## QUERY

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MQNDTYSWFVQGMDKAT TDAWLKGWDERNGGNLTLRLD DA $M Q S L L T S W F V Q G M V K A T G D M W L K G W D E R N G G N I S L L R L T E D$ $M$ Q S $L$ $M K I L D A K F V Q D F I K M A N D G F L Q G W H E R N G G N L S Y R L K P E$


 MKMND $\quad$ KK F I KNF QKMTNDAWLKGWHERNGGNI TYRLLTK $M K V L D A E F V Q G Y D R M A N D G W E Q G W H E R N G G N L T Y R M K P E$


 MDILKA

MASFSES
 RLY QH GWD K DIVAAPFVQFMMKVT DGWKQGWH A A P FVQEMMKVTANLYRLGWDERNGGNISYLLTPE $K$ FIN SPYAD EMRKM T L G G L Y T H G W D E R N G G N V V Y Y R L T K E MKVENAKFVKDY DKITYDAWLK GWHERNGGNLSYRI GED MTKFVNSKFVKKMCE\|THESYVHGWDERNGGNVSLRIDST MKCLE T P WMQ GM MRMC GD GF RQGWHERNG GNLS YR I P Q T
 $M K M T D L P F V Q G F A R L C D D G W H E G W H E R N G G N L T Y R C L T D E$ FQNSNIVAE FA DI THVVMWSMGWDEKNGGNI SALI T E D MTSFEQSKIVVDLINTTYDMWKKGWDESNGGNISIILNED $M T Y P D Y I N E E L E V T Y D M W Q H G W D E Y N G G N V S Y R L T T K E$ MKS ILDAREVSQVAEVAGYLWQKGWAERNGGNMTINIT MNYPNYI SELLEVVTYDMWKKGWDEYNGGNVSYRLKKE MTYPKYFDELVQTTYDMWAKGWDEYNGGNISYLLTKE MKS I L ENRAVNQVAEVAGY LDWQKGWA E MQNI T Q S WFVQGMIKATTDAWLKGWDERNGGNLTLRLDDA MELSYMELREQI CDVCHKMWQLGWVAANDGNVSVKLPD
 MAYEKI K D E I C DVVCHKMWQLG WVA AND GNVVVMLD MNFLYADFVNGFIRLANDGWEHNWNERHGGNLSYRVKAG $M$ T DLDELKQ QMVDL GRSFFER GYTVVGGA GNLSVRRLDDN $M N E E Q I R Q Q V V E L A R S M F E R G Y A T G G S G N L S V K L P$ MSEAKLRETI CLLAKSMYDRGLTAGSSGNISAR

M Y EKI K E QMVDI CHKDWQK GWVA A ND GNVTVKV MS E WK L R E EMCEVVGRRVVAKGFAAAND GNI S FRRLSED
 QQID T CLRMNSLGI NQ GTS GNVSV
 $M T N T V E Q R A R E M V R L G A S F Q R G Y A G S A G N L L L D D$ V N E Y E L K K Q i C D D G K R I Y N R N MV A A N D G N I S V K
 MFHQKTAAEIVVAVGRQLVSKGLVSGTWGNI SARIP



 MKESE LRRELI CTLLAKSMFDRGLTSGSS GNI SART
MLLGDERARVCEYARRMVTDGLVVGTSGNVSLR
$M Q Q A I E A A K G K I I E L G K K M L Q A G L V A G T W G N I S A L V R E A$ $M N R N E A R E A V V R T G R L L E E R G L T V G T G G N L S V R V E G E$ MSQDEKLIREQI CDVCHKMWQLGWVAANDGNVSVRLD $M S G I D E Q A L R E E I$ CDVGRSLYQRGYTVGSAGNI SARLD
 M D M

E K E R QLL I K Y G R K L V E A GLLT K G T G G N L S
T DAEAKRLIVEDGRRMYQKNFVAANDGNDSCKVDAE
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 $M N E R D A R A A V D A A Q E M E R L G L N H G S A G N L S Q R V$
M S D
EKLREAMCWHAK SLFDRGLSGGTTGNISARTPD MHE $\square \frac{E}{N}$
$M H E \backsim N$
$M E N E$ $R$ R R E E I CRTGQ S L LF E R G LTT S G S T G N I $L R E F I C E V G R R A Y A R E M G A A N D G N$
$M L L Q N E R E E M V R A A A S L F T R G L T G G A S G N V S V R L D D$
$M L L Q N E R E E I V R F G R K M V S A R L T S G T G G N L S V I$
 MNSVSEHQLRELLVHYGRSLFMRGYSSGGSGNLSVKMPD NEMTEQTLRQQLLDTSRRMVELGLNRGTAGNASVR L R A EVI ETARALD KLGGLTKGTSGNVSAR MS A MDE GAL R R GIV DTALEMERLGINQGTS GNVSARLR M R M E K ERE E L V R Y G R K L C E A GLTKG T G GNL S I L

 MLLENERAAVCEYARRLTADGLVVGTSGNVSAR
MDQSERLLREGMID DCLRMNREGI NQGTSGNVSARWR

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UniRef90 Q47AR6

$\mathrm{K} \square \mathrm{A}$
DRASGRVAI
T $\square$ WT T P T GVS K G LEDGSFll TPSNKNYN DKILITPSGIPYE
GDAALVTPSGVPAR GGLLVSPTGSSFG
E
DVTPFESDFYPQPRREALSQPMPELAGCWFIVTGSGKFFR EVSPF TADFVTEPRHDELTQPAPGLAGNCWLVTGSGKFFR ELIRPRLNESGEWTEGGEVPGLAGEFFLVTGSGKYFR ELAEYLD LSQVIRNIPDAFDAAELAGRDFLVTGTGKYFK E V Q Y Y L D S D Q V K R T I P L D F TVVK S L A G E L F L V S G S G K Y F K EVNEVKDLIDESAEYKSI GVKVENLANEYFLVTGSGKFDR


 EVAP Y L NVNDIK S ETVMPDPDPELKNKDFLVSGS GKYFR
 DLA QF D DVK DVI R N I P I KF DATALLAGDYFLVTGT GRYFK

 DLAD F D DVKE IVKKTFVLGFDASPLAKEYFLVTGTGRYFR

 EAAEAAPYFDAEPRWVKMGVCAPSMAGAFFMAKGTGCYMR
 NI DMLXSSD KNSNFNEFNDIPPENLIGGKYILI TAS GS QFR
 EI LDRLKD DLDDKE QTEIPVVMEIPMNMVVGEYLLITAAS GSHFR

 GF $L_{V}^{T} V_{T}^{T}$ NGHFLAT
 G N F I T

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N
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D GWL LTP T NACLG
R T S GRVAl

GLVV|TPSGMD
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S G L $\mathrm{A} V \mathrm{~T}$ D GMLI T P

QUERY
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UniRef90_Q47AR

100
110
120
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 NVIKYPDRDAGLLVKVAQDGQELEVLWGLKSGAKPT NLI IHPQDTMAMI EVDDKGENYRLVWGLESGGRPT
 NV LDPEANDGAKI DDKGENYKIVWGLLNGAKPT NVINQPTLDLGGVQ:TADGQKADLEWGFEDGGNPT NVMSDPSHNIGVEI NDAGDSWRVWGLTDGGKPT NMTVCLEENAGII IKVDEKGENYKIVWGLTNGARPT NMKDDDEGNAGUVEVGPEGDTYRVRWGLTDGGKP
 TIKSRIVEDIGVIRI KREGYDVVWGFENNHKPT
 YLHHQPEDDTGII KL YVKEQPNIDTGIVKLGTKNGYQI DLAARPMEAGSVI RI LDDCAS YVI I $N V Q L D P A A N L G V V K V D S D G A G Y H \| L W G$ FITPEK

L V K I I N T K G Q FMTPDM

FLDPAKLSLL | F | DPPAK |
| :--- | :--- |
| F | $\mathrm{T} P \mathrm{P}$ K | DI MDAPRETTCMI ELDKEGKRYR\|VWG RLT TVAPETLSVLDMQGN RLVVAEELSVVDDDGN




SLEADR EDV
DMKP
RLKAER
$R L K A E R$
$F M T P E M M$
FMTPEMM
$R M D P$
$\begin{array}{llll}R & L & D & P \\ T & L & P\end{array}$
ED DPVVADDGS
TCLQATDMVVLDLQG

FMAEDE $\quad V R M R \square D G T \| L E$
KTEK
DLEAD
K K P
EDIVITSTDGD
KLKP EDLVICDLNNCN W E L A P E L L I A R M PLLA
RLDPA RLS
ELEVDK
SLLDPARLSL
$\square S K V T \square D G E W$
S L M P A R
ALDPGRLSRL

ELDPATLS RL

DLTTBEKMVAVDMQGCY
EIRPDAADVYLPDDVRSDDA
F V R E E E M E D MVV LV D S GK
$\mathrm{F} V R E E E M$
$R T G P D D$
ALTP
A L R P E

| $A$ | $R$ | $R$ |
| :--- | :--- | :--- |
| $A$ | $R$ | $R$ |
| $R$ | $D$ | $D$ |




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UniRef90_UPIO003767686 UniRef90-A0A0591Q78 UniRef90-A1AS27 UniRef90-LOF8D8 UniRef90-R8X010 UniRet90_D5CRX7 UniRef90-B9QWE5 UniRef90-G8MFP5 UniRef90_O2STN5
UniRef90_F2NF49 UniRef90-B1M359 UniRet90-D9V4V6 UniRef90-WODJZ8
UniRef90-Q47AR



170
180
180
Lp wmणp
190
200
DATGQATAQE FTRELUEGSTECLVVFPDGVGIVPWMVPGTDA\|GSATAEQ FTRELWESATECPVVFPDGVGVVGWMVPGGRA:AEKTAEQ FTCTLWQMITECTVVFPDGVGVVPWMVSGTNDVGEATARK


## L

## A

V GRQHRVP G G 1



 F S E ELLTK I S A E C E K V I Q K G V A I IP WK VT G K E NS S L T T E Y | A | RAFTPYYVMRVGKLPVVPYYRPGSPEDARELSER |
| :--- | :--- |
| A KPFTPY |  |
| I |  |

$\square P M D D Y C M D E T V I A V G S V P P L T P Y G T P$
$\qquad$ DDYTMPEAIIFLGSVPIAPYDTPGSVGVADSIVPF
 TENAIKPFTPYVVMRVGNVPVVRYYRPGDDRLAEDLARL DWLPHTPYG1 MQLGQVRLLPYFDPGSPE GSALKGL AGDPLTQPIMPEAVIALGCVPIAEYGTPSTMEIPDNVEKY NRRELDPSYTPYSVMLLGKVKLLPFFVVPGDPAMGEAIKGLL RELPVLEEQAQLLGGTVRVAPYAPPGSKELADGAVTA
 A DKAFTPYYVMRVGSLPVDPYYRPGSPRIAEELEAQ AGDS LEKPVSPEAIVLLGKVPVAPYATPGTQEVPDSVAPY TPYGIMKLGKVKLLPYFRPGDPAMGEAVRGLD VRQP DPPVVEDAAMLVGGAVEVARYADPGTPELARQVVEA HYLVAASGDVPVAPYRTFGSPELAEVAVQA
 AGDPLDRPILPEAVVQLGVVPVAPYAAPGTQEVADSVAPY THYMTAVAGEVRVAKYATFGSMELAKNAFDA FTRQLWEGSTECLVVFPDGVGILPWMVPGTDEI GQATAQE AGMALNQADYPEALVNLGVVPCVHYEPPGSQG:PDSVAPY
 P Y YVMKIGRLPVVEYFPP $\square \mathrm{E}$ DMAMIIGGEVPCAKYAFPGTSELAENVLEV FLPPL TPYGIMKLGKVKLLPFFLPGDDAMGAAVRAL A $\quad$ IKPFTPYVVMRVGEVPVIPYYRPGAEMLATDLGHL VLP P $L L P$ PRLTQQMPESTMF

ARAP $\square P G \square V E$ YY M RLGKVSLDPVYLPGDPAMGEAVRGL $H Y L V A F S G H V P L A P Y A T F G S R E L A D S V A G S$
$D M V M I V G G Q V E V A P C D P G T L E A G A V N A$ NCLPPDTPYMSAAGG RCAPYATFGGDARNALHA HYPYYVMRVGQPRLPYFP
 THYMI AVAGPVRCAEYATYGTQALSDHALAA
AGVPLLEGILPEVVLTLGADPTAPYATTGTPEMATAVRDLL H Y MI A A FGGVVRCAPYAPYGTAE LSDLALAA HYMLAA $\square G P$ TA RDP YA TYGTTELLADAMLKA
HYMIA A A GGGDRCAPYATFGTEAM SRNVVEA
$L G \square P S F H Y M \square A R F G G D S \mid R C A R Y A V F G S E S L I S A A A M A A$

## QUERY

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UniRef90_Q47AR6

MQKHS LVLWP FHGVFGSGPTTDETFGLIDTAEKSAQVLVK
MQKHS LVLWP FHGVFGSGPTVDETFGLIDTAEKSAQVLVMK
240 MQHHSLVLWPFHGI F GTGPSLDDAFGLI DTAEKSAEVMVK
 ME KY DVVI WA H H GMF C S G E D FD L T F G L M H T V E K S A E I L V K MKESRLVLWPQHG\YGTGRDMDEVFGLIETAEKAAEVYTY

 M K K H D I V I W W H H H G V $\operatorname{F}$ C C S G E D
 M K E Y R L V I WP Y H Gil F G T G S TVVD EAA F GLI E T V M K K Y DVVAI WA H H GL F A S GE D FD LTT F GL M H TVV E K S A E I L L V K MA EYQAVLWPHHGLFAAGVS LDETYGLVEVI EKAAMI FSQ


 MEKYDVAIWAHHGMFAAGEDFDATFGLDMTVVKSAEVLVK MREFRLVI WPH HG IVG GAGSTMDEVF GLIETAAKAAEVVYTL


 M E S Y R TAAV WA H H G L F A T G R D F D EAAF GL L A H T V

 L K K H R L V V W WA K H G V L S T G V S Y Q D C F GL I E TAAD K A A N I A L K L D D Y D V V M WE K H GVVVSVG TAD DM E A F D MV D T L S S K S A Q I Y i N VDHRLVVWAK HGVLSTGRDYQDCFGLI ETADKAAHI A L D
 LGEHDAVLLQNHGALTVGADLITAYYRMETLELFAKDSLN
 A G R Y T S V V L L A N N H G P V V VA G A T L L E E A A V V F A M E E E




 L E N H D T L L M E N H G A L T V V G V D I I Q A Y Y R M E T L E H F A K V V




 N G G F S A ALL L A N H G P V V IGA Y N AVL LA A H G LVAVGGDI GRAFNTAE EI E LVARIVYQ
 A G K R S A I ML A N H GP VV A A K DV E A A C F A D E E L E D T A R L A M L L E GR R G CLL L G N H G T L T Y G A D L P S A Y H R A Q QL E WA C Q L WL L L G R R K A V L LAA N H GLLLAA G G A D L GEAAF GVVAE QL E F V A E L A WR LPDHDVMLLE NHGALTVGGDVITAYYRMETLELVAKTTFH A N S V V G V M L E R L G P VVVWES SVVAK A S Y A L E E L E E T A R L W L
 MK D R K AVI L A N H G L L A G A K D L A N A F N I I E E V E Y C A E I I Y T K
 LG D S N ATI MK NH GAVAVGK DI D R A M A A A Y VLE K S A K I Y V M AKKHNS LLLANHGPVVGGETLRQAFFNAEELIEDTARLYLI
 EGKHAAVMLANHGPVVSAGDLDAACN GIEEFEETARLAMM APDYKAFLLANHGPVVTGSTLQ DAADNLEEMEDAAKLSSD



 AADHTAALLANHGPVVSGRSLREAVFNAEELEDSARIWLT LR D R K A CLL G NH G M I AL G G K DL D D A L S VA Q E V E Y L C E I Y WR


 L EARR GCCL LA NHGTI T Y G D S L S S A Y S RA Q QL E WV C QV WL A




> T S $L^{70}$
> T S L L F A $\mid$ Y G K Q Q
G $\square$ MA $\square$ S PS G $\square \mathrm{D}$ YFETKPENVAVLD L
E D Q MLITT P S GVVP Y E N V
 R P A G GT G D LVLIT P T GV P Y D $\begin{array}{llllllll}E & Q & L & M A & S & P & S & G l \\ A & D & Y & F \\ A & H & M L I & T & P & S & G & V\end{array}$


E $\square$ Q LA D GMLIT P T SLLPYE


LE D G R F L I T P S GV S K G
DREKNRMF I TPS NMD Y L

| $M$ | $I$ | $T$ | $P$ | $S$ | $N$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $L$ | $C$ | $E$ |  |  |  |
|  | $T$ | $P$ | $N$ | $G$ | $V$ | $S$ |

E V
Y MVV 1 T P S G M D Y D D GWL I T P T DA C L G
R G D G GLL L V T P S S L P Y
$\square 1$ A
GSAEADAFGT
S DAFAITP TGGDFA LIC T P T G I S K G $\begin{array}{lllllll}D & G W L & T & P & T & D & C \\ G & L & G \\ \text { G } & \text { S } & P & S & G \square P & Y & N\end{array}$
H VA
A DRVCV S P S A V E Y E
 T GA GNGFLITPSGIDPA GS DCDLAT P TGCCCK H

 $G M L I T P T G l l P Y E$ ANETILLITPRSKSYE GDNT WTTPTGVSKG S G N T MLI S P S A TP Y D

V N R
E V
$N \square A$
$R G D G$
$\qquad$
-

$D V D G L D E L F P D A E P G A P L P L A V P$
D V

Q

## PDG

 $-\mathrm{T}$GNV $\frac{1}{Y}$
SGGLEVFI
G G G F L
HE
Y G
G R
DEPSEKD
$\mathrm{D} \vee \mathrm{V} \mathrm{A}$
Y Q D GMLI T T P T G I I A Y Y K $D G Y L M T P$ TNSSLG
G D T L L $L$ V
$H G K Q L L V T P T G A C L G$
D GWLI T P T DACL G
D GFLL T T P T DA C L L
$D \square$
A E
 $G T P L A K P S G R P C$
GNTVLVTPSGVPY D
NREKNL


| $L$ | $V$ | $K$ | $P$ | $S$ | $G$ | $V$ | $S$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | $D$ |  |  |  |  |  |  |  |
| $F$ | $V$ |  | $K$ | $P$ | $S$ | $G$ | $V$ | $R$ |

$H G E G L L I T P T A \| A Y E$


UniRef90 B5M6N3 UniRef90-UPIOOO35C1908 UniRef90-B2A7G7 UniRef9O-UPI00041E142B UniRef90 D1AQX4 UniRef90_UPIOO02D60D47 UniRef90-B8CZ77 UniRef90-X4QTJO UniRef90-D6BBP7 UniRef90-E4RJW5 UniRef90'UPIO0036F4C37 UniRef90-UPIO00369031B
UniRef90-I2F7Z2
UniRef90-UPI0002378928 UniRef90-V6QBH2 UniRef90-A1S082 UniRef90-Q017A3 UniRef90 G7D215 UniRet90_C4SFM1 UniRef90-B8CWP8 UniRef90 ${ }^{-}$F4XD85 UniRef90-UPI0002D8F9A7 UniRef90-H3NMC2
UniRef90 BONBY UniRef90-UPI000474A3B8 UniRef90-UPI00046EBA47
UniRef90-F7KVA8
UniRef90_U3QL23 UniRef90-D1ACWO UniRef90_A5GNQ4
UniRef90 A8F8E1 UniRef90_UPIo00467CBF6 UniRef90-R6NNM7 UniRef90-UPIO002D6444C UniRef90_E7RDT1
UniRef90_J2ZA59 UniRef90-K7RJ73 UniRef90_UPI00036112C8 UniRef90 - $3 \times 5 \mathrm{~J} 2$
UniRef90-UPIO003B55015 UniRef90-UPI00041AD515 UniRef90 X5KJQ3 UniRef90-D4GQU5 UniRef90-IOAON1 UniRef90 B5YHY2 UniRef90-D6YON2 UniRef90-F7S279 UniRe99 UPI00037F397B UniRef90-UPIO00476A3D4 UniRef90-I6T4B6 UniRef90-E4RM24 UniRef90_R5L4Q4
 UniRef90-G9PLE6 UniRef90-BoUS21
UniRef90-UPIo00344B6CF UniRef90-B5HWB3 UniRef90_UPI00047CB9F6 UniRef90-UPIOOO36ECEA9 UniRef90_U1PTW6
UniRef90 L-1MIM9 UniRef90_S3JPI8
UniRef90-UPIOOO: UniRef90-13ZUK4 UniRef90_G2J110 UniRef90-C6CWGO
UniRef90
E3G6YG UniRef90-UPIO004748B60 UniRef90 D8HTNO UniRef90_UPIO003B4A693 UniRef90-M1LYY5 UniRef90_WOLGJ3 UniRef90_JOZLK6
UniRef90 C9YZR4 UniRef90-H2IMP2 UniRet90-M2PXZO UniRef90-D5WG94 UniRef90- UPIO0047768F7 UniRef90-UPIO0037261D8 UniRef90_UPIO0047BOF5C UniRef90-D1B8F8 UniRef90-FORUD1
UniRef90 UPIOOO36D2148 UniRef90-C3WF16 UniRef90-UPI000363D819 UniRef90-W2BPN6 UniRef90_-В9Ккм1зr"0и!

130


160
HGLI YEHY
HAIVYRNRDD

H LKCYQHRQDLAG HLDDMRAR $H$ RVF Y R DRDDVG | $H$ | $Q A$ | $L$ |
| :---: | :---: | :---: |
| $H$ | $Q A$ | $K$ |
| $H$ | $I$ | $Y$ |
| $H$ | $A$ | $R$ |
| $H$ |  |  |

$\square$ $\mathrm{A} R \mathrm{~A}$
$\mathrm{~V} C A$
 H L R L Y Q
HL A V Y R T

| $H$ | $A$ | $V$ | R T |  |
| :--- | :--- | :--- | :--- | :--- |
| $H$ | Q I | $F$ | $Y$ | $K$ |

H L A I L Q A K
H RA L L A R H L A $\vee \frac{\square}{Y}$ Q A R $H R M \| Y S H R P D V G$
HLTAYR
$\qquad$ AVV H A H S T Y S GV L A T L H WE TIE P V $V$ $P G V N A V V H A H P D Y C S A L A M N R Q S I P A$

 P A V N A V V
$P E L G A V V H V H S V Y A S V V A D Q G R D \| P A L$
 HRTAYR R H D A G AVVHTHSLHATALSLLRNDVPAV NPAVRAVVHTHSEYATTFACLRES
H L A

HADVLADR
$\square N V V L H T H S T F S T I L$ NPECKAVV HLLHSTY LTTALSCLQDLDPRN H D L R A R D D H LALYY N R D D G

V V A A
AVVHTHS $\square Y$ A A

## $\qquad$

 A A T T F A A CRRPLDVP Y H WAVY A A R P DVG$$
\overline{P C V N A A}
$$

PSYNAIV H H P MA TA A A V SR K K D P P | H R E | I | Y K N Y |
| :--- | :--- | :--- |
| H A E E | I | Y K N K E D | H I R V F Q E R HLGI YRRRPDVG HL R I Y R E HSAVVY L S R P E V $N$ G

HRAIYD N N

H L A V Y E A
P DVN AVV HAHPMYATS F
AVVHCHPLSCTVLAVQGRPFRSA $\square P E M N G V V$ H A H P P F GTA FA
N

PGAHAVVHTHSTHLVALTLAGVWQPDD TGAPAIVHTHSTYAAVVATTLTELPPL HADVLASR
HTQI YRNFSDV HLGLYR
HL K V Y E K R $H_{R} M V Y$ D N
HA I FY QKRED H L A V Y D R R P DVGG
HLLAVY
HAAFYQTRTR
HR $\quad \mathrm{DF} Y \mathrm{~V}$ R R D D
HRDIYAAR

| $H$ | $R$ | $D$ | $Y$ | $A$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $H$ | $R$ |  |  |  |  |
| $H$ | $L$ | $A$ | $V$ | $Y$ | $Q$ |
| $H$ | $K$ | $E$ | $D$ |  |  |
| $H$ | $R$ | $D$ | $L$ | $K$ | $A$ |

S S DTGGAAVV H T H H S I I Y A T T V L P DVRAVVHAHPPYATTF
NPEMHAVVHTTHSTHLVKWT DTGVWSQD
HS T DA G GI THNHAPSSTALLGLV CD E


H L A V Y R Q
HTGI LREREDAG
HLA Y K N Y
$\begin{array}{ll}H & Q \\ H & \text { V Y H A R } \\ H & \text { I } \\ \text { I Y K R R K D }\end{array}$

| $H$ | $L$ |
| :--- | :--- |
| $H$ | R Y K E |

HL D DMRAR
HRI F F I N R

| H R D | I | L | $A$ | G R |
| :--- | :--- | :--- | :--- | :--- |

H G I MY Y K R E D L D Y
T D H T A V V H T HA P A S T A L S T VT DVVVPA
AVV HNHSPYASTFASLGEPIPA

HKIFY E K R D D
HLRCYEKREDV
HTA Y Y N A Y
$\begin{array}{ll}H \\ H & L A \\ H & Y \\ \text { Y } & R \\ \text { Y A }\end{array}$
H L A V Y E A R P DV D
HRDILRAR
$H$ L G V $Y$
HLA I Y R S R
HR
PELLNAVVHNHSINCAAVS

 | A | 1 |
| :--- | :--- |
| C | 1 |
| A | 1 |

HAY Y Y R R A R P D $\square G G$

G T DAGAATHHNHAPASTAALGVVDEDPCE
H AV H A D Q $\square G R R G \square A D H A V I H A Q P P Y$ L V Q L S H N A A L N N T D

H L E V Y R R R
HRRIY QA
H L Y A Y R A
HQVVY QTR
HS SI YK H
HA Y V Y R H MPEDG G
HA Y V Y E NMPEVGG
H T A I L R A R
H QV A Y H T R

H L A IVH T T A G A R A D T T A R A V V H T H A V H A T A V S T L


HTRI YAAARKFDAGTA CVIHTHSTHCVALTLANTPGD HRRI YENNKEANG VVHTHSTHVVALTLAGVWR



 HLSAYRSRED FSAF H A Y VY A H M P EVGG G
HA Y V Y R H M S EVGG
EPEARCVI HTHSTHLVALTLQGVWSEA
NPA $\square$ GA V H T H P P Y C I A F TL VE E E

 PD $\square$ K A TVV H T H H STMYA TA A A A A R G E E
 $A$
$A$
V

 $V V$ HTHSSY A T A WA A RRE P $\square$ P C A E L N AVVHTHSVAATAMA

 P DVHAVV HT HSTGATTLACL \begin{tabular}{l}
$\square$ <br>
$\square$ <br>

\hline | $\square$ |
| :--- |
| $I$ |
| 1 |
| $I$ |

\end{tabular}



 V | A |
| :---: |
| $\square$ | YGAGAVV H THA PMATA L S L L V L D D L L $P D V Q A V V$ HA H P P L A T GFA CAGR V

$\square$
$\qquad$

$\qquad$


## UniRef90 B5M6N3 UniRef90 UPIOOO35C1908 UniRef90-B2A7G7 UniRef90-D1AQX4

 UniRef9O-UP10002D60D47 UniRef90-U8CZ777 UniRef90-X4QTJO UniRef90-D6BBP7UniRef90-E4RJW5 UniRef90-B6BEK3 UniRef90-UPIO0036F4C37 UniRef90-UPIO00369031B UniRef90-l2F7Z2

LGDYNACL
FKDRKA
MK D RNA VI L GN H G L L A V GA D I A K A F D T L E E I E F CA E I Y Y KLIDRKACLLANHGMIALGHDLDDALAVAVEVENCCEQYWR
MQDRYAVLLANHGLLTGADCTENAFNTAEELEYVAETYYR
LNGKKAVLLANHGAVCWGKNLAEALLAAEILEKAAQUAVI
LTDRTACLLRNHGTLAYGTTLDQAYDRTAQLEWMCRLWLT
LEGSRAVLMANHGPFTVGKDARDAVKAAVMCEEVARTMSI
QDRYACLEAHGGVIASATLSRALWIANEVEVLAKQYYL
LEGRSAALMANHGAVTHAPTLDKAVEHALLLEWACGVYQR

LickLKRSRAVLMRNGOFTVGRTARDAVKAAVMVEDVARTVHKLKNRKATLLQHHGMI ACEVNLQKALWWAHEVEVLAELYY S
ATDHPALLLANHGPVVAGTNLDTALDTLEELEHTAELY

## 


 $L R E P K$ G A LIA N H GAVV A G S S P Q E A M D L A V N L E F L L C E E V Y WR

 LKSSRAVLMANHGPFTVGEDATAAVKAAVMVEEVAKTVAl


## UniRef90_I2MW75 UniRef90_U2QD65 UniRef90-D1BVHO UniRef90 A5ZA29 UniRef90-FOSIQ7 UniRef90-A0AO24JTY6 UniRef90-E8RJI6 UniRef90_F8AMH2 UniRef90-A2RYD7 UniRef90-E1R1X9 UniRef90-E6WNH6 UniRef90 UPI0001E2BDB9

 UniRef90-I3VUV1 UniRef90_C9YBL8 UniRef90_L8EGG3 UniRef90-X1B464UniRef90_UPIO00346F467 UniRef90-M4YJN9 UniRef90-Q6LY06 UniRef90-V7EMU2 UniRef90-I6TYA7 UniRef90_UPI0003B47E4A UniRef90 TOZNM0 UniRef90-UPIO0046FFOE4 UniRef90-UPI0003AD25E1 UniRef90-UPI00047D713F UniRef90-R5FC40 UniRef90_UPI00037C7B96 UniRef90_F9Z113 UniRef90-H3ZL87 UniRef90-A0LL43
UniRef90_UPI000475CE24
UniRef90-UPI00040000D9
UniRef90_UPI000478AE05
UniRef90_E1RA90
UniRef90-A9BF91
UniRef90 Q01Z94
UniRef90-J3J4N7
UniRef90-TOCJA9
UniRef90-UPI00041A6A45
UniRef90_W0JA87
UniRef90-U5E1X6
UniRef90_R2SE81
UniRef90_D7CXK7
UniRef90-V4YHN7
UniRef90-K6TXH1
UniRef90-G5A8J1
UniRef90_16Y1Q5
UniRef90-F8D9F5
UniRef90-E3GZK1
UniRef90-C9MZ80
UniRef90_UPIO002884CCE
UniRef90 A1KAX1
UniRef90-A0A024IHC1
UniRef9O-ATNME9
UniRef90_UPIOOO360E519
UniRef90-H5U2W4
UniRef90-R6XUJ8
UniRef90-MOP8X2
UniRef90_UPI00034517AB
UniRef90_F8FIG1
UniRef90-A0A022LR81
UniRef90_M5TC52
UniRef90-A0A016PAJO
UniRef90-B9L191
UniRef90 X1MHP4
UniRef90_Q58813
UniRef90_F4FD21
UniRef90-E4WCV5
UniRef90-C6WE67
UniRef90-W1VB65
UniRef90_C7NMB7
UniRef90_UPI0004698037
UniRef90_UPI00035C745C
UniRef90-C0D1F6
UniRef90_U2KJ08
UniRef90-M3A2L4
UniRef90_D3R7J7
UniRef90_F7K5W0
UniRef90_N6UW07
UniRef90-E7C201
UniRef90-R8BDE7
UniRef90-C1A8J9
UniRef90-W2BYN9
UniRef90_UPIO004645FA7
UniRef90-R6KF99
UniRef90-UPIO002894817
UniRef90_UPI0002FB0C90
UniRef90_G4L5D5
UniRef90-H2C1D0
UniRef90_R7FZA4

UniRef90_R7FZA44

E EKKK I DDA G $\square K$ LDR Y G L I S L A G G NVSMRMP T G R DE I MQAMERIYR SRMTTTS GGNI SVRTDA G
 $L R A Q L L A T A R A M N S Q G L N Q G T S G N V S V R$ K A FI D D C H K L Y D R K Y V V G S G G N V

 M Q N MEDLI RKNUVKVGKLMYDKELVNPYEGNVS I
MTEHELRDEDCRVGVSDFARGYVHATAGNDSVR MTDREA DDELVATARRTVADGLVVGTSGNVSVRV
 $M L L E Q E R R D V C L T A R R L Y D H G L A H G E G G T V S A R C$
$M S E A F L R R R L V E C C K L L Y R N L T V S A G G N M S V R L D D$ EMTLRRRMLATCRRMNETGINQGTAGNLSSVIR

 MDMKKEVLAMALDQSREKLFAGTS GNLSVY

 MLE KLKTDVCRGNLGLPRHGLVTWTSGNLSAR SRIVKEMVRYSKLAHERGLTAAFGGNLSV
EETAALRSELVVADCRKAERKGLIAASADGNVSCRV
 EETRDRDEI CTVGAHLYDRGYTVGTAGNISARLD


EKELRARLAEFVRRAYRQRLEDSTQGSFSARVD ERVREYVATLHADLDRWGLVVWTAGNVSQRVRGE MEFNQSELAQQLDDTGKYMLANQLAWGTSGNLSARVD

EKELRSQICAFVRRSYEQRLLISTAGAFSARLG ELRASVADTARQVAARGLVLGSAGNVSVR
$M N Y$ LKKEREAIVDYGKKLDTEGLTTGTGGNISSLYREQ
SELRREVCALHAYLPAHRLVAWTSGNLS GR
$M N Q T \square A A R R D D C R V G A S L F A R G Y V H A S A G N D S V R$
 MK

$M M L E E L R E Q V W K G N L D A L P A N G L V A W T G G N L S A D T A D R$
MILETERRAVVEHASELAD GLTARTGNLSVRGSGD
MQMLEN LKREVIKAAQDGQRLDLCKHKSGNFSIR




$M T D L Q D \quad L R T R V C A L H T E L T R W D L V A W T S G N V S A R V P$


 $K K Q F \square K \square C R K \square Y D R K Y V V G S G G N V S V K$
MQHRRSRQHVVDMCRTMLARGYLKATEGNVSVRVPGH $R Q K I A L T C R A L F D A G H D S G L A G Q I S A R G P R$

$E$ EDDVGADAVRRGLVLASGGNDSARDDAE EQERRAVVDAARTLVAEGLVVGTAGNVSVRTGAG MYEREKQQLI DCARAMERHGLVVLSGGNVSMRMPC MD DSA DKEILEVCKRLDSRGLVNAYEGNVSDKRD
MTDS
MTG G R KEEEVKQVREVVAALHEQNLVVWTAGNVSQRLRTA

MTTQQDCKEVSKYSLLLHERGWVANHDGNVSCRDKR QWQLEHMAGAFRVFARKGFTEGAAGHI SVRDPVD AEDVEQLALACRRLHAGGLLAGAEGNLSVRLSDS
F DE E NFIQELVELGLKLQKKSLVQGTWGNLSVRV




NEEQDKRELVNSVRTLYWKGMISNAGGNQSARLP

RVAA $\quad$ HA AELPRWELVVWTAGNVSERVGDYFVIKPSGVSYY El WI TPARIDKG RSDGNTVITPSSVDYR DGSGLLITPSALPYD LIYATPTGSILG
K KCll TPSSALDKG EDGWLI TPT DACLG


GDLVLVTPSGVPYD
$G D L V A V T P A G V A D D$
KHI LI TPSGANKG
$D G N L I Y I T P T G L S \square G$
HGDGFLI TPSSLPYD
GNYVF K GTGSVME
SRSFFI SPTGRRYE
D P
S GDLVAAVVTP
EDGMLI TPTGLA YE
DPET GLVVVVTKS GVPY D
DENGKVVIK K

TAAGVLI TPTGSSLG
DGWLI TPTDACLG
DPETDYMY SPS SGMDYM
D
AEDGS
QED
GEHML
DGDAVAVTASGVHRL
MLISPSGIPYF APGAKTMLI KPSGVMFE

D
${ }_{D}^{E} \square$
YRNK $\square \mathrm{MD} \mathrm{V}$

DKETGYVVVTPSGVNRE

DSQGGGFLITPTDACh
EVQSVFPLVEE $\square E \square P T A A P A L A G G W L L A T G S G T R L R$ GN WITPS GVDKG GDRVLVTPSGARLG
A VVEYAPALADLTPGRTGNLSVRD
GDRVAVTP
GTDRMVIKASGVSYD
GGDAFLI TPHGMDRK
GTDLDFVI K P S G V S S D
NTFWI NPMGVHFG

D 1
A R D K

R L
$P G T F$ LTQRLGLLGFD
TVYETDMADPENDLVRGTNGPEPTREGDFVIKPSGVSYD
EDA $\quad H F I V T G S G T W L D$
GNFLVTPSAMSYD
GSYMYITPSGQNKA
$\stackrel{\text { D }}{\text { E }}$

| $M L$ | $T$ | $P$ | $S$ | $G$ |
| :---: | :---: | :---: | :---: | :---: |
| 1 | $C$ | $C$ |  |  |


PDTFWI NPYAKHFG

NDNFAITPSGCGYE
GDEVLLS GTGSWVP
NGHFLTTPTGSSFG
GSDK】WI TP P S GYPR S

| UniRef90 I2MW75 |  |
| :---: | :---: |
| UniRef90-U2QD65 | STTPED ${ }^{\text {a }}$ |
| UniRef90-D1BVH0 | DL DAEAMVVCDLDGN LVEGTRSPSSDTAA |
| UniRef90-A5ZA29 | DMEPD DVLVMDIDGN 11 EG |
| UniRef90-FOSIQ7 |  |
| UniRef90-A0A0244 | DMEDD DLVLVD PEGAVQHAKD |
| UniRef90-E8R | RCGEDD ${ }^{\text {a }}$ EGRRKP |
| UniRef90-F8AMH2 |  |
| UniRet90-A2RYD7 | RL P PAGA AKVD PAGNAVSGGKPSKTLAL |
| UniRef90-E1R1X9 | NLTPDL TAVVKFDG TNLTPHLPLSUETEM |
| UniRef90-E6WNH6 | HLEPAR $\triangle$ AKVNRDGEW VSGDKP |
| UniRef90_UPI0001E2B <br> UniRef90-I3VUV1 | EMTPDM DMVVVDLDGNGVV VVEGKLLPPSVDTAL |
| UniRef90-C9YBL8 | TLDPARLAKV TENGVQ\CGDRA |
| UniRef90-L8EGG3 | RL GPGDLTAVGLDG RPARGTDRPTSELPM |
| UniRef90-x1B46 | YLEP SDLVVINMQGD VLHGDKQPSSEYRL |
| UniRef90-UPIO00346F467 | RVEP ADCPVLSVDG GVLEGRREP |
| UniRef90 M4YJN9 |  |
| iRef90-Q6LY |  |
| UniReef90-V71 | VVRMYWDGTYE GRRP |
| UniRef90-16TYA7 |  |
| UniRet90-TOZNM0 | SLEPH SVPLMSLDGLWH GRLCPSSEWRF |
| UniRef90 UPIO0046FF | TMT AEDUSVIDLD |
| UniRet90-UP10003AD25 | RMEPA |
| UniRet90 UPlooo47D713F | GAKDVFVAGDGSVPGKQ DGTHEKKPSSEHF |
| UniRet90-R5FC40 | TLEKEQFSTLL DGTHVEGMKPSKEYPL |
| UniRef90-UPlooo37C7B96 UniRef90-F9Z113 | ALMPDGPGDTVVVDLEGK RQVEGALLRASSDTAM |
| UniRef90-H3ZL87 | ELTQEQ L $^{\text {a }}$ |
| UniRef90-A0LL43 | DLEPRD\ $\square$ GVNALGERVSGHGRPSSEDHM |
| UniRef90 UPIO00475CCI | - |
|  | V AEALSLI SKMDGSGOWDDRGAHLAGPRPSKEAFL |
| UniRee90-UP1000478AE | RLDPAE VSKVDGSGQW V |
| UniRef90-E1RA90 | KVKTDH |
| UniRef90-Q01Z94 | TL |
| UniRef90--3JJ4N7 | DLSP EAMVVCDLDGN |
| UniRe90-_OCJA9 |  |
| UniRet90_UPIoou41AE | $1$ |
| UniRef90_W0. |  |
| UniRef90 U5E | TVVHLDG HVIEGGLLRPTTELEM |
| UniRef90 R2SE81 | SVCDVDGK VVEGDRKPSSEYDL |
| UniRef90- V4YKM | KPEETSWTSLCEDEDGGLAHSGSTASKDTET |
| UniRef90 ${ }^{\text {K6 }}$ TXH1 | Y |
| UniRef90-G5H8JO |  |
| UniRet90-A0A017P | NLLPED UVTLNLEGKVID GTKKPSTELDT |
| UniRef90-16Y | DMTPADM VVVDSTGRVVD GDRGPSSDTAS |
| UniRef90-F8D9F5 | PVVGTDGE RLDGEMAPSSEVPM |
| UniRef90-E3GZK1 | S EDEVLLDLDGN VISGKKPSSELHLL |
| UniRet90-gMz80 |  |
|  |  |
| UniRef90 A0A0241HC1 |  |
|  | EI YDHPLENLGVVQIEADGTHARLYTAPSRLIFTRTSELNS |
| UniRef90-UP1000360E519 | ALT ANDM |
| UniRef90-H5U2W4 | VQPDQ ovvile |
| 6x |  |
|  | StVPEDAADVCDVSLIGE HGRPVLDGRMASSSSDTAM |
| UniRef90- F8FIG1 | YLEPQD GRAEAGKKPSRSHLL |
| UniRef90-A0AO22LR81 | LTP ENVVCTLDGVPAEGWGNAHG |
| UniRef90-M5TC52 | NLTRN DIVVVKADGTI |
| UniRef90 A0A016PAJ | MLKASDM VHANEDGQVIGGNRVAVNAAGFT |
| UniRef90-B9L1914 UniRef90 -1MHP4 |  |
| UniRef90 Q58813 |  |
| UniRef90-F4FD21 |  |
|  |  |
| UniRet90-C6WE67 | DLGPE AMVVTDLHGNLVE |
| UniRet90-W1VB65 | SAENMVACTV EGTV |
| UniRef90-C7NMB7 | SP ENLVVVDMDE |
|  | MMTPDLGDVGLMRQDG TVVSGAPKPSSEWKL |
| UniRef90 ${ }^{\text {col }}$ | TMTDDD ${ }^{\text {d }}$ VLIDGETRTVE GRRRP |
|  | VVLEESTMKQVSGT |
| UniRet90-M3A2L4 | ALDAERLSVLDL |
| UniRet90-D3R757 | YLP SMVVCDLDGNVVD GAESPSSDAS |
| UniRef90-7K5W0 | M K M A ARQ |
| UniRet90-N6UW07 |  |
| UniRef90-R8BDE7 | MLKASDM VVVDEDGQVIGGARSPVNGKPTAGFML |
| UniRef | RI HAGQVVRVHADGRMCDGTDTPRGDSPVRASSELGM |
| UniRef90-W2BYN9 | KLR AEDMVLVN LTDRSLM TRESSEGVKATSESVL |
| UniRef90_UP1000464 | NLKPD NGVLLN:N TPDLFGSVRPSSERLL |
| UniRef90-R6KF.99 | DLVID |
| UniRef90 UPI0002FBOC90 | RLVVAEELSVVDIDGNHVE TGGKKPSNEAAF |
|  | ILMDLDGK IIEGKRRPSVDNVA |
| UniRef90_H2C1D0 | ELEPKD LVQDMEGNLIQ GUR GDLKPSIEVSM |
| Ref90_R7FZA | N\|LRRED UMQULPD GTUIGUHR P SVEYPF |




## UniRef90 I2MW75

 UniRef90－U2QD65 UniRefe90－DIBVHO UniRef90 ${ }^{-}$FOSIQ7 UniRef90－A0AO24JTY6 UniRef90－E8RJI6 UniRef90－F8AMH2 UniRef90－A2RYD7 UniRef90－E1R1X9 UniRef90－E6WNH6 UniRef90－UP10001E2BDB9 UniRef90－I3VUV1 UniRet90－C9YBL8 UniRet90－L8EGG3 UniRef90－ $\mathrm{X1B464}$ UniRef90＿UPIOOO346F467 UniRef90－M4YJN9 UniRef90－Q6LY06 UniRef90－V7EMU2 UniRef90－I6TYA7 UniRef90－UPI0003B47E4A UniRef90＿TOZNMO UniRef90－UPIO0046FFOE4 UniRef90－UPIO003AD25E1 UniRef90＿UPIO0047D713F UniRef90－R5FC40 UniRef90－UPIO0037C7B96 UniRef90＿F9Z113 UniRef90＿H3ZL87 UniRef90－A0LL43 UniRef90－UPI000475CE24 UniRef90－UPIO0040000D9 UniRef90－UPI000478AE05 UniRef90－E1RA90 UniRef90－A9BF91 UniRef90＿Q01Z94 UniRef90－J3J4N7 UniRef90－TOCJA9 UniRef90－UPI00041A6A45 UniRef90＿WOJA87 UniReffo－U5E1X6 UniRef90－R2SE81UniRef90 D7CXK UniRef90－V4YHN7 UniRet90－K6TXH1 UniRef90－G5H8Jo UniRef90－AOAOITRWZ1 UniRef90－16Y105
UniRef90 F8D9F5 UniRef90－E3GZK1 UniRet90－C9MZ80 UniRef90－UP10002884CCE UniRef90－A1KAX1 UniRef90－A0A024IHC1 UniRef90－A7NME9 UniRef90－UPIOOO360E519 UniRef90－H5U2W4 UniRef90＿R6XUJ8
UniRef90＿MOP8X2 UniRef90＿UPI00034517AB UniRef90＿F8FIG1 UniRef90－A0A022LR81 UniRef90－M5TC52 UniRef90－A0A016PAJO UniRef90－B9L191 UniRef90－X1MHP4 UniRef90－O58813 UniRef90－F4FD2
UniRef9O－E4WCV5 UniRef90－C6WE67 UniRef90－W7VB65 UniRef90 C7NMB7 UniRef90＿UP10004698037 UniRef90－UPIO0035C745C UniRef90－C0D1F6 UniRef90＿U2KJ08
UniRef90 M 3 A2L4 UniRef90－M3A2L4
UniRef90＿D3R7J7 UniRef90－F7K5W0 UniRef90－N6UW07 UniRef90－E7C201 UniRef90＿C1A8J9 UniRef90－W2BYN9 UniRef90－UPIIO004645FA7 UniRef90－R6KF99 UniRef90＿UPIOOO2894817 UniRef90－UP10002FBOC90 UniRef90－G4L5D5 UniRef90－H2C1DO
UniRef90＿R7FZA4
1



LIDGRRACILLGNHGTVIAVGATLIDQADRTAQLIEWMCRVWLL CGGSDAVLLSNHGLVACGRDLKSAYGLACNLEYVAELQYR LTNHRAVLMANHGPFTDGRDARAAVKAAVLLEEVARAVHD LGDSLAVILAHHGVMTVGKNLKQALTAAVYLEETAKGYLA LEGRGAALIANHGLVAVGPRPDKVLHITALVERTAQIVWG LEDRSAALLGHHGMICLAADLDHVLALADEVETGARMYLQ ADRERGVLLERLGPVVWGPSVAHASYALEELEETARLWL
ANEVRGVMLERLGPV1WGGSVSAASFALEELEETARLWLN

YRDYDLIIMSHHGVVSIGGDIFTAWRLTEHLEACAETLFY LKGKRAALDANHGGVGLGDGLEQAFEHARLLEWLCGVYID TED $L E D R M A C L L G Q H G Q V S L G K T L E G A L W M A V E V E T L S R M Y V Q$
$M K G Y D A V V V E R H G V V T V G R S L R E A F Y K A E L V E V A R M W Y Q ~$ MKGYDAVVLERHGVVTVGRSLREAFYKAELVEEVARLWYQ
LDDRYACLMANHGMTARGPSMPEDAMMFAHRLEEVLCRYYL
 MGGKRAALMANHGGVTLGRDLDEAFENARLEEWLCGVYVR MNSDAYLLKQHGPVVAGRTVDDAFYGLEELEESAKTAWY LDQSPAVLLKKHGVFTVGTSHEKAVKAAVMVEDVAKTLTY LEHYDAVLLQNHGLVTVGKSLREAYYKAELVEESAKLWYLV LAGHRAVLLRSHGVFALGGSARAAVKAAVMCEDVARTVHT AGQVRGALEERLGPVLWERSVAHASYALEELEETARLWL LGKNGAVLLPGHGALIAAANMPMALKISTVLEKNAQVYLY LRESRAVLMRNHGPFTIGRDARAAVKAAVMVEEVAKTVHV

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Tums
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UniRef90 I2MW75 UniRef90_U2QD65 UniRef90-D1BVHO UniRef90_A5ZA29
UniRef90-F0SIQ7 UniRef90-A0A024JTY6 UniRef90-E8RJI6 UniRef90-F8AMH2 UniRef90-A2RYD7 UniRef90_E1R1X9 UniRef90_E6WNH6 UniRef90 UPI0001E2BDB9 UniRef90-I3VUV1 UniRef90-C9YBL8 UniRef90 L8EGG3 UniRef90 ${ }^{-}$X1B464 UniRef90_UPI000346F467 UniRef90-M4YJN9 UniRef90 Q6LY06 UniRef90_V7EMU2 UniRef90-I6TYA7 UniRef90_UPI0003B47E4A UniRef90 TOZNM0 UniRef90-UPI00046FFOE4 UniRef90-UPI0003AD25E1 UniRef90 UPI00047D713F UniRef90 R5FC40 UniRef90_UPI00037C7B96 UniRef90_F9Z113
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UniRef90 C0D1F6 UniRef90-U2KJ08 UniRef90-M3A2L4 UniRet90_D3R7J7 UniRef90 F7K5W0 UniRef90-N6UW07 UniRef90_E7C201 UniRef90 R8BDE7 UniRef90 C1A8J9 UniRef90-W2BYN9 UniRefol UniRef90-R6KF99 UniRef90-UPI0002FB0C90 UniRef90 G4L5D5 UniRef90-H2C1D0
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ASSIVPGPKLLITPEQLIAE
260
TMCI GTPNILTDEQMAEVMERF
SRQLGEPQPIPQDAVDALYARY
ARACGE $\square$ EHLSDEQI K QTVE $\square$ YK
AAHLGTVRFLDDDQLTEARER
A RALGGPVPI PEDVNRNFAGVYG
$A L Q V A E P P L L P R A E M A E V L R R F$
IHSLQS P
TH P K P E P L GEPA L A E LRDAF
TRDDPGSHSLSKAQIAEL
CAT KPTALPEQAVRELCEHF
TKMLLGEKELPDVELEKLYE

ASSL
ANGLGGD
ARRLGEPRVLSEEELAEVRHR
LGNSAEPLPL EEVEKLRE
$\bar{M} N N L$
A L A L GEPPVLPDDEMERVIAQYGLGPEEE
AQQLGEPNHLSVEDMDAFREK
A L A i GAVEVLDACEMTRVIEKFRTYGRQDADD
S YAVGELHLVVPLEFQNMMREKYGMK
$A R T I G E P R V L T E E E L A R V V E R \quad G L A P P$
LLLLGPPELLSDSEMARVIEKFK
L
ASSVPGPNLLSAGQLDAAAAQ
AK LIGE $\square$ S PLLPQSEIDSNHDRY
ALLIGGPPPAMPDKDRE
ARQLGAAPPLPQADVDRLYDRY
LRGA ATRPLTAEQAAALR
MSAKRPQPLDAAADQELRDVF
$A K L L G N G D R L F S R E E D D A M Q N F$
SKLYSNVNEIPEEKIAAFKEFF
SQGIGPMPEEVTKELDRV
ARAGGP LVP EQQHIDSLYARY
AKSAD DPLTKDPDNVRDFLEGARYKPRK
AEALGGAKPLPESDLADLRARAK LGGPR
SRPLGPLAPMPDAALTELRKAFGMD
A A AVVRPRALTPDDLQAVIE
ARCI GTPVLLNNEQLAEAVEKFG
ALQLGTPVPLAQEAI DKLHERY
LSQGQAPSLSDAAINDLCDTFG
A CVL
AKVLGNPTY口TDEQ
STQI G $\square P K P L A M E E V E K M R D V Y$

SRSAGEPQTLTDDQLETVLEKF
S SQ
TLLINEPDSFSPEELE

CS PRPAPLSDARLDELRQRFN
N LIAAGEPADL QPDEI RA A A RA L G I
A NR $\square G T P T L L T D D D Y E T V R N K S E V R L D E$
A VS A G A P A L LS D D Q $\square$ T EVVA T
ASSVGEPHVLSDEQMATVEERFGQQPDAD
ARQNGPLERLPQEDIDALHDRY
AQS LGAIVHMDEERI GELEKAFGL
AKQGGEVVPIPEADI DRLFDRY
AQQLGTVRYLDNDQLD
VESTGLPRNTISDEAAEYTYRYNADPN
ARSAGELHRIGPDAVAS DRRSYGVKAR
$A L L Q G T P D E \| P V Q E V R R A H K A Y K E K Y$
A $\square$ S E A GKVHTDP TA TRE $\square \mathrm{A}$
AMAAGEDKPLPPR LAKEAHDWTLTPR
AFQLGKPERIAQEHIDSLYARY

A EDLGGTPEEIPDEEE
VLGAGRPRALLSAEEMAEVGARYGQRPPE
ALASGRDPELTAEQDAD
A ERMGA PVKNLEE
LLGPHPVRHLTDDEAAHDAEKYRV PW
AKQLGDIIPIPQED $\square \mathrm{DKLLNDRY}$
SQlLGDVRE
TQS $\square G G P H Q L E A S A L L E L R A K A G L G A P E E$ IDATGRDKUIVDDEEAAYTAKFNANP
ARLLGGEQRLPAGEAAALA

AHAYGKMAT\T DEQ TQTVFEDYGQK
ARA LGGLKVLTPQDMRKPGARY
ASTLGGEIHTLSERHMNLYK

UniRef90 UPIO00465C582 UniRef90_F0Z5W3 UniRef90-S4MNG2 UniRef90_M1E720 UniRef90_F7NGL1 UniRef90_UPIOOO2D5E50B UniRef90 A5UMP7
UniRef90 L2G9T7
UniRef90-H1PJM7
UniRef90 R2V7IO
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UniRef90-B2JKZ3
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UniRef90_C7YTDO

MNTLEQK MNDAlUW\| AKKELIFDRGKATGSSANLISF KNDTSAEARRDMCS IDHRAYDQGQVNSTQGSFSVRDDEE $M D \square L Q A E K A K E V A V G T S L E A R G Y V A A S A G N V S A K$

EKEQLDRTGRHLLAAQLAWGTSGNMSARDDT
YKQQLMNTGQYLISNQLAWGTSGNDSTRTDSD EKNDEE I NNVSDYLYKNKLVAGKAGNVSARFKGE MRKNDEWQSRRSDAEYGCKLLEDGLVQGTWGNVSVR KVLE K K Q K K E TVCK ENKALDKNGLVLWTS GNVSAK KVEYKTLVKE SMY S GLLRMLESGLVVATWGNVSYC RLVQELI
$Y K K E E V G K D A A A R G L V L A S A G N L S A R I ~$
$V$ MQELIEVGRDASRRGLVLASAGNLSARV $M N Y V P G D G R D Q L A H V G Y D V V Q A G L V V G S G G N V S A R I P D E$ RAEVSQLHQLLVRYDLVVWTGGNISGRVPGT $M \square Y E D \square R K T V L A A D N E A V E K K L I N G T S G N I A M R$ ME $\square K \square S$ EELKQQVVTYALTADRSGLCKHRSGNFSVR


EQLLFRKQRLAAALRDFGRGFDEGVAGHDTVR MNPK ET A


LNEEVMEVVADVMRLLYQRGLVQVKGGNVSVI
 KKEERKWALQHMAAAFRVFARKGYTEGTAGHIS $\square$ RDP DD

WVLQHMAGAFRVFARKGYTEGT $\square G H V S R D P \square D$ MLLEPERRDVCLTARSVAAAGAAPGETGTVSVR MLES LKKDVVQDAKRAQKDGLCKHLSGNFSAR QKLALTCRILIFDHGHDAGLAGQITSRTD EHMAGVFRVFGRRGYGEGAAGHVSVRDPVD VIKAGKILVESGLIARTWGNISARD RKELVDCVKSLYGMGLTTPVSGNHSIR QWQLEHMAGAFRVFARDGFAEGISGHDSVRDPEF MTK EQQLRVDMAAAFRLDYQMDMHESVANHLSAAVSDD KLLERQHVKEMAGTFRVFGRRGYNEGAAGHMSLRDPDE KRRDAAADRVFAAYGYDEGVAGHITARDPVR



DDEDTQVCRSAWSRRLFSGFNGNASVRD MLE ELKK A VYEANMDDPRYGLVTFTWGNVS

EELAARRDMIT LIHRSYQMGLFTATHGTYSVR
LK RQLAAAFRLFAKFGFDEGVAGHDTARDPE
 REE K DEVGKWLHENELLVRTWGNVSCRDDD
MLE E L K


LK EQVYEANMELIPRRGLISTYTWGNVS

EERAFRKR LA QTYRIFGKLGYDEGFAGHITVRDPVLD
ERRHRKERLVAADRDFGRGFEEGVAGHDTARDPEF MNCDEDTKRAKLVELSHQLLSDGLVVRTWGNFSVRGSAD DSEEAVEEVLFVAKRMDDKGLVNSFAGNDSTKRD
$M Q N D S I L Q D L Q K T G L F M M E K N L A W G T A G N I S A K C$
KQRLAAAFRLFSRFGFDEGVAGHITARDPE

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

## $M M L K E L R E E V Y R A N M D L P R Y G L V V F T W G N V S A L D K N A$ QELK E DVFRANDEVVKHGLVIFTWGNVSAICR

$L$ K E RLAA A F RLLFARYGF DE G $\square A G H I T V R D P E R$
EERRHRKQRLAAADRDFKHGFGEGVSGHDSVRDPED

$M L L E Q E R R D V A L T A H R D A G T G A V L G R G G A V S V R$
WMLDNHMA GAFRVVFARKGF TEGAA GH I SS I R DPDVD
 N S I





UniRef90_UPIO00465C582 UniRef90-FOZ5W3 UniRef90-S4MNG2
UniRef90 R6HV46 UniRef90-M1E720 UniRef90-F7NGL1 UniRef90-UPIO002D5E50B UniRef90_A5UMP7 UniRef90_L2G9T7
UniRef90_H1PJM7 UniRef90-R2V710 UniRef90-R7D0L8 UniRef90_B9Y5A5 UniRef90_UPI0004625EED UniRef90_B1C6X9 UniRef90-UPI0003B58F37 UniRef90_UPI00036B3C80
UniRef90_UPI00035CB67F UniRef90-D7GCC9 UniRef90_UPI000366A067 UniRef90-U2UVQ9 UniRef90- X0WJ85 UniRef90_R5Q215 UniRef90-H3NW59
UniRef90 R6RGR6 UniRef90-XOZXS8 UniRef90_Q1CXM4 UniRef90-A0B3X1 UniRef90_D9Q302 UniRef90_UPI00037C4B38 UniRef90-R5URW4
UniRef90 H8X7Y8 UniRef90_Q67T20 UniRef90-H8X8G6 UniRef90_UPIO0034608E9 UniRef90-R6QTQ6 UniRef90-R9B0R6
UniRef90-W0T9B3 UniRef90-U2NS42 UniRef90-R6FD65 UniRef90_K01B92
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UniRef90-D8NBY9
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KLDPINQDACAFFEDHALFDDYGVVLDHEEGRRIAKA GTTHADYMYGEVPCVRPEEDAEA YEQNTGRLIVEEFVRM $R T \square P E S Y!L L R D V K K \emptyset P Y E E D Y T N P$ DQMAKEF
 TQDALRFYKSHAVYDNFGGVVL K VK GRLKEKEF

 P
P G S P G S NQDVCTFYGSHSVYTDFGEVVPCARNLT A EIEEGYEIVET NQDVCTFYKSHSVYTDFGGV YSAYGVVLEAREGDEIAKS
 $\stackrel{E}{A}{ }_{S}^{L}$ EAQAALGQEVPVAPYGLPSTKKLHRGVEET S DL PEMMGNFH
 NQDVCYFYRAHAVYSQYGG|IPCARNGANDASEGERIAQS

GLPCYGTTHADYFYGEVPCARNLTEEDEKGYE DET V S SCAFYND
DSKYGG
VPCMRGE GTTQADYFYGDVPCMRGEEIADDYEANTGKVIIEGFDGRD F $\square \mathrm{PPL}$ TPYALMQLGRVKLLPFFRPGDAAMGTAVRGAL
 HR AAARLGGAVTKEEPEEAYEKNTGVLIVDA NQDVLQFYNVHTVYEGYGGV ALEADEGVHIAEA LGRKLDP TGDACAFYEDHEVFDEFGVVLDSDEGKRI AVR LDPLTQDACAFYEDHALLDDYGVVLETSEGKRLAET DDPLTQDACAFYQNHSLFDDYGVVLDPKEGRRI AQT
MTPFHNDCA FLADWPGVPGA DQMDMTPFHNDCAGFLADWPGVPDA $L Q R N G L D G Q D A C F Y Q D H S L F D D Y G V V L P E Q G K R I A Q A$

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 L N D $\square$ QVGI LE NH GTIVVGGKTLKECYY L S E LLLE E S A K L A WH
 ASNANII MKNHGVVVLDDESLLDEAQMRLQTLEEVACHMML K IG D E DV LI L K Q H GV L CVVG D S L K E A T L L L A T F V
 YQECPA ILLKKNHGVFTVGK SATHSLLKNAVILDETTAQSVFY

 FEGRRGVLLANHGAVVAADTIDGAVDLALQLEWLCSVAYH





KNPVVII ENDCII AA ATS LLDNAFDRLDEVMEYSAKSLVE $\square G D K K A V L K N H G H L T V G Q S V E E A T W W Y V T M E R S C Q A Q L L$ MP S CRAFMLMHHGTLCLGESFDQAFEVAGALEKCCE IK N Y D GVILSNHGLVTVGASSKEATLRS LLAEREAK ILA L G S K R A L L L S H H GQQLVAG D S I E Q A CVVLA EL FEERAA R L QL L L G S K R A I L L S H H GQQLVVVGKTV E EAACI LAALLIDERAAA L QLL L L L K Q C Q A A AL R GHGGVVA Y S R DVVY E A L D DV EAA S D L A EVVQL Y



L
 L G DN K A I I L Q N H G L L TVVG E TVV D E A G Y L F TGLMMEKCCE EV QL L


 LGNNKAI ILLQNHGLLTVGETIDDEAGY LIFDLLERTCQVQLQQ


 L GP A K A V I L R R N H G L L L TVVGA S V V E E A T W WW






 FA GKN GVL CKNHGPF T WGK D A A Q A V H N AVVL E E I A K M N L M VGNGKGAILQNHGLITVGQTVDEAAYLYTLMERSCECQLL

 L L A A A M








 MGKVPAVLCKNHGVVSWGKDAHEAVHNAVVTEEVAKMAYR



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AR $\square M G A V P E L S E D E D A K A A G W$
ANQ $\mathrm{AGKTKS} \mathrm{\Pi PNYD} \mathrm{\quad EVLSRFG}$
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TAA $\square \mathrm{GGE} \mathrm{V} V \mathrm{~V}$ DEEVKEDEVAFN【
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$\square \mathrm{N} \quad \mathrm{L}$
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ADAAGYKK पM $\square$ NKEEAE $\square$ TAK $Q V G G P E K G W \square A$
CEK $\square \mathrm{NPQVQPAPQELQD}$
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VR C D $\square A$
$M L E \quad R L K E Q V Y E A N L E L P K Q G L V K F T W G N V S$
QE IA KY GRKL VE H GL LVESNF GNI S L R
GF SE GEA GHCS $\quad$ R D P $\square$ D
A A LRQDLAAAFRLCHRFGWSESVGNHFSAADSND $R Q K L A D T C R I E D D G G H D L G L A G Q Q T A R$ MLE QLKAEVYQANLELPKRGLIKYTWGNVSAF

R HRKE
E HAAATFR $\square$ FARKGYDEGEAGHCSMRDP $\square$ D METDHGK LRRMMLVDA $\square$ SMMERAG I DDFN GHFSARLP

E $\square$ A R F GK K L VE Q G LTT G SRF GN $\square$ S V


#### Abstract

 E QLK Q QV F A A NMAL P RHGLVTYTWGNV SAIDR QR $M L E \quad E L K K E V Y E A N M L L D Q Y G L V V T F T W G N V S$ K E RLA GA L R I F GRDGGYED GVS GHI T A RDPEY  Q Q LK Q QVVF E A N M DLLP R Y GL VT F T W G N V S A


TNSKTTDPRFELSDAARYFYRQDWMVGTAGNLSARLPD SELKK K EVYE QNMRLPELDLVNFTWGNVSQ』
A NARD DLAAAAFR AA R LGFHEGTCNHFS LLLP G AK L R E A R ID MAR I MDELGGNEGDDNHLTVVVPG
$M L E \quad E L K K S V Y E A N M E L P K R G L I T Y$ TVWGNV S
$M S$


Q WQLEHMAAAFRHWYREDY VE GMSGHDSVRDPEH $M L E \quad E L K E Q V F E A N L Q L V K Y G L V V L T W G N V S$ QEMRERVCQANKSLPEHGLVKFTWGNVS
 $L K Q Q V C D A N L S L P R Y G L V T F T W G N V S A D$

MYSEDKQRVLDANDSLPTYGLVTFTWGNVS MLE ELKEQVYEANMELPAKGLVTYTWGNVS



TE QELR $\square$ DLAA AVFRLIVY MDMHESVANHLSAAVSPD ERRHRQERLAAA LRVVAKGFAQGLAGHI TARDPED MS PVEWEARQQLAAACYRIFDHMGWSELI YNHITVRVPGE


ERRHRKERLAVAFRDFARGFDHGLAGHDTARDPEL MLY QKEREEMCEVVKVMFDRDLTNAAGGNLSERMNKE E ERA H RKAKLLAAA F RMF S R GL D E G V A G H I T V R D P E
TEAKMAEEDAGAFRDFAELDNDEGGVAGHISVR
$M N S S T L T D A R L E L D A A A H F Y Q Q G W M V G T A G N L S V Q R D D$
$M L E \quad K \square K E K V Y E A N M E \square Q R K G L V I Y T W G N V S$ $M L E E L K E K V F K A N L D L V K H N L V L F T W G N V S \square R \square D L A$ K L A A AF RMLARFGLTEGTAGHVTVRDPEH SMGYAK LRCKLASVFRLMDLYGWTHGINNNITARDNQE

VRLDAP
MA Q $\square$ T AEAAKEQLVQAAHY $\square$ ASHGLFRGNHANLSAR $\square$ S DT
MA YEALK QRVLEANLLLPKHNLVLFTWGNVSEYDREA $M S L S R E Q L A Q D L I E V G R F L Y A R G W S P A T S S N Y S T R D S P S$

E ERRHRKQRLAATFRLFGRGFDQGLAGHVTARDPEH

RALADHCRPLYVQGWMPGTSGNLSVRLPGQ ACYRIFDRGWTELIYNHITLRLPPE E $\square$ A D $\square$ A R GLY A S GWMPGTA GNI SVR $R K Q R L A A A F R L F G K G F S E G V A G H I T A R D P E F$ MS S LY K D LIK QECYEANMQLNALNLVVYTFGNVS




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 $R \| R D^{200}$ LDP LLTQDACAFYGDHALFDDYGVVLDVSEGERLART $N Q D S C M F Y K D D A V Y G S F G G V V F A$
$G T T$

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 NQDVCDPYKRESCAFYESHALYDGYGVIVDAEEGRLYAAG FAGYELIKGLGGTRPDAlDLPMFRNH ADVPQTGADIEKY GTTHADYFFGDITCTRALSAQEVDYEDNTGQQIGADTEGEA LESGLETRLHYMIVVAVGKSVPVAEYAPYGTDALAENVVTA
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GTTHADH可TDPAAF GTTHADYFHDPCTDAMTE QKKGLLMDSQHSMRFFQRDAMAEYEYNTGVVIVDRFRKN
 GTTHADYFYGPVPCAREEEVNSAYERETGTVIIEEFTRRG RDVPDDS YNDEGSYFLHDVPVVEGGDGTEKLANNDARA GTT SADYFFGDIPCTRAEVQGEYELGKVICDT STLPP $\square D Q N T A D F Y N R Y V \square D D E F G L A F E S E G E R C A S M$ GTT PVPCYGTTHADYFYGE
DIPFYGTTHADYFYGP
MSGPAGTTHADYFYGDIPCTRDLTEYEKETGNVVVET
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 L G Q R K A V I L K N H Gl L T A GP S V E S A A WW W I A L D N A C H T Q L L







 LG D R F V M M L R N H G L L T C G R S V G E A F R L M H N M E R S CR A Q L A MG D A D L L F L K N N H GVVMVA G G S I A E A WD D L Y Y Y L

 FK DKD GV LVVFNHGPFAWGKDAFDAVHNDTVLVEQVANMAWH






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| UniRef90-F8J6S7 | AMPVSDUKP VPELLAREAHDW】STPK |
| UniRet90-U1EAZ5 |  |
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| UniRef90 D9R5A2 | TELLNPAVLPAPRSLQD |
| UniRef90-UPI0004254E61 | TRQL NAGIIPSMQQELLD |
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$Y T H I S A R V P G P E ~ H H F L I N P Y G M S F D$ SAGR LI TPSGANKG GEGGFNI TRSGAY
TH $\square$ S L R VPGEAG HFLINRYGTLFE
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E
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GFNQEK
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GEHLVITHRGSADG AVNDDGSKFLMNPNQMHFS GIDDREKGLFVIKPSGVAYD


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E VCREL
QVHKLVTFTWGNVSG \(\square\)
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\(\mathrm{G} V \mathrm{~V} A\)
PSSFWVNP NGTHFA
MTWGNVSA DDRETGLVLIKPS GVDYE EDGVSGHLTARDPELAADCFWVNPFGLPFS
E HHFLINPYGMMFD
\(H \square S M R V P G H D D Q F L L N P Y G F L F G\)
\(\square T A K V P G T E H F L I N P Y G M M F D\) WTDLIYTH \(\square\) SMRVPGPE HHFLINPYGLMFD

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G \(\square \mathrm{DREK}\)
K G L F Y VI K P S G V D Y D
\(G\) D REK
AAFRWAER LHMNEAVANHFSLAVNTSGTQFLMNPNQVHFG

AVNDDGTEFLI NPNQRHFG
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LSETRALLTVSGKHKG

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THITARVPGPE
FTHISARIPGPE
Y H MVT


HHFLI HHFLINRYGVLFH \(K P S G V D Y D\)
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WT DHDYTHFSARVPGP
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 QTGGLRRYTQFAMTVTNDHAVYKONGAVAEDEGQRIAET GTTHADHADDPCAPPMKDKAYHDYEGTALNLDERSRIVAD AGMA \(\square P A A D T P C A P P M K\)

\section*{}

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EWALQTTCRFYGRVAYDYDGVALS
NSNFYSAQLHDAVAYHDFEGVT臬H TQDFCIFYDDH VVYPNFAGVVLAA GTTFCIFYDDH VVYPNFAGVVLAA GTTHADYAYGDDPVVMSDEQ\KRDYEEETGDQETDCFKDR SQDACMFYENHS VFDTFTGVVADLDSGDMI AEA QKNGLLPLLTQQSLFPLSGLSYHDYEGVALRDDEKARLQAD AQKDGLLPLSQEATQKLGQUPVLPFAPATSMELALLVKEY QKGGLLPDSQHAMRFYNRVSYHDYEGUALDDEERERLVAD
 TNKVIPPIAYDSAN YGGYIYVANGGNAESSETAKDLIDK GTTHADTFYGPIPVSRLMKAEEGIDEEYE GLVQTGNHVVNN GDGNPYGTTQADYFYGEDPCTRDMTVVDEEAARLLAKG

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SSLPPIDQNSAMFFERHIVDSDYGGLAFEEEGDRCAGL SQQSLFPLSS

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 NMDPMA IVVQNHGGPFAWGTSPMNAVYHAVVLVEQVAEMDLDK FA DMPA YI I R GHGVVYVWGKNMAAA L A R L E G GL E F L L A C V L E



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 VAS P K TMLL LN K H GI LVLD K T L R K A Y DMLE RVE Y NA YV A A K L GA S Q Y LI L R NHGGLLTTVGQSMA EAF QAMHRELEAACMVQVR L G D TYA M L R NHGGLLTTCGRSVVAEAFTDMFY L Q KA C E A Q I A

 L NMSDACLLEESNGAIVVSGNIVENVVFKARTVERVAEIVYK

 FK DLLNAVGVKNHGPFTWGGKDPSEADVHNAVVLIE EVAMMAAT


\(\square G N K K A C L L Q N H G L L T V G Q T D E A C I F W F I S G L E K C C R T C Q L D\) E P D L I A Y V L A G H G I Y A W G K DVVE H A Y WR L E A L E F A C E L

 LG DVKVMI MGNHGLLVLGDSVADTFNRLYYFERSAETYDR FEK K Q GVLVHS HAPFVVWGKDPDNAVHNAVVLEEVAKMAI N

 L G D R R F L M L R R N H G L L \(\quad\) T V G R S V A E A F V
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\hline UniRef90-H5WVD0 & AQGGGKVPQAIQDEIPAMARA \\
\hline UniRef90-K0DSX8 & TFSMGKARAVPEEAMRCSRDADQFDPRHGA \\
\hline UniRef90_UPI0001CBAA5E & AMSTGKELLE \({ }^{\text {L }}\) ( P E E \(\square\) A \\
\hline UniRef90-A7HWN2 & A L S GGVKLTMPNQ \\
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\hline UniRef90-C6HX27 & \\
\hline UniRef90-A3CW38 & S GRILR GV \\
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\hline UniRef90-W6T582 & TMQLS G \\
\hline UniRef90_UPI0003B52067 & S C TLR P E VP R L K D A L I R \\
\hline UniRef90-B9K0J3 & E R \\
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\hline UniRef90-K4AQN9 & T L S M G Q KVTLPSPEVCEHAAK \\
\hline UniRef90-S8AV20 & AEAAGIPKRMIS DEI AKY T A EFAQNPH \\
\hline UniRef90-B8MZL2 & AEAAGVPKKIINDEVAQ \\
\hline UniRef90-B81292 & CR QLLNPNVT PMP QVLLD \\
\hline UniRef90-R9AC94 & A A S G H K I NTIDDEDAAFTAATLTHPEAAYL \\
\hline UniRef90-W1N789 & AMKTGRKLIVPSA \\
\hline UniRef90-W2DAP6 & AQACG KLVLPSAEVCAYTEQ \\
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\hline UniRef90-UPIO003461888 & T Y Qi N P EVTP \\
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\hline UniRef90-X1TF44 & LKALGR1 \\
\hline UniRef90-A3K3P1 & ALQ T GVELD F L S D EVAE \\
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\hline UniRef90-S3W3K8 & S R \(\mathrm{C}^{\text {K N NP }}\) \\
\hline UniRef90_UPI00044089B1 &  \\
\hline UniRef90_UPI00046A91DE & AQAAGTELHEESQEMAD \\
\hline UniRef90-13C7N8 & T L Q I N P N A P RLLK D S L I \\
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\hline UniRef90-UPI0003469734 & S L Q T PELLPPMQQALLD \\
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\hline UniRef90-F4EE16 & TEQI NPRVEPAPSYIMD \\
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\hline UniRef90-U7Q0R3 & A EAAGGRRNELT \\
\hline UniRef90_UPI0004678355 & T RTLRPDVQPLKQA\ID \\
\hline UniRef90-G2IE42 & SNQLTGNKLEKMDTVL LNKHFK \\
\hline UniRef90-12N4N3 & ARAAGKPVPIGHRDAVATREQLG \\
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\hline UniRef90-K2JPL6 & AMSSGAELAMVPPEVIAEHAAR \\
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\hline UniRef90_UPI000424670B & S S QLS GEPELLDD \\
\hline UniRef90-A0A009QCP5 & A YSTGQTLKKLS DDVAE \\
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\hline UniRef90-P75289 & TQM| NP \\
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\hline UniRef90_S6FJG8 & TEM \\
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\hline UniRef90-UPI00037AB0B9 & SMQLTHKNLELPQYLLD \\
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\hline UniRef90-C9KQG7 & A L Q L \\
\hline UniRef90-A0Z4Z8 & ALQTGQQLRTLLDDDTAR \\
\hline UniRef90_UPI000476AC3E & ALAGNPPLTPVPQEIVD \\
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\hline UniRef90-UPI00047C3A6C & A LQTGQPLRVLSHEVAE \\
\hline UniRef90-UPI00047BD895 & MIT 1 N P T TEPMDQELLD \\
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\hline UniRef90-N2J703 & 1 L S 1 \\
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\hline UniRef90-Q882Y5 & A QSAGNELVFPPQEVIARVE \\
\hline UniRef90-E3G9B6 & SHQLTPQLPDMQADLLD \\
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ERHA \(\square\) A \(\square\) A CRVLAARD \(\square\) APG \(\square L G H \square S \square R V D R\)

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E E WA \(\square R Q D \square A A A Y R \square A H H F G W D E L I Y N H \square T V E D P G\) MSNLSYYEMRLEMCKVAKMMWDRRLTNAAGGNFAVRVDEN

MSNNPQLSELVAACRWDGQKGWCPATGGNMSVRDD E E I KQMQFTGMVLHQLRLVSSHGGNLSVR \(M L E \quad Q L K Q Q V F E A N L A L P K H N L V T F T W G N V S\) K \(\downarrow A E E L V I A C K R A Y T R G \| Q T G S G G N V S A R V P\)


MLES \(\square\) KEEVFQANLELKRQNVVIYT WGNVS \(\square\) RTARE
\(\square\) DEAEARQQDAACYRVFDH DGWTELDFNHTT LRVPGE MS DETLKE EVLAANLDLVTKNLVISTWGNVS
MSNLSY YETREEMA VVAKNMWDRRLTNAAGGNFAVKVDEN
\(M L E Q L K Q E V F Q A N L D L V K H G L V D F T W G N V S\) HMAATFRYFARQGFVEGMSGHISVR

\section*{\(M T V L P Q \square D Q L V A A C H W \square G A K G W A P A T G G N M S V R Q D D S\)}


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MNNEQ 【IQQMKEANLQLPNEGLIKLTWGNVS
E WDARVQLAAAYRDFHMLGWSELIYNHTSLRVPGE MYDELKRQVLKANLALPEHNLVTLTWGNVS

\section*{}
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MYTDLKEQAWRANMEI PARNLAIYTWGNVSALDPDK MLLAALREEVLEANREI SRRGLAPHTFGNAS EQLKQQVCAANLLLPAYKLVTFTWGNVS
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MLEN LKEEVLKANLELPKKKLITYTWGNVS

EEWK LRVDLA A CYR LVAMF GWDDLIFTHDSARLPGT \(M \operatorname{TENPQLSALLLAACHWUGEKGWCPATGGNMSSLRLDD}\) RNLIPE LDCRQFYH \(\square G W V T G T G G G \square S!K\)
\[
R A R V E
\]
\(K Q R \square A A T F R \square F G R Y G F D Q G \square A G H V T A R D P E F\) QWAKEH LVGAFR \(\square\) FAKFGYNDGAGGH \(\square \mathbf{L}\) GRDPVN





ENYELLKNTHESRIVVP \(\quad 180\) AN DQDIPRIDATQA DAYLD T QSNFYSAQLHGMVAYHDFEGDTDHA DEAPRVL K S Q E Q G L L P D S Q H A L KFY G K L A Y H T Y E G DA L S LDERER L I A D
 Y E PLMRFGMTEPTPVVIIAWAPRGSDESVRGIVDAVKA



A Q D R K L L P I N Q
    KTGKP】HQNSCRFDGNVMYDKNYGAGENDEADRLGKT



G T T

T WHARLKMSADLDPTLDVPAAMVKKEYFPMVEEEYRENS DL
        C GF L P M S Q E A L I CGEVVSYHE Y GILVDDQE ERA A L QR H
    EGYEVLPGVDSHTARLEVPVFGNDQDI PRLAARVEAHLSA
    GGFKLEMCHQNSLRFWNEIAAYDDNGLVLDDDEGERLVKV
GTT
            GLP P
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                VWA G Q T A LIK F Y GLRKYHS Y S S FIID S TILE Q Q N M I K S
GTTHA
                LI

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                                    K GE
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GTTHCDY FN \(\square P\) CTRLMT
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\(G\) & \(T\) & \(V\) & \(R\) & \(D\) & \(D\) \\
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 LK S N K A L F MVVNHGALTVVGKTDE SAA FWF Y S L E K Q C Q V Q Li
MK M M L R H G V









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 MAGKD I AF LA D 1 DP QAVII AGHAPFTWGKDGSDAVHNAVVMEEDAAMATA L G E A N NL I L R N H G L L T C G A T V A D A F L N M F L Q R A C E V Q A
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 P SRMPA YLI A GHGLYTWGGSVREARHRLEALEFMFECELW \(P G A \square P A Y L I R A B G L Y A W G K D V D E A E R V L E A T E E W M\) \(F R Q R Q A V L V H S H G P F V W G T D A A N A L H N A V V L E E \square A Y M G \square F\) L G D K R F L M L R N H G L L T V G R S V A E A F F V A M Y F F E T A C M I Q V R
 \(P A T V Q A V V R R H G l Y V W G K S W Q Q A K A M T E C Y D Y L E D D C G V Q\) FQDKDVLMMANHGVMVIGPSVSHCLYDLHYLEVAARDCWN




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RRLL
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RLS
A QS TGKK LKKVGDDVA
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\(\square\) IS M NQNi ITPDPHMKRTYDTFSSDYECGUVEL
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TRQ 1 NPDAERGKDSL!
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A VT \(\square\) GNNFEPMQQELLD
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T 1 A A GPVKAI SDEEAMDAYKT LG
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VEAA
AEAAG \(\square\) KKS \(\square\) CPHEEAEYTYR \(L\) T TPEAMW \(\square E\)
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TVRLNQE
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TRA】SPEVAIQPE
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C
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A QSTNQNMVTISEAVQKTKSQFDLTPYKEFEAL
RRLL
MKQFG】DP ILTPRE
ALDANQPLRLVTAAVID
SRQLTP
A QA A GP LKP \(\square\) SHD
AEAGGAELIE DPRA ILD

UniRef90 Q474E7 UniRef90-K8WQPs UniRef90-18T9P2 UniRef90-A0K6G5 UniRef90 Wol288 UniRef90-W6TYBO UniRef90-M5DM61 UniRef90 G8NAR2 UniRef90- B4WCK9 UniRef90-LORUD4 UniRef90-UPI00016A7934 UniRef90 UPI0003B3А9СВ UniRef90-A5FUG4 UniRef90-H1WQL4 UniRef90-X0QC71 UniRef90- E8XPC9 UniRef90-UPIO003678537 UniRef90-F4KX38 UniRef90 X5DWD6 UniRef90-C4XXU2 UniRef90-G0EC97 UniRef90 W9C967 UniRef90 K2MLJ8 UniRef90-F7VAD4 UniRef90-UPIo003659A77 UniRef90 U2UXY8 UniRef90 \({ }^{-}\)F81828 UniRef90-C6C4C9 UniRef90 V8NM10 UniRef90 UPI0003719062 UniRef90-H0TR65
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UniRef90_V8R5T8 UniRe990 UPI0002ECFABE UniRef90-D5WZ18 UniRef90-F2GAA6 UniRef90 UPI0002626F58
UniRef90 Q5YZV1 UniRef90-H1SCR2 UniRef90_A0A021W131 UniRef90 F4S9L2 UniRef90- S2ZP67
UniRef90-U7Q2T2 UniRef90-U5KMZ6 UniRef90 DOD3F5 UniRef90-101223 UniRef90-G216D3 UniRef90_M9MKK3 UniRef90-E1GBK3 UniRef90-UPI0002D47CAA UniRef90_Qow5S6 UniRef90 F5Y3V7 UniRef90-UPIO0035F0386 UniRef90-A8GF55 UniRef90-E3QAA4 UniRef90 E3BJS4 UniRef90-W2RUJ9 UniRef90_UPIO0037ED43A UniRef90 T1J123 UniRef90-C2WBF3 UniRef90-E6W5T6 UniRef90 G0A6F9 UniRef90 S3DEX2 UniRef90_W6ML43 UniRef90-W4QX99 UniRef90 UPI0002899B91 UniRef90-F9ZS97 UniRef90_S613B1

MAENKPपAELVAACRWपGARGWSPATGGNMSQRRD
MLARLYTAFRQ VGEDLFGQGLISATAGNFSVRGK

EMLES \(\square K E A T \square E A N \square E \| V R R G L V L Y T F G N A S G \square S R D E\) \(R E L V A \square G A R M D A R G W V P A S A G N L S A R C T A D\)

T TMQTATSTDSTSSVHHNMSEQEWQMRVNDAACYRM MTENLQLGALLAACHWDGQKGWSPATGGNMSVR MKAKLFATFQQDGADLFASRLASATSGNFSVRDK
MLE Q LKEEVFKANDE LVEEDDVVDFTWGNVSAD


 MM \(\square\) KE \(\square\) RERAYEANMD \(\square\) P KHGLVVFTWGNAS

ERQYRKER \(\square\) AAAFR \(\square\) FAKGYEEG \(V\) MGHMS \(V\) RDP \(\square\)
E Q LK H DVF K A N LDDPKHGLVT FTWGNVS
K QR \(\square\) A GACRVLYRCGYEYGFAGH \(\square\) T VR
QLVT TCHWDGAKGWAPATGGNMSVRED
\(T \square R C K \square A\)

NYSEEHPRK LTPEDCK LFYGNGWVTGTGGGDS QL \(\square R \mathrm{HANKLIYENGWMAGTSGNLSVR}\)

पCEAGRF \(\square \mathrm{DSKGWVPATSGNFSVR}\)
\(M L D \quad Q \square K E E V L K A N K L L Q S S G L V K \square T W G N V S A K\) EAARTLAATGHRLYQQGWSPATSSNYSIRLNAG

MEFEA \(\square\) A QS \(\square\) AEAGRF \(\square\) AS QGWAPATSGNYSAR

\(\square\) CELCRNFYS \(\square \mathrm{GWVTGTGGGDS} \mathrm{\square R}\)
MMLKE \(\square\) REEVYKANMDLTKHDLVVFTWGNAS

MTNDDETQARDDLAAALRMTARAGMHEAVANHYSVALSAD YCDAVAR \(\square\) I AA GQRMDRFGWVPATAGNПS V R S S HE

MDFAAAADLVATGRRDDARGLAPATSGNYSVR REIAYWGKKLDDAGLVSSRFGNISVRTKN ACYRVFD \(\square G W T E M \square Y N H \square T L R L P\)
DDGIIEAGRFAHARGWVPATSGNFSARIDAN

\(R W \square G L \operatorname{G} Y N E G A G G H \nabla T \nabla R\)
\(R N L I P D L C R Q F Y A L G W V T G T G G G \prod S \prod K\)
MK QLFRQW
EELSKLKKELTDRNWFPATSGNIS!KVSNA VGRDTYDKDLNSSHSGNISFR MNLKTDEFADELIAAGRFIDSKGWVPATSGNFSAR

KELAAVKRELAARGWFPGTSGNLALKVSDH
AREFYRRGWMLGTAGNLSARLPD

UniRef90 Q474E7 UniRef90-K8WQP9 UniRef90-18T9P2 UniRef90-W01288 UniRef90-W6TYB0 UniRef90-M5DM61 UniRef90 G8NAR2 UniRef90-B4WCK9 UniRef90_LORUD4 UniRef90_UPIO0016A7934 UniRef90 UPI0003B3A9CB UniRef90-A5FUG4 UniRef90-H1WQL4 UniRef90-X0QC71 UniRef90- E8XPC9 UniRef90_UPI0003678537 UniRef90-F4KX38 UniRef90 X5DWD6 UniRef90-C4XXU2 UniRef90-G0EC97 UniRef90 K2MLJ8 UniRef90-F7VAD4 UniRef90-UPI0003659A77 UniRef90 U2UXY8 UniRef90 F8I828 UniRef90_C6C4C9 UniRef90_V8NM10 UniRef90-UPI0003719062 UniRef90-H0TR65 UniRef90-E8LLLI5 UniRef90_UPI0003B6C9FD UniRef90-I3UFB3 UniRef90_Q7T147 UniRef90 G0E9X8 UniRef90-N9QZK1 UniRef90-UPI000298F6D9 UniRef90_S4RST4 UniRef90 E1R2F9 UniRef90-R5SJI7 UniRef90_UPI0003F9CDD6 UniRef90 UPI0003A6B124 UniRef90_FOZL55 UniRef90-J9ZEI4 UniRef90 UPI000375DB4A UniRef90- S1A9Z4 UniRef90_UPI00037A8BE6 UniRef90_G8WEN5 UniRet90 A6DG32 UniRef90-K0CFU5
UniRef90-W0HZD9 UniRef90-।2ILP9 UniRef90-K8RCP3 UniRef90-A5VE24 UniRef90_V8R5T8 UniRef90 UPI0002ECFABE UniRef90-D5WZ18 UniRef90-F2GAA6 UniRef90-UPI0002626F58 UniRef90_Q5YZV1 UniRef90-H1SCR2 UniRef90_A0A021W13
UniRef90_F4S9L2 UniRef90- S2ZP67 UniRef90_U7Q2T2 UniRef90_U5KMZ6 UniRef90_D0D3F5 UniRef90-I01223 UniRef90-G216D3 UniRef90_M9MKK3 UniRef90 E1GBK3 UniRef90_UPI0002D47CAA UniRef90_Q0W5S6 UniRef90 F5Y3V7 UniRef90-UPI00035F0386 UniRef90_A8GF55 UniRef90-E3QAA4 UniRef90-E3BJS4 UniRef90-W2RUJ9 UniRef90_UPI00037ED43A UniRef90 T1J123 UniRef90-C2WBF3 UniRef90-E6W5T6 UniRef90_G0A6F9 UniRef90-S3DEX2 UniRef90-W6ML43 UniRef90_W4QX99 UniRef90 UPI0002899B91 UniRef90-F9ZS97 UniRef90_S6I3B1

50
60
70
80
\(\square\) A A A Y R \(\square Q G W D D L \square Y\) TH \(\square\) SATVPG EPDHFLLINPFGFAFE ETWCWLSESGKDKG WDDLVFTHTSARVPN SDHHFLINPYGWMFE WDDLVFTHUSARVPGPE HHFLINPYGMMFD AHSCFI TTSGLDKG
FTFGNVSAADREEGVFAIKPSGVPYK WDDLDFTH 1 SARVPGPEA HFLINPYGMMFD

FTHDSARVPGPE HHFL KSGVYKA
 WDDLIFTH \({ }^{\text {S }}\) SARLPG SDHHFLINPYGMMFE \(S \square \mathrm{~A}\)

DRAS GLVVI KRS GVVPY K
\(\square\) AS Y GWDDLVFTH \(\square\) SARVPGTEDE FLIN PYGMLFE
-
EGDAHCLI TESGKDKG
FTFGNASVADRSAGVFAlKPSGVPYA DREKGLVVIKPSGVSYE

G \(\square\)
E

E VDRDK
F TH \(\square\) S A R L P GEA
HHRLVTLTWGNVSGVLRSQGMVIKPSGVDYD


NLEQEHFLIVPFGLLYS WDD LIFTH WDDF \(\square\) YTH \(\square\) SARVPGP DHHFLINPFGLTFD
D P E H P S \(\square \mathrm{Y}\)
WTNPFAMSFS
NSEQERFLINPYGYMYE
HT WGNVSADSKDRSYYVIKPSGDPYE


WDDLVFTH \(\square\) SARVPDTEDE FL \(\quad\) NPYGLFFE
E GKE \(\square Y\) T A A S G VQK E
TEDGFRITPSGKHKG
TYTWGSVSGIDRERGLVA KPSGVAYE \(\square H Q L V T F T W G N V S G L E R E K G V M V I K P S G V E Y S\)

H LVTFTWGNVSG

HAA
\(I\) T CS GKDK G
APDHF LIKRHD LITYS WDEY \(\square\) FTH \(\square\) S \(\square R\) R \(\square\) GPE

WTNPMAVHFA \(R H F L I N P F G L L Y E\)
\(D L G F L V P Y G Y A F S\)
\(\square\) VFTHTSAKLPLSLTGGDHFLINNYGRMFE RWGDLIYTHISAKVPGTDHYLVNAFGLTFD

HENHVFI APSGVQKE

D P VR P

 GDKYY I AP SGVARKE GSRFLI NPKWMHWS LGREDRQLA ILGEGNTSARDDEGTFWVKASGSQLG

PKRYLVNPFGLNYD
 DSVTGGAK Q FL I NP R GVMM
\(R \square \mathrm{~A}\)
 MHGWDDLIHTH \(R \| P G T E D L L I N A F G L S F D\)
\(D P L L P D H F W I N P H G K S F S\)


AS DGS IH TARRGSMLG
LADGNIAITVSGRHKG
PKTFWI NPYT \(\square\) HFE
DNDY \(\square\) APS GVQKERLVPENMFVMDLKSQEY LRKPL
P L




\section*{UniRef90 Q474E7} UniRef90-K8WQP9 UniRef90-18T9P2 UniRef90-A0K6G5 UniRet90_W6TYBO UniRef90-M5DM61 UniRef90-G8NAR2 UniRef90-B4WCK9 UniRef90-LORUD4 UniRef90_UPIOOO16A7934 UniRef90-UPI0003взА9СВ UniRef90-A5FUG4 UniRef90-H1WQL4 UniRef90- XoQC71 UniRef90-E8XPC9 UniRef90_UPlooo3678537 UniRef90-F4K×38 UniRef90-×5DWD6 UniRef90-C4XXU2 UniRef90-G0EC97 UniRef90-W9C967 UniRef90-K2MLJ8 UniRef90-F7VAD4 UniRef90-UPIooo3659A77 UniRef90-U2UXY8 UniRef90-F81828 UniRef90-C6C4C9 UniRef90-V8NM10 UniRef90-UPI0003719062 UniRef90-HOTR65 UniRef90-E8LLL5 UniRef90-19L1L9 UniRef90-UP10003B6C9FD UniRef90-13UFB3 UniRef90-G0E9X8 UniRef90-N9QZK1 UniRef90_UPI000298F6D9 UniRef90_S4RST4 UniRef90-E1R2F9 UniRef90-R5SJI7 UniRef90-UP10003F9CDD6 UniRef90-UPIOOO3A6B124 UniRef90-FOZL55
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UniRef90-12ILP9 UniRef90-K8RCP3
UniRef90-A5VE24 UniRef90-V8R5T8 UniRe990-UPI0002ECFABE UniRef90-D5WZ18 UniRef90-F2GAA6 UniRef90-UPIO002626F58 UniRef90-O5YZV1 UniRef90-H1SCR2 UniRef90-A0A021W131 UniRef90-F4S9L2 UniRef90-S2ZP667 UniRef90-U7Q2T2 2 UniRef90-DOD3F5 UniRef90-101223 UniRefofo G2l6D3 UniRef90_M9МкК3 UniRef90-E1GBK3 UniRef90-UPIO002D47CAA UniRef90-Q0W5S6 UniRef90-F5Y3V7 UniRef90_UPIOOO35F0386 UniRef90-A8GF55 UniRef90-E3QAA4 UniRef90-E3BJS4 UniRef90-W2RUJ9 UniRef90-UP100037ED43A UniRef90-T1J123 UniRef90-E6W5T6 UniRef90_G0A6F9 UniRef90-S3DEX2
UniRef90-W6ML43 UniRef90-W4QX99 UniRef90_UPIO002899B91 UniRef90-F9ZS97
UniRef90_S613B1


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220
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पGQQQAmLLRNHGTपTVGRTVAEAYVLMATLDKACEVQПG APLRYGFLLRGHGLTCWGNTIQEAARHLEGLEFLLECEMQ LGEANFYMLRNHGLLTVGGSLADAFVSMYFFEAACMIGVR TUGGNYLMLRNHGLDTVGATPADAFVAMYFFEAACMLQVR GYSHHMDLVGNHAPFTWGKTAEKAVYNSAVLESVAHMALL LGTTDFMLLRNHGLLTCAENLADAFLNMFILQRACEVQLL LGDKSLMLLRNHGTLAVGETAAQAWIGIFFLERACAQQVA FESTTATLVKEHGPFVWSKNPADAVNLALTLEEDAKMALY LGRAMFLMLRNHGLLTVGPSDADAFLAMYLFETTCQIQUAM AAPPDGYVLRGHGDYAWGEDVERCFWRLEAL EFL
LNPMPAVLTDDHGPFTWGENVNEAVHNAGILDTVANMAYH AEHAPGFLLRGHGLTCWGRDVAEARRHLEGLEFAFQCELQ

TKNYDGVLVNNHGPFSWG
LEKCRAAILSGHGVVAVGETVWKAKVYNEAIDYLLELDADK
LGSKKAALLQNHGL
LGDKAVMVLRNHGLLIVEENLPKAFWLAWTLQRACETQCA
LGDKHVLVLRNHGVAVGESDVARAFFLLWTVQRAAE:QCH
\(L G Q A N Y L M L R N H G L L T V G A S I A D A F L A M Y D F E S A C Q I Q D A\)
\(F A G T D G C L V R N H G P S W G K D A A Q A V Y H A V V I E E D A K M A R D\) LGNPDAVLVHGHGPFTWGRDPDEAVHHAVILEEVAKMAYH FQQRQAVLVNAHGPFAWGRDAHNAVHNAVVLEEVAYMGDF VGSNKVLLLKNHGLLSLGKSVEEAAYWFISEEKASQGQLL LGSKNLMLLHNHGTLAVGRTCAEAFLRMYFLERACTMQVR
\(M K D P A V L V N S H G F C W G T P D A V Y N A V V L E E A F M A F H\) LGQTNVMLLRNHGTLALGASDGEAFSGUYQLEAACSAQVR
 ARSHPGFLIRGHGLTCWGRDVSEARRQLEGLEFLFECELL QLDEDAVLVKEHGPFCWDKSADDAVKLAMTFEEGAKMAFY
NTDKKVLIGRNHGLVAVGSTLEEAFYYIGNLVACEMQVR GPTSKVLILRNHGLVALGETVEEAFHYLYNLVMACEVQVR YKEVEMVLVACHGPFSWGKDAMKAVYNSAVLEEVAKMATL
FEQRPGVLCTNHGPFTWGKDAAEAVHNAVVLEEVARMATV LGDANFMI LRNHGLLTCASTVADAFLFMYIMQRACEVQIK MEKYNAVLVRRHGVYVWGPDWVKAKTQCECLDYLFEDAVK FRRKREFLLPGHGLTVWGESPDAAFKHVELFDFLFRFMVL
FQNRPGVICRSHGPFVRGKEAAQAVYHAVVLEEVAKMAV FRQRPAVLVNSHGPFAWGTDPANAVHNAVVLEEGAYMNLF
 FQNHKAALLHFHAPFTWGRTAMESYKNAVALEACAEMAVR MDQNHAYLIRGHGLYTWAADMATCYRQLEALETLLAMELD LQLKSALFMANHGVVVTGATAAEAWDRLYALEYACQVQLY FKGVKALIMQNHGLLVVAASAPAAFTRIKDLLEACRIQLMM LGTNNHLLLRNHGLLACGADVAAAFSALLTLQRACEVQLA
 GEANFLL RNHGLLTVGASIADAFLGMYVLESACQMOA LGDTNHMLLPNHGGLTLGPSVGDAFMRFYDLQRACEVQLA LTPVPAALI DRHGATTWGPDLETARNRMECLEMLCALQLR GGKGEALLRNHGLVTLGRSVAEAFIDMHNLERACRVQVA LGRNTFLMLRNHGLLTVGASVADAFLAMYDFEAACAI QVR MREYPAVLVRRHGTYSWGKDWEQAKCQAECLDYLLEEAVK LGAGKACLLQNHGLLTVGATVEAAVFWFASLDKCCHVQLL LGNKSRLLMGNHGVMITAETVGEAWDDIYTFDRSAQIVIA LLR RYKLLMVNHGITALGRTMQEALNNTLMADKWARILLG APHLDAMM RGHGVYVWGADMDVALARLEGLEFACEL LGDKNVMLLRSHGFVACGESVEDALHLAFNTVIACETQDR FGKYKGALNRGHGSFAWGGDLADCENTTAM1 EHSCFVKYH
 FAERQAVLVHSHGPFTWGKDAENAVHNAVVLEEGAYMGTF LGKANFMLLRNHGALTMGKTIGDAFMHMYDLTQACQDQLH LGSTKACL LQNHGHLTAAKTVDGATFDFGAFDRCDQAQLMM MKEYPAVLVRRHGVYVWGESWEKAKTMCECYDYLFEDAFQ
 1 KNTKVAI LQHHGLLSVGTTIDEACYWFCCFDRCCRAQLM | K DYPAVLVRRHGUYVWGETVWKAKVYNEADDYLLEDAVK LGAGSFLMLRNHGLDTVGA


UniRef90 Q7PS09 UniRef90_R2SIY6 UniRef90-Q65KJ7 UniRef90 U2NJJ9 UniRef90 C6CYF5 UniRef90- 59 WJ 72 UniRef90-E2C5T1 UniRef90 H2MJY7 UniRef90 H3GCA5 UniRef90-14WLI2 UniRef90_A8L5D88 UniRet90 W7AP78 UniRef90 S6HI91 UniRef90_Q1YKX9 UniRef90_UPI00046F0C88 UniRef90- UPI0002A4995F UniRef90_CON6K4 UniRef90 I7MALO UniRef90 U5LA27 UniRef90-UPI0002F26760 UniRef90_G8RGP6 UniRef90_UPIOO04419088 UniRef90 E6RJQ6 UniRef90-C3Y497 UniRef90-K6Y6Z0 UniRef90 R7WY14 UniRef90 A0A024JXR4 UniRef90_Q3AWF4 UniRef90 A8FCH0 UniRef90 UPIO0045EC420 UniRef90 Q0K828 UniRef90_UPI00021A44D7 UniRef90 A4YNG7 UniRef90 \({ }^{-}\)X4Z134 UniRef90-UPIO0036D49BB UniRef90_A8NQV9 UniRef90 B2T82 UniRef90-W6L665 UniRef90_U5KM19 UniRef90 W8Z0M8 UniRef90 K7GG61 UniRef90-F4WDI3 UniRef90_UPI00034A8376 UniRef90 I6TDD2 UniRef90 T2MGIO UniRef90-UPI000441838C UniRef90_11EWL0 UniRef90- UPI00039F3726 UniRef90-V8DHV3 UniRef90_B5I631 UniRef90 UPI0003644A2E UniRef90-B4LMU8 UniRef90-A0A031LQK6 UniRef90 J2VJX0 UniRef90 H2UL45 UniRef90-R9AFL6 UniRef90-UPIO0041CC611 UniRef90 UPIO00368CCB UniRef90-UPI000367EA01 UniRef90-UPI0002893F81 UniRef90_G3PYD2 UniRef90 W7YND8 UniRef90_UPI0003B450BA UniRef90_Q5DD72
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UniRef90_UPI00035DB8FE

MSEQK RQELAEDKKELAERDWFPATSGNLS DKVSED
 NYDEEHPRNLIPK LCRQFYQLGWVTGTGGG \(\square\) S \(\square K\)
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KCRELLVCELCRLYYSTE WMT GTGGAMSLDR
DAIAAEAARELSAMGWTPATSSNFSMRVDAS
A A YRLFAKG|AEGLAGHISARDPELL
E LK Q A VY Q A NMMLLPEA GLVKLLTWGNVS

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MTNQVIEAMKERVYQANLDLPKEGLIKLTWGNVSEDNREL \(M N R \square P D Q Q \square K Q E V Q H Y \square W \square R Q Y G C N D S H S G N A S F R W H D E\) REVI CALLRNFYTQGWCAGSGGGISIRKSDD MSLIQEKW DQLADIVEELAGRDWFMGTSGNLAIKVAAE \(\square K E R L V A A C R A F A L Q G F D Y G F A G H L T V R D P\)
\(\square R C K\) A
\(L R\) VD L A
QVALMCRMLIKEGWDEHTAGHTTYR LAAAFRIFARHGFDLGLAGHI TARDPEL
QELREQLAKTIGDLHGRRWCEGTGGNFSVVVQHD QELADVKREEAQRDWFYGTSGNDSI KV SDD
\(\square \mathrm{PE} \square \mathrm{C}\) K Q F Y S LG WVT G T G G G \(\square \mathrm{S} \square \mathrm{K}\) Y K

ARAADATCEAGRLLDGRGMAPASSGNYSMRLDDG \(\square P E L C A S F Y H \square G W V T G T G G G \square S \square R\)
\(\square P E L C A T F Y S L G W A T G T G G G V S \prod R D D\) RNLI PELCRHFFHLGWATGTGGGI SI K
MT DYMDSPGLEEKQRAFADLSERGWFPGTSGNLSVRV
SMGYAK LRCKMAAVFRLLDLYGWTQGVGGQDTARDNQD
REALAWVIRDI HQKGWATGTGGNFSAIVLQPD EMK QRVYEANLALPQYGLVKLTWGNVS
\(\square \mathrm{PE} \square \mathrm{CRAFYN} \mathrm{\square GWVTGTGGG} \mathrm{\square C} \mathrm{\square R}\)

\(\square R R E V L E A N L A D P Q V G L A T \square T W G N V S\)
ELADAKQLFADRGWFAGTSGNLSMRVGEF SMGYAKLRCKLAATFRLLDLYGWTQGLGAQITARLKVD NVSEAELRVKLAHCYHLIDYFGWTETLFNHVSARLPGA VR E Lla
\(\square \mathrm{PQ} \square \mathrm{CENMYRQGWVTGTGGG} \mathrm{\square S} \mathrm{\square R}\)
GNTSARTDDA
ELAAD \(\square\) KDLFAARNWFPGTSGNLSMRV
QELRQYKTMLASKGWFPATSGNMSVRIGDH I PELCRILFY QLGWVVTGTGGG\SLR
ELRNI KQQFADRNWFPGTSGNLSMRVGDF
ELRR
LRRSLAALYRLIDMRGWTHS \(\square Y N H I S A R C T T N\) SELAQLLIDNVRELAHAGWTPATSSNFSHRLDD

TEDE IVRAMDQAGHATVNARMVDSFFGNDSY RALAATGQRIIYANGWSPATSSNYSQRLNTD MSPAS \(\square\) AEDLTRAGHALDAAGLVTA FGHVSARISDE MDHFYDKSFDKEIPELCRQFYHLGWVTGTGGGISDK

I PELCKLFYKLGWVTGTGGGI SIKYNNE
M \(\square\) GEQAKSLIVDLCRQFYTLGWVSGTGGGISIKED
LK QLLCEAALHVYERRLTDAAGGNFSVR
\(L V A A C R V L E H Q G L T T A\) F GHVTARVDGA

MESQTSLQELTKLSHTYYERQWMYATAGNLSCR VADLCRHFYNLGWVTGTGGSITVKVHDD ELSEVKAELAERDWFFGTSGNLSIIRVGNS

EKQAALDAlQRLREELAARGWFPASSGSLSMRV 1 PELCSKF WHLGWVTGT GGGAS \(1 R N D N\)
 \(M H T Q A A K L A L D D A G A W V A Q Q G W V P A T G G N F S I K T D S\)

G WA H LIA N S Y \(\square\) T VR \(\|\) S K E
DELVALSRVLGTREHDLAAEGNASARVDAE \(\lfloor P E L C A S F Y R L G W V T G T G G G \square C \square R\)
\[
\begin{aligned}
& \mathrm{P} \square \mathrm{R} \\
& \mathrm{~N} \text { P D E F }
\end{aligned}
\] WTDH \(\quad\) YTHFS \(\square\) RVPGEKP HFLI TASGKDKR YFA TASGKDK
 \begin{tabular}{ll:l}
\(H E D K\) & \(Y\) & \(A P S G V Q K\) \\
\(E Q D H\) & \(L\) & \(D P R G G\) \\
\hline
\end{tabular}
HA A HGERIYV TPSSGVPKE TDHFWVNRLGLDFG \(T \square D R E Q G V I V I \quad K P S G V P Y K\) \(\square S A R L A G T D E Y L V N P F G L A F D\)
G V
\begin{tabular}{l|l|}
E & l \\
P & L \\
E & V \\
P
\end{tabular}
IVIKPSGVDYN
EQEHFLVLPDGLAYS \begin{tabular}{c}
\(V W V T P T G C C A D\) \\
\(Y\) \\
\(Y\) \\
\hline
\end{tabular} QF LVTASGKDKR \(E L Y W T N P M C V V F S\)
\(M Y V N P W G L W W A\)

S LY R RTD DF GWAHLANSY \(\quad\) TVRDSKEQDHMYVNPWGLWWA ACYRLVDHF RWGDLIVYHLSAVLLPGTDHYLVNAFGLTFD EHFLI NPYGMMYN \(\square A N G N D L T N P W E V A W S\) DRLVNPLGVHFS \(D R L V R C R S D S D T\)
\(H L L M A P S G V N K G\) TFLVTASGKDKR EGWDDLIYTH GS I Y V APS GVQKE \(S \square \mathrm{~A}\)

THITARQGNIVYIAPSGVQKE \(A P G N V V Y\) APGGVQKE GEFNPGRF
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P L\SDRAL

```

H \({ }^{\square} \mathrm{A}\)
Q C CY H L V D WF WTEA \(\square\) FNH \(\square\) SAR \(\square\) P GPA
 HFAI TASGKDKS QEYFLVNPYGLLYH HYYLVNPFGLNYT
 SVHRLFDLFWAQDGHTCLTLRVNKEQEHFLVLPDG
\(D N N V A Y V A P S G V Q K E\)
H F

TADQF
Y I K A S G T T GEFSPESF

HFAVVRMEPVS TGQSDFVFAVTSSGKDK R G D Q \(\square Y\) V A P S GVQKE

PNQFLI NPFGLLLY
RHAA TVSGKDKG

\(\stackrel{F}{\mathrm{~F}} \mathrm{~L} \mathrm{~L} \mathrm{~L}\)
\(\square \mathrm{T}\) P P WP \(\square \mathrm{GA}\)

DDVLIS GSAGPGLVTGP
 HFL। AQS
WT DH \(\square\) YTHFSVRVPG AEEHFLINPFGLLFD A GDVFWI TASGKHKG D MYVLTGSGAVLS TFLVTASGKDKR ISARLPGKDEYLVNAFGLTFD GRYAPDRIVGALLPGKDEYLVVAF GLTYD
P L




\section*{UniRef90 Q7PS09} UniRef90-R2SIY6 UniRef90-Q65KJ7 UniRef90_C6CYF5 UniRef90_S9WJ72 UniRef90-E2C5T1 UniRef90-H3GCA5 UniRef90-14WLI2 UniRef90-A8L5D8 UniRef90-S6H191 UniRef90_-Q1YKX9 UniRef90_UPIO0046F0C88 UniRef90_UPI0002A4995F UniRef90-C0N6K4 UniRef90_17MALO UniRef90-U5LA27 UniRef90_UPI0002F26760 UniRef90_G8RGP6 UniRef90_UPIO004419088 UniRef90_E6RJQ6 UniRef90-C3Y497 UniRef90-K6Y6Z0 UniRef90-R7WY14 UniRef90-A0A024JXR4 UniRef90-Q3AWF4 UniRef90-A8FCH0 UniRef90_UPI00045EC42C UniRef90_Q0K828 UniRef90_UPI00021A44D7 UniRef90-A4YNG7 UniRef90-X4Z134 UniRef90_UPI00036D49BB UniRef90-A8NQV9 UniRef90_B2T822 UniRef90-W6L665 UniRef90-U5KM19 UniRef90-W8ZOM8 UniRef90_K7GG61
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180
190
200

 AQKHGLLMDSQHSTRFHQRLGYHDYGIADDLDEQQRQVAD

 SHQEMIKGITGHGYADTLVVPVIDNAPKES A LAKPIARA G PLHPDSQDSLAFYQDHVIFDEYGVVLDEEEGRKIAAA GITHADAFYGE VPCTRQLTEAEDARDYEGETGNVIVET QTNGLLPYSQYSLFSLASLSYHHYEGLAVREAEKKRLQDD SHLGATVGPDHRWSSRTDFGATN DLPAYGT THADTGYGAVPCTRQLTETEDEEGRV
 AL IKAFDRWDEDAVLT DPII PNHAHDPKLAESFSEHI

 GLLPLSQYSMFSLPS LSYHGYEGLAAVNDDERKRLQTD


 QLEG WEMLKGLKGDTSHETTIVDPD DM SNNQEELSQTVRPY E K Y ELL KAFHESRDAVP UDANDQDDPRLAALVDRYLER GLLPLSQHAMRFHGRMAYHDYEGLAFTPAEGARLTAS
 MQCGLLPLTQTSMRFA DDAYHDYEVADDLDERARLVAD




 \(M L K G L D G D T S H T A T V T D P L W P N S Q D M A A V S A E D P A L L T D\) SQES I IVGNVSY KTEKIGEFRISHQEMDKGVVVP IDDNPNEEDLKDSMAEA RDYEALRELPGCPHPNHGLQAPVFANEPDDKQLAARVDAA RKKAGFGHHDFYGAQNHGRVGYHTFGETVIKQLAARMDAA
 TK K A CVLGEDSIHVYTGLLIDEDERNRLVRNL FKNDNFYGAQLYGRVGYHAFGITLFEEEKQRMIKS KKSGFEHNDFYGAQLYGRIGYHEFGUTLFAEEKERMLQS MKCGLLPLSHEALLV GQDVAYYDYAMEEEEERVELQKSLC THMGAFLGDAVPVYEVRDKQGDATDLFGGSRSVCADVAES QGRTCPDHD KAFNDWEENAADQIPVGPNYADIP
 PAFN WWDENAE IS IPP ILPNFAHIP


 NRGKCHIRC DKPRFIGDIPVIPGEVTGPRGLSNTLPPA

 ■SHMEMDKMGYHNTGIVP II KNTAYEGDDTVSLEEAMLK Y PTSEQTDRWGTVRVCEEHASHTPQLAEAVVEA
 YHMAGFLGSGAPVFDILRHCFGCTD MLVVRNGEQGKALAAS
 RTHMPPIEIKAFG\|WDEKPNVFYNHTHVPTIASEIKRY
 P ES G GLKP

 MLPRGFGAYFAPQPPLWDDPQLLRSDDQAAALADT \(M K C G \square L P D S Q E\)


UniRef90_Q7PS09 UniRef90_R2SIY6
UniRef90_Q65KJ7 UniRef90_U2NJJ9 UniRef90_C6CYF5 UniRef90_S9WJ72 UniRef90-E2C5T1 UniRef90-H2MJY7
UniRef90_H3GCA5 UniRef90_14WLI2 UniRef90-A8L5D8 UniRef90-W7AP78 UniRef90-S6HI91 UniRef90-Q1YKX9 UniRef90_UPIO0046F0C88 UniRef90_UPI0002A4995F UniRef90-C0N6K4 UniRef90_17MALO UniRef90-U5LA27 UniRef90_UPI0002F26760 UniRef90_G8RGP6 UniRef90_UPIO004419088 UniRef90_E6RJQ6 UniRef90-C3Y497 UniRef90 R7WY14 UniRef90-A0A024JXR4 UniRef90-Q3AWF4 UniRef90-A8FCH0 UniRef90_UPI00045EC42C UniRef90_Q0K828 UniRef90_UPIO0021A44D7 UniRef90-A4YNG7 UniRef90- X4ZI34 UniRef90_UPI00036D49BB UniRef90-A8NQV9 UniRef90-B2T822 UniRef90-W6L665
UniRef90 U5KM19 UniRef90-U5KM19
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UniRef90-F7FOW9 UniRef90-W5XC76 UniRef90_F8P5K5
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210
220
230
240 LLRDYPA|I LV|RRHGVVVWGHNWQKAKTMAECYDY LIFSLLADVIE FNEKKGVLVYGHGPFTWGKTPQQAVENSIVLDEIAEMACA SGDSGAVLI RSHGDTVWGKTAFEAKRMLEAYEFLFSWHLK 1 P G I L RKHGIVAWGANAFEAKRHI EAFEFDFEYVYR
 LGTAKVLVLRNHGVVALGETMEEAFHYDYNAQYACEI QVVN MEAHPAVLVRRHGLVVWGDSWEAAKRHAECLHYLFEVAI E LK PDHA YL I DGHGUYTWGRDMAETRRHLEALEFLCELDLKK LGPHKLALRNHGLLTVGTSVE
FRGNQVVVVRGHGPFSWGKDLEKAVEHS ILLDEVAHMALL \(\square G T T N H M L L V N H G G L T V G A T V G D A F M R F F D L Q R A C E D Q V M\) MGADFAVLLANHGGVVAGRTLKEAVFRTVQLCRNAELQI A FKTRQGVVVYGHGPFTWGETCTKAVQNSVVLDEVAEMALG
 LQKHKVAVVCGHGVYACAETVNLAYKWSCSLELSAKMAWLD LADSGAVLI RNHGI TVWGRTPFEAKKLLEASEFLFRYQLK

 LGTTNHMLLVNHGGLTVGBTVGDAFMRFYDLQQACEDQQLA LGPKNVLILRNHGVLVCAGTI EEAWYLA YNTVKACEIQQK LGDAK WALLANHGSLVVGKDLRQAHLRADTLEWRSKRAYQ
 LKT \(\square P G I L V A G H G L Y A W G D S L A E A Q R H V E I L E F L\) LSESGAVLI RNHGITVWGKTASEAKRVLEAYEFL HADCHGYVI A GHGFYTWGATVAETLRHIEAFDYLCEDRDH
 LGDKSVILMRGHGDVIVGPTVQAAVFRAYYTDVNARLQAQ


 PNTNAV VVRRHGDYVWGPTWQKAKGMVECLDYLMETALK

 FQERQGVVFVYGHGPFTWGETPAKAVENSLI LDEELCLMAKE \(L G P K N M I L L\)
\(M E N H G V A V C G T S D E D A F H R D F N V M E A C A A Q V\)
\(M\)

 AVEVPAALVAGHGPFTWGATARKSLEHAIICEAVADDADH NQQIPGILLRKHGDYAWGANGFEAKRHLEAFEYLFEYAYR GPNSKVMLLANHGALCCGETDEEAFFAACHVVQACETQLK LGDNHILVLRNHGVAVGESTIEKAFFLLWTVQRAAEDQCQ LGQKHILVLRNHGVAVCERDI QRTFFLLWTVQRAAEIQSA GPTCKVLVLRNHGIVALGESVEEAFYTIYHI QAACQI QVS MHKYPGVLVRRHGIVYVWGPTWEKAKAQTECIVDYGCELGVK \begin{tabular}{l|lll}
\(L\) & \(G T Y P V V L M A R H G V V N V G T S V R Q V V F R A F Y L E Q E A A A Q T A\) \\
\(V K E F K A I V M E N H G L I D A M G S P S K V Q A D T C M A E K C A K I V V G\)
\end{tabular} LHAAPGI LLRNHGIYAWGRDAFEAKKHLEAFEFLFEIAYR
 LDPAPGILLRNHGIYAWGKNAFEAKKHLEAFEFDFEYLYR
 GCKAKVLFLRNHGVAVAASNIPEAWYLVKRVITACQTQMR \(\begin{array}{ll}\square G S K K A M L M R S H G L \\ L & T \\ G P & C \\ \text { G }\end{array}\) VRGRRGAIVYGHGVFTLGNDFRDAFAHLAADETLSR

 PSTFAAVLVERHGVYVWGKDWKEAKTHAECYDYLFQVVI E

 LG DADVALMRGHGFVATAPSLPAAVYRAIYTELNAGMQSK LGERNVLILRNHGLLAGGVSVEHAFRLLHGLE
I ETKPFLLIEGHGPTVWGKTVAEANKHLEAVHFLLQVM MAAYPAVLVRNHGDYVWGDSWDNAKTQAECYHYLDDVADK GDSGAVLI RNHGITVWGKNAFDAKKY LDEAYEF L F NYHVK K K K

 MPEVPGVLI RNHGI YTWGGNDFEAKRHDEAFEFLFEYHAR LGSARAILMRGNGTVTAGTSLQEAVVLTYYLEDACRVEDA





UniRef90 A0A052JGL
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SMGYAK LRCKLAATFRLLDLYGWTQGLGAQDTARCKKVVD MTDFHEQRAL IAQACRVAAARGLVDGVLGHLSDRIDDE VRLLAEAGRDLSARGWLPARTGHFSARLDDR DELAEDKANLAARGWFPATSGNLSVRV
\(\square E G K A V K E M A E L C R H F Y T L G W V T G T G G S I S M K V H D D\) DQLVDVIQRLHRRGWCDGTGGNFSLVLERE EQLARAAEQLFAAGVMSHSGANLSARLD
SMGYAK L R AT MSRLEERW NELGDDKDELAERDWFMGTSNLA \(\square\) LFERERELLADVKDELAERDWFMGTSGNLA IVVSDH LLFEREREDMAKIVQLIFERKNTNVAGGNFSFKTTDE RELLAHAGWTPATSSNFSHRLDEQ CRVAAA RGLVDGNGGNVSAKGTAT
LCAKFWTLGWVTGTGGGCSIRDECS \(\square E S K P V N D \square S D L C R Q F Y S L G W V S G T G G S \rrbracket T I K V H D E\) LCAKFWT LGGWVTGTGGGCSПR KFKEREYDKGRLILAYRDFAKGYDEGVAGHITMRDPVE \(M L Y Q X X X E D L A K V K T M F D R F E T N A A G G N V S V R M N N E\) ETICSMCQLFYVNKWVLGTGGGIGIK

\section*{} A DLVARSNRDGADPRTGGNTSAKGT

ELRTIKEQFASRHWFPGTSGNLSVRVGD LCAKFWT LG WVTGTGGGCSIR
LRCKLAATFRLMDLLGWMQGIACQITARLNAD MSAEEWEVRVDLAAMFRLTHMMGWDDTVWNHITARTPGT LCAKFWTLGWVTGTGGGAS \(\square R D D\)
ELLHCREVEAMCEVCARLPELGLVTLTWGN
RSNALGADPRNGGNTSAKGAVT


REDAEAGWTPATSSNFSHRLDAA LI GT TSEFAQAGWTPATSSNFSHRLDEH MSNETHPAVAELLARSHELGSDRRNTNYAGGNASAKG

TNYAGGNTSAKGTDT GWMRGTSGNDSVVLSRE MTNETVTSLVE RSNRLGADPRNGGNTSAK GV AEAAKGVIAMARFAGARGWVPATSGNFSVRMNEL

\section*{MAEAGRAVVDYGLVDSFFGNLSCLIDN ELLGRSHRLGADPRNGGNTSAKGRAP \(\square 1\) SA \(\square\) SEAGKLLIKNRLVDSCFGN \(\square\) SY \(\square R N N D\) GGNTSSKTT \\ LNRPAVNEVEELTYRSNLLGGSDRRGGGNTSFKTTR \(\square T S A L D H E E M K K \square A G V A L F L Y D L R L D T N Y A G G N T S C K \square T E T\)}

ARTADA \(\square\) AA \(\square\) T RE \(\square A A D G W T P A T S S N F S A R \square D\)
TQGAGGNTSIK HD \(\square C R L L D A H G W T S V G F D H V T V R L S Q D\)
QELVDRSRRLADRSVCNWGGGNTSAKTT GGNTSMKTDEK MNEKMVQNVIDYAKK LSEEGLASENA S STFRHENE MEAMGYEK LRCK \(\square\) AAAFRLVD \(\square Y G W A Q G \square N S L I T A R L N A D\) Y R CK \(\square\) A
DRSVANWGGGNTSVKTKE


EA \(\square R R\) RTVEASRR \(\square G D P F L V L H G G G N T S A K D\)


G G N T S VK T FEK
GGNTSVKLVE
\(\square V Q Y G Q R D A A R Q L L V N T L G N D A V R S R C A\)
F VQTSLRELVERSNRLGSDRSVCNWGGGNTSMKT
GGNTSCK
MLTMDK LDAGLEELVTRSNKLADRSVCNWGGGNTSVK



D PVTGDDVDLLWVKGSGGDLGTLTDSGLRDD E K R DPVT GQDVELLWVKGSGGDLGTLTEKGLAVVAS GHDKG SAA

D E TYY LiA T G A NKA
D

\section*{\(P V T G E D V E L L W V K G S G G D L G T L K E P G L A V\)}

VRDFRGREVEVMFVKGSGSNLATMTREQ DAVTATGLRLD AKDFKGEEVEVMWVKGSGSDDATMGDQNFTALK LSDMQQ D PVTGESVPV MWVKGSGGD \(\square G T L T K A G C Y V D\) \(\square\) VVRHGDNMF TVYGUSPD
 GGNTS
 FRGRE \(\square E V M W V K G S G S D L A T M K A K H F \quad T G L R L E\) LYTTKQGVDFA
P LT GKEVEVMWVKGSGGDVGTLTKAGLYVD QELFLVNPFGVLNH CVYRLIEDFGWNTS \(\\) Y NHATVRDNRNEEHFLI NPFGLLYH TDFFGRE \(\square \mathrm{DVMWVKGSGSDLATMNKANFTGLNLA}\) PDPLTGDPTEV MWVKGSGGD \(\square G T \square K K S G L Y \square N\) NMNDLFGNPVQVMCDKGSGQDDATDTASGHPAV \(E V E \quad V M W V K G S G G D I G T L T R S G \square Y T K\) DVLWVKAS GTWLADANETNIFVPVLLP A A R E HPLTGQDTEVMWVKGSGGDLGT LKQS EKDPDTGGKTEVMWI K G S G GDI GT \(\backslash K R S G L A\) ETDPLTGQPVEVLWVKGSGGDVGTIKLDGFAT
 TDPLTGQPVEVLWVKGSGGDVGTIKLDGFAT LYME

HDF DWAKASGFD \(\square G A L A P E G L R K R\) EIIHVKGSGWD LGDIEAPGDPAMWLAEPLLKTAR LIPELCKQFYNLGWITGTGGG■S IKHKEKIY \(E \square M Y\) VK G S GS D \(\square_{G}^{D}\)
D FRGRNDEVMWVKGSGSDLATMKAQNF T GLRME R D L Y G D AVEVVH \(\square K G S G R D \square A\) VID A
E ETDFRGRSVKVLWVKGSGSDDAEATEKNF
\(E K D P L T N E D V E V M W V K G S G G D U G T L T R Q G I A\) L WVK GS G

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ETT
El TAS
ASSLIKVNILGEVVEQGSTSFPVDDRK

 GVAFTRPSDTRLTRFDGTEAAAGEL DGYRVPNEVVL EKSFLDRHDFLVVDDG HVVAGTEEPAPETFL SLLQSPEDFLLVN SGSVLSA EKGTPVEATRLLKPSAETLI
RME P EDMYVLSHSGSVLSAPSPKPWPHKP
VDFGVVDFEGRLVRGABGPDVVHA \(R V Q A D Q\) LI QVNRDGAVVD GSGVASAETLL QLAAGSGDLLAVDMAGNGLEGEDQSVEGKQPSAETLL K


ASLNKDMQGQVVEQGTINFGVNKNH
DEDFLLVDEFGRPVGSTHLK
\begin{tabular}{l} 
PSAETLLL \\
PSAETLL \\
\hline
\end{tabular}

RLRAVGEDVMVVDFDCLAVGRDYCDHGKGGARPSAETLL
GVAFTRPGDTRLVRFDG TAGAPGELDGYRVPNELP
LMKPAD \(W Y V L S L S A Q D P T Q P L R S Y\) RRSPPS YRPSQCTPL
SPSPKPYPNKPPKCSDCGPLFMKNVGKRRLISRGKRSWN
PLYTNNPESGVKTADEDYMVGMPHCTFNNNPRASSDTPL

\section*{LMKN}

L LK
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LLEPEQPYEULVVDYNTQDDTYNNNEVVEGDGRVTREDNL
SLIKVDLDGIYQC
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TMKPSVDVYPGVEREDMVVTTMDGNVLGEHSLRPS
EVQAST KVEQGDEEGNSALSLEKKYHSLR A S
\(R\) L VKADワMVVDFDGK
VLRLDRMEDMAVDLDGNAVGH
RLRA位DVYPGIEREDEMVAAFDYCLHGKGGAAPSIDTAM ELTP ADVVLV DGQGAAVRGGKPSAEAELL RLRALQDVYPGVEREDEMVAAFDYCLHGKGGAAPSDDTAM EL
RIQP EDMFVCDTNEQN
ELEGC

\section*{ELK} NNDDUPLDGSSC
DVRP■ME KDEM
ELTP RDVVIV
LI EREAMTDEEMV
KLHALKNRYRGMVHEDEMVGYLEHCMLSKK K FTVDH
FTEEKD【VKASL！R
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DARAEKS IDDFVVELN
EVT ASSLLKLDMQGNV\DSGTTEHESGLRPSDETSF ELVAQAGDRDIMVVRVAEKATDFVVAPGNTSGLRPSDETSF
DI RPLMEREE MSDEEMVEYLSHCMIDHRHPRPSDETLL NLTADDVLFADLDVFDTDKLDDRTAKKLGGD
KLRSDEGUYGGUEHEDEMVGLFNHCVYDLDSKAPSDDTP
EVYASLEKD SLIKVDSQGUVLDPGSTVLEVDQ AGMWLF

RLAPLQQLKVLDHDSDEDMVNILRTNLLDRAPTPSVVEAL



RADLERMDEGASLSDTEMMDGYAAATVEPGRPAPTlEALL DVAHMSDEDMV RICPDE LFVQDTSGNDIE LPPSEKKLKKSQCTPL HFLVCAARPMGLDGVGEAGTVVPVDGPLPDGVLG EVVR SMEAKHFTGLGLEDIDEEMVEYLGHCMIDAKHPA D ПRLLMERE RMAPLRLRQLSALTDAEMVNVQRTN EVLPCLLERELSVLD RLRN KNVYGGLEDDEEMVEYLSHCMLDA RATERSFTAGGRLDDEDRMVGLFNHCTYDLD


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 FADYELQKAFSGISSHESQVLVPIFDANDQDIARMAARA TEPMLRFGQAE \(\quad\) II PVVPWGPRGSDVSVRGDAEV LKVGLLPLTRDACV LLGEVTTHSYGTYMDDDERDRLVRA ELI K AFDKWE EDAVLRRIPDI PNYAHDPALAKCFSSHI HE ELI KAFDMWEEDAVLKI PII HNYADIPTLAREFSEHVS ATSGLDMPNLTEATQKVEYI EVLEFEPNCSEELAEIVSNH RLEGYELLKAFEGNTTHETAVEVPFANTQDMQVLAAQVDA LTKEC AHD LPGARTGGNQVVWVPWRRPGAFQLGAAQKKA Y R VF A NRNFEVNNE

 \(L G R E L D I I T Q D A C A F Y N D H A L Y D S F G V V L G E E E G Q E I\) A A A

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\(A E C \quad F G D R V V W V P W R R P G F Q L G A A V K D A\)
 ENKVFA INNDEQ \({ }^{\text {NKGGGRGMHNTPHEEDLTEYL EAAMEA }}\) \(L K Q G L Q P L T K H T A B L L G E A F H T Y A G A N E P E E K D K L L R S\) ALLKGGIPHLVVQDSSMLVGKVGYHNWGLDVDVDERHRIAKN
SKEFRINNNDE Q DK GF GK GVV DPVIDENTAHE E D L T E F L E E A
LT



SQGLLP \(\square S Q S A A F A L A D G \square G Y H\) ASSVRLRPIVHMAGFLTGGAPBF
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 ITH QE IRRKCTS GGYYRYDDMLVVPII TPEEK DLKERMARA NASHCHIRCREPRTV GGAPVVPGEVTGPTGLCNTLPPA
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 AAR MAAVPDLKWAS \(\quad\) MP YRRPGTPUARE I GKAA


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 M P AQHPEA VVVA GHGLYVWGADPRQARHHTEVV E W

I N E Y P A V L V R R H GVVYVWGET WE K A K T MCECY D YLLFD \(\square\) A VS MAHSPAAAVHGHGVFAASDDFNKAFRDLLATEKRCHDEYF


 \(\stackrel{L}{N} P\)

L G P L W G Y L I D G H GL Y A W G R D lia


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\(\qquad\) RER \(\square\) DVLILG NH GLVVGAA
LD D N R GI ML G S H GL F TWW DTAAE S Y N TTL EVI E K C A E
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P NAELVLMEKHGLVVWGDTAKESYERTDAVINNEAEQY \(\square \mathrm{V}\) HPEAEALLLRNHGHVTWGQTAKASYDRL
ASDTNCVVMPSHGYTCFGRDDSEAFHRAVAF TAE \(\square\)
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A H Q M
WH LL
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QQLL
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L L
LLK L R G T R QVV P
A R
MK K L G \(\square \mathrm{P}\)
LN QL
EMTFGGAKYTS \(\square D E\)
\(M K K \square G \square P\)

MKELGGQ
SMSA
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QVSQPD 1 KAL
ER TERLAAEGKHFGVVPGYEADD
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\(K Q A H^{H} Q\)

A Q G S G
MK QLG \(\mathrm{L} P\)
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SRGAPEP
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\(\square R \quad G G F \square D T N K A K \square E D L I E T Y K \square \quad P K Y D F C\)
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EHGAAEP
TRLLGA VTY L T DGE DDK ASAMLLSPMP
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R R

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THKL
T L
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LLP VGDNLVVIPEE
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ER

A R
\(\mathrm{MHK} \square \mathrm{G} L \mathrm{P}\)

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QRSA
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