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UniRef90 K8RBD2

GPSSVV I A A L G G N N A L G G N
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K K I V I AL G GNALGNN LDEEQMGAVKSTARAIVDLI E E

$G K K V A L G G N A L G N$
GKR VLAL G GNALGN


$K K 1 V V A L G G N A I L T D D A S A T A Q Q K A L L E T A Q Y L A E F I D Q$
AL GGNAILLTDDPSAEAQDRALQRTCAHIVPLVRE






EKVVVALGGNAI LQSGQTFEEQMENVHATAVQIVRMLEA
G

$\begin{array}{lllllll}K R & V & A & G G N A & L & G \\ K & V & A & G & G N A & G N\end{array}$
L $V$ : $A$
K R L V I A L G G N A L G N

GS T P T E A Q K Q A V


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






K R V V I A L G G N A L K P G Q T F DE QKE N I E DS VD SF G A I I A A
$K K L V I A L G G N A L Q E A G A T A Q A Q L E V V E K T S E Y D A D I V E R$






$T$ TVI ALGGNALQQKGESADAQKRVARLTVTQLVPLLAA
KKAVVS LGHEAL
$R \square \vee I \mathrm{~A}$
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 GH DVI I A H G N GP QV G A I NLA FEDA S K P N I P E M P FP E C G A M GNELSHGNGPQVGNLLLQQTAGSTKDNPAMPLDTDVGM
 GHQVVV AH GNGPQQVGMINVAMTTREDPTHPMAPMSVVCTAM GYSVIVTH GNGP QVGNIVIQNETAASN IIPAMPBCDCGAE GVNTI TVHGNGPQVGMINNAFDAASKNKVPPMPFPECGAM GDDLIVSHGNGPQVGNLLLQQAAGSTDKNPAMPLDTAVAM GHDVVI SHGNGPQVGMINLAMDTKSNYKYSS DPMSVCVAM $G \square E V L I T H G N G P Q V G S I K V A T D V A A Q T G S P E F P F A E C G A M$ GNKVIVSHGNGPQVGMINLAMDIASEAQTAEMPFPECGAM GNEVVIAAGNGPQVGMINLAMNIASESEHPAMPFPECGAM GYRVVVTHEGNGP QVGMIAFEAASKTEAKS PVLPMSVCVAL $G V N V V V S H G N G P Q V G M I Q N A F D Y A N D G K T P A M P D P E C G A M$ GNQLIVSHGNGPQVGNLLLQMAGGSTDKNPAMPLDTDVAM GKEIVITHGNGPQVGNLLLQQETGSSARSPAMPLDTCVAM GHEVIIAHGNGPQVGMINLAMDVASSAATPEMPFPECGAM GYEMAVVHGNGP QVGRMVLAQEIAANPETPAMPFDVVGAM GHEVVLSHGNGPQI GAILI QQQMANSEKTPAMDLGTCGAM
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 $G G Q L I, T H G N G P Q V G N L L L Q Q Q A A D S D K N P A D A L D T C G A M$ Q Y NVVLVHGNGPQVGVLALQGLEYKKVNPYPLDVLGSE GYKVIV SHGNGPQVGVINLAMDFSSNNGTPSFPFAECGAM GYQVIVTTHGNGPQVGQILLQNELA QPEDPTMPLWVCTAE GYRLVLTHGNGPQVGNMLIKNEIAKDDVPPAMPDVLVSN GHEII I SHGNGP QVGMMSLALDIASNDKVAK FELPECTAM
 GYKVVVVTHGNGP QVGFAMQRVEDASES GMQT@PDVNCVAD
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140
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| :--- | :--- | :--- |
| $G F K N P T K P$ | $G S F Y T K E E A E K L E K D G Y T M K E D A G R G Y R R V V$ | AFQRPTKPI GTFMTEAEAEEMERRGNAVMEDAGRGYRRVCV AFDHPTKPI GPFYSKEEAEMLIKNGYEMVEDSGRGYRRVV AFQNPTKPVGAFMTEEEAKMAAKTGCTVKEDAGRGWRRVV AFSNPTKPI GSFMTKDEAESLIAKGENVVEDSGRGYRRVV AFENPTKPVGAMLTKEQADAKHETGDVYVEDSGRGWRRVV

A
A
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$A F R H P T K P I G G F G T E E D A K Q A A D D G C T Y U E D A G R G W R K V V$ AFENPTKPVGAFYSKEEAEKDMEKGFVMKEDAGRGYRRVV AFKNPTKPI GPFYSEEEAKRAEEKGYVVKEDAGRGWRRVV AFDHPTKPI GPFYTEAEASEMRVKGDVMVEDAGRGYRKVV AFENPTKPI GSFYTEEEAKADEEKGYVMKEDAGRGYRRVV AFTNLSKPIGPFYSEEEAKAEMEKSNTFKEDAGRGWRKVV AFKNPSKPI GHFMTKEQAEYAAEYGY IVKEDAGRGWRRVV GFKNPTKPI GPFYTKEEAEKIVEKGYKMKEDAGRGYRRVV AFNNPSKPIGGLYNKEEAEQIQEKGFTFVEDAGRGYRRVV AFEHPTKPVGMFYTKEKADELAEKGFTFVEDSGRGYRKVV GFKNPTKPVGSFFTEEQAKKLMEKGYTMKEDSNRGWRRVV AFGDPSKPIGMFYKEEEVAQLEKPDYSMI EDAGRGYRRVV GFQNPTKPVGSFFTEEEAVELMEKGYTMKEDAGRGWRRVV GFKNPTKPVGHFMSEAEARYAEEHDYKCVEDSGRGWRRVV
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 S GKP AF AFQNPSKPI GMFYSKEEAME DEEKGYQFVEDAGRGYRRVV AFQNPTKPI GAF LTKEQAEKAAHPDMDFVEDSGRGYRRVV
A

## A

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 N Q K R L E S I G V D E L K K K Y $\operatorname{l}$ E E E Q Q F A P G S M L
 N QLLQL





D QK A L K E I NL E E VD K Y I E E G Q F A P G S ML P K V EA CK K F VL S
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$R V A V V A V G G N S L I K D E G A M P Y Q E E A A A E T M R H I A E M I S A$ VVVAA GGNS I I KDNQS DEAQEKAVQEVADH:CDMLEG

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 $R L V V A L G G N A L Q Q R N E P L T A T Q W T N A R D A A R A L E P V A R$ $V \vee A A L G G N A L L R R G E T A E A Q R T N V Q \| A A K S L A A I I R A$
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 $G K T I V I K_{Y} G G H A M V S D$

 G K T V V V K Y G G N A M T D E T L K

## NS F A R D M V ML K F V

 ANVHSAA 1 QLAAALAE$T L V V A L G G N A L L K R G E P L E A E Q R$ $Q N \perp E Q A A R T I A G L T A$ LA EKFARDIV LLLKQV $R V V V A D G G N A L Q R R G E V M T A D Q R N N V R \square A A R Q L A V V A G$

$K K M V I A L G H H A L$

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K K V V V A L G H K A L
K K I V V A L G R N A F






$R L V V A L G G N A L Q Q R N E P L T A T Q W T N A R \square A A R A L E P V A R$

R ALGGNAMTAR




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130
140

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RLTRDQEDPTVNVPE
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D S S $\square E T V$ LDD L G F VGEP V E AFYHPTK\|IGRVMSAEEAELEERKGNHVIEVPG

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$\square$


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VQDGADRRLVDGGFLVVCAGGGGVPVVGTGHR

$\square N$ T S VLD MLT NS D F $\ P \mathrm{P}$ V I A P$\square$ N T R $\square$ VV N P Q I I T SLA Q S D IA S P T P R A A L Q LD A V K A L L D A G Q F A A A A G G G A P V S R V F G DVV NTHDL K HF EQS D IIPVVVAPAAPKPTDTIEADSI| $A$ | $A$ | $P$ | $K$ | $P$ | $I$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $I$ | $I$ | $I$ | $E$ | $A$ |  |  |
| $V$ | $E$ | $L$ | $I$ | $D$ | $L$ | $L$ |V T P Gl I T S L



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UniRef90_FOYJF9

250
260 FGETNMLLP 270

280
TQTP\|EKMTVISDAEKY\|ISEGQFGETNMLLPK\|EAA\|IEFLK NQKWLDHMTLAEAKQYLAEGHFAKGSMAPKIQAIVWFLEA NEKKCTLLKVEDGPALIEEGHFAEGSMLPKVQAACAFASS
 NERWLDEVSADELEEYYRKGEFPPGSMGPKVLAALKRVVS SARPLGRVTADELREHAAGQFERGSMGPKVDAALRFVDA EEEELGEITLEQAKE QARPI RRISPS AQVLRQFSFAPGSMGPKVEAACEFVEE EQRWLDTLTCEQAQALLDSGEFGAGSMAPKVEADVGWLRH EQRALSRTTPAE KGAGTFDAGSMAPKIGASCDFIVQ DQRALEQMTLAEARKYMAEGQFPPGSMGPKVEAAMRFLEG EARP GRVGLEEMEKYAAEGHFASGSMGPKVEAADRFARS EAKEI LRATPADLR EQKALEEVTAAEMMVYAEQ NEKPLHDVSVAEMMQYAEQGHFPAGSMQPKIEASLSFLLK NOQR KRVNPDEQ LAKHV FLRSLGAPAGSMGPK NAACQFAEA SQRLLLSETSMADAARYMADGQFPSGSMGPKI GAALKYLEN NAKPLDVLRVSEALKYYREGHFKPGSMGPK LAAGVRFVQN NETQIGKISYEKMLALQAEGHFKAGSMGPKVAAALEFANF DASRVAEMDTSEVQNFQA GDPAGSMGPKLSAARNYASQ AAAPVQKVTPEQGRGYAKLDVVAGSMGPKVAAACDFADF DARPLERVTVAELEGYAAAGHFASGSMGPKVEAARRFRRS QQQALGETSVSDMQRYMEEGHFPAGSMLDKIEASLSFIKQ HQQPLERAKLDYLKELYDQGHFPAGSMGPKILAAIKYLEN QETPIDEMTVAQAKAYMEEGQFEEGTMLPKIEAAMDFIGN
 GQRKLDAVRVDEDEKYYAEGHFPPGSMGPKVLAAIVNFRAN
KEEKIEKMVETAKKYMQENQFASTMLPKVEAAVSFVEK TSTELKELSI EEANSLMEDNKLDASTTLLPKIGAALNFVVK EQRWLDTLTLAEAQAMLQSGQFGAGSMAPKVEAMLTFLRC $N Q E W L S E M T V A E A K A Y M E E G Q F P A G S M L P K V E S L L D Y L K E ~$ DQKGLHEVHVEEDEKYLKEGQFGEGSMKPKVMAADRFAKA
 NQKQVPRATPAELR AMGLPSGSMGPKVEAVCRFVEL TQRVLPELCAGEALQMVGNGMFPRGSMGPKVEAAALY TQ EQRALNHITLTAEAKQYVREGOFPEGSMLDKVQAAKRFVTH QARALRQVTPGELAPFAA GHF PDGAMGPKAAAVIGFVKQ
 NQRALRKATPTELSEY S $\square \mathrm{A}$ G LDPGGFAQGSMAPKVEAARTFASS
 EQRLVPELHADE LEGSAF DAVALSRLTPEKARDLGA
SQKSIHKARPDDLRQF $\qquad$ SFP EQLDLARASLSEMKRYLAQGHFPAGSMGPKI EAADRFDET NAAAVRS GVDADRSLIVREGFATGSMGPKVEAACRYVEG
 DQAEMKVATPA GLADFTFPAGSMGPKVDAVCKFVQS
 TQKAVNKVKLNEIKKYYDEGQFSTGSMGPKVLAAMRFVEH DEKPI PVMTVDQAKKHLSQGQFPAGSMGPK】RAADEYLES QQQWLDADSVYEAQT LQEGQFGVGSM DQLQA AKANPVELEKLAD EFAPGSMGPKVKAVINFVKA EQQELAHDTVSEAKRYFEEGHFPAGSMGPKIEAAISFIEG QQQALRSATHQEARKLAPLAVADGAMGPKIMAVSRFVQR EQDDLDELTVADARKYLAEGQFPKGSMGPKVEAADNFIEG RARLLRKATPAELTSDMAGFAAGSMRPKVEAACDFANA

 REKSLRDVSVDEAQAYLQSGQIIDSERMKSKVAAGIEFAK
 EQRAIERATPE ALAEFGFAAGSMGPKVDAARRFVAD TQRALDEDGVDEVERHLADGQFPEGSMGPKVRAGDAFLRN NQDKLDIUTTEELKGY SFDKGSMQPKIDSMI NYVEN ENSLLSKATDAEVKELINRGVITRGMDPKAESAISAIIKR EQRAVSAATPQ DQKAVMAHPGRAODTGADGRFAGGMIPKVGCDVEQ DGREMRMVTPGFLVARKSGQAFPGSMGPKVNACDDFVTR NKKLIPDLTDTDARRLMEDGTD SGGMDPKIETCIDAVES



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UniRef90-TOE1TO
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GKTVVIKYGGNAMTDE GKTVVVKYGGNAMTED KTVVIKYGGSAMVNDEDK GKTVVIKYGGNAMTD GKTVVIKYGGSAMDDCNDK GKTVVIKYGGNAMTDD GKIVVIKYGGHAMVDR R RLKK

NSFAR ESEELK


RSFAHDVVLLKLV KMVMQDVVLMKFV
EDFAKDVVLLKLV
EQL VALDA
VSTAR
OSFAR
 $V M L$
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$V L$
$V L$
$V L$
$V K M$
$V L M$


GTTMVIKYGGNAMVNDDLK

## $\square R$

KTLVVKYGGNAMVDETLK
RAFAEDVVFLHHA
GKTFVVKYGGHAMGDP
RIVVALLGGNALLQRGETPSANQRHNARARDIVLMKSV
GKTFVIKYGGSDM
GKTIVIKYGGNAMT
ADEKLKKNLIEDITLLKYV
RLIVAVGGNALQRRGETDENMEKASADMAPTVAALAKE GKTVVKFGGNAMTDT ELQNSFARDIVLMKLV GKTLVIKYGGNAMTDENDQAG EDQNFARDIVLMKAI GKTVVVKFGGNAMVDE

ELRQNSFAREDMVLMKAV
GKTLVIKYGGNAMTDESLK SQEMRNNSFARDVVLLKAV GKTVVALLGGNAFSRPGEP SOMRNVATAAQVVARIVKE AARDFAEDIVLLKAV
KTIVIKFGGNAMVD EALDQA
KTVVVKYGGSAMVDEELK
VVKYGGNAMIDPELESS
GKT VVKYGGSAMV
GKTIVIKYGGNAMVD
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GKTMVIKYGGNAMTDPDLGAD
GKTVVIKYGGNAMV
KTVVALGGNAL GKSPQ KRLVIAGGGNAMGSN_PEEQLRELVKQFARDVILLKLV GQTIVIKYGGNAMTDEALQSS GNTVVIKYGGSAMDDP
GATVVVKYGGNAMTDDDLK



GKTVVIKYGGHAMVDDELK
GKTVVVKYGGNAMLNDDIKTKVLQ
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GKVMVVKYGGNAMTDP LLESS
GKTVVVKYGGNAMVSDT
KEVMASVLKD:TLLKKYV
LRRSVMSDIVLLNLV
MVVADGGNSVI KDNQSVEHQAQAVKAVAESVLEMLAS

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| G |
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GKTIVVKYGGAAMKDASLQAT GKTVVIKYGGNAMDNDELK KIVVVKYGGNAMVDDDLKA GKVFVIKYGGSAMLNDALQA GKTLVIKYGGNAMTDPALQQD E Q LR D

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GRTVVVKYGGNAMTDDDLK
KTVVIKYGGHAMVDD GKTVVIKYGGNAM KSEMDK K LKKRDFANDITLLKY
 KIIVVKYGGSAMSN EELQKNVITDVTLLKLKV GQKFLIKYGGHAMVNDD
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UniRef90_Q6V1L5
 GLRPVVVHGGGPEI TAMLGKAGKKTQFVSGDRVTD A E GUHPVVVHGGGPQISAMLKRDGDEGEFVGGLRVT SPE
 GIIE P I V V H G G G P D $\operatorname{D}$ I S D L L N R L N H K S E F I N G L R Y T D D

 G I R VV A V H G G G P E I S A M L K M I G H E S R F V D G L R Y T D A T T MV





 | $G M$ | $N$ | $V$ | $V$ | $V$ | $H$ | $G$ | $G$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $Q$ | $Q$ | 1 |  |  |  |  |  | $G \square N P D V, V$ H G G G P $\quad$ Q $\begin{array}{lllllllllllllll}S & A & L & R & L & G & K & E & G & R & F & Q & G & M & R \\ V & T & D & E & T & M & E & V \\ D & K & A & G & M & E & T & H & F & V & N & G & L & R & V \\ T & D & E & P & T & M & E\end{array}$




 | $G M$ | $N$ | $P$ | $V$ | $V$ | $H$ | $G$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $P$ | $E$ |  |  |  |  |  |
| $G$ | $N$ | $P$ | $V$ | $V$ | $V$ | $H$ | $G$ |
| $G$ | $G$ | $Q$ |  |  |  |  |  |



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UniRef90_E7S084
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UniRef90_Q6V1L5

47DFF99<br>5

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3B3FBC1
3B75E71

LL
VVKQRSP ELED

ETEEPE I I DLGHVGEVES $D H P G Q T L D I G F V G D I E R$
HF $\square$ RASK $\square$ F $\square K$ SESDED AKKMPEVRK
AVKKPGTLR LPD GSTQE
RVKHKTP
A D G S WEPVVD
 A RKLLLRRRDAPELAEPEIIDDGHVGEVESIDVSVVDLLIG E ITKNPTKPDGPLLTKNEAS\|IKLPYKKVTVKDMEGYRFVV TVVDPDSHIER GMIRARR RLSHQDAAEQ

P P E V D D

VRRME $\square$ A VDRENAPPE $\mathrm{K} \underset{\mathrm{Y}}{\mathrm{Y} \mid \mathrm{D}} \mathrm{R}$ R E

EVKA $\qquad$
$V D L G L V G E V V G$
DSK $A$ A 1 RTGTVVDGEE
TFTRTS P
EAKKA
PKAVADAESGDPDVVDLGFVGEPDR
K SK】EPT SEI IDDLGVGEVNK AFERPSKF $\square G P S Y A E A A A R R \square A E E R G W D I A Q D G A S W R R V V$ TF
K L Q D
D SKEKD LGFVGEVEK
AFRNPTKFVGPVYGPKEAHADAESDGWVVKPDGEYFRRVV TVNRKSP EVVQAEIDDDGHVGEKT
 GLVIAEKVQGR LQVTGETIDPALQTSEMDDLGHVGKVSSIDTSVI SAATPTKPIGPLYPEEAARELEAFGWRFAADPRGGWRRVV GLVTATKVERTTKDPESNDERVVDLGFVGEPTE $\mathrm{K} V \mathrm{SRQT}$

## L LDKKT

$\bar{M} V E N D S T \square L Q A P$ KK $\square K S D U K P E L T S E$ T K LK D

AEML EPA
YAG
QV
D D G VK Q D AF $\quad$ RARKML MADRETAGKWDNIGQVGE LES
 NKDPSVEHDVGQVGDILS AFNNPSKP GLIFYNKEEAEQ DQEKGF DFVEDAGRGYR RVV LVANEKQPGGT AFKKLTKPVGMFYTKEEAEKDSEKGFTFVEDAGRGYRRVV

$P V G L T G K D G K \square L R A K K L N K D G \quad V D L G F V G E I E K$ ARRREAVVDGEP $A$ R $A F L V_{K}^{N P T K Y D G P \bigsqcup Y D E A Q A R A L Q A E K G W V F K A D G N A F R R V V}$
$A L G A K Y S D G Q D D G Y V G E V T E$
 blutrekrarapor
 G HMERKA GVDLPS
$A \quad L L Q A D R K T V E D D G Q T T$

## LS K

$S \square N A A A$
MQKTVQDSDSN D
K D
$E$

 | $G$ | $E$ | $D$ | $L$ | $G$ | $Y$ | $V$ | $G$ | $E$ | $V$ | $T$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $K$ |  |  |  |  |  |  |  |  |  |
| $M$ | $A$ | $L$ | $G$ | $F$ | $V$ | $G$ | $E$ | $V$ | $T$ | $E$ |
| $V$ | $L$ | $D$ | $L$ | $G$ | $V$ | $G$ | $E$ | $P$ | $E$ | $E$ |

$S L N A A A$
A K L T $\quad 1$
MQKTVQDSDSNERVL

 AFDNPTKP MME E G $\square E$ $G L I D R A K K H L D D V$
QL F T
G L L K V T K K L
ESDN
AERRA

$\mathrm{V} G \mathrm{~L}$ S G K D N N L I Q A
PMSKT

- $\quad$ D E Q G NE Q Q
$G L F Q A V Q L D$
GFTRPTKPDGAFFSEAQRDELAHPDWHFVEKYGGRVGRITG
 $\mathrm{K} \perp \mathrm{Y} \mathrm{K}_{\mathrm{Y}}$

$P A P N A T K$ L GFVVGEVAR
ECEQYK TE $\square D G E L K D I G Y V G K I T X K$
GLF T A T K R L IDVD GE
$E L L R A K K G D$ L $L$ L $G L F T A V R R Q A D V D G E P$ TGRDGGLMRAKKLKMLDHKDPS LE $G M \square K V D K K L$

K P $S$ Q PEI I K S E E
ERTVRDPDSA $\square E R V V D L G F V G E P D S$
LLKD
$G L L H$
$R \quad \mathrm{~V}$


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UniRef90-Q0ACJ6
UniRef90-UPIO003A64DE2
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1 DPSVV
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I NPEVLDNL
$D M L V Q G D F I P V I A P$
VEPAVVKALQDDQF
$\square \mathrm{N}$ S GFLLPVS P
$\square \mathrm{D} \| \mathrm{s}$ si
$V N D E V$ V $\mathrm{NLIDDRGY} \mathrm{\square PVIAP}$
TDPSLVSLLDSQDF
VNPEI I KNV
VNPQIVV

GSPIPV DMLVNSDF』PVIAP:GVGED PSPKPVK\|IEEE I IQKLVENK DIT $\square$ AGGGGGI PVI NGKYQ
$1 \mathrm{D} R \mathrm{~T} L \mathrm{~L} \mathrm{DLLA} \mathrm{C}$ S AM DPVLAP
 I NTKLI
VETALI RSVERDGF
1 NPDIVNKLIDESKF
VNPAAI
FDTE I L T H LI HGDF
NRLVSDDY $\quad$ PV

 GS PE PQALLLGVPA 1 RTLAANGTLVICAGGGGVAPVARDABY
 IN NAVVKALQDDAF $\square$ NRSVIDVL
 VDTSFLKFFENSDGI VNS DAP $V$ T T DI DMLIN S
VD PRLI
 PSPTPVKVVEVDA $\quad$ RRRVDAGFVVVAA GGGGVPICGGA lop Pll HTA
I DPSILNLLESKDF

| V | $\mathrm{N} P$ | K | I | 1 | Y |
| :--- | :--- | :--- | :--- | :--- | :--- |
| V | K | D | D | V | N | V


SVINLLLKGDF
DLLEKDFLPIICP
 A DVI QAVSKDF P DAP G E
1 D $\square$ SVINLLLKGDF
 ADVIQAVSKDFI PI 1 APVGTGDD I DPALI ALLDTQDF PSPQPI SLI ELES SKTLIKNDTLVIAAG $\square N P A V V K A L Q D D A F$
$A S P Q P Q R \| V E D E T V K Q L V D N G T \square V I T V G G G$
$\square D P S V V S M D S D D F$

V N T R LI K S LIDDNDFПP I

## VDPTAVL

## 

$D L V E A G R \square P V V S T V$


VALGQTD



 $\qquad$ P
G F
L
GE
GV
V D A TVLHP $\square$ AS GH $\square P \mathrm{~V} \square \mathrm{~A}$

$T \vee A V S K D$ 1 DKSII ETLTGGGNF $\quad$ DPVIAPI GVGPD ASPKPAEIVE IGAIRSLVDSGQLVIACGGGVIAPVGVDGQ



ST - IGPDAD

$\qquad$
 VLGGEDD A $V$ VGVGVEA






208C
CD4DA
E2878
$\checkmark$ NPA M T D GADF
VNPEITHTL

| V N P D |
| :--- |

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V D PKVLY
I DTKLVDLL
V N P D I I T T L T GK G F

STAAEGF IPVIAPLGVGP
$D L L D N D Y \square P \| I A P$
$1 P \vee V S P D_{1}^{G V D D D}$



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GKTFVVKYGGHAMGDP
GK $\| V V V K Y G G N A M \square D D E \square K A$

|  |
| :---: |

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GHRVAIVVGNGPQVGNIVLHEEADNTTETPSLPDEDSGAM


GVNPVVVHGGGPMINAMLKRLDDQSEFVDGKRVTDAATME







G
G $\begin{array}{llllllllll} & K & P & V & V & V & H & G & G & G \\ P & Q & Q & V & V & V & H & G & G & G\end{array} P \quad Q \quad l$

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 $V E M V L A G S I N K Q I V A Q L N Q A G G R A V G L C G K D G N G V V A R K$ II A EMV $\operatorname{L} N K V N K G L V S M V Q E L G$ $V Q M V L A G K V N K S L V N L V E N K G G K A M G L S G I D G H M I E A K$ $V E M V L G G R V N K E V Q G I R A G G R A V G L T G K D G$ VEMVLVGKVNKSLVSLI NCAGGRAVGMCGKDGNTLRGK IVEMVRMVLAGQVNRDVVSRINMNGNAAIGLS
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$V V M D V V R M V L F G Q V G R E L V G L I D A H G P Y A V G Q S G E D A H L F T$ AKMVLVGNINTKIVSLI GVCGGKGIGLTGYDGRMILGHKQ $V S M V L V G K V N K N L V A L I N K A G A T A V G L S G D D G R L L T A R P S$
 AEMVLSGAINKDIVSWI GRAGGRAVGDSGKDAKLVEVEKV VRMVLFGQVGRDLVNLI NSHGPYAV

 LAEMV $L$ GKVNKGLVQLVERLDGVRA GLDSGKGKLLTVNKK VEMVLAGTVNKQVAGLI NAAGALAV $V$ QMVLAGKVNKDLVKLLEQLGGRAMGLCGDDNRMLMAEKK VEMVLVGKVNKDIVMNINLHGGKADGVCGKDGELLLAEKE VAEMVLFKVNQELVAMMAEVGVKAVGLSGKDAEMIRVKKK




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$T M D V V R M V L V G Q V Q R E V V G L L N$ N A H GPFAVGVSGEDG ARMVLLGNINSSLVSLI GKHGGKGDGLSGKDGQLIVARKK
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YA $V$ GLS GKDG
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 $V$ Q QMLA GKVNKSLVALLKGKG V EMVLSGLVNARIVQAI TEQGGRAVGLS GKDSGLI LCEPE V A EMVLNKVNKQLVQUVEQLG $V E M V L V G R V N K Q I V N G L N R L G A S A V G L S G S D G R L V E A$ AEMVLVGKI NTELVAMLNKQGSKAIGLSGKDGNLIVARKY VEMVLSGLVNKRIVQAI NSQGGRAVGISGKDANLMICE
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A VGMS GEDG
ARMVLFGQVGRELVNLI NAHGPYAVGVTGEDAQLET
VEMVLVGKVNKEIVNKLNLADCKAVGLSGKDGTLLRA $V E M V L V G K V N K E I V N Q M N L A G A K A V G L S G K D G M L I R A$ AMEVVRMVLVGQVGRELVGLIN A AHGFAIGMSGEDG AMDVVRMVLSGQVNRELVSLINGHGPL A AGLSGEDA ARMVLFGQVGRELVGLINSHGPYAV G GIGTEA





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KTVVVKYGGNAMDNDELK EAVMRDLVLLTTV

$T V V V K F G G N A M V D A D$ E IM M I K K G G GKTFVFKVGGK lLDSDEVFEA
$\square$ A $\square$ G G N A $\square D$ T GK S S $\square$ ME Q $\square G K$ ASETE $\square R \square S N V I N S$


[^0]
 GVHVVLVHGGGPEI NKMLDRVGKESKFVDGLRCTDADTME







 G 1 RTILVHGGGGPEVIVAMLLKKTGKESRFVNGLRYTDETMEV




$G \square K V V L V H G G G P A \prod N K T L E K M H \prod E S K F E N G L R V T D D T V D V$ DV DVVAV H G G G P Q I K T K L E S Q N L E S K F I
 GVNP VVHGGGPQ1ATMLKKLDITSEFVNGLRVTDKTVEV
$G L R P V V V H G G G G P Q!S A M L D R L G L Q T R F E A G L R T V T T E T M D V$ GF QDVVVVHGGGGPDI N E WL K QL N K S S P Q Y WE G I R V T D V


|  |  |
| :---: | :---: |
| S M R L V V VH G G G P Q I | N ALL N R L A IEES R FEK G L R VT D A D T MQ |
|  | N R MLLK K T Gl E S Q F V N GL R V T D E T M E |
| GI N | S R A M K S GLK A EFR NGMRVTTDETVV |
| $\mathrm{G} V \mathrm{~K} V \vee \mathrm{~L} V \mathrm{~V}$ H G G G P E | S Q GVKLLLGKE P Q F $\quad$ L L GLLRVT D D T I N |
| GYRPVIV H G G GP A | S EMML G RL G I E S E F V N GL R K T D E A T d |
| $G M R L$ |  |
| G | D R A M A S G L VP K K I Q |
| Q V | $M N Q L G I M P$ K $\quad$ K N G Y |
| G A S $\square$ V | N E WLT KL HVP $\square$ R F E H G L R |
| GTQPVIV H | S D NLA KLGILETEFVNGLR |
| G ! H P L I I H G G G E A | NKA MKA Q M S P K F NGIRVT D DI A |
| GI A TVVVI H | K R E LE K S N I Q S K Fl R G L R V T D K N I I D |
|  | TEAMEFVNLPVEFKDGQRVTTEAMDL NSWLGKLGI EPQFKDGLRVTDAATMV |

GEQLVLVHGGGPQIDEALAEKGIGKNRVAGYRVTDEAVAT
 GKRLVFVVHGGGPQI DTLLEKLHIVGEK KQGLRVTREVLDV.



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 VEMVLLGKVCQEDVTRINQNG VRS $\quad$ VGDCGKDG

 V Q MVLVGKV NA QLV GAI NSYGNYALG TTGADGRTLMA AEMVV GGAI NKEIVRWI GAAGGRAVGLSGKDAGLVT VEMVLC GLVVNKND TQLI NNA G GNAI GLLCGKDANLI EAK K A Q MV L V G K I N D G I V S L I A K C G A R GVGI S G N D G
 $\vee R$ DVLS GKVNG V R MVLTGKVSRELVGLLNAHGPHAVGLSGEDGGLLR TLDI ARMVLVGKVNREIGSDNAHGPLAVGVS GEDGGLITA
 VRMVLA GQVQRELVGLLNQHGPLAVGMTGEDAHLMSA

 $V$ Q MVLA GKVNKDLVSLLTRHNG RALGLCGID D $V Q M V L G G K V N K D L V L S L Q H K G G R A L G L C G L D G G M I E A$ A EMVLSSGKLNK GLV QHMERDGTHAVVGLG GKD G VQQVLA GQVNKDLVALLKGRG VGLCGMDGHMITCSRK

 $\vee$ EMVLT GRINREVVTMVHRHGGRAV

VRMVLT GQVNPQLVSKDNSHGP
V EMVLS GKLNKEIV GMLLREGGKAVGLSGVDATGLSGEDA
 IV M DVV R MVL T GQVVGRELVGLLNQHGPLAVGLS GED GALFG V R MVLTGEVNQQLVEAMNAHGNMGVGVSGTDAGVIVA

 $V$ E M V L

 $V E M V L S G Q V N K R I V Q A D N R Q G G K G V G L S G K D A N L I T C T Q T$ AMDVVRMVLTGKVERDLVGLINN AHGPFAVGLSGEDG V E MVVLT G K V N Q E L V A LL L N A R
 $T$ T GQ $G Y M I X E S T L D E E L M K L G G D K L G L T V L T Y V K V D A E D P$
 $V L D$ $V R M V L T G Q V G P D I V G L I N Q H G P M A V H L S G E D G G L F T A E$
 VEMVLS GRVNKRIVSADNGQGGRAVGVSGKDANLMVCDDP $V Q M T L A G K V N Q D I V R L I$ SEHGGKAVGVSGLDADTIQAD






VRMVLTGRVQRELVGQDNAHGPFAVGMTGEDAHTMT $V E M V L A G K V N K Q L V G S I N A N G G K A I G L C G K D A N L I V A K A S$ $V E M V L D G K\|N G K\| V S S\|C K K G G K A\| G L S G R D S F C I$
 VEMVLCGQVNKTVVSRFLQHGARAAGLSGRDAGLL RA V Q MVLS GKVNKELVSHLDGKGV
$V$ E DVL N N EVVNAE 1 CKML EA Q GCRAK S L
$V L Q M L A G K V N K S L V A L L K G$
 IVEMVLCGQVNKAVVSGFARHGVRAAGISGRDGNLLRAR
 V R MVLCGQIN QELVAMATQLGGDAVGLCGTDGNVVR $V$ V MV L A G S I N K Q I V R LI Q R V G G R A L GL S GVV G GIL Q A K P V I E KV L C K E I $\| \mathrm{V}$ ESVLIDDFNND\|VNSLKDKGTEADS ITHTKNNNVI KT@PE $V R T V L M G K V N Q E L V E A L N E H G N F A V G V S G A D A G V I V A E Q A$ $V E M V L V G R V N K E L V S L I N Q A G G K G V G L C G K D G N L V K A$

VQ S VLS GTVL RTVVNY L
$\square G S D V N A \square G L S A S D G$ $V$ E MV L S GLLV GK R V Q A ATMVLA GKINTEMVLDFAAK GFQSI GLNGSNNLLL IVEDVMMAFNKE VVSALEKKS CKAKS I TDSENNAIV VK QK A L Q A V V K
 $V Q Q V L C G K V N K N L T A M I N H M G G H A V G L C G L D A G L F M A R C L$ $V Q Q I L C G Q V N K N L V A T L N R L G G G R A I G L C G L D G G L F Q A K$

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UniRef90 A6P0Q0

TKRHAVVDGQSVD A GLFTGRRRGTVVDGEE VDLGQVGDVVD
S M $\square K T V P K$
$V G L S$ GK D D D L M VCEA D D P

## S

D $\mathrm{L} M \mathrm{M} \mathrm{D} \mathrm{CV} \mathrm{A}$
AQQDPS
EAEQLD P

ARK LTRTRRDPDSATERTT

DELLGLVGOITC
 GVVGE T

LLDMGFVGEPHD SLLAADKRGVNAGHE ASQRPATVDGRSVDVGLVGDVVEVSPQPIIDDLDQGRIVI $P$ DGDPGENILQC $E K L D T V V H G D P V D L G F V G N I T S$ ARRRHATVDGEAVDVGLVGDVVDVDPRAVQDLLDAGRIPV AARNP DLGFVGDVTS ARRHAV VDGEPVDVGLVGDVVEVHPSAVQDLDDAGRI

## A LIFSASQRKP IIDGEPT <br> TKHFAE $\square$ D GEQ

SFKTTNVLFGKKLVDQ
ATRTGTVVDGV
ARRRGTVVDGEL
GMLVAIKKENP
$D \quad G L V G D V V G$
VD G RVVGQITD

D M $L^{\top}$
DGFVGEIHH
 A D GTDL GQVGQVTN

## RLERRARENGVETERVLK

GFLVGTRKVHD
GMLLCEKRTGA
DFVDPHKPVGPFYTEDEAKKDGEENGWTAADWGFVGDIVR ( LGGRRRGVVIDGEE

V DL GRDGDVVE
ARRRGVVIDGV
D F S K W


NQSDYDYGYVGEV V ${ }_{L}$ S



D
ARRRLVS $\square D G V P$
A LIF R A T QRK
P GLVGNPVE
$P E L G F V G D P S Q$
PDLGFVGTPSK
T N K
AFMNPTKPDGPAYDVPKPGY
A M L K A RRDRG
HLLFTAVR RDVMVDGVAT
ANAVGLC GTDGNMVQARMLDER
AF LEPEKF $\square$ GPVYSPEEQMA $\square E A T Y G W H M K R D G K Y G R R V A$ A

PCHNAETLGLVGEVAA AFENPTKPDGPFHNKKEAGFDTRRTFVMKEDSKHRWRRVV GFAHPTKPLGAFFSESQRDELQKPDWRFVEDAGRGYRRVV D D S H YTFVNEI
RK】T QMADPTSNEMK DVDIGYVGDPLQ AVRRPALVDGRPYSEEEAKAEAEKGATFKEDAGRGVRKVVD S

KKELGLVGEIEQ
VSEKVEGRVGRVKE AFKNPTKPDGPFYTKYRAQMDREKKWAMDEDSGRGYRKVV

N $\square \mathrm{FQA}$ QKHQSPD PGNDVLCCKK LESFNENGE UVDYGYVGGKVEQ $K G V G L C G \square D A N M D Q C E K L Q A E V D Y G F V G E V V K$
A N A D
GEPDDLGRVGOVGLVEVTE

A VF $\square$ P G Y E V A
S

FSAVKWNHAEIGWVGDVTG
FSAVKWQAFSSQGDP
PDLGRVGR TR
RRVDQED
EEAEKRKEELGWNMVEDAGRGYRRVVV
 $K$ VRPDHDQMDGYVGTVEH


EK YGLVGEVTH

| $I L D$ |  |
| :--- | :--- |
| $T N T A$ | $K$ |

> D N
> NELGGVGEITH


$G E T F N V N G D T A A G A D A A A L K A D R F L L L T D V E G V V A$ GHVYNIN A D DAASSIA 1 AALKA E K LI YVVS DVA G I


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A


DS LIKKARRSEDEGLKKDGDVSKGMMPKVDCCTDADDG RNSLVSQDNTADLTELLPTLEAGMVPKIVACLRAVTE


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UniRef90-UPI0004778FD5 UniRef90-A9GQU6 UniRef90-Q3Z730 UniRef90-Q0ABR9 UniRef90_UPIO003608118 UniRef90_UPI00037DBB63 UniRef90_E1VL59 UniRef90_Q87M87 UniRef90_F2F8U5 UniRef90_R1IK17 UniRef90-N9TWW8 UniRef90-D5DAG5 UniRef90_G2DF24 UniRef90_UPI0003B730FD UniRef90-F9DWM4 UniRef90_UPI00047D397D UniRef90_I3YEM1 UniRef90-UPI0004654EF3 UniRef90-UPI0003B61902 UniRef90-IODWU0 UniRef90-W4VH30 UniRef90-C0R5M0 UniRef90-R7ZBT3 UniRef90-V9SCC5 UniRef90-Q9RRP6 UniRef90-R7BWU3 UniRef90_Q3J9M2

1
GKTFVTKYGGAAMKD
$G R T F V V M L A G E L L A G P A L P T$
$G K T F V I A F G G K A V A S$
GKTFVLAFGGE
$G R T F V V T F G G E T L L D P T F P$
GDIVLIVCGGSTLSNLSDGFFES
$G K \vee F \vee \vee A D A G$
$G K T F V V M L G G E A M V Q P$
$K V I V I K M G G V A S D N L T K S F F K Q V E A$
$K I L L V K L G G S I L H E L Q E S F F A S L K$
$G K T F L I A F G G K A I A G P$
SLLDGFSSMA D LARTLAYDVN
GKTFVLAMGGESLLDGDFSSMA

KCGGSTMABIASLQQD
$E T \| V V K \square G G N A S E N L D P S T F F E Q \square K T$

KLIVMKCGGSTLAALPDSFYEQLQ
 $I L V$ I K C G G S TME QLL P A $K Y \vee V K$ L G G A A LER R D
K T F V I MFDGDAI LHPNFNSIVQ
K P A I K $\square \mathrm{GG} \mathrm{G} T \mathrm{I} \mathrm{S} Q \mathrm{~L} P \mathrm{STF} \mathrm{YRD} \mathrm{\square GE} \mathrm{\square YET}$
GKTMV MLGGGEAVADGNS SFYRDIGELYET
GKTVV M GGEA A GNFS
$V$ I K
$G R T \stackrel{F}{F} \vee \operatorname{AFGG}$
H P S F
E V S
$\stackrel{40}{\mathrm{~V}}$
EVLKN FIAENVLL R K V
 A Q GERMEDLCH DCNL L A A L HL I H D LALLHGL
 NQNA

GKTFVLMLGGEALETD
GRTFVIAFGGEAVADATFP
KTFVLMF GGEAV
KTF VLMF GGEAVRDP $\square F \mathrm{~L}$ I K F G G N T L S EP D
 GRWFVVKIGGGELAADRPKLAGSVGAAVRAFLS



 GKTFVVGMAGELI A AGKLSAFAQ DLLSILHAM




K E L $L$ S
GKTFVIMLGGEA TE HANFS G
$\square \vee V K M G G V A S D N L D A A F F D Q \square K T$ GKTFVIMLGGEAIEHDNFS
K T IVLKLGGELVHAPELDV GKTFVIMLS GEAI
GKTFVI MLLGGEALMQDS
$K T F V \vee A F G G E \quad L V R D G$ V V I K C G G S T I A
$G K T F V \vee M L G G E A I M Q S G F$
GKTFVVMFGDEAVARDNFST

$G K T F V I \quad G \quad S G E \quad M V T D$ K T IVI K LGGSVVLGSRDTSLE
GKTFVVAALS GECLLAS DHLTTMLLQ
$G K T F V L M L G G D A V V D D$
A K F VS F $\square \mathrm{H}$
$\square \mathrm{V} N \mathrm{D} \square \mathrm{GLL} \mathrm{H} \mathrm{S} \square$
$S \square V S D \square G Q S Q$


 | $A$ | $L$ | $N$ | $A$ | $L$ | $I$ | $Q$ | $V$ | $A$ | $L$ | $L$ | $H$ | $A$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $L$ | $D$ | $E$ | $F$ | $F$ | $K$ | $S$ |  |  |  |  |  |  | $-L V K G G E V G B$

G


ALLA ILS S DLAALTRA
$E T\|V I K\| G G V A S Q Q L S L D F I A Q Q K A W K$

 R K MVI KL G G S T L E G
$K T I V V M L G G E A I A D P N F G$
L N E



GRTFVI SFGGEAVASSGF $V \vee$ K C G G S T V
KRQVI KLGGSMLDELSESF $K Y \vee V K L G G A G L E T P$
GRTFVI A FGGEAVADVRFP
GK TFVL MLP GEALVHPNYG I I KI G G NVI D N S
GKTFI I MLGGEAIA HENFP
GETFV, $K$ $V \vee I K C G G S V F E Q L T P S F Y$ $M \vee I K L G G S T L E G L N E S F F E N F K$

MEDPQA
M I VK Y G G N A MK S LD
GKTFVISFAG


## UniRef90_P59297 UniRef90_LOWHZ7 UniRef90_Q47A18

 UniRef90_UPI00047828F2 UniRef90_UPI0003B6AE3D UniRef90_UPI0002F2B9C8UniRef90_UPI0003C7E85B UniRef90_UPI000380B7A1 UniRef90_A1S2D5 UniRef90-R2T334 UniRef90_UPI000303DA1C UniRef90-A0A011N5H8 UniRef90_Q7NSR5 UniRef90-W9AAP7 UniRef90_G9Y9Q6 UniRef90_V6MJ1 UniRef90_UPI0002194443 UniRef90_Q0AH78 UniRef90_K4ZGK9 UniRef90_Q9K8V4 UniRef90_UPI00036FE260 UniRef90_G8NTU9 UniRef90_M5DX89 UniRef90_D6XUI6
UniRef90 B8K789 UniRef90_L8J581 UniRef90_F5SGS3 UniRef90_UPIO003616BF9 UniRef90_E6PZX7 UniRef90_A1ST99 UniRef90_G2DYB4 UniRef90_N9A3X6 UniRef90_A0A014TWN7 UniRef90_M4YKP9 UniRef90_UPIO002629337 UniRef90_U4K2F7 UniRef90_Q096B1 UniRef90_A6F7X1
UniRef90_W9UZ57
UniRef90_C1F4F1
UniRef90_X1L144
UniRef90_UPI000422339D UniRef90_B1Y3G6
UniRef90_G9QL93
UniRef90_Q5L1V3
UniRef90-R4XQ69 UniRef90-UPI00037F9DB7 UniRef90_T1C101 UniRef90_UPI0004719C15 UniRef90_R2PM29 UniRef90_Q8ZMB8 UniRef90_A7H6Q3 UniRef90_C5BH95 UniRef90_UPI000470AB4A UniRef90_UPI00046796BF UniRef90-W4Q1K1 UniRef90-I1E2R6 UniRef90_LOWN58 UniRef90_E6SH26 UniRef90_UPIO0034CE187 UniRef90_F8GIC7 UniRef90_D8K0U9 UniRef90_F3KYU5 UniRef90_UPI0004778FD5 UniRef90_A9GQU6 UniRef90_Q0ABR9 UniRef90_UPI0003608118 UniRef90_UPIO0037DBB63 UniRef90_E1VL59
UniRef90 Q87M87
UniRef90_F2F8U5 UniRef90_R1IK17 UniRef90-N9TWW8
UniRef90_D5DAG5
UniRef90_Q731G5
UniRef90_G2DF24
UniRef90_UPIO003B730FD UniRef90_F9DWM4 UniRef90_UPI00047D397D UniRef90_I3YEM1 UniRef90_UPI0004654EF3 UniRef90_UPI0003B61902 UniRef90_IODWU0 UniRef90-W4VH30 UniRef90_C0R5M0 UniRef90_R7ZBT3 UniRef90_V9SCC5
UniRef90_Q9RRP6 UniRef90_R7BWU3 UniRef90_Q3J9M2
UniRef90_G5JRK4




## 

 GK R P V I V G G G G G P E $\quad \mathrm{I}$







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



 G $\operatorname{l}$
 $G V K I V L V H G A R P Q I N R L L D K Q D H H T P Y H K G I R D T D E D A D S$ $G V R V A V I$ H G G G P Q A T E L T N K L G LTP R M V A GRRRV T D EA TEV

 GK S L V V V H G G G QVAASEWLAARLG ISS T S F I K G L R V T D E T L K V






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


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


 $G Y R P V V V$ H G GAA T V N D W L K R L G L A T R I I H N G E R V T D E N L D V


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

 GI QLI I T H G G G P A I N R E L A A V G I E S H T V N G L R V T S E M I G I

,

## 

 $\begin{array}{llllll}G & Q & L & L & V \\ G & N & Q & A & V & V \\ G & I & R & V & V\end{array}$ $G \vee R L \vee V V$
$\begin{array}{ll}G W Q P I I \\ G I N P V & 1\end{array}$
GVELI THDGEYE
GMRPVLIHGGGKA
AMPLVVVHGGGPVI
GI QLVLVEHGARPQ





|  | 200 |
| :---: | :---: |
| UniRef90＿P59297 | E |
| UniRef90－LOWHZ | AODGTGNUVEVDPIRRQLEAGNVVLLSPLGCSP GPSPT |
| UniRef90－UPI00047828F2 | DEIAADLDQQNVVLTSNLGVSPA |
| UniRef90－UP10003B6AE3D | VDKEAlHRQLDQGNLVTLA |
|  | VN |
| UniRef90 UPI0003C7E85B | NKNIIIDKIVVNDKKVPVIA |
| UniRef90－A1S2D5 | NGDK |
| UniRef90－R2T3 | VDTELLEHLL |
| UniRef90－UP1000303D ${ }^{\text {d }}$ | $V N S Q L I K Q V L S L G L ~ U P V L T P L ~$ |
|  | VDSEGARAQLGLGNVVLLS ${ }_{\text {V }}$ |
| iRef90－W9A | $V$ NKTFLSTFLEAGILPIISP |
| UniRef90－G9Y9 | DEEAIHRQLDNGA VLMGP |
| UniRef90－V6MJ14 | TNSEWTS MNAA【PKA\｜LTQGYLPVIAPLSVST |
| UniRef90－UPIOC | $\square N S E W L S$ NAAA $\square$ SQ |
| UniRef90＿C0AH78 | GL |
| UniRef90－09K8 |  |
| UniRef90－UP100036FE | －VesamLGhLLe |
| $\begin{aligned} & \text { UniRef90GGNTU9 } \\ & \text { UniRefon M5DX89 } \end{aligned}$ |  |
| UniRef90－D6XU16 | VNPSVIHAD，${ }^{\text {V }}$ |
| UniRef90－88K789 | CHSGRURR\｜DVEG\｜NRMLDQGSIVLLGP |
| $\begin{aligned} & \text { UniRef90-L8J581 } \\ & \text { UniRefol-F5SGS } \end{aligned}$ |  |
| UP10003616 | （ DNELVLLSPDGYSPT |
| UniRef90－E6PZ | TDPRWMEA |
| UniRef90－G2DYB4 | LKALLDMGYVALM |
| UniRef90－N9A3X6 | DDTDALRGHLDNHNIVVLG |
| UniRet90－A0AO14TV | HLDNNNVLLG |
|  | NAETVTDLLADGVLPV |
| UniRef90＿UPIO002 | VVDVNNVFLQSQLEQHIVPVVAP |
| UniRef90－Q096B1 | VNTALLFERLSEAGLVPVLGS |
| UniRet90－A6F7X1 | A QN |
| UniRef90－W9UZ57 UniRef90 C1F4F1 | VDHKA■NQQLDLNN【VLISNLG |
| $\begin{aligned} & \text { UniRef90-C1F4F1 } \\ & \text { Uninefon } 11 L 144 \end{aligned}$ | SDPRWLEALWK RTLLEKGYMPVMNAVPVISSIDALGFD |
| UP10004223 | G $\square$ K S QLS |
| UniRet90－B1Y3G6 |  |
| UniRef90－05L1－133 | VRSRLL |
|  | Al EKGSSV |
| UniRef90－Proo |  |
| $\begin{aligned} & \text { UniRef90-T1C101 } \\ & \text { UniRef90-UPIOOO } \end{aligned}$ | EAGAVRGWLARRPPTGGGGVPVITRQRGGRYR |
| UniRefoto－R2PM29 |  |
| UniRef90－Q8ZN UniRef90 A7H6 |  |
| UniRef90－C5BH | GAVLLGP Vi ${ }^{\text {a }}$ |
| UniRef90－UP100047 | T |
|  | QHTGVRKDDADSTRQALANRKLVLL |
| UniRef90－W4Q1 | LMELLKM |
| UniRefto－LOWN58 | $\square$ V RHNLDNDHVVLGPTGFSV |
| UniRef90 E6SH26 | VNTAFLERLLEAGFVPVIAP |
| $\begin{aligned} & \text { UniRef90-UPIO003 } \\ & \text { UniRef90_FGIC7 } \end{aligned}$ |  |
| UniRef90－D8K0U9 | VDPTLLHLLLENEFVPVVSPV |
|  |  |
| UniRef90－UP10004778FD5 | （ ${ }^{\text {HLDQGEIVLLS }}$ |
| UniRef90 A9G | RGLLELLGSGGYL |
| UniRet90－Q0ABR9 | VDAEGI RA晨LDDGDMVLLSP |
| UniRet90－UP10003608 |  |
| UP100037D | Q QSAYLEQMLSDDM】PVLAS |
| UniRef90 E1VL | VRTEA】RALLQHDI |
| UniRef90－F2F8U5 | VNTNMLNTLTEAGIVPVVA CiGATKD |
| UniRef90－R11117 | Gl HRQLQHSIVLLGP Va |
| UniRef90＿N9TWW8 | DTDGIRRQLDQQN |
| UniRef90 O731G | MNYIPVVASVGT |
| UniRef90－G2DF24 | E ${ }^{\text {a }}$ |
| UniRef90－UPI0003B730FD | VOT |
| UniRef90－UP100047D397D | A |
| UniRef90－13YEM1 | $V$ VHRTLRAMLDQG AVALMPPLGYSPT |
| UniRef90＿UPIOOO4 |  |
| UniF | N P Q N |
|  |  |
| UniRef90－COR5M0 | V |
| UniRef90－R7ZBT3 | QSVNSALLETLIKAG\｜VPVIA CVGADEE |
|  | V VDCQPLLELSSAGLLPTLLGAGLTPSMCLAAD |
| UniRef90－R7BWU3 | V |
| UniRef90－Q3J9M2 |  |
| G5JRK4 | H S |




| UniRef90＿P59297 |  |
| :---: | :---: |
| UniRef90－LoWHZ7 | GVARAHLLDTGDDLRELFTRDGC |
| UniRef90 Q47A18 | GVGRVHLI GFEQDLRELFTHDGV |
| UniRef90－UPI0004 | GVARAHLI DRDKDLLEFFTRQGV |
| UniRef90－UPI0003B6AE3D | GVARVHLLDRHTDLLELFTRDG |
| UniRef90－UPI0002F2B9C8 | ELQEVM |
| UniRef90－UPI | GVKGVVI I D GRKNDFELLS K K G G T L R Q |
| UniRef90＿UPI000380B7A1 | GVGRAHI TGDGSLLLELFTHDGV |
| UniRef90＿A1S2D5 | GVPRCHLVS Y LE DLQELFSRDGI GTQ\｜V |
| UniRef90＿R2T334 | GVKEVHITNQ |
| UniRef90－UPI000303DA1C | GI D Q V R |
| UniRef90－A0A011N5H8 | GVGRVHMI G Y DEDLRELFT R D GVGTVIS |
| UniRef90－Q7NSR5 | GI PRAHLVSRHQDL LEAFTRGGNGTM |
| UniRef90－W9AAP7 | GVKRTAIVNGLEDLEA |
| UniRef90－G9Y9Q6 | GVGRSHLIS Y Q E DVQELFSRDGDGT |
| UniRef90－V6M | GVEQVVI CGTAEDLLAVVAGKEAGTTVR |
| UniRef90＿UPI0002194443 | GV ${ }^{\text {a }}$ |
| UniRef90－Q0AH78 | GVEERVHL ${ }^{\text {d }}$ |
| UniRef90－K4ZGK9 | GVQEVVIADGAES |
| UniRef90－Q9K8V4 | TLEAVSIVNGNDVFFA ESGKLIGTTI K K |
| UniRef90－UPI00036FE260 | GVGQVVI CGTASDLRDAVIGRPVGTAI |
| UniRef90＿G8N | G V K R V R I |
| UniRef90－M5DX89 | GVPRVHILS Y QVDLQELFTREGS GTLIT Q |
| UniRef90－D6XUI6 | GIEQTFILNGFETITAYQHNRSTGTTFSK |
| UniRef90－B8K789 | GVPRSHLVSKVDGALELGSLDGMGTQVVQ |
| UniRef90－L8J581 |  |
| UniRef90－F5SGS3 | A ARGVLI TD |
| UniRef90－UPI0003616BF9 | GVARTHLTS R H $\square$ D $\square$ Q E LIF T H S G $\square \mathrm{G}$ T MVT |
| UniRef90＿E6PZX7 | G V K R V R i L |
| UniRef90－A1ST99 | GVARSHLIS Y Y Q DLKELETR D GVGTQ |
| UniRef90－G2DYB4 | GVRRVHLVGRSANLRELLTHDGSGTLI S |
| UniRef90－N9A3X6 | GVHRVHLI PYFHDI EELFTRDG |
| UniRef90－A0A014TW | GVHRVHLIGAL I EELFTRDGVG |
| UniRef90－M4YKP9 |  |
| UniRef90－UPIO002629337 | DLQNVMIA ANQAISDA GFTGTMI KR |
| UniRef90－U4K2F7 |  |
| UniRef90＿Q096B1 |  |
| UniRef90－A6F7X1 | GVPRCHLVT |
| UniRef90－W9UZ57 | NVPRCHLI |
| UniRef90＿C1F4F1 | GVKRVR |
| UniRef90－X1L144 | VPVVRII DGRMPHLLKEVEKES G T S I V |
| UniRef90－UPIO00422339D | DVTRCHLISYHQD |
| UniRef90－B1Y3G6 | GVERSHILGALLLMEVFTHDG口GTMVV |
| UniRef90＿G9QL93 | NTGHVHI |
| UniRef90＿Q5L1V3 | A LPPEVMIVS G |
| UniRef90－R4XQ69 | GVARAHLVGSV LLEDFTHDGVGTMVV |
| UniRef90＿UPI00037F9DB7 | HV |
| UniRef90－T1C101 | GRGR A I I T D DP SLGAALRGR AGTRVR |
| UniRef90－UPI0004719C15 | GVPRSHLIS Y L E L Q L L F R D G $\square$ G T QVV |
| UniRef90＿R2PM29 | GVT A VYI T |
| UniRef90－Q8ZMB8 | GVRRCHLISYQE |
| UniRef90－A7H6Q3 | GAKSVVIVGKLDLAHAVLNPGSAG |
| UniRef90＿C5BH95 | GVGRSHLI S Y LEDLQELFSRDGIGGTQIV |
| UniRef90＿UPI000470 |  |
| UniRef90－UPI00046796BF | GVPRAHLIGS $\square$ L $\mathrm{L} E \mathrm{~L}$ FS S DGVGTMV |
| UniRef90－W4Q1K1 | NIQSVMI M G K S T NVGE D G SVQGT TII |
| UniRef90－11E2R6 | GVPRCHLVSYDEDLQELFSRDGDGTQ V |
| UniRef90－LOWN58 | GVHRTHI I S Y A D I EELFTRDGSGTLI S |
| UniRef90－E6SH26 | GAGSVHI IGRRPHALELFTSEGVGTMVV |
| UniRef90＿UPI00034C | GCQKVVI A A G E S I Q KLQ |
| UniRef90－F8GIC7 | HVTRTHLIS RHSDLQELFTHDGIGWMI |
| UniRef90－D8K0U9 | GTVTS SVDGSQA HMLK EVVEGGCGTA |
| UniRef90＿F3KYU5 | GVERCHI 1 GFEQELAELFTHDGAGTLVSR |
| UniRef90－UPI0004778FD5 | GI PRCHLI SYQENLSELFTRDGAGTMVV |
| UniRef90－A9GQU6 |  |
| Ur | GASACII DGRIPHLVRELTEGNCG |
| UniRef90－Q0ABR9 | GVHRVHLLDRHRDLLELSTRDGVGTLVT |
| UniRef90－UPI0003608118 | GVGQVVI GNNL |
| UniRef90－UP10003 | GVGQVLI GDN |
| UniRef90－E1VL59 | GVSRAHLIS YQQDLQELFTRDGSGTLL |
| UniRef90－Q87M87 | GVPRSHLI S Y K V D L Q L F S F D G |
| UniRef90＿F2F8 | GI P S VQ |
| UniRef90－R1IK17 |  |
| UniRef90－N9TWW8 | GVPRSHLVSYTEDLQELFTREGVG |
| UniRef90－D5DAG5 | EEVHII S GTDGFLD K E GKLI G |
| UniRef90＿Q731G5 | GVQKVSIVNGTKDFTEV T GECIGTTV |
| UniRef90－G2DF24 | GVKRIHLLERGALLKELFTRDGV |
| UniRef90－UPIO003B73 | DLEKV I I AGADGHTDKAGGKLKGTAI I |
| UniRef90－F9DWM4 | G｜P SVQl VGG QQLTGTVIT |
| UniRef90＿UPI00047D397D | GVK R V R I |
| UniRef90－13YEM1 | GI R RV H LVARRQD |
| UniRef90＿UPI0004654EF3 | GVPRAQLFSYAADLSELFTRDGMGTMV |
| UniRef90－UPI0003B61902 | GV KAVIIGKSDELGQLKDKKPFGT |
| UniRef90－IODV | GVRRSHLLSYQEDI QELFSRDGIGTQIV |
| UniRef90－W4VH30 | DVLEVVSIVDGTKELAEFMQGKE】GTR】S |
| UniRef90－C0R5M0 | CAGVVHIVGR】PNILD |
| UniRef90－R7ZBT3 | Glp S V Q I V |
| UniRef90－V9SCC5 | $\mathrm{G} V \mathrm{R}$ |
| UniRef90－Q9RRP6 | GAP FAl 1 A S TAGVLA QAARGEAGTR |
| UniRef90－R7BWU3 | GVSRVHIVPWMVDLAELFTHDGVGTM |
| UniRef90＿Q3J9M2 | RVPRVHI I D Q HLDLMELFSRDGIGTLVT |
| UniRef90＿G5JRK4 |  |

UniRef90 G8M746 UniRef90-A0A033UQ70 UniRef90-F8IGR44 UniRef90-Q4AOM9 UniRef90-D3VCM4 UniRef90-FOVWG1 UniRef90-W0PA42 UniRef90_C9PRT8
UniRef90_IBMC4 UniRef90-Q2YC33 UniRef90 W6TA09 UniRef90-UPIOOO413B80D UniRef90-U5SAFF UniRef90-A1WYP8 UniRef90-EзBMY6 UniRef90_UPI0003B62E18 UniRef90 C5WCD8 UniRef90-V9D8E2 UniRef90-UPIOOO36B1917 UniRef90-UPI000359EB3A UniRef90_UPI0003744F68 UniRef90_UPIOO0410A86C UniRef90-A4XP61
UniRef90-R7L380 UniRef90-W7QV28 UniRef90_UPIO004758CF6 UniRef90-Q5UZ51 UniRef90 U3JF52 UniRef90-A3MT40 UniRef90-G7ZQG3 UniRef90-W8KTF1 UniRef90-UPIO0035DC10B UniRef90-N1JH16
UniRef90 F5SXY UniRef90-F3LCT5 UniRef90-K4KLG5 UniRef90-E4U9T4 UniRef90-LOA303 UniRef90-FOWIY1
UniRef90 E7EZW8 UniRef90-M5E5W6 UniRef90-T1DQS7 UniRef90-G9PCM5 UniRef 90 C C7R8V3 UniRef90-H9UIK3 UniRef90-G7UUH7 UniRef90-D4GDW7 UniRef90-R9GS97 UniRef90-H1Y5D1 UniRef90-13KH63 UniRef90-W4LXV2 UniRef90 UPI00030B8E98 UniRef90-K3WX76 UniRef90-H8WWU1 UniRef90-N6TSS3 UniRef90_UPIO0040E400D UniRef90-S8BNX1 UniRef90-B2AT45 UniRef90-W7Z7G7 UniRef90-UPI000376CD4F UniRef90 A1RR74 UniRef90-M4NEJO UniRef90-A4SYB2 UniRef90 ${ }^{-}$W0Q679 UniRee90_UPI0004075EB9 UniRef90-A5VOJ4 UniRef90-A0A034WHU4 UniRef90-UPIO000E0EE6B UniRef90-14YEP2 UniRef90-TOZ7C8 UniRef90-T1PC19 UniRef90-TORHS4 UniRef90-L7U553 UniRef90_W2SHD3 UniRef90-C4WCG1 UniRef90 UPI0002E08EC4 UniRef90-R7SCY4 UniRef90_UPIO002F46534 UniRef90_17ZF64 UniRef90-D7BCX8 UniRef90-D3VH72 UniRef90-l2GEC3 UniRef90_G8NDC5 UniRef $90^{-}$G4RMG7

1020
 RLL A L
EAR R
N F P N L



GKTFVI MLDGDTIAS P
GKTFVI MLLDGNA A A H S



K F I E L V H DLL L L A S L
$\lfloor\vee\|K\| G G L A S Q Q L S Q S C \boxtimes K Q \| K Q$

WHAQ
$K K \square I \quad \mathrm{~K} \square \mathrm{GG}$ S A
GRTFVIAFPGAAVEPP

$K \square M V V M D G G E A V A D E N F P$
IVVLKVGGGSVLER DHP
GK VFI I ML NGESI



$K R I V I K L G S A V I T R E D E C G L A L G R L G S \| V E Q V A E L L Q N Q$
 $R T \stackrel{L}{F} V \vee M L P$ GEGIA HP
 N F A N 1

G K VF V VMLS GEA I GHP G F
GKTFVIMFDGDAVLHPNFG
$K D \|$ I D D A L L N S



K F A V I K VGG G $\square$ LTE H L E P C DS A L
GATFVIAFFDGETDDSQEFEP

 $\vee \vee K V G G S A G I D Y D$ RS IVVVKI GTE IVVHSVDGMLA MGQDAVCDIARLWKE
 $V$ I KVGG A I L T N E
 K F A V I K V G G A I L R D K F A I I K V G G A I L K D D
$K R F V V K V V G A V L R D E L D D L T S S L T$

 V I KII G G NVI D N S

ENLHHFLKDFSAL K



 GT TMVI H L PGQQI E S PLFSAVMQD $\quad$ A L L N T F $V$ I K V G G A 1 $R R L V V K L G S A V I$ TREDEHGLA | I | K | K | G G N | V | $\mathrm{D} N \mathrm{P}$ | D |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| V | I | K | V | G G | A | I | T |

 V IK VG G A L LT D

Y LD E L C S S L A FL Y TV
M V VK Y G G N A M K S
LE L R R A VA A E $\square$ A A L R A Q
IV I K V G G S V V C K D V S K V I Q NL



$R R L V V K L G G S A V D T R E D N H G L A L L G R L V A S V V E Q V A E C H L E E$ GK T F V L

 K R $V$ V I K M G T S SVVVSSNGE

 $\mathrm{K} \square \mathrm{I} V \mathrm{I}$ K M G G $\square \mathrm{A}$ T K N $\square \mathrm{T}$ P E T $\square \mathrm{Q}$ Q $\mathrm{L} \mathrm{K} \square$





$G R V F V I A F G G E A A E R P D F D$

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| :---: | :---: |
| UniRef90－A0A033UQ70 | NYMPIIVHGGGPFIN |
| UniRef90－F8IGR4 | GWPVVLVHGGGPRIS |
| UniR | A $\mathrm{KVVVLVH}^{\text {a }}$ |
| UniRef90－Q4A0M9 | DLHPII |
| UniRef90 D3VCN | GIRRIVVYGARPQ |
| UniRef90－FOVW | GKQLVVHGGGFAl |
| UniRef90－WOPA | GVHIVLVHGCLPQVN |
| UniRef90－C9PRT8 | NIKLVIVFGARYQIND |
| UniRef90－13DMC4 | GIKLVIVFGGRLQI ${ }^{\text {L }}$ |
|  | GVRLVLVHG |
| UniRef90－W6T1 | GKQ LIV VGGGPMI TKLTQALQ |
| UniRef90＿UPIOOO413E | GKQIVVVHGGGFAIDKLMAEQH |
| UniRef90－U5SAF5 | TKKPVVVHGGGPMINQLLEKLAIPTRFVNGLRVTTEVLTV |
| UniRef90－B1MWD1 | GVRLVLVPGARPQVEQRLQRAGLAARYAQGSTGLRITTDAE |
| UniRef90－EЗВМY6 | GIKLVLIYGARPQ1 |
| UniRef90－UP10003B62E18 | GTQVVIVHGGG |
|  | G |
| UniRef90－V9D | GLTPPV |
|  |  |
|  |  |
|  | GMKLVLVFGAKEQIDEELAREKDETRFHKRIRITD |
| UniRef90 UPIod | HGGGDQVQALLQQLL |
| UniRef90－A4XP UniRef90 R7L3 |  |
| UniRef90－W7QV28 | G |
| UP10004758C |  |
|  |  |
|  |  |
| UniRef90＿A3MT40 |  |
| ， 72 | HGGGP |
| UniRef90－W8K | GVRLVLVHGARPQ｜EERLRARGA |
| UniRet90－N1JH | GLFPIVVHGAGPQLNKLLEDAGVESQFEEGI |
| UniRef90－F5SXY0 | GIKLVLVYGARPQIEASCDQQNVPVRYHSGLRVTDDVSLV |
| UniRe990－F3LCT5 |  |
| UniRef90 K4KLG5 | GVRLVLVHGTR |
| UniRef90－L0A303 | GRRLVLVH |
| UniRef90－FowiY1 | GDRVVIVSSGSVADGKMMLQRQYSMQSHLGGRVGHDVDEK |
|  |  |
| UniRef90－M5E5W6 | GPQLINE |
| TDQS | C MV SGAVAFGK |
|  | GLYPVVVHGGGPQLNELLEAAGVEPQFEEGLRVTDAKT |
| H9 | GI R VVL |
| 既90－G7UUH7 | VVVHGAGPQLDAELSAAG EKQTVNGL |
| UniRef90－D4GDW7 |  |
| 2MF33 |  |
|  | GFK ILVHGGGKVATQLSTTMGIESK |
|  |  |
|  | GERLILVHGGSHETNELSTALGKPPRFVTSVSGVESTDRE |
| UniRef90－UPIO0030B8E98 | NYTP｜ |
| UniRef90 K3Wx76 | G KLVLVAGSRPQL NYQLKLRQLSQRFDCGVRITGKCAMD |
|  | c |
|  |  |
| UniRet90＿UPIO0040E400D |  |
|  | GLYPVVVHGAGPQLNKMLEAAGVEPEYEGGIR |
| UniRef90－A6VD | GARLVLVHGSRPQLESRLAARGLAPRYHRDLRVTDECVID |
| 90＿B2AT45 |  |
| UniRef90＿UPI000376CD4F |  |
| UniRef90－A1RR74 | VHGGGL |
| UniRef90－M4NEJO | GLTPIVLHGAGPQLDEEL |
|  | GMRTVLVHGDRPQI EEQLMLRK】KSKFGHSYRITDECVKE |
|  | RLVLVHGARPQI DRELAILRGQPAYSGDLRITDEAAME |
| UniRef90 WoQ679 | NIKLVIVFGARPQINQLLAQNNDEPEYYNNIRI TNEYVKQ |
| iRee90 UPIO004075EB9 |  |
| A5V0J4 A0A034WH | M |
| UniRef90 A0A034WHU4促 | EV $V$ M |
|  | GLHPIVLHGAG |
|  | G1 RLVLVYGAAPQIEAALENRALATMKSGGRRVTPPPLME |
|  | GLYPIVLHGTGPQVNSKLEAQGIEEEYDEGMRVTDPVTMS |
| UniRef90－T1F | MMV T SGAVAFGKLTQELLMSLSMRETLAPKDHSKA |
| UniRe990－TORHS4 |  |
|  | GEQVVVVNGGSEAGDSLLASLGMERPEALTASG NVVRLL |
| f90－W2 | GRQMLIVSSGAVAFGRQKLRQELVMSMSM RQTLRGPSGM |
| C4 |  |
| UniRef90－M4E | GVKLVLVA |
|  | R |
|  |  |
| UniRef90－17ZF64 | GVKLVLVHGARPQIERQIAQLGLVSRFESGQRVTDDCV |
| niRef90 ${ }^{\text {D78 }}$ | V H |
| ef90－D3VH72 |  |
|  |  |
| UniRef90－G8NDC5 | VLVHGGGPEIGALLERLGYESRFVEGLRVTPPEQMD |
|  |  |



UniRef90 G8M746 UniRef90－A0A033UQ70 UniRef90－F8IGR44 UniRef90＿10JXZ5 UniRef90－D3VCM4 UniRef90－FOVWG1 UniRef90－W0PA42 UniRef90－C9PRT8 UniRef90－13DMC4 UniRef90－O2YC33 UniRef90 W6TA09 UniRef90－UPI000413B80D UniRef90－U5SAF5 UniRef90－A1WYP8 UniRef90－ЕЗВМҮ6 UniRef90－UPlo003B62E18 UniRef90 C5WCD8 UniRef90－V9D8E2 UniRef90－UPIOOO36B1917 UniRef90 UPI000359EB3A UniRef90 UPI0003744F68 UniRef90＿UPIOO0410A86C UniRef90－A4XP61 UniRef90－R7L380 UniRef90－W7QV28 UniRef90＿UPIO004758CF6 UniRef90＿Q5UZ51 UniRef90 U3JF52 UniRef90－A3MT40 UniRef90－G7ZQG3 UniRef90 W8KTF1 UniRef90－UPI00035DC10B UniRef90－N1JHI6 UniRef90－F5SXY0 UniRef90＿F3LCT5 UniRef90－K4KLG5 UniRef90－E4U9T4 UniRef90－LOA303 UniRef90－FoWIY1 UniRef90－E7EZW8 UniRef90－M5E5W6 UniRef90 T1DQS7 UniRef90－G9PCM5 UniRef90－C7R8V3 UniRef90－H9UIK3 UniRef90－G7UUH7 UniRef90－D4GDW7 UniRef90－T2MF33 UniRef90 R9GS97 UniRef90－H1Y5D1 UniRef90－I3KH63 UniRet90＿W4LXV2 UniRef90 UPI00030B8E98 UniRef90－K3WX76 UniRef90－H8WWU1 UniRef90－N6TSS3 UniRef90＿UPIO0040E400D UniRef90－S8BNX1 UniRef90－A6VDYO UniRef90＿B2AT45 UniRef90－W7Z7G7 UniRef90－UPIO00376CD4F UniRef90 A1RR74 UniRef90－M4NEJO UniRef90－A4SYB2 UniRef90－W0Q679 UniRef90－UPI0004075EB9 UniRef90－A5VOJ4 UniRef90 A0A034WHU4 UniRef90－UPIIOOOOEOEE6B UniRef90 $-14 Y$ YP2
UniRef90
UnZ7C8 UniRef90－R9XCK4 UniRef90－T1PC19 UniRef90－TORHS4 UniRef90－L7U553 UniRef90＿W2SHD3 UniRef90－C4WCG1 UniRef90 UPI0002E08EC4 UniRef90－R7SCY4 UniRef90－UPIOO02F46534 UniRef90＿17ZF64
UniRet90－D7BCX8 UniRef90－D3VH72 UniRef90－12GEC3 UniRef90＿G8NDC5 UniRef90－G4RMG7 UniRe90－G4RMG7
UniRef90 UPIO0036

G\｜$\quad$ D GVDFQ
 CATN

A $\qquad$ 1 A AHPFG【V $S G \square D Y Q L T G R$ N
 GVIDGG $\square D \mathrm{FRHTGKVRKFDD}$ QP GVDDG $\mathrm{D}_{\mathrm{D}}^{\mathrm{Y}}$ S पR【PNSPV पNVVSSNALLAQP鸟GVDGVDFGLSGK亡RR RPIGVIDGIDLMHTGEVRKVD
 GTNLRVVSGNFDTAQPQGUDDGUDYCHSGKVRRI A ARपSMSLNSTTWQRTRNCTNVVSGNFTTAOEGGYVGRTD位 AGLDS $\square Q \square R S H \square P D D E A D F D D S Q Y$ Y GLMS LYDAMFLQYGVKTAQULLTKPDFQDESSRENGQETQ TTKLSMGLINTPMQGSRLNVVSGNYVTARPLGVVDGDDY S

> ARPपGVLDGVDYHHTGEVRRGAV

AQPDGVDEGDVDLGFVGEIDK
$\underset{\text { GFVI }}{\text { NV }}$
AQPLGVDEGVDYHHSGKVRR1｜OR PRKSAVRVVEDGKKKIRRG G■MA $\square Y E A M F T Q Y S D C A A Q L V T N L D F H D E Q K R N L N G T L$ RKEKVLVVDERGRQRVVDGGYVGKIVD NQQYGYVGTPTTGNKKA
NFVT VRMTP

AVKRPPMLDTDNKTD
ARPLGVRDGVDYQHTGEVRR
 GVIDDGVDLQFT GKVRR1
 DFRDPVIRKTLKETMQSLLQVGHMPVVAVEDGKVK DFRDPVIRKFLUETMQSTALQUGTNLDFHDEQKRRNRVPL GLMALYEAMFTQYSTCTAQLLVTNLDFHDEQKRRN $S$ FLDD DFYNEETRKNDFSTLSELISTNUVP\｜INTNDA पGVATRSDQGAFG ATYLDKEKWQ GTfecelleneti
TLLSRHRVTGITGNWVRSRGLGVINGVDYEESGKVGTIQS AGARATSITGGVF EADYLDQDTY GLVNVTQLDNDQTTDEELTHMHCTPIVNANDGGVGHATP PVK

DDYGVGDLSD
FHDDQKRQNLNSTLRELLRM RPVKTVPYGFVGDLVV CGADGRSMVGE RKAAUKVVENGKRKVLRNDFTGRVEQ PLNEKYG YVAECLSVNKPVLADDCKLA AQPVGVRGGVDFKNTGEMRR
DFYNEETRKN】ISTGSELDS
YLNKEKYDLVGKTTG NA $\square \mathrm{KA} \square \mathrm{KR}$ R

VKDVDFGFVGD
YLDKDKYKFVGKTAN RP四VVEGVDYHHTGEVRRDDRKGIGRLDD RAEY【NKEKW GLVGKVTG
A $\quad$ L

## QPV

PRHAEV GRVGRVTG RKEKVLIVDERGRQRVVDGGYVGRVVH

Y LDRETAGGVGKVES
TVKEESQPRVVGGSWVTAKPVGVRGGVDLQLTGEVRR
 DFYNEETRNNDFCTDSELDS $\square$

AKPMGVRGG $\square \mathrm{DYENTGSVRR} \mathrm{\square}$
PAGVFTASYGDKD
GVFTAEY乌DKKYQ
RPLGVIEGVDF $\square Y T G T V R R$
 GLMSLYETLFSLYDVACSQVLVTESDFKTKEARANDRDTL DIDDPQRRKNDQATMESLLSLNDIPIVNANDA
A NLNVKQLREDQLS IUQADY NYQHY
AQPVGVRGGVDYKYTGEMRR
YL NYK TYGSVGTSTQ
YLDKAKYGLVGKITR
S
G $\square$ R N
GTDHQYTGEVRR
EPALGRVGEVSQ
GMVKVSQLDKTFGHTGMA $\mathrm{A}_{\mathrm{A}}$
N




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| :---: | :---: |
| UniRef90-A0A033UQ70 | GCKSVKI GSSDHLLKSSHSNKIGGTMI T |
| UniRef90-F8IGR4 | GVREVWV |
| UniRef90-10JXZ5 | GVNRVHI I D GRM |
| UniRef90-Q4A0M9 | GCQKVVI AGNEAHVVEIRTGKGIG |
| UniRef90-D3VCM4 | GVRRSHLDSYQENVQELFSHEGIGTQIV |
| UniRef90-FOVWG1 | GVGEVLI GDN |
| UniRef90-W0PA42 | GVARAHLIGSI LLEYFTHDGVGTMVV |
| UniRef90-C9PRT8 | GIKRAHLI SYEEDL QELFTRDGVGTQLS |
| UniRef90-I3DMC4 | GI KRSHLLSYKEDLQELFSRD |
| UniRef90-Q2YC33 | GV SRVVHLI S RHVDLQELFTHSGIGTMIS |
| UniRef90-W6TA09 | GVQQAII TNA |
| UniRef90-UPI000413B | GVETVLI SDNLSR |
| UniRef90-U5SAF5 | QMNQAVI LN GLED DA S Y L K G E VGT KFV |
| UniRef90-B1MWD1 | GVHNVH |
| UniRef90-A1WYP8 | GVARVHLLDRNQHLLELFTRDGV |
| UniRef90-E3BMY6 | GVSRSHLVSKVDGALELFSLDCGIGTQ |
| UniRef90_UPI0003B62E18 | GIPEVRIVGAHANGF |
| UniRef90-C5WCD8 | GVKRSHI I S Y K ENLQETFSREG |
| UniRef90-V9D8E2 | RSSSVAI I HPADLQKELFTDSGAGT |
| UniRef90-UPI00036B1 | GVNQLLI GDNL |
| UniRef90_UPI000359EB3A |  |
| UniRef90-UPI0003744F68 | GVERCHLVSYEQNI QELFTRDGIGTQlVR |
| UniRef90_UPI000410A86C | SRRS ${ }^{\text {S }}$ AVAGWQDALTRLLAKGEA |
| UniRef90-A4XP61 | GVGRSHIVTDGALLSELFTRTGNGTLV |
| UniRef90-R7L380 |  |
| UniRef90_W7QV28 | GVPRCHLVGSL L Q L L F R D Gl GTQ |
| UniRef90_UPI000475 | GIEERTHVLSYANNLAE |
| UniRef90-Q5UZ51 | GASEVVVADANAESP\LSALDGGGT |
| UniRef90-U3JF52 | , |
| UniRef90-A3MT40 | VI SNGLADSP Did |
| UniRef90-G7ZQG3 |  |
| UniRef90_W8K | SVERVHLVDRNRDLMELYTREGA |
| UniRef90-UPI00035DC10B | GVTSALVGSSLL T T G |
| UniRef90-N1JHI6 | KSS VVAI 1 HPEDLRELFTDNGAGT |
| UniRef90-F5SXY0 | GVTRVHILDRA $\mathrm{V}^{\text {V }}$ NLQELFSRDGAGT |
| UniRef90_F3LCT5 | GTDRAVILSASED |
| UniRef90-K4KLG5 | GVPRAQIVSFSDDLK |
| UniRef90-E4U9T4 | GVGRVVF GDARDEAPISKALA GA GTVVR |
| UniRef90_L0A303 | GVGRVIFGDARAGEPVSAALNGQ |
| UniRef90-FOWIY1 | VK AAII A K A C CLIDII K G K R |
| UniRef90-E7EZW8 | G TSVVIANGTH |
| UniRef90-M5E5W6 | RSSSVAI I S V D Q |
| UniRef90-T1DQS7 | GV SVVICNGHQD |
| UniRef90-G9PCM5 | RSSSVAI 1 HPSDLQKELFTDSGAGT |
| UniRef90-C7R8V3 | VSNATSVITKPSVAKELFTDRGSGT |
| UniRef90-H9UIK3 | GVERAHIVDGRRDLEEVFTNQGVGTMIHK |
| UniRef90-G7UUH7 | LPEESVSIT T P A D A ELFTHKGSGTLVRR |
| UniRef90-D4GDW7 |  |
| UniRef90-T2MF33 | GV SVVIANGVFKI T DIL L C GKK |
| UniRef90-R9GS97 | GV TEVYI GKSDEL QLLGKES |
| UniRef90-H1Y5D1 | GV KAVII GQADEL GLLKQNQSFGTRLS |
| UniRef90-I3KH63 | G TSVVIANGTNITDIVEGKKVGTFFS |
| UniRef90-W4LXV2 | GVG TVI FGR L D H PVQLAL E GQGTVIR |
| UniRef90-UPI00030B8E98 | GCSSVKI 1 GTVKHALINS SNSN】G |
| UniRef90-K3WX76 | GVKRSHLVSRHVDLQELFTRDGEGLMI |
| UniRef90-H8WWU1 | R S S S VA |
| UniRef90-N6TSS3 | GV SVVICNGEAVKTILSGRKDG |
| UniRef90_UPI00040E400D |  |
| UniRef90-S8BNX1 | RTS SVAI I A TEDLQRELFTDTGAGTLI R R |
| UniRef90-A6VDY0 | GVKRSHIVSYTEDLSELFTRTGNGTLVAQ |
| UniRef90-B2AT45 | RATSVAI I HPGDLQKELETDSGAGTLI R R |
| UniRef90-W7Z7G7 | DVQEVVIVDGPQVLSRVVHGET $\mathrm{D}_{\text {V }}$ T R I VR |
| UniRef90_UPI000376C | GAPHATI A GMVA GVLAAAARGEAGTRV |
| UniRef90-A1RR74 | GIEEVISNGLVENPIDVALNGGS GTHIVK |
| UniRef90-M4NEJ0 | SSVITRPSELAELFTHKGSGTLVRR |
| UniRef90-A4SYB2 | GVSRVHFLPSNQDLEELFTHDGDGMM |
| UniRef90_W6K4U5 |  |
| UniRef90-W0Q679 |  |
| UniRef90-UPI0004075EB9 | GVKQVT I CHADDLLA ATKSAAGTVIS |
| UniRef90-A5V0J4 | GVH A R I T NLEGLL |
| UniRef90-A0A034 | GV SVVICNGMQEI K T I I A GRKVG |
| UniRef90-UPI0000E0EE6B | GTPRAHI DGALI IKELFTRDGTGSLV |
| UniRef90-14YEP2 | RSSSVAI I S A DQLQKELFTDSGAGTLI R R |
| UniRef90-TOZ7C8 |  |
| UniRef90-R9XCK4 | RTSSVAI INVQDLQKELETDSGAGTMIR |
| UniRef90-T1PC19 |  |
| UniRef90-TORHS4 | GVNAVVI ASGFKVLDAI MKGANLGTLFV |
| UniRef90-L7U553 | GVPSAYVTASRPVLSALANE AGTQL |
| UniRef90-W2SHD3 |  |
| UniRef90_C4WCG1 | GV QEVI I G DNL ${ }^{\text {V }}$ |
| UniRef90-M4BMD8 | GVKRSHLVSRHVDLQELFTRDGEGDM। |
| UniRef90-UPI0002E08EC4 | GlKKV I I G DNLL |
| UniRef90-R7SCY4 | RTS SVAIIS T DMLQKELLFTDEGAGT |
| UniRef90-UPI0002F46534 | LGRAI EVAGSPEKLAELFAGNS $\square \mathrm{G}$ I TRF |
| UniRef90-17ZF64 | GVTRVHLLGAELDLRELYTLDGAG |
| UniRef90-D7BCX8 | GAPWAAI ARGARGVLEAVLSGETGTRV |
| UniRef90-D3VH72 | GQPVD\AS WR HLIA L F NG】PVGTRI |
| UniRef90-I2GEC3 | GVERVVIC HADEVAMALQEGAG |
| niRef90-G8NDC5 | WAAI AKGRGGVLEGVLKGEAGTR |
| UniRef90-G4RMG7 | GVETII Y NGLVESPI EKAL A GAGTHD |
|  | R I HLVGHDDGALELY TRDGVGLM |

UniRef90 S6F3H3
UniRef90 A9A1K7 UniRef90-UPI000417A811 UniRef90 I1YJ06 UniRet90 UPI00032A6611 UniRef90-V5WMIO UniRef90-W7Z203
UniRef90- 7 SAA15
UniRef90-B6EMN7
UniRef90-K2JZK4
UniRef90-UPIOOO4696149
UniRef90-14EHR7
UniRef90-B8KUK3
UniRef90 B8KLW4
UniRef90-F9D313
UniRee90-UPI000378ADB9
UniRef90- UPI0003FC3ECD
UniRef90-F7PNUG
UniRef90-H6OS21
UniRef90 B4H8O1
UniRef90-TOCVT4
UniRef90-UPIO002554DFB
UniRef90 UPI00036C7CC2
UniRef90-B4XYB4
UniRefofo ju4VX2
UniRef90 E7RX88
UniRef90-U2EAX6
UniRef90-L1P353
UniRef90-W4H1A3
UniRef90-R7TSW8
UniRef90-R5CCN2
UniRet90 C6W050
UniRef90-G4YM73
UniRet90-R6XQE8
UniRef90 UPIO0041A161D
UniRef90-LLJTN4
UniRef90 A3HST9
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UniRef90-FOXJ59
UniRef90-UPIOOO2895746
UniRef90 UPI00035F3D2F
UniRef90-C2G026
UniRef90-E3T6W3
UniRef90_F3L9F9
UniRef90_UPIO003745DC6
UniRef90-J7TPQ9
UniRef90-UPI00037E7827
UniRef90- R5NKG5
UniRef90_UPIOOO47144D5
UniRef90-F6GDE4
UniRef90-K0AAB0
UniRef90-B7FUP3
UniRef90_UPIOOO25564D6
UniRef90 UPI000368A6B6
UniRef90 H2G026
UniRef90_UPIO00364FDA8
UniRef90_BOTL87
UniRef90- J9CkY4
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K VEDPTALADFIQQ
 IVKVGGAVVEDEARLEALLD GRTFVIHVPGEA GKTLVAGA ASSLTERFRP

FIIKIGGN I IDNPSA地AFLK $K R \| V I K M G T S V V S T N G E P A L G R L A S V E E Q V S M L K R Q$ GSAVITREDECGLALGRLASVEQVSELHSK VVKTGGNVIDNPEACTRFLQVFAQLDAPK
TTVIKI GGDVI DHELDTLIESLRFMKDT
K TTVVKIGGNVIDDP ERLVVKLGGAVLTRGDQGGDADGRLASTVEQVAELHSK VVKVGG AVLRDD KRVVIKVGTSVLTRDNE FGVSLTRLASLVEQVSALVHS K ISUIKUGGNVDFPEKLDEFLKLFSKF



QRTVIKVGTSTLTYETGKDNFNCTDKLARIISDLSNQ KRIVIKVGTSTLMYPNGNVNLRTIEKLAMVLSDLCNE MVLKVGGALLQCEMGM ARAMETAAKILAD FIIKI GGN IVDDEMADESFLKSFAAVQSPK LVI KLGGAAL

 KRVVIKDGSSSLTHP QTGRDNLRKLEVLVRELGLLQQL


## KR VTKVGTS DTHSTGKT NDRQMKR VT ARLQKM

 NTRQMKRLVTVISDIVNS VVKVGGSAGIDYD KRVVIKVGSAVISDQDGLDRNHLDAL KTWVIKI GGAVLNTADAVVVKI GGARAVDPADA TE
VIKIGGD IIDDNEALLGFLK
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EQALNTFLSTF SNTE
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| UniRef90_S6F3H3 | $\mathrm{K}_{\mathrm{D}}^{120}$ |
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| UniRef90-UPIIO00417A811 | SL N VGAPASGFSGAKHHLLKAS |
|  | IARQVIGDLRIA EAKLSAGLPQTPMADA |
| UniRef90_UPI00032A6611 | ACAAVGQSSLMALYDTMASQLIPAVGI |
| UniRef90-W7Z2 |  |
| UniRef90-LLAA | V |
| UniRef90-J7SA | T |
| UniRet90-B6EMN |  |
| UniRef90 K2 | LAGDLS |
| UniRef90 UPIO004 | TVTMVYGGLFNKNNVAQLQK |
| UniRef90-14EH | TMDLMLAVYAGMVN |
| UniRef90_B8KUK3 | VTATQRLQLETRLSMGLPDSPMRG |
| UniRef90-B8KLW4 | VVGAVYGGLVALSLGLPNSPMQGAKLRAVSGNF |
| UniRef90-UPI000378, | MVYAGWGNKNTVALLQKTGCNALGLSGADAN |
| iRef90-UP10003 | VTMVYGGLVNKT |
|  | FEMAFGHLNTQLVAGLQSQGVDAVGLNGVDGKLVLEDGK |
| Reef90-P60S | EVVMSMSMR |
| UniRef90-84H8 | A AAAVGQSGLMS |
| UniRef90-To | AMPAVLRALQQC |
| UniRef90-UPIooo36C7CC2 | VTMVYGGMVNKN |
|  |  |
|  |  |
| UniRef90 R5PTW2 | MVYGGLINKDIVARLQARG |
|  | A R M M AGFsQa |
| UniRef90-L1P353 | QVCGRLN YETEAALSVGLSH |
| niRef90-W0F4V2 |  |
| W4H1 | QGGTEQH HALDAKKGAMAAAGQV |
| UniRef90-RTTS UniRef90 R5CC | VMMMrQTLSSRDTQFRINQRLPPRACA AAGQSGLMALYE |
| UniRef90-C6W050 | $V T M V Y G G L V N K N L V A Q L Q A A G C N A \square G \square T G A D G G I I R S V K$ |
| 俍 |  |
| R6 | R |
| Unif | VLAIVRRVMQ AQNL |
|  |  |
|  | MVYA GLITNKQIVA |
| UniRef90_UP10003B6EE75 | VTMFYAGKTNKQVVALLQAQGVNALGLSGADGNVVQATK |
|  | GQS VOKYTE IFAEHRDTAQT |
| UniRer90 UPIO003553D2F | QMPVITGALDGAVNAELVS |
| UniRef90-C2C | VTMVYAGLTNKSIVSKLQNLNCDALGLSGADGDTDRTMK |
|  | Hel |
| UniRef90-F3L29 | M |
| UP100037 | V RKALHSGQNQLKEMALPVLEARA |
| UniRef90- J7TPQ9 | TGALAGSANKTLLA WATRYQLNGTGLCLGDG |
| RRef9-UPI0003 | AVMTYAGLI NKDLTAKLQALQNNAMGFTGADGNLI |
|  | VVTMVYGGLVN KNIVVRLQAQGVNALGLTGADM |
| UniRef90-UPIO0047144D5 UniRef90-F6GDE4 | VTMVYAGLVNKNVVSKLQALGGNAL |
|  |  |
| Ref90-B7FUP3 | EAGYVRFEVERQLARSLRMQGGGMGNAPGV |
|  | GY TGALAGTANKMMLAKAKSVGIDA |
|  |  |
| UniRef90 H2G026 | FEQIPV AGALAGTANKLLLAQALAHE: PSVGL |
| BOT | IVGALAGTSNKTLQAAALKAGVTSGGMSLADAGMMSAK |
| UniRet90-J9CKY4 | M |
|  |  |
|  |  |
| UniRef90 B81871 |  |
|  | Al |
| UP | k |
|  | K ML QGQA |
| UniRef90-F8NBS2 | VYGGLVNKD |
| $\begin{aligned} & \text { UniRef90-L7N } \\ & \text { UniRofon-ENE } \end{aligned}$ |  |
|  | LVN KNTVAGLQA |
|  | FARMAAFDVSNRLMTGLAGQEVNAVVGNWV |
| UniRef90-R51/ | (IYOKLFGEYNQMAG QULMTKN |
|  | FQVNMAYAGWANKAGVNA |
| UniRef90-UPI000474AD85 | QLNKWLVRRLTEHG ARAWGVSGMDG |
| UniRet90-R5 | QCE |
| UniRee90 E8U7F7 |  |
|  | AVAAVAGCANKODMSQADASGAKPVGMSLYEAGVVVKOK |
| 何-U1PO76 |  |
| Ref90-K41NK6 | G |
| UniRef90_E6RNB7 |  |
| Ref90_A2U1U3 |  |
|  |  |
|  |  |

UniRef90 S6F3H3
UniRef90－A9A1K7 UniRef90－UPI000417A811 UniRef90＿I1YJ06 UniRef90 UPI00032A6611 UniRef90－V5WMIO
UniRef90－W7Z203 UniRef90 LOA4F0
UniRef90－J7SAI5
UniRef90－B6EMN7 UniRef90＿K2JZK4 UniRef90－UPIO004696149
UniRef90－I4EHR7
UniRef90－B8KUK3
UniRef90－B8KLW4
UniRef90－F9D313
UniRef90＿UPI000378ADB9
UniRef90 UPI0003FC3ECD
UniRef90－F7PNU6
UniRef90－H6QS21
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UniRef90－L1P353
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UniRef90－R5CCN2
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UniRef90 UPI00041A161D
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UniRef90 C2G026
UniRef90－E3T6W3
UniRef90＿F3L9F9
UniRet90－G1RRT1
UniRef90－J7TPQ9
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UniRef90－R5NKG5
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UniRef90＿F6GDE4
UniRef90＿K0AAB0
UniRef90－B7FUP3
UniRef90＿UPI00025564D6 UniRef90－UPI000368A6B6
UniRef90＿H2G026
UniRef90＿UPI000364FDA8
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UniRef90－J9CKY4
UniRef90－UPI0004174A63
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150
RKKKLLIVNEKGRKQADDGGYTGK\RE
CVS GNWVTARPA
FFKDAGFRKQLSDTVSSLLELR
SHDNHT
AGAEAVGПSGCDGSTLIAKE $\square$ DVVK W
A LLV VGELLLDGAGLA T
PDD DEKLGLVGEVD K
$G \square I D G \square D L G H T G E V R R$

AMKNGVNA $\square G \square S \square A$
$N \nabla M H S V K R$
A DY LD KEKWQYVGK
SALDGGIARGPRKDT■RADEDGKPKVVRDVYGFGDVDR
$A \square E D G K P K V L R G D Y A G G$
ARPLGVVDGIDFQYTGAVRR川DA
GVIRSHKR APVSTPATVGGTPDVVLYGRVGRIDS
AI RRSPVP
DLIRSVKR
APVSTPATDGGTPIVVDYGFVGDVDH
$P$ VKDDDYGYVGDVEK $G \square Y$ YDREKYGFVGKDNK
$G \square M S \square Y E Q L F Q Q Y G \square T V A Q V L L$

DFYNEETRNNLFCTLSELISL
TKPD DDDDQR RKN
$D P G A A H V P D R D G T A V R A G D C G R \quad D R V G E R H$ KTGRVDAVIGNFVRARGLGVEGGVDMEQTGQVDRILT

VDFGFVGR
PVGIVVGVDH
ARPVGDAGGVDHGHTGEVRR\｜DV
SPQRGRRDRVVSGNFVSARPIGIDDGIDMGYTGCVRKTDA A QKRPVKTI DYGWVGDVDS T LIFSMYDVACSQVLVTEAEFRTPEHRANDRDTGLHLLDMD AMFTQYGLRTAQULVTKPDFQNDESRNNMRSTLLELLNDN DVIRSVKR
$P \vee K D D D Y G F V G D V K Q$
RPVKTIDYGFVGDIEA
A
 A A GQS G $\square$ MA $\square Y E S M F A Q Y N \square T$ TAQVLVSKRDLDREHRL H L $M F S Q Y A Q L L V T M S D F Q V D A H R A N M C E T D K E L I G G G G V P V C$ NLIRS $\square K$ R

$R P \square T T G V F Y A D Y D R E K W G Y V$ G $V$ V $V$ N RVAT

## FSKKDRYQNAYETFEEL

$A L L Q G L N P V G L N L S A G N S L Q F$ $P$ V K D
AMMS LYSQTFSHYQKNVSQWLLT $R$ DVV
 NSIKSDKR QSVKVTPLSDELGHVGKAAPGNPA LLNLLLNNGF

LSEKRKNAAVDFGFVGDVVA

D V IR S HKR
AS $\quad$ R
N V
D M $\square K \mathrm{~V}$ T QR
VIS GFYSAQPFG
$R P V V D V D Y G F V G D V V A$
$R P V K T V D Y G F V G D V K K$
GEKQPEYGAVGQVTK
$K D K \| V I L N E K G R K Q U I D D G G Y V G D V A L$
G G LCRVS Q

VRDDH SGRITS
$\mathrm{NV} 口 \mathrm{RSTKR}$
TGVFECDLLDAERFGLVVK
P VK D
CRKNVVN

TCLGMS $\square$ ADADMMTAS $\quad K D P Q L G F V G E$ $V A K T D Y G Y V G D V D S$ VEEDDPELGAVGK
LG LTGADMNVMLSHRRPLRNG】DYGFVGDVDF $G L C Q V S Q L D P E L G A V G Q A Q A$

$$
\mathrm{RDVV}
$$

## N $\square$ MR S D K R

$P$ VK DVD Y GF VGRDVV
RAKS $\square G V I D G I D F H Y S G T V E R I L T$
TMVNNANRKNAENTFNELLSMGVIPIVNENDS ISTYE
$R P \square T N G V F E A K L R N L N V Y$ G
NS TTAVKRPSLPI DYGFVGDITS
$S M L M A V R T E K P L G W V G E$
VDNLESRDNLI NAFERTDEFGA TPVINENDVVAVEE！VY
S GLDGR】FEGRHKDSVRAVENGKVKVLRGDHTGTVER
ANRR
LK A L
NSIISTKR
GPRKSAVRIIEDGRKK DERGDHSGKDET
NS $\square Q S D K R$
QK LK A LGQVGQCHSNDDSGINELLS



UniRef90 S6F3H3 UniRef90 A9A1K7 UniRef90－UPI000417A811 UniRef90＿I1YJ06 UniRet90 UPI00032A6611 UniRef90－V5WMIO UniRef90－W7Z203 UniRef90－J7SA15 UniRef90－B6EMN7 UniRef90－K2JZK4 UniRef90－UPIOOO4696149 UniRef90－14EHR7 UniRef90－B8KUK3 UniRef90 B8KLW4 UniRef90－F9D313 UniRee90－UPI000378ADB9 UniRef90 UPI0003FC3ECD UniRef90－F7PNU6 UniRef90－H6OS21 UniRef90 ${ }^{-} 44 \mathrm{H} 8 \mathrm{O} 1$ UniRef90－TOCVT4 UniRef90－UPIO002554DFB UniRef90 UPI00036C7CC2 UniRef90－B4XYB4 Uniinefol JuHVX2 UniRef90－E7RX88 UniRef90－U2EAX6 UniRef90－L1P353 UniRef90 ${ }^{-}$WH1A 3 UniRef90－R7TSW8 UniRef90－R5CCN2 UniRef90 C6W050 UniRef90－G4YM73 UniRet90－R6XQE8 UniRef90 F6UET6 UniRef90 UPIO0041A161D UniRef90－LiJTN4 UniRef90＿A3HST9 UniRef90 UPI0003B6EE75 UniRef90 ${ }^{-} \mathrm{FOX}$ J59 UniRef90－UPIOOO2895746 UniRef90 UPI00035F3D2F UniRef90 C2G026 UniRef90－E3T6W3 UniRef90－F3L9F9
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UniRef90 UPIO0004174A63 UniRef90－R6YBFO UniRef90＿B81871 UniRef90 W7CTM3 UniRef90－B8CNH8 UniRef90－UP10003FCFA6D UniRef90－F7YK54 UniRef90－F8NBS2 UniRef90－L7NJR2 UniRet90－FOEW46 UniRef90＿R7J656 UniRef90－E1R505 UniRef90－R51A40 UniRef90－10W7D8 UniRef90＿UPI000474AD85 UniRef90＿R5KT27 UniRef90 E8U7F7 UniRef90－Q1JWH3 UniRef90－Z5XTE1 UniRef90 U1PQ76 UniRef90 K4INK6 UniRef90－E6RNB7 UniRef90－A2U1U3 UniRef90－T009．J7 UniRef90－UPIOOOS6F5903
UniRef 90 O4CS3

VNASFIKSLLLDQGLTPVISP IA A ASEE IDSVA VHQQLEQGNVVLLSPLGYS
CRPDVIF
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VNAALLRTLLGVGL VAKEP1
VAKEPI EASTKAGALPILTS LSPELGNVGDATAGDAKVLAGILA TQVTPITSSLAETPS GCVGIPEAADKHLLETLLAQGFTPTMAS LAQAAD OTKUNGAUENSIEAGYTPVLTS MAESDD VDAEAL EKDDTRLIHLLLDNGYLLPVLDTVVPVMAPMTHDGN AGVISALDQE G\｜VLLSPMGFSPA
EGMESLLVSGSLVLLSSL
VDGHALATL
PDPDKTNTDF DSQLIESS DTPVFCA VDAVSLTELLRSEV

HLLNGGYLPVISP

GLLSPMGFSPT

SAPENASSAERSSANSRAAK MARDDGDGQEPRAEWLP LQATUESLLSLNTIPASNANDAVAPDPKLNMH
VAADA【VANIVPIINTNDAVSPPMF IRDDEPAGGARR DP SRVLDGGMVPEGKMPLLPPYGVDDD TNSLFLSQLLYSKL VDPAPVRAV

पDRGHVPVVS VDKRPL

VYSGVVRKVDAVRUKMLLDAGITVVAP A EADQ
SKFNVQSLLSFDGH
VLP
11 P
VNAMLL
VNGAQisallss Sn
1 HGDPVQ
VNHTLLGEAADDAGEIPVLS
Q ATLNNLLALSIVPINTNDAVIPLPDHDVNV
GECAN
 VNNKLIDHLLKGDLLPVVNA
 NDATLDELLNTGSTKKVLEQGFTPVFSS VDVELLQSLDAQGV
$V \mathrm{~V} V \mathrm{~V}$ GVLGFDGD I FPESLLNV TNAFESLLKLGILPTVNENDAVSVDEM LHHLLLEKSEESFLSNLFVPQFPYLKMGD VASNSUNKL UQADFTPVFCA
VNADLTQVLLLQNV VNGTLLA

VNNRMLRELLMNGAVVRKGI
DPVIss TGDGN VNTETLE』L

VEVEWDRQKHENKLEHCLINT
GSPKLLEVLLQ
LDPELGAVGQIEGGDATLVSSLLAGGFLPIVSSIGMTFEK
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 TRQG VPVMAPLTYDGA
TFETLLEKGIVPIVNENDSVSTVELKVG DYPTSRKNVIN FNKLLENRIIPIVNEND VEPNDASYLEFVLAKGWMPVVSS TVA
 ASPGDSQ TDGQQLAALLEHQL PDTHDGK IGLTAE EFPESLHNGDGALVLSLLQNGYLPDVSS DPVREV
 c $\square$ GWns $\frac{Q}{T}$ SA TNCNQTP【LSCLGESND VKAVNDSADNMLLDNGDTPVECA


RYLNARNTLTTLLDYGIVPIINENDTVVV NDTV DNYTPVVTVPGFDEE VNTSLLTTLD VNTEVLELL
$\prod A S N S \Pi N K L L Q A D F T P V F C A$
$\square A L L K V G \| I P V V N E N D V V S Q R Q V P L T$
VRLEQVAAAARAGQ

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UniRef90_Q1JWH3
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220
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240
GQMLTNVINADVAAGELLARVFEPLK|IVY|L|NEKGG|ITNGETKE
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 GS GLNWDNDSLAGLLALELKADLLVLLSDVEGLYSGPPDP


 GQRLNVNADLAAAAVARLVDGDLVLLTDVDGILDKQG GRLLNVNADVAAAELARALEPLKVVYLSEKGGLFDGEGDK

 GEAFNLS L A D DVA IS A A RDLKAHKLI I LGASAGVHDHDG
 GNMLNTNADTUAGEVAKALSSSVFLIVCFEKKGVMMDVNDPD
 Gll I KDNDSLSAMLAAEVQADLLILMSDVDGIVNKPPWE GEFFNLNADTTAAHVARAVAADKLLLCTNVAGVFADF
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 GKTFNLAMTDIAESAAAALQAEKLVFLIEQEGILDEEG GHILNTNADTIASSLAVALSAHYLIVCFEKKGVLEDVTND GVISVK DNDSLAAARIAGETNANLLMLLSDDVDGLYTSPPTPD GHMLNTNADTIAGETAKALSDVTLVYCFEKKGVLRDENDD GLLLNTNADTMASATAVAMSEAFLIYCFEKKGV LDSDPDD GQTLNDNADVAARQLALNLQPDKTIFVNAKGGWVEDDGT

 GQLLNTNADSIASALATSLHQVNLYFCFNKSGVLIDEKNE GQLLNTNADTIASSLARALAGSYLHFCFEKDGVLADDNDD GQLLNVNADVAAAELARALEPGKVVYLSEKGGLVDGEGGK


 SVISVKDNDSLAARLAVEMKLISDVGSDVEGLFDSPPSD $G Q L L N T N A D T I A S T I A V G M S G l Y Y Y Y C F E L D G V L K D F D N K$ GLL MNVNADQAATAI AETLGAD LVLLSDVSGILDGKG GQLFNTNADTHASTIAVACSNYFLLYCFEKKGVLMDSENE GHILNTNADTIAGETAKAMADAFLMYCFEKKGVLRDAEDD
 GQLLNTNADTLASELADGFASVFLYYCFEKNGVLENVEDD GEVFNVNSEALAASVAGALEASKVIYFTEQEMELRHHGKK GELMNI NADEAAVALAVVLKAD LALLS DVDGGLDKDGN GCMLNVDSDQVAAEI A KAMK ISKII FLTDDVGLKDNEN GKLMNVNADQAATAIAEILEAELVMLSDVSGILDGKG GRPVN ANADR $\quad$ AA A A VAVELKARTVVFLTAAPGLLADPADP GEMLNVNADQAATALAKLVSGSLVLLSDVSGVLDGKG GNMLNTNADTDAGETAKALADFFLIYCFEKKGVLDDEQDD
 QKDTFSENDTLSAMVSKLI EADLLIILSDDDGFYDSDPRK HLLTKFGDNDRLSALVLEVIQADLLIMLSDIDGFYDSNPTE $G E M L N V N A D Q A A T A L A K L V A G N L V L L S D V S G V L D G K G$ GQLLNTNADTMAQSIATAMGDVTLIYSFEKSGVLDDVGD
 GELVNVNADQAAVAVAKAIDGE LVLLSDVSGVLDGKG TKFGDNDCLSALVAGIVHADLLLMLSDVDGLFDKNPAE GHMLNTNADTI A GEAAKALADVTLMFCFEKKGVLLNEDDD GKPYNGSSDELVLQDAVALGAEKLFFDTTETQLAEHYHCP SLEKF GDNDTLSAVVAALI GADLLILMSDDDGLFTDDPNT
 A ERYNVNADVSAGAI A AAL RAESLDMVTDVPGI

GVAl NVDGDRAAAALATALHADALLLLSNVPGLLRAYPDE DEIRFGDNDNLSSALVTNLVDANLLVILSDVDGLYDKDPRP G WYNVNADEAAAAAAKELDAE LI FMTDVVEAVLDANKQP GVAVNADADRAAAA AGALNGE LIACDDVAGVYRDPDDE
 GQLLNTNADT\ASTIAAGMSADYUYYCFELNGVLKDFN D
 $G R L V N V N A D A A V R A L V H A L Q P F K V I F L T G T G G L L E N A$

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 R S L I P R I PAADVVEAYLE F FA Q DRMKKKVLGAA EAVA G


 K ESVI K N I D Y N S Y K DL L Q K GVI SDG MDPKLDNCFDADKN $L V H E Y A S K Q P W M F A P S S R V G P G G Q Q D K V L A C V T A D V N S$

UniRef90_F4CCS3

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 $\begin{array}{llllllllllll}T & V & R & Q V & A & G A & A & H & L & H \\ R & S & S & S & V & A & V & R & A & D & M\end{array}$

| $T$ | $V$ | $R$ | $Q$ | $V$ | $A$ | $I$ | $G$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $A$ |  |  |  |  |  |  |  |
| $G$ | $S$ | $S$ | $V$ | $A$ | $V$ | 1 | $R$ |  |
|  | $V$ | $K$ | $Q$ | $V$ |  | $T$ |  |  |

                                    H GVK QVVI T L L A T E DGRHS GTVI SK
     GVARAHLVTDGALLRELYSRDGAGTMM



 G L
G
G
V H A S
 G GVSKVMHI




| $G$ | $V$ | $D$ | $S$ | $V$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $V$ | $Q$ | $K$ | $V$ | $C$ |


| $K$ | $V$ | $Q$ | $K$ | $V$ | $C$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $C$ | $K$ | $H$ | $V$ | $R$ | 1 |


| $G$ | $V$ | $K$ | $R$ | $H$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $S$ | $L$ | $V$ | $S$ | W |


| $S$ | $P$ | $K$ | $H$ | $L$ | $Q$ | $L$ | $L$ | $T$ | $R$ | $D$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |


$T$ L G K PV A V G S P E QL L S L L A G E S E G T R $\square$ S




 GVKRVVITVAEYL

$L G R S I E V A S P D K L A D L F A G Q S D G T K F S$ N A G Q MVLMNSRNDI LVRVLAGEEIGTWFS K GV KEVI ITQASEI HKHTGTRVH | $G$ | $S$ | $R$ | $V$ | $H$ | $L$ | $D$ | $G$ | $R$ | $R$ | $E$ | $L$ | $Q$ | $E$ | $I$ | $F$ | $S$ | $N$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $V$ | $G$ | $T$ | $M$ | $V$ | $H$ |  |  |  |  |  |  |  |  |  |  |  |  |
| $G$ | $D$ | $M$ | $V$ | $A$ | $N$ | $G$ | $G$ | $D$ | $F$ | $H$ | $N$ | $I$ | $H$ | $R$ | $V$ | $E$ | $G$ | $D$ |


$G \square D T V I M N G G P E N L Y K \| L E G H Q V G T F F V$
GVRRVIFGDARAGQPISAALAGQGTVV

GA T T V I I A D A NVVA D P I T T A A L S G C G T H
K V N K V C I G K S E M I F N P F T
L R R GVY Y I S SPENLTALLQGEHVGTKVT
GVTKVHI
$G L V Q A A V L A A P G S T V D V V D G K T \square G T L F S$


UniRef90_G5HAS4
UniRef90_Q9KCR4
UniRef90_Q18E31 UniRef90_A0A024U3S1 UniRef90_UPI00047867FE UniRef90-K6AP33 UniRef90-B7RQP6 UniRef90-TOMNA8 UniRef90_G2RQ14 UniRef90-W4FUL4 UniRef90_D5XBC6 UniRef90-R9M8L5 UniRef90-UPI00037C5AF1 UniRef90_UPI000255D896 UniRef90-UPI0003477F41 UniRef90-UPI00036E63CD UniRef90-A9DTR6 UniRef90-P39820 UniRef90-S3L626 UniRef90_UPIO004280B40 UniRef90_UPI00041ED35E UniRef90-H8LAU1 UniRef90 Q976J6 UniRef90-KONG15 UniRef90-Q2N9V2 UniRef90 R7G5A4 UniRef90_UPI0002D91498 UniRef90 N8VW73 UniRef90_G4L3M9 UniRef90_C5BC59 UniRef90-R717F5
UniRef90 ${ }^{-16 H Y C 2}$ UniRef90 V6S169 UniRef90-R5PCH0 UniRef90-V7CEM0 UniRef90_A5US68 UniRef90_SONXY8 UniRef90-W6TPE2 UniRef90-UPIOOO219784A UniRef90 K0T979 UniRef90-D6GSA4 UniRef90-M9VID3 UniRef90_G9Y994 UniRef90 UPI0004787FF6 UniRef90_U7Q167 UniRef90_Q6LVG9 UniRef90_H9UFK9 UniRef90-D4HUG3 UniRef90_G7FS14 UniRef90-UPI0003B3BD15 UniRef90-C0BGP2 UniRef90_Q65W17 UniRef90_F2BGK4 UniRef90-A0A023VQB7 UniRef90-B1ZW60 UniRef90-J3JQS2 UniRef90_U3QD34 UniRef90-D9PXB4 UniRef90-Q8DVNO UniRef90- UPI0003946656 UniRef90-IOZ7P6 UniRef90_UPI0003143E3F UniRef90_A3SS87 UniRef90-C7RCB7 UniRef90_C7LK75 UniRef90-Q9V115 UniRef90-Q40136 UniRef90_UPIO0047830D6 UniRef90-C7QK85 UniRef90_UPI0004682AD5 UniRef90-T1CIJ2

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UniRef90_Q02XV9
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UniRef90 ${ }^{-}$D7BBQ5
UniRef90_UPIO0024913D6
UniRef90_V4HWF4


## $V V K \square G G \quad A C G N E C K G L R E L A E R T \quad R Q$


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

$K R \square V \square K \square G T S S L V L P S G K \square D D L N K D D Q L A F V I S N L M N R$ KRLVVKI G SALLVDGATGQLNQVWLNGLAADVAELRAG VVIKLGGAVLGS SETLAKLFETVAQ
 $K R G V V K I G G S L L A N E E K D T G R Y A F M N G L M A D L G D L Q D Q$

## 

RRVVVKVGTSSVV DAAGE VKYPVIN RLA QTLT QLE QT KRCVIKIGG VLLEDGEQLERLCRKLTAIKTPF
$V V K C G G N P A V D A A G$
$R \| V I K V G T S T L I D Q N S K V V R L A V I D K L A H V M S T L K K D$

 $R R L V V K V G$ SAVLSGPQGRQHQD A A A A A QVAALRAE
 $R R V V V K V G S A V L S G A A G R A R Q L R A B A L A E Q I A A L K A E$ QRLVVVI GTSSSLIHPNGKD NLQADDQLSYYLTALVANE $K T W V I K V G G A V L N T E Q A A L S L F Q V L Y E L S$


UniRef90_G5HAS4
UniRef90-Q9KCR4 UniRef90-Q18E31 UniRef90-A0A024U3S1 UniRef90 UPI00047867FE UniRef90-K6AP33 UniRef90-B7RQP6 UniRef90-TOMNA8 UniRef90-G2ROI4 UniRef90-W4FUL4 UniRef90-D5XBC66 UniRef90_UPI00037C5AF1 UniRef90_UPIOOO255D896 UniRef90-UPI0003477F41 UniRef90-UPI00036E63CD UniRef90-A9DTR6 UniRef90-P39820
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GVEVILVISSGAVASGRSEMQLLHNH
 GRDVIVVIGGGSTAVDKTLEALGEEPTYVETPRFTDERTME
GEQWLLVHGAGGAMNTLCEERGVP DRHVMSPSGYRS R GFK ALVHGGGRSATKLASQLGIESKMVNGRRVTDVETLK GKDVVLVSSGSDAAGR
GKEVVLVTSGAVQVGVKKLKLKEK BKGVGREKQ GKQIILVSSGAVAI GRMVLKRQQ GKEVLLVSSGA VGAGMGRLGLGKKPRSDPEKQAVA AV GHEVILVSSGA DAVG ERAVVLVHGGGPVVESMMNKLGRTSHKVDGLRVTDAHMPV
 GREVI MVTSGAVGAGAA GTMNLDE
NTPKILVHGGGKSASTDTQQMNDEVQTMNGRRDTNETDDI GHEMILITSGAVAAGF SSLGYPSRPVT TKGKQ NKQLVIVSSGAQVAGMSADNRWTRKKDIHYRQALCA】GQV GPKILVHGGGNKATEVAGKLGFKTKMLDGRRDTDKDSME GHQKVVVSSGAQAAGR GEQAIFVHGGGDQVTETSKKLGDEPVFVTSPEGDRSRTSK GПEVILVSSG
GHEVILCSSGAVALGM
GKELVLVTSGAVSAGMAKDQ MSKRPTQMREKQ GPKMLI HGGGKLATRLAAQLGDESRMVDGRRDTDETLDV

 GKEVVLVSSGA AVG RKAMGIKERPNDMSVKQACAAV G $\square R L V L T F S S K K P T P L T S P G G S V P A E P V V P A A D L P S L M A E$ GNEVILVSSG
GDRFVLVPGTHVQDDNLLRERGREPKYVGPYRVTDDESLA GQRFVLVHGGSHETNTLAERLGHPPRFVTSPRYTDVTLEL
 PGDKILIHGGGKIATELGVSLGVEAKMVEGRRDTDETLRIV

GHDVLVVSSGA TAGG MGYLNYSKRPKTL
GKRRVV LVVSS GAI ATGFPAMMGMTH
 GHRVVIVSSGALGVG GLRRMDVENRPKHLAQLQALAAL GRPLLLVHGGGYLVGDDMKKLQLETVKKEGLARVTPKAAPF QRPLLIVHGGGCLVDELMSKLSLPVKKKNGLRVTPADVDV SHNFVVVHGGGALVDTWLKEAGFVSAKHQGLRISPEQMPH GYDLVLVSSG GAKIVI HGGGKEATQMAKKПGПPVQ\|IEGRRПTDDPNLE




$E \square D V I L V S S G A M G F G \square D \| L K M D K R P A E V A R Q Q A V S S V G Q V$ STDVILVSSGSDALGR
 $G \square R L V I V V G H Q Q Q \| D E R L K Q Q G L E P R F V G G Y R V T D A T A L R$ GHRVVLVSSGAVASGR
GYEI I LTSSSGSVALGLNMDGKRPEEAG $\quad$ GLDKQAAA
GYK IVHGGGK $\square$ AD LVSNQMGYNMK $\square$ NGRR $\square$ TDKTTDE GHK I LVHGGGKKASIIFSRKLGIEPQMI NGRRITSEDIDI I I VHGGSRYVDEMARKLGVKVERLVSPRRTTRRVLD GYEVILVTSGA IGVALKQMHQTK RPTEDPAQQ $D R S L V H G G V F A G Q L A K Q L G D P C R M V D G R R V T D D N M L V$ LVGGGSGEI GRLAGRLGVPQRTLVAPVSTRYTDPD GKDVILVSSGA $\mathbb{R}$ GVMGVLHLDSRPVK\|SQQQ AVAA RRDYVLVHGGSDEVDRLGSALGRPAEYYTSPSGTPTHLET GYEVI LVTSSGADGVGLNVLGMNK RPK G】ADQQ GCDVV LVVS S GS IA L G R GREVVLVSSGAQATGMQKLGLTEKPKSMPGKQAL AAV

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

## cont

sol25
sols

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UniRef90- UPI0004787FF6 UniRef90_U7Q167 UniRef90-Q6LVG9 UniRef90-H9UFK9 UniRef90-D4HUG3 UniRef90-G7FS14 UniRef90-UPI0003B3BD15 UniRef90-C0BGP2 UniRef90_Q65W17 UniRef90_F2BGK4 UniRef90-A0A023VQB7 UniRef90-B1ZW60 UniRef90_J3JQS2 UniRef90 U3QD34 UniRef90-D9PXB4 UniRef90-Q8DVNO UniRef90-UPI0003946656 UniRef90-IOZ7P6 UniRef90_UPI0003143E3F UniRef90_A3SS87 UniRef90-C7RCB7 UniRef90_C7LK75 UniRef90-G8R615 UniRef90_Q9V115
UniRef90_Q40136 UniRef90_UPIO0047830D6 UniRef90 C7QK85 UniRef90-UPI0004682AD5 UniRef90-T1CIJ2 UniRef90-Q02XV9 UniRef90_UPI00046A822C UniRef90-Q9ZG98 UniRef90-K8CIV1 UniRef90_UPI00046392C9 UniRef90-D7BBQ5 UniRef90_UPIO0024913D6 UniRef90_V4HWF4

AAAAVGQALLM


## $F$ VGEVERELFETAASRVSRDLLWALRAEGVRGVALFP DL

 $V V T M V Y G G L V N \quad K N V A G L Q A L D V N A L G L T G A D M$ SQAAAA $G V G Q \square R \square A R A Y E E A L E P H G I T T A Q V L V T G E D S$ VVTMVY A GLTN AAASVGQCELMH $\square Y S K F$ LSGSMQSHLKGYNPAKQGSLGEYKACAVGQVLLTKDVIEDEE $G Q G \| L M H M Y E K M F A E Y G G \quad$ G AAAAVGQCRMMHIYDKLFSEYNQSVAQDLLTGDDVE VCGALA GTANKQLCALADAGGLTPI GLSLLMDGNMI HC YPEAAAEKQALASVGQS
 E ${ }^{\text {L }} \mathrm{M}$
VI MVYGGLLNKSVA
GLQAKKQNA $\square G \square C G A D G$ $L A A V G Q \square Q L F Q T W E N D F N \square Y G D H V G Q M L L T R A D D M E D R E$ AAAAVGQAELMNTYNQRFSVYNQQTAQLLVTRDVVDY E E LEVEDMVMSLISRQDVSKLAYKKKVISLTGADGNSVIA A A GLRKMQM KAVGVEPGEAGMRRPDEIPKRQADAAIGQS
AAASVGQCELMFIYDKFFSQYGSKDAQLLLT$\quad$ K


Q $G$ G I SGAL A GTANKTLQACA $\square A H G L A A \square G \square S D A D G$ GQARQMMVYQKLFGE V GRLRFDLEAALSQGTDATPMAGARVRTVGGNFVMG $V V M T Y A G L L N K K I V A Q L N A F G T N S D G F S G A D G N V I$ AAGRAELHVDHHLDNVEQRQLFSAIGQVK DGULIGYYD AAMEAA G R R RLMDEAKLSPGPS CNDRRHG F LMA TA GKVNK LI VERLQHMGVNADGLSGLDGR\LQGQRK $A V A A V G \quad Q A E L M S I Y G Q R F G$





GQAGALAGTANKMLQGRADKSG
VA A V GL AD QVLAGEMNTELVRLLFSRSIRSVGLTGCDAGLCI 1 TGALA GTANKTLLAWSKKHGLDAVGLCLGDGGSV
 GQAKLMMVYQKIFAE KPKEDRMKQAAYSTVAAQVLMTKA 1 TMMYAGKLNKTIVAQLQAFGSNALGLSGADGNS $\square T A K$ 1 VGALAGGIANKTLVAQ
 $A M M S L Y S Q Q T F A H Y Q T N T S Q L^{L}$ LA DRASSRVSHADVEGLTQNSLKCADTNAVRALPIT I AQQQAVSSVGQVAMMSLYSQUFSHYQTKVSQULL VVMTYAG INKNIVALQSYHSNALGLCGADGNCIQSY $\square R$
AMMSDYSQ $\quad$ Q $\quad$ Q LEQSQAAAAVGQDQLARAYQDVLAPHDVVAAQVLVTLEDS $\begin{array}{ll}L T G A L A G T A N K M L Q G E A D K S G L K A V G L C L G D A C Q V E E L D P ~ \\ A & C A E A A G L T\end{array}$ ACGQ $K \downharpoonright A Q Q L L G R Q Y G R S \ A E K Q V L A S L G Q P E L V H M Y A$
 $V T M D Y A G L I N K N I V A Q L Q A F T C N A A G F T G A D G N S I$ I VYVAA LMRANRELVSFLRERG DDA GVSGLDGVVLAKRKK ALAA I GQSYLMAI YNQSFAFYQQHVGQVLLTTYDV
A VMA YAGWVNKILVARLQSFGV
$T L E V V I L A L A G A V K P R L D A E G A$
 ALASIGQVELMSLYTQMFRR YSQKVSQLLLTRDVT AEQSQAAAAVGQURGARAYEEADAPHGQTTAQVLVTGDED GQPT LMMLLWEQAFS ITGALA GTANKTLLAWAKKHGDASVGDFLGDGDSVSVTPL $A V G A G K M R L Q Q \quad K P K E G R M K Q A A A A V G Q T E L M H L Y D$ GQPVLMQLWEQA
E L M TVVYQ

F A WY D L R V G QVLL T A E D RFAVYGQKI SQVLLTHD
\SPKEQLPY $\| G A L A G C A N K$
$\square 130$
140
R R H
DFQNQTQYTNAYSALMELLK
VDA LGLSGVDGELLCGPRKSAVR IVEDGRKK DKRG DKQAISISSGNYVHAQPVGVRGGVDY A NTAEAERKD\|LRSVEDGRVRLLRGNW SGTVTR $N L M R S D K R \quad D V A E V D Y G F V G D V K E$ A DRRRYLNSRATMEQLLSLGAVP IVNENDT
GTIKAIKR PVKD DDYGFVGD\|LH HVRNNVVNTFEKLIEDKVIPIVNENDT GMQSLYEVLFSQYHLDACSQLLTSDTDFQVPETRENVKQTI RFSNARNTLSALLKMNVLPIINENDTVAVEE $\square R F G$

D P VRAEHLR
IVK D

A DKR
RYQNAHQA
$V L M N L Y S R F F Q H Y N Q H V G Q \square L M T R D \square M N Y S N A Y S N C R \square S \square$ $R$ PVET $\square \mathrm{DYGF} \mathrm{V}$ GD I QK

UniRef90 G5HAS4 UniRef90-Q9KCR4 UniRef90-Q18E31 UniRef90-A0A024U3S1 UniRet90 UPI00047867FE UniRef90-K6АР33 UniRef90-B7RQP6 UniRef90-TOMNA8 UniRef90 G2RQ14 UniRef90-W4FUL4 UniRef90-D5XBC6 UniRef90 R9M8L5 UniRef90-UPI00037C5AF UniRef90-UPIO00255D896 UniRef90-UPI0003477F41 UniRef90 UPI00036E63CD UniRef90-A9DTR6 UniRef90-P39820 UniRef90 S3L626 UniRef90-UPIO004280B40 UniRef90-UPIO0041ED35E UniRef90 H8LAU1 UniRef90 O976J6 UniRef90-KONG15 UniRef90-Q2N9V2 UniRef90 R7G5A4 UniRef90- UPIOOO2D91498 UniRef90-N8VW73 UniRef90-G4L3M9 UniRef90 C5BC59 UniRef90-R717F5 UniRef90-C6HYC2 UniRef90 V6S169 UniRef90- R5PCH0 UniRef90-V7CEM0 UniRet90_A5US68 UniRef90 SoNXY8 UniRef90-W6TPE2 UniRef90-UPIO00219784A UniRef90 KoT979 UniRef90-D6GSA4 UniRef90-M9VID3 UniRef90-G9Y994 UniRef90 UPI0004787FF6 UniRef90 U7Q167 UniRef90-Q6LVG9 UniRef90 H9UFK9 UniRef90 D4HUG3
UniRef90-G7FS14 UniRef90-R7NCZ2 UniRef90 UPI0003B3BD15 UniRef90-COBGP2 UniRef90-O65W17 UniRef90 ${ }^{-}$A0A023VQB7
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UniRef90-J3JOS2
UniRef90 U3QD34 UniRef90-D9PXB4 UniRef90-Q8DVN0 UniRef90-C7D507 UniRef90 UPI0003946656 UniRef90-I0Z7P6 UniRef90_UPI0003143E3F UniRef90 A3SS87 UniRef90-C7RCB7 UniRef90-C7LK75 UniRef90 G8R615 UniRef90 Q9V115 UniRef90-Q40136 UniRef90-UPIO0047830D6 UniRef90 C7QK85 UniRef90 UPI0004682AD5 UniRef90-T1CIJ2 UniRef90 Q02XV9 UniRef90 UPI00046A822C UniRef90-Q9ZG98 UniRef90-K8CIV1 UniRef90 UPIO0046392Cs UniRef90-D7BBQ5 UniRef90-UPIO0024913D6 UniRef90_V4HWF4

FS S R E R Y R N A Y A T $\square M E L$
$F$
AFFKYG $\quad$ H $\square$ GQLLFTKE
$\begin{array}{lll}K \\ R & V & L \\ L\end{array}$ N A R D T L
PESRKNVRNTLEQLLIMDT@P VVNENDT
ERKK
K I I DDERGRKR IVDG
G Y T G K $\square K K$

QL L N A Y K Q V G Y EF DF E I A Q I L
$\square T E N S \square L R D N A \square N T L E T L F E L A V I P \square V N E N D S \square A V D E \square T Y$ A A G A
A D R R
VY S QQ TAQ LLLT
VD Y G Y V G D I A E
GAVQVSPLDASLGHVGQALP
R D
TMINDISRKNAQNTFRELLQMGVIPDVNENDTVSTDEMEY $R P V G V L G$ GI DHLYA GKVRR

LSEKREKGTVDFGFAGDVVS
LIFRDYK TKVGQVLTMKENFGAEEQYKNQEA
SRLHEVGVSVASGNFLAAK RRGVVKGVDFGSTGEVKK A $\square \mathrm{K} R \mathrm{P}$ VKE $\square$
AMMNLYNSLFSQMEVNAAQVLLTSGDFLDESNLKNLR
RFLNSRSVLNELLSKNUIPII NENDAVVVSEDKFG
RPTSYRNAWSTLDTLLELGVVPIVNENDT
S
GVRKRC
LFSHLRQPDAQ LLT
GLC QIT ELDPELLGSVGKAAP

LK A L C L VGG C
NVERFDDELGHVGLA
$T V M N D K S R R N A Q N T F N E L L N L G A V P D V N E N D T V S T Y E \square K Q$
FFSEYGRMVGQ\|LLDNEDIA
KRPPEPI DFGFVGDVTA


$\mathrm{K} \square \mathrm{S} N$
$\square D Y G Y V G D V N$
EF PESLENVTNTFETLLSMRVVPEAQCDDVGIDVVRLD
A $D R R R Y L N S R A T L E Q L L S L G V V P I V N E N D T I A T D E M R Y$
A $\square$ DCFHYGPAVRIVSGNYVTGKRRGAVGRPSA
S MFRMHK LLA DCFHYGPAVR QVSGNYVTGKRRGVIDGVDF
LLMNAYRQVANEYNFDVAQML
VTVEDMEERRR
AGFNLVKPDNDVLTRKEKQPLAADGQSMVVRHWRFFDDVV
SIKRPVEPD

- DFGFVGD
 $R H R V P A V G L T G M D C R M L R A Q R K S A V R S V V D G R T V L V R N$
EGARADV
$D G R \square L R V \vee D$
A D R RRY L N S RATMEQLLSLGVVPIVNENDT
AHRHRY $L$ NARQTLETLLEWGIVP
K
A HRH
VIRDFPASQEHVHHTMK QLLEWGVIP IVNENDA
$Q L M S Q A \ V A G L Q P V G T C L Y E A G F L A K Q K L K A L G Q V G T C V A$
 UniRef90_Q18E31 UniRef90_A0A024U3S1 UniRef90 UPI00047867FE UniRef90-K6AP33 UniRef90-B7RQP6 UniRef90- TOMNA8 UniRef90 G2RQI4 UniRef90-W4FUL4 UniRef90_D5XBC6 UniRef90 R9M8L5 UniRef90-UPI00037C5AF1 UniRef90-UPI000255D896 UniRef90-UPI0003477F41 UniRef90-UPI00036E63CD UniRef90-A9DTR6 UniRef90-P39820 UniRef90 S3L626 UniRef90_UPI0004280B40 UniRef90_UPI00041ED35E UniRef90_H8LAU1
UniRef90 Q976J6 UniRef90-KONG15 UniRef90-Q2N9V2 UniRef90 R7G5A4 UniRef90-UPI0002D91498 UniRef90-N8VW73 UniRef90_G4L3M9 UniRef90 C5BC59 UniRef90_R717F5 UniRef90-C6HYC2 UniRef90 V6S169 UniRef90-R5PCH0 UniRef90_V7CEM0 UniRef90_A5US68 UniRef90_SONXY8 UniRef90-W6TPE2 UniRef90-UPI000219784A UniRef90_KOT979 UniRef90_D6GSA4 UniRef90-M9VID3
UniRef90 G9Y994 UniRef90 ${ }^{-}$UPI0004787FF6 UniRef90-U7Q167 UniRef90-Q6LVG9 UniRef90 H9UFK9 UniRef90-D4HUG3 UniRef90_G7FS14 UniRef90-R7NCZ2 UniRef90 UPI0003B3BD15 UniRef90-C0BGP2 UniRef90_Q65W17 UniRef90-A0A023VQB7
UniRef90-B1ZW60
UniRef90_J3JQS2 UniRef90 U3QD34 UniRef90-D9PXB4 UniRef90-Q8DVN0 UniRef90-C7D5Q7 UniRef90 UPI0003946656 UniRef90-IOZ7P6 UniRef90_UPI0003143E3F UniRef90_A3SS87 UniRef90-C7RCB7 UniRef90_C7LK75 UniRef90 G8R615 UniRef90_Q9V115 UniRef90-Q40136 UniRef90_UPI00047830D6 UniRef90 C7QK85 UniRef90-UPI0004682AD5 UniRef90-T1CIJ2 UniRef90_Q02XV9
UniRef90 UPI00046A822C UniRef90_Q9ZG98 UniRef90-K8CIV1 UniRef90_UPI00046392C9 UniRef90 D7BBQ5 UniRef90_UPIOOO24913D6 UniRef90_V4HWF4
 RGALPII NENDSTSIA
DHSGMTETVNESLLTTLLQNDYTPVVTTVPMLADD KFSGEVRRVNDKKI SAALDAGDIVLLSD $\quad$ AA YSAS VETTLLEEAWRKGMLPVLPPL ARDRES VN A DLLASL $\quad$ H Q Gl

VNTAS TKKF LDEAGVPVFSADTHNGL
VADDEDEIVRFGDNDN
$\square S L L Q V G \| \frac{\square}{\square} \square \frac{1}{\square} N N D V V S Q R K A P L T D A T N R \square A$
GTFSALLEMGVIPVVNENDSVSSAEDETG
 MTVLMNRGAIPI I NENDSVAIAA
DSLLKSN! 1 PIINENDAVSVDEPGHCSKFG
 MRNTLFTLVDEGVLPVIN R W
$\square V N \square N F I E$ S VAVDEDD
VDSLVISDLLKSFDLLVFAP LA YDPEE ARNTLHT LMEWKVVPVINENDT DMVE $L T L G D F E D H R R F L N T K N T V H R L L Q S N\|I P\| V N E N D$ G G $V N V E L R R T L D A G \square T P V F S A \quad \square T C D G R$ SCDALQNLI DWRVI PVINENDTVS EYPESRNNV INTLEELLAMGIIPIINEND

GS PLLLRQLLAADFLPIVSS
 G N

 VDVRMRERLDGDCIVILSNLGYSS
LDAGLLPVI A PIDAVSTIGEA
EFPESRKNVAVNLNQLGKMGIIPIINEND TVAVDELD TS

$\mathrm{V} A T$
$\mathrm{~T} A$ GSPALVTTL
 EHTGTVASTDPSVLHALWQADLLPVIAS VGQDKD $K P G T P R L I \quad N T L L A A G F L P V V S S \square G \prod T Q$ VQ

DPDRSKNLKNTFDALLENH\IP IVNENDSVSHAEDES VNEVLFTSLLAQNDVPVCCA KNPALL RNTDTRALEAALDSGALALIGPLBADS SFPESLANV TNAFESLLADGVVPIVNENDAVSVDEM D QFTAKVERVDKDFLMALI DRDVVPIVSP
 ARVLITALGESAYPSVPENFREAVRFAASGR VVMG G GDPT $\| V N A \Pi M Q$ A G GVP V I S S TGLTAS
 E L EQKNUIPIINENDSVSI E
FLNIKNTMLRLFENQ\|LPII NENDS $\square$ ATRDDK A QVLLTSADIKNPERSENARNTFQTL FELGAMPGVNENDT
 DYSGVIK SINVTLLKNYLKVG\|PVIAS

##  $N \square S G R \square T T V D T G L D R T L L H A G Y V P V V S P$

 S E LDD


 ARHTLETLLEWNVVP I I NENDTVM $\operatorname{LD}$
$E E G L G L L E S L L A L G R$


UniRef90_G5HAS4
UniRef90_O9KCR4 UniRet90-Q18E31 UniRef90-A0A024U3S1 UniRef90_UPIO00047867FE UniRef90 K6AP33 UniRef90-B7RQP6 UniRef90-TOMNA8 UniRef90-G2RQI4 UniRef90-W4FUL4 UniRef90-D5XBC6
UniRet90-R9M8L5 UniRef90_UPIooo37C5AF1 UniRet90-UPIOOO2555D96 UniRef90_UPIO003477F41 UniRef90-UPIO0036E63CD UniRef90-A9DTR6
UniRef90-P39820
UniRef90-S3L626
UniRef90-UPIOO04280B40 UniRef90-UPI00041ED35E UniRef90-H8LAU1 UniRef90-Q976J6 UniRef90-KONG15 UniRef9O-O2N9V2 UniRef90-R7G5A4 UniRef90-UPIo002D91498 UniRef90-N8VW73 UniRef90-G4L3M9 UniRet90-C5BC59 UniRef90-R717F5
UniRef90 $\mathrm{C} 6 \mathrm{HYC2}$ UniRef90-V6S169
 UniRef90 V7CEMO UniRet90-A5US68 UniRef90-SONXY8
UniRef90-W6TPE2 UniRef90_UPIO00219784A UniRef90-K0т979 UniRef90-D6GSA4 UniRefofo-MgVID3 UniRef90-G9Y994
UniRef90 UPIooot787FF6 UniRef90_U7Q167 UniRef90-O6LVG9 UniRef90-H9UFK9 UniRef90-D4HUG3
UniRef90-G7FS14 UniRef90-R7NCZ2 UniRef90-UPI0003B3BD15 UniRef90-COBGP2 UniReffo-O65W17 UniRet90_F2BGK4 UniRef9-AOAO23VQB7 UniRef90-B1ZW60 UniRef90-J3JOS2 UniRef90-U3QD34 UniRef90_D9PXB4 UniRef90-O8DVNO UniRef90-C7D5Q7
UniRef90 UPIOOO3946656 UniRef90-I0Z7P6 UniRef90-UPIo003143E3F UniRef90-A3SS87 UniRef90_C7RCB7 UniRef90-C7LK75 UniRef90-G8R615 UniRef90_O9V115 UniRef90-Q40136
UniRef90 UP10004 UniRef90-UPI00047830D6 UniRef90_C7QK85 UniRef90-UPI0004682AD5 UniRef90-T1CIJ2
UniRef90-Q02XV9
UniRef90-UPI00046A822C UniRef90-O9ZG98 UniRef90-K8CIV1 UniRef90-UPIO0046392C9 UniRef90-D7BBQ5 UniRef90-UPIOOO24913D6 UniRef90_V4HWF4

SGTEVTRET ${ }^{250}$ LQDSCYTQTGQFGRGGMLLTKCRTATKVAD ${ }^{260}$ HYQYLPTIPDEMLQMGGEAGNVGTGGMKSKVAAAQTALSI
 AVHTLLIRQAQQYLELAS DDPS ATTLIPSGSPE TWDSLEKAAQGNMKKLRACREALEA ESVIPEDDRTVFKQLVEEGGIDQGGMDPKLENSFQAIDA
 NMKVIDGLTPELENFAGDSGTVGTGGMVTKLTAAKTATSA AVVHEYNPLQPMQFASTSRVGHHGQLDKVLACVDADNS
D $P$ DARLLHRVTPEILEMAGGAGTWGTGGMATKLSAARVAMAA

NPEAI EK HSD DAMAGEAGDNGTGGM
NAALI SVGDDDEDOAMAGGSFSTGGMETKKAAALATNA
NSVIEIIDSKTYQTLLEGNNTSEGMILPKLTNCFSMMD
G NSVITELNSENYKELIASKVITDG MLPKLHNCFEADSR NPDAKLIEEVQEDDESUKVSGLGTGGMATKLQAADIGARA MYRYIDKIDEKLAQAGGAGSTFGTGGMQSKLKAASRIFEA GKVINKLTSKEAKELSKR TGPG MNRKL DMAGETIEN FSKLIPKVTDEEYASHIPGTLGTGGMLSKI QAARKVTS S PDAKLVEEVSDVSEYLAATATLGTGGMLTKLQAANMAQNA HASLIP!VTDDEHDFSMAQGKLGTGGMATKLQAAKDATDA ERSVIAEITPDTYAALRAEGALSAGMLPKIDGALRAVAS NAKLFHTVRADDFDMAGGSGKFGRGGMLTKVRAARLAAKS QAKLYRRITKIDDELMKQAGQFGTGGMSSKLKAAKRVLD QRDAEMTAQKAQRLIEQGITTDGMVVKVNAALEAAR NANASF SSCVDRDDEKLENMDVGTGGMATKDSAAKDATAS
ASIVIETLNGEKYDDLSKTGATHSG MIPKKNNCFEALEK SRTRISVYYDRDISEYIDKSSMGRGGMESKVKTAHEVANA SGHLI RFLTDQEADMLIRNRVEQSETAANYVKADAE RTLVRHIPRADVEAYLP LAQGRMKKKILGASEALNQ NKNAKLYSRVTEINDDLKGSQYGTGGMYSKLKAAQRVLEN QSVVPVIRMGEFETLKNEGVV SGGMDPKLHNAFEAIKS DAKLVSSLQSGSPAIVAAAGKFGTGGMTTKLKAAELILKH HKDAKLIEYVEKIDSKIDTSNVGTGGMRTKINAAKDATRS PDDVVEDIGDALEIDTHKAGSGVGTGGMTTKLEAARMATSA HSKRI EEMTAAKAEQLLIAGGIVTDGMVVKVNAALDAARS HPEVVDDINALEADDSTPGSALGTGGMSTKIVAARLATSA HLISALTEQQAEDLITQAVITDGMIVKVRAAIEAAKA YGTVSRRLNSSEDEAGI NDGQIV GGMVAKTRAALAGLQQ SKQRIAEMTAGKAEKLIAEGVI TDG MVVKVNAALEAAR DARFI NQVDVDDDKKSTSGSGVGTGGMATKLKAAGIAVSS DAKLI SREEITDELKSПASGSGGTGGMПTKLDAAEYATEH ENSVIPILTSVAYKTLKKEKTTHSGMLPKIHNCFEALKK NKQRLTENSAQDEQLDEDKVIDDGMVKVNAADDAKN YEDALANLSAQEAETLLLQQGRILPRGQQNLLRTALEAVAG YEDAKLRHHVTETTEEIAGSKFGTGGMLSKLQSAQMVFDT
 SARFYPEISASEMLEHLSESDVKAGTYEFFDHTAALKAFQN YDNAVLRENVTEDTEELAGSKFGTGGMMSKDKSAQMADF NKQLIPQLNEQQANQLIADGVITDGMVVKVKAALEAADD GACNVMRYTQKAVNGSINELEFDLDCWKLLASVVACKN AGSPD DGPEKGWPEVSAVKSTHGRGGMDSKLGTARKM S EAELVTGFKGVNDETMAVGKDTGTGGMQTKLQAARFASEN N
$\qquad$ INKGMDP TKLQAARFASEN SVIENIDSIKYEALKKANSHDG MLIPKMENCFHALKN TAQPI PLVTVTDSLRAGARGTLGTGGMATKLVAADYLLQH KTVIPGLTPVMYKALRREKLIHEGMMPKLDYAFSTIQA DAKLIDRVKTIGPDTTAAAGKFGTGGMTTKLKAAERILKH SSLLRRVARDEVETVLPY A AGRMRKKVVAAQEALRG YDNEI HE TDELLQMAGGAGSFGTGGMTSKLAAAQUFEN DPTAILYDVIDAITPEПEAMGLSKGGMKTKVMAARTATAA HPEAQPDPYVERVDAGVLRMRVGTGGMKSKLLAAEKAQAA NPDAKVISRVEEDTEELKSLASGSGGMITKLEAAELATSR NPRYVERVDAEVMRMAGDPGHAGTGGMRSKLDAAKKAQDA
FDDVLHEI TEDAVRQGGAVTELGTGGMATKLKAAQSILKN QKQPLHSLNVEQINELIQQ KVIVGGMEVKVKTSGHAAQH

|  | 300 |
| :---: | :---: |
| UniRef90_G5HAS4 | $\mathrm{G} \\| \mathrm{E}$ V I V A N G K R D S I L |
| UniRef90_Q9KCR4 | $\mathrm{GV} \mathrm{V} V \mathrm{~F}$ GKAS GE HL L D L $\quad$ S GK G D G |
| UniRef90-Q18E31 | GA TTVII A NANAAEPI A A L A GRGTHI |
| UniRef90_A0A024U3S1 | G V K R S HL V S R H T D L Q ELFTR D G D G $\square \mathrm{M}$ M |
| UniRef90_UPI00047867FE | GVPRVIL GDS R V R L E A ALS GR G T |
| UniRef90_K6AP33 | GV K EVI ITQASEI HQGKGTKV |
| UniRef90-B7RQP6 |  |
| UniRef90-T0MNA8 | $G V R N V Y \square \quad G H A N N L H L F Q Q G Q F G T C L T$ |
| UniRef90_G2RQ14 |  |
| UniRef90_W4FUL4 | $G V V K$ A A V A A P NSLV H AVEEGQRI G T L F R |
| UniRef90_D5XBC6 | GV PVII ARKQVLSDIVKGEEI GTL C |
| UniRef90_R9M8L5 | GFD MVIT R T E DL Y GlVEGGQDIGGTRFV |
| UniRef90_UPI00037C5AF1 | ELGRAVFI A S WQA SP Q D L L A N T G S Q |
| UniRef90_UPI000255D896 | $\mathrm{G} V \mathrm{~N} \quad \mathrm{EV} \mathrm{V}$ I T NDE G L |
| UniRef90_UPI0003477F41 | GV PVVYI C S S K K L L E A A E N Q |
| UniRef90_UPI00036E63CD | LGKSMVI TSAENMFD L L D G NEAGTLLRRK |
| UniRef90_A9DTR6 | QVKKVHHGK S A M L L H T NTK H T T I Q K |
| UniRef90_P39820 | GVKVFIG T G S GEKL A D L D GRG D G T Y |
| UniRef90_S3L626 | GI P MIL A N G G K E RI LE NLA S G S A |
| UniRef90_UPI0004280B40 | GV S AVFLG D A NLLKENVS H T K V |
| UniRef90_UPI00041ED35E | $G V E V V I A A G H A E Q A V K A A A G E N V G T R F R$ |
| UniRef90_H8LAU1 | N S A M L L N GKN I F D I LA GKEVG T L F |
| UniRef90_Q976J6 | GVKKVII S S GLVQQDP ISNALLQLRGTVI |
| UniRef90_KONG15 | G\\|PM V A R G S Q N L RLFD GEEHGT |
| UniRef90-Q2N9V2 | GC TAWIA D GEEI SAI L N GERRCT |
| UniRef90_R7G5A4 | GI P MVIA N GEK I Y D L N N E Y R G T LFi K |
| UniRef90_UPI0002D91498 | GVESVVI |
| UniRef90-N8VW73 | GC P TLTA S GES LARLMAGEMLLGTLF |
| UniRef90_G4L3M9 | VNGSMVLA R P K I I F DI LK G A EVVGTL F |
| UniRef90_C5BC59 | TLGGRPVDIA GWEKL P A L F N GEAVGGTRIH |
| UniRef90_R717F5 | GCD MII A N GENI AQIMEGEEVGTI F |
| UniRef90_C6HYC2 |  |
| UniRef90_V6S169 | GVKKV I I G H H S L |
| UniRef90_R5PCH0 | G IKVI I A N G T P N L V L LTE H |
| UniRef90_V7CEM0 |  |
| UniRef90_A5US68 | $G \nabla G R V I L G D A R E P V S R A L A G E \quad G T V$ |
| UniRef90_S0NXY8 | HS A MVLAS P KVI F D IVN GEE $\mathrm{V}^{\text {V }}$ T |
| UniRef90-W6TPE2 |  |
| UniRef90_UPI000219784A | NQEMVLTNGK D P N I I I L S G D P VG T L F S K |
| UniRef90_K0T979 | G S Q C R A |
| UniRef90_D6GSA4 |  |
| UniRef90_M9VID3 | $G V \quad P \vee V L A S A S D A R G V L G G A A V G T$ |
| UniRef90_G9Y994 | L G R P V Di A S WE K LP AL F N G VPV G T R |
| UniRef90_UPI0004787FF6 | GV V T I I A NSRKL NSI A K G ELV G T L F |
| UniRef90_U7Q167 | $\mathrm{GV} \quad \mathrm{T}$ TVIT R P D NLVQI LA H |
| UniRef90_Q6LVG9 | R P IE VA TWR Y P D K L A A L FD G Q N $\square$ G T K F S |
| UniRef90_H9UFK9 |  |
| UniRef90-D4HUG3 | TLG R PV DIA S WR HLP DLFNGVS I G T R |
| UniRef90_G7FS14 | $L R R G V Y$ S S S P E L T A L L G E HVGG K I T |
| UniRef90_R7NCZ2 |  |
| UniRef90_UPI0003B3BD15 | G ID D V I T N P E K L Y DVIE K K I V G T L F V |
| UniRef90_C0BGP2 | $\mathrm{GV} \quad$ A HV I G N P K M I T E |
| UniRef90_Q65W17 | C GVD $\square$ A N WK Y P E K L T A L F A GE $\square$ I G T R |
| UniRef90_F2BGK4 | $\mathrm{GVPR} \mathrm{CQ} \mathrm{\\| L} \mathrm{~L}$ GRS DI GELFTRSGTGTSVSQ |
| UniRef90_A0A023VQB7 | $N G Q M I L M N G N P R D I L R V L E G Q V I G T W F V Q$ |
| UniRef90_B1ZW60 | GTPRVHIVD GRD GLLEI F S S E GI G S L V |
| UniRef90-J3JQS2 | K GQMVLMNGNPRDILRMLDDGANLGTWF】Q |
| UniRef90_U3QD34 |  |
| UniRef90_D9PXB4 |  |
| UniRef90_Q8DVN0 | DCDRQMILANPRD L L R A D GKMIG T L F A K |
| UniRef90_C7D5Q7 | GCAMA ITLLGSRSNPLRQLGQGAAATWFV |
| UniRef90_UPI0003946656 | LGRA $\square$ TVA G TPELLAHLFS G G Q V G T |
| UniRef90_I0Z7P6 | GVK R A H L V G G L I LEL Y S R D GV G T M I S |
| UniRef90_UPI0003143E3F |  |
| UniRef90_A3SS87 | $\mathrm{G} V \mathrm{E}$ |
| UniRef90_C7RCB7 | GI D T I C N G K E S Y M L LF S N Q P P T L I R R |
| UniRef90_C7LK75 | $\mathrm{G} V \mathrm{~S} K \mathrm{~V} \mathrm{~T}$ I |
| UniRef90_G8R6I5 | K V S K V CI |
| UniRef90_Q9V1I5 | $\mathrm{G} V \mathrm{~K}$ K V V I |
| UniRef90_Q40136 | GRQMVLINGNPAT L L E V L A GEPVGT LF |
| UniRef90_UPI00047830D6 | $G V K S V \quad R L L H P D E L \square D N P V A G T R I T$ |
| UniRef90_C7QK85 | GVGGSVRDADGPEPVSRTLAGAGTTVHISR |
| UniRef90_UPI0004682AD5 | NQQMVLANGK D P DI $\square$ N IL S G D MVG TLLFT K |
| UniRef90-T1CIJ2 | $G V G R V V I G A G P D P V A R A L A G E G T$ |
| UniRef90-Q02XV9 | D Q EMVLT NGERI RE II E GRE】GTYFH Q |
| UniRef90_UPI00046A822C | GCAMA 1 T EGSVLR PLT ALEEGANAT WF T |
| UniRef90_Q9ZG98 | $\mathrm{G} \square \quad \mathrm{PHLL} T \mathrm{RPQS} \square$ AEALLQGAPVGTLF |


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

[^1]sol5



```
210
220
220 B B
\begin{tabular}{llll} 
sol0 \\
jhmm \\
jpssm & 250 & 260 & 270 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|}
\hline & & 290 & & 300 \\
\hline sol0 & B & & B & \\
\hline jhmm & \(\longrightarrow\) & \(t\) & & \\
\hline
\end{tabular}```


[^0]:    V I K Y G G N A L P A A G D S D P
    GATVVIKLGGHAMGSD ETIVIKLGGNALSTDEPAFFKQПK EKLVIKCGGRVLIDA KTFVISGGGEAVLAADF LI
    GKTVVI KYGGGAAVMAADFRAD
    GKTVVVKYGGNAMISD
    GKTVVVKYGGNAMIS

    ## 

    LF NS FIIEDVVILKKLL
    EHHVHDFALLNSL
    VMSDIVLLKTV
    ELRRHVIDSDIILLHLV
    FlV $\operatorname{MKCGGSTLAADPE~}$

[^1]:    lupas_21
    lupas_14
    jnet
    conf
    sol25

