRef90_-10YSU4 UniRef90-QOALG9
UniRef90 U3U954 UniRef90-U2TWL7 UniRef90-LOFWJ3 UniRef90-LOA542 UniRef90_UPIO003F8EEOF UniRe99 OODTS UniRef9-FA955 UniRef90-B8B7F6 UniRef90 ${ }^{-}$W9VAY1 UniRef90-UPI00031D6FF3 UniRef90-BoBQP6 UniRet90-A4EHB6 UniRef90_K6YH32 UniRef90-JOUSH8 UniRef90_UPI000402684E UniRef90-D5AMW3 UniRef90-LODKN5 UniRef90-×osRV2 UniRefofo-A6F9Y6 UniRef90_LOLN80 UniRef90 AOAO59C660 UniRef90-A6VR84
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UniRef90 UPIOOO35E432E UniRef90-F6SDP5 UniRef90-C6HV45 UniRef90-H8GVK9
UniRef90 D5VGG3 UniRef90-LOG6H6 UniRet90-Q3A1S9 UniRef90-D2R7R8 UniRef90-A0A044V8T9 UniRef90-D3PL12 UniRef90-V4JBP88 UniRef90-R9JNJ1 UniRef90_UPI00037C1B6D UniRef90-C7Q8Q4
UniRef90_E7QQK3
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 EHPRFQAEFAAVTAKVVNDRGAAAIDLCYVASGRYDGFW DNNYAEFCYATHMTGGVRRGGSAALDLSYVASGRGDGYW SRDDIDAEGLARQUGALPFPGVDLWSSHVRYAALMLGDDDD AGDPNDGDAGGRMGHSLRSMGSAALNYCMVAQGGLDMYW
 SEDFFKKIKISQELLQMRCGGGAGNKILMVLEGAADAYV HPSEALERWLATVPVARRVPAGSSLKFCLVAEGTADVYPR LF LGNMEKLLTFQAHGDRVTGSSTLALCHIASGAADAYYQ AKLKNTEDILRTGVHGMRSLGSAALNMCHVARGDSDLYV QKYLQL LQSLMQRSHGLRRMGSAAI DLAYVACGRFEGF KGDHGLFLRECAVMGMRRWGAAALDLAYVACGRFDAYW DTYFNLTRQGGGMCHSLRSLGSAALNLCAVASGSMDCYV NNNLNHANFAVRAQAVRRAGSAALDLAYLACGRFDGFW HLSSETQEIIDQYPQADVVSMGSSLKFMLLAEGKAQLYYPR RESEFNNLNYFNQAQAVRRAGSAALDMAYVAAGRFDGFW ADRMQLAAELDSVKSLRTLGAAALHLDYVAAGRDDDFWE TD EKTDERLRTIVQEVQGIRTLGVAALSLCYIAMGIVDAYYD GGVQGDVLQQLVGDDYQLIPLGSSLKFCLIARGAADAYYR AQFLKELHQVMPHCAGDRRNGSAALDLAWVAAGRFDGFW QHLTTHILSKHDP WNPQPDRADSQCKYAWVADNTVDFFDR FEGMPNYLRMMHQTHGLRRMGSAATDLAYVACGRFEGFF
RDDRFNLGKLPCQNQIAVGSIGCKIATIVEQKADVY AQERLLAWLAERFGDLQLASIGSSLKFCLLAEGTADCYPR DSYLAMFVDMLKKTAGVRREGAASLDLCNVACGRVDGFW HPEFLKELNLMGEVAGIRRGAASLDLAYVAAGRFDGFW
 EDTKNFISEIEKDNRVEVVSKGSSLKFCLVAEGLAHEYPR
SGENEAAFNRVRDNVRIPLYGCDCYAYGLLAAGFCDLVV ARFLKELHQ MPHCAGIRRMGSAALDLAWVAAGRYDGFW
 SRFALERLA NDTDRETFGRVEKTVRLSRYGGDCYCYAMLAAGQLDLVI HEDPVKVVGAFHDAQGVRRAGAAALDLAYVACGRLDGFW NDADRAQFSHVEQEVRLSRYGGDCYSYCMLAAGHLDVVV DAYLGMFKAMTQUTAGLRRPGSAALDLAYAAAGRTDGFW
 AQQAVLNSVDKSYQAE FQYGSSSLKAGLLAEGKADCYVR
$P H C L D D L E L L M P Q A G L R R W G A A A L D L A Y V A B G R F D A Y W$ AEDSVARFSNIFKQCGDVRRCGSAADLAYVAAGRYDGYWR DRDEYLLQHLPCQNQKAV GSVGCKDSTIVEQQADUYIS FGWMQDYLQLMQKSHGVRRLGSAAADLAYVACGRFEGFF PATLQDLARLMPVCAGVRRFGSAABDLAYVASGRYDGYW DVMMEATLTARSQIHGIRRFGTASLDLCMVARGLFGAYF RRLDRVLETLTPAGVDYLPMG SALKSCLVASGQADTYPR EDGQEIASALWPGVVSVRVMGSAALGLAYAASGRLDLYDH NSNAKTEGFLTDNAVSGCTSTGSSLKFCLLAEGKADVYPR ATNMELFKDFTDISRGVRRLGAAAVDMCHVALLGVAEAYW PASLKNKLKQSYEQVRELPKG SSIKGCRIAEGIADLHLR NEARNQVATENSQRHAMRSTGSSAMCDAMVASGVADAFYN RNGAADRADHGGMAHALRAGGSAALNTCLVATGQLDAYW QRFDNLLSQUPFFGKNYVASVGGCKIATVLEQKSDVYUS FVQWTRLEGAVAPQVAGIRRLGAATDLAWVAAGRFDGFW
SAYUPLLSRLIDNCADIRRMGVASLDLAYVACGRFDGGL PLMNHFMDQLYGKASSIRVNGSAAMSLCYVAAGRFDI RVSLMMTQLEPLGTTVSRENAGSALKFCRMLDGDGDVYPR PE TEDFMRKIGVSDFTSVGSSLKFCLLAEGVADVYPR IVLSNLEKLFC\|PVHGLRSVGTAAVNMCLVATGGADAY ElSPEVLKKLRKKHPFSVKSVGSA|KFCR|AEGAADFYPR HSTEETKEFFDKHNDTQ\NKYGSSIKICKLAEGLIDDYPR AFMADYPEASVISMGSSLKFMLLAEGKAEIYPR GDRWHRAMLFYYRTHGVRRDGAAALDLCYVAAGRFDGFWE SDEDSRFVETDDACQSVRRDGSAALNAYVAAGRDDCYFT LAG A N NLAVLIAKLPKGSDURRCGSAALDLAYYVAAGRLDGFW ADANFARFRRVFDQCDDRRDGSA PGMFPSGS $\square A \square K \square A R M A A G E A D V T F$ EEYGKDEAFDDLSRACWRTRAYDFWSHMLVAEGACDMAA


| UniRef90 G9EUC1 |  |
| :---: | :---: |
| UniRef90-C8RXA2 | AA PPQSPGVLAAA PGLHAALLARLQPLAQ |
| UniRef90 B3QFX2 | DVLKTGDV VC GNETDHAELAR\\|LKPL |
| UniRef90 UPIOOO3652757 | SRELLATNGLLLSELSQR |
| UniRef90-C8WBK2 UniRef90 F2P5H6 |  |
| UniRef90-Q3B2Z2 | GMATISGEGLVSANGP TGSSL |
| UniRet90-B8C1K | RWGLRTRKICGSNGGR V HEELLEA |
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| UniRef90-C4LC85 | KPDIL NPWFVA |
| UniRef90-A0AO24SFC9 | RGRTLAGNWGLVAA PEGVHGEVLRLVREWDE |
| UniRer90-F8NFC5 UniRet90 UPIOOO38159E9 | Q |
| UniRef90-11G077 | PTQDMNSKGVVVTMRG HDDDARDPSPVKAK |
| UniRef90-K2BMB5 UniRef90 WORSA2 | GGEDYFKSGDLVAGNPKVFKQLLQM\\|VR |
| UniRef90-F6QQQ | SCR VVAAGTMELAQSTAQEDQ |
| UniRef90-W4YIT6 | SRQ IVCGSSVKLVETVSKLLTHIEYER |
| UniRef90-12GH12 | RGDVIAGCG VHPELQQVVREFWQA |
|  |  |
| riRef90_A81 |  |
| UniRef90-R4XC02 | KGEVIASNGKTH PEMD EVINLVKEA |
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| UniRef90-J9E2T1 | ARD |
| UniRet90-W6RX69 | KDSDFANPNFIS |
| UniRef90-UP100000DB71AE |  |
| UniRef90_UPIOOO47657A4 | RNVLETGNDI A GNEYARDELIERDPSL |
| UniRef90 C8XO30 |  |
| UniRef90-D7DEP5 UniRef90 UPIooos6 | NYLDRHPLLLASANEQMHSTLLETLYKL |
| UniRef90-K9VHM1 | RGDVSQWGGLLASNGC CHAALCGQAEGIL |
| UniRet90-S6 | AREGFLNPSFLALPVAAEWRAELTQLARAL |
| UniRef90-UP10003B6A3EE UniRef90-C1DBE1 | NPGGVVGDPA GWRERLKAAPHV |
| UniRef90-C6XRN3 | DGDLVCGNSTLVAKMTDRIEGR |
| UniRet90-08KBX1 | SDDVFA ${ }^{\text {d }}$ SLA GSPLTHPLLLEKAR |
| UniRet90_M7ZQ08 | RRILYPSGGVLVTNG |
|  | RE VHAEVLEIIRS |
| UniRef90-3YZG3 | YAVDASLPGEVIAAGDAQVHRQAL |
| UniRef90-Q0ALG9 | AENMLETGNIVAGNEPMLAEVVERLKKA |
| UniRef90_U3U954 |  |
| UniRef90 U2TWL7 | GAELQNHRGLLACNAAA FDRVAPVVAEFA |
| UniRef90-LOA542 | QREPRLRRGL! GGRQDVMEA |
| UniRef90-UPIO003F8EE | GNALATNSLLH |
| UniRef90-Q07TS | AQNGGRIIJAGDPRVHEAAMKLLN |
| UniRef90-D6V3F4 |  |
| UniRef90- B8B7F6 | RRDIYPSGGVLVTNG ALCHGKLVEMI |
| UniRef90-W9VAY1 | RFLETGNLVA GNDRVHRDILDLIKPF\NEK |
| UniRef90-UP100031D6FF3 | TGDVNQWGGLLASNG QYHEVLCQEAERILQA |
| UniRef90-BobQP6 |  |
| UniRef90-K6YH32 | DPLDKGEIVAGNPRVVQSL |
| UniRefolo jous | CTGKLKQDGFIAARTPQ ALA A |
| UniRef90-G6FYG9 |  |
| UniRef90- D5AMW3 | RGGFESNSVIAANG ELFEPLCKTIRDV |
| UniRef90-LoDK | LAPTGlLATNG ALHEAMLEIVQ |
| UniRef90-F6DB97 | EDLLNPH |
| UniRef90-A6F9Y6 |  |
| UniRef90-LOLN80 | DDFANPHFICWGGQK |
| UniRef90-A0A059C660 | DRSLLVSNG AVHGKLLDRDAPATE |
| UniRef90-AGVR84 | ETLLNGHFFVUSA |
| UniRef90 - B4QJQ2 | SRRCLAA |
| UniRef90-B0JT37 | RGDVRQWGGTM |
| UniRef90-UPIooo3797631 | RYMERNEFLASND |
| UniRef90-E8LLE3 | SGN LCGNPNIVKGLLKVTDP KTLPEVLR |
| UniRef90-F5J3Q9 | QELLFNNH |
| UniRef90 B8KWC3 | CRDTLLVDDF! |
| UniRef90-F6SDF | SRR |
| UniRef90_C6HV45 | R |
| UniRer90-H8GVK9 | R ${ }^{\text {a }}$ |
| UniRef90-DLVGG3 | KRNLKNNFIAATR |
| UniRef90-Q3A1S9 | DGQVLVSNGGLHAQMLEVL |
| UniRef90-D2R | VSLDRPHFUASST AELSAAMRG |
| UniRef90 A0A044V879 | NRRVL |
| UniRef90-D3PL12 | DYPASGL A GNGLDA HDILLQ |
| UniRef90-R9JNJ1 | GGSVSTNGR |
| UniRef90-UP100037C1B6D |  |
| UniRef90-C7Q8Q4 |  |

EKLLEQASQAVREAGELFARRDMAG
H $\square$ RQKGA
$M T P D L Q L A D E L A E K A G K \square T L D Y F \quad$ GRRS DQVFSKRD LLEEDQTFAVQLSKKAGQAILEGSARRFEGLSGFDEKKNT

LE QLLFAGTKAARLGGAMLES
MNPVLT】AKRAALSASRILLRHFDHD WRSRFTVGTVGGR
QNAMDHAVALARRAGEVVREALQQ DDRKVMTKSC
KIAADDAGNEI MA ITYE
ARQWIDEAGKRIIRASF
KDFDIYEKMD
AK K LT TVEAKP $\square Q E \square L E \square A R D M G W G A A N L L R S Y Y N G T A K D P N L D V Q Y K Q$ LARDFELVRETAREAGELALS

YWGRG】REETKAD
YKED $\square$ A $\square$ A $\square E \square$ AGHADVVTMHRFE
ATDLSVKSKPD $R K \square E \square G F K G R$
$\square D E \square S A \square A R A \square G W G A S D \square L R S F Y R G E P S T G N L N \square Q E K T G$


LQEDHDFLIEVAKKAGEMDTSARPTTTTTG
EKKNS DLE LAHYLADKADALSLPAFR DI AKQWVKEAGTRI RQSMQE SLTIETKSP VEAVR IS QK QV

TQ GVLAA GRDVMADYE
S $\square$ S PH $\square \mathrm{N} \square \mathrm{MI}$ K A SEKASKVLIRDFGEV AVKMVREAGQLLLQAMD $\square E E R \square A \square A V R \square A E E A G D M \| R S A R E Q$

RDFEVTAKAD EKLQVSNKGP DKKVITKNGT QGFSQRDKAG

FQPELDTAVRLAQEAGALLMSHL＿ARGVTVEHKSA $M L E F D L E A V K K T A V Q A G K V I L E Y Y Q K T D L G L E D K S D$



QDLVELAERLADASGAVIRRYFRKGDEADD KAD $R L Y D V L P Q L C A D A G H V I M D V R E T C F E Q V E A K G D$


$M E \square E \square Q N \square I K V E D A A G \square L S Q R D L I G \quad D \square S V K G P$ ESLRNAVVDVALRGGEMLRHHFGAARGVRAKTSRY $N V M V K A A L R A G R S L K R D L G E D E H$ MEPNFEG ICAMVAKSVADAAGQVILPYFRSTDLDAENKDG $S$ LLEMYNQTKAWVLEAGQRLRESMD TVPRIEYKSV

HP L DDPVLELVQAAGQATLEEYMYYWQANVAVQTKAD AS Q ILLEEYQNYCAGRDFNIDEKED

## VIRKAFTEEKHVSTKTSA

 V I ERAARKAGTALRRDFNEVQH LQVSRKGP
$\square D T A \square A A S R T G G A \square L R R Y F E E G V T M R N K S G D G G K S$ MKSHLLSTSRVEKTKSSK

## $\square \mathrm{N} \square \mathrm{MMKAARKAGRS} \mathrm{LV} \mathrm{K}$ DFREV <br> ENLQVSMKGA

KYLMDAVKAALQAGREDLSTYDD PASDFQ円ERKAD
YANYLY IALRAALDAGKA $I$ MD DYTD PESDFGUERKAD

$L L F S \square D \square A K S A G K \square L L K Y Q T K \square \quad S S L E \square T S K Q A$

DFGAQA LIMAS $\square H E \square F P R D N Y$ VGEEDAGT $\square R K D$ T D F VT QVDLEVQTML

DTPVTEADRNAEELIRQGDSAKFPDDGLFGEEFDEH
ADLVTETDQATEKLVKDEI ARAYPHHKFIGEESWAAG
EDLVTDYDKK $\square E D$ L LVKSLKEKFPDHEF $\backslash G E E T$
ANLVTEADFASQKLIHDTLLNEF

S D LVT QTDQK VEQLI IQSVKEKFPTHSF DGEESVAAGEAC ESALTEADLASHHHI I NELAA
NDLVTNVDRAIEQFFAEHI RRQFPSHR
NEPVTVADVVVSKYILDRLQAT
A $Y$ V T EVD $Y R V Q Q F I V R G R L E A D Y P Q V Q F$
GTAVTEADRAVDALFAARLREARPDYGWLSEESAEH
M $\square \mathrm{H}$
MTPVSDADLACEKKLRAELKKARPKDEVLGE
 $\square N L V T E \square D \square A S E R T Z I Q L S E A F P E H G F$

G PVTAADLAVNAY!LEKLQAS
E A D R $\square$ S L E H F
STPDTEADLMAHRLDCQGDHQ DSPG
LLQVTQK
NDLVTNDDRETERFFVNK IRQTYPGHQ
ATPVTEADKLSNTLLRKELKALFPD $\quad$ PP $\square$ I SEESN $\square$ PD Y H $L$ ME H MQKER
VDVVTETDQAVEKMVSTTLKEKYPDFSFMGEETYKP
MTPVTDVDRAVEHAL
NDLVTNIDKETERF F TDR TQGTFPGHRD
NDFVTEVDHAAEK』II ETLLTAYPG
ESPDTEADMASHHALVALLRAATPDVPVLSE
SDFVTNADLKAEKII IEELKR
ANFVTEDDLKVQEILFGKLLK
$\square E L V T D V D V A V D T L I S Q R L E E H F P G$
EDTVTAADREASALIVAGLKAAFPGDG QSPLTLADKAAHKVI MEGLA
RDLVTEADLASQNAIHDCLTKAY
$\square T P V S D A D T E D E R Q L R E D L S T R P D D A V$
GTVVS IVDFACQSMVMHGLKKHFPNDSVLGEEEDQNDDDE
ASPVTV A DREAEAA R E LLAA A A
DSPVTLADTRAEA VVLNGLATAFPDDPVIAEEAMAAGQ
DDLVTNDDRETEQFFIKRIRETYPDHQ
D S P T Q ADLASHKHITAELQKLTP

ADFVTEADKD TQQF TQAELLVQYPD IQF
DLVTEADEAI EAELARYI QRQFPGHAVVGEEDDSRRVLS ANFVSLADKRAEEMLYTDLSKARPGYGFLGEEGGTREGTD FDPVTVADRAAEEAMRDLLAQLRPKDGDLGE
D SPVTSADLAANRY ILEKLQAVF
RDLVTEKDRE $\square E S F F V S R\|R H A Y P D H D\| L G E$

ASPVTAAD $\operatorname{Pa}$ AHKVLAAGLTA
HSPVTQADLKVNRYLMGVLAELTPD
A D LVTETDCLVEHLI ISELRKQFPSHRF DSEEATAAGAKC
ADFVSKADQKSERTLYDELLKARPGWGF
A GPVTEADLAVNAMLHQTLTAARPDYGW
A DFVS $\square A D K R A E Q T L F D E L R R A R P D W G F L M E$
YDLVSDADEESEQ
D DLVTVVDKQCQDLVFAT $\square K Q S F P T H E F L G E E N V A P G S$
GDFVSRADLAAEK $\square L R E E L L G A R K T Y G W V$
NSPLT $\square$ ADRKAHEA VVGLDNET
NSPLTKADKKAHA乌I SMALS
GSPDTEADKQADKMDTMALQA
QGVASTAD $\square$ ASEKF $\square \square K E \square$ SKRFPEHD $\square L A E E S A Y \square Q F G D$

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110
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KKKHNDFVSEVDQAAEQA 1 IDVILDAYPKHA RRLI ERAFPGH
EALAATVRETSYDFAKHESVNADEYRAVISLPGVMSQADM
QK RLAE $\square$ APEVQ
PS GNGR

E S Q W I ID P LDGT
VLT D C
पK T GFPVLSEES $\square G$ N E DFAY
 RDDYD $\square$ SKYDGNFRS $\square$ TAADRAAHEA $\square$ KRT $\square G Q T R \square P \square L S$ LAE ESG PD H
 ETKPDRSPVTEADLADERALRETDAAERPEDGD
 QHNDFVTEVDKAAEAA 【IE LHTAYPDH

WGNAENVRQKSSFQDVVSDCDKQAQKMDVQKDKDHFPDDA LWS EHDIEFKGE IN LVTEVDKACEDLIVRTIRAEFPDHDI

RE I V V NRPDDS
H G I

TKPNYS LLSEE
EAR LLPDSN



K K D GPVTKADLAANHY F L R H V K S L L P A D VD P VKACSVA VH

P G H


पGEEDS
GQAGSREGAVAQ
K S H T W
D P Q VF A Y LS E E T Y
A VR QLIVTERPDDH

E L

VIAS $\square$ I RETFPDEA
QETEQFFTKK $\square$ RETFSDHH【
PD D
PFPVLSEEGK VTPFPVLSE E G K K LVST $\square$ P LIT E E S V
R R R $\| Q A R F P D H$
$I D S P M L G E E M S$
AKEAYQVFK
$\stackrel{\text { EA }}{\text { F }}$

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EENQLTDEPTWIDDP G LAEESGSDGPEVGLQWMVDPLDGTTNFAHGYPFFTSVG FLGEEDLATRPTSSPFQWVVDPLDGTSNYVHGFPYYVSIG ■TEEGTAARDGRSYTWIIDPLDGTTNFTHGLPVFVSIAG

ADTDWKERQSWSTYWLIDPLLDGTKFIKKNGEFTVNIGA DGEEGFGDRIDADDGVVWVI DPI DGTMNFHQRREFAVS：G KSPLSQ DSSQWVWIIDPLDGTRDFTKKTNYAVHIA NQE பD KSGLVWI
EARLSAR RVFVL ПMAEEGDFEKG DRLWI EFGGEPVTSGRQWVI EDGREMHYEERCNWELFWLVDPDLDGTKNYVRGVPVWTLI S SRNGTPSPSPAPRSSGRWIIDPLDGTTNYAHRYPFCI A A GILGEEGGIIGDTSDYLWCIDPLDGTTNFAHGYPSFVSVG DGYQSQTSGPDDHSWVWI DPLDGTRDFUDKTEYADH1 A LGEEYGTE GDTTRQWIVDPI DGTANYLRGVPVWTLI A
 GFLAEESGASASESEYLWII DPLDGTTNFIHGFPYCVSIA VGEEGFGDDPAELGGVIWVVDPDGTMNFVHQKRNFISVA TLAEEGDFEKG $\qquad$
AEENDYAAVNS
解
$\qquad$
$\qquad$ R ESARRWI पYGEEFGAS LGEEGQGDKDRS

 T\AEETADNTFAL L－ H SFYGEESSDGSGP ditablablo GEEAKIPFQNRKNWGYFWMVDPL GDLGEEFGEDAGQSGYRWVLD YLSEETYDGNKDEHPWVWII DPL GEEFGGDTGDATRTGRQWI，

AEESGE
AA EGEEGQDPTRRWIVDPL GIVVEETAKDTEPGELTWIIDPVDGTTNFAHGLPYVASIA A GEEFGRQNEGAELVWVLDP：DGTKAFDTGKPFGTLI A ПGEEGFGDDLDKLDGTVWI I DPADGTMNFVHQQRNFISVA
$\qquad$ ERRQWQRYWLI DPLDGTREFVKRNEFTVNIA

QKEVDFYGK
 AAGEREWE
EFPAKMGTSGRTW VLDPI QS EPRESRTGRDWVWI I DPL
$\qquad$
EEFPPVESKSGRTWVLDP F GEESPRSFSASASRVWVVDPI EVLGEEFGGQACYEGRQWVID A 1 AL

SERQQWTRWWLVD
SDRHAWSKCWMLD
G ILGEEFGASAHHGEWVWV
TSSPTWVI DP
EESAETEGSDPTRRWIVDPL

TEEKTKNQUGERYTWI
GE ARALIELASKEWLWIVD EVLGEEFGGTASFSGRQWVI

VRSOWNSLWIVD
 EKPFAERSGWDMLWIVDP
$\qquad$ GEENGHQDG


## EEQGLREGTDKTHRWI

GFTAEENKETHSDTYNWIVD曻
 $A$
$A$
$A$ ogtunfag grybavila GTNDFAKGSDSV
 LOGTTNEAHGYSFVSVG dgTNLHDYRssisla
 D GTR GF I S GTP TWV L I A A 8et

 L $\begin{aligned} & \text { D } G I T \\ & D\end{aligned}$
 AS A FRWIVVDP LAD GTMTNYAAHGYP F F V A



[^0]



[^1]


[^2]





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UniRef90 UPIO00475B189 UniRef90-UPIO002DB1517 UniRef90-G9NDB3 UniRef90-F4XD35
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LRYEEEIVLGVVYEVNNDELIFYAVK
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$L I H Q N K P V L G V V Y A P A D D V L Y F A S E E D$
$F E D G D G Q L G Y V Y D V V F D E L Y A A$

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LAVDGVPRVGVVSSPALGRRWWAVT
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LICEHKPVLGFVAAPCLDTVWFGGE
H
LAHRGVVTQAVVYDPARNDLFTAS
LICGTQPIFGIINNIRDKEITWAFKDDKCY胃KKENQ
YVEKEQVILGVAHDPVLNETYYA TK
LEIEGTVQTGVVYHPMMGEMFTAIK
LAVGLQPTVGVVYNPFTATLYSAIT
IFEDGKGKIGLI YDVMQDELYHA F
LSVKGKDEQAVIYDPSRNDLFTATK R R R
LIENQKPEVGIVYNPMLNQMFTA
KKNNEIIAGIIYDPUKDEMFYAEKN
LVDGVPYAGIVYNPFLNEMFTA
WIVNGVGKVGVVHAPFLGDTFSAAQ
WIENCVGKVGVVHAPFLGDTFSAAQ
LWREGRSELAVVEAPMLGETYHA R R
LAVGGEPMLGVVFAPASGEFFAGVV
LIDNGKAVFGVVYAPVLGDLYWGKVGNGAWKRDAF
LVHQHRSVVGVIYDPVRQDLFTSI
EEQMDHPVFGMIDQPYIGERFWGGLGFA QMSGP
LVHEGRPVVSVVVVPEAEKLYFALK

LEHKGQVVAGVVYDPAKDEMFFAEK
LWHRDRVVLGMVNMPLLDERFITVA
LLHRGRPVLGVIDQPVLGDRWLGVLGRPTDW
LILDGVPMAGCVAAPAHGMLWYGSGSRLLTRVINRRQEHS VYEDGVGKTGLI YDVVHDELYHAKA



VMYRNEVLAGAVFNPMQDELYVAV
LQREDTII AGVVYNPANDELYIA E
LSEGEGPIGVIDQPYTAERFSGSAA
LTYRGRPVVAVVACPGFGKLYSATL
LSEQGPVLGVIDQPYMQERFTG
LDQGHPVVGVVYAPDLGRCWWAAA
LI EGQVVFGVVGVPVTSADYYGGAEF
LIDNHQTIFSII AVPCEQVMYLGYLTEDPYKY
LCRHGRPVVGI DIPALDERWUGDAGY
FADHQELEFGVVHHCMEERGYMA
MF WAEK

VEEPREITTALVYQPLTDESFWAEK
LQEYDELVLGVVYEINQDECFYA $\quad W$
YYENGQAKAGAI YNPIGDDLYTTV Q
TYENGSPMLGYVYDVVYQELYHAKA
LEHKGQDVSAVVYDAAKDEMFYAEK
LLVDGKPVVGVVSAPALGRRWWASA
$L V Q Q S V P V A G V I Y V P V K K D L Y F A D E G V G A F K C T D \prod A S L P C$ LVKEGVPVLGVIYVPVRKELYFAADSLGAFKLAEIDYG
YAYKGQVQLGGVYDPNQDDLEFAADSLGAFKLAEIDYG

FVRNGRAELGVI YNPVSGECFYA
LLHMGKPVLGVVYRPSNGDCYYATSYAESR
LERDGETVAGVTYNPDTNDLYYWEK


UniRef90 UPIo00475B189 UniRef90_UPIO002DB1517 UniRef90-G9NDB3 UniRef90-F4XD35
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UniRef90 K1L638 UniRef90_G3ND95 UniRef90_UPIO0036D1A3F UniRef90_C9RZ15 UniRef90-K9X0H5 UniRef90_N9W7J6
UniRef90-E3HZ06
UniRef90_O33832
UniRef90_D5NXF4
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UniRef90-C6HVN1
UniRef90-B9ICN1
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UniRef90 E5AS53 UniRef90-UPI000380A73D UniRef90-R5PGE7 UniRef90-A8F809 UniRef90-B9M791 UniRef90-R1GD66 UniRef90_UPI000474COA7 UniRef90-M1KKW0 UniRef90-JOKDB3 UniRef90-V5GCZ6
UniRef90 W7PX79
UniRef90- J9YXK8
UniRef90_B81634
UniRef90-F7SSS2
UniRef90 S7UDY2
UniRef90_UPI000375CC37
UniRef90-S2E3B9
UniRef90-X0XKK0
UniRet90- UPIO004163C7F UniRef90-X5DP60 UniRef90_A2EGK6 UniRef90_FOJFA6 UniRef90-A9GDU5 UniRef90-UPI0001E898A4 UniRef90_WOTM09 UniRef90-UPI00036A1AFE UniRef90_N8VS65 UniRef90-B9SDQ6 UniRef90_R6VH32 UniRef90 UPI00041A623C UniRef90-A3XFB0 UniRef90_UPI000379BE62 UniRef90_F5L854 UniRef90-A4EVJ4 UniRef90_UPI0004758890 UniRef90_U7LJB7 UniRef90_UPI0003B6048E UniRef90-N8Y8R6
UniRef90-D4HV40 UniRef90_G5C074 UniRef90_UPI0003B61A5A UniRef90-UPIO003B430C3 UniRef90_A3STW5 UniRef90-A0A03117H6 UniRef90-H1Y193
UniRef90 M5U1R2 UniRef90-G4ZUY3 UniRef90-UPI00036291C5 UniRef90-X7F814 UniRef90_U3GT08 UniRef90_J9GPP5 UniRef90_R6X9V7
UniRef90_E8N1L7 UniRef90_UPI0003812427 UniRef90_G2LLI6 UniRef90_C6S4Z7
UniRef90 UniRef90_E8RR64 UniRef90_FOSAC1
UniRef90_HOYOQ8

RGVGSFLLN ${ }^{210}$ DRRDRVSKRTINMNECTIAATGFPVVDQSMLL RGEGTDSRHGKAQEERRKLVVRPCAKLSQATLMTTSPLLI
KGHGAFCNGQPDQVSGAQH


RGSGAFMNGSPVQVSA
$H V S E V S D L A T S L L V T G F Y Q T Q$ RILPLAEMNGSPVQVSA

 GQGAF L N G GER DWVS QAKA LEESSLDATGFPYSAF GR D


E A GETGKQIRVS DKA E T P LRVVVGS RS H Q S D

 R G G GAFLN GSGAFFN GERIVRVSENASLDECVGSTGSYVDF GAGAFRVWCGEPK QLLVVSQVSKLADA SVAGSSSLE GWT A AYTFDEDKQGACRLPLVAERHAHPLIADSRSHNTP RGQGATLNGSPLSVSSESDPERSL LDTGFSYRQADGPV A G G GAFCNGQKIHASPTAQVSDHVEQSLLVTGFGYEHDDP RGQGAT DN

GGGTFEETRDGGSTVQVQVSDRNSLADLTLVVSTTHRD

 GEGAYFNHRP LP KLTE

T

## G Q G A Y K N

GER $\square N V$ R PVEEA, LGINPTWLVK D S GQGAFVNGRQLHVSSKGPLKNC SLLKDSIGNTGFYTDF

S GKGAYLNDTPDAPL
 GRGAYMNE
K GKGAFLN GEGAF NGAFFNN
K GKGAFVNDSRDGVTTNG
 RGGGAFCN GUPIRVSNCDAGVDS IVATGFPYAR G A GVT K N G E A S S S SRl T P P F V VA I
GAVQA V Q A S GVQTVNRDVASRSHLNEATR
 HGNGA GHGSYCETRDGG QLTKMTVSDRANPSDLYLVAS RTH $M G A W A V F N T G G E A R R D S V S K V S D D A D S S S V S L S S S L E G W$ EGFGAYALDLKG GAGAWMNDSRLRVSGRSQ
 T T GEE Q M A P A R V R R A C A G L P P GEGAY L N D T K LLP QLE EVA NGAF RQDNDATYVVPDHVTTPCAQPMRVA G S R S $\top$
 A G G GAFCNGQRIHVSQTDD KVEQSLLVTGFGYEHDDAW
 $R G K G A R R H G A A L N G R P L R V S A E D E L A Q S L L A T G F Q Y D A$



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


## $R G R G A F C N T Q$

 G G GA WMNESRLRVSGRG $R G A W L G D R R L R V S A R$| $R$ | $M$ | $E$ | $S$ |
| :--- | :--- | :--- | :--- |
| $R$ | $D$ | $L$ | $S$ |
| $S$ | $E$ |  |  |

R DLS ESSLIDATGVP YK GHG N GATLNGQSTSVSDIATIPEATVL ATK
$G R G A W L T D$

K GAPAYLN
HGQGAFRN
QGEGTF L N
GEGAYWNEK

 $P P \square D R$ $K L P$
$D S R$
$A L G$ E GI K PA EKI SVISKVARIE D
E D
(
 $\square L E K A P S \square Q V N S L Q D K H S V K Q Q D R V S K G L D G H V G E K \square V V A$ GQGAQCN GRPLHVSDVTSLEQALLVTGFPYNV $R G Q G A F L N G T R L P L R L V D K K$
 GKGAYHNDRRGRVSARKV MEDSLIATGLPFVGKTGH DTLLATGFPYYDFTRK NKKVA

UniRef90 UPI000475B189 UniRef90-UPIOOO2DB1517 UniRef90-G9NDB3 UniRef90-F4XD35
UniRef90-P56160 UniRef90-UPIOOO4561714 UniRef90_UPIO0021A743B UniRef90-Q05T06 UniRef90-D5SYC2 UniRef90-W6LQX2 UniRef90-K1L638 UniRef90-G3ND95 UniRef90_UPI00036D1A3F UniRef90-C9RZ15 UniRef90-K9X0H5 UniRef90_N9W7J6 UniRef90-E3HZ06 UniRef90_O33832 UniRef90-D5NXF4
UniRet90
UPIOOO4 UniRef90_UPIOO0474864D UniRef90-C6HVN1 UniRef90- B9ICN1 UniRef90-UPIOOO2DEA795 UniRef90-K9VUC8 UniRef90_UPI00037EB620 UniRef90-Q3AU86
UniRef90-F3L554
UniRef90-E5AS53 UniRef90-UP1000380A73D UniRef90-R5PGE7 UniRef90-A8F809 UniRef90-B9M791 UniRee90_R1GD66
UniRef90_UPIO00474COA7 UniRef90_M1KkW0 UniRef90-JOKDB3 UniRef90-V5GCZ6
UniRef90 W7PX79 UniRef90_W7PX79
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UniRef90 XoXKK0
UniRef90-X0XKK0
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UniRef90-B9SDQ6
UniRef90-R6VH32
UniRef90-K6PME4
UniRef90-UPIOO0041A623C
UniRef90-A3XFBO
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UniRef90-A4EVJ4
UniRef90-UPIOOO4758890
UniRef90-U7LJB7
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UniRef90-UPIO003B61A5A
UniRef90-UP10003B430C3
UniRef90-A3STW5
UniRef90-A0A03177H6
UniRef90-H1Y 193
UniRef90 M5U1R2
UniRef90-M5U1R2
UniRef90-G4ZUY3
UniRef90-UPIOOO36291C5
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UniRef90-HOYOQ8
 EPGLRESFHRVEAEVRLSRYGGDCYAYCALAAGHVDLVIP
 DPPSNHPVDQLRDDAGLVRGWGDCYGHMLVASGRAEVAV DTGDSDGGVEGGQMVQGVRSMGSAALNFAVAAGSMDLYM DNNYAEFCWMTHRTHGVRRGGAAAVDLAY AQHQPAYLNIFTRCDEIRRAGAASLDLAYMAGRLDGFWE DDYLKVLRALMEKCHGLRRLGSAAIDLCYVACGRVDGFF K IFLSLRSDLCDPVHGVRGAGTAAI NMCHVASGCVEAY
 RLDHRPLMRLAKEARGTRSYGSAALELAYVAAGRDDAY DKNFDDFKRLFMDCQDIRRSGSAAMDLAYVACGRLDGYF
$G S R W K R P W P E V H V V H D C S M T$ GSRWKRPWPEVHPVHDCSMTGAYRLCLVASGVGDASFA ERDLLNNFIDLSQSTWRLRGYGDFWNYCLVAEGAVDI ETFAHVEALRRRYPDAQVDEQGSSYKFCLLAEGRVDYYV
LRNLDHEERFSRGAQGIVRSGSAALDCHVAMGVLDGFWE WATNDERFKEFTDVSRGVRRGGAAVDMCHVAMGIVEAYW

 S AMLKEVI ADSAGLGRRAGSAADDLAYTACGRFDGFW YLQATLSYLRSATPELQRLDSGSALKFCQLAEGRGDUYPR DEYLKLFSEMTRACAGLIRRPGAAALDAYVAAGRYDGFF PGVKECITPMVKKMRGTRSDGSAAIEIGYVAAGWLDAYDS TGDF DSADEKVRRVRMTGS AMADAGAVACGR
ENNFNNFMNFQMTARAVRRFGAAADDLAYVAAGRLDGYW SETFAKLCARREDGGAMVHGLRSFGSAALNLCGVASGA
 GDNFKAYMNMMADVMQRRRPGSAALDLAYVAAGFTDGFF DPEKGRQKILMPQVHGLRADGSAALDMAMVACGAADVYF GAAEFEA FCHALPAHERVSMGSSLKLCLVAEGAADLYPR DETFRTTKNVFNKCRDIRRSGSAALDICNVAAGRTDGFF KKLLPRLEAVLTNCQDVRRNGAAAIDLCDVACGRDDAY SGTEYKRELHLHDLPGMKPSGSDALKLARIAAGEADATFT EFLANYPEAELVSMGSSLKLLLVAEGKAQLYYR
 KDQRFQDLLDRLPFKDRNYVGSVGCKIAHVLEQKSDVYUS NDTQLYQYVKDHLDDHEELTMVSMTKGFVI GSGGACAYDR PETLRDLGRLPGCAGVRRWGAASLDLAYVAAGRYDGFW EDILKNLRTLLP DAGGIRRGGAAAVDLAFVACGRLDGF PPAKARAFGEVASRAKLVSYGGDCYQYGLVASGSIDVVV
ENWISSQL



DENFELIKKVFCKSQDIRRSGSAALDLAWIACGRSDAFF VQFRAEMETLQNKVAGLRRFGAAALDGAFVAAGRLDGFW
 SERGLRDKFLNLTDKTWRLRGYDFWSYCLVAEGAVDIA EQEALLERLAENFPTLRLVNVGSSLKFCQMAEGAADLYPR LREEQAGYNHLLTASKWRDYGGACYAYGCLASGRLDLSVD PATLQDLARLSPVTAGVRSWGSAALNMAYVAAGRFDGYWA $M D E W H A I F G A I R P Q V A G I R R G A A S L D L A W L A A G R Y D G F W$
$P V M D M Q H W T K G D G F K R A H R P S L A Y R G G V G Q G R F D G M V T$ HGDFVQWSRDFPEVAGDRRFGAAADDLAWVAAGRFDGYW QRAFVELFAELMRGCHGLRRGSAAVDLAYTACGRFDGY
GSMMQATLCFSHNTMGTRRGGTASLDCMVGCGKLEGFF GSMMQATLCFSHNDHGLRRFGTASLDLCMVGCGKLEGFF
 RDCGKLDAFLQLSDVTWRDRGFDFYSYCLVAEGAVDVGL

I KASPQKNLDHFDVAQA: RRDGSAALDLAYVAAGRFDGFW




UniRef90 UPI000475B189 UniRef90-UPI0002DB1517 UniRef90-G9NDB3 UniRef90_F4XD35 UniRef90_P56160 UniRef90-UPIOO04561714 UniRef90 UPI00021A743B UniRef90_Q05T06 UniRef90-D5SYC2 UniRef90-W6LQX2 UniRef90_K1L638 UniRef90_G3ND95
UniRef90_UPIO0036D1A3F UniRef90 C9RZ15 UniRef90-K9X0H5 UniRef90-N9W7J66 UniRef90-O33832 UniRef90-D5NXF4 UniRef90_UPI000474864D UniRef90_C6HVN UniRef90- B9ICN1 UniRef90_UPI0002DEA795 UniRef90-K9VUC8 UniRef90 UPI00037EB620 UniRef90-Q3AU86 UniRef90-F3L554 UniRef90-E5AS53 UniRef90 UPI000380A73D UniRef90-R5PGE7 UniRef90_A8F809 UniRet90-B9M791 UniRef90_UPIO00474COA7 UniRef90_M1KKW0 UniRef90 JOKDB3 UniRef90-V5GCZ6 UniRef90-W7PX79 UniRef90-J9YXK8 UniRef90 B8I634 UniRef90-F7SSS2 UniRef90_S7UDY2 UniRef90 UPI000375CC37 UniRef90-S2E3B9 UniRef90-X0XKK0 UniRef90 UPI0004163C7F UniRef90_X5DP60 UniRef90_A2EGK6 UniRet90 Q166M7 UniRef90_FOJFA6 UniRef90-A9GDU5 UniRef90 UPI0001E898A4 UniRef90-WOTM09 UniRef90-UPIO0036A1AFE UniRef90_N8VS65 UniRef90-B9SDQ6 UniRef90_R6VH32 UniRef90-UPIO0041A623C UniRef90-A3XFB0 UniRef90_UPI000379BE62 UniRef90- F5L854 UniRef90 ${ }^{-}$A4EVJ4 UniRef90_UPI0004758890 UniRef90_U7LJB7 UniRef90 UPI0003B6048E UniRef90-N8Y8R6 UniRef90-D4HV40
UniRef90 UPI0003B61A5A UniRef90_UPIO003B61A5A UniRef90-A3STW5 UniRef90 A0A03117H6 UniRef90-H1Y193 UniRef90-M5U1R2 UniRef90 UPIO0036291C5 UniRef90-X7F814 UniRef90_U3GT08 UniRef90 J9GPP5 UniRef90_R6X9V7 UniRef90-E8N1L7 UniRef90_UPIOO03812427 UniRef90- G2LLI6 UniRef90-C6S4Z7 UniRef90-E1X548 UniRef90 E8RR64 UniRef90-FOSAC1
UniRef90_HOYOQ8

S G D

## 330

I V A A A PKVL G QLL L P L I A P H V
SK G GAIVAASDRALHEAAVRLL
A GRTLAANWGLVAA PESVVHGEVLSSLVREMD GPSSVMMANGHI GPELLALINQ TSPVLATNGR历HTVLSEVIREAL
$E G L V S A N N N L I A A I I G N G E$

SGKVLAAN Q A LHQQISRELAK $\square$
QPEVILAT ATMESLHAQU QQ
NDFMKSGNVVAGNPKVFKALLQEMQPHL
GEVLASNNHIHQS FDVEIQK
SRR R V VA A N S RTIAAERLVSE DHS
TKES L L N P Y F I V
$G R N S V L A A K P G V H E E \square L R$
$T G D I N Q W G G L L A S N G \quad Q Y Q E V L / C K Q A E K \square L$
VS D A A GN SVI A
NKSA K V P G Y L A A G P L L HP L LAAERMGDAL
KNF $\square \mathrm{F} \quad \mathrm{SNGLI} \mathrm{H}$
$V D G P A G G S A V A T N G \quad L L H S K V L D K L S K$
KRD LQNPWFV CRAHNCAA
AP IVVASNGRIH GWMVRTIR Q
D R S V L V S N GV
L A S D GRVVA A ATPALHAEMLA LI K
QGDVNQWGCLIASNG HCHEDLCDR】QQUL

S R D TL M S P HFV ALA D P S A
HE VAAGNPKQYAQMV
FLAKPG
LHEKLLET
KKN MENPPFIMFN
T GNF L F S N G L

QRRYLA
P N AVA SNGHLH QA A LE K L

QRECLA GTPRI
R RVLVA S S R E L A
Q Q D SVL N PFF
K S S A VT N GLI H K E L LD A TK

A D GLLASN GLVVEVLSRLL
QERPHI E Q G I VGGQPEAL
$K_{D} E D L L \mathcal{L} P W F V V T$
D P $G G R V V A A A T P E L H A E A M S \quad L K E V T Q E$ Q GDVVKWGGIIVASNGP CHEALCQQSIE LIKE $D G S A V A S N G L \square A Q E R V L S A L$
A R VA GS Q D GL I F T NK D QA FHD KVLAAVYHEAL
R G DI L G S G S L I CA N

A A S A G DVV V A G DPRTHAEVLAA LR
D R R PFENPNFVAMA
NMLGQNSVFVS KPGLHEVI
QKESLLNPYFLVFGDS
RENLLNGYF
QRETVLNKGFDA
D R S ALVSNGVLAHSKLLERDGEKLKSK $M E \square R P V 1$ A A T G T P KVVCE E L L T L I K E
QPSVVATNGRI HDALVTLLKEA
K D D AVTS GHVVCC GNEYVHGELLKI LKAASK
$P \vee H E G G R A L A A A T P Q L H A E A L R V L N D$
$R E D V$ S Q WG G L L A S N G Q QVH GE L CQTAI A L LEE
QVFEKS SVLVA R P GLLHQAM DDRYLHSPSAR
$P V H E G G R A L A A A T P E L H A A A M K L L Q$
$G R G \square V$ S S TPAALHQQ $\square \mathrm{MEV}$
GSAlASNGRLHKAALQMLQD
A QENYLNPFFVALPQQAVWRESFLAHVSRI
QRDTVLNAGFI A YR D KENQE IA L EABLKNV
S GS S VVAA GDPQLDA QVLLDAL
ARR VVVAAGTQKMATLI A QALLQPI
E P LE K G S IV CANTP
A A D R QVLAA GNDA LHS K L H K L L A Q A L K K Q
NPDPRLNG VVAGGDAVHGALLSGLAQ
A D R A MERNEFLAANDG LHVKLHKLVAGALR
TREVVATNGKITTEELLNTIQK
STSVVASNSHLHSALTE
SLS TRNVVVSNNKGD\HASMLELIKK A


K EDLHNPWF V
APDYLRPPCNVLCANP VLHE $\square M L K E \square Q S V$
QTKSLLNPFFI AVCD

| $Q$ | $P$ | $E$ | $V$ | $V$ | $A$ | $S$ | $N$ | $G$ | $H$ | $L$ | H A A A M | $C$ | $Q$ | $V$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $G$ | $E$ | $H$ | $V$ | $F$ | $K$ | $R$ | $S$ | $V$ | $V$ | $A$ | $A$ | $L$ | $E$ | $P$ |

S G E HV F K R SVVAA LE P KL F E R WV
T A S ILLAA R S
D M 1 GEMLAAN HDLP QLLEKLQ
$S R R$

UniRef90_A3V5L5
UniRef90_C8PW71
UniRef90-Q64VR3
UniRef90 G8S1J2 UniRef90-UPIOOO3490908
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UniRef90-UPI00047CE7DB UniRef90-UPI00037A17C8 UniRef90-X8JSZ5 UniRef90_UPI00016C42E4 UniRef90 B7FVR6 UniRef90-K7URV3 UniRef90-W9E2J2 UniRef90_U5FPW0 UniRef90-R7DMH1 UniRef90-B8EQE6 UniRef90-DORPT8 UniRef90-A9VW01 UniRef90-D5MHK8 UniRef90-V8CRR8 UniRef90_UPI000365DB28 UniRef90 UPI000365DD20 UniRef90-UPI0003734531
UniRef90-B6INP1 UniRef90-A0A031GDE6 UniRef90-X0SIX2 UniRef90-IOI9N5 UniRef90-E3HA04 UniRef90_V9VQQ3 UniRef90 FORU73 UniRef90_V6F6T9 UniRef90-UPI0002F4A308 UniRef90-10QTL1 UniRef90-R6ZUA2 UniRef90-E8RUM5 UniRef90 E5S1V6 UniRef90-D4GQV1 UniRef90-G9PNW9 UniRef90-UPIO0047315AA UniRef90 UPI00035DEC14 UniRef90-H9KDM2 UniRef90_UPIO003EBE064 UniRef90 A7HFY7 UniRef90-UPI00035FB094 UniRef90-W61550 UniRef90-B8DPU8 UniRef90-L1QEX5 UniRef90-A8G8X2 UniRef90_UPI00037C3C3F UniRef90-UPI00037A3FEB
UniRef90-F7GEC3
UniRef90-Q2GQ55
UniRef90_UPI00047C0D4D UniRef90 H6LAA6 UniRef90-E8Q6Q6 UniRef90_UPIO004686D96 UniRef90-A3VZ81 UniRef90 K9P3Y0 UniRef90_UPI00046F87C2 UniRef90_UPI000382EF69 UniRef90_UPI0004658A58 UniRef90-B6JIY2 UniRef90_E4XNT8 UniRef90-R5NK90 UniRef90 UPI0002DB7671 UniRef90-C7MXS8 UniRef90_C3Z920 UniRef90-UPI000346A109 UniRef90-TORJD0 UniRef90-Q7NH94 UniRef90-UPIO0047EDF5E UniRef90_T2QTF9 UniRef90_E3HT30 UniRef90-G7GBW5 UniRef90-E2CBE8 UniRef90-A6E2J2 UniRef90_M9SDH6 UniRef90_F8J9G0 UniRef90_W5XUG4 UniRef90-A71317 UniRef90_A0A022L696 UniRef90_M3DL77 UniRef90 B6B2C4 UniRef90-S3DG13 UniRef90-W4YZ92 UniRef90 UPI0002FCFEEC UniRef90-UPI0003B2F258 UniRef90_UPI00023799D5

LNVMMKTARKAGRALLKDFGEV MEPMVVMAARAAQKVGQEILNAHNNR HKYLVVAVDAA LDKGEE LS S $\quad$ Y T D

 PASDFEI ERKAD
MARF


SHSGLLTVIERAARKVAPQLRRDFGEVQH
LQVSRKGP

D $\square$ ARSAGA I LQGSKT LLEQKGQQNEKKNA S S DGワGVINKQD
$\square N \square M \square K A A E K A S \quad K S V I R D F G E V E K \square Q V S K K G P$ MQNE $\square$ NTA A RAA $\square$ EAGSE $\square$ T K $\square$ Y T D PNADFE $\square E Q K A D$

## LRTLLDFAVDAARQAGEDTMEYFQTALSPEEKPD

 QD DENDKTAA DQAGK $\square A D G Y F N K N Y R T W D K E \quad A G$ PDFNDDLRLAHGLADAADAATMERFKS LDDKVETKPDMHPM $\square$ NTA $\square$ KAARRGAAVINRASFDL
$P \square K$ VESKS ${ }^{\mathrm{D}}$
$T A \square E A \square L Y \quad D \square S A Y V V E R Y G Q R D T L I V S T K S P$
$M \square E Q \square C Q \square A R D A G V A \square L K V Y D$
$\square Q D E L D L L I D R A R R A G A L A Q H$
GEQPLNARQKND

A VaVEAAETGAEYAFEHF
$\square K$ A Q G $\square N \square S Y K S D$ TKTSD

QAADULLYYSRLLEDADDKTNTNSNE
EFAKELTDKAGED FKYGFEGQKDIEFKNHE $R L V A S A Y S I A Q K A G T I V R R V I A E \quad G D L G I V E K S P$

E ICVEAARRGGAVLRER
L-A DAAGHALE
WKTQRII ELKGG LYETRFAVTEKAD $\square R S R G F D V \square H K S D$
$R \square T E A D A D \square A E E A A Q L I L \quad P Y W R A G T T A E \square K A D$ MLEQI CQLSREAGAAIMAVYD DCALLVKMAKDAGKIAKA GKQPLDVAQKKD A DAADADTTSHYDLNASAIVWNK N RLVASAYSDAQKAGTIVRNVIMAAGDLDIVEKSA $S \square A Y A R R \square A E L A V Q R A V L V T K T V L R S \square P K K T D G T S A A K K D$
$\square A R \square A G S E \square M K V Y \quad S \square T D R M K \square N V R K K \square D$
DLLLLIEAAHEAGR $\square A$
TAYVGGP LEVQDKGG $\frac{V}{V} \square A H \square T A D A G R R \square M E \square Y D D K A D Q V A W K A D$ AK K W I K EA G Q HLVVSSMKQ SLIIIETKSN DFAVEAAREAGELA SGMFGSDLKSWVKGV


## K N $\square$ N T LLA $\square$ A QEAAD $\square$ GAK $L$ M T T

VY GRAFDVTVKQD QAPGAVSTKGD
$E \square A K Q W V L E A A E H \square K K A \square A S K \square H V E A K \quad S N P$ KAAQYAANVAEQTGKRLLSYQKKTVSSKEA SPEYLLEVARRTAWGAADILLDDEFGEVYYRRPGKI RQKNG

QASQLLLEEYQSYCAGCEFNDQEKSD KDLHLLREAALEAGELALS FFGKDPETWLKGG DLALLIEAAREAGRIATAYVGGPLEVQDKA GG MEK DMMDVI DLAVKAGEMV AMAHFNNGVCDSGFKVDSKGT YDALDAALLPAVREAGRLEMAHFNNGVS

HAELLD LAREAARRAGELLRDGRPADLA
VAATKSSS M H P M $\square$ N $\square$ A $\square$ R A A R K A GNH $\square$ T K S F S N F

GDFVTRADRAAEQMDREDLLHARPSYGFLGEEGREDEGED DGLVTQDDRYSEEL HS PLT I ADRKAHVTIAT TLLNET

G PVTQADLAANKYILEKLR
A DLVTETDHLVEDLI I SELLRKKFPSHRFDAEESTAAGEKC

ADFVSVADKKAENTLVQELRKARPDWGFLLEEGGEDEGDP

VD LVTE WDVR VEEYVK DK $\square$ K E S Y P S F S F $\square$ GEESYSAGEQN ASPVTVADFAAQAM【LRHLKDAFPDDSF $\square A E$

DLVTETDKACEDLI FNYLKQQHPSHKFIGEETTAAC NS PLLTDADKKSNEII LSFLLSQT

RTFDTA A A R Q AEER $\square$ RA
AGPVTEADLE $\square D D F L K T S L L N S A P H Y G W$ MTPVSEADKRAEELIRSQLGR

R V V VTEK
$N D L V T E V D K A T E Q F F Y Q N \square K K T F P D H G F$

TDF $\square$ TEVD $\square$ AVQKR $\square$ VEH $\square$ MD $\square$ FPTDVLIGEESGLDYFK

GS IVTNADLEVDLWLKEALLDARPGYAWQSEESPDTP VDLVTDVDQKVEQVLVDGIRSKFPDHQFIGEESTAMGKKG KDLVTEIDRETQRRVISTIRERFPDDAVVGE



HSPLTEADGAAHR LVGGLSDDDPDWPVLSE
HSPVTEADHAAEKA LAGLRAATPQWPV
DSPVTAADRAAEALILERLTARWPQVQAVAEEAAAADGLP
DSPVTAADLAAHHII QRGLAALTPE
NSPVTDADDAVNSFLLTALMAARPDYGWLSEETK
RTPVTDADTAVEDAVRELLARHRPDDADAGE
SDLQTKADRLVQMSICSSLARKFPKDTI IGEEDLPFQDVD NSPVT S A DFAVQALLISGMRKAFPNYGFLGEETAGK

QS F VT N A D LIF S N Q I VS F LQ K $\square$ T P N $\square \mathrm{P} \| \mathrm{I}$
A GPVTAADLAVNAMLVEQLRS
A S P LT T A DRVA H GVLTEGLLK DH P
ADLVTNMDRE EEQFF $\square G K G K E T F P K H Y \square$

$N S P \backslash T E A D R A A H N V I R H G \square Q A L T P T Y P \square$
RDYVTELDVR\QHQl
DDVVTDVDRSTEAFFYEKVSTHFPSHHF
Q GVFS EADVEAE $\square Y$ YYKKLK SAYPD $\square P \square L G E E A A F E E F K G$ G PVVDADLAADRFILSELRS
ADFVSKADKKSEET I IUNLLRDRPGYSVLAE
DSPVTQADLKVNRFLLKHLAEVTPT
KSPVSEADLAVDGFLADTLKTARPDYGWLSEET
A GPVTAADLAVNAMLAEQLRSARPGYGW
K NYVTSTDIKVQEYLRRELSK LDPGSYFMGEEG
RTPVTVADKEAEA II LDAALARリAPDVPVVAEEEDAAGKVC
K S P L T T A D L A A N D V I F K $\square$
VDVVTEMD $\square$ A AEKLDT GLDAERRPDDGVLGE
DDPQTEADRKAQRC $\square V S S Q Q T R F P G \square T V I G E E D L T E S$

A D P VT A A DREAEKAMRAVLA $\square$ HRPKDGVLGE

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UniRef90-Q64VR3
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UniRef90-X8JSZ5
UniRef90_UPI00016C42E4
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UniRef90-U5FPW0 UniRef90-R7DMH1 UniRef90-B8EQE6 UniRef90-D0RPT8 UniRef90-A9VW01 UniRef90-D5MHK8 UniRef90-V8CRR8 UniRef90_UPIO00365DB28 UniRef90_UPI000365DD20 UniRef90_UPIO003734531 UniRef90-B6INP1 UniRef90-A0A031GDE6 UniRef90-X0SIX2 UniRef90_IOI9N5
UniRef90-E3HA04 UniRef90-V9VQQ3 UniRef90-FORU73
UniRef90-V6F6T9
UniRef90-UPI0002F4A308
UniRef90-I0QTL1
UniRef90-R6ZUA2
UniRef90-E8RUM5
UniRef90 E5S1V6
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UniRef90-G9PNW9
UniRef90_UPIO0047315AA
UniRef90 UPI00035DEC14
UniRef90-H9KDM2
UniRef90_UPIO003EBE064 UniRef90 A7HFY7
UniRef90-UPI00035FB094
UniRef90-W61550
UniRef90-B8DPU8
UniRef90-L1QEX5
UniRef90-A8G8X2
UniRef90_UPI00037C3C3F UniRef90-UPI00037A3FEB UniRef90-F7GEC3
UniRef90-Q2GQ55
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UniRef90-E8Q6Q6
UniRef90_UPIO004686D96
UniRef90_A3VZ81
UniRef90 K9P3Y0
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UniRef90_C3Z920
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UniRef90-TORJD0
UniRef90-Q7NH94
UniRef90-UPI00047EDF5E
UniRef90 T2QTF9
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UniRef90-E2CBE8
UniRef90-A6E2J2
UniRef90-M9SDH6
UniRef90-F8J9G0
UniRef90 W5XUG4
UniRef90-A71317
UniRef90_A0A022L696
UniRef90_M3DL77
UniRef90-B6B2C4
UniRef90-S3DG13
UniRef90-W4YZ92 UniRef90-UPI0002FCFEEC UniRef90_UP10003B2F258
UniRef90_UPI00023799D5


90 100

$P T R R W I V D P L D G T$

GELGTEDFGYLSEE
VL
TEYKAANNLVSYVDKETEKLLVTGLRQULPEAGF
MK PRW
DNKYEVGFDPVTAGDREAEAA $\square$ RQ $\square$ LDADFPDH
P $\square \mathrm{T} \mathrm{D}$ V P
L A R P D Y
-
ES SAA A A DEAGLA N QVLKAS QLGDMDA LK ES $\underset{D}{\square} \frac{A}{D}$

PYPVLSEEGK
AAMRRLIMTTFPSH

ARPRDAVLGEEYG
VRDELARARPDFG QHNDFVTDVDQAAEQA I EVLSKAYPDHAF

PD H

LAEFPEBH
$\square P \mathrm{~L} \stackrel{A}{L} \mathrm{~S}^{\mathrm{F}} \mathrm{E}$ E DP
NRTSVEKKHAHDYVSYVDKESERRIVSRLKDL
M F

D LLS E E E E E E V
QELIEDGQW
EE L L
$\square$ FAR $\square$ RQAYPDHAR $\begin{aligned} & \text { V } \\ & \text { L }\end{aligned}$
P S VG E W
$\square P L L S E E D P$
QELDESGQWDE LLKKPCPVQY
LREDERMREKVWKLVQKTKDSDPACEALLGKPGGPQEM QFF $\square$ SK $\|$ RAVYPNHK

$\mathrm{H} \square \mathrm{P} \mathrm{V}$ LSEEGR
$\square 1$ R D $\|$ LD D ERRDD


LSS E E D V
$\square$ GEEG $\square$
ACGNEAFAY $\square$ SEET $\square$
$\square P$ VLSE E P S D

D L P S EDDR
H Y
EASDLSVKEKPDMTPVSDADLACEKKDRAELKKARPQDEVV E K SKK IP C C C S E E K I

NDFVTNDDKEAE【I I ID I IQNAYPTHSULSEE VT DLIDELGDSEDVL

|  | L GEETGETLGDSSYQWVIDPLD | $\text { D G T T N Y }{ }^{150} \mathrm{H} \text { G F P Q Y }\|\mathrm{S}\|!\mid \mathrm{A}^{16}$ |
| :---: | :---: | :---: |
|  | T N F L | H GLP H W A V S I A |
| niRef90-C8PW71 | GEEF GLQEGKGNDKDWCWVID P L D | D GTHNF\HGLD HCVSI G |
| UniRef90_Q64VR3 | HLLEYD TRRNWDVMWIVDPL | D GTKEFIKRNEFTVNI A |
| UniRef90_G8S1J2 | GEEFGRSEAAAGPGTRHWVI DPI | D G T K N Y V R G VP $\square$ WTLI |
| UniRef90_UPI0003490908 | VKK A EPVDHD WVWI I D PL | D GTRDFID K TEYGMHIA |
| UniRef90_F7AFG8 | T D SPTWI I D P | DGTCNFVHRFPTVVSIG |
| UniRef90_F8EBT0 | $\square$ T E E G T A GEESNPDELYWI I D P L | D GTANFIHSLP Y CVV C V G |
| UniRef90-P29219 | T D NPTWII DP | D GTTNFVHRFPFVVSIG |
| UniRef90-G2II75 | $\checkmark 1$ D P | D G T S N FLH GlP HFISI A |
| UniRef90_UPI0004 | G $\quad \mathrm{L}$ L E E F G A K N LD A R Y VWV I D P | DGTRAFIS GL P V WTLVG |
| UniRef90_UPI00037 | SFLAEESGAS GKS T E F K WII D P | D GTTNFLHGVVPYFISIG |
| UniRef90-X8JSZ5 | F CJV D P | D G T T NFV H GFPYCI SI G |
| UniRef90-UPI000160 |  | D G T R GFAKKVQFSVMI G |
| UniRef90_B7FVR6 | LGKEYEHWDGS S R P S RVWCL D P | D GTKGFRDGGQYAVAL A |
| UniRef90-K7URV3 | L I LGEEG GLVGDS S E Y L WCi D P L | DGTTNFAHGYPSFVSI S |
| UniRef90-W9E2J2 | GSI ENKDK N N W Wl I D P | D GTTNFLHG@PHFI CLA |
| UniRef90_U5FPW0 | GITEELT DEPTWIV D PL | D G T T NFVHGFPFCISI G |
| UniRef90-R7DMH1 | Y SIRES WK K L Wi V D P L | D GTKEFIKRNEFTVNI A |
| UniRef90-B8EQE6 | G $\square$ I E E F G S I R S D A E F V WV L D P | D G T K S Fi A GLP T WGSI G |
| UniRef90_D0RPT8 | A EES GERKNESEFNWVI DP | D GTSNFMHGIPHF@SIA |
| UniRef90_A9VW01 | $\mathrm{G} \\| \mathrm{L}$ GEEFGSERADAECVWVLDP | D GTRAFIS GLP T WTLI G |
| UniRef90-D5MHK8 | GI L GEEFGEQQGSS GWTWII DP | D G T A S FLIHGVPFGVLL G |
| UniRef90_V8CRR8 | AVLGEEF G GEAQ $\mathrm{C}^{\text {S G G Q WVI D P }}$ | $D G T K N F V R G V P V W T L V A$ |
| UniRef90_UPI000365DB28 | LS E E E D G S SRLLTK K K VFI I D P | D GTRSFI A G DETWASLA |
| UniRef90_UPI000365DD20 | TE GSGPRRWIVDP | D GTKNYVRGVPVWT LI A |
| UniRef90-UPI0003734531 | G H G T R R WI I D P | D G T K N I R GVPVWTLI C |
| UniRef90_B6INP1 | F L M E E S G TVEGRDKRSRWI I D P L D | D GTTNFLH GLP HW S S A |
| UniRef90-A0A031GDE6 | AEESGASANSHDENEYQWI I DP | D GT TNFIHGFPYCI SIA |
| UniRef90-X0SIX2 | SEDGD $\mathrm{S}^{\text {L }}$ TLEE GTVWI I D P | D GTMNFVHQKYNFI SVA |
| UniRef90-IO19N5 | WGEESNQPPAQESFWLVDP | DGTTNFAHNDYCSVNI A |
| UniRef90-E3HA04 | A IL GEETGAHHKESEYLWVLDPL | D G T N N Y A Q GLP Y CVVI G |
| UniRef90-V9VQQ3 | GILGEEFGTKPGTS GRTWVLDP | D GTRGFIS GTP T WVLI A |
| UniRef90-F0RU73 | R C WMV D P | D GTQNFL R GPEFGVSI G |
| UniRef90_V6F6T9 | G $\square \mathrm{FGEEHGRENCDAEYVWVLDP}$ | D GTKAFITGKPSFTLI A |
| UniRef90-UPI0002F4A308 | GV\GEEHGSVRPGAE WVWVLDP | DGTRAFVTGRPFGTLI G |
| UniRef90-I0QTL1 | P S W S V R Q N WT R FWL V D P L | D GTKEFLKRNEFTVNIA |
| UniRef90-R6ZUA2 | LP EA GF $\square$ A E E GS ${ }^{\text {P E T Y C WL V D P }}$ | D GTTNFIHDNPYCVSI A |
| UniRef90-E8RUM5 | T Q S H L F V L P | D G TMGFTK GSPYWI A |
| UniRef90_E5S1V6 | T D A P TWI I D P | D G T T NFVHKVP Y CI S I A |
| UniRef90-D4GQV1 | E E D ERKTVPESGY A WV I D P | D GTQNFTRGTNAWVSVA |
| UniRef90_G9PNW9 | GHSSRQWVI D P | D GTKNFVRGVPVWTLI G |
| UniRef90_UPI00047315 | KVSSESFDM K S D W WVLDPL | D GTKDFI Q G T N Y A M HLA |
| UniRef90_UPI00035DEC14 | NLLTEETGLVDNGSPYTWVVDPL | D GSSNYVNHNPFFVSIC |
| UniRef90_H9KDM2 | A S N S K E K P I L T D K P T WI I D P | D G T $\square$ N F $\square$ N S F P K Cl S I A |
| UniRef90_UPI0003EBE064 | RKPCPS QYST | DGTKEYTEGDNV |
| UniRef90-A7HFY7 | $\square L A E E S G A S G E G V G E L R F F V D P$ | D GTTNYAHGVPHFVNV |
| UniRef90_UPI00035FB094 | EGQDVPFARRRQWPTYWLI DP | D GTREFVKRNEFTVNV |
| UniRef90_W6I550 | A EEEVAAGLMTAPADTFWLVDP | D GTREFTAGRDFTVNVG |
| UniRef90-B8DPU8 | GEESGDSTGDSGASPFRWIVDP | $D G T V N Y V H G \square P Y Y V S V A$ |
| UniRef90_L1QEX5 | WLI DP | D GTK GFI Q GREYTVNI A |
| UniRef90_A8G8X2 | E VR Q W W R Y WL V D P | D GTKEFLNRNEFTVNI A |
| UniRef90_UPI00037C3C3F | $D G S R R T A K R V F V V D P$ | DGTRAFIKRRPDFVSLA |
| UniRef90_UPI00037A3FEB | GSVAAPGRVWVI D P | D GTKNFLRGTPVWTLLA |
| UniRef90-F7GEC3 | S $\square$ K E E DL VV WVD P | D GTKEYTEGDNVTVLI G |
| UniRef90_Q2GQ55 |  | D GTSAFMEHGQYAVVLG |
| UniRef90_UPI00047 | GEEGF G D T LES LD GVVWMID P | D GTMNFIH QQRNFI SLG |
| UniRef90 | A EES GQKQSDSPWRWI I D P | D G T T N Y L H Q L P F F I S I A |
| UniRef90-E8Q6Q6 | PEWEEC K W WNCFWL V D P | D GTKEFLSRNEFTVNI A |
| UniRef90_UPI0004686D96 | G I LGE EF G S VA GT S GLT WV L D P | D GTRGFV S GTP T WVLI S |
| UniRef90_A3VZ81 | LSEETEDTAARLQS DRVFIVDP | D GTRSFIE GNDSWASLA |
| UniRef90-K9P3Y0 | $\square A E E S$ GQLA GQGDLLWCVDPL | D GTTNYAHGYPFFTSVG |
| UniRef90-UPI00046F87C2 | D $\square$ P F S ERK G WQRYWCVV P | D GTREFVNRNEFTVNVA |
| UniRef90_UPI000382EF69 | LGEEGYGDELASTD GVLWLI D P | D G T M NFVHQKRNFISI G |
| UniRef90_UPI0004658A58 | AVLGEEF G G DALLGRGRQWVI DP | D GTKNFVRGVPVWTLI S |
| UniRef90-B6JIY2 | DDPA R R G K S R V WVV D P | D GTRSYNRRKDWS I SVA |
| UniRef90_E4XNT8 |  | D GTMEFDDRHHVT I LI G |
| UniRef90_R5NK90 | LIIAEEKENLGLSKEETYWILDPI | D GTTNLI R D F H M S V AL G |
| UniRef90_UPI0002DI | GFS GVG D D G R Y WL V D P L D | D GTKEFIKRNEFTVNI A |
| UniRef90_C7M | F LGEE G G G A I D E S VD Y VWV L D P i d | D GTSNFAHGDPCATSLA |
| UniRef90_C3Z920 | T D D P TWI I D P I D | D GTNNFVHSFPFVVA |
| UniRef90-UPI000346A109 | SENVE Q M ${ }^{\text {d }}$ ( GTVWI I D P I | D GTMNFVHQFKFAI S |
| UniRef90_T0RJD0 | WI V D P L D | D GTNNFL NGMDYFVC |
| UniRef90-Q7NH94 | GLERFERPFLWVVDPLD | DGTRDFIDHTEFAV |
| UniRef90_UPI00047EDF5E | E IT GS D K H HRFI I D P L D | D GTTNFLHG |
| UniRef90_T2QTF9 | S T L Y WLV D P I D | DGTSGFIKNRFFASAVS |
| UniRef90_E3HT30 | EEF GASHAEAEFVWSLD PI D | DGTRAFI S G NPWGTLLA |
| UniRef90_G7GBW5 | $Y$ SARKAWPQCWMLD PL | D GTKEFIHRDEFT I NLS |
| UniRef90_E2CBE8 | D D K E RLL R ERTFII D PI D | DGTRAFAGGDEWTVAVA |
| UniRef90-A6E2J2 | EESEDTTARLA A D RVFIVDPI D | D GTRSF $\square$ E GNHNWASLA |
| UniRef90-M9SDH6 | R G S D T WVWIV D P I D | D GTANYARGLENVVSIA |
| UniRef90-F8J | ARRFFLVDAL |  |
| UniRef90_W5XUC | L GEEFGGDAVTKGRQWVI D P I D | D GTKNYVRGVPVWTL |
| UniRef90-A | LPFDERKNCEN FWLI DPL D | D GTQEFIKNGEFCVC |
| UniRef90_A0A022L696 | D G $\square$ F GEEFGAQGSTQRQWI ID P I D | D GTANFLRGVPWGTM |
| UniRef90_M3DL77 | E GAS T A G S S G VR WVI $\mathrm{V}^{\text {D P L }}$ | D G TVNYLY G L P T WVSVA |
| UniRef90-B6B2C4 | GNTA GTS GLT WVLDPI D | D GTRGFI S GTP TWVLI S |
| UniRef90_S3DG13 | GF $\quad$ K GNHSNV QWYI D PL D | D G T K N F I K S LP HFV SIA |
| UniRef90-W4YZ92 | CP D T L K S V S LA DIVVVWV D PV D | D GTKEYTQGFHVTVLI G |
| UniRef90_UPI0002FCFEEC | EEFGARGGEAGRRWII DPI D | D GTKNFVRGVPVWTL I G |
| UniRef90-UPI0003B2F258 | GT GPRKWVVDPI D | D G T K N Y V R GVPVWT |
|  |  |  |




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UniRef90
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UniRet90_UPIOOO23799D5
 PETLQDLARLDPACAGVRRFGAAALDLAYVAAGRYDGFW KICEQGGQVRRVGSAALDLAYVAAGRFDGYF
 RDDRFQQLIDRLPFAGKKYMGGVGGKMSTLLEEQESDVYAS
DPDTLKLFFLHAKAGVRVIGSSTLACHLASGAADAYYQ QEQYLKVLETLMQSCHGRRMGAAAIDLAYVAAGRFEAF VSLSNMERLLCIP HGTRAVGTAAVNMCLVATGGADAY HGDLAQFSRLFGAIAPSVAGIRRFGAATLDLA WVASG ${ }^{R}$ EITFKEYESVSRKVAATRKFGSSALDLAYLASGRCDGVW DGSSQGNVEGKMVHS RSDGSAALNFANVASGGGDIYW KTGMSPKPVRALAPKTVIETYSGGVKGACVARGDADVYAN TTNMNGFKEFTDUSRGVRRLGSAAADMSHI GLGGTEAYW FSNLNN MRYSGCAALDLAYVASGRLDGFFH DATTNRDNSLDFKVRSLRMTGSCALNLCGIACGRIDLFYE ETASFTADLQQKHPDLVTTSTGSSIKICLVSEGNADIYPR
 NKFFDQDKKASSKIHKLRNYGSAALDFAYVAAGRADFAWY EPYGREAAFRHLTAAARMHRSWDCYGHILVATGRAEVML RDRGDRDQFDALTDAVWRVRGYDFYNYCLVAEGAVDI ENDWKRGNSALF RQRYRPS $\square A Y R L A L V A E G R F D A M \square A$ EEQGRLDGFLDLTRSCWRTRAYDFWPYMMVAEGAVDI REHGSLDDFLRLMDATWRTRAYDFWSYCLVAEGAVDLA
$F$ QGFMAQLAAVMPEVSGIDRGSAALDLAYTAAGRFDAYW
DEYLKMYAIMGERSQGVRRAGSAALDLAYVACGRLDGF HPYQNPDSALVRDVRSURSYGAAAIEI AYVAADRLDGYD SSDNNSAEFAYFMPRTACVRGSAALDLAHVAMGAAEGYW LNNDDYFGELVPRDRGVRRMGAAAYDLACVASGVLDGYW
TPQDRAAFERVSAQAKLTRYGTDCYAYALVAAGQVDLVV DDATRPGWDRLAARVKLPRYGCDCYAYALVATGFVDDV SDDQELQDY LAQLGEHQTVTIGSSLKFCLVAEGAAQLYPR YDYKPTAVKLVDRCYGQVAGGAAAAEMCYVAAGRFEA
 PAVETLAGEVGGFGELRRDGTTQLTDSRVADGSDDAVVG
AQLKRLRGMLGLMQSCWRTRAYDFWSYMLVAEGAVDLAA
GNEILKNGIHKUNFCKVEDMGSDGCKDASVVRGDSDIYAC D DRWGRFEALDHSVRGIRCMGSAALALAFVAKGALDC SNKLVTDCVTAMNPDDVLRVGGAGNKIDQLDEGKASAYVF EFPLRLFGAFIRKARAVRRFGSAALDLAYVAAGRFDGFW
 EGYDEQFCAVARCAAGMRRGGAAALDLAYVAAGRDDGFFV HSDEDAERLAGRNGCRLLOGMDSSLKKCLVAEGRYDAYPR AKKWPSMDCEARNSMAYRIG HDRG AYLDLVDATWESRAFGDFWQHCLVAEGADD DAV SSKLVNDCVDAMNPDLVLRVGGAGNKIIQLAEGKASAYVF RDDHNDMDPLVRDARGTRSYGSAALEMVFVATGRVDAY■ KAYLALLGELMPACRGLRRCGSAALDLAYTAAGR DYQQKLDNYVINDNNYKIDNDGSSFKFCLIAEGDAQFYPR EVRDGEGFAAVAKEARLVRYGMDCYAYALVAAGQVDLVI PEHWAEGGGRVPDVTRAFRPSDAYRLGLVAEGRYDAMMT HALPEEEVFLRGYPVVDRKTVGSAVKFGLIAAGKAQDYYR RLDMRKMAQLVKKARGTRSYGCAALEMVYVATGRLDAYV RDRGПRDQFI ALLTDDVWRVRGYDFLSYCMVAEGVVDIAA PS LLDRVAKISGGTAGAPRDGSLALRMCRVASGALDVAFA
$A S H D V N A C I E A M K P D E D R Q G G A G N K V L R V D E G D A H A Y V F$ ASHDVNACIEAMKPDELLRQGGAGNKVLRVIEGDAHAYVF ALTDWLAAL AKGPYQMQPMGSSLKSCLIAGGQADVYPR RRRFAVTKALAENVERVRMFGAASLDLAWVAEGRTDACLI
 SR WRLDALLARLPKRGLRRMGSAALDLCYVAQGIFDGFW RPGHAKFLKELHQVMGHRRMGSAALDLAWTAAGRYDGFW QHHATRLLSLSLPGQPQACRVDSQYKYAMVAEGAVDFFIR VGAELAAFEALTQAARMRRYGGDCYSYGLLASGHVDVV RVPETARAAGVGVKTTYロRSLAYRLVLVANGQVDIGVA RVPEVVARAFRPSLCEDTRRTGTAAFRLSCMLAEGRYDAMM AASSGLLALLKVHDAKP DGSSMKFCLIAAGEGDLYAR GERNMLNNFUNLTESTWRDRGYDFWNYCLVAEGAVDIA YEYKRDGSADKFCRLAENAAASYDR EADRDDTLLTVAERVWRDRAYGDVYSYMLLAEGRLDMVAE RAHQADVVRRLVPLVRDDRRGGSAIDDCDVAAGRLDGY
 SDSYVKIMTSMLTNFSURCTGSAALDLCYLAASRUDAYFE GTEAVQETLDAMCPTEILRVGGAGHKVLLCLEGTASAYIT RALGKLNSMGGLTQQVWSRGYDFWSYMLLAEGAVDLAA
Unipupouch

| UniRef90 UPI00037C36BF |  |
| :---: | :---: |
| UniRef90-A3V5L5 | EA DII GSGQVI CAN EAIFETFAKVIRKA |
| UniRef90_C8PW71 | A H NAMQTGSIFAAN $\square$ K L L K P LMQ TVVP |
| UniRef90- Q64VR3 | K EDLLNPWFIV |
| UniRef90_G8S1J2 | $R$ VCSDKS SVI A T N G L L H E S L T A L |
| UniRef90_UPI0003490908 | Q G DVKRWGCIVATNG KCHEALCTKAAT I DE |
| UniRef90_F7AFG8 |  |
| UniRef90-F8EBT0 |  |
| UniRef90-P29219 | S CR |
| UniRef90_G2II75 | RREILAGNDIMHSKLHKLLAGSL |
| UniRef90_UPI00047CE7DB | EKGGTILAA GSKELHAEALQA |
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| UniRef90-B7FVR6 | LGAKMSD H GVLASS G |
| UniRef90-K7URV3 | D R SVLVS NGLV $\quad$ H G Q L L D R |
| UniRef90-W9E2J2 | D K F D Q N N I D R A S S Al ${ }^{\text {S D K M L EKL K N }}$ |
| UniRef90_U5FPW0 | SQR V A A S NPLLKEAFVEVLQQ |
| UniRef90_R7DMH1 | K DNLLNPWFIV |
| UniRef90-B8EQE6 | GGDIVATGCA QLHVRA LKLL |
| UniRef90_D0RPT8 | QKET F $\square$ S N S Y I |
| UniRef90_A9VW01 | P A T G G GRIVAA G D R L HEAALKVLN |
| UniRef90_D5MHK8 | D A $\quad$ ASTNRRLLD QVM HVVK K |
| UniRef90_V8CRR8 | GSA $\square$ A T NGALH T AVLSS L R Q |
| UniRef90_UPI000365DB28 | K DRS SKGIIA GNPSIHKSLTK ELLN |
| UniRef90_UPI000365DD20 | GNAAAASNGLLHEETLAFLLN |
| UniRef90-UPI0003734531 | G N ALAASNSILHSEALLHLLNPKL |
| UniRef90-B6INP1 | Q S VLAANPHL |
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| UniRef90-X0SIX2 | LD A ESVIV GKPQLHKEMVS T |
| UniRef90-1019N5 | K E WT IH D NHIVASNGS T S L H A A L L E T A R A S LK EK |
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| UniRef90-V9VQQ3 | QGNPAHNGGRALLAAANAD\HASALKLLRQA |
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| UniRef90_V6F6T9 | R A VTID S P G TI CA A G D A RLH ALALLEVLR |
| UniRef90-UPI0002F4A308 | SLEGD GTVIAVGDAAL |
| UniRef90-10QTL1 | P K ES FL N P GFRVS |
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| UniRef90_G9PNW9 | G N A VA T NSLLHDVALSHLGAE |
| UniRef90_UPI00047315AA | K T GFEQGGILVA TRNRDTHG\\|ICLEDKK\|IE |
| UniRef90_UPI00035DEC14 | K S DVCMTNGVI HEDVLK T I Q |
| UniRef90-H9KDM2 |  |
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| UniRef90-A7HFY7 | RMLET GDIVAA A P G L H P P M LEVI |
| UniRef90_UPI00035FB094 | TRESLL N P EFLVCAGNP |
| UniRef90-W6I550 | KPG WENPHFI CT GA |
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| UniRef90-A8G8X2 | P R E S FL N P GFRVS |
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| UniRef90 F7GEC3 | K D K H M S A GVLA T |
| UniRef90-Q2GQ55 | EGRDMLS Y Y Gl IT A D A T ITHKAlVDA VKVELAAE |
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| UniRef90-E8Q6Q6 | Y NE Y F L N P G F Q V S |
| UniRef90_UPI0004686D96 | RA I A A A A E IH A Q ALA IL Q E |
| UniRef90-A3VZ81 | NP VPMVNGVLA A N PVLHS ALLHA ALA |
| UniRef90_K9P3Y0 | D G R V I A |
| UniRef90_UPI00046F87C2 | K ESLQNESFLCLATPE |
| UniRef90_UPI000382EF69 | Q I E K S SVLVA R P GVY E EMLQ Y VQ |
| UniRef90_UPI0004658A58 | ENGPAGGSAI ASNGP L H D AVLSRLQ |
| UniRef90_B6JIY2 | CP VVAHGVLVAAGRPR H Q ALLL NALA |
| UniRef90-E4XNT8 | K N A KVPNS G GVLA T $\square$ S P D T Q K WYLE HVPPQTVR |
| UniRef90 R5NK90 | NED L A |
| UniRef90_UPI0002DB7671 | TPTQTL N P P F VVWGNR |
| UniRef90-C7MXS8 | AEETMACN |
| UniRef90-C3Z920 | GRCMLA A S S M T VA S G L R H D H K K |
| UniRef90_UPI000346A109 | GGSVFA GKPAFHKEVIK |
| UniRef90_T0RJD0 |  |
| UniRef90_Q7NH94 | QP DLHLWG GLIA D NG VTHGSWCKLLP DVLS |
| UniRef90_UPI00047EDF5E | DVLETGDI I V T N EALYEPLMERV |
| UniRef90-T2QTF9 | REDILENHP I L A S G N A EIHR】TLDAL Q E |
| UniRef90-E3HT30 | SLES Q G RVVAA A TPQLHRQAMRVLGA A M |
| UniRef90_G7GBW5 | QRDTVLNGGFI A |
| UniRef90-E2CBE8 | K K T R HPALIA A |
| UniRef90-A6E2J2 |  |
| UniRef90_M9SDH6 | S GPA |
| UniRef90_F8J9G0 | HDRAFRNPHFVA WARQPLWRGAVAELL |
| UniRef90_W5XUG4 | PA GGSAI A T N G L L HEKVLS K L N K |
| UniRef90_A71317 | GENLLNNPFLVLDD NSVDFLDE Y $\square^{\text {L }}$ |
| UniRef90_A0A022L696 | SRSTLA T N G T L H |
| UniRef90-M3DL77 | DLTVAA S P G V |
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| UniRef90-S3DG13 | Y L N S GNLVGA GARNIKK |
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| UniRef90_UPI0002FCFEEC | P DA $\square$ A S NGHLDEAARALV |
| UniRef90_UPI0003B2F258 UniRef90-UPI00023799D5 | $N \quad$ A A ASNGLLHEALLGVL |

$S \square R \square L L R T S V L A A \square R G G N E V V R A R Q E N \square N \square R S K G \square N Q \square G Q$ D DLDLANRLADAGAAI R PFRADFASESKAD LDRVLEVLTRVAKEAGAIIKKR NGTTTFDNKKNS MKDLINELIKISKEAGKEILDVYS S Y DS $\square R K M L D A A I Q A A Q R G G L E V V D V M H S R L K E R S K G K T A E G V$ HDLDLLI DCARKAGQUAL $R L V A S A Y S V A E K A G A \square V R K V \quad \square H S G D L G \square V E K G A$
 QF AERLLADAAAVALKPYFRS

QLQVDDKGG
E TARAAGQA LLEV YERDD $\square$ GVETKSP
$M \square E Q V C Q L A R N A G D A L M Q V Y D G A L D B M D A S K K D$

MHPM LT T A R R A AEEAGKVVKRGYRSR LDH REKR LEVYYQVSLELVRKCGPL KGEGFQKPKTDYEVKSA $L K D I L E W T I I L A R N A G K I M L E G S Q A \square A S E D T G D N E K K N S$

# ERLGEVALEVATDAARHVRKRRPEDFGRTGAGVSTKSP 


QECMDYAVI $\square$ ARQAGEM $\square R E A \square K N E M \quad D V M \square K S S P$

MRELAAQ $\square$ ARVAGQAAQHAM $\square$ RWRSDFARWEKAP $D \square P L L R D A A R E A G V I A M R Y F G N \quad S P Q V W M K G G$ YFRSGVTVQCK GD YHDD $\square R \square$ AHVLADSADATTMERFKAD D $\square$ KVETKPD

D S P D A H $\square \mathrm{K}$ S D
$R L L A S A Y T V A E K S G K \| V R R V$
$\square \mathrm{L}$ S G D L G $\square$ VE K G A

LS PHMMVMQNAAQKAARG【LRDFNEV EMDQVSVKGP $1 E \square A Y K A G E \square I M G A \quad L P T$ T DGIGSKKNS

$\square \mathrm{T} \square \mathrm{AKEAGDK} \square \mathrm{MA} \square \mathrm{YE} \quad \mathrm{KDFA} \square \mathrm{YEKQD}$
 $M L N D A L E A A K L V K T M T V D A F E \quad G A G K F D Y K P D$ ELL R A ALDAADRAGTFLRDGRPEDLA GAVATKSSA $L T L A L R D A T D A G N L I S Q$ QRPRLSVEFKGG
 $\checkmark$ V $L$ A R RAGEA】MA $\square Y$ A Q FEEVKEFLIELAHEAGD【IKS LDLCFEDAVDLADKSGE RVYKELMSRRDRVVSEKGP $L E R \square E A D L I S L S K K A S R K \square L T Y K N K V G Q E L V I Q S K Q A$ $\square E D E \square T \square A G R \square A D A A W \square A \square R P H F R A \square K G V D N K A \square P A K A P$ $\square E \square A \square K \square I E K A G \square E \square N E N F T K \square R \quad K \square A H K S D$ EVALSVARVGAEVAAASQAEVRADTATRFTKSSD F R G DLSVEESKAN
E $\square$ A DQVDQYT LTHFTQRDYQVYEKAD

ASPVTEADRAAETAMRRLLDAEAPRDGVHGE
VDLVTEVDQQVEDFlKKELLEEFPDFEFF
KSPLTEADKRSHQVITDSLEK NDPFTDADGRSHCVMKQGLQR 1 FPRVR $\square$ FSEEDKEHCKDA GAPVTEADLAVNAMLHADL
ADLVTETDQAVEKMVSDMLKEKYPDFEF
NDLQTLADRLAQKS $\square$ CAS $\square$ SRRFPKVT I IGEEDCEEVQED
QSPVSEADLAVDRFLQAFLLQARPNYGWDSEETAT
$N D L Q T L A D R L V Q Q S I C A S L S K S F P K D T I$ GEEDLPEEA
RDPVTLADKAAERAMRELILSEFPEHNILGE

GDFATEADLSVERQLRTLLTRYTGMPVHGEEYGVVRPGEQ
KSPDTEADLAAHKVI ETGLQALTPDDPVFSE
D S PVTTAADIAAHHVIVNGLKALAPD
GDFVSQADLRAEKVI REELDRARPGYGF LM
DSPLTAADQASNTVI NSYLK
ADLVTEVDRETQRRV1AAALRERFPDDA
QSPVTIADKQTE
NDLVTRDDKDDEEFVAAE
ADVVTETDGEVEH IILTK $\square K$ TKYPSHHF $\square$ AEESVESKGCE




ADLVTVTDQKVEKML

GNPVCAVDLEVDALLRERLQRLVPDAGWLSEETV
TSPVSEADHAADAYLRRTL
QSPVTVADREAEEAMRAVLRSRRPRDAVFGEEHGYEAGAL P VTAAD L A VN QH LLE GL A QAFPDAPWT
MTPVSEADKAAEELIVRTSLR



GDFVSQAD DRAESTMRAELEKARPGYAFDM
ADLVTGYDRAVEEMIRTALKEKYPDYQFHGEETYDPGH
RS PVTDADTAVED

TSPLTEADLAAHNVIVNAL
RDFVTEADVAVEAFLKKELTGRYPQFGFWGEESGKTENQS $R S V V T E T D T R V E E E \square R A F F A Q K T P N \square A V$
VDVVTEMDTASEK
TELVTQADVAADELICRGDRQVY

## H VLAD T A D S $\square$ A MQRF

NEPVT $\square$ A D $\square \mathrm{T}$ AS QY $\square \mathrm{LE} \mathrm{H} \square \mathrm{Q} A$
ESPLTAADMAAQRVIAAGL
VDLVTA DDKLVEKTVSTKIGAKYPNYKF
KDLVTDADLASQKAI RDMLVGAYPDYAFVGE

QGUVSEADLASEEDITKKYLKHYPDDPVLAEESFFKEFKG
F DPVTEADRAAERA $\square R A \square L E A E R P H H G \nabla T G E$
QDLVTQFD LS $\square$ QKM MTNE $\square$ QK QF
TDLVTRADRAAEDA $\square R$ QALLVARPTDRFLGEES
$N D L V T E D R D A Q R Q V V A T \square R A E F P D D R F \square C E E D L S T R A G P$ $\square T \mathrm{P} V \mathrm{SD} \square \mathrm{DRGAEQMU}$

K DVVT QVDRDAQETVIET TRETFPD
ND L VT NVD K A TENY $\square$ Y D A $\square$ LR S Y P D H R

M四ENGAEETLQKSCPKEYEADKEEELVVWVDPDDGTKEA RADVDFDPVTEADKGAERA $\backslash$ RALINARYPEH

VKEDLIESGQSED【L
QYKQNEPVTLADVAVSQY LDDK $\square$ QAA $\square$ GNEEFG VE पNPNDEYADEFDGPQSKPPKGPSNPGपHEपP

■P ILSEEDP

LT N N P T W
T $\square \mathrm{KN} \mathrm{\| ILTAFPD}$
PE
VIREHTTRHYPEHA
SDWLVEDLDEAF鸟EQSCPSEWK
DHGQVEHVEYKTDKSD\｜VTEADYQAND\RTAПNSEPGH MAEAEIRA LLQAYPD
CHSFTGEESVAAGEKTVFT
DDSGLTVENKATKENYVTSMDVKDEGF पREK LTSLIPGSF ADRNAERM $\square$ RQA $\square$ AAVYPH

G
पAARPDYGWLSEETV
ARPRDAVLSEETA


DDLIETGQYDVILQKQCPDEYSSGKEEELVVW
VDPL
DERQVVRALTEATG■
AVRALLADAYPDDR
A AERAMRDVLATERP EAESDLPILSEES

S R W QRपPE】I AAPVLGEEMS
$\square 1 T$ GLLAEARPEDGV PDHQ
KA पD $\square Y$ VESKPD A पGNEDFAY DSEETY PALLNVP【】SEEAQ
NHLTDEPT W
KKDGYAKFKN $\square$
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RALGLDAENKDATGFDPVTVADRAAELAMREVLARRRPQD
PEDK

PDF
EADREPEAVDSV

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UniRef90-G4SWK1
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## 



 GEESFVPRGSRVPLGPTFIVDPIDGTLNFIHEFPFCTSLG






 Y I S E E T Y K S Q Q N S S E W V Wil I D P L D G T R D F I D K T E Y A I H I A
 E S G G $\square$ A Y A DRK D WP R F WL V D P L D GTKKE F I KR N E F T V N I A $P G W D$ V $\quad$ V R Q HWQR Y WL V D P L D GTK E F I K R N E F T V N I A

 VGE E D D E LIK T VP E S GY A WI I D P I D G T Q N Y T R GAAR E WV S V A II $\operatorname{F}$ G $\operatorname{E}$ E $\operatorname{F}$ G $\begin{array}{llllllllll}A & D & S & F & A & G & R & V & W & V\end{array}$ | $V$ | $I$ | $D$ | $P$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $I$ | $D$ | $P$ | $I$ |
|  |  |  |  |  | GFFGEEEFGKTNGRAEYTWLI DP GQEYDDQSVQTTESEYQWLI TA $E T A A A G N R P P\left[\begin{array}{lllllll}L & D & D & A & P & T & W \\ T & D & P & T & F & C & D \\ D\end{array}\right.$



DVK P E D F V I W V D P L EVQSEENDDVEPVDGYAWLI DPL HAFVGEESGGTEDAEYVWLVDPLDGTGNFLRGFPQFVS I A F LGEEGDPVSEGEKEYMWDVDP


K DSVYGEEFGTEGTSKRQWII DP GIFGEEYGVVRGDADRLWVLDP LKGFGGEAVFAGRQWVLDPI DGTKEYTEAARLMDSPVVVQKQLOGHNFVRAVPVWTLIA GEEGGAQDGADPTRRWVVDP
GVHEEFGGE P
VAGEERGGTVG GIIAEEGSQERSTTGVSWIIDP ADADEEYGAHPGSSGLTWVLDPI ADISWDERKTWSSYWLVD VDPDDGTHSFSKGQYFW GEEFGFVGEQQFSSG WVIDPDDGTRAFTYGVPFSTLI T GLSEELNPDGGTDAEHLWI IDPPDDGTVNYLYGLDP SWVS:A
 TSPENGENS

DSTR VWVLDP AGGGEAVDADIIGTSPTWVIDP GEETFDDAERQTWGSYWLVDPLDGTKEFIARNQFTVNI A GEETFIEGETKLTDDPTFIVDPIDGTTNFIHNFPYCISLG
 GFDTEEDTVAFEKKDYYWVIDPLDGTTNYIQDNPYCVS:A
 LAEEGEASQNTFQENQWI DP D DGTVNF:HRFPDFCISL ATAQAGGDADGSD $\square W V V D P$ G【IGEEFPAHNPQAKYVWVTDP: TYGEEYGGSAAEATQARWI DPIIDGTKNFVRGVPWWTAVG GIIGEEYGEDRPDAEFVWVLDPVDGTRAFISGLPWCVLVG AVLAEESGASDTVADLCWClVDPLDGTTNFAHSYPFATSVG AEEGGEDEGVDPTRRWIVDPLDGTTNFLHGLPHWISIA



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UniRef90
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UniRef90＿S2XLV3

RGQGATLN
210 HGSYCNGEK $\square$ NVTNTN VGQG
GKGTTFN
RGKGAF RGKGAF NGDRILPSPLTLQSSILALEGGSDREGHNFETKQ GAYKINNNETADLNSIKPSEEYPKRDTVVASKSHLNE
 L LGLGAFGFQLQEVPADKR

SRLDTPKGSTPDAVRACSGLADAVIGTTDPHLY

## GQGAFQNGTPVAAQLPADGRSYPVA <br> $P G Q G A S G F E L Q E V P D G R R \quad V T T T R S H$

 EGAWLN GGGTFVETVNGSLPLKKVSNKPUEDLTLVVS RKELAGAMDHTGFPPRERARVDGHPARRMPPSDPA TTQ GGFGS LLSQRRGNTPVSYRQDML GVGAFKEHNGERQADECRA RTTPVVMVASRSHGGE
 GVGAF $\square N D R R$ RVSARRNMGEALEATGQPFARVVAQRRL PEKLGAPADRDEPAAEDPDTLRVVGSRSHMNA
IDGLSATCVN
GDTMRVSDQDLNNAR FINEGDKD GoGAYRN GRELSVSDRTDPEVATVCPT FWW SDVG GPATEPGR
PGRGAFCN GKEELAQVPSDKGFRDSIIITDLKE GTGAWT GRRDENATRCTVSQVSTLADASLSYS SLSGW पGQGAYLN GERПQVSGYTDIQQASTGNDKTLTQ
RGQGSQLNGQR川RTN
QGHGAYLNGQPIEVS
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TRKGV
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RGFGAYLㄴN
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GRRMRDTPRPGTDNA DRपDESMLLSGY
KGKGAFCNGQKLQVSQQED囚TKSLLVTELGSSRKPETLYH GNGAF LNGEPLHVSDRTKEHCMVS LAWSTYNKKLA GEGAWASF DGGDPRRLSVSEVGDLGSSSLAFSSLSGW
RGQGCTLN GVGAWRNGKPLRAA GQGAFRN

GRPCRVSAKSDLPESVLACGGPKSM
NGQPL
GEHFA
GGGAYTGRS LSQATRLSERREGLDASNHDQR DSDTATDRRLHVSRVGRVADASFAYSSLSGW
KGCGAY品NEH A $D \mathrm{DK} \Pi$ KGHVRNCAELAEARFGSTAPAAF ■GLGAFGFQLQDVPEGKR GSGAWLN DSRR■RVSGRSRMDEADFATGDPYTTRSH R KPCPPLGSPTLADSIIGQQTFN G RGCGAGAWVSRDGGEPRALGVSGVRSMADAYLSTTDLNSW RGCGAWVRAVGEPGAGEPLRVSGASSLDRALVATGFSYRA

GPHGQRTLKTRAPRDLRQAIVFTTFPGVG GDGA WT
 KGQGAYKN AS APGERIHVSSETNLADAMFACLRSYLT GEGCWVQTASQAPRQLKLESQSPKSLSEAVVSASGDHNS GKGARLNDHPD

NG
DGEGAFAGRHQANASP IKVSGVRRLADASFCYSSLDGW GSPYCNGQELPRLPIDEDLSSSVLAYGAFNAKSKGRYF GAGAWMNDQRLRVSGRRNMLEC
GQGTFVETRDHRQPQQLSFTPDTRQIEDFTAVVSRSHRN RGEGAFLN
THGQTPRA

GQGAHCNDQKMSASG LQS
KGKGAFRGTERMKVSK SIIALESGSDREGEDFDVKL K G

VS S SL V LTE
RKDLKSVLLATGFATEKGKPF
KDNMGQAF $\square G \square D \square P Y N A G D Y K P V V N H L M D S \square Y G K V S$
TPRRVSACSDLREATIATTDAFMF
GKGAF LN tGPLGERPLGTRSTAMLNEALLETTFPEMG
KGSAAFLN GKETKVSTNTKVADSLLATGFPYYDFTRK
HGGATRNGVALKLGAPPPLGRALVATGFGYDPGRR RGVPAGFSSALGGVPGTRQTVSGLAAELSATSPEMDAGA GRGVGSWRSFNSGEPQANRVSKDTDDKEAFSYSSDSGW

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VATFKK $\square C A S K A \square G G A M V H G \Pi R S L G S A E L N L C G V A A G$
FDKQAQYMQMMQKTHGLRRIGSAAVDLAYVACGVFDAFF
SNKTVTDCVNAMEPHDVIRVGGAGNKIDQLDEGKASAYVF
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DRAMPRLVAALVESRGHRYGSAALECDEVASGRAGAFVH SPETVQRTLKNFESQGFRALGSAALDMCAVAEGSMDAYFD
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AAYLGMFGDVFERAGDLRAGAAALDLAYVACGRADGFW AAYLGMFGDVFERAGDLRRAGAAALDLAYVACGRLDGFW VLSNMEKLCSIPDGGURSVGTAAVNMCLVATGGADAY KDRGIRDQFVDLTDDVWRDRGYDFFSYCLLAEGTLEIAA
 P PAGWQKRLVRAPYSPSLAYRLA RGRPAGPWSRVTAAVRSVQYSADCYAYGLLASGWCDLVV
QEEGRVEPILELNERAWRSRVGDFWPYMLVAEGAYETA
GPEELEEAYAVTTDARDADWGGDCYNYGLVALGGQLDGVI
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STEEASAFRAVASQALLTRYGMDCYAYALVAAGQVDLVI
 DNNLARFCRIAQVTAGQRRLGSAALDLCLVADAQVDAFW
ERRARQAEVIRHEVRDDRRGGAADDLDVALGRLDAY
DDLLPRLMRRLNSVLTRCRRLGSAALDLCWLACGRMDAY TDASARAYKAVSNKCRQPMYGVDAYAYGLVALGFADTVV GARRDDLLTELSSRVSRDRMLGSTGVDLA PATLADLGRLMPVCAGVRRWGAAALDLAYYVAGRYDGYW DEAFRLAELLRRNVQALRMSGSAALNMCHVACGKLDCYYE ETFKSLLSRNHGFIHGFRSFGSAAMNDSHTATGQLDAYW SPEVTRFVKVLEKCRSLRRLGSCALNMCYVADGRLDGYWA NKEFKTFKNMMAEVRAIRRMGSAALDLCFTALGDYDGFW SVRDNGSAAMSMCYVAAGRFDAWA
NPAEQGAWTHLRATARITRYGLDAYAYARLAGGTDDL
TPEDRVAFERVKTRTRLTRYGTDCYAYALLAAGHIDLVI ASE LLIKHLHRKVRRVRLLGSAA QGAYVGWGVSEAFD
 GDNAVRRFNQLRHAAKRIYWGGDAYSYGLLALGQDDV DDRDEFGRLCSAVGDRFGDDRRDG SFQATLAHVADGADE EERGKDQAFLELARKVWRTRAYDFYSYMLVAEGVVDAAA RNNYAEFAWMTHRTRGVRRGGAAAVDLAFVAAGRLDGYW DQRDQYAAANRALVDRFGDMRRFGCAQLELAMVAAGA P A T L Q DLAARLMPACA GVRRWGAAA LDDLAVVAAGRYEGYW W




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TD $\square \mathrm{ACEAGD} \square \mathrm{L}$ RRH
H G G D C P H VLK P D
$D \square A R G A G D \square A \square S Y F R P G E R T R A E \square Q H K V G$
$D \square S L L V K A A E Q A G D L A C R F S G P A A K R W D K \quad D Q G G G$


D $\square$ T DVEEAVRKAAAA $\square$ MPRFRQ Q $\square$ AA HE VVEKKGP A VTRSRFRARDLRVDRKPD $D$ DDLIDAAHRAAEVATRHD YGGP DDDREKGG DLALLEQAAHEAGEIALDR YWRRDPRVWDKGN
$\square A \square A R Q A G E \square M R N A \quad T G K E D E T D E K M N$
ETDVDLLIRAAREAGQ】ATR
YSGRDARRWDKPD
S $\square$ HRRRRDGSEDEAD

Q LAFSAAHAAGHDIKTHRQTEDQVHHKETGTSTA $\square R P L L A A C F S A S V H G G R V I R D V V Q Q H V A L D L V N K Q E G A$
$\square S R L V A S S V K V S Q S A G S L \quad M K S D L A K G D L G V D D K G A$ QSLRD $\operatorname{LSVRVAREAAELAENMRHGVVTEGTVDTKSTE~}$

> METD $\square E \square$ A QRAA $\square$ T GAAEA $\square$ RHFAVI AD $\square$ PRETKKD
> YHDDLRLAHVLADAADAATMERFKAL QDRLELAVSIANEAGER\|IDARQ E EAVRKAAAVIMPRFRQD
> D LKVETKPD GQSFSQRYKQG
> AADD VEKNGP
$R A R T S \square R R R \square D G E L V A K A P$

DFAKSLILEAGNNVR
$\square$ M M K E K $\square$ S $\square$ E T K S P
$\square E E V A A D V K K W A R E D G D Q Q K E K D A K K N F K V K T K S T$ E I A L E V ALGAA A LI R R R R GE L H G HVGVVGTK TSE
$\square Q E \square H D F L I D \square A T R A G E V I T G A K P L V H G V D S K \quad K N S$ DAAKEAGNI AKK

F WRADPEAWDKPD A $\square D A A D H A G A D I L S \square Y N D$ DKDTDFLVSTVAAAGDVILPRFRND GAGAVSEKTSA $S \square K Q L L A A S I Q L A E D G G \square A V R T V R E Q N L S E K S K G K T K E G V$
$\square R D L L A \square S V E A A Q \square G G E E \nabla K R \nabla R K E N T \square N E K S K G E T K G A$
VREAGALASSMF
RTELRNWTKGA

AKGLILEAGUNVRKDMKE K A G DLS S $\mathrm{S} L \mathrm{~L} E$

D $\quad$ KVETK K K GLKKE $\square \mathrm{KS} \mathrm{D}$

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UniRef90_S2VM86
UniRef90-M4AVR6
UniRef90-R2QUT8
UniRef90-Q131A9
UniRef90-Q3AXX7
UniRef90-Q3AQE8
UniRef90 M2WLE7
UniRef90-B1XZK4
UniRef90-UPI00034B6AF5
UniRef90 F7YWR0
UniRef90-B2HQA7

GTPSSEAD $\square E S E K L I L D A L K R H Y P T$
GSPVTEADYLVDRFLKEHLAKLLPDAGW A GPVTEADLEVNAMLEDLLQRARPGYGW

## HT $\square$ A DQADA $\square T$ DPRF

MNKQWNERFEK $\square Q \mathrm{E} W \mathrm{~V} Q \square A G E E Q V K R$
KDVVTQSDRDAQDAVIDVIREFFPEDPDVGE NDLVSQADRDAEQA LLQUMREKTPD $\square A \| V A E S G$

H D L VTVADR DAEEHDTAS LTALLPGSRVVGEEGVHANPAA RTPVTDADLAVEQAVRTAWR

QGPVTAADLAVNEVLADTLLSARPAYGW
GAPVTEADLAVNAHLERLLRTARPDYG
QDYVTEADGAVEQFLAERLGALFPDDGF
A DVVTETDKRDEDLVNS LLTKEYPTFSF $\square D V V T E M D \square R A E K L I T G Y L S E H R P G D G F L G E$
G A P VT E A D $\square$ A VN A M $\square$ A Q M $\square P$ A A RPGYGW
GD $\square$ VTETDRE $V E D F \square H S A \square A N R Y P S H A F \square G E E T Y S K G S S K$

$$
H D \square A H S E V M P R F \square H A^{Q}
$$

GQVVTEVDHKAQAA LE LLEPSCAEY
YDPQTVADRRSQQRII H ALREAFPQLT $\square V G E E G E \square A P P A P$
YDPQTEADRAAQY LIVQSDQKKFKNDC\|IGEEEKVSKVEV TDVVTAADRTVERLIVRQRLEELRPGD

GSVVT LADRAVENA $\square R G V L T E A R P Q D A \square L G E$
Y R H F
MTPVSEADKAAEELIRGHLQRARPRDAVLGEEFGGEGLGP QELVTNVDLEDDRLISE
HDLVTVADRAAEAHLTAS $\quad$ T A LLP GSVVVGE
$R D Y Q T E \square D V A V E R \square I V D E \square N R S F P T Y A$
NDPFTDADGRSHCVMKEGLHRDFPRDKDYSEEDKESCSNV ADLVTETDRLVEKLI I STLTQRFPSHRFIGEESVADGEKC

NDLVTNDDKATETY $\quad$ YYEA $\square$ HSNYP

SDLVTEYDRAlEA
NAPVTEADLAVDAMLAAELRNARPEYGWLSEETT
NSPLTDADRKAHETITGGYNAT
VDLVTEAD L LDAEAITAALLQRFPTAHIVGEETY NDPVTQGDLQSHRAMFYGFRKAFPSVKVLSSATILLNNEL
KELLTMGDLQSHRKMYNLIKNTFPEDTVYSEESDSKPDSV SQKMIVE I QE WLKEAAAF $\square R$ VS $\square$ ANKVTV S S PVSEAD $\square$ A VVNDLIVRDRLQTAVPDYGW

NDLVTNVDKATEKYLFDNTTETYPN
NTPVSNGDLEVNKFITQK』SEDTP


EAQDFKVETKPDLTPDTEVDRATEKLVRDYLARARGRDSV MDDE LK $\downarrow$ EQKSAN DDLVTEMDVWTDEFFQENDRTFFPS DA

ENDALKAVPEE
$L I R G L L A T R R P G D S$ AFPGH

```
\squareD A LH
```

                                    ARPRDR】AGEE E E G \(\underset{\text { E }}{G}\)
                                    AERPD \(\frac{\frac{W}{D}}{\frac{L}{D}}\)
    PD D
FVVGHRADSAVRKQGNDFATEVDLADERQVVAALTERTGD EGIRKADGSLLSAADLAAQAAFERHLPD\|VRAPVLGEEMP EKEFPDH

PEH
EDVVQCDLKALDDVAFV
LE D G


PSD
 HFS WS RVEHKQEHDYVSYVDKTSEQMLVEALSELLPEAGF

VA Q DF TVETKPD $R R W V I D P \square D G T K N Y$ VRGVPVWATLISL

R $\square$ E T A L P GES R L P E A

DNKAAEGFDPVTVADRAAEAAMRE【IAARRPSD $\square K G E E A V$
M L E DFRVDAK LINPND LVT DVDHETEAF $\square$ YER $\square$ LEHWPEHR NTFD VL LDPTVL

PEH<br>EHKV<br>CQT LITD I I LKNFPDH

$N \square L G E E S H Y T D N$
MVS K E LRARYPTFEFM
PFPVLSEEGK
Q N $\square$ E DE Y VP VSNV
SWSRN $\square P D$
SQKSNRTDLVTNDDEETQTFLDKK DNKYYPNDS LLAEEKG
LS E E S V
TSMKGRHDVLTEMDRAVEERESVILAAERPDD
HYWRRGVDVELKSDDTPVTVADREAELARRAILTDALREA
DYACQKMIVE I KRKIPDA F V
IE R QVVA ALEAATGL


SVINDFDPSVLIYDNECSDEM

|  |  |  |
| :---: | :---: | :---: |
| UniRef90 R6GKL8 <br> UniRef90 UPI00036454FA | D ${ }^{\text {deb }}$ | G |
| UniRef90-V4 | GlIGEEYGEEKPDAEYVWVLD | - |
| UniRef90 ${ }^{-1}$ | LSEESEDSPARLGKKRVVIVD | D C |
| UniRef90-V9W013 | ESEDNDARLDREKVFIID | dgTRSF |
| UniRef90-F4CTF4 | AVPDSGRGWV | D ${ }^{\text {G }}$ |
| UniRef90-C7NW, | TGRAWVVD | D |
| UniRet90-UPIOOO2DF9736 |  | D |
| UniRef90-W4QCD1 | EEAGASAGESGYEWVI | DGT T NYAHRFPMFISVA |
| UniRef90-R7ET05 | GEHRHDDPaVPT WVI | DGTTNFVRRLDSVVSVA |
| UniRef90-D3SZD8 | GPA WI | DGTNNYVNE:RFGTAVA |
|  | VLGEEEGGSVADPA S GVRWVVD |  |
| UniRef90-UP1000 | GIL LGEEFGEDRPGASLQWVLD | DGTKSFVTGRPTYGSIA |
| UniRef90--120152 | EEFGLTGSGSYRWVLD | DGTRPFICGLPVWTLI G |
| UniRef90-K5BJX2 | EYGGADLDSPVLWVLD | DGTFNYAAGLPMALLLG |
| UniRef90-M3АА62 | GDDPVWI |  |
| UniRef90-O8RJW8 | R T WV | DGTKNFLRGVPVWTS A |
| UniRef90 W8R159 | GFLGEESGSADLGARCVWVI | DGTACFVNGHNWCVS\| G |
| UniRef90 W4HDA5 | EESAHDPTRTLAPSTF | A |
| UniRef90-A0A023D394 | ENGRRSDEARHSGYVWVVDP | DGTSNYARGREWCINSIA |
| UniRef90-10RRZ9 | EEFGGATAFSGRQWII ${ }^{\text {d }}$ | DGTKNFVRGVPVWASIA |
| UniRet90-UPIod | ELTTGTAWVL | DGTFNYSSGHPSGMLLA |
| UniRef90-B2AS85 | YVKGVTKVTDAPTFI | DGTQNF HGFPACMS G |
| UniRef90-L5MXL4 | SRDEEYLWI V | DGTNNYFDGHPYFISila |
| UniRef90_Q5LMW9 | ARLDHDRVFII | DGTRSFAEGSRTWA ${ }^{\text {d }}$ L A |
| UniRef90-D1A6K6 | RGT GDLMWV |  |
| UniRet90-W9Z3 | PT WI |  |
| V6 | A GS S GVR WV | DGTVNYRYGLPTWVS! A |
| UniRef90-Q73V29 |  | DGTKNFVRGVPVWTLI A |
| UniRe90-CYP100047E, | KNLIGQKQAQTGGLWVVDP | dGTtNFLNGLPHFLSVA |
| UniRef90-K2J5J2 | GII IGEEHGSVRRDAEWVWVLD | DGTKAFLTGKPFGTLIG |
| UniRet90-UPIOOO4665EE7 | GLLGEEYGLADATSGFTWV |  |
| UniRef90_UPIOOO4 | S DF | A |
|  | DGQRQKKPAFWC |  |
| UniRef90-H3HA50 |  |  |
| UniRef90 H3FS80 | EESN | DGTTCTATLQQVTVLI G |
| UniRef90-UP1000366C8B7 | GGTHEQEGLRWVVD |  |
| UniRef90_U7M308 | D V V V | A |
| UniRet90_Q0ALQ3 | NGKGDRR |  |
| UniRet90_U1MR | GTEGDAPRQWI |  |
| UniRef90 R7P9Y5 | A AYDGQP YCWV | DGT TNFMHRYPFAISVA |
| UniRer90-K1ENL8 | Esornwi |  |
|  |  | dit |
| Uniref90- UPA020MLD6 | EGAATEGTSGПRWI | DGTVNYLYGLP SWVSl ${ }^{\text {d }}$ |
|  |  |  |
| UniRef90-W70 |  |  |
|  | GSATYNDEPYCWVID |  |
| UniRef90-F2RDS5 | AVYDALRGDA PVWI V | DGTRQFVHGDPFCTLVA |
|  |  |  |
| Uni | ALLGEELADRAGDSGYSWVL |  |
| UniRee90-UP100047 | V |  |
| UniRef90_K5BKA3 | EFGGTAVFAGRQWV |  |
| UniRef90_UPIO002D5EB, | GTDVEDTGVLWI V | DGTLNFVHQLQNF S G G |
| UniRef90 AOAO34VSDO | ELVDIK | DATQEFTEKLYQYVMVC |
|  |  |  |
| UniRef90-UPIO00478550F | EEFGEVNPGARWRWI L D | $D G T K S F V Q G V P Y G V L V G$ |
| UniRef90-D3QDQ4 | GHNIRN\DGVVWVVD | DGTLNFVHQRENFISI G |
| UniRef90-UPIO001744E2F | GNAGNPDGTTQWIV |  |
|  | K S SYTWVI |  |
| UniRef90-C8RTJ2 | GEEGGLSSEHSAPGEVLVWVV | DGTKNYVRGVP A WTM A |
| UniRef90-C5GYD4 | YHPSSPGTDA PTFIVD | dGTVNFVHGFPNCITSLG |
| UniRef90-A3JUY8 | RLDCERCFI |  |
| UniRef90-R5M5) | WD |  |
| UniRef90_UP10003C113 |  |  |
|  |  |  |
|  | RRWI |  |
| UniRef90 M4AVR66 | GREVSADSUTVWI |  |
| UniRef90-R2QU18 | or ${ }^{\text {a }}$ | DGTMNFMEQEFCVMA |
| UniRet90- Q3AXX7 | AVLAEESGAAGEQDGLRWClV | DGTTNFAHGYPFFTSMG |
| UniRef90-Q3AQE8 | GILGEEFGEKLSQNGRRWVID | DGTKAFIHHVPWGMMLA |
| UniRef90-M2 | AVLGEEFGGDAVFEGRQWVV | DGTKNFVRGVPVWTLIS |
|  | DDAVIGEEDGGEPGERVWI | DGTANYARGIHYCVSIG |
| UniRef90-UPI00034B6AF5 | AIJYGEEFGLDGDRDGLLWL | DGTKSFVRRTPFFTQ1 A |
|  |  |  |
| A7 |  |  |
| niRef90 UPI0003637E4A | V |  |
| UniRet90_14Y | GRLRWIVD |  |
|  |  |  |
| 7FFA2 |  |  |
|  |  |  |
| UniRef90_UP10003B42B09 | datLVGTSGTDWV | A |
| iRef90_A0A044Q | DVVI WV | DGTYNMSRQQEVTVLI G |
| Ref90'UPIO003B5081E |  |  |



## UniRef90 R6GKL8 UniRef90-UPIO0036454FA UniRef90-V4Q5Q5 UniRef90_V9W013 UniRef90-F4CTF4 UniRef90_C7NWA8

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 GVTAFEAADHRGRPTTRFADRVRKGPEDGLVALVSRRHG RGEAALM GQGARLNDKP $\square T V S S R T H M D K A R$ $\qquad$ GQGADCN GGPTHVSRATDLSRTEVLAAKPNLQ APGGPARRDGVSGVAEDADCAVSTTNWNFR SLSSAKRLEVSSVTSLGDASLSYSSLSGW
GKGAYपNGKK VIVER RGEGAFC

GVFRNGEALDAVGB
HQDGCFLN
GORVNTSOS
RGGGAF SDDGSGP

## GAWCERAG

$\qquad$
RGAGAF $\square \mathrm{DGKPGRPGAA}$
RGTARGHVS

GQGAFVNDTP【KVSDASLVGQ GHGAYLNGAPIAPSART
HGEGAHVLTGKPSDDPVHWRGVAPP
RGHGAFLNGRPGTASPVTDPTTA VEMGWSPKVTRQTYTG DGSPPRRLAVSSVARLDTASLSFSSLSGW DGFGAFNTDSRGRDPG
QGQGKPQQLPLRPGRKLGSLE GRGAYGN GKGAF ${ }^{\text {LN }}$ GGGAFLN
HGlGAYQADRRपOVS
SMTTDLKDAllVALGDYAVGEGAETEN RGGGAYPRNAPSKCVFACEWGKDRKDRPDGNLSRKVDSFV HGRGAFV AVNGAAARRLSVSSVAQADDSASLSFSSLSGW

## GSGAF $\square N G R P \square P L \square G Q K R$

AEKG
GRGASMNGTP STDATRTDRNAVTGGGAVLQTTSPDMF
SVATGANHYVAPQVVAK
KGQGAF
RGQGAYKNGHPDQUPDLDPKQPLILSUDFSFQSHPWLEHT
$P G \square G V F R S H E E S E G T T H A A P K Q S M F P Q R P F D C T V S T$
 PTGESRTIWAVKGLGVHGIEVAKEKNEKVIVVTKSHGTAT
GGEESPEFDDARG
HVGCFSSLPTAAFHE
EIIRDLRASRCDRLDRAIMASTDPNLF
RGGGAWLNEQPDPAAPRRLRVSGVASLANAVLSYNADQGW KGAWLNEPPISVSRHTPR EALIGVELPYNAADYT RGAGAYRGRVAGGALVDAERIHVAAAHGRATGSRLGVVPL GHGAFT SADGEPARQDHVSAVDSDEDASMSYASLSGW RGRGAWATGSWAGERRLTCRPDAPLDRALVSTGFNYVTDV GSGAYTGRSLSASRLTVSKVERMADASFAYSSLSGW YGQGAWCNGKPIHASRRSNLEHCLV GOGGYYRDSR
KGGKAWLNGMRGG
RGGGAFLNH
G
TPTSV GGGAY $\square N G E R I D C V Q S P M R T R R N V P L D Q A I L F T T F P E V G$ GEGAYTSVNGG EPRRIVVSVVVAAGLPASGQLJKAVPE GQGAYKNDVRLGG RVQGTHLSKSLVSLNSNWVVK
 GSGAWTGRS\|T SARR\|LASGVTRLEDASLSYSSLSGW RGEGCTDN
 RGKGAY KGDSKDYDSQKSELETALIATGFPYDKNDSK RVEPAEEETEAGKAPGNESDKALGKALIAAGFSYLAKDR GRGAFLNRTTRLPRKGPALEPLRGLSNALIAVEWGSDR GGGAHLNGVADTPKRR GEGAFLNRRNGSQA KLRVADPVPDSEMVGIFSWGHSH NGHGSSSNDNS RGNGA WLSENGGEPQRDRVSDVDRMD RAAFGFSSLSSWD VGQGTNMEHRS SYNLNSPKVIVSRSHSGEVKNFLHSAFG GVFVNDQK LQQP KDRALSDGL TGMNAYMY RASTGAEDDFVKVAGPKPLIERLALPESTQUL PGDGAFCNEQADTVSSCQQ GEGAY
RGSGAFASVGDGAVEPRAIAVSSVDVLGSASL
 KGFGAFLNGNRUVAPTNERQPATMAQAAISTGNVKTLT KGFGAFLN GPKRRNGLPQASLKPAKLSESLMGDQNLF
 SGEGAYENGTLLPE SGEGAYENGTLLPE EKDNEKDNTPLKTSIIGDNPNWLTK LGHGSLLNGRTDKCSDTKD INKSUISTGLPYNNCLHH AGGGARLNSQGAPDQVNTGVPLSHALVGTGFSYSAEAR
UniRef90_R6GKL8 UniRef90_UPI00036454FA UniRef90_V4Q5Q5 UniRef90_B2IHP3 UniRef90_V9W013 UniRef90_F4CTF4
UniRef90-C7NWA8 UniRef90_UPI0002DF9736 UniRef90_W4QCD1 UniRef90_R7ET05 UniRef90_D3SZD8 UniRef90_UPI000369E899 UniRef90_UPI00036C422D UniRef90_UPI000477E8FC UniRef90 I2QI52 UniRef90_K5BJX2 UniRef90-M3AA62 UniRef90_Q8RJW8 UniRef90_W8R159 UniRef90_W4HDA5 UniRef90_A1B5I1 UniRef90-A0A023D394 UniRef90 IORRZ9 UniRef90_UPI00037397F6 UniRef90_B2AS85 UniRef90_E8W507 UniRef90_L5MXL4 UniRef90-Q5LMW9 UniRef90_D1A6K6 UniRef90_W9Z3C3
UniRef90_V6KP76 UniRef90_Q73V29 UniRef90_V5XDZ2 UniRef90_UPI00047EAE0A UniRef90_K2J5J2 UniRef90_UPI0004665EE7 UniRef90_UPI000429EAA4 UniRef90_G2FE78 UniRef90_H3HA50 UniRef90_A3W7D8 UniRef90_H3FS80 UniRef90_UPI000366C8B7 UniRef90_U7M308 UniRef90_Q0ALQ3 UniRef90_U1MRX5 UniRef90_R7P9Y5 UniRef90_K1ENL8 UniRef90_G8S2M1 UniRef90_UPI000051051E UniRef90_A0A022MLD6 UniRef90_M3ABL3 UniRef90-W7QHD1 UniRef90_I9GBI8 UniRef90_F2RDS5 UniRef90_LOMLG7
UniRef90 UniRef90_UPI0004702E0F UniRef90-K5BKA3 UniRef90_UPIO002D5EBAD UniRef90_A0A034VSD0 UniRef90_V9LEN7 UniRef90 ${ }^{-}$W9GN01 UniRef90_UPI000478550F UniRef90_D3QDQ4 UniRef90_UPIO001744E2F UniRef90_E3DMX0 UniRef90_C8RTJ2 UniRef90_UPI0003460769 UniRef90_C5GYD4 UniRef90_A3JUY8
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250
260
270
280
D R N F S IL LR R|LYDRCLDYRRFASAALLDCCQl|AAGRAE\|FF

 AHHW LGGGSPPAFICCSYRPSLAAYRLAKVADGRFGAMLT EHGTLDA WLAALTERCWETRAFGDFWQHCLVAEGTDDLAV


 DEYTATARELVTRFGDIRRFGCAQLELAMVAAGALD

 HGELK QGFDRLSASVRMTRYGGECYATAMMLAAGRIDDAD
 DHEK RVLA RL DTP GVVPRPCGSAGGLE Y L NV A R G A A D A DA F
 PNMAPKFWPNGVPNVRRSHRPSGAYRMCLVAEGRFDAMFT

 $K L E V Y K E L T A S K M A G A V R S M G S A A L N D C Y T A A G V M D V Y W$ A H Q ATVAQQLIPRRLRDI RRGGSAAI ELCDVAAGRLDGY
 $R L R L A L T E R L A A R V Q R D R M L G S A A L D L A W V A D G K L D A A I M$ N MAAEI GARDGKGGMVHGVRSLGSATMDLAYT A M MA THQASVVAARDIPQLRDIRRGGSAAVDLCDVAAGRDDGY $A Q L G L R D R F L A L T D A V W R V R A F D F L S Y C L V A E G A V D D A A$

 QDPEKWARYGNVVGQVNSTRGFDFLQYHFLATGKVDLIV


 A GAELLAAFEAVRARARLCRFGFDAYAYAMLASGGDDLVV D GA GRLLDDLI GLLQRDVWRARYGDA WSYMLLAA E GKVDDAVAE $A T G L L Q D S R L Y G R D S G L R M V G S A A V A D A Y V A A G R M E G W L D$ REGGRGGSFMNNTSDMWRTRAYDFWSYMLVAEGAVDVAAA

 E ERGGLLPRF LDDLTRDCWRTRGYDFWPYMMVAEGSVVD D P P L M R R L M A L Q H C Q DVR R N G S A A LD LDCDVACGR LDA Y

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

 $R$ D R G L R DAF L DLLMDACWRTRAYDFWSYMLVAEGAVDVAA
 EA A F E RYK R I S SLAA V K K T R M L L G S A A L A A L A Y I A A C G R L A A A Y V
 E Q Q GRLLEAF LGLLTRSVWRTRAYDFWSHVVMVAEGAVVDAA A GRNWETK LRTTER LGKSREAGGAMVHSMRCLLGSAAAAGV
 QDRRPV DAANMAKT RMAFSLLNCSAHEYWLV SAGK GKVNATARKAFGGKAVVIPAGGAGYKVLSLFDGSADAYVH

 $P R \| G S L A L R L C G G V A D H R D D V A F A$
DNNYAE F CWLTHRTRGVRRGGAAAVDLAFVAAGRQDGYW
LDSPSNHPVDMLRNSGGLVRGWDCYGHMLVASGNAEVAVD

A D Y L A L V G R V M HA G C A MRRS GS GA L G L A DV A A G R I A A Y


AHQARVVAEVVLPLVRDIRRYGAAA LDLCYAAEGRVDAY

 E K Q M GILLKDILLKNTRSIRRRMGSAALDDA WIACGRYD GYW RAQAEVLLTLLLPRARDIRRVGSAALDLCAVAAGRLDAY E F VGGAGFKACYT


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UniRef90 A1B5I1 UniRef90-A1B5I1
UniRef90-A0A023D394 UniRef90-IORRZ9 UniRef90-UPI00037397F6 UniRef90_B2AS85 UniRef90 E8W507 UniRef90-L5MXL4 UniRef90_Q5LMW9 UniRef90_D1A6K6 UniRef90_V6KP76 UniRef90-Q73V29 UniRef90_V5XDZ2 UniRef90-UPI00047EAE0A UniRef90_K2J5J2 UniRef90_UPI0004665EE7 UniRef90 UPI000429EAA4 UniRef90_G2FE78 UniRef90_H3HA50 UniRef90 A3W7D8 UniRef90-H3FS80 UniRef90_UPI000366C8B7 UniRef90_U7M308 UniRef90 QOALQ3 UniRef90-U1MRX5 UniRef90-R7P9Y5 UniRef90 K1ENL8 UniRef90- G8S2M1 UniRef90_UPI000051051E UniRef90_A0A022MLD6 UniRef90 M3ABL3 UniRef90-W7QHD1 UniRef90_-19GBI8 UniRef90_F2RDS5 UniRef90 LOMLG7 UniRef90-S9RKI2 UniRef90_UPI0004702E0F UniRef90 K5BKA3 UniRef90-UPI0002D5EBAD UniRef90-A0A034VSD0 UniRef90_V9LEN7 UniRef90 W9GN01 UniRef90_UPI000478550F UniRef90-D3QDQ4 UniRef90 UPI0001744E2F UniRef90-E3DMX0 UniRef90_C8RTJ2 UniRef90_UPI0003460769 UniRef90_C5GYD4 UniRef90_A3JUY8 UniRef90-R5M5Y8 UniRef90-UPI0003C11966 UniRef90-A7SLX4 UniRef90_S2VM86 UniRef90-M4AVR6 UniRef90 R2QUT8 UniRef90_Q131A9 UniRef90_Q3AXX7 UniRef90-Q3AQE8 UniRef90_M2WLE7 UniRef90-B1XZK4 UniRef90_UPI00034B6AF5 UniRef90 F7YWR0 UniRef90-B2HQA7 UniRef90_UPIO003637E4A UniRef90_14YRM3 UniRef90 A5H0F3 UniRef90_UPI0003C7FFA2 UniRef90-M1M2Z8 UniRef90 UPI0003B42B09 UniRef90-A0A044QYC5 UniRef90_UPI0003B5081E

AGSVF $\rceil$ TNGVCHS
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TAGQVIA GCSRELVAAADEHLK
RPE TRHGLLTAAPERIVAEV
NPHPHLN GVI AGN
GGNAVASNGALHDAALDA
RWTHDARGLVASNGPA LHDAVLDAARAD
 GNIIAS NKHIA TAFGEMURQQL
ADGSVLAAGDAALHEAARDLL,

EEGGPVLASATAGLHTQALHLLNS
WTLTTRSVLV GVPGTHDELLELVQSV
G G N T M
G G
A L S A N P H L H G Q A VA L L N
A
$A A R P \square A D G L V V A \quad P P A \square H D Q L L A A M$
A LL F AAAPGV
GSAVATNGLL $\quad$ LHDQVLSTL
APWTIESGSVLAAA PGVHEELLELIDSAV
D G DVAATPGV
PFAQDQVRSLLATNG H $\square H E P \square R G L L L E$
NPKPRLDGVIAGG
T P N L T D QVT T L I Q E
D $\square$ A VAA T P GV
RGSAVASNGL
SKSALA
SKALA
A APGDHQD\LELVA

APVLAAAPGAl
 RPDTFMNHRGLLYAGNHALADHVIALHHSVL NAPDFDNERGLLACVEPEAHQTVLNVMAK




GNAVATNGL LLBDVLARLA
GPHVFASNPALLDEADRDLH
S GEVVATPGV
G N
A A A S NGLLHDELLGY $\square R$
NKHF $\square$ EGHH $\square$ ATNGS $\square H S L L Q N L V K E \square P P E$
G G N A L
QGNVALMANAETYSQLRELIQQEVK
RA
$P V T A N G D I V A \quad G N P A L H P W L V K$
GSAVATNGWLV
$K G S V L A$
GNPE $\square$ HEE L
EGSPVNDQGLLAT T K K N HDE Y $\quad$ HEK K MEYRKS
S G NAVATNGHLH
GGNAI ATNGLLFEAVMAADKP
HPDSVL MANQTVHEELLQ

RGQTFTDGGALVCT NGALHDRVL
GRKY LAVRASPGGEGQREDIEEL
NPHPKQAGVFAAA PAVHQEFLQRL
K EDLLNPWFVV
PSKPANDQGLLAAADRNHKEFRRMDKL
GSALVTNGKLHTAAQAIINE
GTPLNEGGLVAS VEVDHKNULAKLPN
KREYFLA
RPEV THGVLVAAGRDR HAR VE


KGEILAS
SRSVLA

$\qquad$
A AADFDALHALLVEL
PNS IVMANAQLHSELIEHHFQEI DELLQHRDK KKD LKNPSLILKNKN
$N G W V L A G N$
A TFELTVAAAP S LYYEELAATLREA A D T Q $\mathrm{S}^{\mathrm{S}} \mathrm{N}$ GGVLATAHWWNHQEFVDCIPERDK

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DELAADAVDVAQEAAAHVRRRRPELFGGTPQSTVDGAS MQPMUSACVDLGAFAGQVIRDVGNRASGESLQTVNKAD

KAAAEEDTPRFRQ AEDDVVQKSGP
EAVARRAGEDAMGFFRPGEKTSAAVSYKDG
SMAQFVDVAHK【ADAA RVIT LKYFRAKFQ IIDKSD

IIKTKAHEKSKY园NKSNA
ПD $\|$ VRRAAKA E ILPRFRNDDPES 1 QTKSP
$\square A Q \square R D R \square V T \square A Q A G E M \square T S A K P S T \square S S G \quad T K K N T$

FRGELEDDHKG

QADLALITEAAREAGKVAMAHFGGOSEVWKNE
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SYTDLLPADEE乌ARKAGAA $\square$ MD $\square$ YAE DFTVRHKAD

VEKSGP
rLVremreetvsedgakahks sa

EAHHKSD
 $D G D S L T D L K R A G T E K V M P S F R N L G D D N \square R E K T S$

SDLIRTVAREVVLHAADQTDEKTP ETLLA LAVETAEEAGAMLLAKRPD RPEVLATKSSP DLELITVAAKAAGERALS FFRKNPDVQWKNE

FLCSLALKAGKNAM VYFHQDDEVETKEN QY $\square Q P A V N S V L E A G K \| V L E \square Y N S$

D पA T A WVKEAGSQ $\square \mathrm{A}$ S Q $\square \mathrm{N} Q$ DFKVKDKGK Dपs VETKGGP Vmeramekagar

VAEQLATEAADFVSRRRGEFASAATAVRSKSP DLSVVEAALRAAGAEIMPRYRQLAAHE TVEKSGP QAASNIVADAADLALSMQPABPGKQASLKGR

EEAVRKAA AQETMPRWRRLAEHEVDLKGP ALEEFLARVEEAAVRKAA AAE：CPRRFRRLAAHEVVQKGP LRKLL DGSI QAAI T GGVVQVKAVSNEHDLHTKSKGKTKGA $A L D E E \| R$ DLLLRYAAE RAILPRYRNLSEQDVEEKAK

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S SPVSEAD AVNDLI A GKLRA

GSPVSAADFAANQKDESLLRTARPDYGW
F DFVTKTDKHVEK LI EELSKDKKNYSFDTEETGDIKNDD $N D L V T A A D L A A E A M \| T R A L R H L F P T A L I V G E$

MD Y Y D G

WTKEAGEQ $\quad$ RTM
$A N P V S$ S


HDLVTVADRRAEEFLTRELTALLPGSVVVGEEAVHADPST $D \square V T Q D Q Q E E F \square H G A \square S T H Y P T H D F D G E E T Y S R A A S T$ GSPVTEADMAVDRFLQEAAMALFPDAGWLSEETA

SSPDT $\square$ ADRSAE $\square$ AMRELLAEQCPSH

VD LVTETDK Q
ED LVT $\square A D Q R A E A F \square Q R E V A E R F P E A T \square V G$
A D LVTETDRAVEAY $\square$ S
$\square D L V T E A D L L S E K Q M T D A F L A R W P G A L I V G E E A C E T N P G V$
KDVVT QTDREAQRRVIEVIEASYPD
GSPVSAADYAANRLEE $\square$ RHARPNYGWLSEETD
QDLVTEADRAAERMDTRGLQALWPDALIVG

TDVVTAADRASEQLVRRRLAELRPG
NEFVSFVQQQAAQRIDETI
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VDPVTAVDLASERFLQHFLLTALPDSSLLGEDEWDPNHPG

$$
M \nabla N V L D D \square A G A R \square A D E A D A \square T \square A R F
$$

GSLVTQSDLAVQARLTETLARDPGVPLLGEEM
TDPVTLVDTDCERLLRRRLASGRPDDA\LGE
ADLVTDADEAAKDFURKE乌EAFSSSALFVGEES
GDLVTDADKESERRLSAGLALILPDASTVGEEAV
YDFVTDADLASQRAVLAVIEERHPDHALI LAE
TDVVTALDRAAEELIRSRIGEARPYDALLGE
GSPVSEADYAANDILKEKLLTARPNYGW
DSPVTDADREGEE\|IDQGTEAQFSTVQ $\square$
NDPVTEADLKAGAHISRNLHF
GSLETEADATQEALARELRKDYPGPVVGEEMTENEQVAH NDLVTNDDVQTEKFLTGKปRANFPNHR』V
ADFVSKADRQAERTL
A M R WF G P A
TDPVTVVDTETERLIRDRLAQ
HDLVTSADRGAEEHLTASLTKLLPGSVVVGE
QDYVTEADQAVEKFVTERLQALLFP
hDLVTDADRKAELYपTEALTALLPGSVVVGE

N D PVV T E A DVK A G L H I S S D R L R F
NDLI T DA DFKS HCVMFNGLLRSDFPKLK VVEEDSSNNEKC D DFVT $\square$ A D RE TE QFLT EALTRLAP DV

A T P D Y G W $\square$ S E E S A A RPDDAV

EAVAADPSLPDK

QEHVVNVKGRSSDVVTEVDFACQKMDVDFDSTHDPEARF■ TA GDLEIEVKANALDMVSDADKNVEA』DRDRDADAFPED MGDTYE $\square$ HTKANQHDLVTDVDRHTELFFKEK DNEHFPDHR ASTVNPVSTKSTETDPVTVADTETERLIRQLLHEARPAGD EDVTTPCT

D VDRMAEDE $\square R A S \square K Q A Y P D H A$
RERPDD HY WRRGVEVE $\square$ KPDATPVT $\square$ ADREAEQA $\square R K V L Q A A B P$ R Q A Y

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R N P WLPKAAPSGCTFACEWGKDRREDPEGNLNRKV
KGKGAF LN
KGEGAYVN
KGGKAFMN GRQI K NK T TS

GHGAF L N GE ElUVVSDV
$R G Q G A H T R T A V E E L D P K L P N V S M N E S L L S$ GGGAWVADGDGPRVP $\square$ RCNPVDRAFLADATGSFASVES
SPYTTHMFTW ALATGFGYAADRR

GHGAWLDGVRVGVADTAQM EGGGLLVVDGRAAPLRGKDED $\square A Q V G F S S L S S Q T R C E Y S T$ RGKGATLNGTPLRA G ATLNDEPVSVSDQADLERFVVVAP
VGVGPDPREAPSKCIFSCEWGKDRRDTPDGNMSRKVESFV

GGAWRE
ARTRACAALAGATLATTSPHLFADGDVP
GNGAF L N
GRGARAGRLLGEDADGDRRLPRIADTPLTDGVVIAHLHA
GPLLRNGVAQPRLGPAALSDSLVGVGTFN
GNGAF LNDTK DERPLKLQQSVIGFEGGAERQGSNFEVKM
$R G Q G A F Y \square R P D G T E R R V A V S A K E S L E E M T G F T S D R D F P$
TGTATETETDTDQHRLPLQDPAPLTGLDSCLVIDSEGGDR
EGQGAYTSF
KGL
GGQTRRDSVSGVGDLDAASVSYSDLTTG
RGAGAQF LRADGERVPVKVAAPCDLVAMVGTISUNED LGDGAWLGDRRLSVNPEVGKAAP DGTDAWLNDDELLAVSDRADPHVCT GWWGRDRR RGHGAYARSAGDGAARQRLGCAAVTDVGLALVASGFAYDQ GQGSWVN ESRLQVHSATHLNEGLLGIISNSSRTPA A G

GAYLN
GTSVSVSDVSDPERATVVPTVWWDF GHGAHVRHGDATTEGRCSQAAELSMALVGTGFAYERDRR RRPKPLSVSAGGQIADLSGFAGLYLLP ADGQAFRVDADGQ RGGGAW

LDGAPLSVSSAARDLALVGMGF VTAPTGALVGMNGFSYAQ GAGAW LDGRRLTVSRATRLDVSLLGYGFAYRADRR $R G Q G A Q L N G Y R L R M N N K T K D D T G G S T V S T L L S D D Q K K H A P$
$R G R G A T L N G T P D$

TADADDKDQLLKAPSATELASSLVATGFGYVAAQR $\square G L G A E E R L H R D G E H G R T L R V R D A V P L A D S L V S T G F G Y R A$ RGHGAWAGGPCVDEGSPI HVSTVSDLREAFLSYSSLHGW RGKGAWHND RRIRVSARIELGDALVAAGFDGAD RGVGAFDDGEP DHTQARSAQLKDCLAMDDMKRLPPEVLP $G K P L Y V N G L E Q P A L Q P G A L S D C V V G T G T F N Q D S R G R F P G$
$G G A T V R E A N G L Q R P L E C N P V Q E T V L A L V A T G F A Y S T V R R$ KGGASWLLASGEVRRAKVAWPVALEETDGIISATVFE EK L G G M RGGGAFVDDRPMRVADIEDRSQC GGGAWLR
 $\begin{array}{rl}G D G S W C E D R R G E R S P \\ N Q E T A L H T K L S A A & V R S E R S A L S E L I L V A S S S H \\ V\end{array}$
F S $\square E S R N F T K T L N N S K P T N K V$
GRGAF DN GQGAYCNDNP $\square$ TGLL RGKGATCN GERLRVSTS DKALIGFGSAPYYEELF QGAWLQDRR LRVSARRH LDEALIATGDPFAGRGDM GQGARRDGDPIETTDR
FSDG
GHGATVRNGQTTDTLRVTPRATQTAMKLEHTVE
GHGATVTRNGQSTTLRCNDUDDLGLALVGTGFSYDAQRR RGRGAF RGVGA WMNGRKLVASPVTDPKSAMVEMGWSAKVSPETYAR GNGSY $\square N G E R L D V K K R P D D F T S S L V A L E S G Y E R G D T G N F$ PEGEPPLRLAVSRSRPPAFAEELGRTM
RGKGA HLDGERLRAGSPEPGRDLRVAT SHPDFTT
RGQGAY

KGKGAFI
RGHGAF
NGDGERITARTTGETPPVAAISLLFMDP
$S K \square A D M G P L T L S K S V V A D Q P G S A R E G D N F K \square K M$ T T QNGR\R\AVSRSRPPSIVGVLAES LDAEL


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## C

 P LVEK LDRPRGDVVLHPRDSSLAALRLCRVADGSDDAAFA EKHIDKQFTQLLSEVRAVRRMGSAALRDLCYTSDNLYDGFWA HR TERVKYVPS L FSDLN FSDLN MDMRVKLAATLPSFGMRYSGCAALDLAYVASGRLDGFFH HSFVTMAMERNGRGGRANSLRCSAHEYRTVAQGNADFVL
 $K L E E W T L K S l E K M S Q E V R D F G S A A A E L C Y L A C G R F D G Y W$ $V I V P V M T Q L L D R E G M F I V N G G C A D M M A Y A S A G R L I G Y$
$Q Q Y K Q T A L H L I D R L Y G V V G G D R M N G S A A A A D C Y V A A G$
$V$
 SAAGR LAPFLDLVDAVWRTRAYDFWSHMMVAEGAVDLA RAQGRIVAEL LPKVRD DRRDGAAADDLCMVASGAVDA

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



 AGDAEAAFIRVRNEVKVPLYGCDCYAYGLLAAGHVDLVV

$$
\frac{\mathrm{L}}{\mathrm{~V}}
$$

$\stackrel{-}{\mathrm{S}}$
K GR DF D YA K K L Y L N S L G I RA G G S







 K R Q A E T WA G L A D L L R D I R R A G A A S L D L C A V A A G R L D A Y A




 E R Q A HLVVA QLLPRVRDVRRDGSAALDLAAVABGRVDA



 $R$ D D R L E QLI GAL A LGG G S H A V G S VG C K V A T I LAR G E T D L Y M S



 D P D G S F L L T R F Y Q E T R G V R R L G S T A L
 E EK R A L L G G V Q N A D DLLA A R P C G S A G L E Y L A I A R G A L D A V A F $R M S S M L S L G A M P$

 GATTVPMGSAGVK AMSVVDGSSDAYVH DEQKRSLLALRTEGVAPRPCGSAGLEYLAVARGESDA






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S WELAWDHAAGLLLVEEAGGAHATR DGVPFAVT SPQPEPNPWDTDAG|ALVERAGGVVTDA
ASADSKDWDIAAADVILTEAGGVLSE DEGLPDRYN FDV VCESGLQAYYDFAAHVPVVVEGAGGRMCDWENGDPLTAG ESGLKPYDYDALVPVVEGAGGVITNWNGEK MDGYYEDFLGYYDMAAGMVLVEEAGGRVESADPDTSFSDT पGGADSFGDHDWDHAAGVAAVRAAGGGVTDRGTGAPWTAQ EGGCYAWDVCAGWCVLKETGGMVVGGNVNEEWPGD
 $E A G L K L H D V A A L I P V V E G A G G Q M C D W R G E P L T$ ■M EPEVKLWDLAPLDVVREAGGRFDLSGGTGPH F $\square G H Y K L M P W D H L A G V L H Q E A G G V T A R F D G S P Y D P G$ ERGLAPWDLAAGSLLVTEAGGRF NVSAHPWDTVAGVSLVRAAGGTVTDLDGNQ NLRANPWDTVAGVALIRAAGGTVTDLEG EHGLNPWDWAAGGLIAAEAGAVVRLPAADSRSVDG YEAHMHPWDSLPGIVLMREAGGVTNDYLRNEGLKNG VKKSSHDWDLAAADLILARAGGSLTD LDGEALVYN NEQTNPWDTIAGVHMIRQAGGTVTDLDG
YEDGVHDWDWAAGALIATEAGARV


|  | 330340350 |
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| UniRef90_T0RK84 | VA DVL SA R N PI H |
| UniRef90-M4S9S2 | QA DVYLP DLLI C P P S Y A D Q L A L I R E L |
| UniRef90-S3I2E1 | RARV SHDELCAAAAPRLADLL |
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| UniRef90-B7RI93 | A T L K S G Y L L A A P D |
| UniRef90_E9E3T7 |  |
| UniRef90_UPI0004765A2C | G G $\sqrt{L} Y$ S N A L L S Q L L S L H |
| UniRef90_A8F8W8 |  |
| UniRef90_UPI0003B74C8C | G GPILAA G A NVA |
| UniRef90-R6V1H8 | D D HFI E GHHLIA T NG H L H P LFEKLLSEV |
| UniRef90_UPI0004093661 |  |
| UniRef90_F8AXB2 | G G S L T T N G R L H TRALGGLN Q |
| UniRef90-K6WLC5 | P P D SRA DEGHITVAVAP GIA DEFLLGLLDEL |
| UniRef90-A0A024UDX0 | ASGDHENTAGIVASLDKSLHATVVACVA |
| UniRef90_U5T637 | GGDRYLD T G NIVA GSPKLFADLVRTIAPHRME |
| UniRef90_UPI0004695989 | PAHNGGRVIAAA A T A I H A E ALLVI LQEVLS |
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| UniRef90-M0A4K6 | CEGLVASNGSVHAE 1 VER R VRA A V |
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| UniRef90_G8QXP2 | HCDLISSNGL |
| UniRef90_UPI00040221BC | $E P G S L L A$ A TPSAHAEMAERL |
| UniRef90_F5YTE7 | SRSALA A A P GAHTE\LDDLSAV |
| UniRef90_H2AV99 | R R C Y FA $\square$ R G |
| UniRef90_UPI0004763DF9 | SPD S D GRVIA A A N S LLE Q A L A L L |
| UniRef90-UPI000371590C | Q G R L L L A S |
| UniRef90_G2IIQ6 | CE G DVIA L G D P A R L D DV IE A L S H |
| UniRef90_W9YT03 | HRKY $\mathrm{H}^{\text {A V R G A T S GQKELVE }}$ |
| UniRef90-K0VCB7 | GGSAVATNGL L L H A VLDAL |
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| UniRef90_LOICT6 | WRHDSDGLVASNG EI HSELLEAANAV |
| UniRef90_D2RT77 | NRWRHDSEGLVASNG ALLHDELVAAARAL |
| UniRef90_G7GVU8 | V P TII AVAP GI |
| UniRef90-A0A0591H57 | NPVLLANPKIKALTTGNRALE E |
| UniRef90-K2QVF1 | R Q EV T HPVLCA A S R L LL P A L L K N $\square$ S R $\square$ P R S |
| UniRef90_J3A0S7 | NRWRHDSTGLVASNG AVVDDVLEAARA! |
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| UniRef90_S9TPP3 | $K$ PG FLLNPDFVARGPDP |
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| UniRef90_K0JTB5 | ADATFAAAPGIA DALFDALL |
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| UniRef90_G2NMQ2 | GPNDLPP F TAARDAATAERILDALRS |
| UniRef90_F8DXM2 | S LDCDKAKQMLVA GAKGEVLPKLLQVLA EA |
| UniRef90 UPI0004751AF5 | S R MVVA G P P G S A T A L VAVLEE A |
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| UniRef90-UPI0004035F33 | G D AVAA NPKILA |
| UniRef90_G2E720 | Q A L GLE S R R Alda A A N P HLL |
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| UniRef90- Q2YC36 |  |
| UniRef90-K9EBU1 | D F LTTESE I I A N K LA H Q E L D H LH Q |
| UniRef90-R715L4 | PMAHMAANARIIFDNLREVLQSA |
| UniRef90_Q2G6X6 | DETVLAGNDALHS KLHKLLVGALRNA |
| UniRef90-L0K3B1 | LATE GLLGSNGP LH P ALL E HL E D |
| UniRef90-E0MQA4 | C SDVRHGQLVASCATR H E E MLDLARRA $\square$ |
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| UniRef90_V6KK87 | GGNAL PFTAARDERTAH |
| UniRef90_UPI00036ABBFD |  |
| UniRef90_V8A4Z0 | A R P \LA TA P GVAEA $\square$ A E A A G M ELL |
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| UniRef90-D6A7H8 | $G G N T \mathrm{C}$ P F TAARDAA TAQRVVGLLSE |
| UniRef90_UPI00036E3E3B | $G G N V L$ |
| UniRef90_V6I7Q1 |  |
| UniRef90_U5ESQ0 | D S S LIF V I E N G L L A T T S A N N H D L Y $\square$ K K $\square$ |
| UniRef90-U2YJ25 | D DHARSGLI GAASPRQWDDLAARMAR |
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| UniRef90-H2B0G4 | N R T Y L A VR G |
| UniRef90_UPI000478B2C6 | QRDPYLPDLLLICRPDLAEL |
| UniRef90-M1RE42 | STD V VAS N GL I H D WMLSVVQK |
| UniRef90-15C7Z1 | $R \mathrm{D}$ G F H P A RVLA A T G |

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FRTDLDVEYKDG
$L \mathrm{LE} D \mathrm{LL} \mathrm{P}$ V I R A A GDVVMAVV YRTDFAVRGKDD

EEAVRKAA AAE $\square L P R F R R \square A A H E V D Q K G P$
SMKELLDADS $\square G \square A E K G G D R \square K A \square H D S K Q L N E A V K G K T K E G$

> K K L L Q MID L VKECNKCAMFHFHNL
> $S V D K V K Y K N D$
> QQEL CELIRQAGAHAQALRD KGLQVETKGR
$\square R A L R A L A F D L A C E A G E L I V D E R P D \square L G V A D \quad$ T K S S E

LQVAK DSAAAGARVLAGRDPSKFSENMKSGD
$\square H D L L S Y V L L A A E L G G R A \square L D V N D E E K L N T F K K A E T D G K$

E E $\square$ M P R F R N A A A A N VS EK S S

$D L R L V L E A A R K A G E T A L \quad G F F R K D P E V W W K N G$

 QLLAAS $\square \mathrm{H} \square \mathrm{LAEKAGQE} \mathrm{\square VE} \mathrm{\square RKSS} L Q E T S K L K E G L A G$

A VA LIE VA T DAARHVRRRRPELFGRTGTSTVTGDD $\square \mathrm{C} \square \mathrm{Q} \square \mathrm{ANEAAK} \square \mathrm{H}$ S $\square \mathrm{QTGG} \square \mathrm{KAE} \quad$ QWKGK
SMKELLDAAA $\square D \square A E E G G R E \square V R \square K K S G$
 $\square E \square A K$ D WVR D A GNF L K E N $\square$
$R \square K T S E K T G K$ R D GDVS E K S P D L VK S E Q S DV
A A P L E $\square$ T E K T R $\square K A \square A D \square A T K A A \square K A G E V D Q K$ FDRTS LKVQQKEG $M E K V T E L L V E A S A E A$ VEPRFRALADGEVMEKAP

 N R A A M Q $\square E G K Q D$

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UniRef90-UPI00045E9C6B
UniRef90_Q2BGU0
UniRef90-S7V651
UniRef90-U5PJ60
UniRef90 W81884
UniRef90-A2TZE8
UniRef90-E4N114 UniRef90 H5U3G2 UniRef90-A0A011ALZ2 UniRef90-Q0BT29 UniRef90-Q1NEM0 UniRef90-UPI000477F7CC UniRef90_UPI00047EAB68 UniRef90_UPI0004093DD4 UniRef90_D4YFB4 UniRef90-UPI000263222E UniRef90-A0A024YVL7 UniRef90_U6B4X2 UniRef90_V7FNR0 UniRef90-A6G111 UniRef90_A6DIX3

QDLVTVADQACERYDAEKVADEFPDWSVVG NDLVTAADTAAEMMITRALQDAFPTALVVG K DVVT QS DRDAQDAVIDVIQDSFPDDP

ASPDTEADERAEALILPA $\square E A L L P G T P \square V A E E A V A A G A \square P$



HDLVT QFDRASEALLVERLGALTPGVPT $N$ S PLT QA D LIEVNQIAVNGIKKLFPKVKI IS E

QDFVSQAD L LVEQQ VDVVTVMDRRSEELLRARD
GDLLTADDGEAQEVDEAAVRAAFPAHAFLGEES
TDLVTEFDFAAESAVREA ILLARPRDVI
PELLLTRADLLSNQLVMSVLGR YPGLQRIVREEKGPRFMKA
AD $\square V$ TEADQA $\square E K M \square A G K \square S T A F P S V A F M G E E T Y K P G M K$ VDLVT QADLRSEAYLTAA $\square R E R F P S A L I V G$

GS VTTNADTEVNDWLKEAL
GDLVT $\square$ A DQESERALTRGLTALLPGSTVVGEE
GS PVSAADYAANEDLET\|LRSARPDYGWLSEETD
KEMRTDGDMESHRELIHGFAKAYPAMKVISEEHDRTPVDL GSPVTEADVAVDAFLVVRDSALVP
LTPVSDADLACEQM
ASPVTALDRE $\square E \square A \square R E L V R R R H P R D A \square L G E E F G E Q V G E A$ NSPVSKVDFAVDHF LIKEK L

QAAFQD $\square$ VREAGR $\square$ AFDRWPG

GDVVTEVDH\CEE\I!KQTQGVFPNHQ\HSE GELVTVADRRAEELI SAGLRRLRPGSVVVGE $G S P V S E A D L A A N D G L K T R L L A A R P D Y G W$

KE $\square$ VT $\square G D Q K S H N \square I T R G L K E V W P T \square R T K S E$

## RNFFKA $\square$ SEEF A WRWPE $\square$ ET $\square$ KHGFR

SDPVT $\square$ A D TESEEL $\square R S R \square H R \square R P D D A V L G E$ DDPMT $\square$ A D $\square$ KAQT LI IRG $\square$ RKYYPN $\square T \square V G E E$
NDLVTAGDHASHD DMYYGLKGAFPGLAVISEEE GDLVTVVDLAAEAALVEGLTMLGRGIPVVG AKLLSDTCQKAELSIVHTIQK
DDLVTNFDKEVQEQ\|VAN!LHHFPEDK\|LAE
GNVVTADDLECEKVIRTYLLEPTCTQFHL
GEIVTVADREAERII ARRLRELLPVPVVG
$\square D L V T$ D A DEAAE Q W $\square$ T Q A LLR QFPSALVVG
WA N
A NFCTETDEK VQRF LIERDTEVMPEAAF LGEEDGQDVFTA GSPVTEADLAADR\IADGLEQLAGDLP

WVEEAASY $\square \mathrm{H} D \mathrm{D}$
HAMAR
S SPVSDADTAVNAYLESFLR
A DLVTEADVNAERLI TARLLDRYPKAMIVGEEACSDDPTL GSVVTAVDLEVEARIRALICAHFPDHAILGE


E $\bar{\square} G E R F W$
PDD
D G F
P D D
Y
GDDGQSVRAKSTPTDPVTVVDTEAEQLIRGLLAEDRPQDA NQDTGVETKRQ

## $\square \vee R E R \square A A \square R P C E \frac{P}{\square}$

EKSAHNDLVTNMDRH $\square$ EKFLI GK $\square$ RAA $\frac{\square}{V} G E E S \frac{\square}{G}$ AAARPDDAAYPEDRI $P D D P V L S E E D P$ VPAGATAS A DAD
TETKSSAVDPVTQVDKHSEEF DTGEDARDRPEDG EHKRDDQDVVSDADRNVEELIKSLILERYPDDA


$$
\begin{aligned}
& \begin{array}{l}
\text { P D A } \\
\text { P E A }
\end{array} \\
& \text { PDD } \\
& \text { E EA } \\
& \text { RRHDAV } \\
& \text { AAFPDD }
\end{aligned}
$$

LAARPDYGWQSEEEA

STVASVNKH
RAA WLS L $\mathrm{L} N \mathrm{NETV}$ $\square R E R \square A A A S P D$
C G
$\square A \square L R P G Q T A A R P D A$
$L K A R P N Y G W D S E E T$
$L$
W
$\square A R S \square A L H R P E D A \frac{V}{G}$
EAGLIGTK $\underset{E}{H} \mathrm{D}$ A V

EKTQSDHDKGRAFRPLLKHPET | R P T D A |  |
| :--- | :--- | :--- | :--- |
| H T F P | V |

E K $\square G A D G E R T A N \square D Y A C E Q D I L H Q \square N K \square E F P W D A F S E E \square G$ $M T Q E F K V D R K S N D D L V T D V D E T E Q F L Y T K W L E R F P E H R$ ILDR LAA ARPEDSV
QY LS K N S QF P L L S E E S
HRLLARALGRHRPGDAV
Q $\square$ E FEGD L G Y DVNNLNPNLIP
DAPQNPSGSVF $\square$ PK $\square$ T NKK $\square E R \square L V S$
AYPSHK
AEAT $\square$ RDF $\square$ FAEEPN E EA

E E A
GETRVRQWEKVPGHPVCEADLADDAMLRESLTADDPTAGGW
K M
LNSEDQ\ESKSNRKDLVTNVDKEVELLFRNKDAANFPDDR WQSDFARWEKAPGNPVCAVDLEVDALLRARLGALLPDAGW

P $\square$ R P S Y G W LD

E

## UniRef90_C2CM82 <br> UniRef90-F2JWI3

 UniRef90_UPIO004693DC3 UniRef90-C5DM81 UniRef90_M0ATB3 UniRef90-F8I8T9UniRef90-C2Gl28 UniRef90_G8PQW8 UniRef90-N6X8Z3 UniRef90_R9SR14
UniRef90-J1SX75
UniRef90 H2JMC0
UniRef90-E9SV84
UniRef90_UPI0003598FB0 UniRef90_UPI0004685FDF UniRef90-E6SBU0 UniRef90_UPI0003829B8E UniRef90_A0A017T342 UniRef90_UPI0003B57C99 UniRef90-V5AY42
UniRef90-B8IQX7
UniRef90_S3J9N3
UniRef90_UPI000255C560
UniRef90-E3B9S0
UniRef90-X3UV87
UniRef90-R1DU86
UniRef90-S2ZOV1
UniRef90 A9WTZ2
UniRef90-D4GL81
UniRef90-G8QPP6
UniRef90_UPI0001E44B17
UniRef90-A0A038FU67
UniRef90-C7Q332 UniRef90_G3JCU4 UniRef90_G0CXN7 UniRef90-J1T013 UniRef90-F1YKK0 UniRef90-V6L247
UniRef90 C6C7J4 UniRef90_V4NXA7 UniRef90-G8SEA8 UniRef90_A4S3X6 UniRef90_UPI0003B3DD43 UniRef90_F7U5D8 UniRef90-V4CRS0
UniRef90 B1LYE3 UniRef90_L7KF26 UniRef90_UPIO00469CEDA UniRef90-U5W4D3 UniRef90_UPIO003039BF8 UniRef90-A3WEN9 UniRef90-B3T5A2 UniRef90-X5DP64 UniRef90-W8IA80 UniRef90_UPIO002DF6366 UniRef90-C4RBY4 UniRef90_UPI00037F2230 UniRef90_UPIO002C34533 UniRef90_I1FJD0 UniRef90_UPI0003740395 UniRef90-AOYMM0 UniRef90_UPIOO03824015 UniRef90-K2NNH9 UniRef90_UPI000411DA8F UniRef90-T1VQW1 UniRef90-G7QH94 UniRef90-H5TRZ8 UniRef90-A8LOJ5 UniRef90_UPI00006CBE2F UniRef90-UPI000379B428 UniRef90-E4WTB9 UniRef90_UPI00045E9C6B UniRef90-Q2BGU0 UniRef90_S7V651 UniRef90-U5PJ60 UniRef90_W8I884 UniRef90-A2TZE8 UniRef90-E4N114 UniRef90-H5U3G2 UniRef90-A0A011ALZ2 UniRef90-Q0BT29 UniRef90-Q1NEMO UniRef90-UPI000477F7CC UniRef90_UPI00047EAB68 UniRef90_UPI0004093DD4 UniRef90-D4YFB4 UniRef90_UPI000263222E UniRef90-A0A024YVL7 UniRef90_U6B4X2 UniRef90_V7FNR0 UniRef90-A6G111 UniRef90_A6GI
UniRef90_A6DIX3

140
150
160

 |  | $D$ |  |
| :--- | :--- | :--- |
| $P$ | 1 | $D$ |
| $P$ | 1 | $D$ |
| $P$ | 1 | $D$ |
| $P$ | $L$ | $D$ |
| $P$ | 1 | $D$ |
| $P$ | $I$ | $D$ | $G T$

$G T$
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$W$
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$T$ WN F A N G
 TFMGEETGGESGAAG TWVVDPIDGTTNYVRGFHWGVSIA $R A L Q D D V P V W I V D P V D G T R Q F V H G D D F C T L V A$ VLGEE GGGARDVPE GVRWVVDPI DGTVNFLYGDPYSVSVAA EDVIKSDQS P IISRGAIWI DDPLDATKEYTEDLLQYVMVC


 EFEKSQQFFQNNNNFWLI DPIIDGTVEFI NKKPNFVNFA
 LAEGERG V SEE GFGDGAVDTKGVVWVL PAWE GASAGTSGLTWVIDPI DGTVNYVYGHPFYVSVA RCALDACG VRQHWQRYWLVDPLDGTKEFIKRNEFTVNI A $\Pi L G E E G S N K E S T S G Y T W V I D P I D G T V N F I$ Y GI PQFVSI A
 V LGE E S G G D T Q G A R V V WVI D P I D G T A C F V N G H N WC V S L A RAEQEAALEAGN
 G L A E ESGASQGDNAARWIIDPLDGTDNYARGLPWFVTVA RWLTDEYETTAGPPGEWWVVDEVEGNVNHVHGLPEWVTVA A LLGEEFGGDVELKGRQWVI DPI DATKNFVRGVPAWATLG YEADRSVVPALADADLAFI I DPVDGTFNFAAGLPDFGTIA LSEEAEDVGDRATAERVWI I DPLDGTSEFSMGTDWAVHVA GILGEEGASVDGTSGVRWVVDPVDGTVNYDYGDPAWVSIA ALLGEETGGATTDAARLWVVDPI DGTANFARGIHFCLA A
R R D R
DNAERLT


 D D PA QVLGE EFGGDAVVTGRQWVIGPD DGTRAF L

ASADLDPADASAARWI I DPLDGTRAFATGSPWGTLIG
 LSEETADDKDRTRSDLIWLVDPI DGTRDYVRGRAWSVSVA
 LWLID KTSDRAGDGRRTFIID
 Y VV $\mathrm{G}_{\mathrm{L}}$ A
TAK $\square Q Q R N E K V N S D D \square A V W \square D P L D A T K E Y T E G K Y V T V M V C$ LSEEATDNGRRLTSDRVWI I DPLDGTREFAAGNDWAVHIA GLLDSEEGEHLFPTTDWCWI I DPI DGTTNFARGLPDWILMG S GPFWLVDPLDGTKEFVRRNEFTVNIG MFSSEHNNK LR N NVFLI DPLDATHNFLDGFPFFISII S IIGEEGHGENINDKGVI WIVDPI DGTNFVHQGENFAISIG LSEESADDRNRLDASRVWI I DPLDGSKEYPDHADWAVHVA GE $\square K$ NASSSQTDS GLRWIVDPLDGSLNYTKGIPMCVSIG
 FNTPK DQNQFNIDDVVVWI DPLDGTLSYVKEEYDAVTIG LSEEASDDLDRLGKDRVWIVDPLDGTKEFATGRQDWVHIA LP $\square E D$
VAADPRLLDVIAGAEQVWVVDPI GEYTGEHAPISAGAEQVCWTVDPDDGTQAFVEGLPHAVMVA GEYTGEHAPISEGPEFCWTVNPIDSISNFSNGLPVFISMA ESDEEKDKFDSE SSLLGEEGGQVGDGD\|QWYVDPIDGTSNFASGAFWCVSI A LS EETEDDQSRFTNDYFWCVDPLDGTDAF IVNNHPFSVSIA IVAADPEDARALHAEPAAWLVDPVVGTRNFVAGRSSYVMAS AAKTPSLLNALGTGARRWIVDPIDGTADFVAGDDRWVLVAA LSEETADTVARLLGS RVWVVDPV DGTRDYAAGGREGWCMAA WADEFDAVPGTGEVWVVDAVDGAVQYLQGLPWCVSVA
 YIGEEKMGDTPSSAGGVWIVDPIDGTANFVQQNHFAIMVA LSEETVDNADRLALNRLWVVDPIDGTRDYLRGRPGWVSIA LSEEMDDDFDRLNFKTDFIVDPV DGTRGFIGQKEWCISVAA


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| Un |  |
| UniRef90-F2JWI3 | VVKGVTVF GLL M P |
| UniRef90 C5DM81 | LALNKEPVVGVI YNPHLDDLVVASKNNGVRVNGKTFD |
| UniRef90-M0ATB3 | AVVDGEPVAATTVCPALEDTY |
| f90-F81899 | LIDGGKPVWGLIAVPLSGRRYVAW |
| UniRef90-C2G128 | AAINED\VAGAVIVVVTGEVYRSARGEGAQKAV VPPPGET |
| UniRet90-G8PQW8 | CVKNGEKY GVVYDPCADE |
| UniRef90-N6X8Z3 | LIEHGTPVLGAVLAPALGRLFAG |
| UniRef90-R9SR14 | LVENGVPTHAAVGLPDLGVVFHSADA |
| UniRef90_J1SX75 | FVFDGKVEIGVVYDAAND |
| Ref90-E9SV84 | AQIDGVSVAGAVVDVAAR |
| UniRef90-UPI0003598F | VVVDGEPKIGVINRPFEKETTWA |
| UniRef90-UPIO004685F | ATVADRA【AGAVYCPRLDELLFDAAD |
| UniRef9-UP10003829B8E | $A Q C G G E V L A G A V V D V A G G R V F S A A K$ AVADPSLSVVHAR |
| UniRef90-A0AO | DEPV VGA |
| UniRef90-UP10003B57C99 | LIKNNSPIFGLI SQPYTGNTWYNFR |
| UniRef90-V5A | WVRNDRIELGII YAPDRE |
| UniRef90-S3991 | YVRQNTIELGII YAPDRDEFFFA |
| UniRef90-UPIOOO255C560 | YEEGEGRAAFIYDVMADEL |
| UniRef90-E3B9S0 | GDTAREG |
| UniRet90-R1DU86 | VARRVGE |
|  |  |
| UniRet90-A9WTZ2 | VGPDGAWLAGVVTAPALNRSYFASLGAGA |
| UniRet90-D4GL81 | IVCDGEPVVGVICDPNHHELFHA |
| $\begin{aligned} & \text { UniRef90-G8QPP6 } \\ & \text { UniRef90_UPIO001E44B17 } \end{aligned}$ |  |
| UniRef90-A0A038FU67 | YEVGG |
| UniRef90 C7Q332 | LVRDGQTVLAVVRQPVGDL |
| UniRef90-G0 | D |
| UniRef90-J1T013 | , |
| niRef90-F1YKK0 | LTVDGHPEVAAVSLPAKGEVFRSD |
| Ref90_V6L247 | GE |
| UniRef90 C6C7J4 | QGITELGGUYNATQELYMLARRSHYAQ D |
| A8 | ER |
| UniRet90-A4S3 | YVLGLALMSDVGTPE!AVMDAPKWPGGGLEVVAA |
| UniRef90_UPIO003831 | LVVEDEPVLGLVAAPSLSRRWWAG |
| UniRe | $\checkmark$ VVKGQPVIGVIVKPFEDSTAWALEGGEALKNGEPUSAAR |
| iRef90-B1LYE | LLSRGEPLIGFVHAPVGDADYEAV |
|  | RGVPIWATLIALLID GVPVVGVVSAPALTRRWWAA |
| UniRet90-UP1000469CEDA | VLRDGRP |
| UniRef90_UPIooo3039BF8 | IIENGRPIVGVVQCPAQRELYA |
| UniRef90-A3WEN9 | S GKPLIGMLSAPAREEEW |
| niRef90-B3T5A2 | NG ${ }^{\text {a }}$ |
| 5D |  |
| UniRef90 W81A80 | DGRVTAGVVFDP |
| UniRet90-C4RBY4 | DGEQVGAWVLDPLAGTLA |
| UniRef90-UPIO0037F2230 | VVHQGQPTAGVLYAPALGEVYQA |
| ee90 UPIO002 |  |
| iRef90_11F |  |
| Unil | LTGGRPADCAVSLPA GEIYTTDTVPAVGGELTGRMVAS |
| NiRef90-AOYM |  |
| UniRef90-K2NNH9 | VFIDGESSHGVYDP |
| UniRef90-UPIO00411DA8F |  |
| UniRef90-T1VQW1 | L WERGGIT A A AVAQPALGAVYSSGDEADSVPANSPGRVVV |
| UniRef90 G7QH94 | LWDA |
|  | S S GPLPARALPAARGAGA |
| UniRef90-UPIO0006C | VSTHNRPLMGIISQPYHLEKTFTFKPKUYFGHVDSSQVYY |
| 90-UPIO00379B428 |  |
| E4W |  |
| Ref90_UP100045E9 |  |
| IRet90_Q2BGU0 | 仡 |
| $\begin{aligned} & \text { UniRef90_S7V651 } \\ & \text { UniRef90_U5PJ60 } \end{aligned}$ | LVRSGDPVIGGVVYIPDEDLL |
| UniRef90-W81884 | AVERGEVVAGVVYDPVADLMFSADLEH |
| UniRet90_A2TZE8 | EGKPVIGVVF |
| UniRef90 E4N14 |  |
| UniRef90-A0A011ALZ2 | LEEDGEIVAGVVVVPAQGRUWWASRGEGAFA LIM |
| UniRef90-Q0BT29 | GEIMATI I HDPVSRD |
| UniRef90 Q1NEMO | VEDGAVRTGILAAPARNEDWVAQA |
| UniRef90-UP1000477F7CC | VRDGEPVAAVLHAPA |
| UniRef90-UPIOOOC4093DD4 | VVT |
| UniRef90-D4YFB4 | dGLGkLGVv |
| niRef90 UPI000263222 |  |
| Ref90_A0A024YVL7 | EP |
| UniRef90-U68 | IVVNGRPVIGVI YASALEKEFVVSIGNQSTCNE |
| UniRet90_A6G111 | $L R E R G V P V V A V A D F P S I G G R L H A V R G$ |
| UniRef90_A6DIX | KLLVYAMVA ITP QENKAY |

UniRef90 C2CM82
UniRef90- ${ }^{-} 2 \mathrm{JWl} 3$ UniRef90_UPIOO04693DC3 UniRet90_C5DM81 UniRef90_MOATB3 UniRef90-F818T9
UniRef90-C2GI28 UniRef90 ${ }^{-}$G8PQW8 UniRef90-N6X8Z3 UniRef90-R9SR14 UniRef90-J1SX75
UniRef90 H2JMC0 UniRef90-E9SV84 UniRef90_UPloo03598FB0 UniRef90-UPI0004685FDF UniRef90-E6SBU0 UniRef90_UPIOOO3829B8E UniRef90-A0A017T342 FSAKTKEMGP LT LKTSVVA LQPGSAREGSNFQTKM RNGKALSVSDRTDPEASTVCPTYWWDF $E P D G S W H R L N P D M P P H N G L R V A A S H S H P E L V R A W C R E Q A V$
$V G H E A F A Q L S A S S A T E I E Q S L$ VGHEAFAQUSASSATEDEQSL VGAGAFVEEGGER RPDACRGVPADGPTVVAS R R D

 GSGAPDAVVEGTDGERLCNGITDASSADLATGFGYGVERR LVQGTQKS GEEHS GAGARDN

GHRDRVSGKRELATALVGTGFGYTV RGGGAWTRESAPGAEGRRLSVSTQDRLGRALLATGFGYDP
 GSSGEA WRGENNQNFENSQRIGKNKIGDYNLKILSSFN
 $H$ GAGSWL̆N
CGRGAYQNTKK LIAALTTSVTIEDSLIDD SATWLKPNRLIH
 $\square G G G C T L N G S P V G V E P \square A D A V V A T G F A P T E A S L A P M V R G \square$
 DGTQATKEDKGPKQQRTGK K G S GA WLN D R R EVHKA QLNEGLLGISNSSRIPGEH EGGGAYVNGKRLPLR R R VAGSLDQAVANVDLKRDP
 RGGGAHLNGAPDTVSAKTDLDAAVVVTGQAEADQDGTYRR
 KGAGAFQHKRNCEPVRLKVAEPIELGRMVGAMSFSHMD

> GHGAFRN

Y GE GA WLN
GSGTFR
 RGSGAWTGRQLD RARQVGVSDTSVLE HASVSVDEVAS WL ENTGTFHLAAPE
VGYGHSKNLQKADRDTRNQNKK $\quad$ IVSMSHT RGRGATRN GEPIRVD EGRGAHVSFDRG RARRIEVSSVADLASSSDTFSSDSGW GAGAYLNGVRLTQASAWASPRRLGELRLAGMATTTPDKF ПGKGATLNGRELPLLSSKINRKYQUSDDQSDAQKLPDDFR PLKASTRKEFSGARVPTDQLPSADSDLVAVEKPNSI
KGHGAYH SGKRMEPSQDGNMTEALIGDDLSGVS
 $\square G E G T S C N N$ R RQDUKSNPNIFKGNIGWIQGHRVQND

 VDHGVSPNDEGDKSSPNTNTIRVISSRSHSGDVIKVA RGWASYESGHVSQRDGDDM

F WLENTGGTGPSGAFRNQQPDHSSLETPCSDHFF
 SGS
$R K D R V S Q V R A E F D S V L C T G P V K N N F S$
GGGAYEDRDGERVRLRANPISRADDALVATGFGYDVDRR VAAGPAGNRGDPAGP VAPAGADAAVPRIVASRT AYGEELDEEGRKSYLPYEFRLQHTNRPLDQLIGATSKHRV SGK\AVSRRRPPAVAGAVAQALDSELLPL
NSVLVSRSHTGQAEEQSKKHLGSNAKIIKA
RGAGAWCNGDRLARPAPDLTALRVATSFLSGSADGLPTGL
 RGEGDMLNGKPFNLDKTTYDDSLHVYLDRSMQGGSYFQDLL
$D S H K A F C N Q K E L E L K E R P L A Q S$ DSHKAFCNQKELELKERPLAQS Y G $\square G A F K N G K P W L L N K P N N K D T Y D T D K T D K D T P Q K E V I K$ GAGAWRDGERLALLAKVATPPEEWTGULKTRYDAHPGGHR RWGGTYEV
$A R Y T G D S V G P G Q R L Q V G R S R P D G \square A G S V L G V I P T D D$ RGEGAWDSFPDGTRQDLRVAVS VPVAAMTGAA GRGATRNGKVLKAGTRTVLPGARVPADQLPRADRDLVAV RGGGARLNGAPCAPSGRDDP RAALVATSQPPFDAARP GEGAYLN GEKDMSTEAP LDSDLVAVGTAPYYTEDQ VGRGAERVDFNGATVSTAKPDNTRKLPARGEPWDAAVSRS
 GSGAYS

GAGSH $\square$ RHAHGNFEKVHVAKPAK E K S
GAGSH $\square R H A H G N F E K V H V A K P A P D S E M T G A V S W H Y L P M$
CGTHEDGRPVRVSPSFDPEQDVVCHGDPYTF

## UniRef90 C2CM82

 UniRef90-F2JWI3 UniRef90_UPIO004693DC3 UniRef90-C5DM81 UniRef90_M0ATB3 UniRef90_F8I8T9UniRef90-C2Gl28 UniRef90-G8PQW8 UniRef90-N6X8Z3 UniRef90_R9SR14 UniRef90-J1SX75
UniRef90 H2JMC0 UniRef90-E9SV84 UniRef90_UPI0003598FB0 UniRef90_UPI0004685FDF UniRef90-E6SBU0 UniRef90_UPI0003829B8E UniRef90-A0A017T342
UniRef90-UPI0003B57C99 UniRef90-V5AY42
UniRef90-B8IQX7
UniRef90_S3J9N3
UniRef90_UPI000255C560
UniRef90-E3B9S0
UniRef90-X3UV87
UniRef90-R1DU86
UniRef90-S2ZOV1
UniRef90-A9WTZ2
UniRef90-D4GL81
UniRef90_G8QPP6
UniRef90_UPIO001E44B17
UniRef90_A0A038FU67
UniRef90-C7Q332 UniRef90-G3JCU4 UniRef90_G0CXN7 UniRef90-J1T013 UniRef90-F1YKK0 UniRef90-V6L247
UniRef90 C6C7J UniRef90_V4NXA7 UniRef90-G8SEA8 UniRef90_A4S3X6 UniRef90_UPI0003B3DD43 UniRef90_F7U5D8 UniRef90-V4CRS0
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$Y S Y A P E V N R Q L A V K S T A F A R T H S Q P S C H A Y R Q L A D D$
$K E H Q A K M A V A L T G F T R S H P L G C S A H E Y R M D A Q G H T D F L L T$
$K E H Q A K M A V A L T G F T R S H P D G C S A H E Y R M D A Q G H T D F L L T$
$R T Y E A L L S C D E G F V H G F R N G S S A M T L A Y D C L G Y L D S Y W$ DQRGEYTAAARELVTRFGDIRRFGCAQLELAMVAAGA P DRELREA
 GDAAALAAFLGGRKVAALKNAGSSLKLCLIVACAEADLYPR D D Y A A L SKRLHERGMDYRRMGAAAVDLVRVAEGVSDLF DEQKRALRPLWTDGLAPRACGSAGLEYLAVARGELDAVAF RAQGK LIAALLP HVRDDRRVGSAALDLCMVASGRVDAHF GDVIKVAE EALGKNVKIDEAGGAGYKTLEVDKGSVNAY EVRARQAEVLRAVLPRIRRIGSAAGDLVRVAEGSVDAYA $R V R Q A K T L T E L I G R V R D F R R G G S A F D L C A V A A G W V D A F$ DNNFASFEAVKRRARAVRRCGSAADDLCMVADGTYDGYW HRS DELENWI SFVNPVSDQDDGSSI KFCYLAEGQVDFYPR REYTDALEKLLDQGVEHRRFGAGALMLAHVAAGLVHGY NPADEACLARLPDGQRRP VSSALKFGLIAAGDADGYDR P LYARTIEYLLNDGMEYRRFGAGALMLAHVAAGQVHAY EE $\square$ MTEIVKRCS GTRAYGAASLELAYVAAGYLDAYF

 KQQAELLTTVLPQVRDIRRMGSAALDLCALAEGTVDCY
AR DIGEL EARMTGFGDFRRLGSAALELCALADGGLDAY L RELAVRIATAPPFGFSQRNGSSALEWCQVAAGRVDVAVH


 EPDRSRVAGNMAKTKMTFAFNCSAYEYWMVSSGK
GHSYHSAAVADRLGMDAVRVGSAGAKAMAVVRGDADAYVH TAQAEVARRLIPRLRDIRRSGSAAVDLCDVAAGRLDGF
 NKYFPPDMQAHDDAHAGALGGYTPGRHCAGYEYPADATDAA
 DVIA HLPD EVVRDGVKRMPHVPSLDAYRLAAMVADGRDDGTLV
 $G P K P M L D R L A R G A G E D P D F E V V A R D P S L A L R L A R V A D G T V$
$A D R G D R E E F I G L T D R V W R V R G Y D F L N Y C L V A E G A V D D A A ~$
 A YRLVLVTGQNEDDIVLV
 ERYHAADRAVIDRAAVTRRDGSAADSVAYVAAGRHHA PQAVKLRQHIDDRFKRMLRLWAPTLQWCMLAKGD DDGIVL PPEHRRRAEAGGER】GELLPGQHCAGREYLDLLVGAQEFV RVPHVPSL
 NSALSDSGNKVEHIVAAGAGYKTLQVADQKADLYM H
$N V C T R S T A D P N \square P C K \| R L M G M A G Y N F L M V A S G V A D G G V V^{H}$ ATSDALQAYLADKTVASITNAGSSLKFCRI AEGQADLYPR
 RPPAFTEAVAAELGADVVHMGSAGAKAMAVVRGEVDAYLH TKTLNSFVSEFQKYKKVVRLLGSASLSSMCMVASGAAEDY
 KEHVLNF IKNDLKPAVLLQNGGSGKKSLQVLENEVD GSAGAKAMHVLLGDCDAYVH GGAGYKADSIFHGRGEGYFH REQVEPRDAADGPAAYPSDRGWSGATYARUASGQEDFAFY SDKAHDEAY LNDFRDMT LNGGTGYNGGSPALNLAYTAAGR KDKDKQWAEGQNYTNVNYHVGFGAVRNS LVLSHKNACYFK RSNSGGLLDLSHQTLGVRUIGSAGISYGQLLEGK\|IGYF EAADANLGELVETFSTLRRPGSAALSDAHVAAGWADAATG LLSNALAL

A AVSRALGLAPVEDGSAGAKAMAVVRGDVDAYVH $G L F P A E R E M L A P L T A V A T K T A W G V H A A L L V A G G E F D L A V Q$ SWRFMAEPLRSSVCQGMAQVAQSFDFRCAAHEYRMLAGGH EKPNS IAA AEAGRSLTAVLPHVAAVRNDGATSWQLADVAAGRDDGFWQ DKTFELAKKVLPLCVDLRRSGSAAWDMCCVAMGTAAGYF HGDPKSEAFIIDSRPNAVRRTVGSAVVKGGRIAEGSADVYPR
$M T D A Y K V Q Q L V K E S M G L R I Y G S A G I E I I A L L K G E D A Y V$ PKPNSIAL EEQGRLAPGFLDLTRACWRTRGYDFWPYMMVAAGEADLVAT




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| :---: | :---: |
| UniRef90-F2JW13 | SPTMPNGKLLIA QSKEQWEKLIAE |
| UniRef90_UPI0004693DC3 | R R S |
| UniRef90-C5DM81 |  |
| UniRef90-M0ATB3 | ERWRHDSDGLVASNGT $\quad \square \mathrm{HEEVL}$ A A A Q A $\square \mathrm{EGEE}$ |
| UniRef90-F818T9 | SDQMV NPSFVAS |
| UniRef90-C2GI28 | LPVWGA A P GV |
| UniRef90-G8PQW8 | VQDAVMNGCKVVTAGPDVFNQ |
| UniRef90-N6X8Z3 | KPG FDNPHFVACGA |
| UniRef90-R9SR14 | NKDTYMPD L L I C R E L A D ELLEMCAKFYEE |
| UniRef90-J1SX75 | GPVIAHSPGL |
| UniRef90-H2JMC0 | GGNAL |
| UniRef90_E9SV84 |  |
| UniRef90_UPI0003598FB0 | P LQDMKNERGLLATVNTKLH |
| UniRef90_UPIO004685FDF |  |
| UniRef90-E6SBU0 | A GPALVEP |
| UniRef90_UPI0003829B8E |  |
| UniRef90-A0A017T342 | VGHLVASNGHLHAELLRVLAA |
| UniRef90-UPI0003B57C99 | K ENFKNRNFLAYGLTDNL |
| UniRef90-V5AY42 | TNGNTAWAATPAVWQQL |
| UniRef90-B8IQX7 | R R A Q GYRNGPFAALGDPAYA HRV |
| UniRef90-S3J9N3 | RGNLVLAGCNSVQERLS |
| UniRef90_UPI000255C560 | NULSKTSVLAA R P GLHHFIAEHVCK |
| UniRef90-E3B9S0 | LPAGKTMAVASTPKIHEAL |
| UniRef90-X3UV87 | PRESFLNPGFRVT |
| UniRef90-R1DU86 | S R PMLA S N A A H A E LREVLRD A |
| UniRef90_S2ZOV1 | NPVWGA A S GV |
| UniRef90-A9WTZ2 |  |
| UniRef90-D4GL81 | NPVLLAN |
| UniRef90-G8QPP6 | $R \mathrm{R}$ R\\|VAAPGVFAA |
| UniRef90-UPI0001E44B17 | NGDYVLRNGLLAAA |
| UniRef90-A0A038FU67 |  |
| UniRef90-C7Q332 | A DTVVATAPALHAATVEVL |
| UniRef90_G3JCU4 | D G R V Y L |
| UniRef90_G0CXN7 | GS A LASNGLLHAPALDV |
| UniRef90-J1T013 | E $\square$ S GGI DSAPDKESWEMTRRET |
| UniRef90-F1YKK0 | $N P Q P Y M P D F I I C C O R P E \square A D A V L D A V A$ |
| UniRef90-V6L247 | DLTVVASPGVFRALQPGAWHDRV |
| UniRef90-C6C7J4 | GQPVLA A A T GVA D A L A R A |
| UniRef90-V4NXA7 | A $\square \mathrm{DSL}$ KPSLICAGAP LI D D $\square$ R R CAHL |
| UniRef90-G8SEA8 | RR KGLLVAGNEEIWH |
| UniRef90-A4S3X6 | DRRRFSPGGGGVICAAKSVHENVVRAFRE |
| UniRef90-UPI0003B3DD43 | TGEPTA VVVSNG ALHDMVLGALA |
| UniRef90-F7U5D8 | RREV NHPAL CAAADYAL PALLKAFSHL |
| UniRef90-V4CRS0 |  |
| UniRef90-B1LYE3 | RADPV HGELLAA PVGLR |
| UniRef90-L7KF26 | GSAVATNGL L HDEVLAAL |
| UniRef90-UPI000469CEDA | A GD VVAAADPLLHRAVLD 1 L A |
| UniRef90-U5W4D3 | SEHY $\square$ A A T P GL HAAA $\square \mathrm{K}$ V L |
| UniRef90-UPI0003039BF8 | MKPY QYGFL 1 A GKNNCCQNMI |
| UniRef90_A3WEN9 | KHDP R D F GVLVSA P Gl H A A AVARLAERAKA |
| UniRef90-B3T5A2 | S T L S K R RLSFVAA GKDELCSK\\|LGSV |
| UniRef90-X5DP64 | NEDTYLPDLLIC |
| UniRef90-W8IA80 | Q ${ }^{\text {G }}$ GAVLAS VPALQPWLLSLFGE |
| UniRef90_UPI0002DF6366 | G MKEEPYLIACH PDHKEELLQ\\|VREGLS |
| UniRef90-C4RBY4 | QG PGLLVAANEQVWAEA |
| UniRef90_UPI00037F2230 | RP $\quad 1 \mathrm{~V}$ SHGVLGAGSGLVLPELLAA |
| UniRef90-UPI0002C34533 | RRIIYPQGGFLVSNG KIHNQLLELI |
| UniRef90-I1FJD0 | P DVDAKVNDGLIVAYTKNWH |
| UniRef90_UPI0003740395 | RRSPFMPDFVIC RSELRDPILSALAE |
| UniRef90-A0YMM0 | PGQDYGHRSYILVASQEQWVSQFQPLVQSLL |
| UniRef90_UPIO003824015 | KAPAFLNPHFI ARGA |
| UniRef90-K2NNH9 | VP DSLKKRVNIVAGSNDTIVNEILK |
| UniRef90_UPI000411DA8F | STSVI S GNPKIHSEILE |
| UniRef90-T1VQW1 |  |
| UniRef90-G7QH94 |  |
| UniRef90_H5TRZ8 |  |
| UniRef90-A8L0J5 | QP DPLLPDLVVC D P A HAEQVLAVT R |
| UniRef90-UPI00006CBE2F | Y D S KLTNYYNVVYT LR P DVGQYLISKTKN |
| UniRef90-UPI000379B428 | NKDTY $\square$ PDLLICC RPELAEKILSVI ${ }^{\text {C }}$ |
| UniRef90-E4WTB9 |  |
| UniRef90-UPI00045E9C6B |  |
| UniRef90-Q2BGU0 |  |
| UniRef90-S7V651 | PESTFMNQQGVVYASAE GIA EMVMK |
| UniRef90-U5PJ60 |  |
| UniRef90-W81884 | KAPDFMCPGYI ATGA |
| UniRef90-A2TZE8 | PKNTLNTQGVL |
| UniRef90-E4N114 | APG GTNGLLVAADPEQW |
| UniRef90-H5U3G2 |  |
| UniRef90_A0A011ALZ2 | GTSVFARDAGL HAAADDLL |
| UniRef90-Q0BT29 | RHE GGLLCTPDAESWHRLAQALLGQ |
| UniRef90-Q1NEM0 | RPQPTAFGLLCAAPGDHAAQERLAPRAQE\L |
| UniRef90_UPI000477F7CC | E T GVLAA PA QL HPKLLALL |
| UniRef90_UPI00047EAB68 | G P |
| UniRef90_UPI0004093DD4 |  |
| UniRef90-D4YFB4 | Q R VLAA |
| UniRef90-UPI000263222E | T P |
| UniRef90-A0A024YVL7 | $N$ A AASNGLLHEEMLDLLLR |
| UniRef90_U6B4X2 | RSQV SHGVLIFAS S |
| UniRef90-V7FNR0 | VG GGLLVAPDRESWREL |

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UniRef90_UPI000366A2B5

1

 VA L M R QVGRD $\square$ VMPRYQN LAAEE $\square$ SEKAA FEDR $\square \mathrm{K} \square \mathrm{ACGAAKMAGEM} \mathrm{\square LA} \quad \mathrm{CNDTD} \mathrm{\square AF} \mathrm{\square VKGK}$ MMPA $\square H A A V E \square M R E A S E H A \quad \square L P H Y Q K L A A S Q \square D A K A P$
$D \square A \backslash E L A Q K A D \square A V Q H A A S A A A D P K G H A$ $L N L V R R A A R A E!L P R F R N L E S G E \square D$ QKKSH

ALEAE $\square \quad \square D V A R A A G \square L A E A A Q A E D M P R G D G D \square R Q K S A$

$$
\square \mathrm{A} \nabla \mathrm{~K} \text { A A E R G A D } V \mathrm{C} \square \mathrm{~L} \text { H } \square \mathrm{DGELVS} \quad \mathrm{~V} \mathrm{~A} \text { T K S A A }
$$

## A $\square$ A E Q $\square$ ATEAAAF $V R R R R G E V F Q Q D D G A V R T K S P$

S $\square E E L D Q K A Q Q \square I R Q A G Q N A Y Q K M E N D Y Q V D T K T N Y T$
EVAERDATRAGDLLLDVRAE FATADASERKAA
$D \square L R \square A A K A \quad E \| L P R F R R \square G S G D V R S K S P$ MDRSLTPAVEAMRDAARLA VGMPRGTAGAALVADKGE


MSE $\square L Q E L L R \square S E K A A N \square A R A C R Q Q \square E E K K E G E R N K K F T$

DPLLDDVGALLREAA AKVVVPLFRRLDASD $\square$ SEKAP $M \square E \square L Q E L L R A S E K A A C \square A R A C R Q E \square E E K K D G E K N K K F \underset{X}{C L}$

MAVLLRSLLAASEKAAR】AQLCRQEDEEKRGVDKNKKF L

MNPMVQFT $\square R$ ATRKAADQF $\square R \square R E R \square E N A H D A T N L T Q$
$D L L R Q A A K A D R R F R R \square G S N D V R A K S E$ LLELAVSAAREAGALVARGRDTAARHMVTKSSP SAGDGAVRSKSP
$R L V A S A Y S V A Q K A G M \square V R R I A E$ $G D \backslash G \square V E K C A$ A A Q L R $\square$ VA AEVVMPRYRNLAADE $\square$ SEKAA
$\square E N K F H F A K E D I Y Q A G A F \square R E H \square$
Y D DLDDVS K S A MSDILRELLRVSEKAANIARACRQQDQEKKDEEKNKKFA MESKFLFAKSLDKEAGLFDKEAMNQ DGD DE E K D

UniRef90 H2U1Z1 UniRef90-K2QE26 UniRef90-K6XFB5 UniRef90-UPI00035C4987 UniRef90 H0HGX5 UniRef90-J2D8J8 UniRef90_L9PPP2 UniRef90 FORT18 UniRef90 UPI000463CB17 UniRef90_A0A031K6P9 UniRef90 U5DK72 UniRef90 UPI0002378A8F UniRef90-UPI00037EDDFE UniRef90-F2QCM0 UniRef90_UPI0002D6D894 UniRef90-F5XP66 UniRef90-Q0FQP4
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UniRef90- TOITAO
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UniRef90 ${ }^{-}$H2Y5Z7
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UniRef90_UPI000366A2B5

GDLVT $\square$ A DREAEALTTAALREADPDALIVGEE
ADLVTAADEAAERFLAQEIARMDPNALFVGEESASKDPGL KI I VEASRLALDEF NDFVT $\square$ A DKESE $\square R \square A E G L A S \square L P E A G V I G E E A C$

S DVVTHLDTASER
DDVVTVADKQAEALLTERDSTLLPEADVVGEEAAF

GDVVTHVDQEAERLIAAVINAVYPDHAVLGE
QDLVTEADRAAERMIARGLLALFPNALI GEEN

A D LVTEADVNAERDITARLRDRYPSAMVVG
TDLVSEADVNAERAIRALLAERRPGDALLGE

GDVVTAVDRAAEEAVRAVLREARPDDSMLGE

MR Y

T DPVTVVDTETERLLRERLAADRPDDA $\square \mathbf{L} G E$

DLVT T $\square$ DRENEQL $\square$ NDQ $\square R K \square D P D S Q \square L S E E G F G D Q Q \square S$

G DKRAHEFLTTELARLRPND
A DLVTEADEAAERMDRRELEAFAPGALFVGEESV
SEPVTAADRECEA DLSDRLAGLDPGAA乌VGEEAVHQQPE

$T D V V T A A D R A V E R Q V H D V L R L R P G D A V L G E$

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

GEVVTVADREAEALISEGLRRLRPGSVVVGE

T DFKTLADVLVQEVIRHDMGEKFPGDNDAGEESNTFTNEL GDYVTS SDLELDDRLLSASFSDWFPHDCUITEENADSYQ\W

LLTDTAGKAEAT $\square V Q Q L E R G Y P Q H G \square V G R F T Q Y R$

ADLVT EADEQAERM\KAEVARDWPEALFTGEESV VDVVTAVDAASEELLVRRLLEARPDDGVLGE


T D L Q T K A D R LVQMS $\square$ CS S LIARKFPK LT I IGEEDLPSEEVD

D D F VT $\square$ A D K E S E $\square$ R $\square \mathrm{A}$ E G $\square \mathrm{S}$ A $\square \mathrm{L}$ P E A G $\square \mathrm{I}$ GEEAC

T D L VT QMDRK\QDD LVA
A DFKT LADVLVQEVIKQTMENKFPGLGKRVFGEESNEFTN $E D L V T S L D K Q C Q G L M \square K S \square L K A Y P D D Y F L A E$

UniRef90 H2U1Z1 UniRef90-K2QE26 UniRef90-K6XFB5 UniRef90-UPIO0035C4987 UniRef90 HOHGX5 UniRef90-J2D8J8 UniRef90-L9PPP2 UniRef90 FORT18 UniRef90-UPI000463CB17 UniRef90_A0A031K6P9 UniRef90 U5DK72 UniRef90 UPIO002378A8F UniRef90_UPI00037EDDFE UniRef90_F2QCM0 UniRef90 UPI0002D6D894 UniRef90-F5XP66 UniRef90-Q0FQP4
UniRef90-K2B873
UniRef90 C6XJE7
UniRef90-D4GPT7
UniRef90_S9T2B5 UniRef90_UPI00036F1B11
UniRef90-TOITAO
UniRef90-LOKMU3
UniRef90-D3F4L7 UniRef90-UPI0002487B42 UniRef90-UPI00037C26CF UniRef90-A0QWZ2 UniRef90 U5W851 UniRef90 D9T2W9 UniRef90_C6ABS1 UniRef90-S6HYA5 UniRef90 W8H436 UniRef90-UPI0002DE2B75 UniRef90_UPI000379E093 UniRef90-UPI000362E5A8 UniRef90 T01213
UniRef90-G7GS31
UniRef90_B2G6P7 UniRef90-UPI000288F155
UniRef90-UPIO0047870C4 UniRef90_UPI000361EA4D UniRef90-K5B806 UniRef90 W6VVQ3 UniRef90-TOHNT6
UniRef90_UPI00047919AD UniRef90 R9SI17 UniRef90-A0A023XKQ0 UniRef90-A4X4Z2 UniRef90-A2BZSO UniRef90 F1Z6A7 UniRef90-UPI0003B64165 UniRef90-UPI00032ADAB6 UniRef90_UPI000411F9C1 UniRef90 UPI0002489C09
UniRef90-C7QG10
UniRef90-UPI000255ED70 UniRef90_D9SYD5 UniRef90_UPI00037B74BA UniRef90_UPI000255EA5C
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UniRef90 B0JZU3
UniRef90_K9SJN9
UniRef90-W7YNA3
UniRef90- B5IEA2
UniRef90-A9A336
UniRef90-K2GDN0
UniRef90-UPIOO044213C9
UniRef90 V6AUTO
UniRef90-A1SF51
UniRef90_UPIO00370C547
UniRef90_L7LRR9
UniRef90_UPI00036D25BD
UniRef90-UPIO003781830
UniRef90-UPI00036C1833 UniRef90 B9JFR1
UniRef90-H6RR87
UniRef90_UPI0003B478D8 UniRef90-W9VIR7
UniRef90-D5PJQ0
UniRef90_UPIO00376FBEC
UniRef90-UPI00035C9354 UniRef90 F7BWC0 UniRef90-K2A4A0 UniRef90-UPI00034B0388 UniRef90_T0ITZ7 UniRef90 H2Y5Z7 UniRef90_UPI0003B74E7E UniRef90-UPI000179683D UniRef90 A3CMF6 UniRef90-UPI0003598D85 UniRef90_UPI000366A2B5

ㄴㅁ
ATASEPSL
HERDRFVLEEKKANEFVSEADRQVELLIREHLSLSAPNDH

LIRDI 1 HHSFPDDN
HQTLTVDEKTSRKDLVTNVDKGNEQFLIGGURQLDPQAQU
WADGEDRAA $\square$ AAEFPEH
QDWVSEADRNVETF $\square R D K \square R D A W P E D$
MKED LQVERKSSPTDLVTRLDKEVQQLLVDRDKSSYPEDLC R P D D GL

VA D H PEV
$\square 1 \quad$ S E $\square K K$ WFPDHNI
RPDDAV
RFESSSRERFRDRPADEAAEAR $\square$ TDVIAAAFP P D
AAHELLMDLLGAYRPDDAV
$N Q F L C H A L R E V R P D E \underset{E}{G} \underset{A}{L}$

K DAGDRASHELDTAALARLRPADAVLSEEEA FGCTLDVWDKEGNSPVSEADFAVDHFLKEKLLGARPNYGW AERPG P A A D

HGWE $\square G K K G D R L S D D Y L L D Q L A \square E R P N D A V L S E E S A$ RPEDGL $\square$ AS VLARHRPADAV
N M Q
GFGDPRALKSAGDNGANDHLLGRLAAERPDDAVLSEEGK AVLSEEAT ERKAAGDKRSHDFLMSALAAERPDDAVLSEEGV

MEKAGHANFCTETDEK $\square$ QKF LIER $\square$ QKVLPEAAF
RSA $\square$ LSEEA
TECDRWSDKT $\backslash V Q G \square S Q \square A P G E$
DKSAAGDWVT DFDRASEEA TRATILTSRPSDEL $D \square G E K \square T V R \square C S T K E E T A E L L G N G N Q L A S E A L A K V V H Q D V$ QQGDFRRWEKEPGHPVCDVDLELDALLRERLAALDPEAGW

D WVT D Y D R R A E Q A VR E V IT A Y R P H | D A A |
| :--- | MG $\square E \operatorname{VKVETKSAATD\square VTNDKACQQFLVES\square QDRYPNDH}$

F LLRRLAEERPDDAV
GEKVVVQ $\square$ CQTEEETGKLLQT $\square L N N E A A A K A L A K A A H E D V$ QQQEQQ

NVKDEYGDVVTEVDFQCEAVILKADNEHFPEH A ENKI IQMVK E E D M

I IKKHNPNHE
$E \| V V V R \nabla C P T Q Q E T A A L L Q K V L D R K Q T A A E L L A A A V H Q E V$
AAHDLLMALLAEHRPGDAV

$D \underset{E}{D} \sqrt{E}$
GGPADPAATPVDA
QELIEDGQW
VKSYPS

P TS DPPSANQE
F $\square Q D K E \square E A K G E Y G D \square V T E \square D R Q A E E W \square V S G 1 K K R F P S H R$
EVILWDRK LIPED I


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| :---: | :---: | :---: |
| UniRef90－H2UR1 | GEVRIIGN |  |
| UniRef90－K6XFB | － | DGTKNFVHGRPHAVMVA |
| UniRef90－UP100035C4987 | VVVD | dgtanfvagmpfavmat |
| UniRet90－HOHG | S | dGTANFLRGTPWGV |
| UniRef90－J2D8． | AADPSLDRAGDGLNWI ID P | dGTGNFASGKPPFIMI A |
| UniRef90＿L9PPP22 | EAEDAETAAMAERGEYWI CDA | D |
| UniRef90－FORT18 | FLGGEEEGLIEEYGNGG TWI V | DGTNNLVHGD |
| UniRef90－UPIO00463CB17 | EGFGDQLTSMAGRVWI VD | DGTMNFVKQRDNFMMI G |
| UniRef90－A0A03 | A D S SMERLLKDRLLCWIVD | dGTNNFAAGKPPFVLVA |
| UniR | GVIJTEETEHLITSGTEWCWV | 硡 |
|  | GEEHGASKGTSGFD | DGT TNFVNGIPWTIVLA |
| UniRef90 UPIO0037 ${ }^{\text {UniRefole }}$ | AV | DGTKNYVR |
| UniRee90－F2QCMM |  |  |
| － | EEKDNSERLSDSERVWL | DGTREYGERADWAV |
| UniRef90－Q0FQP4 | K VADAELAFT | DGTWNYAHGTTFGV |
| UniRef90－K2B873 | KNPEKGKTWI |  |
| UniRet90－C6 | LSEESKDDKSRLEKSRVWI | DGTREYGEGRDWAVHVA |
| UniF | RPKPRW | 兂 |
| UniR | GASS DWQWL | DGTNNFADGMPFSCSIT |
| UniRef90－UPI0003 | RLDAERVW1 | DGTREFPPREDWAV |
| UniRef90－TOITAO | LSEEEKDNAARLDKSRVWI | 兂 |
| UniRet90 LOKMU3 | CSEDPALLDGLIDAELA | D ${ }^{\text {a }}$ |
| niRet90－D3F4L7 |  | D ${ }^{\text {a }}$ |
| UniRet90＿UP100024 |  |  |
|  | K N |  |
| UniRef90－A0Q | GSGPLDQ |  |
| UniRef90 U5W8： |  |  |
| UniRet90＿D9T2W9 | － |  |
| UniRet90＿C6AB |  | FLSGS |
| UniRet90－S6HYA5 | ESGTDAATNDNWVI | DGSKEYPGHSDWAVHVA |
| UniRef90－UPIOOO2D | SAASAECVWV | DGTRSF |
| UniRef9－UP10003796 | GAARAPAGVPV WV | dGt VNFMYGGAYA |
| UniRer90－UP1000 |  |  |
| UniRef90－101213 |  |  |
| UniRef90＿G7GS31 | ERVW1 | D G |
| UniRet | GNEGEWLWLVD | d G |
| UniRef90－UPIO004 | VRLGADRVWI | dgtreyatrodwav |
| UniRef90 UPIO00361EA4D | NSARLTSDRVWIV | DGTREFSDRDDWAV |
| UniRe990＿K5B |  |  |
| UniRe990－W6VVQ3 | A ${ }^{\text {a }}$ |  |
| UniRet90＿－YOHNT6 | W1 |  |
| UniRef90＿UP1000479 | SGYCFV |  |
|  | Y |  |
| UniRef90－A0A023X |  | D |
| UniRef90－A4×422 |  |  |
| A2BZ30 |  |  |
|  | GEEFGIISTGTSGREWV | D G |
| 000 |  |  |
| UPI00032 |  |  |
|  | PTLIDRLMEAPRAVV | DGT F |
| UniRet90－UP10002 | RLLGVRTWV | DGTRDFLRGRPWSVSI A |
|  | ALPAGEWWV |  |
| 25 | EYG ${ }^{\text {a }}$ |  |
|  |  |  |
| 003 | EEDNLKTNSRGAVWV |  |
| Uni | DHARLSAERVWI | DGTREFVPRDDWAV |
| UniRef90－K6 |  | D |
| UniRef90－K9 | ANSSRCWFI | dgtndFVRGRHYA |
| UniRef90－W7YNA3 | NKESDWLWMI | D |
| UniRe | AGFDDRGYDRTI |  |
|  |  |  |
|  | PNAED I WV |  |
| UniRef90 UPI00044213C9 | US TESLAVW | ， |
| Unit |  | ${ }_{\text {A }} \mathrm{F}^{\text {V }}$ |
| UniRef90－UPI000370C547 | GEGQDTVWH |  |
| UniRet90－L7 |  |  |
| UniRef90－UPIO0036D25BD | AFLGEEGDDVEGSSGVRWIVD | DGTVNFLYGVPRYVSIA |
| UniRe | D |  |
|  |  |  |
|  | P |  |
| UniRet90＿H6RR87 |  | DGTVNYLYDVPYAVSVA |
| UniRef90＿UPR10003B |  | A |
| UniRef90＿W9VIR7 | mepetarrilads |  |
| UniRef90＿D5PJQ0 | Ewv |  |
| UniRef90＿UPIO00376FBE | ESLDDRARCAAERVWI |  |
|  | V w | DGTKEFATGRQDWVHI A |
| UniRef90－F7E | KQPCPSQYSATIKEEDLLVVWV | G |
|  | HYSEEUGKMKS |  |
| P100034B0388 |  |  |
| UniRef90－10iz7 |  |  |
| iRef90－H2Y5Z7 | DVTVW | ) A |
| UniRef90－UPIO003B7 | NDPDWFWM |  |
|  | V WI |  |
| ef90－A3C | WV | A |
| iRef90＿UP10003598D85 | dild | TYQYIKGQCVT LIG |
| NiRef90 UPI000366A2B5 | FP\｜SE GNVW |  |



UniRef90-K2QE26 UniRef90-K6XFB5 UniRef90_UPI00035C4987 UniRef90_HOHGX5 UniRef90-J2D8J8 UniRef90_L9PPP? UniRef90 FORT18 UniRef90_UPI000463CB17 UniRef90-A0A031K6P9 UniRef90-U5DK72 UniRef90 UPI0002378A8F UniRef90-UPI00037EDDFE UniRef90-F2QCM0 UniRef90-UPI0002D6D894 UniRef90-F5XP66 UniRef90-Q0FQP4 UniRef90-K2B873 UniRef90-C6XJE7 UniRef90-D4GPT7 UniRef90-S9T2B5 UniRef90-UPI00036F1B11 UniRef90 TOITA0 UniRef90-LOKMU3 UniRef90-D3F4L7 UniRef90 UPI0002487B42 UniRef90-UPI00037C26CF UniRef90-A0QWZ2 UniRef90_U5W851 UniRef90-D9T2W9 UniRef90-C6ABS1 UniRef90-S6HYA5 UniRef90-W8H436 UniRef90-UPI0002DE2B75 UniRef90_UPIO00379E093 UniRef90-UPI000362E5A8 UniRef90 T01213 UniRef90-G7GS31 UniRef90-B2G6P7 UniRef90 UPI000288F155 UniRef90_UPIO0047870C4 UniRef90_UPI000361EA4D UniRef90-K5B806 UniRef90 W6VVQ3 UniRef90-TOHNT6 UniRef90-UPIO0047919AD UniRef90-R9SI17 UniRef90-A0A023XKQ0 UniRef90_A4X4Z2 UniRef90-A2BZSO UniRef90 F1Z6A7 UniRef90-UPI0003B64165 UniRef90_UPI00032ADAB6 UniRef90-UPI000411F9C1 UniRef90 UPI0002489C09 UniRef90-C7QG10 UniRef90_UPIO00255ED70 UniRef90 D9SYD5 UniRef90_UPI00037B74BA UniRef90_UPI000255EA5C UniRef90-K6WZ57 UniRef90_B0JZU3 UniRef90-K9SJN9 UniRef90-W7YNA3 UniRef90 B5IEA2 UniRef90_A9A336 UniRef90_K2GDN0 UniRef90_UPI00044213C9 UniRef90_V6AUT0 UniRef90-A1SF51 UniRef90_UPI000370C547 UniRef90 L7LRR9 UniRef90 UPI00036D25BD UniRef90_UPI0003781830 UniRef90-UPI00036C1833 UniRef90 B9JFR1 UniRef90-H6RR87 UniRef90_UPI0003B478D8 UniRef90- W9VIR7 UniRef90-D5PJQ0 UniRef90_UPI000376FBEC UniRef90_UPI00035C9354 UniRef90-F7BWC0 UniRef90-K2A4A0 UniRef90_UPIO0034B0388 UniRef90_TOITZ7

LIRSS GEPVVMGVIJNQPF
180
190
NYKDPASGSW

IVVRRGKALAGVI YDPMSDD
FI ENGRSTVGAI AYPSLGTTLSAAA
LADNGATLAGW LDPLTGRLCHATLGGGSHV
LMREGVPAFTAI FDAVHDEMFHAS
YEQDSHPVIGVVFSPQSNELFYAAQ
TY Q D GVGQLGFIYDVMNDVVYAGGPVV
$L A E K G E T D G G W I D D C D T G R F C R T D$
$L L Y C G T P V F G L V H F P P L Q Q T F H G \square W \square G D S G L D G Q$
GVSNAQTQIGVIHDPNVDESYVAV
LMAPGQPVVGVVSAPALGRRWWAVQ
YFEDGVGKFGVI YDVMKGDCY
LADEGVAS IGAVALPGMDVVLRSDQP
LCRRGEPVVAVVHDSARGRSYAADV
ALRFGTPVFGLIYDPVMDDVVLGETG LANNGKLI ASCVID
LS ID GKP SIGAVALPGMDLVLRSDQPPALKMPMKQEYVWST

YEGATQRPDVGVVVYEPMTDRLGFHAAV
LWSQGDLI AGAVAQPALA
MAVDGAPTLGAVALPGLD
$V \vee V R G E T V A G I I H D P V G K D W L I A A$
AEDAQGTLVGVVWDPLREEEFAATRSGAATC
VNYKNSPI F GLVVNFPMLKKYYLTGVNRASYLVENNKFKKL
V RRDGTWLAGAVCAPALGSTWSAA
LRDGGDVAVAASADPFANEDFWTD
LWQRSAAPDGAJVAGAVGMPARTTVDGTPLV

$G M L \square A Y V Q A G V P A V G V I S M P \square L N E \square Y S G G$
LWERGRDTAAAVAQPALGAVYASDDDSH
LTVDTVPVLGVVD TP TQERWVGAKG
$V Q \perp D G V S V A G A V A N A A T G E V F S A A$
LWESGSLSACAVSQPD $\square C E V V Y T A D A V L G P R T D G P$
$M A V D G A P V L G A V A L P G A G V V L R S D Q P G E V$
LTEGGKDTHAAVSLPAKGRVFRSDTVETTTGPL
LYVDGQPTLGYILDVINNRLYHG
$L I H N Q Q P V L G V I V E S H L N R L Y H G A E K G K G V T C D G E P \square Q \square P E$
LWQRGGLTAAAVALPAQGVTLRTDE
LWESGELVAGAVALCPAQNTTLHTPEVAAPDAVDG
LWQRGELVVAGAVALIPAQGVTLAAP TVAAP
VVWKGETVA GII YDPMGDD
$\square T$ WVMMAE

| $L A E Q G V P D G G W I L D P$ |
| :--- |
| $L$ |
| $L K$ |

$L\llcorner K D G K P Y M A V V Y N P Y D D M M F S A T K$
$I A T V P E G R L A$
$V$ I ATVPE GRLA
$Y H D G G E A L V G L E S P L S G T V E D V V I G T T K N F A N G D \square C Q A V$
$A$ $E V D G V V V T G V V R N V V T G E E W T A T$ RFTNGEPETAF LDDPALRKRIFAAK ALVVDGFPVLGVDQPILKERWVGVIG
LEEDGTWVAA AIVAPALQVEYFAGKS L
 $V I E R G E V K G G I I Y D P V R G D A A C A D A G G G A F L$ LVEGGRPLIGVLDAPA
LVRDNEPVLTAVHLPLTTGQTYTATA
$V$ EGPGEWLAGAVVAPADGRSWYAAAGQGAFSTVDDAVTGT LLTD GVPVASWVYDPLDGTMAAG YLED GVGQF GLI YDVMADKDYSGGKGFPVTCNGGALPLVS LWQSGELVAGAVALPARGVTYSTGE
LWS S D GLI A GAAVALPALGVTYVDDDTVVEPT
LTDTGGP MGVI NQPFATRDKVTDRWKSHVYWGLSYMD $\square N$ LMEHGLPVMGWVYAPESDRDFFGGKAD
$\mathrm{L} \square \mathrm{Y} Q \mathrm{KV} \mathrm{P} V \mathrm{~L} G \mathrm{~V} V Y E P M T D R \mathrm{~L}$ FTS
$i G K \quad K N L Q D V E Y G Q V K N V P L N V D Y W A D$
HMKNNVVQFAVAYDPSADELFTA
$D G I V P S G L H S A L V L D G V Y S G E P V L G I I N E P F F R E E D H$ AFAT

EDKLSSVTAGVVTDLSTGDMYWAA
$A E G E T F H T$
L. WAA GDLVAGAVAQPALGETAHAT
$C R V K G R P E H A V I D C P F S D D E Y L D A T$
$C R V K G R P E H A V I D C P F S D D E Y D A T$
$A L L V D G V P S V G V S A P A D N R A W W A A A G G G A F A$
AEREG
PDGERSVVAGVVIDVPRRDEFTGYR
VERGVPVWATLIALLVNAVPVVGVVSAPALSRRWWAS
LVEDGAPI A GVVRNPCEDVSFASVRGAGAT
$V V S K G E T V A G V I F D P M G D D W V L A E K$
$A E V D G V V T A G V V L D V A T G G L F S A T A G A V G M P A R G L I L H T G$

$V Q V D G V S V A G A V A D V V G G R V Y S A A T$
$L A V A G R P A V G A V A V P A T G R V Y T T A E A \quad C S R Q$


 VAVDGKPVIGIIHKPFEHKTYWS
CFYRDEPVLGVI YDSHLERLYVAVK
VAVNGKPVLGVI HKPFSKYTAWAMVDGGSN
YFEKGVGRFGLI YDVTRDQLY


UniRef90 H2U1Z1 UniRef90-K2QE26 UniRef90-K6XFB5
UniRef90 $\cup P 100035 C 4987$ UniRef90-HOHGX5 UniRef90-J2D8.J8
UniRef90-L9PPP2
UniRef90 ${ }^{-}$FORT18
UniRef90_UPI000463CB17
UniRef90-A0A031K6P9 UniRef90-U5DK72 UniRef90 UPIO002378A8F UniRef90-UPIO0037EDDFE UniRef90_-F2QCM0 UniRef90-UPI0002D6D894 UniRef90-F5XP66 UniRef90-Q0FQP4
UniRef90_K2B873
UniRef90 C6XJE7
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UniRef90'UPI00036F1B11
UniRef90 ToITAO
UniRef90-LOKMU3
UniRef90-D3F4L7
UniRef90_UPIO002487B42 UniRef90-UPI00037C26CF UniRef90-A0QWZ2
UniRef90-U5W851
UniRef90-D9T2W9
UniRef90-C6ABS 1
UniRef90-S6HYA5
UniRef90-W8H436
UniRef90-UP10002DE2B75 UniRef90-UPIO00379E093 UniRef90_UPIIO00362E5A8 UniRef90-T01213 UniRef90-G7GS31
UniRef90-B2G6P7
UniRef90-UPI000288F155 UniRef90_UPIOOO47870C4 UniRef90-UPIO00361EA4D UniRef90-K5B806
UniRef90-W6VVQ3
UniRef90-TOHNT6
UniRef90-UPI00047919AD UniRef90_R9SI17 UniRef90-A0A023XKQ0 UniRef90-A4X4Z2 UniRef90-A2BZSO UniRef90 F1Z6A7 UniRef90-UPIO003B64165 UniRef90-UPIO0032ADAB6 UniRef90-UPI000411F9C1 UniRef90_UP10002489C09 UniRef90_C7QG10
UniRef90-UPI000255ED70
UniRef90-D9SYD5
UniRef90-UP100037B74BA UniRef90-UP1000255EA5C UniRef90-K6WZ57 UniRef90 BOJZU3 UniRef90-K9SJN9 UniRef90-W7YNA3
UniRef90-B5IEA2 UniRet90_A9A336 UniRef90-K2GDN0 UniRef90_UPIO0044213C9 UniRef90_V6AUT0 UniRef90-A1SF51 UniRef90_UPIO00370C547 UniRef90-L7LRR9 UniRef90_UPIO0036D25BD UniRef90_UPIO003781830 UniRef90-UPIO0036C1833 UniRet90_B9JFR1 UniRef90-H6RR87 UniRef90-UPIO003B478D8 UniRef90-W9VIR7 UniRef90_D5PJQ0 UniRef90-UPIO00376FBEC UniRef90_UPIO0035C9354 UniRef90-F7BWC0 UniRef90-K2A4A0 UniRef90_UPIO0034B0388 UniRef90_TOITZ7

210
220
230
240
SGRHFWGVISCGGVINTSSESRPKDVPDRGPSVVLS SSE
 $R G A G V W R N$
$Q G G G A F L V R A D G T E G R L T R P E A Q V D P E T L R V V T S R P S Q E ~$ GHGVFKDRQPFDRKVHFPSVRV DGERDMAKESEGDDPDAAIST DFMEAE
WGKGAFRNGERTRVNGRSAHYQGMFATCQPPFAGRDPRAV GCGAFLNSKAIHISSV AS DADAVSTAPPPLRVPSLI GGGVWANDQPLPAPANLALADGLIGMSAPLVIHDVAHTQ RGGGAFLNNAPVTSPDEPSSNHLVALEEGTVAVGYSNRI GGGAYTGRSDAKASPD RVSGVQRIEDASFAYSSLHGW HGGGAFPPCRNNDPLPTFKKKPLQEFL VAGNGMF GHGATLN GTPVRMLAPEPLDRVTVSWLQGYAVGADD GNHEPAELVMPKRRKRRTLSVSAGGPVENLQGYMPLYMLTP NPPKMLVSRSRPGKEAT

GEGAFVN
GNGAYCND
FHTGAAPQVP RTSDR R $\square R \square A V S_{\text {R }}$ RPPA
RGAGSHDRAGTILRDQTVAVPPAPQKLRMVVSRTRPA
RGAGSHDRHAHGSLEKVRVAAPVPDSQMTGAVSWQYMD
DGMGAWRTFAAGAADARPMHVSGVADIADASISLSSLEGW KVSKSKSDNSSKDAGGFFGWLSDDEQKKDSKLTHLMLYPC GD G A Y V R T G S G D E RLL E PSAASRLLVDF N L D P P F P NAP G $\square G T T C P Q P K A S D G P \square R D A V S R S R P P A$ VGGGATGNGDKLPRDASGGHRKYKVSQDKSGAQKDPDDF

AVHTEQDPARPR\|VVSASRPPAFVDAV
RGHGAVVT


PPAPEKLRMVVSRTRPAREATSV
SGRLATSRYASYEVSWVSRELKLINP
$K G A G V Y A N N Q K \square S Q P A D L G$
SSKTALRKM
RHPVAGPRPDRPRTAVSRTRPPAEA
PPRIVVSRTRPPAVAL
GGSDGPPRVVVSRTRPPALALDV
RGAGAF $\square R$ RPDG
TGEGA
GQGAYMN
KGHGAFLN
VGDGAW GKGA

$\qquad$ | $\mathrm{L} \mid \mathrm{A} T$ |
| :--- |
| R D |

PPKKPESRF
GA WKHDLRTGKNGRVRTRACSALAEASTATTGPHYF SYMGTNDHSLQPGNSRGTQEDSSSSEVGTSRPFSADISTS AGAGATRNGLADKVSDRNSFPGARVPADVLPKVDSDLVVV GGGAH
 LGGAGARLDGASLGAPQAEPRVGALRGTAATKFDPPDFRRR G G

QHRDDDARPAGDPPLRAVSRS
EGLASRPRTGVPRVVVSSSRPPA
$\square C S L N F S T S A G T N D E T N Y C T S D N G S A A R N S Y S A V T S S A E A$ GGVYVQDGDAEP TK KDLRTPEAQFCKIILSHKDKRRY DGEGSYCND KGEGAYKNGKK $\square K V D G K N$ NGEMYWASKDKGSYFNQEQMKVHNKDP TYKIVGINTSGAS KGKGAFDNGKPDEVSK YNSCRWQSKYHWGISYGGTNLSSLSPPQQRPSPRGVLSSN RGRGAYCN SKRDHVHKEKPVYK $\|$ VGNVSGAK

GAPPVVPPSSAARPRIVSRSRPPA
RGGGAQHNDKRMRVSKATALGGTRTALSDP PTWDRQRHL SDDGGEPRPDSVSKVDDLGSASGAFSSGSGW DADGA VSRRDGKPDGVAEPAPGKRLDATGFGYAAALRR AGAGAFTRF GSEDPRRVVSDVTQLDSASRAFSSLSGW RATAAGSETLRVADEDGLAGVRISGPSSFVG GGGAWDRRPNG EAQRLSVAKPVALEEMVGMASTGYLP GGGAELASPGRPVRRTVNRPGALDRTLVATGFGYRVEQR PGHPEAPVESWDGSRPLRLAVSRTRPP

GAFLDGKPI RSASRSGTLGDCLDADDVKRL GLGAHVIDERGVSPLRCAEVDDLSMALLGTGFGYSRQRR GVCGAPPRMVVSRTRATDMVERVGVALDVATYVCEK $\square G \square G A F G F Q \square K E V P A G K H$ GSFFNGERLVKGKKDSVSNVSNLKDSFVYCYSYYRH LGDGSFI DGERVQA

## UniRef90 H2U1Z1

 UniRef90－K2QE26 UniRef90－KKXFB5 UniRef90－UPIOO035C4987 UniRef90 HOHGX5 UniRef90－J2D8J8 UniRef90＿L9PPP2 UniRef90 ${ }^{-}$FORT18 UniRef90＿UPI000463CB17 UniRef90－A0A031K6P9 UniRef90－U5DK72 UniRef90 UPI0002378A8F UniRef90－UP100037EDDFE UniRef90－F2QCMO UniRef90－UPI0002D6D894 UniRef90－F5XP66 UniRef90－Q0FQP4 UniRef90－K2B873UniRef90 C6XJE7 UniRef90－D4GPT7 UniRef90＿－S9T2B5 UniRef90－UPI00036F1B11 UniRef90 TOITAO UniRef90－LOKMU3 UniRef90－D3F4L7
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UniRef90-U5W851
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UniRef90-C6ABS1
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UniRef90-UPIO002DE2B75
UniRef90_UPIOOO379E093
UniRef90-UPI000362E5A8
UniRef90-T01213
UniRef90-G7GS31
UniRef90-B2G6P7
UniRef90-UPIO00288F155
UniRef90-UPIIOOO47870C4
UniRef90-UPIO00361EA4D
UniRet90-K5B806
UniRef90-W6VVQ3
UniRef90-TOHNT6
UniRef90_UPIO0047919AD
UniRef90_R9SI17
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UniRef90-A2BZSO
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UniRe90_UPlooo
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 ARQADVLVGLLPKVSDIRRGGSAADDLAWTAAGRTDAY
$K V V G R R E L I A L T D A W R L R G F D F W S Y C M V A E G A V V A A$ S VGRRDEALSACSLSEGKDVVLQ RQLRDLGALVCEYTDMRRFGAAAVDLCLVAQGSLDAFV FRAVDLLGDPRFVERFRPRVVATTLAVAWVAAGRRAAYVT NRVSLYHYLPSL LSEHPQKLSRLMTTGKVRRFGYDCYPHALLAAGHIDAVID ATEDGAEVTTMGSAGAKAMAVLRGDVDAYI H DGDAAQPFRNVAEASRFTDYDAGTQAYGLVASGHADDMIA RQQAGAVAELLAEVRDRRRVGSCALDLCMVAAGRLDAYF RPPAVVVRLRDELGAELIPMGSAGAKAMAVLRGDADAYVH AEEIGAELVPMGSAGAKAMAVLRGEADTYLH SGDSALKKDAQD ADGLRMYGSAGDEMDGVITGQLGGYIS ERKAMALK WRLDEQCRRVFRLWASLQWCMLARGDLDGVVL
 GGERERILGNLAKVRFFANYRCSAHEYRTFAGG
$\qquad$ SRRARLLSSLAENAEVVDSPRCAADQYPRTATGGHDVT DRTFDIAKKI LPLCDDRRSGTAAWDLCCVALGRVNLYF V S
 QSFPGKURL SDHDGEHFMALAAQTDHKRMVMGGDCYNYAMLASG QFQARVLEGMLEDYVNVRRITGSAALDLCLVAEGALDAYA EKEASKAALA HVCGNSDFRAAGAGYKSLCVVQGLVDVYDF EKPNSIAL EDEQVVRRVMLRAALVVRTSVPATLHLVDVAAGRVDAFWQ DFQLRALAALLTHFGDVRRIGSAALDLCMVADGTLDAYA VEEGGRRIGELLPGQHC AGREYLDVLTGE
AQNAYHLADLFNRSLGVRNYGCAGLSMARVLAGQDWGYAS RPPAFAEALGRTMGATTVPMGSAGVKAMSVLDGSSDAYVH
KD LNSLSRVCGKNVYFAAGAGYKCLCVILGLVDFYVF
K D GNAVLQADPTAEFYNLGSFGL QNDVKAVQLRNHIDTHCKRMMRLWAQWCMLARGDLDGIVL KKAHKQSFELAQKDRRTRALGSAALEMCMVAEGLADMFIY TELMKKLHPLFENHNHTRHFGANALEMALFARGLMDIFI D ETVALLEALACLYGERLCFASGAGYKMLCVACLGLADAYVL PSLIKRIVQPLFENSNHARHLGANALEELALFSRGLIDDIYVID PAYMTLTQQLGPTVEAMVATGSGLLDUCEVAAGRVDSAFV ADRGDRDRFLALTDSVWRVRGYDFFNYCLVAEGAVDDAA LAAQCLVRLLPQVRDVRRAGSCALDVCDVAQGIFDGYL P LKQQGVESGKWHYALANRLVQVAGGGLDAALA PGKRAEILGNLAKVRFITNYRCAAHEYRTFAGG $\stackrel{H}{\mathrm{H}}$ RAQGAVVARLLPQVRDIRRFGSAALDLCAVAAGRVDAYYE
 AA QAELLARLLPVVRDVRRIGSAALDCMVAAGRLDAF ATTRVGMGSAGVKAMAVVDGRADDY古H
PGGYDKAWKKLGRLGKKVYRLRSLADENTATCWLAKGGCE VINDETDHDLQEASFGYRCDGSCGLDSDRVIKGQ
EERAEVQRRAQTSFTLVDTPRCAAEQYPRLVLGQNDVSTF KGDVEQVAKKAFGNAEVVGAGGAGYKSLALFDGTASVYVH SGMVKQVALQTFGNQTTIIPAGGAGYKVLALLDKADLYUH G LADLARECDGVRVYGSAGISFSKVLSGGLLAYFS



UniRef90 H2U1Z1 UniRef90-K2QE26 UniRef90-K6XFB5 UniRef90-UPI00035C4987 UniRef90 HOHGX5 UniRef90-J2D8J8 UniRef90_L9PPP? UniRef90 FORT18 UniRef90 UPI000463CB17 UniRef90_A0A031K6P9 UniRef90_U5DK72 UniRef90 UPI0002378A8F UniRef90-UPI00037EDDFE UniRef90-F2QCM0 UniRef90 UPI0002D6D894 UniRef90-F5XP66 UniRef90-Q0FQP4 UniRef90-K2B873 UniRef90 C6XJE7 UniRef90-D4GPT7 UniRef90_S9T2B5 UniRef90_UPI00036F1B11 UniRef90 UniRef90-LOKMU3 UniRef90_D3F4L7 UniRef90 UPI0002487B42 UniRef90-UPI00037C26CF UniRef90-A0QWZ2 UniRef90_U5W851 UniRef90 D9T2W9 UniRef90_C6ABS1 UniRef90-S6HYA5 UniRef90 W8H436 UniRef90-UPI0002DE2B75 UniRef90_UPI000379E093 UniRef90 UPI000362E5A8 UniRef90 T0l213 UniRef90-G7GS31 UniRef90-B2G6P7 UniRef90 UPI000288F155 UniRef90-UPI00047870C4 UniRef90_UPI000361EA4D UniRef90_K5B806 UniRef90 W6VVQ3 UniRef90-TOHNT6 UniRef90-UPI00047919AD UniRef90 R9SI17 UniRef90-A0A023XKQ0 UniRef90-A4X4Z2 UniRef90 A2BZS UniRef90 F1Z6A7 UniRef90-UPI0003B64165 UniRef90_UPI00032ADAB6 UniRef90_UPI000411F9C1 UniRef90 UPIO002489C09 UniRef90-C7QG10 UniRef90-UPI000255ED70 UniRef90 D9SYD5 UniRef90-UPI00037B74BA UniRef90-UPIO00255EA5C UniRef90_K6WZ57
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$\quad N M L S S S N L V L V A$
$E$

 ESHPYLPDLLI C RPELARPLLAAI A $S G D R F \quad V A V G D A A L L P E T L Q L L$
QPYPYLPDLVIC


RPEFAEQTLAVTR RKEHAEMVLGKVKALV RSELREDMLASLAEI

## PEHRQQWLELVQQVMREE

 RPDLAEPLLEAIAEA RPELAERVLA RPELAESVLAIDER EGLIAATTDEAW
G K
NK LT TYYEKVVIVCAGNEELHSK\IKTIINN DLQKIATNG HUHDELLTLLQE
SGTDLVNFPLLTASSEDQLNNML
S G GHVIALGDPARLDDVVEALA
RPDLRSGGLLMAPDQASWNELATAL
STK KLASTPG HAAA K ARLADR
KPWTPASEGFLAAA PGlHDAAAAAL
PAD EGRGLLVAASP E $\square$ WDEVSAA $\square$
SRQSV
RENPWSPDLVVC RPEVAEELLAALAT $\square$
NEDTYLPDLVIC
S EHLNPGS LVH
EMMEEPYLI ACH PAHQEYFMKLVEEGLS

D R
 ALKPEGVLMAAGPRLYKALVVQL
GGSAVATNGLL
GGSAVASNGRL
RETTRHGGLI AAAPKRSLQ
H H LD G GLLVAVDKPS W
RENPWLPD $\square A \square C A$
QGIGGAPQHAI GAADTRLMQSWL
PRDVEGAGLVLAAAPG!ADELLAALDE!
CENPLLPDLLI C $\quad$ RPELAD QVLAA VAAL
NADTYIPDLLICC RPELADEIL


GSDG $\square E \quad G G L L A S \square S M N \quad H Q A L V R K \square P D L$
TRQPVM
N R Q K V M

VDFKTGADVLVQEVIKENMENKFPGLGFGEESNEFTNDGG KTFVIAHDQDSDEHLAQA LL DAKFDFAKLLVYKAGRGAWRM

GS P VT S A D $\square$ A A D R $\square$ I A E G $\square \mathrm{K} R \square \mathrm{APDV}$
VDFKTLADVLVQEVIKRHMESKFPGDKDFGEESNEFTNMI
lupas_21
lupas_14
lupas_14
lupas_28
lupa
jnet
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sol25
sol5
solo
sol
jhmm
UniRef90_UPI000382C8AA UniRef90-P21327
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WTHR ${ }^{90}$
100
120 EK I I MR LGAPTEEETVALLSKVLNGNKLASEAL AKVVHQDV REQGVSTDFKTSLSDVVTAADRAAEQFVTGVISALVPED $M Q N T F D V E E K S R F D D L V T S$ LDCKTQKLLIQEIDQHYPDDN $P \frac{\square R P S ~ D}{A} \square$

lupas_21
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UniRef90_UPI000382C8AA UniRef90-P21327 UniRef90-D8KLA3 UniRef90-Q3DIV2 UniRef90-W5TPE1 UniRef90-UPI00034979CC UniRef90-Q2IT45 UniRef90-I0RID2 UniRef90-G1PFS8 UniRef90_UPIO004756A30
130 140 150
160
 GIVGEEGTHKPGTS GRTWVI DPVDGTYNFVSGSDYWCSGLA ILAEEDDVRSPDAQGNVWVLDPIDGTVNFIVQKDNFVMLA

 DS EEGDDDALRLGAERVWIVDPLDGTREFPGREDWAVHVA


UniRef90_UPI000382C8AA UniRef90-P21327 UniRef90-D8KLA3 UniRef90-Q3DIV2 UniRef90-W5TPE1 UniRef90-UPI00034979CC UniRef90_Q2IT45 UniRef90_I0RID2 UniRef90_G1PFS8 UniRef90_UPIO004756A30

 VYQTGVPLMGVINQP $L V H P D K V C F G A V H_{H} R P A M G Y T W F G G K D I P T$ YYEEGVGQFGQI YDVMADVLYS LAVDGRAEVGAVALPVPGLVLET
$L W E N G D L V A G A V A L P A Q G S T V S T V D P P W L P D E R P G D Q R$ $L V T D G K P L$ L WESGELVAGAVADPAQGRTDATPHVAASPAHRG



210
220
230
240
SYLGGTNIG S LLPPVSTRSNSETQNPSSEGSCRFSVVISTS GGGHFDVYANDGKALPALENKSTELISMATYLNPPFDAE GTPPVLPPAHDGPPR IVVSRSRPPA
HGAERLAVDADGTGYDTTPDHTRPMPADGAPWVVAGASRS DPPRVVVSRTRPPADA LQV

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lupas 21
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$T R Q K V M$
$R P D P Y L P D L L I C$$\quad R P E W A D R V L K A L R D$
 EPRPFIVPEFI AWGDARA QPDPLLPDLLVC RPEHAEAVLAV K $\square \mathrm{DLGSKTSLIVSN} \mathrm{\quad KHLHKKLIAL}$

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lupas 21
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[^0]:    so

[^1]:    

[^2]:    

