ouear
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UniRef90 G0V107 UniRef90_B6QRZ1 UniRef90-L1JJA7 UniRef90-11GCR8 UniRef90-G3WZU7 UniRef90-GoW595 UniRef90-V4A5GO UniRef90-D8UB97 UniRef90-M5BJP3 UniRef90-UPIOOO333013A UniRef90_W5N343 UniRef90 H3G9D9 UniRef90-G3BFD1 UniRef90-F2S755 UniRef90 UPI000443FC9E UniRef90 B9PYL7 UniRef90-Q4QH62 UniRef90-S9U9B5 UniRet90 12 JY 65 UniRef90-E3L000 UniRef90-A9UPWO UniRef90-M0W1F6 UniRef90-C1G414 UniRef90-Q9NG60 UniRef90_W9XAWO UniRet90_U1GEQ9 UniRef90-H3FVL2 UniRef90-E6ZLS5 UniRef90-D2VHT6
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UniRef90 C5DVV1 UniRef90- V5HWT5 UniRef90-F7CJY3 UniRef90-Q4N3E4 UniRet90_A3CS15 UniRef90 K91A19 UniRef90_UPIOOO3F0A488 UniRef90-H2M3Z2 UniReigo_R1EW58 UniRef90 N1JCB4 UniRef90-F6T385 UniRef90_V4XS76 UniRet90 UPI0001DE9B85 UniRef90- N1 QIR5 UniRef90-UPIO003DEC61E UiRe90_O26746 UniRet90_B8GJW7 UniRef90-H1VRB4 UniRef90_UPI0004544D24 UniRef90 V4XSIO UniRef90-F6BEN5 UniRef90 х1ЕKY8

1
HMLWAR LVGLAR LEARALSKKERRS LLERDKPYYTRDP F S DVISGQTNLK S SVQRS IR A NLL S QWKAELLE QIWP


 D N $V$| $V$ | $S$ | $A$ | $L$ | $Q$ | $Q$ | $I$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $G$ | $V$ | $T$ | $Q$ | $L$ | $K$ | $S$ | K ENIS VK S $\square \mathrm{S}$ S Q N Q VK K ENVVNC DQLK T

$D I V S Q V P I K$ K ENVISGINNVK $V$ S G T T QL K D I S GQTPVK V D GVQQLK

S DI S GQTPV VKK E D L S S N T T L K S S QL K K D S V S GVQ Q K T N S S
A Qlla Nl S N K E
GSRSKVKSSVQ
KFSNEEVKDKSKIGRGLRSKLDETFEPYDDEIMMP $D V T G Q N Q A K S S V V R G G D S K V I D Q Y P E Q H D D D$

VK S N T AVKGSDRRKLRTDVAAAFPAELVP



```
K F T S
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VK S N T V I K G S DRRK L K A

## 

 A QIIASSSSHVK Q S S A H R A $\quad$ KR A Q K F TKDDVHTQTNVKSSVQRALRTKLVNQYPEESDK DLMP

MFKKDVS GARSK VK S S VQRA $\square$ K QK L VE T L A P YMDE $\square$ I P K S S A AL K G S DS KKFRQRVEAAFPDQLVP

 VG S A T K LKK S S V E R GI R R S I S E QL

 VK S N T A I K G S DRRKLRTDVAAAFPALVVP
S G A K S K V K S S A Q R A I R S K V V E Q Y P E S Y DE Dil P $V H T K S N V K S S V Q R G L K V K V A$
 MFKKEFSGAKSKVVKS SVVQRKI RENI I ETLDEPYDEAILP
 A QI A N I S N K E Q A QV
MF K K P V T G P Q K S K K S S A Q R A V R A A K F L
 KSSAALKGAEAKKLRARLELAFPHILLP


 $\square \mathrm{T}$ V K K R H V I R K S Q
$\square$ K G S D R R K L R S EVVRN Q F P R V V VP
V K S N $\quad$ V VI K G S D R R K L K A D L L MWRKF T K E E HI R S H AV K S S E QR GI R A R V I E Q Y P E Dil P
 M QVK S R H HL R S D GVVE I R E A L A A G L G VD I
$P$ L K T S I I K Gl M N QL 1 I E L F F P V V E M P MFKKDFSGAKSKVKSSAQRA』RAKI LETMEPYIDQQMMP DK S F K VK S N N Q LIK GT ERKK K L C E E I S A I Y P T L L I P P

 VS N C $\square$ QL K T S VI K G VS M RVIK S R H HL R S D D ID A I R E A V A D H L G V D I D G


query

## UniRef90 - J4G8C6

 UniRetofo-STRUN1 UniRefi90 ${ }^{-}$C1BSEO UniReito- 05 CJJII UniRefio-O4YSZ1 UniRefio-DOFH72 UniRefi90-E9H666 UniRef90-H2U348 UniRei90- UPIOOO1CE080FUniRete90-M5EKS2
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UniRef90 14 YGN5 UniRef90-GOUBQ9 UniRef90-U4L4V5 UniRef90-C7P9G5
UniRef90 S 3 CGB 0 UniRef90-B4K3G3 UniRef90-J7MH34 UniRef90 C5DVV1 UniRef90-F7CJY3 UniRef90-Q4N3E4 UniRef90-A3CS15 UniRe990_K91A19
UniRef90_UPIO003F0A488 UniRef90-Н2м $3 z 2$ UniRef90-R1EW58 UniRef90 N1JCB4 UniRef90-F6T385
UniRef90 V4XS76 UniRef90-UPI0001DE9B85 UniRef90-N1Q1R5

50
 KKESLTLVKCREH KKDAFRIVKCHEHDEL



 VEI I AI GNELL
 K K $\square \mathrm{P} \mathrm{L} \quad \mathrm{V}$ V K C P N H K K DP V R R V R C HE H T
$\square$ $L V G A N$ $T L \vee V \vee N N \vee P L$

RKEKWILIKCHGHMNLI S I
$\left.\begin{array}{lll|lllllllll}K & K & D & S & L & R & V & A & K & C & Q & D \\ K & H & E \\ K & K & D & T & I & K & V & V & K & C & Q & N\end{array}\right]$ $\begin{array}{llllllllll}K & K & D & T & K & V & V & K & C & Q \\ K & N & H \\ K & K & E & T & L & V & H & V & K & C \\ R & D & H\end{array}$ K K A TVV I GKCE K K E GLV V HJV K C R E H K K E S L NLLK K R D H K K DALRIVVKCQDH R E $\square$ V S K K A P I L AKCQN H K K DAFRIVKCHDH IE I

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




K K E S V Y L GK C
K K E GVTLVKCKDH
K REA V K M V $V$ R C H E H T

| K R | $E$ | $A$ | $V$ | $K$ | $M$ | $V$ | $R$ | $C$ | $H$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |$H^{T}$

K K S Q VI LI I C C D R
K K A S L E A M K L L P D R
R R E P V R LL R CHE H


| $K$ | $K$ | $S$ | $D$ | 1 | $F$ | 1 | 1 | $R$ | $C$ | $Q$ | $G$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $K$ | $S$ | $D$ | $H$ | $C$ |  |  |  |  |  |  |  |

KK S TVVVLYKCED
K K E S L NLLKCCREH
K K S P Y Q L K TRRDR S


K K S P M V VV K CQNH


| $A$ | $K$ | $A$ | $A$ | $V$ | $T$ | $Q$ | $V$ | $K$ | $L$ | $T$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $H$ |  |  |  |  |  |  |  |  |  |
| $K$ | $K$ | $S$ | $Q$ | $M$ | $D$ | $L$ | $V$ | $K$ | $L$ | $P$ |


K K E N F K L I K K C K D R

NKASVTTVKFARE HVQML DADKQVLF

KKESARVMKCHEH
K K T E L Q Q I I K C


$\begin{array}{llllllllllllll}\text { N } & R & E & E & L & N & I & V & K & L & Y & T & H & K \\ K & G & D \\ K & K & E & Q & L & D & L & V & K & L & P & D & R & \\ K & K & S & S & L & V & L & F & K & C & E & D & & K\end{array}$
KK E QLLDAMKIDPD R

$G V P \subset \square$
WS D GRTYY P T

 \begin{tabular}{l}
P <br>
P <br>
P <br>
P <br>
P <br>
\hline

 

T \& L <br>
T \& L <br>
L \& L <br>
\hline
\end{tabular} T TL $T$

$T$$\frac{V}{L}$ | $T$ |
| :---: |
| $T$ | .

QUERY
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UniRef90 C5DVV1 UniRef90-V5HWT5 UniRef90-F7CJY3
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UniRef90_X1EKY8

QCLKAFGVD

R LL H K Y P | R L L | H K Y Y P |
| :--- | :--- | :--- | :--- | :--- |
| R L L | H K Y P | RLL H K Y P RLLHQYP RLLHKYPD RLVHTYP RLLHKYPDC RLLHKYP RLLHKYP YALWRYPA RLLHQYPN RLLHKYP QLLHQYPD RLLHAYP KLLHKYP KLLHKCSNP RLLHKYP RVLHKYPD RLLHKYP KILHKYP KLLHKYP KVLHQ LPN RLLHKYP YTLWRFPD KLLHKYP KLIHSFPDA RV HHQYP RLLHKYP YTLWS Y P N RLVHRFPEAY RLLHKYP RVLHQYPA KLLHKFPN RLLHKYP YTLWHYPD KLLHKVP RLVHQYPECF RLVMGOYPECF

RVLHAFPNA RLLHKFPC RLLHTYPS KLLHKYP KLLHKYP KLI HMYPSCF KLLHQYP KLLHQYPN YTL WL $\mathrm{T} P$ $R L L H Q Y P N$ RVLHAFPDA Y T L W IVPD KIVHQYPHAF KLVHAFPQAF
 RLLHKYPD RLLHKFPD KVLHQYP KLLHKYP RFV HKYPEAF Y TL WVY P D YT L WSYPD YTLWSYPD AF

 RVI HQYPQCFQ PRLRIDRGAI RFVLS L RLLHDYPHLLP KL L HRYP K V HAYPQCF LLLL K K Lip N R N KLVHRFPTCF YTMWAEP

 YALWKYPD R A LVGK H S N P $R L V H K C S N P D$
$R G L V E H P D P$ K VLHKYP YTVWKYP Y TVVWK Y P RLLHRYPD
 Y FLWEH KGANAHDPD
 KVV WQYPQC
Y TLHPN RGALKMEDD MGAVARP KGAVARFPQAF RLLHKYP RGANDY KVLLDKDT ${ }^{T}$ $F$ ILPRQQ 1 DFGGCK
P $P R V Q V$ MPTVGIDRGA F ILPGHQVDIGGCRYVVS $M L L P Q D D R G A I K F I L$
 PRFQVDRGAl KFVLS KKQVDRGAl KFVL

$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$ PSIRIDRGAI RFVLS

$\qquad$ HDR K GA K L


WLKGVVLVDKGAADA LDAKGAHDMDPGVVGVE $F L L P V V R I D R G A D R F L L A G A N M M C P G M T S A G$
 FLLPHQMVDKGALKFVLSGANIMCPGLTHPN $M M P T M Q V D K G A I K H V L K G S N I M C P G L T S P G$

 LLPDFRTWPPVI QKLLGGADLMLPGVVLPS
 FILPHQQVDKGAI KFVLSGANIMCPGLTSPG
 FMAPPMQVDKGAIKFILSGANIMCPGLTSPG


 FFLPKEQVDLGAI KFVMSGANIMCPGLTSAPG
 LLPAFTTWPPVVQKLTGGADLMDPGVVVSS

 FMLP WLLQVDRGA K K

 LLPHAQDDRGAI PYLLGGANMMCPGFTSKG
 $V$ MKAFT TWPAVLQK AGGADLMLPGVVVPP
 GA MVPGLTSAE WORVDRGAA RFVLSGATLMAPGLTSKE

 PR T DQ DDRGAI KFVLS GANIMCPGLTSSG AFA WPPVLQKLAGGADLMLPGVVVPP
 PHVQVDRGAI KFVLSGANIMAC GLLTSPE PSI RI DRGAI RFVLSGATLMAPGLTSAG HVRIDRGGI RFVLSGATLMTPGLTSPG PPVTVDRGAIRFLI A GANVMSPGLTSTE

 PYFTTHEGALRPKLSNGATLMAPGLTSTG TMLPKMQDDSGAI KFI LIRGSNIMCPGLTSEG PTVQVDRGAIKFVLSGANIMCPGLTSPG LLPYLTTWDAVLERLSGGADLMAPGI GAYS L LPAFTTWPPVLEKMAGGADLMLPGVVVPS $R R V V V D S G A V R F V A N G A D A M R P G I V S D S$

 1 LPKYQVDRGAI RFVLSGANIMSPGLTSTG PSAYVVDMGAVRFLANGADVMSPGIVDAD PSRRIVVDMGAVRFVVNGADIMRPGIVSVT

 TLLLNKQVD



UniRef90_GOHNC2 UniRef90-G0R8N8 UniR Refo-Q3IUCO UniRef90 A0B507 UniRef90-N1 Q2L5 UniRef90-E2AXJ4 UniRef90_h7svxo UniRet90-J3EWW5 UniRef90-FOLHD7 UniRef90- Q7PZ98 UniRef90-Q18186 Uninefoo-R8BDL2 UniRef90 ${ }^{-}$MODOIO UniRef90-U6JR64 UniRef90-U5EZSO UniRef90_U1PKP1 UniRef90-MOMLW7 UniRef90-B7GDR8 UniRef90 ${ }^{-}$A2SPR9 UniRef90_UPIO003337DOB UniRef90-G2Q6L6 UniRef90-D7SN00 UniRef90-MOMDE1 UniRef90-_33NZ06 UniRef90-D8QTI8 UniRef90-G3WVD7 UniRef90-10A1J1 UniRef90-C7NXX3 UniRef90 Q46G25 UniRef90-W2TKK8 UniRef90_K4D8H6 UniRef90 A8INB8 UniRef90-K5WPW2
UniRef90 $\mathrm{Q} 23 \mathrm{CU7}$ UniRef90-M0A4W9 UniRef90-A6UV12 UniRef90-F7VZV5 UniRef90-D7DV72 UniRef90_A2EJQ9 UniRef90-LOAAL2
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UniRef90
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UniRef90 D3BBT7 UniRef90-UPIO002B42FF7 UniRef90_F6D4Q9 UniRef90-G8YH20 UniRef90_D8LJR1 Unireo -UniRef90-M3C583 UniRef90_A0A059B3Q7 UniRef90 UPI000444A8B8 UniRef90_R9NYS1 UniRef90Cciebv3

MVKHPLSKKVIKEI IREMSETFGEEIAG K Q K L K S SVVQRSLRNAL LA T LT P Y I DE I LP
 V K R Q N T L K G S DK K K I K N RI E E N V L S E L F P K SRHHLKGSEVKRI LSAI E ERII E DPDGL MFKKDFT GAKSK VK S S A QRAD RA KV I E R I E P Y I D D D $\begin{array}{rl}\square K & P \\ \square & \text { K K S N S }\end{array}$





## MFKKDMSAAK QKLKS SVQRS LRQSLLSTLTPYIDEV

M D VK S R H H L R A D A $\square$ A D $\square$ E D A VA A T $\square G \square E \square D$ A
$M E$ VK S R QLK G S D K K K L K Q K I S S Q Y L N E L DS HLRSD AVA EI Q D ELLA E R L GVVEI D A
 MKVKSRHHLRSDEISELEDAI A DQTGVAL
 MFKREVQGSKQKLKSSI QRSIDRQSILDTLAPHIDEVVMP
 MFKK DLT A AK Q K VK S S A Q R A L RQQ L L D R L A P Hil D E V L


$\begin{aligned} & \text { S F RVVK S N A A } \\ & \text { M R R R H Y } \text { K G S D R R R } \\ & \text { S K K E K K D E }\end{aligned}$


TVKK K NTNLLRNS DTK K L L Q R L S S A F G D I L P K S HQRLS GADRKKLRRTI RDRFS DVIL P QSHKVSGADRKKLRKALEKVYGEAILP

M QVK S R H HL R S D DVS ELLET DLSD K L G V S LD G
MFKK D $\square$ T P S K Q K L K S S I Q R N L R Q S L LT T L LT P F DD D D I P
ME DK R R Y M L K K K E L K Q I K E E L N K K I I D D D I F



FSEN $\square A G Q S Q L K$ SSVQRN IRAK LGDEYPETILDDLDP SRHHLRSDDIDEI GDALRTGLGVEL

 MKRQRLRKKKAKRI KNLIAEKYSIIEI E G $M Q V K S R H H L R T D E D D T L T A E I D H T T G V A L D A$ K S F S NL R N SERRRKLK A T I T D Y LE QX L F P K S Q Q RLS GVVSRKKLKRTI KERFPNVLLP MKRKML R K K E A K K V LIE E I K L R A G VEL

S L L G N K E R K K L R E QA L KA F P DLL L P P QVK A S A N N K K S S D R K K L L A Q V V Q L MF K K DLTT P S K Q K L K S S V Q R S V R Q L i L D T L A P H I D E V K N K K T L G S A M DS K L R E A L F P E I E N D Y L | $K$ | $T$ | $S$ | $A$ | $P$ | $L$ | $R$ | $S$ | $S$ | $D$ | $R$ | $R$ | $K$ | $L$ | $R$ | $A$ | $R$ | $V$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $A$ | $Q$ | $Y$ | $P$ | $D$ | $L$ | $L$ | $V$ | $P$ |  |  |  |  |  |  |  |  |  |
| $L$ | $L$ | $K$ | $N$ | $K$ | $D$ | $A$ | $K$ | $K$ | $L$ | $R$ | $R$ | $D$ | $V$ | $A$ | $V$ | $C$ | $F$ | $L$ |

PAK VS GNV
K R H RLLREKE DK VLDDE I RERLGAEAFS
K P T LLS K T GVK E LK QS LT DQYPDETFP QRLSGADRKKLKRTVRDRFPDALLP $\square K V K S N T Q M K G S D R K T I R E R F L Q T F P E L V I P$ MQRHFLSQKE LDKNFKS II KQKYS LEEI ES
 $M Q R H V M S K K D A K E F L K R V K E L Y G V E L$
 K R K RL R N K E A K A L A D A I SA D $\square$ GVPV FG K S Q QRL S GADRKKLK RTVKDKFP D L L L P P

SDLEDVLEEQLGVS
VK S N TADK GS DRRKL R N DV A A V F P T L V V P S Q S LVVR G S D K K K L K E K L V Q T Y L D DV I Q ASEAK LQQQRLS GA DRKKLKRTVKERFPDLLL P

TKASSNDKSSERRRLFAEDCKTYEQAEIA SRS LLLKN SAA K KI KA ELLTK E I IDDE L M P
$D \square S G$ Q TMMKS SLL Q R A V R A Q I L E RL E P V ME Q I WP

$K$ T S A P LRGSDRRK LRQR VVE $\square Y G N E L V P$ K S S V R R V I R QKLT E QYPA ALLEAA WP K S S S
A L G G S D E K K

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UniRef90_Q3IUC0 UniRef90_V3ZML0 UniRef90-A0B5Q7 UniRef90-N1Q2L5
UniRef90-E2AXJ4 UniRef90-R7SVX0 UniRef90_J3EWW5 UniRef90_FOLHD7 UniRef90-A3DN31
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UniRef90_U6JR64 UniRef90_U5EZSO UniRef90_U1PKP1 UniRef90_MOMLW7
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UniRef90-J3NZ06 UniRef90-H2W5T0 UniRef90-D8QTI8
UniRef90-G3WVD7 UniRef90-I0A1J1 UniRef90-C7NXX3 UniRef90_Q46G25
UniRef90_W2TKK8 UniRef90-K4D8H6 UniRef90_A8INB8 UniRef90-K5WPW2
UniRef90-Q23CU7 UniRef90_M0A4W9 UniRef90-A6UV12
UniRef90-F7VZV5 UniRef90_F7VZV5
UniRef90-D7DV72 UniRef90-A2EJQ9 UniRef90_LOAAL2
UniRef90_M0RZ16 UniRef90_LOKX71 UniRef90_A8A8F4 UniRef90-B0R8B9 UniRef90-F1KYL4 UniRef90_W7A888
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UniRef90_UPI00035DD41C UniRef90_KOIFN5 UniRef90_M4YM84 UniRef90-G7JKR1 UniRef90_A6UR48 UniRef90-17BLV5 UniRef90_V8NKL3
UniRef90_D3BBT7 UniRef90_UPI0002B42FF7 UniRef90-F6D4Q9 UniRef90-G8YH20 UniRef90-D8LJR1
UniRef90 U6LG12 UniRef90-V9G1P5 UniRef90-M3C583 UniRef90-A0A059B3Q7 UniRef90-UPI000444A8B8 UniRef90-R9NYS1
UniRef90_C1EBV3

KKDR|VIEVIAEF ${ }^{50}$
KKASLESMK LDPR

RKASMELA $\qquad$
KKEQVDLVKLPDR
KKESI SIMKIVTHNGQI
DGLQSQKFSTHLDDPG
DGDSYELVELADS
KKDNVQLAEF
KND VVEDFEFDKTTQLLEVNGKPMFIVGRQNLVFPLV
 KKGQVAQVKLTTFEGTMN
KKSNLSQMKLPDRA
$\begin{array}{lllll} & D & K & T & T \\ N & E \\ D & & & T \\ D & V & D & R & E \\ S & G & E & \square & N \\ D & E & G & F & E \\ N & G & Q & V & S \\ D & P & G & V & A \\ & E & F & D \\ D & K & T & T & Q \\ K & N & K & F & K \\ E & E & P & V & T \\ E & G & T & M & N \\ A & & & S\end{array}$
60
LLVINGKP FFIDRKGLIFPLVV

D S Y E
K VEFEDSDWN

DSYE RVE FADAE
KKSPLVQYKVGSH
MMLYCPTDEPVLFQHRDGPDMPTL
A D F DVVLVDGDPVVVYMDDER
YNAPM

PKAEITIVKLQNRVHLY A GDTYERVEFAESDR GLVLVGGGEPMVFDYLDDDD $\qquad$ P KKSSLEQMKLPDHA
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EKVEI
TFEKVEFEDS
Y LE DKT LDEKITLE
KKA QYAQAK VTVNGGYSLYLVDGKPLLFEIVEGHVFPTV
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KKAQDSSTKFHTPEHKWELFWVDKFPVFFDKEDDELFPTL

KKTPVIVYSIEQH
EWDKVEI AVYQ
PKAEITVAK
TNE
 Y S N K
VKEEKHADAGDTSVILI DGKV

EFE VVLVDGDPLVWYPDGE
 SKAQVAHVRLLNSNGVPNVYTFDKNPLLEEMEDDPGYPTV
 DGRKVYLVNDDPLLFEH DAYEL VELDGVSYNVVLADDNLDIVRFDDE
 $P K V E V T V C K \quad Y S N R V L V Y G L E N D P M F F D S R G S E D F P T V$ EGNVEVVEF GKTNAILINGEFDADEH PKEEISVAK LQ FPP $K P$ IGSELVKKATFKTQFTIYFSEQEPTYFQPRDGSIYP QNVAVD RAEGPEFDVIYVNNE LLGLVYEDKAFLSSV KKASLEQDKLPDR

VSLYVI ENR


K L Y FVGNYPAVVELGH

KKANTQSFKLRSEY KVEIVQVGKDYACF
PKVEI KVSKYQNRVLVYGI FGGFPMFFDTKENLVIPHL $K K E T V S A D K I V T E G N E V N V Y S V Q R C P F A F E I Q$

## DNVEV

 MKEELNII K ITYTHKGEVTVYANGKNPILEEMEK
 PKSKVELL ETDMNDI LLVDGNPDDMMIDDMP FPTL
 KKAVPVLLKCQNH $K K A P M V V A K C H N H$
$E Q E N V Q S A R F T T T S G T$
DG LDSQKFTTHSGEPGMDYDNGDPDWFS DGKDEM MPTV


|  |  |
| :---: | :---: |
| UniRef90-GOHNC2 |  |
| UniRef90-Q3luco | RGANEYAPDSH VVTVDSGAVSFVSDGANVMRPGG |
| UniRef90-V3ZML0 | W KAPEMLPVFTTWPPVFTKLAVGADLMLPGVVVSG |
| UniRef90- A0B507 | GAIELSPRGR TVVVDSGAVRFIANGA |
| UniRef90-N1Q2L5 | KVIHKYPWCFT RVRIDRGGIRFVLSGATLMTPGLTSPG |
| UniRef90-E2AXJ4 | YTLWHHPA LINTFTUHSGVLSKLAGGADLML |
| UniRef90 R7SVX0 | YTLWKRPD LLPFLSTPAPVVPKLIGGADLM |
| UniRet90-J3EWW5 | VRGANEHSPSKGVVTVDAGAISFVSNGADVMRPGIVEA |
| UniRef90-FOLHD7 | ALYELSNEEWKRRVVVDEGAVPFILKGADVMAPGIVDAD |
| UniRef90-A3DN31 | KYLLRNPNLKI P I IVDMGAVKPLLRGADLMAPG\\|RE\|I |
| UniRef90-Q7PZ98 | YTLWSCPD LVPAFTTHATVLPKLANGADLM |
| UniRet90-Q181 | YYMWNNQKTF PVLTCHEPVFSYLENGADLMLPGV |
| UniRet90-R8BDL2 | LVHRFPAAF PSI RIDRGAl RFVLSGATLMAPGLTS |
| UniRef90_C8VSF5 | KLLHQFPD MLIPTIQLDRGA RFVLSGAALM |
| UniRef90 Modolo | TVVQGANFPPQRNVVTVDAGAVSFVSDGADVMRPG\|LVEAD |
| UniRef90_U6JR64 | L ${ }^{\text {HEYPS }}$ M MPKMQVDKGAVKFVLRGSNVMCQGLTSPG |
| UniRet90-U1PK | VQGANEYPPAEHLVTVDAGAVGFVSNGADVM |
| UniRef90-MOMLW7 | RGANDFPPESH VVTVDAGAISFVSDGADVM |
| UniRet90 B7GD | , |
| UniRef90 MOD3S1 |  |
| UniRef90 UPlooos337D0B | RLLHKY SFILSHQQVGKGAIKSGLSRASITCPALTCPG |
| UniRef90-G2Q6L6 | RLVHRFPHCFPTVRIDRGAIRFVLSGATLMAPGLTSWS |
| UniRef90-D7S | KGGEVRFVIGGA |
| UniRef90_MOM | RGANAHPPETGVVTVDTGAISFVSDGADV |
| UniRef90-J3NZO6 | RLVHRFPQAF PTVRIDRGALRFVLSGATLMAPGLTSWG |
| UniRef90-H2V |  |
| UniRet90_D80T18 |  |
| UniRet90_G3WVD7 |  |
| UniRet90_10A1J1 | YLLKHRDT |
| UniRet90_C7NXX3 | EGLNAYPPTDH VVTVDSGAISFVSDGADVMRPG |
| UniRef90-Q46G | GALEM |
| UniRef90- K4D8 | Y ALWRVP |
| UniRef90-A8INB8 | FALWRWPD LLPRVYVKHPAVRYLVGGADLMLPGVAMPA |
| UniRee90-K5WPW2 | YTLWKKPD LLPFLSTPAAVVPKLTGGADLMIPGVVQHS |
| UniRet90-Q23CL | GAVKFLIGSNVM |
| UniRef90_M0A | GANA |
| UniRet90_A6UV12 | HNLL SGKVVVDMGALRFI ANGADVMAPGIVDAD |
| UniRef90-F7VZV5 | HRFPQCF PTVRIDRGALRFVLSATLM |
| UniRef90 A2EJO9 |  |
| UniRef90-LOAAL2 | CLLKRDNSWMNG VVI DRGATNAVSRGADLMDPGIK |
| UniRef90_MORZ16 |  |
| UniRef90 Lok | IELALE KNTVVVDSGAVRFVVNGADVMSP |
| UniRef90 A8A8F4 |  |
| UniRef90-B0R889 | GANRTDPSTGVVTVDAGAVSFVSDGADVMRPGITAAS |
| UniRef90-F1KYL4 | WISPESF PCLLVREQVLSFLENGADLMLPGV |
| UniRef90-W7A888 | YTLWKYP HMDPCFVIYPPASEFLMKGADLMIPGIVDNV |
| UniRef90_Q4YFI3 | HTYP FLMPQI QV |
| UniRe | LLKNKPEGRKVVVDNGALPFVMNGADIM |
| UniRet90-GOLMZ0 | QGANRYNPTRSVVTVAGAISFVSNGADVMRPGIVD |
| UniRef90-12JZD5 | YTLWKSP YLLPVETPADVVKRLINGADLM |
| UniRet90-S8CYE2 | SVLGVMKFKPERGRVVVDSGATNFIINGADVMKPG |
| UniRet90-B90HY8 | YTL WKCPD LLPTFVVHAPVSSFILKGADLMLPG\|V |
| UniRef90-G3AN | TLWKCP FLLPQ KTHPHVIDUI AG |
| UniRef90-R9T4B4 |  |
| UniRet90-A2DNA3 | MENMGLLRTIVVDEPTARAVMRGADLMAPGVNGMD |
| UniRef90-UPIO0044122BB | LWKVPN LVPSLYTPDAVLPDLMGGADLMTPGVRAT何 |
| UniRef90-DoN7K5 | YALWRFPA LLPPLVVHAPVSEFVLRGADVMLPG |
| UniRef90-UPIO00360A824 | LLKHPAT KAWVTVDMGAVPFVTKGADVMGPG |
| UniRet90_A7EMN5 | VHRFPTCFPS ${ }^{\text {P }}$ |
| UniRet90_A0DXT3 | RLVHKFPDLLIK QQVDAGAIKHILSGSDVLAPGLMSQG |
| UniRee90-Uploooz 2 C2E73E | FALWKVPD MLP |
| UniRef90-W7KVY5 | CWIMDTKANLPFVVVDEGAVKALSRGADLFAPG |
| UniRet90-T1EFU4 | AMWKHPDLVI SFETHASVNSKLKGGADLMLPG |
| UniRef90-s706J0 | YSLWKKYDLLPTLTTPQAVMPRIQDGADLMIPGVVSWP |
| UniRef90-UPIOOO35DD41 | PYVVVDEGAVKAVTNGADLF |
|  | GSKPEVLQRPSVTVDMGAVKFVCNGAKVMR |
| UniRet90 M4YM84 | GVLKYLPQKRFVTVDMGAVPFANGADCMGPG VDAD |
| UniRef90-G7JKR1 | L WMV ELLPAF LKGVRYVGGADLMFPG VVP |
| UniRef90-A6UR48 UniRef90 $17 B L V 5$ |  |
| UniRef90-V8NKL3 | MLYP TDLMLPGVIIPK |
| UniRef90-D3BBT7 | F |
| UniRef90-UP10002B42FF7 | GV |
| UniRef90-F6D4Q9 | GAVKFVIKGANIMS |
| UniRef90-G8Y |  |
| UniRe990_D8LJR1 |  |
| UniRet90-U6LG12 | Qvolalikl |
| UniRet90_V9G1P5 | RADKGAIPFVLSGANVMCPGLTSAG |
| UniRe990_M3C583 | W HNADVPLLHTPEIVVKKMVGGADLMIPGLIPFP |
| UniRef90 A0 | RLLHQYPN MKKLQVDGGAIKFVLA |
| ef90 R9NYS 1 |  |
|  |  |



| UniRef90-G0HNC2 | K G K AlV | K Nll H H A |
| :--- | :--- | :--- |

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UniRef90-Q7RH73 UniRefofo-F4G195 UniRef90-K3XNO7 UniRef90-G8BGL5 UniRef90_W4GOD5 UniRef90-W1QJQ7 UniRef90-G3B283 UniRef90-M31КАЗ UniRef90-C3MJX2 UniRef90_UOD344 UniRef90-ROKQZ3 UniRef90-M3B957 UniRef90-F9CW11 UniRef90-TONMF4 UniRef90-UPIOOO2C3D706 UniRef90-Q01GY6 UniRef90_Q6BWV5 UniRef90-Q74ZX9 UniRef90-LOHPT9 UniRet90-EOSQC1 UniRef90-SOAPL4 UniRef90-l4YFE2 UniRef90-E7KAT6 UniRef90-EOVJD1
UniRef90 G8BYF9 UniRef90-Q8L629 UniRef90- 66 L1X4 UniRef90-E2LNN2 UniRef90-A1CPK4 UniRef90 D8QDE8 UniRef90-G8ZX63 UniRef90-U7FRU8 UniRef90_W8X5X2 UniRef90-13TPW8 UniRef90-F6UZY8 UniRef90-M2U174 UniRef90 ${ }^{-}$F8G8A0 UniRef90-U5QNQ6 UniRef90-D8LWD7 UniRef90-Q5BZG1 UniRef90-I0GYD1 UniRef90-H2AR42 UniRef90-UPIO003AD55CB UniRef90 W9WPJ5 UniRee90 ${ }^{-}$GowGU5 UniRef90-C5DSM7 UniRef90-R5EWG9 UniRef90-G7XNU1 UniRet90_R1DXQ2 UniRef90-Q3SJS7 UniRef90 W959N6 UniRef90- A0A023NP12 UniRef90-U6LKD5 UniRef90-K1E590 UniRef90_13U9J7 UniRef90-D1JIP4 UniRef90-UPIO00476FBE9 UniRef90 R6IIU5 UniRef90_101105 UniRef90-UPIO004775ADC
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UniRef90-R6A750
UniRef90 G1WK15 UniRef90 UPI0002C55B37 UniRef90_UPI0003673F79
UniRef90-J9E002
UniRet90_C6M659
UniRef90 B9KC19 UniRef90-K9XVL6 UniRef90-UPIO00406D4FE UniRef90_J7L4B6 UniRef90- Q8RAE6 UniRef90-G4CKQ1 UniRef90-V4YKA2 UniRef90-B2IE43 UniRef90-A6WDM8 UniRef90-E1R016 UniRef90 K9T5S7 UniRef90 K9TWJ4 UniRef90-N6VDZ8 UniRef90-B0JFY2 UniRef90-UPI0004777B66 UniRef90-UPIO003646A4D UniRef90_UPIO0046FCCBO
 KNFLGNKDRKKLAI ILKSTFNI E ELL

MK S N FVSK SESNAILGEDGAANG 1 A IP QVK P A A NI K S S D R R K L L S T V CK T Y N L I D E I
 K S L S NL K S S E R R K L Y A A I C S Q Y G S L V L P
 C GK G NMQK R H I I M S S K D D A K I I F I N K
 MK S L F T K VE P F S T S I L G K K D K K T I I N N T F K K K E MKSNLI SKSETATLLLKTVTAEKWG MEFP
M S R H I L S K K D Y R A F M E K L E K F N I D
$\square K$ QMKA T LLA KHAKAK $\square K E L Y P$ G LDP I D T IFP $\begin{array}{lllll}D & A & L & L \\ Q & Q & E & 1 & T\end{array}$
Q P K A S A N $\quad$ I K S S E R R K
S S S $\square \mathrm{K} \square \mathrm{L}$ Y L S K K S I K E I L N S V R K E $\square$ S E K F $\square E$ AFSAMCSKH L S K K K D Y R A F M E K L S S A F

S NLLKNSERRKKLLQQTFGQKQTNNNEEYS

M S R H M $\square$ S K K D F K Y $\square$ K A R M E S $\square \mathrm{G} \square \mathrm{D} \square \mathrm{SNL}$

LT LK A S S AVR N S DK R K LRRQR $\square A S T F A D L L V P$ SNLKNSERKKLLQSCKEQTGASDYN


S K L K N S D R K K LVQS LK A Q LDED DS V
SPLRSSDRRKLADQUIADY QVHVP SNLK N S DRKK L L Q T I K T QLLETYNFN $S N L K N S E A K K L L A T C R A Q T G N Q E F P$
 $L S$ GK DVVK K L A E A RLLA A P ELLLR
$\square K S H Q L S G A D R K K L K R T V K D R F P D S L L P$ QSPLGNKDRKRLRESLLSENDADLLV M K T K $\square$ Q A A K VT
$K \square Q A A K A A T S$

> S D $\square E K$ M A D VA A SE F S R G G M
> K L H A A E V VT G
MA T K L S A A R I A
D VE L I N K A $\square E D S$ F GHP DL I
$\begin{array}{rl}K \square D A & A \quad D \\ \square\end{array}$ K $\square E$ A A R $\square$ A T D $\square$ R S K I E A A L M A MA T K L A A A R $\square A$
$K \square Q A A K \square C Y N$

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UniRef90 C3MJX2 UniRef90-BOD344 UniRef90-U1PLS3 UniRef90-ROKOZ3 UniRef90-M3B957 UniRef90-F9CW11
UniRef90
TONMF4 UniRef90-UPI0002C3D706 UniRef90-Q01GY6 UniRef90-Q6BWV5
UniRef90-Q74ZX9 UniRef90-LOHPT9 UniRef90-EOSQC1 UniRef90-SOAPL4
UniRet90
UYFE UniRef90-E7KAT6 UniRef90-EOVJD1
UniRef90-G8BYF9 UniRef90-Q8L629 UniRef90-O6L1X4 UniRef90- 22 LNN2 2
UniRef90 A1CPK4 UniRef90-D8QDE8 UniRef90-G8ZX63 UniRef90-U7FRU8 UniRef90_W8X5X2 UniRef90 - 13 TPW8 UniRef90-F6UZY8
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UniRef90-H2AR42

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| :--- |
| UniRef90 | UniRef90-G7XNU1 UniRef90-R1DXQ2

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UniRef90-UPIOOO4775ADC UniRef90-U5NEK2 UniRef90 UPIOOO363AE17 UniRet90 UPIOOO47793EF
UniRet90
F6D918 UniRef90-L8LPW7 UniRef90 H81513 UniRef90-R6A750 UniRef90-G1WK15 UniRef90-UPI0002C55B37 UniRef90_UPIO003673F79 UniRef90-J9E002 UniRef90-C6M659 UniRef90 BgKc19 UniRee90-KgXVL6
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|  |
| :---: |

EERVLWFKTEDGRRYPTV DNDQSTNFRSHNNAPGVLYDDADGTPLWYSLGKDELDPTV


HVGPISAVEAGGRATWFDPETTP HTA
DQRVLWLK LRD RLYPTV
GGVNMVIASGEDPKILLETLLGDDTGTLFAKNNKKEDTA

 DVGTLFEAASKRYLPAA AGDS $\square$ MQTNF $\square$ STTAAGT $\square Y$ TSNSIP PMFKKHSDT $\square$ YPTS DRVGTLFHPAEGRRMST T LEETDSARFTTHAGPHTVYVGEERILWIQYKDARDYPTV NSNIGQTNFQTTNPPSTVFTNDNDPVWFKKHNDLLYPTV AGVEMIIJASGENPSGILELVGGQGNATFFRPSKKPVVI A
QSAPVETARFTTAGAQTVYVADERVLWFRVDDGRLYPTV KGADV

VQRRTAGGLVRIVDCDRVPVLFELGS
$V I C S G R E R V L L R L A E G E P I G S Q L V A$ PKAE $\square T V A K F Q N R$
PKEGVTLIR $\square$ NTSANKCTLFSVGD PYYAEVNGVLFPTV TTIIASGREERVLERLGQGEAIGTELRASPRLRSA MKAGTPMVIANGGEENILMRITEGAPVGTLFIPKRVRMND SGTHLEAARIATHSGMPVVLLAGQPVGTLFHRQRRRPAS AGVDVVIAAGSEPNVILRVVAGEAV GTRF FAADGRGTIFPAAGG VIACGREHNVLTRDCDGEAMGTFLHATTPKQQA KTKDDAGKIANSAGTAMIITSGKNPLFFAASEKPVNNA SGEMMVLANGTEPQVVSRLLAGEKDGTLFAPQEPGRMSG TSAGVRTVITQGKYPENTLKILQGEPIGTQFEPASRGERA PRDKLVVLNKAPYEDRLDEVFVDGRAVRFDPFRLKWTFMP SGUDMI DAKSDEKEVLLRIMDGGEELGTLFRGENVHPQL AGDASVICSGAEENALVRLASGESVGTLFVPPADRLEDAP KTKIDAAKIATSAGTVMAIASGKRMSPLRAIDETWFATA AGASMILASGQDLHPDRNDLDGKGKSTLFSSKASPR
 TSSGVRTVITQGKQPQNILQ\|IQGEPLGTQFEPQSRADNA VDSARTATEAGVPTVLTSERVGTFFAPADGRRRSA SGVKMVITANGKDDNVLNRI AAGEKIGTTFDPMKNPDSS VVASGRETDILLRLAEGEGTLFTPAYSRLMNA DEAAK】ATTGGT HMVIADGRVTWFLTGSNPV TA EGVGTRFEPSDGSAPESA tSAGVRMVITRGRQPENTEKTLRGEPDGTQFEAQPRTENA VRTVITEGRFPHNIEKIIQGEPLGTQFAPQLQPTNA $K T K L D A G K I A N S S G T A M V I T S G K N P L F F A P S K K P V$
KA
TAGVEMALTRGRQPGNILKIMAGEAIGTRFEAQKRSDNA TSAGVEMADTRGRQPGNDLK】MAGEA GTRFEAQKRSDNA


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UniRef90-Q74ZX9 UniRef90-LOHPT9 UniRef90-EOSQC1 UniRef90_SOAPL4
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## UniRef90_A0A031LUP2

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 UniRet90-EOSQC1 UniRef90 SOAPL4 UniRef90-I4YFE? UniRef90-E7KAT6 UniRef90-EOVJD1
UniRef90 G8BYF9 UniRef90-Q8L629 UniRef90-Q6L1X4 UniRef90- 22 LNN2 2
UniRef90 A1CPK4 UniRef90-A1CPK4
UniRef90 D8QDE8 UniRef90-G8ZX63 UniRef90_U7FRU8 UniRef90-W8×5X2 UniRet90_13TPW8 UniRef90-F6UZY8
UniRef90 M2UI74 UniRef90-F8G8A0 UniRef90-U5QNQ6 UniRef90_D8LWD7 UniRef90-Q5BZG1 UniRef90_10GYD1 UniRef90 H2AR42

A E F G L G D V V CVVE ES Q HKF IA VGRSLATSSEGEAM K R A V K N A V V G I V S K E K P NVI A V G V C R L N L T Q F D Y V V G R HP F L K G QL R A V Y V V G G P MP FA I G D M L V D A E T L

 $P S L V E G Q L V A I R Q Y T R E N E L A V G R M A L P S D Q L R D \quad G G K E$




EEWESNEIVVI GIVD GSDAFAVG】TACSSAEARA S GM



 Q GYPA G E I W A V K V P GN L A P A AV G CTTMMSSEEARK $\qquad$ MKER








GSFAAGDPVDLVDAGS GTPVARGLVNYDAVELPALLGRST

E

S
 A A LPA GA A A CVVRIF GNPS AVVAVGVLDAVPGAAVAEAVRSPG
 GEFHRGD LVEIVDEAGR PVARGLSQYGVAEARRLAGKHS










[^0]| UniRef90_A0A031LUP2 | $\qquad$ |
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| UniRef90-Q7RH73 | KGKCLKLVHTFTDELWKLGS |
| UniRef90-F4G195 | KGRVATSLLHW |
| UniRef90-K3XN07 UniRef90 A0RU87 | KGE\\|VKNLHYTS DKYWNAAKETG |
| UniRef90-G8BGL5 | SGMAVEI HHFDDELIKLNKEI |
| UniRef90-W4G0D5 | KGKAMQLLHVVFDELSKLNPQ |
| UniRef90-W1QJQ7 | HGVAVEIMHVYQDWL |
| UniRef90-G3B283 | S GVAVEVLHH!DDKL |
| UniRef90-M31KАЗ | SGVAVEI HHLNDTL |
| UniRef90-c3MJX2 | RGKFAINLHHVGDTLWEMC |
| UniRef90-B0D344 UniRef90 U1PLS3 | KGKAVYVVHTWKDRLWEMGSKP |
| UniRef90-ROKQZ3 | SGEATDVLHHSGDDL |
| UniRef90-M3B957 | KGHAVENMHWQGDEL |
| UniRef90-F9CW11 | KGEVVIKNMHYMSDKFWE |
| UniRef90-UPI0002C3D706 | GVAIAMYQFAGDGM |
| UniRet90-Q01GY6 | KGVGVTLVHAYGDACWALGD |
| UniRef90-Q6BWV5 | GTAVEVIHCLHDELYNLNK |
| $\begin{aligned} & \text { UniRef90_Q74ZX9 } \\ & \text { UniRef90_LOHPT9 } \end{aligned}$ |  |
| UniRef90-EOSQC1 | KGKCIANTSRLDDKTWRASLQLAK |
| UniRef90-SoAPL4 | KGEAVE LHYLNDKVMK |
| UniRef90--14YFE2 | TGKAVLISHSINDALWLAGSQPK |
| UniRef90-E7KAT6 UniRef90 EOVJD1 | GVAVKVHHFNDG |
| UniRet90-G8BYF9 | GVVAVNVLHYLGDGL |
| UniRef90-08L629 | RGKALRUTHYYRDFLWESAE |
| UniRef90-Q6L1 4 | KGMAAENLHYLNDNI |
| UniRef90-E2LNN2 | KDVGVETVTYLGDDLWA |
| UniRet90-A1CPK4 | KGHAVRGI HWEGDEVWAWS |
| UniRef90-D8QDE8 |  |
| UniRef90-U7FRU8 | REIEAEMIH RDDL |
| UniRet90-W8X5X2 | AR】A E S GHDS |
| UniRef90 I3TPW8 | RGRD EMI H RDD |
| UniRef90-F6UZY8 UniRef90 M2UI74 | KGRGFTVLHTYMLDHLWQSGDKS |
| UniRef90-F8G8A0 | YNTANILGH |
| UniRef90_U5QNQ67 | QQ। A A |
| UniRef90 D8LWD7 | KGRVIENHTVYDSLYETVSSTR |
| UniRefo-IOGYD | PELAAEVVHMRDDLCSLSSS |
| UniRef90-H2AR42 | GVAVElLHHFEDALF |
| UniRef90-UPIO003AL | R WLAREl H R |
| UniRee900 W9WPJ5 | KGAAVEGVHWEGDELWSWSQ |
| Unireet90-GOWGM5 |  |
| UniRet90-R5EWG9 | S SIENILGFTH |
| UniRef90 G7XNU1 | KGHAVRGLHWEGDELWAWSSSSK |
| UniRet90-R1DXQ2 | KGTALQ |
| UniRet90_Q3SJS7 | T |
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| UniRef90-A0AA23NP12 | RDПGAEVVH RDDLATLAD |
|  | KGRALEEVHLGDSLWKHGKHV |
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| UniRef90-UP1000476FBE9 | RGYDRELIH RDD |
| UniRe | SEIEDKIGHKNYDE |
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| UniRef90-U5NEK2 |  |
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| UniRef90 UPIOOO47793EF | SEIE KVLGYY |
| UniRef90-F6D918 | TKıA El L GYVDDE |
| UniRef90-L8LPW7 | AKIA SVLGYL |
| UniRef90-H81513 | K GVAVKV] |
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| UniRef90-UPIO003673F79 | REDEAEM $\square \mathrm{H}$ RDD |
| UniRef90_9 - 002 |  |
| UniRef90-C6M659 | ERDAEKLGYAHEDEL |
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| UniRef90-UPIO00406D4FE | REIETEMLH RDDL |
| UniRet90_J7L4B6 | R |
| UniRet90_Q8RAE6 | HDIESLGYKYYD |
| UniRet90-G4CKO1 | EQUAARLGYVSEDEL |
| UniRef90-V4YKA2 |  |
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| UniRef90-E1R016 |  |
| UniRef90_K9T5S7 |  |
| UniRet90_K9TWJ4 |  |
| UniRet90_N6VDZ8 | E E |
| UniRef90_BoJF | ER1 |
| UniRef90-UP10004777866 | RW |
| UniRef90-UPOOOO3646A4D UniRef90-UPIOOO46FCCB0 | GDIEVEEAGLGD |



M A T K LQ A A D $\square \mathrm{A}$
QTKLEAVSVVVK
$\square N K L E E N N S N E$ I I E
K $\square$ QA G K I A V N
MQTK I Q A A DLA
MA T K I R A A E I A

VT A E $\square E$ GMA GAA GSELSRGGMRT
$\mathrm{K} \square \mathrm{E} A \mathrm{~A} \mathrm{~K} \square \mathrm{ATS}$ K D $\square E F \square R S$ VFRE HY G VD E $\square \mathrm{F}$ MATKLQAADVA

QAAEVTMK A A K I VMA

E LIN S VS MLQ F N A P L I L I N E I S E Q F N S P L I P<br>K $\square$ T P E $\square E$ A M A E D T K S K VS K G G M K K L A $\rightarrow$ A A $R T K \square E A A K \square A V G$<br>K $\square$ Q A A E $\square$ A T R



$K \square Q A A R \square A T S$ MSRHVVSKKEMRELYGRLKDIGLEAPF I $\begin{array}{lllllllll}K & \mathrm{Q} & \text { A } & \text { A } & R & I & A & T & G \\ K & E & A & A & K & A & Q & N\end{array}$ KLQA A E I CVR
$K L E A A R \square A G R$ $K L Q A A Q V A M S$

MATK LQAAD $\square A$


MATKDTAAEDA
ETK L Q A A R $\square T M Q$
$\mathrm{K} \square \mathrm{E}$ A A R $\square \mathrm{AT} \mathrm{S}$

M A T K LDEA A D $\square \mathrm{A}$
$R T K \longdiv { L }$ A G Q $\square A T Q$

A GK $\square \mathrm{ATH}$
$\square$ K K $\square$ T P E $\square$ E E MAGESS $\square$ S
$S G G M R T K L L A$
$A R \square A T R$
$M A T K \square Q A A D V A$

## UniRef90 17ARR7

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KNEAYMTHRCKN KVVIS ${ }^{50}$ CVSGGGVAlI LF ${ }^{70}$ FFNRKYFPTI RRAGIEVIIAAGRAPNVIFDSLSDEPTRFDALEEALEN AGGKVRAASSAAEQGDRSVITSGAEPTLFEPTGARRGS KTKI DAAKDAQSAGTTMI IASGKT LNPLDADENTWFPRA RRSGIEVIIAAGGADNVILESVSSSPCGTRFLPLPESLEN A G DPMII AKGEKPD LLTRLFAGEKHGTFFVPKKGRLSR AGEAVI I ANGRTDKVLKRIVQGEDMGTLDFLPKKEKLAN

 T RSGVAVVIAAGHEPDVIVRVANGERIGTFFPATTTHPDA TEAGVRTVI TDGRSPTNLLKI L GGEALGTHFEPRPKTDNA
 VRAARLAARSGAVTVIASGREPVLVRLKSGEALGTAL
A G DDMVICQGHNSDFLIQLAEGQGTRFSPCGTVHD DTP A GTHMLIASGK\DHPDKAIAGGGPCTWFLTPANPV TA GANTVVASGREPDVLVRLCAGESDGTLFTSEFSRV NA DGKVVLLNKTPGEDDVYEIILLDGYVVRFDPLGLKWKPGL RRAGIAVVIASGHGVDVIGRLVAGEGTRFSPDEDPGES AGlPMII ANGGEKNILSRVIAGEPVGTLFMPKKKRMND A GIPMVVAHGAEKNVLRRIIAGEPLGTLFVPKESRMMQA LI A GEDVGTWFLPTGGRRNT
 A GCDMI I AKGTDSNPDSSMGI I NKKTLFKAQIKDPQTARK NRAGVHMVIAAGQAPHIQRLLEGGLCTWFDAQTDDVGSA


LRAARLAARSGTVTVIAGGDEPVLTRDAAGEALGT A GTPVVIASGD $\quad$ PD D $\square P R L V A G E R H G T R F H P A T T R L E A R K$

SKDEAARDATHSGVNDADTTGKRPMFLEDGAGTLFTSA A GSGASTVIAWGREPDVLLRLARGEAIGSALVAGTPKFAA DGKIVLLNKIPGEDDSYE』IF DGFIISFDPRSDKWRPGL

VK TAlTHGQFPQYlERILHGEPLGTQFTPQLRAANA VI AS GRDPDVLVRLAQGESIGTLLKTDRKPMSA
A G IP MLL LLPGEDPRSITRALQGEPVFFAGGNKRYSG GGAHMLIADGRVEHPVAR $\square$ DAGPCTWFLTGSNPVTTA $\begin{array}{ll}E N A D D K Q V S G T V Y V G S H E G T S G E Q R I L W V K L F D K & M Y P T V \\ F G D P V V I A S G L Q A G Q Q E A V L K G E E D G T V F L P R E H R\end{array}$ AGTSMVIATASGREPHVLSRLADGEAIGTQLVAATNRMAA TENQUEVEEKKGKK
 S GIDMIVAK SDEPEILYRLVEGEQLGTDFYAENVHPQLD SGCTLVIARAS LPGVIRRVLAGEGEGGVFFPREKLRE $A G V N M V I A S G S E E G V L R R I L Q G E A V G T V F P A R E S H L \quad R D$
RRAG $\square E V M \square A A G S S A N V I F D A D S D T P T R F L P S E E A D E H$ A I ASGRETDPIDRLANGEPVGTLLVSQTQPDAA VRAARLAARSGTPTIIAPGGEQVLSRIGAGESVGTL

 SGSKLEAARDAASAGVATVITEGNTPTRFALARPGGRDSL TNAGVRTVITQGKTPENDPRILAGESLGTQFQPHPRPHNA
STENCLSARFTTTAGQGTVYVGDERVLWFKDDKRLCYTV

$\square A D G N A T W F \square P R E D P$ QAA GEAGVRTVITEGRSPVNDERILAGEALGTQFEPQPRPDNA AG $\| P M V I A G G M Q R G N L A A I L Q G K R V G T L F V P C E E T \quad M K A$ AGDPLVICHGRAEDAVVRSLAENPDLFTAKERRHEDTP $A G A H L A D T D G R V A H P L A R L A E E G R G T L F L A Q K G A A L A A$

E E DGTVFHPT GPRRPS
VEAAKDATTGGTHMLIASGGRCTWFLTPANPDTS
 $L I A S G H E P D L L L R L C Q G E R \| G T W L T P N R S R G S A$
AGTAMIDAKGEAQNPLQSD QDGARFTLFKPSTTPVS AGVRTA $\square$ TEGRSPYN $\square T R$ TLQGEPLGTQFEPQPQPTNA

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KGGMDTAARTATQAGCAMVITKGDVPTWFKPNVDPQTARK $V I A S G R E P D V L L R L A R G E I V G T Q L L A G H A K D A A$ A GANMVIAAGQEHHPLRRLQ A GGLCTWFMAQTDAGS A


UniRef90_17ARR7 UniRef90_Q9KPT8 UniRef90_L7U4D6
UniRef90 G8PNWC UniRef90_V5FD54 UniRef90-E1YHF
UniRef90-I3IRC4 UniRef90-Q1QQT9 UniRef90_B6AEC6 UniRef90-F7NHR2
UniRef90 A9WAX2 UniRef90-Q8DH42 UniRef90-F5R797 UniRef90-D4X4E3 UniRef90_W9UTJ1 UniRef90-14W918
UniRef90-R7B2N3 UniRef90-E6S718 UniRef90-Q2J3J7 UniRef90-C4GGM9 UniRef90_UPI00029A3374 UniRef90_K2J0R1 UniRef90-Q648U0 UniRef90-D7CLA5 UniRef90-M2XC73 UniRef90_C7Q8B0 UniRef90-F7XKE2 UniRef90-UPI000375DC34 UniRef90- G6XIJ5 UniRef90-W3RN08 UniRef90-S6BWF1 UniRef90_UPI0003B55E86 UniRef90_Q2S355 UniRef90-F8EST0 UniRef90 10HX51 UniRef90_Q9V229 UniRef90-E9UTU3 UniRef90-K9UH14 UniRef90-R6AGG8
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UniRef90 Q5BEI6 UniRef90_UPIO0047BC505 UniRef90-B0UMS7 UniRef90-A0A037ZKT6 UniRef90_B8HQP9 UniRef90_K4LWI1 UniRef90-K0Z7Y0 UniRef90 UPIO0030D8C9 UniRef90_F2R2A6 UniRef90_UPI00036D0BF3 UniRef90_UPIO004703932 UniRef90_C5FEL8 UniRef90-A8L1V5
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RYDEKHDSE ${ }^{90}{ }^{\circ}$
100
110
120
 RAAWI AHALRPQGTLRVDAGARDAIVQGRSLLPSGVRSVE RKTWI SGHLLKPHGTI QLLDAGALKAVKAGKSLLPAGVTKVVE RKRWI LA GPAASGDIVI DDGAVNALRKGSSLLAKGVTEVN
 RKRWI A GSLEPKGTLTI DAGAVAALRAGKSLLPAGVI RVD QLLWI Y GDY RKRWLAF GARLHGSVKVDKGCEKAI LDGSSLLAAGIIVVE RQRWI LAETVRHSRIVVDEGATTALTRGKSLLAAGI CEVS RKRWI ARALIPKGELWLDEGAVKAIVGGKSLLAAGI TRVVE RKQWLADHLQLAGTLVLDEGAVKALHEGKSLLSDGVTEVQ RKQWLADHLRLRGRVVLDDGAVQALMRGKSLLPIGVTDVQQ RKQWI A GHLQARGTLVVDAGAVSALTSGRSLLPAGVVDVS RKYWLLHAPASSGRI RI DAGAARALSHGHSLLPGGILAAE
 RKRWIAGSLEPKGTLTIDAGAVTALRAGKSLLPAGVIRVD RKQWLLGH I Q $\square$ S GSIVVDAGAETALQQRSSLLPVGCVRVN KALWKRFGKSMKKWVIIDRGAVEPILNGSNLLAVGVIEAE RKQWILAGPPPVGRLQLDDGAVRALVKGASLLPKGISADH K E H WI LF SASPKGKI KVDEGAKTALVGGGSLLPSGI TDVE RKRWI AFGSACQGKVYI DNGAKEAVLRGKSLLPSGIVGVVE R LL WL A H LLAD DKGSLVLDDGAVKAIVKRKSLLPAGVTEVV

 K WISTMK PVGELVI DEGAVNALFSGKSLLPAGVLIVR RKRWLGSSLHPHGRIVI DAGAYQALRQGASLLPAGVCGIE RKRWI A GTLEAKGTLTIDAGAVSALRAGKSLLPAGVDRIE RKRWLA GHLRVKGRLVLDDGAVEVLRRGRSLLAVGVREVE YTLWHHP RLVPLLHTPSLVMDKLYGGADLIMTPGLAPFP
 HKVWLAGRLTAHGQAYIDDGAVKALQDGKSLLPAGI YEI K RKQWMIDHLQLRGAVVVDAGAALKLRDGKSLLPIGVVEVQ RLLWEKFGKRMKKWVII DRGAVEPVKNGANVLPVGIIEAE RLLWWLQHATEPVGSITI DAGAVAAI RRGASLLAAGVTGSS RKRWIAHGLIAVGKIVLDAGAVAAITGGKSLLPAGI ARDE
 RKKWIA GSLEPRGVLHVDAGAARAGVSGKSLLPAGVTRIE YTLWHNP RIVPLLYTPLVVVEKMQAGADLIMTPGLQRFP $R K R W L A Y A P A V Q G Q I Q V D A G A A R A D C N G K S L L P G G V D A V D$ RKQWLADHLKLAGRLLLDDGAALAI RRGTSLLPVGVSAVE KKRWISGQLVPRGTLFVDAGAETALSQGKSLLVAGVRRVE ELLDAIDPGF KNITIDNGAVPRILGGAKLFAQGIVEMD RKGWLAGRDT TRGRLIVDAGAKKALERGNSLLPAGVAQVD RKS WLAFGKRLMGEI SVDDGC DAAMRRGASLLAVGVTAVY KKRDI I IG TAVKGRIVVDKGCSEAILKGSSLLPVGIVSVE RHLDLAHATTGHGRVLLDAGAVEAVRRRTSLLPAGVTGVR KRRWL LF GA QVKGKIVVDAGAAKALRGGKSLLPSGIVGVE RKSWLAFGKRLQGDLVVDAGCVKALEGGSSLLAAGIKELD KKRWMLA QKQIKGHLVI DDGAVKALEDGKSLLPDGVIAVD RKRWILAGPSTSGDII I DQGAVTAVLKGSSLLAKGVVKVS RK Q WL A D H L Q L A GRLILDAGAVNALHAGKSLLPDGVIAAE RKQWLA GHLQARGRLVLDAGAVRALRKGTSLLAVGVKAVQ RKHWI AYTLRPAGKVLVDAGAQKALVKGTSLLPSGITGVE RKQWLLGHVQLCGSLVVDQGAEQALLAGKSLLPVGCVRVD RLLDWLEHATEPMGSVGLDEGAVRAVRRGASLLAAGITGAR RKRWI GYGLVPAGALHLDEGAVLAVRGGKSLLPAGVRGVE RKHWDAHALVPTGKLILDDGAAKAITTGKSLLAAGI TAVE YMLW HNANIVPLLHTPEFVMGKLRSGADLMTPGLANEP R LWMAHASIPEGRVIVDAGAARALVEGKSLLLPGVTGVD RKTWIAGSLEPRGSLVI DAGAERALQGGASLLPVGVARIE RKRWI AAMKPRGSVRLDTGAVAALKQGRSLLPIGGVTEVS RKRWI AHALVPTGKLYLDRGAVQAI AQGKSLLAAGIVQVE RKRWI AFGSPVEGKI RI DHGALEAILKGKSLLPGGVTGVV

 RLLWWLAHASTPQGSLTLDDGAVRAVVEGKSLLAAGVAGVE RKTWI A GQLQPAGMLQLDEGAVTALGAGKSLLPAGVRSI S RKQWILA GPAPEGKLVLDDGAVRAVSKGRSLLSKGILKVK YSLWRNPG LVPLI CTTSHVMEKLYNGADLMTPGLAPFP RLLWLAHATAPEGRLHLDEGAVAAVVRRASLLPAGVTKVE RKRWI A GTLLEPKGTLTIDAGAVTALRAGASLLPAGVDKVE RKSWI A GHLAPAGTLTIDDGAARALAKGSSLLPAGIIRAVN RQQWIMGHLQFSGKVTDDAGAADALSQKHSLLP $\square$ GCDGVQ YT $\quad$ WWH N WK NWIA GQLE PQGK RKRWI AYGLDPAGK DEGARGALLSGKSLLAAGVKSAE R DWLAHASTPQGSLTLDSGITAI SQGKSLLAAGIS TVE RKLWI AHATTPRGVLTVDAGAVAALVRRKSLLPAGIIDAVT RKHWI AYTLRPVGRITVDNGAREVLRHGRSLLPSGVVRVE RKRWLA GQLQVRGKLVLDAGAERALCNGKSLLPVGVVGVE RWDSSQKSA
 RKRWIGGSLQPKGTLTIDAGARRALEESASLLPAGVTGLE RKQWLADHLQLAGKLTLDQGADQALRQGKSLLPVGVREVH

## UniRef90 I7ARR7 UniRef90_Q9KPT8 UniRef90_L7U4D6 UniRef90_G8PNW0 UniRef90_V5FD54 UniRef90_E1YHF UniRef90_I3IRC4 UniRef90_Q1QQT9 UniRef90_B6AEC6 UniRef90_F7NHR2 UniRef90 A9WAX2 UniRef90_Q8DH42 UniRef90-F5R797 UniRef90 D4X4E3 UniRef90_W9UTJ1 UniRef90_I4W918 UniRef90-R7B2N3 UniRef90-E6S718 UniRef90 Q2J3J7 UniRef90_C4GGM9 UniRef90_UPI00029A3374 UniRef90_K2J0R1 UniRef90_Q648U0 UniRef90_D7CLA5 UniRef90-M2XC73 UniRef90_C7Q8B0 UniRef90_LOKWT7 UniRef90_F7XKE2 UniRef90_UPI000375DC34 UniRef90_G6XIJ5 UniRef90_W3RN08 UniRef90_S6BWF1

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UniRef90_K4LWI1 UniRef90-K0Z7Y0
UniRef90-UPI000 UniRef90-UPI00030D9B4 UniRef90_F2R2A6 UniRef90_UPI00036D0BF3 UniRef90_UPI0004703932 UniRef90_C5FEL8 UniRef90_A8L1V5
UniRef90_Q89X86 UniRef90_UPIO0036A54E4 UniRef90_E4ZZY5 UniRef90_UPI00047C7207 UniRef90_K9XAG5 UniRef90_B5H178
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UniRef90_D0I7J7

|  | 180 |
| :---: | :---: |
| UniRef90 Q9KPT8 | KEIGSEVIH RDDM |
| UniRet90－L7U4D6 | S Di ESVLGYRY矿 |
| UniRef90－G8PNW0 | KEI EAEMIHT D DL |
| UniRef90－V5FD54 | KEI GEVLGHDYGSE！ |
| UniRef90－E1YHF7 | SRI KEKLGHKPYDE！ |
| UniRef90－I31RC4 | SSIT KILGYKLYDEI |
| UniRet90－Q1QQT9 | SGRA EMl ${ }^{\text {a }}$（ ${ }^{\text {a }}$ |
| UniRet90－B6AEC6 | KGKVLRILHHDKDNL |
| UniRet90－F7NHR2 | NDIAGILGHKSYDE |
| UniRef90＿A9WAX2 |  |
| UniRef90－O8DH42 UniRef90 F5R79 | TELA N\｜LGYAG |
| UniRef90 D4X4E3 | S Q ${ }^{\text {A }}$ |
| UniRef90＿W9UTJ1 | R Di |
| UniRef90－14W918 | REIGTEVVH RDDLANMPDRL |
| UniRet90 R7B2N3 | R |
| UniRef90＿E6S718 | RELAREVI |
| UniRef90 Q2J3J7 | SGRA EMlH R ${ }^{\text {a }}$ |
| UniRef90－C4GGM9 UniRef90－UPIooo29A3374 | DEGDAAKGVGYAHEDEL |
| UniRef90 UPIO0029A3374 <br> UniRef90－K2JOR1 | RGTGVKVRH |
| UniRef90－Q648U0 | K E！ |
| UniRef90－D7CLA5 | SQ ERILGHKDYDE |
| UniRef90－M2XC73 UniRef90 ${ }^{\text {C708B0 }}$（ | REELGAELVH RDDL |
| UniRet90－LOKWT7 |  |
| UniRef90－F7XKE2 | HGVGVKTR WNGD\AYロHKPEGGQ |
| UniRef90－UP1000375DC34 | SEIEVELGYAG |
| UniRef90－G6XIJ5 | RGRDV L H RD |
| UniRef90－W3RN08 UniRef90 ${ }^{\text {S6BWF1 }}$（ | GD！LAEMけH RDDL |
| UniRef90－C5GV56 | KGHaVkgVtwegdelws wat |
| UniRef90－UPIO003E | RDTEAQLGYTYGDDL |
| UniRef90－02S355 |  |
| UniRef90－8EST0 | E E |
| UniRef90 Q9V229 | RGTGПKM |
| UniRet90－E9UTU3 | A AYAREVIH RDDL |
| UniRet90＿K9UH14 | TDLUDLLGYLGEE |
| UniRef90 R6AGG8 | DEVVEELGYL |
| UniRet90－D7BBQ5 |  |
| UniRef90 Q0V382 | KGOVSTEHWAGDEØwS WS |
| UniRef90－Q2RKZ7 | GETG EILGY |
| UniRef90＿Q7NQC8 |  |
| UniRet90－V5SFE9 | S E $\backslash$ A |
| UniRef90－ToLPK1 | K GPA AE【L |
| UniRef90 W1S6Q4 | E E $\square$ A A |
| UniRef90－F5RMC7 UniRef90 R7CMV1 |  |
| UniRef90－UPIO004766196 |  |
| UniRef90－UPIO004766196 UniRef90－C9RAT1 | R WLIA REL |
| UniRet90－C9K052 |  |
| UniRef90－UPIO004073CD9 | SETVDK【GY |
| T De\ |  |
| UniRef90－E3BLIT | KDIVKKLGY |
| UniRet90－Q47AC9 |  |
| UniRet90＿D3RVR3 | S |
| UniRet90＿B3E610 | AEIEQLLGYRYGD |
| UniRef90 G2DS60 | ERIA |
| UniRef90－UP10003710022 | RWLAREVVH RDDL |
| UniRef90－B0C1B5 | EDIP ${ }^{\text {A }}$ ALGYAG |
| UniRef90－O5BEI6 | KGHAVRGII HWE GDELWAWSPSS |
| UniRef90－UP100047BC505 | RGHVTPVVH RDDLAEL |
| UniRef90－B0UMS7 UniRef90 A0AO37ZKT6 |  |
| UniRef90 A0AO37ZKT6 |  |
| UniRef90 $\mathrm{B} 8 \mathrm{HQP9}$ | Et |
| UniRef90－K4LWI1 UniRef90 Koz7Yo | TElKMILIGYHDYDE |
| UniRef90－UP1000471 F9B4 | EkIA DLLGYand |
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| UniRef90－－F2R2A6 | HALAREVVH RDDL |
| UniRef90－UPIOOO36D0BF3 UniRef90－UPI0004703932 |  |
| UniRee90－UP10004703932 | KGHAVRGIOWEGDEПWSWGS |
| UniRef90－A8L－1V5 | MDLAAEVVH RDDL |
| UniRef90－089X86 | SGRA EMLH RDDL |
| UniRee90－K5YXQ0 |  |
| UniRee90－OPIOOO36A54E4 | HQUEAEVLH RDNL |
| UniRet90－E4ZZY5 | KGQAVSTFHWAGDELWAWS |
| UniRee90－UPIOOO47C7207 |  |
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| UniRet90＿W6K159 | RELAREVIH RDNL |
| UniRef90－A5G907 | GEIEQILGYRYGDDI |
| UniRef90＿UPIIO002559D04 | ERI VELLGGRDD |
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| UniRef90 D5X590 |  |
| UniRef90＿O5FUL1 |  |
| UniRef90＿G80M70 UniRef90－Dolili | SDI |
| UniRef90－D017J7 | QEI |

VKQASSNPLGGKETKKLRGD\|LKKFDDSFFS
 MRTK LTAAHWA
$\mathrm{K} \square \mathrm{Q} A \mathrm{~A} \mathrm{~N} \square \mathrm{~A} V \mathrm{~N}$

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UniRef90 Q605N1 UniRef90－UPIOOO478340B UniRef90－E8UAB5 UniRef90－A8HS47
UniRef90
D8G6PO UniRef90－DoCQM5 UniRef90－UPIOOO2260085 UniRef90 M7CJS8 UniRef90＿C1D9T9 UniRef90－M7N5U9 UniRef90－D3NX38 UniRef90 KoC236 UniRef90－UPIO0035E3CDE UniRef90－A1KYHO UniRef90－A6GR43 UniRef90－Q12Q10 UniRef90＿S6EPDO UniRef90－AOYVP6 UniRef90－UPI00041ED35E UniRef90－UPIo0036D513E UniRef90＿L8HESO UniRef90－UPI0002D77315 UniRef90 V5PMZ6 UniRef90－UPIOOO34B140B UniRef90＿D2VNW6 UniRef90－Q2NCX7 UniRef90－K2QBJ1 UniRef90－W1N2G0 UniRef90 l3WG21 UniRef90－UP100039FCD9E UniRef90－Q72DJ9 UniRef90＿UPIOOO37CE288 UniRef90 Q114A6 UniRef90－W7WSL4 UniRef90－E2SB76 UniRef90－UPI000469FCEA UniRef90 UPIO00463E014 UniRef90－D5UGS3 UniRef90－R5FW54 UniRef90－H3ZJN9 UniRef90－UPIO003B5DCEE UniRef90－UP10003A035DC UniRef90－E1VGG2 UniRef90 F8E7X4 UniRef90＿－Q39QR3
UniRef 90 －J7RA33
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LLRAAR ${ }^{50}$ LAARSGTATV ${ }^{60}$ ASGREGVLP

 AGTHMVIASGH DKNPLKRIAEGGRCTWFLAGATPARAA LVAAHTATDSGCAMA TA LGKRPTWFLPFKAKLDP HA VRAARLAARSGAFTVIVGGRERADTRLRQGEVIGTL TTVIACGREANVLSRLADGEADGTQLVAQNDRWAA
$\square T A A R \square A S R S G T A T \| I \square D G R A \square G T L L I P N E A P V S A$ VTTVTTHGKKPENLLKITNGEDTGFTKFEAGRKNPGT VIASGHEPNVLVRLMKGEPVGTY目APLGRDAA RHAGTEVVIASGHHENVIIKVVNKEGTHFSAIDDSPLES
FATN KQTNFQAQANDGTVYTAENNPDWFEKHDSLLYPTV I EAARDATSSGVRTV\TDDGATIGTHFAAQARPVNA AGVEVVIJA GHAEQAVTKAAAGENVGTRFRATQTPLEN VDSAR AATEAGVPTVLTSETVGTLFTASSRRGPST PKADIEVVKLGGGSRTVVLYFVEAQPLFFDPSG RRAGIEVII AAGSAQDVVIESVSSSPSGTRFVADPEALEN VIASGREADVLVRLAGGEA AGVTTVITNGKNPDNDPKLAGDSVGTKFTAQPKTVDNA ERAGTADA NGTHEAPARALDGVGTVFVPQ RSDGA IDAGKIATSAGCAMIVASGKNPLWFAASKSPV KTKLDAGKTANAAGTAMIITSGDPVGTVFAPVKHRGSS LILPGREPRVLERAFSGEPVGTWVRPEARVVSR RGTGDEAAKIATSAGVRTVITLNGESIGTQFEPQPEQVNG IIASGHEADVLIRDAKGVGTRFHPTGKRRTMA

AG $\|$ TMVПCHGKEPDA DPRTAAGQGTRFVAQGASHD TTP K TSRMEELRKEGLKPKRSPYLEEG DYFE REGPNFPDD HRAGTEVVIASGHKKNVILEAVDNKPVGTRFVSKNSRLEA AGG｜PMLLLPGTRPGVVLQALQGEPVFFAAGERRYSGQ VGIINGNSTENVLKFLRGEETGTFFSHDEDP KNK
SGNTVKQTNFQSTTSVGTTYLNDEKPLFFKHGSGP母WPSV VIDASGREPHVLVRLAAAEPIGTQLDARARMAA DNDQSARFTTTSGTYYVGSHDGEEVLWFQMEGVVYPTV ARSGASTVIAYGREPDALLKTAGGVPIGTLDKPAQSVMAS SGVHMVIASGE RNDSIEVIAAGGRGTHFVARDSK PHM

GGПSVYПGKDTPESR\｜TDMMKGT DVGTWFAPTGRRDRT

 A $\square \square \mathrm{NG} \mathrm{L} T \mathrm{PGNLLR} \mathrm{\square FDGED} \mathrm{\square GTYFFPASNRMAA}$ KSGVAA IIFAGRGERTLSRVMKGELLLFLPAGESL NR KTKISAARIATSAGVRTVVTIQGEDUGTQRAQPEPTSA AKDK【N VKLSE

I ETYLFNGRSGEVVRA DAQDRLYGTRDHAGRTRDAA TSAGVRTVITHGQKPGYLPKVLQGEQIGTQFEPQPQPENA GGVVAA IVNGHQQGVLQNLVTGEDVGTLFLCGEDRYSRH AGSGASTVVAWGREKDVLLRLTRGESDGTLLVANTHKMQA


VLAAQRASRSGCATVIASGREP VVEDRAGHATPR SGATVVIADGREQDLLLRLAKGESIDGTLFPPATTNDES AGAHMVIASGKVKNPLRAIETGARCTWFLAPANPVAS ERAG $\operatorname{ALLADINTHSSPDDRADDAGRGTLFLPQGDE}$ SA VGTVFAPRPERMMSA KGEP SR S DWQSSGGSAS MYFLKKIPLAFS SGURVRLADGRDPAVLEALFAGEKVGTVFQPSATPLAD

TAG AESVICS GSEPDA LVRDARGEGTDFAPPVKHDDDAP ENH IVVLNKIPDKDRMEEVVMGGAVVCAFRPEEKRWE $\frac{A}{\square} P$
 VIVGGRDERVIERLQAGEELGTLLLPEKGMDAA I DQGEA GTHFEPQPEPTSA GATTVILSGKEPDNLRHLAAGNPVGTLFWPDMKPDKAA VIA S GRETDVIVRRLARGEPLGTLLVSETPPLTA


## UniRef90 Q605N1

 UniRef90-UPIOOO478340B UniRef90-E8UAB5 UniRef90-A8HS47UniRef90_D8G6PO UniRef90_DoCQM5 UniRef90-UPIOOO2260085 UniRef90-M7CJS8 UniRef90_C1D9T9 UniRef90-M7N5U9 UniRef90-D3NX38
UniRef90 UniRef90-UPIOOO35E3CDE UniReftoo-A1KYH0 UniRef90-A6GR43 UniRef90_Q12Q10
UniRef90 S6EPDO UniRef90-A0YVP6 UniRef90-UP100041ED35E UniRef90-UPIIOOO36D513E UniRef90-L8HESO UniRef90-UPI0002D77315 UniRef90- V5PMZ6 UniRef90-UPIO0034B140B UniRef90-D2VNW6 UniRef90- Q2NCX7 UniRef90-K2QBJ1 UniRef90-W1N2GO UniRef90-13WG21 UniRef90-UP100039FCD9E UniRef90-Q72DJ9 UniRef90-UPI00037CE288 UniRef90-Q114A6 UniRef90-W7WSL4 UniRef90-E2SB76 UniRef90-UP1000469FCEA UniRef90_UPIOOO463E014 UniRef90 D5UGS3 UniRet90-R5FW54 UniRef90-H3ZJN9 UniRef90-UPIO003B5DCEE UniRef90-UPIO003A035DC UniRef90-E1VGG2 UniRef90-F8E7X4 UniRef90-O39QR3 UniRef90-J7RA33 UniRef90-E5ALJ3 UniRef90_B8H9P1
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| UniRef90-R7D115 |
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| UniRef90 |
| $1 R G P 7$ |

UniRef90-UPIOOO367C569
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UniRef90-U6L9V3
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UniRef90-I1YK65
UniRef90-A0A01 1 NQR4
UniRef90-UP100036D3856
UniRefgo- V8COT2
UniRef90-V8CCT2

 RKAWILAGQKPEGVITVDAGAENALRRGASLLPSGITAVS RKRWL LAEVASASRITLDAGAATAVRRGSSLCPVGVVAVQ RKAWI AGTLEARGVLHLDDGAVAALRRGASLLPAGVVRVE RKHWI ANVLLPAGKLYLDAGAVKAISQGKSLLAAGIVQI E ARKRWISAMKPRGEITVDAGAARALENGKSLLPAGIVEVT RKRWI AGGLTPMGDIT DDGADRALVQGGSLLPAGVTMVE RKQWI AGHLQTRGTLTLDAGAVKVLCGGRSLLPVGVKSVA RKQWLADHLR | RAGRLVLDDGAARAVTRHTSLLPIGVIAVE |
| :--- | RMLWLAHLASTQGRVLLDPGAVRAVSSGASLLPAGIIALS RKAWIAGHVNAAGVLVVDDGAMRALSHGASLLPAGVAAVQ RKRWLTAHLDVKGRVVLDVGAAQAIRSGVSLLPDGVVAVN RLLWLAHATTGRGRLSLDPGVEAVRRRKSLLPAGVTSVE RKRWIAYGLLPRGKLYLDKGAVKAISKGKSLLAAGULKVE RKQWILAGPAAKGSLLDAGAADALRKKKSLL FTCWSCP QLLPVVITHGFVIVRLFNGANLMLAGTVPPD RKHWIANVLIPMGKLYLDEGAVRAIQQGKSLLAAGITQVE RKRWLLAGPPPQGELVLDAGACRAVVRGSSLLPKGVVAAR RQLWLAHATAGRGSVVLDPGAVRAVAEENSLLPAGVVKVD RDDWVPTDLMMQGVVV PKSSEWVQKRP RKRWILAGPAATGEIVTDEGAVKALTKGSSLLAKGVIGVN RKQWMADHLQVRGRVVIDAGACKKLAEGKSLLP IGVIDVE RKRWDANGLVAMGKYYLDDGAVKALCQGKSLLPAGVTHLE FALQI APN LVDTHYLAQPVSHYLLQGADLMKPGVSKNQ RKAWLGGRLAPQGTLRVDAGCAQALQGGASLLAAGIVGIS RKTWI AGQLQPAGTLQVDNGAEGALRSGKSLLPAGVRSVS RKRWLAGQLQVRGTLTLDAGAVRVLRSGSSLLPVGVRKVE RRLWI GFASDPRGALVADAGAAKAVRGGRSLLAAGVVEVH WKVWI SGHLDAAGQLVDDDGALKALKSGKSLLPAGVREVR RKYWLAYQSEPSGTVTVDEGAARALDQGGSLLPGGVCDVS RKRWLAGQLQVRGRLTLDDGAVRQLRRGSSLLAVGVVAVE RKHWIANVLVPAGQLYLDQGAVKA1SEGKSLLAAGIIGV RKRWMADHLQLRGSVRVDDGAVQKILGGKSLLPMGMTAVE

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 $R K Q W L A G H L Q M R G T V Q L D E G A V R A L R K G V S L L P V G V S G V T$ KKLWLAYATIPKGDIVVDDGAVRAVRNKKSLLPSGIVDVS RKHWUAHTLRPSGRVIVDDGARTVLRQGKSLLPSGVIRVE YACWSHPG LLPIILTHSVVIEHLFNGANLMISGTMPPF RKQWVADHLQVRGHVVIDAGALEKLTSGKSLLPVGIVDVQ RLLWLAHVASVQGRLILDEGAVRAVRHRTSLLPAG|SAVH RKRWIAGQLQVRGRDTLDDGAVKVLRQGRSLLPVGVRHПS KKRWVAFGKRLKGSVTVDKGCADALDKGSSLLPVGITAVS RKQWI AGSLTPAGEIMIDDGAADALNHGGSLLPAGVKGVK RRLDLAHAAHTRGQVILDDGAVRAITVGKSLLAAGVTGVH KKQWLGLHSMVRGEIMIDAGASQALIQGKSLLPAGVLDVQ RKRWIAYGLVTSGTLTLDWGAVQALRRGKSLLAAGI TAVT WKFPDMLPKIPTFDMVISKLTGGANLMIPGIAFPS RKQWMADH■QVRGHVVIDAGAVDKLTGGKSLLPDGVVAVQ KK LWLSTMAKSSGQIFIDDGAKEAI INGASLLPSGIIKVA RKHWLQNAPAEPGGI FIDAGAGNALVKGASLLPGGVVAAE KKHWI AFTKKPRGKLLVDEGAVNAVVNGRSLLPSGIKGVE RKQWLADHLQLAGALTLDAGAQTALAGGRSLLAVGVVRVE RKHWIAFTIKPAGSIVVDAGARDVLSRGRSLLPSGI AQVE RKRWI AYGLVPAGKLYLDAGAVSAIAQGKSLLAAGALVE RKRWLVGQLRPNGLLHLDAGAVKVLRKGSSLLPVGITAAE PHPQAL

APVSKFVVNGADLMLPGVVGVE RKY WLRHAPVEAGAILIDDGAAAALTKGASLLPGGVAGALL RKRWI AYGLVAMGKLYLDDGAVRAACGGKSLLAAGLTQTE
QHWIADVLHVAGQI RKQWI ADHLQLRGSVTVDAGAVSKLRDGKSLLPIGMITVE RA WLYSLLRPKGELVLDAGAVRALRKGASLLPAGIKAVR KKQWLGFFSDPDGTLTIDAGAEEAMIHGCSLLPVGVKAAQ RKFWLAYQSDPAGSVHVDAGAAKALLKGGSLLPGGVFRVE RKQWIAGQLAAKGTLWLDSGAADALLKGKSLLP DGVTRVE
 RKAWLSGRLAPAGVLTVDEGCTTALANGASVLAAGLTEVE
 FFILMMRDADFRNNVFCRGPTSQFIVSGAHLMIPGUVNVS RAAWL AHALRARGTLTVDAGAREAIVTGRSLLPSGVRGV
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RKQWLAGHLQTRGRLLIDEGAVKALASGRSLLPVGI QAVE RKRWI AYGLVPMGKLYLDDGAINAISQGKSLLAAGIKAVQ RQQWLVGHLIPKGKLILDDGAVNVICQGRSLLPVGLRAVQ RKQWLADHL QLNGKLILDGGAIHALRDGKSLLPIGVLTVQ RRQWMVDHLHTTGEVVIDGGAAQKLTRGKSLLPGGVIAVN
KRFWIESVAMPQGKI


## 

G

GAF RRGG LV S G R GAFHRGDTVSIVTIE GRE

## 




G
GQFERGDTV AVL NEERRE
 UniRef90-UPIOOOO3A035DC UniRef90-E1VGG2 UniRef90-F8E7X4 UniRef90-O39QR3 UniRefto -J7RA33 UniRef90-E5ALJ3 UniRef90-B8H9P1 UniRef90-L2FC60 UniRef90-UPI0003B4088B UniRef90_R5C110 UniRef90-F7VFJ9 UniRef90-UP10003B6EC5C UniRef90-UPIOOO469B041 UniRef90_U5DLT9 UniRef90-U9TU49 UniRef90-B7CLS8 UniRef90-E8LHT4 UniRef90-UPIO0047A98EE UniRef90-Q1JWH3 UniRef90-W0SJK5 UniRet90_B5EEI5 UniRef90-K9V910 UniRef90-UPIO002624C69 UniRef90-L1JZM8 UniRef90-UP100039EABDC UniRef90-UPIOOO3091F95
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## K

$G E$
$G H$
$G M V$


GEFRRGDLV ${ }^{130} A^{130}$ C D SAGQE GNFMRGADVIIAAPDGRE 140 150

150
160



| UniRef90_Q605N1 |  |
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| UniRef90-E8UAB5 | GD $\square$ A AELIH R D D $\square$ |
| UniRef90_A8HS47 <br> UniRef90-D8G6P0 | EK $\mathrm{I}_{\mathrm{A}} \mathrm{H} \\| \mathrm{L} \mathrm{GYAG}$ |
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| UniRef90-M7CJS8 |  |
| UniRef90-C1D9T9 | R DIE RLL G Y V G |
| UniRef90_M7N5U9 | R D L G |
| UniRef90-D3NX38 | T EI R D EMIIH R D D L |
| UniRef90-K0C236 | SEIE R L L GYVG |
| UniRef90-UPI00035E3CDE | RELASELIH RDD $\square$ |
| UniRef90_A1KYH0 |  |
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| UniRef90_UPI00036D513E | R WLAREIVH R D D L |
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| UniRef90_V5PMZ6 | T DI |
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| UniRef90-D2VNW6 | K GKCFETVH【FNDFMWQF G |
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| UniRef90-K2QBJ1 | NGRAA M $\square$ H R D D |
| UniRef90-W1N2G0 | $R \mathrm{R} \square \mathrm{A}$ |
| UniRef90-I3WG21 | A Q LR R F DG E F |
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| UniRef90-Q1JWH3 | AEI ERVLGYKYGDEI |
| UniRef90-W0SJK5 | QDISAELIH RDNL |
| UniRef90-B5EEI5 | SEI E G I L GFRYGDD |
| UniRef90-K9V910 | QAI A QI LGYK G |
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| UniRef90_UPI00035F03B5 | NEI |
| UniRef90-U6L9V3 | K GKA $\square$ D DM H R L G D S L WN H GK HV |
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| UniRef90-I1YK65 | Q A $\square$ E S L L G Y VDE |
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| UniRef90-UPI00036D3856 | A DI E G \( |
| ) L G Y VE GPEL |  |
| UniRef90-V8CCT2 |  |

SEDAK TITPEDEAMAGDAGLS


K TQAAETATR
KIQAASIATA

A A R T A T R
K $\square$ E A A R $\square$ A MR
A A D $\square$ A
$R K D \square E A M A S P E G G \quad L L G$

MATK $\square \mathrm{DAAK} \square \mathrm{A}$
MATK $\square$ QAAD $\square \mathrm{A}$
MATKLQAADVA
K $\square$ QAAE $\square$ ATR

A A A Q T A L S
A GK $\square$ A T S
$\mathrm{K} \square \mathrm{Q} A \mathrm{~A} \mathrm{R} \square \mathrm{ATG}$

M A T K $\square$ Q A A E $\square \mathrm{A}$

K $\square$ K A GE $\$ A T K
K』E A A R IA MR
R\|AGSKKNERST GGMRTK\|NAAM AME DRATLRQQFKGAGAREAAMQ

D $\square$ AK $\square$ R A QF GK GAADA $\square$ F S

K $\square$ QAAR $\square$ VNE
VT N ME QLE QF QVK T GD S R

K LDEAAR】AMR

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UniRef90 A7BVA5 UniRef90-D7ETF5 UniRef90-W5Y249 UniRef90_E0XY66

CGFTMl\ANGKEENVILRVVSSEETGTMFTPSSH YSNRE SGV]PMVI ANGREKGVLRKVLAGESVGTWFHASEKKR AGESRTITR TSGGRPQQli HVDDERLVSFGTDGRYTLGL


## पMGDGVGTAFAPVKHRGSS

VIVGGRDERVLARLKSGERLGGTLLAPRRGLLAA
VVLASADHLGEVLSGEDVGTWFEPSSVRGLLAA AKSGAHTIIIAWGRDSDVLSRLAQGEADGTEDRAQTGQLTA

GADTLIASGREENVIVRVASGEMMGTWLQPEHGRV AA
VIASGREERVMARVLAGEDVGTWLQPDREPL AA SGDAMLIANGQQPYVMTELLQGANIGTLFCPSKKNLYG TK $\quad$ EAARDATGSGVRTVITEGKFPTQFEPQNRPV NA
 GRESLVLVRAPKEKGNVGTLLIADQETLVVHPKKRKRSR KGSSTEAIAWGREDAVLTRLASGEAI GTQLINAQTAQLTA KGSS DEAAKIAVNSGVIVMIAEDKNSLLVEMAEKKEYNMK DEAARTATQSGVRTVITDEGEADGTHFAAQAGADTA $N G \square P V F V G C V Q E S G D L V L A V E H N G K G T Y F N T T C H S L P M$

KFEVLLRNENPTLFKAKENPLSN
VRAARLAARSGVTAL ASGRQPVLTRLADGERLGTL
IDAGKIATSAGCAMDI TSGKNPLWFAPSAMPV TA KKDTITKQKYQGPGSSAFVYSVDKVPFFISIRLGKEEQDI TTSGVRMVITQGRNPQNDVKILQGEPDGTHFSPHPEPTSA AGDEVTDAAGSKPEVIQKVAAGDNAGTRFLPLESPGES
पGVDVF TGKASGEHALD\LSGKGDGT YVGNTGDLMEGK ILAGREDGALTQAFGDEGVGTFIVSGCKPITMR SGSSMVIVNGDNRNFLTLLGKEUGTLFLGQED HVKA
$\square 1 L P G R E A D V L A R A F A G E A V G T W V R P E E H A \square P R$ AGAHLA SGKПDAPLSHWVDGGRGSIFLAAQAK GA AGSGASTVIA WGREPDALVRLTQGESI GTLLVAQTAKNQA【I ASGHEADAVVRLGQGESLGTLLYATSSPLQA CRSGDDVVIAAGПAEDVVLRVAAGKGTLFPSHDSPLES


 VIA WGREPDVLLRLARGESVGTALLAATPKLAA VRAGKLAARSGAVTTUASGRSPVLIELADGRGPMNA VIA WGREPDVLLRDTQGEADGT LVVAQTAKKQA KKTKVMAAKTATGAGCAMVITEGSIQTWFLAEND PGA FSGDDVGTLFTPTG VKSPA
KKKD $\square$
\|VD\|LSGNK $\square$ GTF 1 HPHKAKKVSSK
LIDAPGSADNLLLRDWSGEEVGTYFRPGVAKDAA AGTPVVIAPGDAPDALPRIVGGEALGTRFLAAVNRLEARK ADVDMVIASGSEDGIISRI CAGEEVGTLFKAKETPLHS

AGDPSVICSGAEPRALVRLARSERDLFEPAAPRTEDAP GGVPVFIGRASEAGDLTAAASGGGRGTLFTTR VALMPMV RRSGTTVWПAQGNEEDIITRIVNNERMGTRLSPERGMLAA
 KGTKVMAAKRAARSGTATFLASGREEGLPRLLKSGELLPD DESVA AGIPLVICQGRATDAVASALADEPTFFEAREKRHEMTP
TKAGLPLVIANGS DDQVVTKDSEGEGTLFDPDSG MTS CRAGVEVIIAAGHKDNVIVDAAGGKDVGTRFVATASVTES CRAGDDVI QLACGADDLEAVLSGERVGTWFEPSKRQRPAS AGTPVVIAPGDAPDAGSRVVAGGAALGTRFHASGSRAEARK
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UniRef90 A7BVA5 UniRef90_D7ETF5 UniRef90_W5Y249

## 90 <br> 100

110
120
$R \quad W \square S A M K T R G V L|T V D E G A A N A| L|Q N G K S| L L|P A G| V|R H| V \mid E$ $R L L W L A H L A S V R G T L V L D D G A V K A V R R R T S L L P A G I A A V B$

$R W L A Y$ $\qquad$ AFPHG $\qquad$ Y I DKGAAEEALI R EV D GA R KA RNGNSLLPCGITSVE
 $R K R W L A G H D Q A K G Q L V L D D G A V E A L V R Q G R S L L P V G V S S E B$ HGA I RLHFEFPRMRIVVDPDSAEFNRQGRNVFAKFVVRCD
 $R K Q W L A G Q L Q Q K G Q L V L D A G A I K V L Q Q G R S L L A V G V T Q V K$ $R R L W W G F A A E P R G T L V V D E G A A K A V R A G R S L L S A G V V E V R$ RAA WL G LTAEVRGRLVI D D GAVAAI DRGRSLLAA GIITGCT $R K Q W L A G H L Q T R G V L T L D D G A V K A L V D G H S L L P V G V K A V E$ RRLLWIA HAAPARGEVIVDEGASRAI TRGKSLLAAGVTCVI RKQWMADHDHTAGAVVLDAGAVQKLRQGKSLLPDGVTGVN K K H W L R H T L VA Q GEI L V DEGAEKALDNGASLLSSGIVDVQ RKQWLAGHLKSRGALILDDGAVKALRKGTSLLAVGVKDAQ RKRWI A DQLHSRGVL HLDEGAARVLRSGRSLLAVGVARVE KKSWI AF GADCRGEVHID HGAQVAVCRGKSLLASGVVQVV

 $R K Q W L A A Q L Q V A G A V T L D D G A V N A L L A G A S L L P V G V S A I G$
 K K S W L Q T L SVVA K G II TVV D R G A E K A I RE G K S L L PA GII K D I E R K Q WIA S QL QMR GKVWLDEGAANAI LN GK SLL P I G V T R I E R K Q WMA D HL K T A G K VVL D A G A VQ K L R N G K S L L P I GV T A V S
 K $V$ MM GL L
 KK QWV GFHSLP QGSVIV DAGAEQALVQGKSLLPAGII KAS K K H WL R H T LIA Q GEI LVVDSAAVDVI RNGESLLTSSGIVGIE $R K R W L A G Q L Q V R G T L T L D A G A V N V L R R G S S L L P V G V K A L D$ $R$ K T WI A G QL QPA G LL S V DA GA ETALLRA G K S L L P A G V R E V S
 RKQADSFSFL




 RRFWLGHAADATGRLTLDDGAVAAVVRRRSLLAAGIVAVD RKFWLA Y Q S DP A GTVLVDAGAAEALLKGSSLLPGGVRQVL $R K G W L A G R L T T Q G R I I V D A G A E Q A L A K G N S L L P A G V A R V E$ RK QWMA DHLQMRGAVVVDDGAVAKLRDGKSLLPDGMTAVE $R K Q W L A D H L Q L A G D L V I D D G A V T A L R S G R S L L P V G V I E V R$ RKRWLA GHLRAR GTLVLDAGAVMALKQGGSLLPVGVTALE RKFWVVRHAADAA GVLTLDAGAVEAVLRRRSLLPAGI TA VA A


 KKQWLGFHSSPQGRI TVVDGAEAALQGGKSLLPAGIIRTI E RKRWI A D H L Q L R G AVLV D D GAVVA KLV G GK S L L P I GMTA V E $R K Q W M V D H L Q L R G S V E V D A G A A V K L R D G K S L L D I V V V E V Q$ $R K Q W L A G H L Q M R G R L V L D E G A V R R V R G G S S L L P V G V T D V F$

WIA A MKPRGEL CVVDAGAARALAEGKSLLPAGITAVVH
 ARKNWDAAMKPRGTI TVVDAGAVGALSKGNSLLSAGVQAVS R R R WL A H A T S A A GRIV V D D G AVVAV R R R T S L L P VGV T R I E R K Y WL R HAPVVEA GAILI DD GAAAALTKGASLLPGGVAGAQ K S WL E L L S YP K G K L IVVDA GA EKA L K A GK S L L P S GII K E V E $R K R W L A G N M Q P R G R L T L D D G A V K V L R Q G K S L L D V G V M A D V$ $R K R W L A G Q L R P S$ G T L H L D A G A A V R V L R K G S S L L P V G I T A S E
 RKLDWI ALLGDAAHGSVSVDPGAACAI RHGSSLLPVGIVAVR
 K K Q WL G Y L S R P L G A L IV D A GA K R A L A E GR S L L P V G I T A V E $K K Q W L G F H S Q P Q G S V Y V D E G A E D A L V G G G K S L L D A G V V E E V T$
 $R K R Y L L A G H Q V Q A G V W I D K G A A R A L S R G G S L A M V G I D D V E$ RKQWL A S LLLYPRGELVLDDGACRVITSGRSLLPVGVKSAS $R K Q W L A G H L Q A K G Q L V L D D G A V K A L K Q G R S L L P I G V V E V S$ WKF WMLLYA AETS GVL RL DA GA V TA V T D Q H S L L P V G I T S I D $R L L W L A A H A A R T H G K L V L D E G A V R A V V R R T S L L P A G V T G V E$ $R \mathrm{~K} L \mathrm{WI} A \operatorname{L} G N S V K G R L I I D E G A A C A L V G G S S L L G V G V V D V V$ K K R WI A Y G G L S E G S I F Fi D E G A V K A L L K G K S L L A S G I T G I D
 REQWI AFNLDDAGKIVI DEGATLALTKGGSLLACGIVEAR


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

WI L A E IT T G R V H L D D G A A Q A V R R G G S L L P A G I M R V D R K Q WL A S H L N M R G S L Y L D E G A VKVL R H G R S L L A $\square$ GV T R V RRFWVRYAAEATGALTLDAGAVRAVVRRRSLLAAGITAVS WK F W A L Y A A D T T G S L R I D A G A V K A V T S G H S L L A V G I T E I D

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## G E



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HEII
HGKAL
HQ DA HELI H RDNL
TGRAV LI H RDDL

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$S G K \square A E V I H \quad R D N L$
R

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KDKFTEVIG
KA I S AELI H RDNL
EETK D LLGYFN
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RGQEVKTil


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A GVGVFVVQCFRDNLWQ
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T R $\square \mathrm{A}$
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HEVAAEVIH RDNL
EDI

A E $\square \mathrm{A}$
C D $\square E S K \square G Y G Y G$
SE $\square \mathrm{P}$ V $\square \mathrm{L}$ GYEG
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SGYAAELI H R R DN
$K G R A \quad T L I U H R D D M$
S
DQ Q
REDGENVVH RDD L
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 $M L P G G L V V P P A G L D P Q V Q$ $K K Q W G L H S V T A G A V V V D E G A A K A L L R G K S L L P A G I V D V Q$

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S G

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Q Q VE D MA GT $\square$ A GP
MTTKDQAAEMA
$\square K$ T K $\square$ E A GLL A A K $\square$ G
K $\square$ QA A Q $\square$ A Q R

QF GAGAGDALFP
$R K \square 1 \mathrm{HD} \square \mathrm{GEVLG} \mathrm{V}$ GANM
MRTK $\square \mathrm{EAAR}$ AC
MATK VAAADVA
$K \square D K K \| L Q K \nabla K S Q A G A G G M Q$

QF GAGAGDA $\square$ FP
 G
P

MATK $\square$ QAAD $\square$ A
QFGAGAGDA LF P
$\square T S \square S K G S \square Q R \quad V R R \square A D Q F G R G A G E A L F P$


QFGAGAGEALFP

QF GAGAGAALFP

K $\square$ T A A DVA
SDLRTVADQFGA GAGRADVA

K $\square$ T PE $\square \mathrm{E}$ GMAQGTKHTTSGGM $\square \mathrm{SK} \square \quad$ SAAK $\square \mathrm{AQR}$
K T Q A AEVACR
K I Q A A R KVT S

K LI A AKTALS
$\square R K \square C E D \square G E A L G T S A$ $R G \square \mathrm{~N} \square \mathrm{~A}$ Y $\square$ YGREAA S

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UniRef90 C5LOY4 UniRef90- soG1U9 UniRef90_Q46F79 UniRef90-A7H6U8 UniRef90-K9EAQ7 UniRef90-F2LY01 UniRef90-M2MNX0 UniRef90-V4HZB3 UniRet90-AOLCZ2 UniRef90-W1F5X6 UniRet90-B1HVU9 UniRef90-F4HAT6 UniRef90_C5CE10 UniRef90 V4XKT7 UniRef90-14VNQ7 UniRef90-W9DX19 UniRef90 EODGM7 UniRef90-Q8FN82 UniRef90-R5SCR7 UniRef90-A4WH37 UniRef90-UPI000379FF07 UniRef90-UPIO0035CEOB9 UniRef90-F7XQP4 UniRef90-U7Q167 UniRef90- F9Q682 UniRef90-UP10003B36C9B UniRet90_U2UYF8 UniRef90 ${ }^{-}$K1XN81 UniRef90_UPIo0038107C0 UniRef90-H5XWH6 UniRef90-B1YA19 UniRef90-R9KZOO UniRef90-D4GW35 UniRef90- X1DK12

$K G L M T V F K V A P D G M Q F A V A K M T W R$

$A G U P K I M A C G F P I T E N T Y D G T Y F V P K$ MKTKTTAARKDTTAGIPKI A CGFTPDFENTYDGTYFVPK KGVGIKAAKICSMAGCYVLIASEILEDVLLKVLSGKEIGTLI LLAGDRVGTVFARGAARLLS | TKAGVPVFDCSSQSDTALIQAGNQKGTLFKAKAENLSQ |
| :--- |
| $K L A C H$ | AGTETVIAKGSESNVIVNTQSGQAKSTKFRFRFDPPHPDRD AGПETVIAKGSESNVIVNワQSGQAKSTKF RFDAPDDG

VMGGGVGTLFLSGGDACS
AGVKVF DGTGYGAQK VVDLAGRGDGTYVGHDDLAVLKNH TRSGIETIIAPGGRKNVILDLANNDADGTKFTVPPHADES
PGDPVT L RRSSGGRPRQVIAGDGARLVSYGTDGRFTGGE
SNPTSKT DEKNNCTWFSPK TSK M DA SKVTAARTASRGGVPVLLTSADNGTVFHPKENRLSA VGTVFHPKENRLS A A REDR LEAAKLVTRFGGKVLDANGKAYYIWKKYGDDTYLRS SKIKAAKTAANSGCETLILMDCEELGTFLYSNQKPLNA SGIDVVVASSSEPDVLRRIWSGEPVGTRFHAHTRFTG NMAGCYMIIIANSSGDNVILR\|LDGEGTLFLTNEDVHKNRD

TRSGПET\|IAPGNRANVIVDLAYQKPПFDAHQADRDESRK KG DP VIIANGREEKDTVRILKGEKRGTLFLPKKELKAKAY s AGVPTVVCRGRQEGILSAVVRGEAVGTRIEGPCMHERA

EGTYFQPVKHRLAG
YNKAGRVRRVFDDGRLAFLRNNDGYLLPTL
 IKAAKDATRSGDPVIIAGEERGTLFLPKKDGLTS IEAAEKATLNGUHTLVNGRGQVFDPSNDPDQD AKSGDQTLIVNGRNPDVFEQLAQGRGTLFLPMKNQ DGA
AGDPMVICDGRRADA VDAAAGKDVGTLFVAAQKPHETTP TKTKLTAAKDATESGUKVQLADGRDPILGELLDGKKIGTV SGlETIIAPGNRSNVIADLAYGETIGTKFIAQSDRLESRK


RRAGVEVIIAKGAGENVILNCMSEQLPGTRFVKLTAPRDG SKLLAAKMANSMGDPVVLLSGKEPTDFWPEERKDSM ESDELTVRQSSGGRPRQVIRSSEGDRLVSYGTDGRFTDGV DQVTFS YSNTKRVRYVSLAKDRLVTVRANDGRFYPGA

A G $\square E T F D G D A T K P N \square L D V V S H K A K G T Y F K P D E K Q E D \square D V$ GGVTVQLADGRDHQNLKKI FSNEKDGT\|FYPCDKPDGN LGCNVFIGTGSGKEKLVDILSGKGNGTYIGNSKQTG!KN SGESLRVGKRTTSGRPEQUHADAGRIVSFGTDGRFTLGL
 $\square 1$ A D GRRPEVLPRLHQGEA $\square G T F V H R \square P K L A A$ DDDAVTV RRSTSGRPRQVLADGERLVSYLT DGRFTLGV GAS VF $\square$ GK $\square$ D QR $\square$ PS $L V E T T \square N G D P G T Y \square \square S D Q P D P M Q M$
 D DDLTV RRSTSGRPRQVLDDEGRVVSYGTDGRFTLGV
 HLFSGEMVGTFFLPQAEKMQS

A GCGVT G G GK DAELFDK LLA GESVGTYFKPSSEPDKSHK GlTVMI AN GRTPGILLSILNGEKTGTKF LAQKPTHGPKR A GI DVII AEGCRDGVI GDVMNNVSVGTHFHAVDEPDEK
SGlPMIVARGNSQNVLLRLIDGEEHGTYFVPRKEKMAS
VGTVFHTRPERHL SA
$\square G \nabla R \square F \square G N G K G R N K L L E D L E G E G D G T Y D G A R D \square T A D T N N$ HMQELRRIKSGVFDENDAVYLQDLDAYVFWKEDGDEEELR KPSNILEI IRHASTSVDDLEKVEGLPLYTHVAKKQNRMRD $K \square Q R H V V E I E R N K D G R \square R R V Y I D G K L A F L R N N D G Y L L P T D$

> SKLTFAKDASEEDSVIVQDVSDAYDFWKEDEDETEGRS LVTLHD LKDAYQFWVEDGDETF LDR GQELI

 RRAGVEVI IAKGAGNNVILKCMSEQLPGTRFLKLTAPKXGG

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UniRef90 K1Y8N7 UniRef90_A6LE73 UniRef90_B3EPG1 UniRef90_D5EQQ3 UniRef90_Q0YS89 UniRef90_UPI000478AC68 UniRef90_K0NG15 UniRef90_C2CMW8 UniRef90_Q0FAT1 UniRef90_N0AV01
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Y K A WII A G S $\square^{90}$ A
 $R Q G W L A A A A R G K G V I L V D A G A R R A L V Q G R S L L P S G V R G V Q$ R R WM L G L E T R GVI I K K K W DGL T L Q A K G R T T D A GA K D A V VR Q H S L L P S GIV R V D $F L A E W I I L S R A S G T I R V D A G A K A A V L G K N S L L S A G V V D V E$


 RYFWLLHGLAPHGTLYIDAGAHAALNNKAGLLPVGVVDVV R K K WL L S GP R C S G A LI CDD G A V D A V C Q GA S L L A K GI T D D V S R K R WI A N G LT C E G S L F LD E GAVAA L L K G K S L L A R GVVVAV E

 K K A WI GF L S K P K G S I FI NEGAK IAI ENNRSLLPVGVVHIVE A GARRLLAAFPAPRVVVGDESEPYVREGRNAFAKFVTAA G RKHWLRHAPAAPGSI RIDAGARALAGGHASLLPGGMTAAE


 RK Q WL LG QLLKHS GCLVI DS GAVVAVKKNFSLLPDGI TK VI

 RSFWULHGLAPHGTVFVD Q GAYQALVERAGLLPVGVVDVE

 KKRWI AF SAKPS GELII DEGAKNALAQNRSLLABGIMNV I
 Y

 R K Y WL Q H T L K S H GE I QV D LG A Q A A L SK GA SL L S I GVQAVR R Y F WL L H T P S P H G TVVY D A GCHRALLD K A GL L P P V GVVVDV E
 $K K L W I A D G D A A R G A L I V D D G A K A A L V K G S S L L P V G V V A V E$
 Q WL Y A A P S A K K WI A HS DGFAKGEI RI NQGAY DAL MQASSLLPVGVVAVD K K WI A S S E GF AK G A L H L D A G A A A A V S K A A S IL L A V GVVTA V Y A L R N M
RKRWVAHSEGLK RKKWLIA G K S S G AVVI N Q GAI D A L T R A T S L L P I GI T G V E $R$ K L W I K Y Y DK P E G R I Y I D E G A E K A L L K G K S L L L P G I Q K I E A GAIQQRAFAAPRHRMVVGEESEPFVVREGNAFAKFVTAAD SALHAAFLPAPANRVVIMEDAVPFVADGKNAMAKHVISSD


 F T T WLAA A HLQTA GRRVI DA GAVEAI LDKHRSLLPDVGVKA DE GATFDDRYVVVGDEAVQYVQDGRNVPAKYITATS R K R WLA GHLRSHGVLVLDQGAARAI LEGSSLLPVGVIDVE
 $R$ LRASLGDAY SVVTVGESAPFVRDAKNVFAKFVSDV $R$ S F WI L H G L K P H GTVVYI D Q GA Y Q A L L D K A GLL LP V GVV V V E R K Q WI A Y H S QVGG GVI E I D D G A V N A V L Q G K S L L P V G V T N V I

 QWLD AAPSAA | G S | 1 |
| :--- | :--- |
| $P$ | $T$ | E GGRRLTEAFPAPRVAVGEESEPFVRDGKNAFAKFVTGVD WK FWAL YA A D S E G T L H L D A G A K A A I S R G N S L L A V GI T E I S


 R K R WI A H S E G LIK G A V T I N T G A E K A L R R A N S L L PV G I E S V L R
$\qquad$ K GAVTI P A GEI IV NGAEEALVR

 WK F WA L Y C A D T G G A V R L D E G A V E A V T R G N S L L A V G V T E V I A R K DW W S G M K P K G T I II D H G A E $\square A$ A K A G K S L L
 R GAAMA HGAFLERKAVVDSEAAKYVAMGRNVPAKY SIT
 $R$ NRWLGS GGLVSGY L TVVDEGAGKALLKRKSLLAVGVLEVV F AVGH K K WIIA HS E DFAKKGK, Hi NA KA E E I L K K A A S L L L V G
 R K R W I S Y G L L P T G KL Y L N E E S II IAI S K G K S L L VA DV DRVV R K K W L M A G P K S T G Q i M I D K G A I S A L Q N G A S L L A K G I T N A F

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UniRef90 V4XKT7 UniRef90-I $14 \mathrm{VNQ7}$ UniRef90-W9DXI9 UniRet90_EODGM7 UniRef90-O8FN82
UniRet90 R5SCR7 UniRef90-A4WH37 UniRef90_UPIO00379FF07 UniRef90-UPIOOO35CE0B9
UniRefgo- FTOP4 UniRef90-F7XQP4 UniRef90-U7Q167 UniRef90-F9Q682 UniRef90-UP10003B36C9B UniRet90_U2UYF8 UniRef90-K1XN81 UniRef90_UPIO0038107C0 UniRef90-H5XWH6 UniRef90-B1YA19 UniRef90-R9KZOO UniRef90-D4GW35 UniRef90-X1DK12 UniRef90_UPIO0036A413E UniRef90-T5A876
UniRef90 Q15MX0 UniRef90-E3DX54 UniRef90-F7UV59 UniRef90-Q46LEO
UniRet90 UniRef90-R7HQQ4 UniRef90-D4ILQ3 UniRef90-H81AK7 UniRef90_UPIO0035FD12E UniRef90-UPIo003B3FA10 UniRef90-MOPJGO UniRef90-A2ST59 UniRef90-FOXQ15
UniRef90
W4O754 UniRef90-UPI0002E041C7 UniRef90-UPIOOO30EF333 UniRef90-L9XBG1 UniRef90_N9LHF4 UniRef90-A3MY42 UniRef90-B5ES20 UniRef90-UPI0003002C40 UniRef90-K3W103 UniRef90_V4JOB7 UniRef90-L7JM46 UniRef90-UPI00047E95FA UniRet90 D6XUG4 UniRef90-D5R195 UniRef90-13DJC6 UniRef90_M0CW71 UniRef90_UPIO0036635F0 UniRef90_O9LD90
UniRef90 K1Y8N7 UniRef90-A6LE73 UniRef90-B3EPG1 UniRef90-D5EQQ3 UniRef90-Q0YS89 UniRef90-UPI000478AC68 UniRef90-KONG15 UniRef90-C2CMW8 UniRef90-Q0FAT1 UniRef90_NOAV01
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UniRef90-Toc9ss

130
140 140 VRYO 150

160
GPFDKGDAV|R|V|RDEDGRE VV|ARG|LVRYDSADAHK|I|AG|L|RS $G Q F G V G D P V D V A D D P A R P F A R G L A G Y A A D E V R R I A G L K T$





 NFSR GEVI R DCNE GRD GDFNNGDVVEVYCEQG GTFSRGEVVLLQNQQGK GDFQA GDVVEI RLDDG TFILGRAMVRYN S PEDRP GDEVLVVDP T DALLFAVGRAEDSYAEAKKVVGLKS GEFHRGDLVEILDDEG QSVARGLSQYSAAEVRRDAGAHS GRFNKGDHI KVLDKKNNE CARGLLSSFTSDEVVTKIMMGHHS GDFHAGEIVEI I GPEG AII GRGEVAYDSSVLTEIIIGKRT

 G G GRF S E N N D A V
 GDFNKGSTVKII HNNDEVARGLVNYGSEEIHADKGHKS GKFEF GNAV S I L G D D G K E I A R GLLV N Y N F R D L D S I M GMR T GTWERKEVVRII NTKGEE A RGVAEDTRDEVQTVKGLHS

 GNFKVGBSVVLLDDVGEE FARGVVHYSSMEVKKDKGTKS



GRFEAD DVVDIKD GTGH\FARGKVAAADDEVQLACG

 GDFEKDDIVRVLAPDGRQ FAVGRTSYDSDEARAAIIGKQ GDFERDD IVVRILSSPEGGAPLGVGR DSCDSATARRNLGR
 GQFERGDLI ELVVT CEQQLVARGUVRFSKAETNLI KGCHS
 D G I R P G DEVVLVVDDEE DTLFAVGGRA EDLS $P N 1$ H A E DEVVFVVDES DNLI ATGMAILSGSEMIGFBCN

G
G
 GNFAQQEVVRLVTEGTPEEVGRALVNYA


 $P A V R P G D D V A V V V S E \quad D E V V G V G R A E D S$ $G D F H A G Q I V D M V G P Q G E F L G R G E V A Y E S N V L A D M L L G H S$





 GSFEKGEVVEVFGTTGGGLGKGEVLYSSEQLMKDMGKRT
 $P D V R A N G E V A V V D P S G S \quad I A V G R L I Y S$
 GAFEA GEEI I EI YSA GQEMIVAV ARARETSQAMIVENLLKTNN DNDAWGDTVAIMTLKGELVGVGEASMSALDIAAADG
 GDFEKD DIVRIMMAS G NAIGIGKANCNSEQARETMGQHG GNFKSFEAVRLCNEGGEE VARGIVNYSKHEDDKINKNR GRFER G DLI D L I D A N N QV I A R G L T R F N QV

|  | DATEAEDGFT 170 GDDLL |
| :---: | :---: |
| $\begin{aligned} & \text { UniRef90_BOT3111 } \\ & \text { UniRe90_Q2IMF3 } \end{aligned}$ |  |
| UniRef90－C5LQY4 |  |
| UniRef90－SoG1U9 |  |
| UniRef90＿ $446 F 79$ |  |
| UniRef90＿A7H6U8 | GEITERALGGYKYLIDE\ |
| UniRef90＿K9EAQ7 UniRef90 F2LY01 | KGG｜VIH |
| UniRef90 ${ }^{-}$M2MNX0 | NQIA ELLGGY |
| UniRef90－V4HZB3 | A QIANVVIH RDD |
| UniRef90－AOLCZ2 | Q |
| UniRef90－W1F5X6 UniRef90 B1HV | Q |
| UniRef90 B1HVU9 | NSKCIEV |
| UniRef90－4HAT6 | DKOcskVLTHT DNDWK |
| UniRef90－C5CE10 | S GVAVKVVRHGVADELWK |
| UniRef90－14VNO7 | REIETVLGYSYGDE |
| UniRef90－W9DX19 ${ }^{\text {U }}$ | NE】 |
| UniRef90－EODGM7 UniRef90 O8FN82 |  |
| UniRef90－08FN82 |  |
| UniRef90－R5SCR7 | NNI |
| UniRef90＿A4WH37 | RGAVVRTDRVVMPAMWKKGQRAAK |
| UniRef90 UPIIO00379FF07 | SEIVNILGYQEND |
| UniRef90－UPI00035CE0B9 | AGEKLQNYH |
| UniRef90－U7Q167 |  |
| UniRef90－F9Q682 | HEI |
| UniRef90＿UPI0003B36C9B |  |
| UniRet90＿U2UY |  |
| UniRef90－K1XN81 |  |
| UniRef90 UPIoo038107C0 UniRef90 | SGKNFEVIH RDDL |
| UniRet90－B1YA19 | RGYavrvirea Liod |
| UniRef90－R9KZOO | EELIAASVDH RDD |
| UniRef90＿D4GW35 |  |
| UniRet90＿X1DK12 | SLIEKRLGYKYYD |
| UniRef90－UPI00036A413E | RQUADTLGYCPSD |
| $\begin{aligned} & \text { UniRef90-T5A876 } \\ & \text { UniRef90_Q15MXO } \end{aligned}$ | VElRGlLG |
| UniRef90－E3DX54 | DQKTYEVIH RDD |
| UniRef90＿F7UV59 |  |
| UniRef90－Q46LE0 |  |
| UniRef90－C9PME2 UniRef90 R7HQ | QD $\square_{\text {G }}$ R VTH |
| Uniref90－R7HQQ4 | KGLGKLI H H C DYGY |
| UniRef90－H81AK7 | EGQALD ${ }_{\text {c }}$ |
| UniRet90－B3QPU8 | HKP VIHY DHLY |
| UniRef90－UPIO0035FD12E | SEDASEVIH RDDL |
| UniRef90 UPIO003B3FA10 <br> UniRef90－MOPJGO | RPNKVEVIHGVRAL |
| UniRet90－A2ST59 | YGTAVKV |
| UniRef90－FoxQ15 | A D $\downarrow \mathrm{A}$ |
| UniRer90－W4Q754 |  |
| UniRet90－UPIOOO2E041C7 | K |
| UniRef90－L9XBG1 | TGMAVNV |
| UniRef90－N9LHF4 |  |
| UniRef90－A3MY42 | RGYAVK ${ }^{\text {g }}$ |
| UniRet90 B5ES20 | HELIA |
| UniRef90 UPIIOOO3002C40 | GRPLVHY DYLY |
| UniRef90－K3W103 | GVAVKDRsG的 |
| UniRef90－L7JM46 | T G ${ }_{\text {d }}$ |
| UniRef90－UPIO0047E95FA | KDKKAEVIH |
| UniRef90－D6XUG4 | KSPSPVVIH |
| UniRef90－D5R195 | EETETElIH RDD号 |
| UniRef90 ${ }^{\text {I3DJC6 }}$（ UniRef90 MOCW71 | Q D 1 |
| UniRef90MOCW71 | SGMAVFVRH |
| UniRet90 UPIO0036635FO | HgVVakTKRVVMD |
| UniRef90－K1Y8N7 | DKLAEILGY |
| UniRef90－A6LE73 | ■KPALIHY D |
| UniRef90－B3EPG1 | AKPLIHY DYLY四M |
| UniRef90－D5EQQ3 UniRef90 ${ }^{\text {O／PY889 }}$ | VGVVVH |
| UniRet90－OOYS89 UniRet90 UP1000478AC68 | QKP LI |
| UniRef90－KONG15 | SQIEAETIH RDN |
| UniReef90－C2CMW8 | EELPEEVVHA DYLSNYASR【 |
| UniRef90－QOFAT1 | SDI SEILGYEG |
| UniRef90－N6UWL8 |  |
| UniRef90－S9VZN8 | NETG |
| UniRef90－A1RTG8 | RGYAlRVRETL |
| UniRet90－Q2HAW7 | H GV |
| UniRet90＿M7TD01 | S G |
| UniRef90－UP100046FB1FB | FEVA |
| UniRet90－D8DU56 | I |
| UniRef90－J9FQQ7 | KKPVV HY DYLY |
| UniRet90＿D3ENC8 |  |
| UniRef90－W1Z 2 M5 5 | EQIGAVVLH RDDL |
| UniRef90＿Toc9s2 | DEISSIVVVHTDN． |

SS QVIREDGQGRDLSSY DQTTKSSFGRGGML
K $\square$ E A A K T A $\square$ P

H LQRA $\square$ QA $\square$ DNQFGEGVGLT LLP
K $\square$ A A A R $\square$ ATA

QGKD LS DY $\square$ QAEKS GFGRGGML

QF GRGAGDALFP

KDD $\square$ KK K KA QF GNGAGD $\begin{array}{r}K \square S M A \\ A L Y T\end{array}$
TQVIREVEQGKDLSDYDQTEKSGFGRGGML RKNEDAKLLTKVNEDTPEDEAA

RD L S E Y $\square$ QD TKSNFGRGGM
$\square R K L V D D M E A L G T S A M Q$
K K D M $\square$ RS $\square$ A D QF GKGAGTVLVP
Q GK D LS N Y $\square$ Q T S K S S F GRGGML

$G G \square K S K L L A$
AKTADD
lupas 21
lupas_14
lupas_28
jnet
jnet
sol25
sol5
sol0
jhmm
jhmm
jpssm


UniRef90 E1QNH7 UniRef90-F4G245 UniRef90-U4L986 UniRef90-R9SK94 UniRef90_N1PD08 UniRef90_UPIO0036B0F65 UniRef90 F3PX45 UniRef90-B0XW54 UniRef90_K6DK88 UniRef90 UPI0003778AC3 UniRef90 R4W8F8 UniRef90-UPIO0035D231B UniRef90-W9Y7T0 UniRef90 ${ }^{-}$X0ZGH2 UniRef90-B7GJH2 UniRef90_B1X3P3 UniRef90-FOS1S0 UniRef90 UPI0003B67FAD UniRef90_Q8TZ08 UniRef90-Q4QM08 UniRef90 UPI00035CC04O UniRef90- M9SC41 UniRef90-E5WM18 UniRef90_UPI0002628D33 UniRef90 F0R2A7 UniRef90-C5G848 UniRef90-Q5CTN5 UniRef90-Q64C00 UniRef90-D5GBG1 UniRef90-B4SG69 UniRef90_10JJ38 UniRef90 D3E4A1 UniRef90-Q5WH53 UniRef90-W3X3Q5 UniRef90_A6KXU9 UniRef90-W9B8V4 UniRef90_UPI000477ADD3 UniRef90-S2JUG4 UniRef90 D1PZS4 UniRef90-R7ZPW8 UniRef90-M4YUN2 UniRef90-F6BF51 UniRef90 UPI000372A782 UniRef90-K4MPW4 UniRef90-J3NJG8 UniRef90 Q5LI23 UniRef90-D5E6Q0 UniRef90-EOTE16 UniRef90-A6USA4 UniRef90 X6LC15 UniRef90_UPI0004729FDF UniRef90_UPI00047E81C2 UniRef90-R5EUP7


 TRFVPHTNP $\square R \mathrm{D}$ $T K S G V P V F \square C S S K K D V A L L Q A V Q N R G T L F L A A D T H A M N Q$ TKTSIIIANGKRDNILVDI IKNEDVPYTRFIPSSEPVSSV

$K \square Q V D R A D A S E R S D E G Q L A A V V P Q Y G T \square A M Q R$ $R V V L A H G R E E R V L P R \| L Q G E E V G T V F G A R R R L K N$
QTKT $\square V M N K V S S \square D A M Y E \square I \quad V D G Y \square V G R \square R F D \square P K R G Y T$ SGVRVRLADGRDPTVLDALFKGEARGTVFEPNSKLMGMQM K GIIPVIIAGGKEKDVI LDRILKGEK\GTFFMPAKKLKAKTY AKLLAAKIAAHGGAHLAIVGGKPDFARTHRGTVFPGA IIAA DVATRSGDET ITAPGNRPKFFWKEEGWEEPDR


VGTAFRAADCR L S A
 $E \square Y Q G E Y \square G T \square F A R Q A D T Q S M K N$ DDVTFRL STTGR】RQVLQGKERITTGRASDNDFTLG $\square T V H \square A N G R T P G D L L S L L E G E Q T G T K F L A P Q K A T H G P$ SGDSSFLGKAGTDNDVYDAVYHNARGTYFETAPETANLDQQ GK DN

GTNVFIGNGKGRETFTDVLLGKGDGTYLGPFTNKTMST TKEGTTVIIANGKKDHTLVDLLETVCTRFMPAEGRGVSSVV AKSKIEAVKDAMASG\|PSFLAVDNNGTYFEPQEDMEELNQ

TKTNTEG\KVVIANGKTNN』LINSKPQETLHTEFLPNPQV $\square E V L I A N G K R D D V L K G F A D G T L V C T Y F E P G K T R H N Q$ E LRRDVSGVFEENDAVYLQDLVDAYHFWKEDGDEEELRRI
 TKTN $\square$ AR K VADEG $\square T V I \square A N G K R D N \square L I N L I E H P P V S S \square$ DESSLVTLHDLKDAFVFWQENGDEEHLRR
 NDFEKLSVRRSKTSGR $\square R N V L L D K E V V F T V R A S D N F L I P A$
 $\square G V P V F \square G R N T G E G \square L E T \| V V G K G E G$



[^1]

## UniRef90 E1QNH7

 UniRef90-F4G245UniRef90-U4L986 UniRef90-A8FCC4 UniRef90_R9SK94 UniRef90-N1PDO8 UniRef90-UPIO0036BOF65
UniRef90-F3PX45 UniRef90 ${ }^{-}$BoxW54 UniRef90-K6DK88 UniRef90_UPI0003778AC3 UniRef90 R4W8F8 UniRef90-UPIoo035D231B UniRef90-W9Y7T0 UniRef90-X0ZGH2 UniRef90-B7GJH2 UniRef90-B1 $1 \times 3$ P3 UniRef90-FOS1S0 UniRef90 UPI0003B67FAD UniRef90-Q8TZ08 UniRef90-Q4QMO8 UniRef90_UPIOOO35CC04C UniRef90-M9SC41 UniRef90-E5WM18 UniRef90-UPIO002628D33
UniRef90 FOR2A7 UniRef90-C5G848 UniReffo-O5CTN5 Une 90 - 64 UniRet90_DGGBG1
UniRef90-10JJ38 UniRef90 D3E4A1 UniRef90-Q5WH53 UniRef90-W3X305 UniRef90 W9B8V4 UniRef90-UPIO00477ADD3 UniRef90_S2JUG4 UniRef90 D1PZS4 UniRef90-R7ZPW8 UniRef90-M4YUN2 UniRef90_F6BF5 UniRef90 UPI000372A782 UniRef90-K4MPW4 UniRef9-J3NJGZ UR UniRef90DEE6Q0 UniRef90-A6USA4 UniRef90 X6LC15 UniRef90_UPIO004729FDF UniRef90-UP1000047E81C2 UniRef90-R5EUP7


[^2]


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[^1]:    lupas_21
    lupas_14
    lupas 28
    jnet
    conf
    sol25
    sol5
    sol5
    jhmm
    jpssm

[^2]:    lupas_21
    lupas_14
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    cont
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    jhmm
    jpssm

