

QUERY
UniRef90_Q4KD17
UniRef90-Q02HIO
UniRef90 UPI0003767C86
UniRef90-H8Z867
UniRef90-W0DF21
UniRef90- X5JW85
UniRef90-D3SNV5
UniRef90_UPI00047BAA97
UniRef90 UPI0002E5AE8B UniRef90-F7USL4
UniRef90-K9R7S6
UniRef90_IODTN2
UniRef90-Q7NIZ8
UniRef90-B5YH76
UniRef90_UPIO0034690A3
UniRef90_A6GMR3
UniRef90_Q4C6Z0
UniRef90-K9S3H7
UniRef90 UPI00034D4AE1
UniRef90-Q5NNN9
UniRef90-UPI000368921C
UniRef90-F5UNV3
UniRef90-R7IAE6
UniRef90_U7DIL2
UniRef90-A0A031GKT8
UniRef90 A6Q217
UniRef90-W9GY51
UniRef90-UPI0003B3DA7C
UniRef90_UPI00047D535E
UniRef90-UPI00036A2A1D
UniRef90-D5WV29
UniRef90_D1C745
UniRef90_UPI00047EEB4D
UniRef90_UPI00047B296C
UniRef90- Q1IMC4
UniRef90- D3PBC0
UniRef90_UPIO0036580B3
UniRef90-UPI0001D2E048
UniRef90 B2FIF2
UniRef90_C9YA93
UniRef90-A0A038GZ61
UniRef90-UPI0003
UniRef90-A0A059KR62
UniRef90-F8ABT9
UniRef90-13Y7P0
UniRef90-DOJ246
UniRef90-K9PEU8
UniRef90-U1X7M4
UniRef90-H0A4Q7
UniRef90-S7UVB9
UniRef90 UPI00047DBC7A
UniRef90-F1W4S9
UniRef90-W3RLY5
UniRef90 M7D2M9
UniRef90_UPI00036D11D7
UniRef90_R7UZS5
UniRef90_H1XRY5
UniRef90-DOL1P7
UniRef90-W0Q5L5 UniRef90_Q8YNJ0
UniRef90-D7A018
UniRef90-UPI0003798FE7
UniRef90-UPIO0036D4E16
UniRef90-B3QD93
UniRef90-Q3KBE4
UniRef90_X7YJF9
UniRef90_Q39ML8
UniRef90-F4QMY8
UniRef90 Q7U3C5
UniRef90-B5H5K5
UniRef90_UPI00046CA38B
UniRef90-I3Y7N4
UniRef90_I4XVK8
UniRef90_UPIO004679D7E
UniRef90_S3ZAX3
UniRet90_K9V478
UniRef90 C3X855
UniRef90-M4NLX4
UniRef90_A0A021W168
UniRef90 C9NVK7

UniRef90_Q2JHD8


QUERY
UniRef90_Q4KD17 UniRef90-Q02HIO UniRef90-Q2JMI7 UniRef90_UPI0003767C86 UniRef90-H8Z867
UniRef90-W0DF21 UniRef90-L8N0X7 UniRef90-X5JW85 UniRef90-D3SNV5 UniRef90_UPI00047BAA97 UniRef90_UPI0002E5AE8B UniRef90-F7USL4
UniRef90-K9R7S6
UniRef90-IODTN2
UniRef90_Q7NIZ8 UniRef90-B5YH76 UniRef90_UPIO0034690A3 UniRef90_A6GMR3 UniRef90_Q4C6Z0 UniRef90-K9S3H7 UniRef90-E0UFA1 UniRef90_UPIO0034D4AE1 UniRef90-Q5NNN9 UniRef90-UPIOO0368921C
UniRef90-F5UNV3 UniRef90-R7IAE6 UniRef90_U7DIL2 UniRef90_A0A031GKT8 UniRef90_A6Q217 UniRef90_W9GY51 UniRef90_UPI0003B3DA7C UniRef90_UPI00047D535E UniRef90_UPI00036A2A1D UniRef90-D5WV29 UniRef90_D1C745 UniRef90 FOS449 UniRef90_UPI00047EEB4D UniRef90_UPI00047B296C UniRef90-Q1IMC4 UniRef90-D3PBC0 UniRef90_UPIO0036580B3 UniRef90_UPI0001D2E048 UniRef90-B2FIF2
UniRef90_C9YA93
UniRef90_A0A038GZ61 UniRef90-I5CFN9 UniRef90_ILCFN9 UniRef90-F8ABT9 UniRef90-13Y7P0 UniRef90-D0J246 UniRef90_K9PEU8 UniRef90-U1X7M4 UniRef90-H0A4Q7 UniRef90-S7UVB9 UniRef90_UPI00047DBC7A UniRef90-F1W4S9
UniRef90-W3RLY5 UniRef90-A9W942 UniRef90_M7D2M9
UniRef90_UP100036D11D7 UniRef90-R7UZS5 UniRef90_H1XRY5 UniRet90-DL1P7 UniRef90-Q8YNJ0 UniRef90_D7A018 UniRef90_UPI0003798FE7 UniRef90-UPIO0036D4E16 UniRef90_UPIO002E070CE UniRef90-B3QD93
UniRef90 Q3KBE4 UniRef90-X7YJF9 UniRef90-Q39ML8 UniRef90_F4QMY8 UniRef90_Q7U3C5 UniRef90_UPI00046CA38B UniRef90-I3Y7N4 UniRef90-14XVK8 UniRef90_Q3SVB8
UniRef90_UPIO004679D7E UniRef90-S3ZAX3 UniRef90_K9V478 UniRef90_C3X855 UniRef90-M4NLX4 UniRef90-A0A021W168 UniRef90_C9NVK7 UniRef90_UPIO00479FD95

90 100 110
WGKLI QVPSVGTSVA TPFNKSGSAAVDLSVQELCGVFSG AWGKLI QVPSVATSVAVPFNKAGSTAVDLSVNDLCGVFSG A WGPLI QVPSVATSVVALPFNKSGSNAVNFDVNTLCGVFSG $P K G M \downarrow V S V P M V G G A L V A A Y N D P G V P E I R L S R L A L A N I F D G$ QDKGVLMLPMTAGSIVLAYNLPVVDQLKLPREVYTDIFLG

 ASKGVLI ASKGVVPMSAGSVVLAYNLPGINELNLTREVYVDIMLG ERGQLLQFPTVIGAVVVTYNVPGKRVLNLDSKAVCDIYLG ERGQPIQPMTGGALVFAYNLPGVDNLRLSRQAYCGIVQG GEVVMLPMAGTVLAYLPGVEQLQLPRAVY D G $V L L L P M T G G S V V F A Y N L P G V E G L K L C R A V Y T D V L L G$ LFQFPTVIGGVVLAVNVKGLQQLTLDGTTLGDGYGG ADRGVVLLPMTAGSVVLIYNVPGPENLKLSRAVYSDMFLG
 $L M Q F P T V 1 G G G V V P V V N L Q G P G Q M K L S A E V L A N V Y L N$
 VLTLPMTAGAIVLA YNIPGVQELKKLSRDTYVGIVLGG VLLLPVTAGSIVFAYNLPGVEGLKLSRETYVGIALG

NKGGLTQFPTVMGGVVPVINVQGUKPLKLTPTLLADIFLG ADKGVILLPMTAGSIVMGYNLPDTEPLKLPRDVYADIFAG $L V Q F P A V I G G A V P V V H I A G V K Q L R L T G P V L A D I Y L G$ A GGLGQFPSVIGGIVPVMNIEGPGQLKLDGETLAKIFLG LMQFPAIMGGVVTIVNLDGPGQLKMTGKVVADIVGG RKRLYQFPAVIGSIVLAYNI PGDMQLKLENRDVADIFLG
 RRRLYQFPAVIGSIVVVYNLPGDRKLKLSNRAVADIFMG ASNLVQWPMVMGGIVPVVNIDGIAPLVLDGPMLAKI FLG
 KRKLYQFPAII GSIVVVYNLPGDTELKLSNRAVCDLFMG

 LYQFPAIIGGVVPVVNIKGLKEFKDTKGILANI FLG
 LAQFPSAIGGVVPVVNIEGLEKLRLSGALLADI FLGG MQFPTVLGGVVPVINVKGI EPLKLNGQVLGDI YLG

 LMQFPTVI GGVVPVVNIKGIQQIKLTGQLLGDIVGG
 GGIVQLPMTAGAVVIAYNLPGVDALKLSREAIAGIFLG
 $K N G L V Q F P T V M G G I V P V A N L D G I K P I V L D G P T I A K I Y L G$ A G GNVLH HPVTLGGVAIAYNLEGVKDLKLTPANIADIYSG NNLLQFPATMGSVVAIVNIPGNNRLRLTGELLADI YMG $K Q G L V Q W P Q M M G G V V P V V N I K G V K P I R L S G K V L A D I Y L G$ $\square V Q F P T V I G G V V P V V N I K G P G Q L R L T G A V L A D I Y L G$ LVQFPVIMGGVVPIVNLEGPGQMKMTGDVVAGIYLG $L V Q W P Q V M G A I V P V V N L D G V K P L V L S G Q V L A D V Y L G$ LQWP I MGGIVPVANVPGI KPLAVDGELAA A

 (VAGGLAYNLPGVTELNLPRVVYTDILLG KNSLLQFPTVIGSVVAIVNLGEDIPLTLNGAVLAEMYQG LFQFPTVIGGVVLAVNIPGLKELVLDGKTLGDIY LG
 LVQWPMVMGAIVPVVNLEGVKPMVLDGETLANI YI G

 $K N G L Y Q F P T V M G G V V P V I N V T G P G Q L K L N G A V L G D I F L G$ VL Q KGGQGINLPMVGGPVAI GYNLEGVDNLVLDSATIAKIFDS
 TFGPLIQ LAQWPMVMGAIVPVVNI EGVKPLVLSGELLGDIYLG

 A GVVPIVNLPGVKA
 D Q 1 KLD GATLAD A LGQFPSA GGVVPVVNVDG 1 EKLRLTGPLLADI FLG


UniRef90_Q4KD17
UniRef90-Q02HIO UniRef90 UPI0003767C86 UniRef90-H8Z867 UniRef90-W0DF21 UniRef90_L8N0X7 UniRef90_X5JW85
UniRef90 D3SNV5 UniRef90-UPI00047BAA97 UniRef90 UPI0002E5AE8 UniRef90_F7USL4
UniRef90-K9R7S6 UniRef90_10DTN2 UniRef90_B5YH76 UniRef90_UPI00034690A3 UniRef90_A6GMR3 UniRef90_Q4C6Z0 UniRef90_K9S3H7 UniRef90_E0UFA1 UniRef90-UPI00034D4AE1 UniRef90_Q5NNN9 UniRef90_UPI000368921C UniRef90_F5UNV3 UniRef90_R7IAE6 UniRef90_U7DIL2 UniRef90_A0A031GKT8 UniRef90 A6Q2I7 UniRef90_W9GY51 UniRef90_UPI0003B3DA7C UniRef90_UPI00047D535E UniRef90_UPI00036A2A1L UniRef90_D5WV29
UniRef90_D1C745
UniRef90_F0S449 UniRef90_UPI00047EEB4D UniRef90_UPI00047B296C UniRef90_Q1IMC4 UniRef90-D3PBC0 UniRef90_UPIO0036580B3 UniRef90_UPI0001D2E048 UniRef90_B2FIF2
UniRef90_C9YA93
UniRef90_A0A038GZ61 UniRef90-I5CFN9 UniRef90_A0A059KR62 UniRef90_F8ABT9 UniRef90_I3Y7P0 UniRef90_D0J246 UniRef90_K9PEU8 UniRef90_F8JBE0 UniRef90_U1X7M4
UniRef90 H0A4Q7 UniRef90-S7UVB9 UniRef90_UPI00047DBC7A UniRef90_F1W4S9 UniRef90_W3RLY5
UniRef90-A9W942 UniRef90_M7D2M9 UniRef90_UPI00036D11D7 UniRef90-R7UZS5 UniRef90-H1XRY5 UniRef90_D0L1P7 UniRef90-W0Q5L5 UniRef90_Q8YNJ0 UniRef90_D7A0I8 UniRef90_UPI0003798FE7 UniRef90_UPI00036D4E16 UniRef90_B3QD93 UniRef90_Q3KBE4 UniRef90-X7YJF9 UniRef90_Q39ML8 UniRef90_F4QMY8
UniRef90_Q7U3C5 UniRef90-B5H5K5 UniRef90_UPI00046CA38B UniRef90_I3Y7N4 UniRef90-I4XVK8 UniRef90_UPI0004679D7E UniRef90_S3ZAX3 UniRef90_K9V478 UniRef90_C3X855
UniRef90_M4NLX4 UniRef90_A0A021W168 UniRef90_C9NVK7 UniRef90_UPI000479FD95
UniRef90_UPIOO04
UniRef90_Q2JJHD8
$R \prod N T W D G \square S G S G R T G P \square V V V Y R S E S S G T T E L F T R F L N A K C$
 $K$ I K N WN DPLLAA GPNLPP KI K S WNDPKI A A PNQPI AVVHRSDGSGTTAVFTKHLSTIS

 K $\operatorname{I}$ K K W W N H P G V



NITKWN DP D A P N QP

| $K$ | $T$ | $K$ | $W N$ |
| :--- | :--- | :--- | :--- |
| $K$ | $D$ | $A$ | $A$ |
| $N$ | $N$ | $G$ | $V$ |
| $N$ | $L$ | $P$ |  |
| $K$ | $T$ | $K$ | $W N$ |

K I K N WN DPKI A AP D LAA




KI K K WN D P G V T L L P D Q A

| $K$ | $T$ | $N$ | $W$ | $N$ | $D$ | $P$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | $A$ | $A$ | $A$ | $A$ | $N$ | $P$ | $A$ |
| $K$ |  | $K$ | $M$ | $W$ | $N$ | $D$ | $P$ |
| $G$ | $L$ | $K$ | $L$ | $P$ | $A$ | $S$ | $P$ |


 K I QF WD DPGVKGPHKK V VVVHRSDGS GTTFNFTYYLS GVS T I E T W D D P A I K A P D L A I API Y R A D G S GTN F L
 K I N N W S D P G V K LTP N T D I I V A H R S D G S G T T Y $\quad$ DF T D




 K I T K WN D P GV K LP DAKI | $K$ | $I$ | $T$ | $K$ | $W$ | $N$ | $A$ | $P$ | $G$ | $V$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $L$ | $P$ | $D$ | $A$ | $D$ |  |  |  |  |  |
| $E$ | $A$ | $R$ | $W$ | $D$ | $D$ | $A$ | $A$ | $I$ | $A$ | $A$ |
| $L$ | $N$ | $P$ | $P$ |  |  |  |  |  |  |  | KVKTWNDPAI K LDPDGK K V A K WN D P A I KAP D A P I KI K K WS DPAI A LPD DANI AQVRRADGSGTTF DFTNYLSKVN K I T H H W N D E K I K L

 | $K$ | $I$ | $T$ | $K$ | $W$ | $N$ | $D$ | $P$ | $G$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $P$ | $L$ | $P$ | $D$ | $A$ | $A$ | $S$ |  |  |

K

R
R
K
K I S K WN D P AI A L P D A A I


KVKK WNDPQI A APDTDI FPVHRSDGSGTSHIFTTYLNKAA


KI T R WT DPA I A L P D A A I A PVVRRAD GS GTT F DF TN Y L S K V S

KI TK W D D A A I P SVVNLPATVVRRSDGS GTTFNFTDY LAAKAS





| $K$ | $I$ | $T$ | $K$ | $W$ | $N$ | $D$ | $P$ | $G$ | $K$ | $K$ | $L$ | $P$ | $N$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |







K I T K WND PAIT A L N P K
K I TK WNDPANPGVNLP I
K I K N F S E L G CA D Q KL


| $R$ | $R$ | $T$ | $W$ | $D$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- |

K V T K WD D PA I K LLP S A S I


K I K S WD D A A I A LP K Q A I

| $K$ | $I$ | $T$ | $W$ | $W$ | $D$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $G$ | $S$ | $L$ | $P$ | $G$ | $S$ |
| $A$ | $A$ |  |  |  |  |  |
| $K$ | $T$ | $N$ | $W N$ | $D$ | $P$ | $K$ |
|  | $A$ | $A$ | $L$ | $N$ | $G$ | $K$ |


$\begin{array}{lllllll}T & V & V & R & R & S \\ R & V & V & Y & R & N \\ H & V & V & F & R & G\end{array}$
$H V V V F R B$

TVVVRRSDGS GTTYNF TKKHLL S M A I S


TE DIF T T HLLKA K K



QUERY
UniRef90_Q4KD17
UniRef90-QO2H1O
UniRef90 UPIOOO3767C86
UniRef90-H8Z867
UniRef90-WODF21
UniRef90-L8NOX7
UniRef90-X5JW85
UniRef90-D3SNV5
UniRef90-UPIO0047BAA97
UniRef90-UPI0002E5AE8B
UniRef90-F7USL4
UniRef90-K9R7S6
UniRef90_10DTN2
UniRef90_O7NIZ8
UniRef90-B5YH766
UniRef90-UPIOO034690A3
UniRef90_A6GMR3
UniRef90_O4C6Z
UniRef90-K9S3H7
UniRef90 UPIO0034D4AE
UniRef90-O5NNN9
UniRef90_UPIo00368921C
UniRef90-F5UNV3
UniRef90-R7IAE6
UniRef90-U7DIL2
UniRef90-A0A031GKT8
UniRef90-A6Q217
UniRef90_W9GY51
UniRef90-UPI0003B3DA7C
UniRet90_UPIO0047D535E
UniRef90-UPIo0036A2A1D
UniRef90-D5WV29
UniRef90_D1C745
UniRef90_FOS449
UniRef90-UP100047EEB4D
UniRef90-UPI00047B296C
UniRef90-Q1IMC4
UniRef90-D3PBC0
UniRef90-UPIO0036580B3
UniRef90-UPI0001D2E048
UniRef90-B2FIF2
UniRef90_C9YA93
UniRef90-A0A038GZ61 UniRef90- I5CFN9 UniRef90-15CFN9
UniRef90-AOAO59KR62 UniRef90-F8ABT9 UniRef90-13Y7P0 UniRef90-DOJ246
UniRefofo-K9PEU8
UniRef90-U1X7M4
UniRef90-HOA4Q7
UniRef90-S7UVB9
UniRef90_UP100047DBC7A
UniRef90-F1W4S9
UniRef90 W3RLY5
UniRef90 A9W942
UniRef90-M7D2M9
UniRef90-UPIO0036D11D7
UniRef90-R7UZS5
UniRef90-H1XRY5
UniRef90-DOL1P7
UniRef90-W005L5
UniRef90-D7AOI8
UniRef90-UPIO003798FE7
UniRef90-UPIIOOO36D4E16 UniRef90-B3QD93
UniRef90-Q3KBE4
UniRef90 X7YJF9
UniRef90 O39ML8 8
UniRef90-F4QMY8
UniRef90
Q7U3C5
UniRef90-B5H5K5
UniRef90-UPIO0046CA38B
UniRef90 - $13 \mathrm{YYN4}$
UniRef90
UXVVK
UniRef90-14XVK8
UniRef90_UPIO004679D7E
UniRefolo-s3ZAX3
UniRef90-K9V478
UniRef90-C3X855
UniRef90-A0A021 W168
UniRef90-C9NVK7 UniRef90-UPIIOO479FD95
UniRefoloryps
UniRef90_Q2JHD8

NAETGNFAVTTTFGTSFSGGDPAGAVAATGSQGVMTADAA AETGTFAVTTNFASSYSGGLPAGAVAAVTSQGVMDALNA SSEGGTFAITTSFGSSFSGGLPAGAVSAQGSQAVMNALNA
P
PE EKK
P WKSKVGDGKTVNWPVG VGARGNEGVSEQLKQ WKEKVGFGTSVKWPTG FVGAPKNDGVAAMIKQ
A E WKAGPG WKSSVGS WQAG WKEKVGA WK SKVGA AK SVVSWPTG
P $\stackrel{P}{P}$ FKET $\square$

SSWKNDПG WKTKVG
PK EWADQ $\square G$ WKTKVG AGSTVNWPKNN

P WKEKVGD
AD WEAS $\square G Q$
PNWEAS
$\qquad$ Y G
G
G
G
G
G
G
TS
AVNPTG
SVNWTG
AVWPAG
AVWPGG GGKGNEGVTAGI QQ

DNWKSKIGAGTVGGKSVEWPVG FIGGKNEGVTASIQQ PEWNTQGAGKTVQWPKTGK AFIGAKGNEGITASIQQ PEWNTQIGQGTSVQWGRQG
A E WTSRVGASDAVQWPAG
WKSKVGNEASVQWPTG
PDWKSSVG DGKTVQWPTTG
AD WKSKVGAGKAVKWPVG
DGWKSK ${ }^{\text {GF }}$
WKSKVGAGKAVKK WPVVG
PEFKSKUGAGSAVKWAVGV
EEWANN GAGSAVGTGKAVDWPVG
PEF
P A
$K E Q V G S N T S V Q W P A G$
$W K S R I G Y G K V V R W P T G$ WKNSVGRNTAVAWPKG ADWKAK VGENTSVEWPAG ADWKAK P W A M
EEWASQ
$\stackrel{P}{P}$
P A
K D
DLQVAG
WKDKVGSGTAVQWPVG KGTAVKWPVG DEFKAKDGWKNKVGTGKSVNWPVG LGGRGNEGVTAI QQ A KWKETVGENVAVDWPLGM PE WKSKVGEGTSVQWPDGMGAKGNEGVANNVAT AE WKSKVGEGTAVNWPVGA GGKGNGVASYVKQ AD WKSKVGEGTSVAWPTGA
$\qquad$ WKSKVGEGTSVAWPTG SDWKDKVG WKSTVKWPTSASGAAG
AEWKAKAG WKSKVG
$\qquad$ GGKGNEGVAAFVAR KGNEGVSDYVGR EGTAVNWPTGA GGKGNDGVAFVQR KE WCEKVGHGKTVKWPVGM GGKGNPGVAAYIKK PDFAQSVGVDMNPEWPQALKERGGLVRGLGNGGVAAFIQA AE WKEKVGEGKAVNWPTGA GGKGNEGVAAFVGR GYFKGR】GANTAPSWTLP PEF KENVGSNTSVQFPVG
ADKWPKEKV
QEFQSK 1 GV
PE
PDWKAK
NADWKTTVAGTAV DE WKSKVGSNTAVEWPVG VGAKGNEGVAGNVQQ EPWKKEFG EA WKSEVGEGKTVNWMSGNLGGKGNEGVASYTGR PEWKQKIGANTVGELNWVG VGGKGNEGVAAYVQR ETWKNEVGTNTDTTWPKA ATTIGANGNAGVANFVRR WKEKVGFGKAVAWPASSVAGKGNEGVASFVKN PE WKEKVGEGKTVNWSKGNLGGKGNEGVASYTDR P
S
P
P
A WKEKVGEGKTVNWSKGNLGGKGNEGVASYTDR WKSTVGEGKAVKWPKGH GGKGNEGIAAYVRQ WKSNVGAATSVQWPAGA GAKGNEGVAGTVKN
NEEWKSKIGAGSTVNWPTG LGGKGNDGIAAFVQR
 WKTKVGAGTAVEWPVG VGAKGNEGVAGNVG ADKFATNSTKASARLPAGSTLPTTWVGAKGTEGVAGNVGQ NGTWGNGAGKKFN GGVGEGASGSDGVAAAVDS

NGTWKSKVGEGTTVNWPTGTGGKGNDGVAAFVQR AEWSSKVGASD AVNWPG DGGKGNDGVAAFVKQ E WKNGPGAAKSIKWPTG VGSKGNEGVAAQLNQ PADWKHDPKSKSW LDAGGQAANGSSGVAAQVKQ PAWNKEVGF GKVVNWPTGK GAKGNQGVTNYIKQ
 PASSNSFSTAVGFNPATNAPAGSTYVGVSGSGAIASTVAN G AE WKAK PSAWPYETGKSWE PE WKSKVGDGKTVNWPTG VGAKGNEGVTAQITQ

P D F
PEWASK
PEWKAK PEWHEQTG P E PE
PNWTAG



K A A ${ }^{\text {L }}$ A
SKTLEAVT
QAALASAEFPSGD $\quad \square P G Y E G T P D L R V W V$
QEAARNARWDKSK
HFYEVLTT
KADPESGSKSLAVIELPANLIAFEPD
K P T DESASKTLSVVTLPENLRAF $\square$ T D
QAAAAGAKWDPSK
A $L A \square E N A$
ESASKTLEATTLPANLRAFEPD

SAAAKKVDWSKSFA

| R A F | I | T |
| :--- | :--- | :--- |
| Q | E |  |

$\square \mathrm{L}$ T L E N S A A A $\square$ A SVE V P P N $\square$ R A F $\square$ A D
ANAAASAH
KAAAAGAAW
KAAAAGASW
SASAT LDADT LDPENDRAF $\square$ TD
AKATEGA
A A T L A S VT
TNALANV.
KAASASADWTHAA
KAAAASADWAATPGFAVVLTDQA
S QALDATV
PMPENLRAF!E
QAAADTADWANAK
KAAAASAPWTQTPGFGVVLTDQA
KAAAAHAKWGPK
QAAAAGADWTRNP
KAAAAHAKWS乌GTHFYTEG
TEAAASVKQMPAD
DAFAAAASNAKWNSVKGMGVSLA

QAAAANADWANAPGFYQlLTDQ
LETTTAAAAGAASSMPDD $\square R$ VS $\square V$

KAAASHANWNMKSHFYLEG
AAAASADWASAKDFH NVMT
TAAAATVKNMPAD
TAAAQGV
KAAAAFANWDKKK
KAAAANAEWTKTPGFGVVLTDQA
RAAADNADWAHAPGFFRLLTDQ
ET F A A A A ASAD WASAKDFNLVIT
KAAAAGADWTKT
QAAAATADWSKAQ
A A A ANVDWNKAKGFSLVLTNQPS
KAAAAGADWSKS
KAAAAGADWSKS
SAAA
RAADESFRA
KAAAAGADWAKS
APSLESANAADATVKFPD
QAAASNADWASAP
TAAAQG
QAAASNADWSAPNFAAN
SFQAAAANADWLHTPGMH
APEDKAFKAAAA GADWARSFYQ
KAAAAGAEWAKTPGFGVVLTNQA
QAAAANADWAKAPGYYVILTDQ
QAAAASADWKSTPGFGITLTNQA
AAAAAGADWKGTP
G F R V V LT
QNAAAHVDFTKAKDFYVILTDQ
QAAAMNADWKNAP
QAAAANADWANAPGYYMVLTDQ
GAAAANADWSAAPAFRVVLTDQ
MAAASNAKWNEAE ROWPENLDRAVVP
ESASQTLAA $\square Q \square P E N \square R A F V P D$
MAAASAADWAHAKNFAA
SNAAKGADWSKTFA
SPS L LAETNKA EAS S L K LPD
AAFQAAAANADWAKAPGYYLI LTT
QPTTANVS LAA LGSATLPATAPSNPAQWVPV
$A$ A $\square P E S V G K T U S A A W F T K K G N D G A L D$
KAAAAGANWSKS
DSFAAAAASADWANAP
STALDDS $\square \mathrm{D} \square \mathrm{GPDLI}$
DSFAAAAASADWANAPGNYVLL $\underset{G}{L}$
EATSENASKADAAAKVT GTGKDLA
ENAAKQANWSLKTSFY
QAALASA
$\square \mathrm{L} T \mathrm{EV} \mathrm{N}$ VQ $\square \mathrm{T} \square \mathrm{DT}$ T $\square \mathrm{P} P$

QAAAANADWASAPGYHVILTDQ

KAAAAGADWNKS
EPVEATVDNASKA $\square$ SEAKTVGKGKD■

K QAAAKAPWSKTPGYGVILTNQS
DAFAAAAATADWASAKDFNLIMT
QAAASTADWASAK
MPTMENFQSAAANADWDNAPG
T A A $\square$ N AF TS Q $\square A Q D P R T P \square V N P P$
TSAlL



QUERY
UniRef90_Q4KD17
UniRef90-Q02HIO
UniRef90-Q2JM17
UniRef90 UPI0003767C86
UniRef90-H8Z867
UniRef90-WODF21
UniRef90 L8N0X7
UniRef90- X5JW85
UniRef90-D3SNV5
UniRef90-UPI00047BAA97
UniRef90 UPI0002E5AE8B
UniRef90-F7USL4
UniRef90-K9R7S6
UniRef90-I0DTN2
UniRef90- Q7NIZ8
UniRef90-B5YH76
UniRef90-UPI00034690A3
UniRef90 A6GMR3
UniRef90-Q4C6Z0
UniRef90-K9S3H7
UniRef90 EOUFA1
UniRef90-UPI00034D4AE1
UniRef90-Q5NNN9
UniRef90-UPI000368921C
UniRef90 F5UNV3
UniRef90-R7IAE6
UniRef90_U7DIL2
UniRef90 A0A031GKT8
UniRef90- A6Q217
UniRef90-W9GY51
UniRef90-UPI0003B3DA7C
UniRef90 UPI00047D535E UniRef90_UPI00036A2A1D
UniRef90_D5WV29
UniRef90 D1C745
UniRef90 FOS44s
UniRef90_UPI00047EEB4D
UniRef90_UPI00047B296C
UniRef90_Q1IMC4
UniRef90- D3PBC0
UniRef90_UPIO0036580B3
UniRef90 UPIO001D2E048
UniRef90 B2FIF2
UniRef90_C9YA93
UniRef90-A0A038GZ61
UniRef90 UPI00038036E7
UniRef90-I5CFN9
UniRef90_A0A059KR62
UniRef90-F8ABT9
UniRef90 I3Y7P0
UniRef90-D0J246
UniRef90_K9PEU8
UniRef90_F8JBE0
UniRef90 U1X7M4
UniRef90-H0A4Q7
UniRef90-S7UVB9
UniRef90 UPI00047DBC7A
UniRef90-F1W4S9
UniRef90-W3RLY5
UniRef90_A9W942
UniRef90_M7D2M9
UniRef90_UPI00036D11D7
UniRef90-R7UZS5
UniRef90-H1XRY5
UniRef90-D0L1P7
UniRef90-W0Q5L5
UniRef90-Q8YNJ0
UniRef90_D7A018
UniRef90-UPI0003798FE7
UniRef90-UPI00036D4E16
UniRef90 UPI0002E070CE
UniRef90-B3QD93
UniRef90-Q3KBE4
UniRef90 ${ }^{-}$X7YJF9
UniRef90 Q39ML8
UniRef90-F4QMY8
UniRef90-Q7U3C5
UniRef90-B5H5K5
UniRef90-UPI00046CA38B
UniRef90-I3Y7N4
UniRef90-14XVK8
UniRef90 Q3SVB8
UniRef90_UPI0004679D7E
UniRef90-S3ZAX3
UniRef90_K9V478
UniRef90- С3X855
UniRef90-M4NLX4
UniRef90-A0A021W168
UniRef90 C9NVK7
UniRef90_UPI000479FD95
UniRef90_Q2JHD8

TNVCNGTGRPLLEAA
ASVCNAI GRPL
SNVCNGUGRPL
S S

S N

DS QGKPLF

A D G K P L V K

ADLKGSDGKPLL MTAQGRPLL

ENLKDAEGKPLVR
GE $\square K$ D G A G K P $\square$

K V K D S A G K P V
VT Y N GK P L L

D G Q P VLK
$\mathrm{G} \square \mathrm{KGKDGKPDF}$
$\mathrm{K} \square \mathrm{S} \nabla \mathrm{V}$ G S G

AS VCNADGRPL
AK VK D A S G K P V
$T N \nabla C N G \square G R P$
UniRef90_G4FKX0
UniRefo-DUYYG1
UniRefo-UPIOO4CEF55 UniRef90-K9UF05 UniRef90_UPI0003777F3E UniRef90-I4ED71 UniRef90-X8C880 UniRef90-K9Ul11 UniRef90-B5IIU3 UniReffo-A9H9X2 UniRef90-B9JXR5
UniRef9O-A1WHF4 UniRef90-QOBTP4 UniRef90-D4ZXM5 UniRef90-L8PDG0 UniRef90-Q118T4

UniRef90-UPIOOO: UniRef90-IOHIS4 UniRef90-C4RD00 UniRef90-Q9RYZ6 UniRef90-UPI0004792F8B UniRef90_C7JCL8 UniRef90-K9D7K9 UniRef90-DgSZF4 Unirefoto-OZSZ9L6 | UniRef90-VGJPN2 |
| :--- |
| UniRef90_B8ESB | UniRef90-W5WMU2 UniRet90-D7A8C0 UniRef90-E4TW65 UniRef90-W9G1A5 UniRef90-H2JYQ1 UniRef90-UPIO00376C7F1 UniRef90-UPIO004665835 UniRef90-D7B9B0 UniRef90-AORV36 UniRef90_UPIO0034939B3 UniRef90 UPIOOO382B7D4 UniRef90-F4HJ35 UniRef90-V5AFW1 UniRef90 UPIOOO36090F4 UniRef90-H5UN36

UniRef90 L LGW7 UniRef90-V5XFY4 UniRef90_D3Q241 UniRef90-TORH97 UniRef90-M3AY05 UniRef90-M4QRU1
UniRef90 C4K8E1 UniRef90_UPI00036E0A93 UniRef90 L7L135 UniRef90_UPIOOO37F8E48 UniRef90-Q9CBE5 UniRef90-D5CTT8 UniRef90_C5ZZU8 UniRef90-UPIO00237AB54 UniRef90-UPIO00372EEF4 UniRef90-H8G8T1 UniRef90_U7D4Z5
UniRef90-S9S2Y3
UniRef90-UPIOOO2FE5636
UniRef90_UPIOOO30EOE1F
UniRef90-C8PZ25
UniRef90- F5ZOJ4
UniRef90-B1 XVD7
UniRef90-UPIOOO47D1187
UniRef90-A3TPR6
UniRef90-G7GTM7
UniRef90-R5VD11
UniRef90-13TEW3
UniRef90_UPIo0039B2F14
UniRef90-H6ROH5
UniRef90-11XEY6
UniRef90-UPIO004707AE5
UniRef90-UPI00035D2248
UniRef90-D5P801
UniRef90-UPIOOO4662973
Unineftol-T2GQ20
UniRef90-S2XVT4
UniRef90_UTKVP1
UniRef90-Q47PE8
UniRef90-Q9YG566
UniRef90-UPIO0034BDB36
UniRef90-l2AIB7
UniRef90-K9EGS8
UniRef90 UPIOOO37F74E1
UniRef90-UP100029A4CB3
UniRef90-G4HSF7
UniRef90-B8L5U5
UniRet90_UPIOOO4705C07
UniRef9O_UPIo 0037804 Cl

1
10
20
30
TLISAAGASFPAAlVQRWFAPQGll QVVINYQSVGSGAGVRQF GAGATFPAPVYTKWAKETGNKINYQGIGSSGGVKQL N T VSLTGAGATFPYPIYSKWAKETGIGLNYQSIGSGGGIKQ VSLTGAGSTFVNPFFQYSKDHPNVRVNYQSUGSGGGLKQF QTCPGKSLAYNPTGSGAGREQF
WAN
 $\square S 1$ SGAGATFPAPIFQRWQVDPNVQVSYQSVGSGAGLEQY QLLADGSSAQKNAIDAWAACKDVQINYKAGGSGAGVTAF VVGGGATLPEPLYNGKGALAGIGFTYVGVGSGGGKTAF
SLTAQGSTAQKNAMDEWAQCSGAQIDYQGTGSGAGI EAF
T L N A Q G S S A QK NAMA E WQK CA GS TI NYEPS GS GA GI QAF
 SVTGAGSSFAAPVYEAWAADTGVNVNYQTVGSSAGQNQL TLNAQGSSAQKNAMAEWQKCAGTTLNYEPSGSGAGIQAF
 SLKSSGSTAQANAMSRFAECDGYNLDYTGNGSGAGINEF ELSGAGSTFAYP\|DWQWAQAYGT\|VGYQSVGSSAGVN KI NGAGATFPAPVYYDWAKATKTRVNYQAI GSGGGIKQ KVAGSGSTAQQNAMKHWNACPEVQLRYNPIGSGGGVAEF QL LA DGSSAQKNA DDA WVKNFGVQINYKGGGSGAGVTAF KL MAA GSSAQKNAMDLWAACTGVEVNYKSSSSGEGIVNF SLSGTGSAFAAPDYTRWAHEAKPSVNYQATGSGVGQKQ
SLIAAGATFPFPLIDLWRVEYNVNLNYQSIGSGGGIKQH RGAGSTFVSPVMAKWKAKTGNVVSYQAVGSGDGL
$\square$

SLSAQGSSAQKNAIEEAEKCQDAKI DYNMTSSGGAGM
TVTGEGSTAQQKAMEHFSQNGGVILDYTGSGSGDGUKKF
S TA EGSTAQQNADADFQKCQGKNLSYNPTGSGAGREQF
KI NGAGASFPYADYSKWFDHSTDQFNYQPTGSGGGMEQF RLDGAGATFPAPLYQAWFQETGNQVNYQAVGSGSGVRQY NLTGAGATFPTSLYSKWAKKMGAKINYQGLGSSAGI KQL SLTAQGSTAQKNAMDEWAQCSGAKVDYQGTGSGAGVQAF TVSGEGSTAQQKAMEHFSQDSD\|VLDYTGSGSGDGIKKF TVNAAGSSAQKNADEEWSKCAGASLNYNANGSGAGI Q TLKASGSTAQANAMTRFRSCPGQTLNYTANGSGAGVSEF DVTGAGSTA $\square Y P$ VLS QWANTYGNSI NYQS $\square G S G G G I K M$ AGATFPKYQVQKWK【NPNVKIEYEGGGSGHGQDAF VSAEGSSAQKNAMDVFAKCQGQQLNYTKSGSGKGV QLLAAGSTAQKNAMDLWAACEGVEVNYQAMGSGGGLTKF VE SGAGASSQEAAQKAWQANPDVTVNYDP GSGGGREQF
VELAGAGASFPAPLMTAMADEYRVTVNYQSIGSGGGMRQF

$T V T$ GA GASFPATVFQD WDA A Y GVVTVN Y Q S V G S G T G V E QF VNIT GA GATFPQPVYSKWAKATGNQVNYQGIGSS GGIK Q
$\qquad$ A E GSTAQQNAIAVFKECAGKNLSYNPTGSGAGREQF
STTGAGSSAAAPVYRSWAKAYKAKVNEYDPVGSSGG|IK
TLNAEGSSAQKNAFEEVTACTGATINYNPTGSGAGUKQF VELTGAGATFPLDPFYMSFENYNAT SGDKISY $V V L N G G G S T L Q A P L V Q Y W A E E T G V Q V N Y Q G V G S G A G I S M F$
 T VGAGSSAQQAAMQGWSIQPEVTVNYDP: GS G G GREQF $\square S L S A A G S T F A G P F Y K T A F K Q T G V Q T S Y G L T G S G A G I R$ QLT GEGASSQQKAMDLFNQLYGAADSYNASGSGAGVKQF KLTAEGSTAQQNAMQVWGQCPGKSVAYNPTGSGAGREQF TIEGTGASFPYPVYKAWYNATGNKVNYSPTGSGTGDKE
$K L T A E G S T A Q E N A D T M F N Q C P G K G L A Y N P T G S G A G R E Q F$
$E L Q G E G A T S Q Q R A M D L F A E E T G S T L S Y N A S G S G S G Q T Q R$
ELVGDGASSQQNAMSYFQTHPDASLSYNASGSGAGVEAF
 N A GAGASSAQENAMRTWIAA YDAQUFYDA GGSGGGRNQF

SGSTAQQNVYAYVRACPGYTLDYDANGSGAGVTEF
T T N G S GAS SQVNAQQA WAKESGVTVNYESTGSGTGREQF
TLNAEGSSAQKNA IEEYEKCTDVTVNYNPTGSGAGIKQF LNASGASSQNNAMTDFANSYGKTLDYNSNGSGSGVKEF AQANAMTRFAACPGYTLNYTSSGSGAGVSEF VQGGGASLPAKLYKGSADSIPANFSYEVTGSGTGKQAF


60
70


UniRef90_G4FKX0 UniRef90_D3UYG1
UniRef90_UPI00046CEF55 UniRef90_K9UF05 UniRef90_UPI0003777F3E UniRef90_I4ED71 UniRef90-X8C880 UniRef90_K9Ul11 UniRef90_B5IIU3 UniRef90_A9H9X2 UniRef90_B9JXR5
UniRef90_A1WHF4 UniRef90_Q0BTP4 UniRef90-D4ZXM5 UniRef90_L8PDG0 UniRef90_Q1I8T4 UniRef90_UPI00034D77F4 UniRef90_IOHIS4 UniRef90_C4RD00 UniRef90_Q9RYZ6 UniRef90_UPI0004792F8B UniRef90_C7JCL8 UniRef90_K9D7K9 UniRef90_D9SZF4 UniRef90-Q3L9L6 UniRef90_V6JPN2
UniRef90_B8ESB9 UniRef90_W5WMU2 UniRef90_D7A8C0 UniRef90_E4TW65 UniRef90_W9G1A5
UniRef90 UniRef90_UPI000376C7F1 UniRef90_UPI0004665835 UniRef90_D7B9B0 UniRef90_A0RV36 UniRef90_UPI00034939B3 UniRef90_UPI000382B7D4 UniRef90-F4HJ35 UniRef90_V5AFW1 UniRef90_UPI00036090F4 UniRef90-H5UN36
UniRef90 L7LGW7 UniRef90_V5XFY4 UniRef90_D3Q241 UniRef90-TORH97 UniRef90-M3AY05 UniRef90-M4QRU1 UniRef90_UPI00036E0A93 UniRef90_L7L135 UniRef90-UPI00037F8E48 UniRef90-Q9CBE5 UniRef90_D5CTT8 UniRef90_C5ZZU8 UniRef90_UPIO00237AB54 UniRef90_UPIO00372EEF4 UniRef90_H8G8T1 UniRef90_U7D4Z5 UniRef90_S9S2Y3 UniRef90_UPI0002FE5636 UniRef90_UPI00030E0E1F UniRef90_C8PZ25 UniRef90_F5ZOJ4 UniRef90_UPI00047D1187 UniRef90_A3TPR6 UniRef90_G7GTM7 UniRef90_R5VD11 UniRef90_I3TEW3
UniRef90 UPI0003
UniRef90_H6RQH5
UniRef90 - I1XEY6
UniRef90_UPI0004707AE5 UniRef90_UPI00035D2248 UniRef90 D5P801 UniRef90-UPIO004662973 UniRef90-T2GQ20 UniRef90_S2XVT4 UniRef90_U7KVP1
UniRef90_Q47PE8 UniRef90_Q9YG56 UniRef90_C7MGB0 UniRef90_UPI00034BDB36 UniRef90-I2AIB7 UniRef90_K9EGS8 UniRef90-UPI00037F74E1 UniRef90_UPI00029A4CB3
UniRef90-G4HSF7 UniRef90_G4HSF7 UniRef90_B8L5U5 UniRef90_UPI0004705C07 UniRef90_UPI00037804C1

SII K N Y S ElL G C ${ }^{130}$
140
150
160 D S K A I KIVHRSDGSGTTYNFTKHLSAIIS NI KKWNDPAITTLPDQNI AVI RRADGSGTSTVFTSYLSKV
 K I T T WN D P Q I A L P N T A L K PVVVRAD GS GTAF DFTN HV S A I S RI SK WNDAAI A KLLNPAI AVV HRADGS GTTFNFTYYY GQVS

 K I T N Y S E L G C
 K
K

SATTWGQLLNTADNTPI TVTKWNDAAIAAPDATIETVHRSDESGTTDNFTKYLSKTA KVTKWDDPAIKADNPDAK VHRSDESGTTDNFTKFLAKTA

 KVTKWDDAA: KADNPDI QAVVRSDESGTTDNFTKYLSKTA A 1 TTWDDPAI KADNEKINVIYRNDESGTTDNFQKYEDAAS KTKWDDPAI DLPSTKVQAFHRSDDSGTTDNFTKYLHTAA QI TNWNDAAI KLPDLKMAVVYRSDESGTTDNFQQYLTAAG KITKWSDPALKALNPDIAVIHRSDGSGTTFNWVSYLSKAS KI TMWNDPAITADNAKIIVAHRSDGSGTTYVFTDFLSDSS


A E 1 T R W WD PPA: A KLRSWSDPAA|AD A A A A D M


$$
1
$$

k


 K EKWNDEAI A LLPDDK KI TNWSTFGCESKT KIKKWNDPEDIAPDQD KITKWNDPAIAALNTA! K

## s

 K 1 E K

.

KI T N YNDPAI ALPDQDI


KITDWNDPDVQLPAKKI
KTDWNDDVQLPAKKITLAYRSDGSGTTFMFTDYLSKMS NVTRWDDPAIGKLPDKDUVVVYRSDKSGTTNILTVYGSRSC Q|ATRNDPR| NAPDRVI K TKKWNDPGVKFPDMA RITAWNDPGVPLPDTKVTPVMSDES KI TYWDDAGVNLPHKKI DFVHRSDKSGTTFNFTYYLSKMN
 E: KKWNDKA A A APDKDIVVIFRSDESGTSANFQKFLKAAT D
 KITKWNDPGVELPDDDI
 AVKTWDAPEIIAGLNAPINVIFRSDE TITNWSTLDANRSGITVVYRNEKSGTTELLTRFLASAC



## UniRef90 G4FKX0 <br> UniRef90_D3UYG1 UniRef90_UPIO0046CEF55 UniRef90-K9UF05 UniRef90-UPI0003777F3E UniRef90-14ED71 UniRef90- X8C880 UniRef90-K9Ul11 UniRef90-B5IIU3 <br> UniRef90-A9H9X2 UniRef90-B9JXR5 UniRef90-A1WHF4 UniRef90-Q0BTP4 UniRef90-D4ZXM5 <br> UniRef90_L8PDG0 UniRef90-Q1I8T4 <br> UniRef90_UPIO0034D77F4 UniRef90-10HIS4 <br> UniRef90-C4RD00 <br> UniRef90-Q9RYZ6 <br> UniRef90_UPI0004792F8B <br> UniRef90_C7JCL8

UniRef90_K9D7K9
UniRef90-D9SZF4
UniRef90 Q3L9L6
UniRef90-V6JPN2
UniRef90_B8ESB9
UniRef90-W5WMU2
UniRef90_D7A8C0
UniRef90_-W9G1A5
UniRef90-H2JYQ1
UniRef90_UPI000376C7F1
UniRef90-UPI0004665835
UniRef90-D7B9B0
UniRef90-A0RV36
UniRef90_UPIO0034939B3
UniRef90_UPIO00382B7D4
UniRef90 F4HJ35
UniRef90-V5AFW1
UniRef90_UPIO0036090F4
UniRef90-H5UN36
UniRef90-L7LGW7
UniRef90-V5XFY4
UniRef90-D3Q241
UniRef90 T0RH97
UniRef90-M3AY05
UniRef90-M4QRU1
UniRef90-C4K8E1
UniRef90_UPI00036E0A93
UniRef90_L7L135
UniRef90_UPIO0037F8E48
UniRef90-Q9CBE5
UniRef90-D5CTT8
UniRef90_C5ZZU8
UniRef90_UPIO00237AB54
UniRef90_UPI000372EEF4
UniRef90-H8G8T1
UniRef90_U7D4Z5
UniRef90-S9S2Y3
UniRef90_UPI0002FE5636
UniRef90_UPIO0030E0E1F
UniRef90_C8PZ25
UniRef90-F5ZOU4
UniRef90_UPIO0047D1187
UniRef90-A3TPR6
UniRef90_G7GTM7
UniRef90_R5VD11
UniRef90_-_3TEW3
UniRef90 UPIO003
UniRef90-H6RQH5
UniRef90-I1XEY6
UniRef90_UPI0004707AE5
UniRef90-UPI00035D2248
UniRef90_D5P801
UniRef90-UPIO004662973
UniRef90-T2GQ20
UniRef90-S2XVT4
UniRef90_U7KVP1
UniRef90_Q47PE8
UniRef90-Q9YG56



UniRef90-D3UYG1
UniRef90_UPIO0046CEF55 UniRef90 K9UF05 UniRef90 UPI0003777F3E UniRef90-I4ED71
UniRef90-X8C880
UniRef90 K9Ul11
UniRef90 B5IIU3
UniRef90_A9H9X2
UniRef90_B9JXR5
UniRef90_A1WHF4
UniRef90_Q0BTP4
UniRef90-D4ZXM5
UniRef90-L8PDG0
UniRef90 Q1I8T4
UniRef90_UPI00034D77F4
UniRef90_IOHIS4
UniRef90_C4RD00
UniRef90-Q9RYZ6
UniRef90_UPI0004792F8B
UniRef90_C7JCL8
UniRef90 K9D7K9
UniRef90-D9SZF4
UniRef90_Q3L9L6
UniRef90 V6JPN2
UniRef90-B8ESB9
UniRef90-W5WMU2
UniRef90_D7A8C0 UniRef90_E4TW65 UniRef90-W9G1A5 UniRef90-H2JYQ1 UniRef90-UPI000376C7F1 UniRef90-UPI0004665835 UniRef90_D7B9B0 UniRef90 A0RV36 UniRef90 UPIO0034939B3 UniRef90-UPI000382B7D4 UniRef90-F4HJ35 UniRef90 ${ }^{-}$V5AFW1 UniRef90 UPI00036090F4 UniRef90-H5UN36 UniRef90-L7LGW7 UniRef90 V5XFY4 UniRef90-D3Q241 UniRef90-TORH97 UniRef90-M3AY05 UniRef90-M4QRU1 UniRef90-C4K8E1 UniRef90_UPI00036E0A93 UniRef90 L7L135 UniRef90-UPI00037F8E48 UniRef90-Q9CBE5 UniRef90_D5CTT8 UniRef90 C5ZZU8 UniRef90_UPI000237AB54 UniRef90_UPI000372EEF4 UniRef90-H8G8T1 UniRef90-U7D4Z5 UniRef90-S9S2Y3 UniRef90_UPI0002FE5636 UniRef90 UPIO0030E0E1F UniRef90_C8PZ25 UniRef90-F5ZOJ4 UniRef90 B1XVD7 UniRef90-UPIO0047D1187 UniRef90_A3TPR6 UniRef90_G7GTM7 UniRef90_R5VD11 UniRef90-13TEW3 UniRef90_UPI00039B2F14 UniRef90 H6RQH5 UniRef90-IXEY6 UniRef90_UPI0004707AE5 UniRef90-UPI00035D2248 UniRef90 D5P801 UniRef90-UPI0004662973 UniRef90-T2GQ20 UniRef90-S2XVT4 UniRef90 U7KVP1 UniRef90_Q47PE8 UniRef90_Q9YG56 UniRef90 C7MGB0 UniRef90_UPI00034BDB36 UniRef90-12AIB7 UniRef90 K9EGS8 UniRef90 UPI00037F74E1 UniRef90_UPI00029A4CB3 UniRef90-G4HSF7 UniRef90 B8L5U5 UniRef90-UPI0004705C07 UniRef90_UPI00037804C1

SEALLGS IDDLGPDLI
SAAAKGADWSKSFA
KEAAAKAQWAP
NQALLADVQFPANFRAFDVNSNQ
DTFAAAAANADWAKAKGFYLILAA TAAAEQF
GAVK LTTDEAARNA $\square \mathrm{DHARFEGHGNDLMLN}$
PEDS PENF NSTV
PSPEA GAEAFVGQTVPADLALTVPDSAN
KPTNETESEALGA $\square \mathrm{DLGPDL}$
SRAAAAADWKGAANFAVDLLDTS
$\square G G$ A

## A A A A NADWAGAKNFNVVIT

GMGISMV
ASAAASADWFSVP
AATAAAADWTKAQNFADD $\square$ NDQA
APSPEAAAKALLDEPVPDNFALLVPD
EPVEANDENATKADAAAKRVGTGKDYALEDDY
LPTAANAQTALGTAVAPTFADRVQPSKWVPTFG
EPTTEST■AASEEADVPDD


SA A G D

E $\square$ T A ENAGKT $\square$ AGAK $\square E G Q G D D$
S NAALGV
DSFAAAAATADWASAK
SQAAEAADWKNAS
KAAAAGANWKGTPGFAVILTNQA
GKT $\square$ AGAKFEGQGNDLKMSID
E $\square T$ TETVGKTDAGATIMKG GNDLVLD TSTFY
SKA $\square A Q A E V V G K G Q D L A L R L D Y T$

QAAALSVDW KQTRDFYATIN
MAAVKQASWKKSEGFYGSLVSQ


A A A A ANTDWAAADNFAVD LT
E P T LLE S TDAA A S E E A E DPD D N
APTLESTTAASEEAEIPEDFRFS
QAAASSADWKAEKDFHLVLT D
KAAVANVKAF 1 PD P T EGYKE D
KAADANVKAFDPDPTEGYKED
AAAAAGADWSKAP
AAA AKEAEFPNTELPVSGAPN

|  |  |  |
| :---: | :---: | :---: |
| F |  |  |
| $\mathrm{F} Q \mathrm{Q}$ | F | A |
| V | S | I |
| I |  |  |

GMALWVNW
 ELTDESAGKADDAAKFAAEGNDLTLD EPTDEAATAALEGAEVNEDLSYN S LAAANFKRAGDD
A PVEATPDNASKA DAEAK TTG TGKD $\square A \square K \square N Y T$
A E T SAA GLS RI I LDD QL R GADA
ESAAK DVDWTHSFA
GKTIEEGAKVTGTGNDL
GPVELNAESAGKALDALEFKNPASKDLVVDTDA

| $\mathrm{T} \square \stackrel{\mathrm{Q}}{\mathrm{~S}} \stackrel{\mathrm{D}}{\mathrm{~S}} \mathrm{D} \mathrm{~T}$ |
| :---: |
|  |  |
|  |  |


QAASAKTDFAHAS
KEAVAKVKAFDPDPTEGYKEDVKQ E LTTANVGKA I EDAEDKGEGND
A PVEATTANASKA $V$ A AAK $\square K G T G N D \square$
AYSPQAAAKVLEVSERDEGRGDTS
SKAAD
QPTSSNTTQALLS $L$ LPAVG
$A P S L A G A N A A L R T V S F P D$
TAASEEADDP
AAASNDNWAQYPGFADT
GVVAATDEAAGAADQSAAFVTEDSNDMRLDLR AAAAAGTDWAK
K A A L A NS EWATSGSFSET LT
AVELTS ESVGKAVATAKQTGTGNDLADK DDY
GAVQLNAESAGKALDAVKFTTPGSKDLVVDTDA
SAAA
S A AVVESV
SAAA
A A V VEDSH
$\square D K L P S S V R A D W S Q S S E E V$
$R$ LE GRGPYD F A I E I A R
NETGD $\square G G V D E L Y S E A E Q L V S S \square A$
SAA
GPVA $\square N A D S V G V A D E N L K Y K T P E D S H N M V$


LTNETAGQAVKAADFMADGNDLVLD
APTKANF P AAAGHASLDPKKDF
$P G T N E T A G N A V N A A K F L S E G D D L V L D$

NKALENDEFKKTDSEHNMVVD
APSPESAARIVSVSPRRDSTTPHDHAM
QAAASGAVQNL PDSPDDDWSTGYELDY
SADAA AKSVDVSPREEGRAENDIVVDLDRTTEES




SPNDPSVQATLDTVLPPTGAAANDVRNWAPVFTN
$\square P A V G N I E \square F L G N V A P P D T A D R A D P T K W A P V \square$

UniRef90_G4FKX0 UniRef90_D3UYG1
UniRef90_UPIO0046CEF55 UniRef90-K9UF05 UniRef90_UPI0003777F3E UniRef90-I4ED71 UniRef90-X8C880 UniRef90-K9Ul11 UniRef90_B5IIU3 UniRef90_A9H9X2 UniRef90 A1WHF4 UniRef90_Q0BTP4 UniRef90-D4ZXM5 UniRef90-L8PDG0 UniRef90-Q1I8T4 UniRef90_UPI00034D77F4 UniRef90-IOHIS4 UniRef90_C4RD00 UniRef90-Q9RYZ6 UniRef90_UPI0004792F8B UniRef90_C7JCL8 UniRef90-K9D7K9 UniRef90-D9SZF4 UniRef90_Q3L9L6 UniRef90_V6JPN2 UniRef90_B8ESB9
UniRef90-W5WMU2 UniRef90-D7A8C0 UniRef90-E4TW65 UniRef90-W9G1A5 UniRef90-H2JYQ1 UniRef90_UPI000376C7F1 UniRef90-UPI0004665835 UniRef90_D7B9B0 UniRef90-A0RV36 UniRef90_UPI00034939B3 UniRef90_UPIO00382B7D4 UniRef90-F4HJ35 UniRef90-V5AFW1 UniRef90-UPIO0036090F4 UniRef90-H5UN36
UniRef90 L7LGW7 UniRef90_V5XFY4 UniRef90-D3Q241
UniRef90 T0RH97 UniRef90-M3AY05 UniRef90-M4QRU1 UniRef90-C4K8E1 UniRef90_UPI00036E0A93 UniRef90-L7L135 UniRef90_UPIO0037F8E48 UniRef90-Q9CBE5 UniRef90-D5CTT8 UniRef90_C5ZZU UniRef90_UPIO00237AB54 UniRef90_UPI000372EEF4 UniRef90-H8G8T1 UniRef90_U7D4Z5 UniRef90-S9S2Y3 UniRef90_UPI0002FE5636 UniRef90-UPIO0030E0E1F UniRef90_C8PZ25 UniRef90-F5ZOU4 UniRef90_UPI00047D1187 UniRef90-A3TPR6 UniRef90-G7GTM7 UniRef90_R5VD11 UniRef90_13TEW3 UniRef90_UPI00039B2F14 UniRef90_H6RQH5 UniRef90-I1XEY6 UniRef90_UPIO004707AE5
UniRef90-UPI00035D2248 UniRef90-D5P801 UniRef90-UPIOO04662973 UniRef90-T2GQ20 UniRef90 U7KVP1 UniRef90_Q47PE8 UniRef90_Q9YG56 UniRef90_C7MGB0 UniRef90-I2AIB7 UniRef90-K9EGS8 UniRef90_UPIO0037F74E1 UniRef90_UPIO0029A4CB3 UniRef90-G4HSF7 UniRef90_B8L5U5 UniRef90_UPIO004705C07



UniRef90 G4FKX0
UniRef90 D3UYG1
UniRef90_UPIO0046CEF55
UniRef90 K9UF05
UniRef90 UPI0003777F3E
UniRef90_-I4ED71
UniRef90-X8C880
UniRef90_K9Ul11
UniRef90-B5IIU3
UniRef90_A9H9X2
UniRef90_B9JXR5
UniRef90 A1WHF4
UniRef90_Q0BTP4
UniRef90_D4ZXM5
UniRef90 L8PDG0
UniRef90 Q1I8T4
UniRef90_UPI00034D77F4
UniRef90-IOHIS4
UniRef90 C4RD00
UniRef90-Q9RYZ6
UniRef90_UPI0004792F8B
UniRef90 C7JCL8
UniRef90 K9D7K9
UniRef90_D9SZF4
UniRef90-Q3L9L6
UniRef90 V6JPN2
UniRef90_B8ESB9
UniRef90_W5WMU2
UniRef90_D7A8C0
UniRef90 E4TW65
UniRef90-W9G1A5
UniRef90-H2JYQ1
UniRef90 UPI000376C7F1
UniRef90_UPI0004665835
UniRef90_D7B9B0
UniRef90-A0RV36
UniRef90 UPI00034939B3
UniRef90_UPI000382B7D4
UniRef90-F4HJ35
UniRef90 V5AFW1
UniRef90_UPI00036090F4
UniRef90_H5UN36
UniRef90 L7LGW7
UniRef90 V5XFY4
UniRef90_D3Q241
UniRef90-T0RH97
UniRef90_M3AY05
UniRef90 M4QRU1
UniRef90_C4K8E1
UniRef90_UPI00036E0A93
UniRef90 L7L135
UniRef90-UPI00037F8E48
UniRef90_Q9CBE5
UniRef90-D5CTT8
UniRef90 C5ZZU8
UniRef90_UPI000237AB54
UniRef90_UPI000372EEF4
UniRef90 H8G8T1
UniRef90_U7D4Z5
UniRef90_-S9S2Y3
UniRef90 UPI0002FE5636
UniRef90 UPI00030E0E1F
UniRef90_C8PZ25
UniRef90_F5Z0J4
UniRef90 B1XVD7
UniRef90_UPI00047D1187
UniRef90_A3TPR6
UniRef90 G7GTM7
UniRef90_R5VD11
UniRef90-I3TEW3
UniRef90_UPI00039B2F14
UniRef90_H6RQH5
UniRef90- I1XEY6
UniRef90_UPI0004707AE5
UniRef90-UPI00035D2248
UniRef90 D5P801
UniRef90_UPI0004662973
UniRef90_T2GQ20
UniRef90_S2XVT4
UniRef90 U7KVP1
UniRef90_Q47PE8
UniRef90-Q9YG56
UniRef90 C7MGB0
UniRef90_UPI00034BDB36
UniRef90-I2AIB7
UniRef90_K9EGS8
UniRef90 UPI00037F74E1
UniRef90_UPI00029A4CB3
UniRef90_G4HSF7
UniRef90 B8L5U5
UniRef90_UPI0004705C07
UniRef90_UPI00037804C1

DGKPVFKA
A D GKP VF

SADCNGDGR

T N A D N G D G

T TACAGK

T S VK DKSGAPI

LK A VT Y D G Q P I L K

T
$L R T V T Y N G K P \quad L K$

A S A C A GLGR P $P N \bigvee C N G I G R P L$ UniRef90-IOKPF6 UniRef90_Z5X9K8 UniRef90_Q0GLJ0 UniRef90_B3QHB9 UniRef90 V8D0F3 UniRef90_UPIO003602967 UniRef90_K0YPU3 UniRef90_A0A024YMG1 UniRef90_F8ANL2 UniRef90_U7JMU6 UniRef90_A0QL07 UniRef90 ${ }^{-}$V4L298 UniRef90_UPIO00402881A UniRef90_UPIO003647C12 UniRef90 E1W0I7 UniRef90_UPIO00476A2E7 UniRef90_Q7VAD1 UniRef90_UPI00036AF9A5 UniRef90_UPI00047545C6 UniRef90_K0KCW6 UniRef90_UPI000380C99B UniRef90_UPI0003A4F5C5 UniRef90-E6QW50 UniRef90_UPIO0036645F3 UniRef90_J4SRN4 UniRef90-B5EQP1 UniRef90_J7LCA1 UniRef90_UPIO003791593 UniRef90_-UPIO0046957F9 UniRef90_M5UJ25 UniRef90_Q0GPP5 UniRef90 F4XI77 UniRef90_UPI000370A6D5 UniRef90_UPIO0034588DC
UniRef90_UPI0003B58D35 UniRef90-U2XBX4 UniRef90-UPIO0046EE051 UniRef90_A0A059IR98 UniRef90_D1BD79 UniRef90_H0QJ51 UniRef90_UPI00047A20EA UniRef90_UPI000362F9FB UniRef90 X7Z0S1 UniRef90-UPIO00478472E UniRef90-UPIO003A0624A UniRef90_Q7M9G4
UniRef90_A5G1Q5 UniRef90_F6BAM1
UniRef90_F5Z225
UniRef90_IOA0Y5 UniRef90_UPIO004693B86 UniRef90_Q58421
UniRef90_UPI000405BF4C
UniRef90_Z9JPC0
UniRef90_J9E1A9
UniRef90_UPI00047E6FB8
UniRef90_UPI0003C7FE04
UniRef90_M5F4F3
UniRef90-W0GUJ1
UniRef90_F4GY63
UniRef90_-11W8J9
UniRef90-A4CXN3
UniRef90_Q5FTI1
UniRef90_UPIO00466B12E
UniRef90_UPI000255EDD2
UniRef90_UPI00042622A9
UniRef90 ${ }^{-}$W5Y2R6
UniRef90_UPIO004664962
UniRef90_S2WTU2
UniRef90_UPI0003B35213
UniRef90_UPI00037F7FD3
UniRef90_D7GG27
UniRef90_H8E659
UniRef90-UPI0003756A37
UniRef90_L1MA84
UniRef90_R4XZG1
UniRef90_UPI00041C1F2A
UniRef90_I2AIB9
UniRef90_G8PPU3
UniRef90_C5C8C4
UniRef90_D7JYV2
UniRef90_UPIO0037B0BDE
UniRef90_F0Y9C5
UniRef90_IOR3E6
UniRef90_UPI00047A9C1A

TLVGAGASFPAPLYQRYATHKNLLQVINYTACGSSCGlURNF NLVGAGASSQDAAQQSWTANPDVTIDYDPSGSGAGRETF TVTGGGSSAQNAAMQTWSKYPNANVQYLSAGSGAGRSAL TVTGGGASLPADLYKGSSDSLPANFSYAVTGSGTGKKAF QACSGQTHNYTANGSGAGISEF RLNGAGATFPAKMYARWAKSGGPQVNYQAVGSGSGRKAF VMGTGSAFAAPDY\KWAEQKGVAI NYQPSGSSVGQLQV NLKASGSSAQANAMTLFATCEGKTIDYNSNGSGAGVKEF ELIGEGASSQQNAMDYFGVQTDATLAYNPTGSGSGQTEF KLLASGSSAQKNAVELWAACSGVEVNYKSSSSGEGIVAF $\square S L R T T G A T F P K Y Q I Q K W K T H P N V K I E Y E G G G S G H G Q E V F$ THGAGSSAQANAINYAAACPKTKINYTPSGSGAGDESF TLSASGSTAQANAMTRFTACPGQTLDYTANGSGNG\|ADF TLTGAGSSFAAPMFNKWFEHADLDSLSYDSVGSGEGIDRF LKAEGSSAQKGAMDYAQKCSGQQLAYNPTGSGAGVKQF TLTGGGSSAQNSAMNAWSQHPKVQVQYASVGSGAGR
TLSGAGSSAQENAMTTWIAGYQTAVFYDALGSGGGRSQF RLSGAGASFPSKLYTRWFAEGGPRVNYQAVGSGSGRK TLNAEGSSAQKNA!EEAEQCPDVTINYNPTGSGAGIKQF KLINAEGSSAQKNAIDTFAKCSGADLAYNPSGSGSGVKNF QLVAEGASSQQSAMDYFGVQYGTQI AYNGSGSGSGRQNF DITGAGSTFVYPMDSKWSAKTGDKI NYQS TGSGGGDAQ ELVAEGASSQANAMDYFGQRYGASLAYNSSGSGSGRRNF
$T \square S A A G G T A \square Y P V L S K W A E T Y G \square M V N Y Q A \square G S G G G \square A Q$ A $\mathrm{Q} E \mathrm{NAMT}$ TWSACEDARI YYDSI GSGGGRNQF NVAGAGSTFVQPLLNRWSQDYSAGLDYEAVGSQAGVM ELVGAGASSQGSAQEAWVAHADVTVNYDPTGSGAGRETF MTIRGAGSTFAAPIIKQWAEHPDVVIKYEATGSGDGEKRF RLSGAGASFPAKLYTRWFKDLGPRVNYQAVGSGSGRKAF TLTGTGASSQQAAMTAWQANPEATVQYSPDGSGAGREAF TLSGAGASSQENAMATWGACSDTTVEYDAVGSGAGRSQF ELVGEGASSQQNADDYFGNKFDASLAYNPTGSGSGQTQ TITGAGSSFAAPIYGAWKKADGTSI NYQSVGSGAGQNQA DUETGSSLLYPLFNLWKHHPEWKITTQSTGSGTGISES THGGGSSAQGAAMDVWKTNFGATVQYSPDGSGAGRKAI
 GAGASSQESAMEAWEQHPEADI SYDPVGSGDGREAF VShSGAGATFPAPFYNDATKQYGLRVSYGATGSGAGMRN QINGSGASFPAPMFATWFDQDGPNVTYEPVNSAQGURQ GAGASSQESAMEAWSANPDATINYDPAGSGAGREQF DhHAGSAAQQNAYAYGRACPGQTLNYTANGSSAGVDDF VTLKAGGATFPDPQYDAWKNYPNDKVSYEGVGSGAGQSNF T:DATGASSQTAAQEAWTANPDVTVNYEPTGSGTGRENF GAGASSQQTAVEAWKTNPDAKDSYNPSGSGAGVVTF QLAGAGASSAESAQGAWALNPEAQVTYDSVGSSAGREQF $\square S L T E T G S S L L Y P L F N T E K V Q P N V Q M T A A S T G S G T G D$

ThGAGSSAQNAAMTAWQAQSGATVQYSPDGSGAGRDAF NGAGASSQQAVVAWKANPDATVNYDPVGSGGGREQF RGAGSTLAAPVIAKWATAYDWSVDYEPVGSGAGLM RLNAAGASFPAKVYQSWFADLGTNVNYQAVGSGSGRKAF ELINGAGASSQEKAMDAWRANPDVTVNYDPVGSGGGRTQF ThNGTSSTFGGQAYLRWAVNED YYAEVESMGSGKSUST VVSGGATLPQPLYQDESFPASTFKAYVGKGSGAGKTAF GAGASSQQSAVEAWQKNPDAQTAYNPTGSGAGVTTF NLIGGGASSQEAGMTAWTVHPDLDTVSYDPVGSGSGREGF QLVAEGASSQQKAMDYFGVQPGASLAYNPTGSGSGQEQF
$S \square A G A G A S S Q E A A M N A W D A K Y D V T V S Y D P V G S G A G \prod T Q F$ GAGASSQQTAVEAWKTNPDAKISYNPSGSGAGVVTF TTGVGASSQNSAMDAWQANSGAQVQYSPDGSGSGRKAL VPIVGSGATSQESAQTTWKKQAGIIKVSYNGGGSGKG TLTGKGSSAQKAAQEKWTKNSGDTVNYSPDGSGAGRSAF QVLAEGSSAQKRAMKYATAVPGARLSYPPAGSGEGQTNF LKGAGSTFVMPLVQRWTKEYGVGTEFAAHNSGAALDYE
$\qquad$ TLTGDGSSAQGAAMDVWKTNFGANVQYSPDGSGAGRKAI DELSETGSTLLYPLESEWAKHPNVTVTTQGSGSGAGIV
QLKGAGATSQESADGAWAVAPELTVQYSPDGSGAGREKF
$\qquad$ ISGAGSTWAENAVDEWRRAYGMRVSYAGTGSSDGRRQF -


UniRef90_K9RKT7 UniRef90_UPIO003B429CB UniRef90-G7GYW6 UniRef90_UPI0002D5939A UniRef90-IOKPF6 UniRef90-Z5X9K8 UniRef90_Q0GLJO UniRef90-B3QHB9 UniRef90_V8D0F: UniRef90-UPIOOO3602967 UniRef90-K0YPU3 UniRef90-A0A024YMG1 UniRef90-F8ANL2 UniRef90_U7JMU6 UniRef90-A0QL07 UniRef90-V4L298 UniRef90_UPI000402881A UniRef90-UPI0003647C12 UniRef90-E1W017 UniRef90_UPI000476A2E7 UniRef90-Q7VAD1 UniRef90_UPI00036AF9A5 UniRef90_UPIO0047545C6 UniRef90-KOKCW6 UniRef90-UPIO00380C99B UniRef90_UPI0003A4F5C5 UniRef90-E6QW50 UniRef90_UPI00036645F3 UniRef90-J4SRN4 UniRef90-B5EQP1
UniRef90-J7LCA1
UniRef90_UPIO003791593 UniRef90-UPI00046957F9 UniRef90_M5UJ25 UniRef90_Q0GPP5 UniRef90-F4XI77 UniRef90_UPI000370A6D5 UniRef90-UPIO0034588DC UniRef90_UPI0003B58D35 UniRef90-U2XBX4 UniRef90-UPIO0046EE051 UniRef90-A0A059IR98 UniRef90-D1BD79 UniRef90-H0QJ51 UniRef90_UPIO0047A20EA UniRef90_UPI000362F9FB UniRef90-X7Z0S1 UniRef90-UPIO00478472E UniRef90_UPI0003A0624A UniRef90-Q7M9G4 UniRef90 A5GTQ5 UniRef90_UPI0003A958B3 UniRef90-F6BAM1
UniRef90_F5Z225 UniRef90-I0A0Y5 UniRef90_UPI0004693B86 UniRef90_Q58421 UniRef90_UPI000405BF4C UniRef90_Z9JPC0 UniRef90-J9E1A9 UniRef90_UPI00047E6FB8 UniRef90_UPI0003C7FE04 UniRef90-M5F4F3 UniRef90-W0GUJ1 UniRef90-F4GY63 UniRef90_11W8J9
UniRef90_A4CXN3 UniRef90_Q5FT11 UniRef90 R4XUW9 UniRef90-UPIO00466B12E UniRef90_UPIO00255EDD2 UniRef90 W5Y2R6 UniRef90_UPIOO04664962 UniRef90-S2WTU2 UniRef90_UPI0003B35213 UniRef90-UPI00037F7FD3 UniRef90-D7GG27 UniRef90-H8E659 UniRef90_UPIO003756A37 UniRef90-L1MA84 UniRef90-R4XZG1 UniRef90_UPIO0041C1F2A UniRef90-I2AIB9 UniRef90-G8PPU3 UniRef90-C5C8C4
UniRef90_D7JYV2 UniRef90_UPIO0037B0BDE UniRef90_FOY9C5 UniRef90_IOR3E6
UniRef90_UPI00047A9C1A


 RYGALI QVPSVATSVTIPFNKAGSA VNLSVAQICGVFSG
 GGDIMQFPTVVGGYAVVVNDPGPGKLRLTAPVLADIFMG CGSEAWNLPLVFGPTAVTYNLDGVDAVNLSGPTLGKIFNG EGNDAWHLPMVIGPVAI AYNLEGIDELNLPVDTVAKI FSG CGADAFDLPTYISPVAVVFNIKGVKKLNLDPDVVAKIVKG TGGQGVNLPMVGGPVALVFNVSGVEKLNLDAATVANVEND
 G


 DSSAAVNI PAYVVPI AVVFSLEGVDELNMSPDTIAGIFKG
 ANNPAWDI PMVVGPIAVSYNVAGVDGLVLNAQVAANIFNG

CGS
E AWH
$L A Q$ FP
$A W H L P$ GGNDAWHLP

PAII G G TVVIPVVVNLE AVI GGSDT $\square N \square P T Y V V A V A V V F N G E G V D S L N L S P D T V A R I F D G$ PDTGLVEFPAGGIVAAVNLPGVEAGKLKLDGALLAD:Y DG $G G A L Q V P M T A G I I V L A Y N R E G P A D L K L P R E V Y V D A F L G$

D G G F

 CGSEVVNLPGY SPMIAVAFNLEGVDSLNLTPEVI ADIVENG


## T VM

 QHM GMLNDPGAGIVVIVNVPGIAPGKLKLDGPTLAGLYDG G \begin{tabular}{l}
D G <br>
A <br>
\hline

 $A \bar{F}$ $\qquad$ 

$V$ \& $S$ \& $P$ \& $I$ <br>
\hline$G$ \& $S$ \& $S$ \&
\end{tabular} GI V P

G P VWELP AVF AVTYHLSGVSSLKLDAPTMAKIFNG DGGNAIDLPVYISPIAVAFNLDGVEQLNLSSDVIAKIFTG
 S K V L L G GPD GAIDLPIVVSPI AVAFNLPGVDSLNLSSEVIANIING


 T G D Q PLLQFP EIVVGAVVVVTYND P G DK T L A GRTAFDVPVYISPLAIVFNLHGDSHVNMDAATVARIXNG


\section*{D G G} | I | N | V | P | V | A |
| :--- | :--- | :--- | :--- | :--- | :--- |
| I | I | S |  |  |  |
| S | S |  |  |  |  | $C G G$



CS A D | $V$ | $V$ | $Q$ | $P$ | $M$ | $V$ | $G$ | $G$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $A$ | $I$ | $D$ | $I$ | $P$ | $V$ | $Y$ | $V$ | A S GT

$R G L Y Q F$ GHGPLVQ口P

 ASGTAFDVPVYISPIAVAFNLQGIKHINMDAATIADVFAG









 GDQGAFHVPAYVSPIAIAYNLPSKEDIVMDAETVAKVFSG

 $P L H D P F N D L G A M S F F$
$G T M$
$G$



UniRef90 K9RKT7
UniRef90-UPI0003B429CB UniRef90-G7GYW6 UniRef90_UPI0002D5939A UniRef90-IOKPF6 UniRef90-Z5X9K8 UniRef90_Q0GLJ0 UniRef90-B3QHB9 UniRef90_V8D0F3 UniRef90_UPIOOO3602967 UniRef90-KOYPU3 UniRef90-A0A024YMG1 UniRef90-F8ANL2 UniRef90_U7JMU6 UniRef90-A0QL07
UniRef90-V4L298
UniRef90_UPI000402881A
UniRef90 UPI0003647C12
UniRef90 E1W017
UniRef90_UPI000476A2E7
UniRef90-Q7VAD1
UniRef90-UPI00036AF9A5
UniRef90-UPIO0047545C6
UniRef90-KOKCW6
UniRef90_UPI000380C99B
UniRef90-UPI0003A4F5C5 UniRef90-E6QW50
UniRef90_UPI00036645F3
UniRef90_J4SRN4
UniRef90_B5EQP1
UniRef90-J7LCA1
UniRef90_UPIOOO3791593
UniRef90-UPI00046957F9
UniRef90-M5UJ25
UniRef90-Q0GPP5
UniRef90-F4XI77
UniRef90_UPI000370A6D5 UniRef90-UPIO0034588DC UniRef90_UPI0003B58D35 UniRef90- U2XBX4 UniRef90-UPIO0046EE 051 UniRef90-A0A059IR98 UniRef90-D1BD79 UniRef90-H0QJ51 UniRef90_UPI00047A20EA UniRef90_UPI000362F9FB UniRef90 X7ZOS1 UniRef90-UPIO00478472E UniRef90_UPIO003A0624A UniRef90-Q7M9G4 UniRef90-A5GTQ5 UniRef90_UPI0003A958B3 UniRef90-F6BAM1
UniRef90-F5Z225
UniRef90-I0A0Y5
UniRef90-UPI0004693B86 UniRef90_Q58421
UniRef90_UPI000405BF4C UniRef90_Z9JPC0
UniRef90-J9E1A9
UniRef90-UPI00047E6FB8 UniRef90_UPI0003C7FE04 UniRef90_M5F4F3 UniRef90-W0GUJ1
UniRef90-F4GY63
UniRef90-I1W8J9
UniRef90-A4CXN3
UniRef90_Q5FTI1
UniRef90_UPI000466B12E
UniRef90_UPIO00255EDD2
UniRef90_UPIO0042622A9
UniRef90-W5Y2R6
UniRef90_UPIO004664962
UniRef90-S2WTU2
UniRef90_UPIO003B35213
UniRef90_UPI00037F7FD3
UniRef90_D7GG27
UniRef90-H8E659
UniRef90_UPI0003756A37
UniRef90-L1MA84
UniRef90_R4XZG1
UniRef90_UPI00041C1F2A
UniRef90-I2AIB9
UniRef90-G8PPU3
UniRef90_C5C8C4
UniRef90_D7JYV2
UniRef90_UPIO0037B0BDE
UniRef90_F0Y9C5
UniRef90_IOR3E6
UniRef90_UPI00047A9C1A

GYFKGRDGTSKKPRWAF 180 RGARKGKGNSGVVAALVIK ${ }^{200}$
GYFKGRIGTSKKPRWAF
 PEVWTDEHDGGWPNSGPS AAENADSTFADLYKRDANGNLPAFLVAAPATGGTSNTVYA DGAWGKGAGKSFN
TEWK
A A WRDKMG】 LGTGKSVDWPAGGVGAKGNSGVAGII KN GMTLSWPVGA GVKGSYGSASTVPM
DGTWTQGAGKSF
GHWDSAG
GDVWTDEADKTWP KQFPQKVGEG ANGSSGVASQTGS
PDAWPHDAAKKWP $\quad$ AGGETGDKTSGLDQAVQS AAPGGQAASGSAGVAAQVKQ


GGVWNKGAGKT
DQWDAGV
PQAWP FNGGVGTG AVGNTGTAAAVKS

KGAWTKDTGKKFNGGVGQGGQGSAGVVES $\square$ NA G
PEAWP HEPDGGWPTGLEKAQGNAGVVTTVTR PDVWT YEPDGQWPLPPV EAAQGNSGI AEAVEG KEWT VGTGKSVAWPVGVGGKGNAGVAGVIKN $P$ TWKERLGAKTSLAWGEHVLGAKGSDGVVRAVQD GGAWKKEPAKT WTGTGSGKEKSAGVAEGVKA KGAWTQGDGKQFK PDAWP WTGTGSGKEKSAGVAEGVKA PDVWTTGQTFPASVG
P E WKSKVGAGTSVNWPTG
DGYWATEGQQFPREVG
TE WKETVGQGKSVKWPTGG PEDSWHEPGGQWPGDNTAVSWPVGRVGGKGNAGVAAYVQR VGGKGNAGVAAYV QR PAWKP VGAGLNVKWPAG TAAKGNDGVAETVKK PNDWTVGS IE SWPTE FGGEGAQGTSGVVEAVTN DEWADRFATSDVDRGVKILDWPGKAMKAAGNSGVAGRIKQ KTWT NGRDRASKRPNWGFKVFS SVPGNAAVASEVRR PEVWTEE VS GNWPSQWAAEKGTAGVVQSAGA GDAWP HEVSGDWPDEPVAAQGSSGVVSAlEG

## DEWEPEKGKTFPTNVG

PDVWT A GSVEEWP
A SWKGKFGAGTS AA ALGGEAAQGTSGVISAVEG
 NGAWT YEPSGDWPSGTQSGSKTSGLIDTVTG PEDWKDKADG $\square$ WPAS $\square K G E N$ AKGTSGVVKTVTD PDLWTSEADGTW PTGLGNENSKGNAGVVSTVSG NGAWSKADWNKKVGVDTSLQWPVGGVGAKGNQGVAAQVQQ SEAWPHTPDGDW PLDEGFAAAEGTGGVTDTVRS SVWAATFGAGKSDDF T N G $\square A$
PEFRQT
V GTGMRVKFPVGTTS
P E A WT DEPDGGVWPLEGGD
$G L P D N L V G K S V Q W P V E K L G$
$G L P D N L V G K S V Q W$
$E G A W Y A A D G E M F N$
PQYWPTS LVGKAP DYPVKA
PDVWTYEVSDEWPD
KEWAEK
PKDWP
VGAGKTVNWPTGGEA
GDVWTHGEVDEWP $\square \mathrm{E}$
GDVWTHGEVDEWP【E GGQSGDGTSGLVSVVEG ASWSQQYGYGT S $\square$ SWPGDSSADIGAKGNDGVVAAVSG GGSWTAGEVETWPTPE SGDWPAEGAAQGTNGVVSTTTA EE W WK TKLGADTLIEWPLGGESAQEGTQALIDAVVA
 GGAWAHEA DGNWPIGGESAQGTSGVIQTVQG PDSWTYELDSNWPNE VGQGAKGTSGVISTLKQ $D Q D W K N G P G N G R L V N W P D G G A V K G S D G M A T A L N S$
P D W KAGMWGDGS EARGNDGVAASVRQ GTDANAFSGKSTFAQEFPGNTPANFDAAAGSGGVATAISA

 GN WDSEG SENWPNAFPNTVGAGGQAKGSGVVSTVQQ S $\square$ A S GNS Q $\square$ TFPVTTRYSDVVATRFRGVDASYGMREAVAA PDAWPHKAGKAWPD SGGESGDKTSGLVQAVTA

GKDWP
PDVWKD
SNVWT
PSIWTRGMTSQF
PTVWTQAAADTF
NGAWNTTGGDYAGY
NGAWNTTGLDYAGY
ETSGPRFVGKDVFREEFPGP $\square P S$ G GVVG
SAWPGDVGVDALVR
PEVWTDKAAGIWPAALKGEN $P D G W G R A A G I W P A A L K G E N$ AKGTSGVVKTVLA PDKWTOV ENVWTVGA ${ }^{\text {V }} \mathrm{E}$
ENVWT
 FPKDTELVSSSEVVTKLTE ADWKAA
 YQLSENWPNDVQG QPSGDWPSGGENAKGTSGVVR EKPSQTWPAAGSNAKGTSGVVRQVVGQ PSLSSGAFKAQSGSTLGVVAAVKN PAAFGGAATGTSGVVTAVON GGVGASGSNGVVNTIRD E S
V
A
A GSTDDWPSSTFADEGSGEMSSMI SS A WPVEYGGEGAQGTSGVVSAVTG


UniRef90-UPI0003B429CB UniRef90-G7GYW6 UniRef90_UPI0002D5939A UniRef90_IOKPF6 UniRef90-Z5X9K8 UniRef90_Q0GLJ0 UniRef90-B3QHB9 UniRef90_V8D0F3 UniRef90_UPIO003602967 UniRef90-KOYPU3 UniRef90-A0A024YMG1 UniRef90-F8ANL2 UniRef90-U7JMU6 UniRef90-A0QL07 UniRef90_V4L298
UniRef90_UPI000402881A UniRef90_UPI0003647C12 UniRef90 E1W017
UniRef90_UPI000476A2E7
UniRef90-Q7VAD1
UniRef90-UPI00036AF9A5 UniRef90_UPIO0047545C6 UniRef90-KOKCW6
UniRef90_UPI000380C99B UniRef90_UPI0003A4F5C5 UniRef90-E6QW50 UniRef90_UPI00036645F3 UniRef90-J4SRN4 UniRef90_B5EQP1
UniRef90-J7LCA1
UniRef90_UPIO003791593
UniRef90_UPI00046957F9
UniRef90-M5UJ25
UniRef90-Q0GPP5
UniRef90-F4XI77
UniRef90_UPIO00370A6D5 UniRef90_UPIO0034588DC UniRef90_UPIO003B58D35 UniRef90-U2XBX4 UniRef90-UPIO0046EE051 UniRef90-A0A059IR98 UniRef90-D1BD79 UniRef90-H0QJ51 UniRef90_UPI00047A20EA UniRef90_UPI000362F9FB UniRef90-X7ZOS1 UniRef90_UPI000478472E UniRef90_UPI0003A0624A UniRef90-Q7M9G4 UniRef90-A5GTQ5 UniRef90-UPIO003A958B3 UniRef90-F6BAM1
UniRef90-F5Z225
UniRef90-10A0Y5
UniRef90_UPI0004693B86 UniRef90-Q58421
UniRef90-UPI000405BF4C UniRef90_Z9JPC0
UniRef90-J9E1A9
UniRef90_UPI00047E6FB8 UniRef90-UPI0003C7FE04 UniRef90-M5F4F3 UniRef90-W0GUJ1 UniRef90-F4GY63 UniRef90-I1W8J9 UniRef90-A4CXN3 UniRef90_Q5FTI1 UniRef90_UPI000466B12E UniRef90_UPIO00255EDD2 UniRef90_UPIO0042622A9 UniRef90-W5Y2R6 UniRef90_UPIOOO4664962 UniRef90-S2WTU2 UniRef90_UPIO003B35213 UniRef90-UPI00037F7FD3 UniRef90-D7GG27 UniRef90-H8E659 UniRef90_UPIO003756A37 UniRef90-L1MA84 UniRef90-R4XZG1 UniRef90_UPI00041C1F2A UniRef90-I2AIB9 UniRef90_G8PPU3 UniRef90-C5C8C4
UniRef90-D7JYV2 UniRef90_UPI00037B0BDE UniRef90_F0Y9C5 UniRef90-I0R3E6

GNGTI GYADASRAGD LGTVADKVGDEFVPYSPEA
 AEGRI GYVGP VG DVIPNLLTDATKVAKV



पDFGSGPV

 EEK K K N L L P N

SGDGYT
A QGlKTVDLNTGAA TPYSI G Y Y TELLSYADEEK LDVAALKNKNGKFVVPDSKS

 TEGS I GYVEAGFA QRLHLDLAWLENRGGGFVAPNTETGG
 $A E G A V T Y$ E GNGTI GYVEASHVGHMSAA

 VDGAI TYVELSFAQDNK LS I A
GEGT I GYADASQAGENK
ID GAl TYVESGFAKQ
I KGSFGYVELTYALQNK

 № $N$ NQLA WAS LQNKAGQFVVQPGAGAT
1 PGAIGYVEYAYAKE NHMAYGKMINAAGKVVAPDLATF

GVGT, GYADA ATARRAGLSRAGELGTVEGKVGDEYVAY
TLYSLGYVQYGAARA VDLAMASIENRAGNYISPSGASG
TPGAI GYVNQSY $\square$
$K G N V K A A A L Q N L S G E Y V$ SPSGASG LINLPMARLENRAGRYV

LGTVAVGVGEEYVNY

 SEGGI GYVEYAYAS RNHLNMVQLRDHDGAFIAPNAASF TPYSVAYIGDSYKQADAAKLGEAKLGNRSGHFVDPDPMTV AEGAI GYADA
TPGAVTY
ADDSAVGGK $V G \square A Q \square K V G$
TEGAVTYAD DSAVGPPLGRANDKVGDQY VEDSI GYVE YAFAKTTNDPTVKMDNKDGKTVAPSLKSF TDGS I TYTA WS FA L GK Q $\mathrm{T}^{\prime}$ TPGGITYADA
TVGGSITYADA EYTLA $\quad \square N \square P R T A D L G R A A L L V G D E Y V P Y$
K EGS L GYVVESYKKAEK
TPGSIGYVN VPSDKGKVQAAALQNSEGNYMLPNSATG
TEGAVTYAD AS KVGTLGTASIKVGEEF


| $T P Y S$ | $G F V$ | $W N Y A D Q Q$ |
| :---: | :---: | :---: | :---: |
| $G N G A$ | $G F$ |  |

K QLPMAQI DATAG
$N M T M A L L R N A N G N Y V L P T T A G I$
$G Q V A V G V G E D E V$
T P Y V
GNGTIGYADA SKA SKNDGDAKVKVGEEYIGY
GNGTVGYADAS WLDKAVAGLAYAALLQNRA

TANSITYADA
TANS GADA SAGDLSTAADKVGDSFTEY
$T K G A I A Y A E Y G Q V \quad \square R A G L P F A A V Q N K S G N F V K P D P A G V$
REGAI GYVNQSYI KGNVKAAAVQNKS G
GNGTITYADESAAGSLGKAS $\square K V G E E$
WVV
TPGSi GY YESAYVRE PR LQVAA LENNRQGTVAVKVGDSY
S $\square$ GGI GFVE YAFARRDRLNTVRLKNHAGQFVAPGKAAF


TDGAI TYVEAGFAQEK GMGIAKLDFGN
STNVI GYLSPDF $\operatorname{CNL} T \square A P S S P A A T T N L K A A A L R N K N N N V$
GTGTI GYADASQAGSLGT $\square$ A L L KA
ANGTI GYADLSQAGDM
TEGAI TYAD
GTGTVGY
NEGAI TYYVYSYA
GTGTI GYADASAAGSLSKASILV


TPGAVTY ADDSAVSGKLGVAQDKVGESFTKDSADA
$N P G C V A Y T S \square G S L D E D Q H G L G E A K L G N A S G K Y ~ L D P N A K S ~$
$N$

TEGAI TYYTDASAVGTIL

| $\square P G G$ | $G Y V A T E Y A A S F G T$ | $Q S A R V K N A A G N F V Q P S$ |
| :---: | :--- | :--- | :--- |
| $N E G A$ | $G Y V N Y S Y A L$ | $N A H Y P V A K V L N H A G Y Y T E P T$ |

TPYA G GYIDSG HGHDDGLSEDELKNLDGTYQ
GNGTI GYADASRAGD

UniRef90 K9RKT7
UniRee90－UPI0003B429CB UniRef90－G7GYW6 UniRef90－UPI0002D5939A UniRef90－I0KPF6 UniRef90－Z5X9K8 UniRef90－Q0GLJo UniRef90－B3QHB9 UniRef90 V8DOF3 UniRef90－UPIOOO3602967 UniRef90－K0YPU3 UniRef90－A0A024YMG1 UniRef90－F8ANL2 UniRef90－UTJMU6 UniRef90－A0QL07 UniRef90 ${ }^{-} 4$ 4L298
UniRef90＿UPI000402881A UniRef90－UPI0003647C12 UniRef90 E1W017 UniRef90＿UPIO00476A2E7 UniRef90－Q7VAD1 UniRef90＇UPI00036AF9A5 UniRef90 UPIO0047545C6 UniRef90－KOKCW6 UniRef90＿UPIOOO380C99B UniRef90＿UPI0003A4F5C5 UniRef90 E6QW50 UniRef90＿UPI00036645F3 UniRef90 JUSRN4 UniRef90－B5EQP1 UniRef90－J7LCA1 UniRef90－UPIOOO3791593 UniRef90－UPIOO046957F9 UniRef90－M5UJ25 UniRef90－Q0GPP5 UniRef90－F4X177 UniRef90 UPI000370A6D5 UniRef90－UPIOOO34588DC UniRef90＿UPIOOO3B58D35 UniRef90－U2XBX4 UniRef90－UPIOO046EE051 UniRef90－A0A0591R98 UniRet90－D1BD79 UniRef90 HoQJ51 UniRef90－UPIO0047A20EA UniRef90＿UPI000362F9FB UniRef90 X7ZOS1 UniRef90＿UPI000478472E UniRef90＿UPIO003A0624A UniRef90＿Q7M9G4 UniRef90－A5GTQ5 UniRef90＿UPI0003A958B3 UniRef90－F6BAM1 UniRef90－F5Z225 UniRef90－I0AOY5 UniRef90－UPI0004693B86 UniRef90－Q58421 UniRee90－UPI000405BF4C UniRef90－Z9JPC0 UniRef90－J9E1A9 UniRef90－UPIO0047E6FB8 UniRef90－UPI0003C7FE04 UniRef90－M5F4F3 UniRef90－WOGUJ1 UniRef90－F4GY63 UniRef90＿－11 W8J9 UniRef90－A4CXN3 UniRef90＿O5FT11 UniRef90＿UPI000466B12E UniRef90＿UPIO00255EDD2 UniRef90－UPIIOOO42622A9 UniRef90 ${ }^{-}$W5Y2R6 UniRef90＿UPIo004664962 UniRef90－S2WTU2 UniRef90 UPI0003B35213 UniRef90＿UPI00037F7FD3 UniRef90－D7GG27 UniRef90－H8E659 UniRef90＿UPIO003756A37 UniRef90－L1MA84 UniRef90－R4XZG1 UniRef90－UPI00041C1F2A UniRef90－I2AIB9 UniRef90－G8PPU3 UniRef90－C5C8C4
UniRef90－D7JYV2 UniRef90＿D7JYV2
UniRef90－UPIO0037BobDe UniRef90－FOY9C5 UniRef90－10R3E6 UniRef90＿UP100047A9C1A

A ATAVGVSSRVEEGTGEDIALDDDRT SPDQVSVQATLDTVAPPTGTDAENPANWVPVFG
DПTPDTVGKTAGANTKGQGNDLVID
D 1 PTPDTVGKTAGGANLKGQGNDLVID AAAAENGDWSVPNYAVD
EAVPLSVETVGKTIDGATLKNPGSNNVID ELSEESVGVALDNLKFTGAEGDEAPHDMVV DSDALF APSQETAAKAADIAEPAKDRADGDLA
APVPATGDNASKA DAAAK $\square$ SG TGSDपA पK पDYT PAAVTGVKSKIPNPTEGYKED
ELTGESAGAVSAAKTAGEGND
RPVRIGTDDFGKTDKGAR\｜VGTGNDLVL

ELNAEAASKAVEAATPVEGGSDQDMSLDLKDTTES ALGADTAGAAIKSAKVKGEGHDLVLDDSGEDDR
ELSPESA AKVVAEAPRREGSGRYDYALELDYGTTES SGAKALNGLTLDPNLAGSNP
KAADRASDWAAKGNFHASLANL
AGKAVAAAKADGTGNDDRDKDDYT
EDTNETVGKADDGAKLKGEGNDLVLD
GPSPEAAASILGASERVADSGE

$Q A A A A T A D W N K E P D F Y Y V L G D$
$E L N A S A N V G V A L D A L E F T T E G N D M V D$
MAAAANAQW
QAAAANADFTKVE
SPEAA AKVVADSPRREDNTSEFDGA
位信
QAAAAGADWGAKSDTAP
 KPTVEAGAKALNGITLDENLAGKNP
KPTVDQANKALGNVQFNEDFTIENTD
SPEAASA
a
SPEAAAATVDAS PARESNTENDHADEGDYT
ELNNESVGKADDNDEYKGEGNNMVVDSKA SPEAAAA IVDAS PEEEGRAATD $\square$ A $\square K \square D R T S T E$ AASATHADWSHADHYAVDLLD $\square$ A
QAAV
KATASKTPTDERDSLI
SPEAA AKVVDASPRAEDATDNRLVVELDRTTTE KISPEAASKAVDAGKPVDGGADTDGAIKLDRTTTES VAVSTEAAAAAVDDATPVEGRSDQD■ALALDRTTTE AEAAKYANYSPKD
SITTESVGQTIDAGADTGQGNDLVLD TSSFY
SADAA A AVVDVSPRDENRYEHD DAF SGDDRTD
पS A A LLP LS S DLK E WLS PVDV
ПAADEGПRAAEYKP
ㄴADS
VAFSAEGAAATVDAS PRVEGRAEHDFADEVDRTLTD KAAVSGVKANIPDPTEGYKED
SISAESVGKT\AGARFAAGSGHGNDLVLDM LK QML
IEADNSA
SYSAEAAAKLVEGSPLDEGRGEGDLVFDVD
KAAVSAVKASUPNPTEGYKEDSAAGEHRVVLDTNHTKQML
SPEAA
QAAAAAVK
ELSSEAASRAVEVATPVE
GRSDADMSLDLERDTES
a
QAAATSVAWGETTDFFASLTDRG
QPSVEAGAKALNGDEDDQHLAGSNP
SPDSAEAGSKVDADSKVNTTVDGDNR\｜VVD』N
RPTQEAASAAVSTDRLNERL
TGAASSADWLHADHYAVNLLAAPGAQAWPTMSATFALVPV TALGSAAALPPATGVVQRDPAGANWTDTNNQANPFNWVRS VPYSADAAAKVVDASPLDKTATEKNRVVVALD ARAVETAGEGLIAGA
SAEAGSKVIADSQLDTSVDGD
GPVEDNNDSVGKALDGLEFKTEGNNMVV

VYAPTAANTATALGGLTLGSDLSRPDSWAPTA
KFSNEAAAAAVDSAERVDSGVQGDL
E $\square$ SADAASKAVADSKLDESVPGAN
SPEAA ASAKAVEVSSVVDNRPANDTATDLDRVVLDUNH
AKVVSG SPARTGGPANDQAIACDRTQ

EAAVAKASFTNNGHNLVVNTDAAADLAYSLDR LYD EAAVAKASFTNNGHNLVVNTDA
EAAAQGAARQIALKNEPPQ GPGAPGWSSPNNNPANWVRリ AAKAVDAGKPV EGRTANDपS DK पDRTTKD GAAAAGV
EAADEEISRSGEPपSTDE
KVGDEYVKESPEAAAKLVETSEEKEDGSLEDDRATTE
1 TAAST
VSLLLKAKTNTNKSSADYLTQQLNG
$S$ STES $\square A R G G V Q A A A E E A L A L G V M P S D P A D F S Q V S L H$ AAAAVVDASPLVEGRESYDLATKDDR



UniRef90 K9RKT7
UniRef90 UPI0003B429CB
UniRef90-G7GYW6
UniRef90-UPI0002D5939A
UniRef90 IOKPF6
UniRef90-Z5X9K8
UniRef90-Q0GLJO
UniRef90_B3QHB9
UniRef90 ${ }^{-}$V8D0F3
UniRef90-UPI0003602967
UniRef90 KOYPU3
UniRef90 A0A024YMG1
UniRef90-F8ANL2
UniRef90-U7JMU6
UniRef90 A0QL 07
UniRef90-V4L298
UniRef90-UPI000402881A
UniRef90_UPI0003647C12
UniRef90 E1W017
UniRef90_UPI000476A2E7
UniRef90_Q7VAD1
UniRef90 UPI00036AF9A5
UniRef90 UPI00047545C6
UniRef90-K0KCW6
UniRef90-UPI000380C99B
UniRef90 UPI0003A4F5C5
UniRef90-E6QW50
UniRef90-UPIO0036645F3
UniRef90 J4SRN4
UniRef90 B5EQP1
UniRef90-J7LCA1
UniRef90-UPI0003791593
UniRef90 UPI00046957F9
UniRef90-M5UJ25
UniRef90_Q0GPP5
UniRef90-F4XI77
UniRef90 UPI000370A6D5 UniRef90_UPI00034588DC UniRef90-UPI0003B58D35
UniRef90 U2XBX4
UniRef90-UPI00046EE051
UniRef90_A0A059IR98
UniRef90-D1BD79
UniRef90 H0QJ51
UniRef90-UPIO0047A20EA
UniRef90-UPI000362F9FB
UniRef90 X7ZOS1
UniRef90-UPI000478472E
UniRef90-UPI0003A0624A
UniRef90-Q7M9G4
UniRef90 A5GTQ5
UniRef90_UPI0003A958B3
UniRef90-F6BAM1
UniRef90 F5Z225
UniRef90-10A0Y5
UniRef90-UPI0004693B86
UniRef90-Q58421
UniRef90-UPI000405BF4C
UniRef90-Z9.JPC0
UniRef90-J9E1A9
UniRef90-UPI00047E6FB8
UniRef90 UPI0003C7FE04
UniRef90-M5F4F3
UniRef90-W0GUJ1
UniRef90 F4GY63
UniRef90-I1W8.J9
UniRef90_A4CXN3
UniRef90 Q5FTI1
UniRef90 R4XUW9
UniRef90-UPI000466B12E
UniRef90-UPI000255EDD
UniRef90 UPI00042622AS
UniRef90 ${ }^{-}$W5Y2R6
UniRef90-UPI0004664962
UniRef90-S2WTU2
UniRef90 UPI0003B35213
UniRef90-UPI00037F7FD3
UniRef90-D7GG27
UniRef90 H8E659
UniRef90- UPI0003756A37
UniRef90_L1MA84
UniRef90_R4XZG1
UniRef90 V8QSR6
UniRef90-UPI00041C1F2A
UniRef90-l2AIB9
UniRef90_G8PPU3
UniRef90 C5C8C4
UniRef90-D7JYV2
UniRef90_UPI00037B0BDE K N CN
UniRef90 FOY9C5
UniRef90-IOR3E6
UniRef90_UPI00047A9C1A
F N S C N

ATACSGKGR
$P T V C G D V G R$

| UniRef90 UniRef90 | K4IKUO KHBBW7 UP100034558F1 |
| :---: | :---: |
| Uniret90－U | U2FX |
| 边 | ${ }_{\text {A }}$ |
| UniRe |  |
| iRe |  |
| Ret9 |  |
| Reter |  |
| Uniretig |  |
| Uniretovo | UP |
| Ret9 | E4N6P3 |
| Unineiga | K8 |
| 2ef90－ | B9 |
| iRef9 | A0A046BDB0 |
| RRef9 | P100038802A40 |
| Unireet9 |  |
| Unifeigo |  |
| Uniret9 |  |
| iRef | UP10003732900 |
| Ret | kgT |
| Unire9 | H8L |
| Unireso | （1） |
| Uniret |  |
| UniReref |  |
| Unireta－ | v9 |
| UniRet9 | k9 |
|  | 边 |
| Uniret90 | 10xT |
| Refor | UP1 |
| Unifereto | ${ }^{\text {A2 }}$ |
| UniReig | R20160 |
| － |  |
| Unireti90－ | E4 |
| Unirei9？ |  |
| Ret90－H | H8 |
| iRet9 | C8 |
| UniReig | wos |
| et90 | EORO |
| Re90 | UP100035E48B0 |
| Unifereto | URIP0046AF078 |
| UniRet90－T | T3G508 |
| Ref9 | Ufi0004787135 |
| 的re90－ | （17） |
| Ref9 | F4A |
| Unireteo | asp |
| ${ }^{\text {Refigo }}$ | B2IZO4 C3AHQ |
| Re90 | UPI |
| Uniretos | － |
| Unir |  |
| UniRe9 |  |
| nirete | S2 |
|  |  |
| UniRet90 | A9wCVo |
| （190 |  |
| Unirets | A7NGX1 |
| Ret90 |  |
| ef90 |  |
| Ref9 |  |
|  | 位 |
| ei9 |  |
| HiRe 90 |  |
| et90 |  |
| UniRef9 |  |
|  |  |
| Unimefote | 41 |
| UniRet9 |  |
| Rel90 |  |
| －190 | － |
|  | UP1000477BB09 |
| UniRef90＿G | G7MCP2 |

GS GASS QQSADEAWKQHPGAR\｜SYDPAGSGAGVNAF
G G GS S LVAP TIG SVS QASEATFTYYSVGS GA GQNGF GGGSSSLVAPTIGSVSNTSEGTFTYYSVGSGAGQNAF

GGGSS LVAPTDGA $\quad$ GNTAQGSFTYFSVGSGAGQNAF $S V_{V A Q G S S A Q T T V V S A W I K C P E A T V A Y A S T G S G A G V R A F}^{T Y G S G A S F P S T V Y R S W F D C Y G T A L S Y A A V G S G S G R N N F}$

EARAKPPVKMTYRGVGS S $\square G Q Y E F$ LLGSGPSDAP P LYTSFAVVARSTTTKLKF VTGGGSTFAAPIDETWAEQYDVDDKYES $\square$ GS GEGEKRF I HGSGSTWSAPATMQWAVDVAARIDYTPNGSTAGRTDF SLNADGSSWAGPADDQWRRDVGDEVDFNPVGSAAGRVQW $\square E M H G S G T T N P S K Y V W K A R E H P G R A V E V L A T G S G T G V R$ $\square T \square D G S S T V F P A V A E E F Q K K Y P Q V K V T V G \square S G T G G G F K K F$
VSLSETGSTLLYPLFSEWGQYPKVTITTQDGGSGAGDAQ TITLAGSTALQPLAEEAAKYPDVSVTVQGGGSGTGVNQ



 RLTGSGSSYVGPAMNDWANSRGDPVNYSSYSSPAGVNQY

GSSTVAPDEEFAAVNPGVKVPVGTSGSGGGFKKF

VSTDGSSTVFPAMAEEFQKENAGDKVTVGMSGTGGGFKKF T1DA AVGSTAALQPVVEAAAEEYKNSVTVVQGGGSGTGLSQ $T L T A A G S T T V L P V A Q T V A E H A T A D V Q V S G G G S S V G$


GS STVYPDTEAVAEEFAVKVTVGDS GTGGGFKKF TlRTAGSSTVYPITVAMAEEPGVQIAVQSTGTGGGFTNF VEIKIDGSSTVYPI SQAMAKHKGVNITVGESGSGNGAKKLL VN T A VGSTALQPLVEAAGEDFGVYINVQGGGTGTGLAQ $N V T V V G S T A L Q P M V E M A A E E Y G V S I T V Q G G G S G T G L S Q$
 VT TDGSSTVFPITEAMAE RITVKGSDTMVILSQKWAKNPGISIQVTGGGSGVGI TVTAAGSTALQPLVEAAAAHPNVMVTVQGGGSGTGLSQ VKVDGSSTVFPEAVAEDПQKARKGSVKVTVGDSGTG VS DGAAVGFPAVAEEYEKVKPEAKVSVASSGTGGGFSKF TI A A A GSTALQPLAEEAGKNSKVSIQVQGGGSGTGDNQ SI TAVGSTALQPLVEAAAVNVGKTVNVQGGGSGTGLS

 LVGAGA PIP LYTAWSV SVVGNGSSTVAPI DEKSSDHKNDTVENVTSGTGDGFKQF NITVTGSDTIVIMGQKWAEHPEVAI QVTGGGSGVGD D T I D
T A S S S

N IVTAGSSTVFPLT QRMAERYAGNTTDDS IGTGAGFERF GSNTVFPIAQLWKVHPDVQVTLEGAGSSTGD
GGSTTVSPIMYKQKEQPNITVSYEA DGSSAGLK
 NLS GSGGSSTVVYPITEAVAEEFMNTVGYDVN
$\qquad$
 TI SAAGSTALQPLVKLAAKNAGVQVNISGGGSFTGLNN VKVDGSSTVYPEAVAEDFQKEKKNAIKVTVGDSGTG GS DTVLPVAQQTAEQ QLHGSGTS NPALL $\square W R A R T K P K \square A M S Y R S \square G S G A G$ S TVSGSSA LLPLMEQSEDNPGAEMSAQAGGSGTGGTQV $N V L A V G S T A L Q P L A Q A V A Q Y K G M S V Q V Q P G G S G T G L S Q$ QLS GAGSSTVYPLTMAVAEEPGVRVTVGDSGTGGGFSKF $\nabla K \square D G S S T V Y P E A V A E E F$


## QLERS RKVC

LSNAPSFFGSTVT

 TNGTPTSPPPFTDSQTTDFNGSDAVLSSTDLSNYNGARSK

MGEENPAGAYVSYN DFGSGDMPFSTEDRQT LLDNGVT YQTTANAAKQQLITYDSDFGATNNGLSSSWVSQMRDAAL  ${ }_{\mathrm{M}}^{\mathrm{M}} \mathrm{H}$ EGSSDDGGGTDAGLSEAALGSVE $\square G D V S \quad A A G Q D D F T A S D V P F R S R N D S G V D P T K Q Q$ C N

VA A GAVDDGASDAY LS E G DM
K
$V A A G A V Q U N S D V P S A E K L E D K S K A$

SNAANGNI T I GASDSYLTM KGLGK
C S G



GDRTVDFGATEAEVTSLQAAGGGGFSAQ LVEGS IDDADSSRAAKDKEDKRADEKGVK
CAGD TD\SNASRPDKDKEDEV CNQ
 LINGT TD CASRPLKPQEDQQLKEKYNS CRGE

VATGAVDVGSDVFAEEKEGVDAK
A T A

 AEEKDGDAKK



TSTVAKEQLVQYNSDFGVSVNADTDGWVQQMSDVGGAK
CRGE

IQSGAVDLGNSDMFAGEKEG $\square$ N PKK
VQSGAVDLGNSDMFAGEKEGUNPKK

## 11 N

EGTSEI GMSSRDLKDEEKSAG
VSGSGGGFKKFC ATVNI GMSSRDLKKEEKSAG NGETN

GGFKKFCDGAVDIGNSDVF A E E K K K Lid A DKAK
CNGD


$V$ A A GAVTVGNS
ACK
CRGE
DGTSQI GMSSRDLKDEEKSEDK
YQTSSTEAKQQLLS
RDGMTDVAMASRDMKDKEVKDFADHNDK
A ALI

CNGE


C
TTGKDR
A A LF NGTADI ANSSRWLKPEEI ERMN
$S \mathrm{~L} \square \mathrm{SGED}$ S LA GSSSEFSAEKLJKM
GVSGTGGGFKRFTAGETDDVMTSRDMKAKETQDFES
VGKGKVTI GNSDDF
$V Q A G A V E I G N S D \quad L F A E E K S G \square D A T K$
VASGSVDI GNSDVEVTDEDKDKG
GGFKKFCRGETDVSNASRPMDKKEMD


 GGFKKFCRDETDFSNASRPI TAKEMA

## UniRefi90 K41KU0 UniRef90_L8HBW7 UniRef90_UPI00034558F1 UniRef90_U2FXR5 UniRef90-A4N092 UniRef90-Q398C7 UniRef90 U5W1N2 UniRef90-U5QJJ1 UniRef90-X4Z066 UniRef90-FOXVF6 UniRef90 L8GIY5 UniRef90-M5RW52 UniRef90-UPIO00371E641 UniRet90-E4N6P3 UniRef90-K8EFX3 UniRef90-C6HYC4 UniRef90 B9L1T2 UniRef90 ${ }^{-}$AOA046BDB0

 UniRef90-UPI0003802A40 UniRef90-C5D4Q1 UniRef90-В ВоК3F6 UniRef90-G6CEF8 UniRef90- J9ZD67 UniRef90-UPIO003732900 UniRef90-K9T191UniRef90-H8LA81 UniRef90-Y5PJX9 UniRef90-K1JZMO UniRef90-D88856 UniRef90-E1QIK5 UniRef90-VGRTU2
UniRef90-K9SIR2 UniRef90-R2S5D7 UniRef90_UPIo0036263FA UniRef90-10XTP5 UniRef90_UPI00047521F8 UniR Ref90-K8E5T6 UniRef90-A2SSII UniRef90_-S6BX28 UniRef90-D5XA22 UniRef90-ELL3E9 UniRef90-B9E1C0 UniRef90-H8L847 UniRef90-C8VYA8 UniRef90 - L8HDX0
UniRef90 WoSD 1 UniRef90-EORQJ5 UniRef90'UPIO0035E48B0 UniRef90-C5R8G1 UniRef90_UPIO0046AF078 UniRef90_T3G508 UniRef90-UPIOOO4787135 UniRef90-K9YT81 UniRef90-UPI000468C59C UniRef90_F4A210 UniRef90-Q5P1F6 UniRef90-821Z04 UniRef90_UPI000372EB36 UniRef90-SONHG3 UniRef9-YOKIT5 UniRef90 ${ }^{-r 5 P Z I O}$ UniRef90_L8GG67 UniRef90-S2XIN9 UniRef90_UPIO003B30003 UniRef90-A9WCVO
UniRef90 D9TQL5 UniRef90-L8GK69 UniRef90-A7NGX1
UniRef90 B9K952 UniRef90_UPIO004633BE1 UniRef90-H3KC60 UniRef90-D950X1 UniRef90-UPIO003B315C5 UniRet90_E6LF64 UniRef90-H5Y4D2 UniRef90-G8OHJ7
UniRef90 W4UYS6 UniRef90-L8HF26 UniRet90-D8UL35 UniRef90-B2THQ3 UniRef90_UPI00047C6241 UniRef90-G2SGK2 UniRef90-LiIVV5 UniRef90-K2F6J4 UniRef90-L8H2JO UniRef90-UP1000477BB09
UniRef90_G7MCP2
 VKLDMQTi GLIFAG TNGPLQPYYVPDTDPTPNQAHSIALNDDDLCGIFSG TNGPLIQUPY VTA TVPTTPGQAHS $\downarrow$ ALNDDDLCGUFSG

TNGPLTQRPYVTP TVPTTPGQAHSTALNDNDLCGVFSG ARCPAVHLPLVVGPALAYNVAGVGGLQRRPAVAKI FAG

VLHVPFNLGAMSFFHNVPDSTDPSTGLNDACDIADTAA GGPVTVFAIVPGYNVPELLKGLDLDYETIAAIYLG TRFKYLP VAGGTSFMYNGKDRGQQNLQLSPRTIAGMFTN YGYSYVPDTAGGTAGMYHLELGGDTDLRLSPDTVVGUFTN

GTVVQVPFQLGAVSFFHNVAADDRLNLTSCTLAKI FLR PVALS $S G R E Y \square E \square P V A$ GVVVAANLPSLPQTATLRLDGPLLARLFSG HLKLNGKVLAAMYQG
EHPGTMNTATATSAQQTNYNDPGTDPIKLNAKVLAAMYSG
GELIDHKVAGIAFALVVNKDVNVDSLTVQQIQDTFSG
SLVDHKVAVVGFAVVVNKD VAVDSLTQQQLVDIFTG RYGNLVSDRVAFDDSOVVYNDPG G KNMDGPQLAK F G ASNLVDHQVAVVGVQPIVNLPGVAVDNLLVPDLAREMG A GINYI ELPPVAYDALTVVVNKQNNWVTSMSVAEIKKIWQG DASALVDHRVAVVGITPIVNKD DGVKDTSMENLKKLFTG YK HG TNPVK TPVALDAI TPVVSPKNSVA SLTMEQLRDLFAG ADQLVDHKVAVVGITPIVNK GVGVTELTMAQLRDI FLG NVGYQY
AGDEFDEDPVADDGLTVVVNQENEWASCDTPDDLKKTWDG
ASLLVDHKVAVVGUAPVANKD VGVTDLTKEQLIGI FTG KAKELVDHQVAVVAMAAVAHPK VGVDNLTKQQLVDIFTG NG AGVEYIELPVAMDALTVVVNPQNTWANDGTVDELKAMWQG

GSDLKEYVIAKDGDALI AHPSNTVSKDLTGEQLKDVYQG
LVDHVVAVVGFADVVNKDVGVE DITKQQLVDI FTG DASQLVDHKVAVVGMAAVVNPKVKVNNLTKQQLDD: FTG

 DASQL
 AGDKYVELPMAFDALTVVVNPKNTFINQLTVAELKKMWQG TEAVEMPI ALDGVTVVVNKNNTFAKEMTVEELKKIWSS KASELVDHTVAVLGLAPVANKDAGVKSLTMEQLRD: FAG LVDHTVAVLGLAPVANKD VGVKSLTMEQLED:FAG
 LVDHQVVAQGFT AYAHKD VGVDNLTKQQLKDDFGGG AGDRYYELP AFDAGAVIVNRQNNFAKCLTIGKELKKIWDG LVDNKVAGIAFALVVNKDVKVDNLTVKQVQDIFSG SDLVDHQVAVAGLAVVVNKKEVTVDDCTVEELRKIFTG
 TVRYTVAYQIAMDGIAVITNSANKVKDLTLDQVKDVYGG
 GYYPEEHKVALDSLAVVVNSGNPVKELTLKQLMGIFTG


SLVDHKVAVVGFAVVVNKDVVTVDNLT


UniRef90_K4IKUO UniRef90_L8HBW7
UniRef90_UP100034558F1 UniRef90_U2FXR5 UniRef90-A4N092 UniRef90_Q398C7
UniRef90 U5W1N2
UniRef90-U5QJJ1
UniRef90-X4Z066
UniRef90-YOXVF6
UniRef90-L8GIY5
UniRef90
M5RW5 UniRef90-UPIOOO371E641 UniRef90-E4N6P3 UniRef90-K8EFX3 UniRef90-C6HYC4
UniRef90
B9L1T2 UniRef90-A0A046BDBO UniRef90_UPI0003802A40 UniRef90-C5D4Q1 UniRef90-B0К3F6 UniRef90-G6CEF8 UniRef90 J9ZD67 UniRef90-UPIO003732900 UniRef90-K9T191 UniRef90-H8LA81 UniRef90-Y5PJX9 UniRef90-KIJZMO UniRef90_SOKPJO UniRef90-D81856 UniRef90-V9RTU2
UniRef90-K9SIR2 UniRef90- R2S5D7 UniRef90_UPIOOO36263FA UniRef90-10XTP5 UniRef90_UPIO0047521F8 UniRef90-K8E5T6
UniRef90 ARSSI1 UniRef90 - R2O160 UniRef90_SBBX28 UniRef90-D5XA22
UniRefo - 413 E UniRef90-SOP6Q9 UniRef90-B9E1C0
UniRef90-H8L847
UniRef90-C8VYA8 UniRef90 L8HDXO
UniRef90 WoSDL UniRef90-EORQJ5 UniRef90-UPI00035E48B0 UniRef90-C5R8G1 UniRef90_UPIO0046AF078 UniRef90_T3G508 UniRef90-UPIOOO4787135 UniRef90-K9YT81 UniRef90-UPIO00468C59C UniRef90-F4A210 UniRef90-Q5P1F6 UniRef90-Q2IZO4 UniRef90-UPI000372EB36 UniRef90-SONHG3 UniRef90-YOKITT
UniRef90 R5
UniRef90_L8GG67
UniRef90_s2XIN9 UniRef90_UPI0003B30003 UniRef90-A9WCVO UniRef90-D9TQL5 UniRef90-L8GK69 UniRef90-A7NGX1
UniRef90_B9K952 UniRef90_UPIOOO4633BE1 UniRet90_H3KC60 UniRef90-D9S0X1 UniRef90 UPIOOO3B315C5 Unirefo-E6LF64 UniRef90-G8QHJ7 UniRef90-W4UYS6 UniRef90 L8HF26 UniRef90-D8UL35 UniRef90-B2THQ3

K|V|TNWRDPR|IAAPDLLD|ITV|HRSDKSGTTKSFLLSY|LHDTA NIT HWNDSQILALLNTAITVVVRADATPTTRAFTRALANSS K L T M N W N L V
 KLTNWNQVTNPTLNAPITVVYRSDSSGTTELLTRHEVAVC VVTVWNDPGVTLPSTKI RTVVHRKDNSGTTDNFTRF TVAAG VIT TWDHDDMAINPPIVVYHRTHGSSTTKGTTQYLAAAC NISMWDDDRIKALNQPI LVATQNDSSTGTQLFVSVLRANV KETRWNDPRI ELLPDQPI HVVVRQDSSGTTFAFTNHLSAIN

Q $\stackrel{*}{4}$

TVK T WNDPQQI T
KI T N WK DVG
KI T N WK E V V G
E I D N WQ DV G
K I R F WNDPGVK
EI T NWKEVG

K I K T WN QV R S N EI KNWSEVG | $E$ | $A$ | $K$ | $T$ | $W K$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $D$ | S S W |  |  |  |
| $K$ | $I$ | K WK | L | G G A |  | K $\quad 1 \quad$ K N WK E DI T R WS DPA $\square$ P A I K N W WS EVGG $\qquad$ GKNQE GKNQEIVIINRAA LPDQPI TLL GRTGQS G

TVT T WA DVVR R D $G$ GDD GPIVVISRDSSSGT FALVY DFI AK S A KITNWQEVG K I T N WK DV G G A KI T N WK EVVG $\qquad$ DREAVINRAS DQKIVII N NRPSSSSGTRKTFENYALGTK KI T NWNQI R PSFP DKP V KVTNWK E V G GA D Q S $\quad$ IVVLNRAS GS GTRASFEA KI T N WK E L G G A K I T N WK DV G
Q I T N WK QL G K I T N WK DVG G E YTNWKEVGG EIT NWK EVVGGAD E V T N WK D L G G S K I T N WK EVV G K V T D WK DVGGS S T M WN SR L K I T K WN QVNPAWP DAQK WS DVVDPSWP

 KYTNWKQLGG GKDPIILINRVTGSGTRATFEK GKNQKIVVINRAQGSGTR】AFENNVM | $K$ | $T$ | $N$ | $W$ | $K$ | $D$ | $G$ |  | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $I$ | $N$ | $N$ | $W$ | $Q$ | $Q$ | $V$ | $R$ |
| $Q$ | $S$ | $S$ | $F$ |  |  |  |  |  |
|  | $T$ | $N$ | $W$ | $K$ | $Q$ | $V$ | $G$ |  | QI T N WK QV G S F


 KI T N WK DVG G C DSSFP KI LDNWNQVNP KFPNVP LKLFGAGSDSGTF DYFTEAVVGKA
 EITNWKELGGGKDLEI SIINRAASSGSRATFDSVIMDGH K I K N WK EVVGGA DQEI SVVNRAS GS GTRATFEK
 KI T N WKEVG GN K I RSWDEVG Q Z T T M WN D Q R $\quad$ K K Q $I T M W N D Q R \square K D P K A P I V V V G R D S S S G$

## R $\$ S N WS EVV <br> RI T N W N E Q V $V$ R E G F


 $\begin{array}{llllllll}K & A & K & T & W & D & V & N \\ E & P & D & \\ E & I & Q & W & S & Q & V & N\end{array}$ D I K N WK E V G KIK SWKEVVG GEDLPILVVNRDESSGG KVTKWSDI RPGWP
 GK D E K

K I T $\quad$ T N WK D V G G S $Y P D$ $\left.\begin{array}{c|c|c|cccc}D & S & I & S & I & G & R\end{array}\right]$

KI T N WQQVG G
DIT S WNDTTRTKDLNTAEVVCTQSTSSETTTGLFTSVLSATV E
 K I T N WK DV G G DQK V VNRPA T R WNQVRPSFPDRPLNLYGAGTDSGTYDYFTAA\|VGEE QI KYWNDSADYNDNAA TVVFVRNEDSGTTE DWKK S L L A GA S
 $K$ I T N WK QVG

UniRef90 K41KUO UniRef90-L8HBW7 UniRef90-UPIO0034558F1 UniRef90_U2FXR5 UniRef90_A4N092 UniRef90-Q398C7 UniRef90-U5W1N2 UniRef90-U5QJJ1 UniRef90- X4Z066 UniRef90-FOXVF6 UniRef90_L8GIY5 UniRef90-UPIO00371E641 UniRef90-E4N6P3 UniRef90-K8EFX3 UniRef90-C6HYC4 UniRef90-B9L1T2 UniRef90-A0A046BDB0 UniRef90 UPIO003802A40 UniRef90-C5D4Q1 UniRef90_B0K3F6 UniRef90-G6CEF8 UniRef90 J9ZD67 UniRef90-UPI0003732900 UniRef90-K9T191 UniRef90-H8LA81 UniRef90-Y5PJX9 UniRef90-K1JZM0 UniRef90-D81856 UniRef90-E1QIK5 UniRef90-V9RTU2 UniRef90-K9SIR2 UniRef90-R2S5D7 UniRef90_UPI00036263FA UniRef90_IOXTP5 UniRef90 UPI00047521F8 UniRef90-K8E5T6 UniRef90-A2SSII UniRef90 R2Ql60 UniRef90_S6BX28 UniRef90-D5XA22 UniRef90-E4L3E9 UniRef90_S0P6Q9 UniRef90_B9E1C0
UniRef90-H8L847 UniRef90 ${ }^{-}$C8VYA8 UniRef90-L8HDX0 UniRef90-W0SDL1 UniRef90-E0RQJ5 UniRef90 UPI00035E48B0 UniRef90 C5R8G1 UniRef90-UPI00046AF078 UniRef90 T3G508 UniRef90-UPI0004787135 UniRef90_K9YT81 UniRef90_UPI000468C59C UniRef90_F4A210 UniRef90-Q5P1F6 UniRef90-B2IZ04 UniRef90-C3AHQ1 UniRef90 UPI000372EB36 UniRef90-SONHG3 UniRef90-YOKIT5 UniRef90 R5X3T1 UniRef90 ${ }^{-}$R5PZIO UniRef90_L8GG67 UniRef90_S2XIN9 UniRef90 UPI0003B30003 UniRef90-A9WCV0 UniRef90_D9TQL5 UniRef90 L8GK69 UniRef90_A7NGX1 UniRef90_B9K952 UniRef90_UPI0004633BE1 UniRef90 H3KC60 UniRef90-D9S0X1 UniRef90_UPIO003B315C5 UniRet90_E6LF64 UniRef90 H5Y4D2 UniRef90-G8QHJ7 UniRef90-W4UYS6 UniRef90 L8HF26 UniRef90-D8UL35 UniRef90-B2THQ3 UniRef90_UPI00047C6241 UniRef90 G2SGK2 UniRef90-L1IVV5 UniRef90_K2F6J4 UniRef90 L8H2J0 UniRef90-UPI000477BB09

GSAWPYPAGEN WPNDL
180

- 190

200
A GVVIMTMNQ TAFADVVGVSDLD PAWPASFVQATGASGVMTAVLN TTANTANGVTFVNTSAFPTGVPSNFVSATGSGGVRSALSG TTANTASGVKFVNSAFPSGVPANFVAASGSGGVAS LSSA ND

WKNQVGEGKSVKWLT G QGGKGNEGVASYVRQ SATNTAPGVTFVDSTTFTASFPTGFVAASGSGGVRNQLTT GADWKFGAGSVWS APGGSAEQGSNGVATAIAR PGADSRIDSDFFVPNLTNGSGSSNVVQGNGSNGVATGISS PD WKSTVGEGKAVKWPTG QGGKGNEGVAAYVGQ

PEKWTQV GSTI EWPDVTVAVEGSGEMSSMIDA PGFSDFVSSSTNP SFPVQSTNRSLVTTAADGVMPLLNA DEWADRFGRSSADASMKVLDWPGAAMNASGNSGVAGRIKQ ND DWRPFFPGGMTSE FPVKGATKAQAGSEGVANYVAA | QGEWEAYCTGVNCGDYTEFFPPSGRMTAQNGSDVVAGYIQ |
| :--- |
| $P D V W T G G V S K$ | VLWRESFGVEDR PSWPRGSVGVSGSAALRAALLK GASRGDYTASEDDNVLVQG PEGWGK SPGFGTTVDFPAVPGALGENGNGGMVTGCAE PDGWGKAPG FGTTVDFPAVPGALGENGNGGMVTGCAE

EEAEG $\square$ A $\square$ TE
KTKPAQE

QDSTGMVRSIVAN
KEWYENDS RDLSPSWPVGS GYNGSDAVVAAVLT
$P S K K S Q E$
$G A S R T D Y T P S E D D N V L V Q G \quad Q D S N G T V R S \| V S Q$
$V$
DGETAVQAQEQDSSGMVRQ\|VAD


PAAYNAFVQRNAANGMGNLPDGVRPQQFSDSEQIATAISS $R V R P D A Q L Q A S N G A V A Q A V A S$ GTDANAFSGKSTFAQEFPGNTPANFLAAAGSGGVATAISA DASRTDYQPSEDDNIIVQG WGLDGAEAVQSQEQDSSGTVKKVVAE
DFD GS $\underset{Q H Q D Q S S G T V K K L V A E}{Q}$
HSSRGDYTASEDDNVLVQG
QHMVGTAALVNAISK
WGLDGASA $\square Q S Q E Q D S S G A V R K \square V S E$

EEASG GKQPVAAQ
NAKQSQE
SAKQSQE
EEKEGLGTT
DETAPG
MEQDSSGTVRKMVGE PSFA A QKKTPYELTACLGKVGVGGLPHFPVLDAFNRSLTA KSSRGDFTASEDDNVLVQG
DLSRSDYQGTEEDNT
KESRSDYTPSEDDNVLVKG
$\because V Q A V S^{R}$
WGLDGAKSADSQEQDSSGTVQS
NGQKMVKKAEQESNGTVQRMVDS
E E LT K DA Q $\square$ S
DGSGNIVTTVEG
E ELTKEA
GASRGDYTASEDDNVVVQG
Q $\square \mathrm{GDGSGNIKSTVST}$
VAFDGEEDFARNCQT पPGTAA V VAI KR
KASRGDFTASEDDNVLVQG V A E

KNGRTDYTPSHNQNLLVQG
K $\square$ NDGTGTT
E A
QDSNGAVEQAVSG
TQSQEQDSNGMVKQAINS KSSRGDYTASEDDNVGLDGAET $\square$ QSQEQDSSGTVRK VVAE GDLTSNAQПSDGSGNTKTTVQG $R V S P R A L I Q A S N G G V V Q A I A Q$ SAFEAAVVPGPSATFPVQGAGPSRSUIVDSPEEMI STLSA D $\square \mathrm{K} A E K \mathrm{~N}$

## KNQDYAADCQTLAGTSAIANA S

KASRGDYQATEDDNVT $\square T G$ G DEVQGLALTE PEFAAQTNRS $\square N \square S T T T D \square G$ DASGTVRKTVA E FEKKGKEA ILNAPGDQLSENDNVLVQGVEGD RMAPY
$V R M V E S T Q \square E \square E N V A R$ QPFFGKAPAYDKEAVVAKENGEVVAKVLA KKSRSDYTASEDDNVLVQG
EAKQAQE
DFTDAAA
KSSRGDYTASEDDNVLVQG
 $K N K N Y M P G S L S M P A T G A T I Q S V V S$

$S$ PEFAAVVTSGPMATFPVQQFGGNRSLVANSTDNLMTQLIS | $P G E W S G K G Q G V G V T \square S W T S \square P A A R R T M V T N S Q T M V E Q U A T$ |
| :--- |
| $K S L E N D S I G A V$ | K S LENDS $\square$ GAV

TEDL
HASRSDFTASEDDNVLVQG
QGS $\square$ QEDSSGTVKKLVKE
 KSSRGDYTASEDDNVLVQG QTFRELV VGTGASVHFPVEDTGVVRVDDVASALDQ
K S LIENDS $\square G$


| UniRef90_K4IKU0 |  |
| :---: | :---: |
| UniRef90-L8HBW7 |  |
| UniRef90-UPI00034558F1 |  |
| UniRef90-U2FXR5 |  |
| UniRef90_A4N092 | MAAASHAKWHEKA |
| UniRef90-Q398C7 | APTYANASTALGSFAPPTTSKAAASNQANWVPNAGN |
| UniRef90-U5W1N2 | A LT TAGARVSGTGGDL |
| UniRef90-U5QJJ1 | PS P TAAFNAVKNFVLADTNGNGVIGDPA D Y A A L T T Y L V |
| UniRef90-X4Z066 | (FAAAAANADWKSAPGMGVVLTT |
| UniRef90-F0XVF6 |  |
| UniRef90_L8GIY5 | K NALLE E Y LA S G S D SLP F N A L T |
| UniRef90-M5RW52 UniRef90 UPI000371E641 |  |
| UniRef90_UPI000371E641 UniRef90-E4N6P3 |  |
| UniRef90-K8EFX3 | PKAATEYGTLPS $\square$ E ${ }^{\text {L }}$ D WSMVSLI |
| UniRef90-C6HYC4 | QRAAEALGRAPA FPEGFDR SLV |
| UniRef90_B9L1T2 | E P NLLETVGKTGQYQ |
| UniRef90-A0A046BDB0 | QAAAAGF ASKTPANQATSMT |
| UniRef90_UPI0003802A40 | QAAAAGF A AQTPDNQAISLI |
| UniRef90-C5D4Q1 | EPTIENIKT |
| UniRef90-B0K3F6 | EPTAQNI |
| UniRef90_G6CEF8 | A P D E NVMT |
| UniRef90_J9ZD67 | N N A GVAALLH P S F P D F N R T IVVW |
| UniRef90-UPI0003732900 | APTEENVHV |
| UniRef90-K9T191 | S P S I S TVQNGTY Q |
| UniRef90-H8LA81 | EPTDENVTT |
| UniRef90_Y5PJX9 |  |
| UniRef90_K1JZM0 | QP GAKTA |
| UniRef90_S0KPJ0 | LP T D ENVT T |
| UniRef90-D81856 | KP Y A N I A A A K H A HLTRPDLS Q DLDEVY T |
| UniRef90_E1QIK5 |  |
| UniRef90_V9RTU2 | T A L G S A A ALDP P A T GVVQRDPA G A W W D T N N Q A N P F NWVR S |
| UniRef90-K9SIR2 | APTAEN】NTGKYA |
| UniRef90_R2S5D7 |  |
| UniRef90_UPI00036263FA | EPTVENVT |
| UniRef90_10XTP5 | LP TEANULT |
| UniRef90_UPI00047521F8 | A P SIVETARSGQYQ |
| UniRef90-K8E5T6 |  |
| UniRef90-A2SSI1 | A P TVENVIN |
| UniRef90-R2Q160 | N E |
| UniRef90_S6BX28 | A P T D T NVT T |
| UniRef90_D5XA22 | APTKENII |
| UniRef90-E4L3E9 | S P T AKHVKT |
| UniRef90_SOP6Q9 | P N DENVKT |
| UniRef90_B9E1C0 | EAS SENIL |
| UniRef90_H8L847 | EPKEENV |
| UniRef90-C8VYA8 | EPSVENI |
| UniRef90_L8HDX0 | RASMTSVASAM NDFLQS GTPLAYTSLV |
| UniRef90_W0SDL1 | MA GEYE |
| UniRef90-E0RQJ5 | APSLETARTYE |
| UniRef90_UPI00035E48B0 | LP S ${ }^{\text {S }}$ |
| UniRef90-C5R8G1 | A ATNENVI |
| UniRef90_UPI00046AF078 | S P TVDNVK |
| UniRef90_T3G508 | EAT DANVIANKYP $\square$ S R P |
| UniRef90-UPI0004787135 | R P |
| UniRef90-K9YT81 | PPSAATV |
| UniRef90_UPI000468C59C | LP S A A T IK N |
| UniRef90_F4A210 |  |
| UniRef90_Q5P1F6 | $\square S$ GA Y N |
| UniRef90-B2IZO4 | VD NVIK N】Y T |
| UniRef90_C3AHQ1 |  |
| UniRef90_UPI000372EB36 | EPTAKNV |
| UniRef90-SONHG3 | K P TPETIQT |
| UniRef90_Y0KIT5 | MP S VESVK |
| UniRef90-R5X3T1 | R P |
| UniRef90-R5PZIO | K P G D E S A K |
| UniRef90_L8GG67 | TSALND Y VA G Q TVS T NPSRRAGS GLAFDSALLG |
| UniRef90_S2XIN9 UniRef90_UPI0003B30003 |  |
| UniRef90_UPIO003B30003 UniRef90 A9WCV0 | SVKK D DKSTAVSPDTAD GRDD |
| UniRef90 A9WCVO | EPSFET AADATYQ <br> EPTKENVIN |
| UniRef90-L8GK69 |  |
| UniRef90_A7NGX1 |  |
| UniRef90-B9K952 | Y P TKEN L |
| UniRef90-UPI0004633BE1 | EPTVKNVI |
| UniRef90_H3KC60 | EATMETAK |
| UniRef90-D9S0X1 | E P T A E S $\square \mathrm{K}$ N G T Y K |
| UniRef90_UPIO003B315C5 |  |
| UniRef90-E6LF64 | K P T D E N M |
| UniRef90-H5Y4D2 | EYS VETV |
| UniRef90_G8QHJ7 | LP SPETV |
| UniRef90-W4UYS6 | TPTVENASN |
| UniRef90-L8HF26 |  |
| UniRef90_D8UL35 | AP ESF |
| UniRef90-B2THQ3 |  |
| UniRef90_UPI00047C6241 | EPTADNVKT |
| UniRef90_G2SGK2 | LP S P E V V N G Y Q |
| UniRef90-L1IVV5 UniRef90-K2F6J4 |  |
| UniRef90_K2F6J4 | EPSAANVENGTYA |
| UniRef90_L8H2J0 | A S SLS Y R A LTLT S SLT |
| UniRef90_UP1000477BB09 | DPTFDNAR |
| UniRef90_G7MCP2 |  |



|  | 360 |
| :---: | :---: |
| UniRef90＿K41／ | SEQGQRMAAAAGSAELGQGLRSQAMASVETV |
| UniRee90 L8HBW7 | İEYNAQAAMSASNYATLHYSVLKRATDALGQVCNKLRSIP |
| UniRei90－U2FXR5 | NA SYASVVHGNGFDTVPSGFQTAINFILSSSNNFLDILD |
| UniRef90－A4N092 | RGQDAATELDYVPIPADVVST：KS |
| UniRef90－Q39 | NA SFAS\｜VHGNGFDTVPSNYQTAISNDFLSNASNLD【 |
| UniRefolo 5 W 1 N2 | ASPAGQAAAARLGYAPLPEKLRAQVVAA N N |
| UniRef90－U5QJJ1 | TSTKYDSLLATSLGFAPLGTSLKASVRSTVGQU |
| UniRef90－FOXVF6 | LSEDGQALLGDYNFEAAPADMLDISRAALD |
| UniRef90－L8GIY5 | NTASQQ IAERQGFV LTSSSRTLMKRFWNDQKNAVS\｜IG |
| UniRei90－UPiooo371E641 |  |
| UniRef90－E4N6P3 | A GQGEADELGYSPIPRNLV |
| UniRef90 K8EFX3 | LSSDEGQAMVPDFLI YALDSTTTASMRMQVESK】 |
| ${ }^{\text {C6HY44 }}$ | RGQEA |
| UniRef90－B9LIT2 | NAA ELLSQEVGYDPLP |
| UniRer90－A0A046BDB0 UniRet90 UPIO003802A40 | DGNKA SFLDQVHFQPLPPAVVKLSDALIATUS S |
| UniRef90－C5D401 | KSKEFA |
| UniRet90－B0K3F6 |  |
| UniRef90－J9ZD67 | Y YPQYTVKTGFAPL |
| UniRef90－UP10003732900 | DTVQEl VKE GY ${ }^{\text {d }}$ |
| UniRef90＿K9T191 | NVGKLAQEVGYV |
| UniRef90－H8LA81 | SDDEGKKSAEDAGYVASPSKVYK |
| UniRef90－K1JZM0 | A EGQQ |
| UniRef90－SokPJo | A DIDQKNIVGKLGYIPVSGMKVER |
| UniRet90－D881856 | DGQVNMSRLGYSPLPPNLAQEMMNA |
| UniRef90－E1Q1K5 | EGQKIAGEE |
| UniRef90－K9SIR2 | ENKSDLVREVGYVDMPEATVAKIVARVN |
| UniRef90－R2S5D7 | SSEVQNGLVKELGYYLP |
|  | KDGQKVVKDVG |
| UniRef90－UPIOO047521F8 | DSKHSEGLVQEVGYVPLPENALAAMRERFA |
| UniRef90＿K8E5T6 UniRef90 ARSSII |  |
| UniRet90－A2SSI1 | LS SEEGQSGIVKENGYYLPIT |
| UniRe | P DKKLVQKMGY। |
| UniRef90－D5XA22 | LS DDVQKLVPKLGGYIPVTEMKVEK |
| UniRef90－E4L3E9 | ESVQQk Vit |
| UniRef90－SOP6Q9 UniRef90 B9E1C0 | DKVEK ${ }^{\text {a }}$ |
| UniRe990－H8L847 | MTEEDQEGVKELGYLPMT |
| UniRet90－C8VYA8 | OGO VEKLGYI |
| UniRet90－L8HDX0 | VAlS SN YVLASSUARAKSYDG |
| UniRef90－WOSDL 1 | RKHGGKLAKEVKY |
| UniRei90－UPIOOO35E48B0 | NSSEGAELVEAVKYIRLPEDVVNKNLEALK |
| UniRef90－C5R8G1 | DSEHTQKLVPKLGYISIHDMKVSR |
| UniRef90＿UPI00046AF | DVVEQDNLVKALGYY：PLSQMKVQKNEKNQVTPDTTTGKE |
| UniRet90－UPIOOO4787 | LSEEGQKIVEENGLI |
| UniRef90－K9YT81 | LSSENRNLVVEVGYVGLSDTDYEKA |
| UniRet90－F4A210 | TTADVAE |
| UniRef90－Q5P1F6 | KNASDLATEVKYVPLPPKAYETAMENVN |
| UniRef90－B21Z04 | ENSWK WVDSVGYVALPDEAYVKVKQKFAT |
| UniRet90＿C3AHQ1 | K DFEK |
| UniRet90＿UPI000372EB36 | SDEVQNGIVQTMGY। |
| UniRef90 SONHG3 UniRef90－YOKIT5 |  |
| UniRef90－R5×3T1 |  |
| UniRef90＿R5PZ10 | L |
| UniRef90－L8GG67 | QNADRQGMVVPTTVDTINRSLK |
| UniRef90 s2XIN9 <br> 促 | D DKGKAAESKVDYVALPKNKYEEQMKKLDKLLT |
| UniRef90－A9WCl | PEFTPII QTPQVGYVKLSDELYAADAKRFNDRV |
| UniRef90－D9TQL5 | MSDEVQKGAEKLGF |
| UniRet90－A8GK69 |  |
| UniRef90－B9k952 | SKKGQELLEKAGYV |
| UniRei90－UPIO004633BE1 | DSPKGQAVVKSTGYIPL |
| UniRef90－H3KC60 | MSADGQALVQKSGFV |
| UniRef90－D9SOX1 | ENAAELVEEVGFVPMPESEYQENLNKDE |
| UniRet90－E6LF64 | SDEIDENLVTKLGYIPVSKMTVQR |
| UniRef90－H5Y4D2 | SKEFQEKNVEKTGFIPV |
| UniRef90 G8QHJ7 | KNAPKLVKEVKYVALPGKVYEANRERLAKKKAGTVFGG |
| UniRet90－L8HF26 |  |
| UniRef9 | DDVAA |
| UniRef90－B2THQ3 | EDNKES |
| UniRef90－UP100047C624 UniRef90－G2SGK2 |  |
| UniRef90－G2SGK2 |  |
| UniRef90－K2F6J4 | VKYVPLP K S A Y |
| UniRef99＿L8H2J0 UniRef90＿UP1000477BB09 | YPEALALLAQENSLTVPD |
|  |  |

UniRef90 K4IKU0
UniRef90-L8HBW7
UniRef90_UPI00034558F1
UniRef90-U2FXR5
UniRef90 A4N092
UniRef90-Q398C7
UniRef90-U5W1N2
UniRef90 U5QJJ1
UniRef90-X4Z066
UniRef90_FOXVF6
UniRef90 L8GIY5
UniRef90 M5RW52
UniRef90-UPI000371E641
UniRef90_E4N6P3
UniRef90 K8EFX3
UniRef90 ${ }^{-}$C6HYC4
UniRef90_B9L1T2
UniRef90- A0A046BDB0
UniRef90_UPIO003802A40
UniRef90-C5D4Q1
UniRef90-B0K3F6
UniRef90 G6CEF8
UniRef90 J9ZD67
UniRef90-UPI0003732900
UniRef90-K9T191
UniRef90 H8LA81
UniRef90-Y5PJX9
UniRef90-K1JZM0
UniRef90 SOKPJO
UniRef90-D8I856
UniRef90-E1QIK5
UniRef90-V9RTU2
UniRef90_K9SIR2
UniRef90-R2S5D7
UniRef90_UPI00036263FA
UniRef90-I0XTP5
UniRef90 UPI00047521F8
UniRef90-K8E5T6
UniRef90_A2SSI1
UniRef90_R2Ql60
UniRef90 S6BX28
UniRef90_D5XA22
UniRef90-E4L3E9
UniRef90 S0P6Q9
UniRef90-B9E1C0
UniRef90-H8L847
UniRef90 C8VYA8
UniRef90-L8HDX0
UniRef90-WOSDL1
UniRef90_E0RQJ5
UniRef90 UPIO0035E48B0
UniRef90-C5R8G1
UniRef90_UPI00046AF078
UniRef90_T3G508
UniRef90-UPI0004787135
UniRef90-K9YT81
UniRef90-UPI000468C59C
UniRef90_F4A210
UniRef90_Q5P1F6
UniRef90-B2IZ04
UniRef90 С3AHQ1
UniRef90 UPI000372EB36
UniRef90-SONHG3
UniRef90-YOKIT5
UniRef90 R5X3T1
UniRef90-R5PZI0
UniRef90_L8GG67
UniRef90 S2XIN9
UniRef90 UPI0003B30003
UniRef90-A9WCV0
UniRef90-D9TQL5
UniRef90 L8GK69
UniRef90-A7NGX1
UniRef90-B9K952
UniRef90 UPI0004633BE1
UniRef90 H3KC60
UniRef90-D9S0X1
UniRef90-UPI0003B315C5
UniRef90 E6LF64
UniRef90 H 5 Y 4 D 2
UniRef90-G8QHJ7
UniRef90 W4UYS6
UniRef90 L8HF26
UniRef90-D8UL35
UniRef90-B2THQ3
UniRef90_UPI00047C6241
UniRef90 G2SGK2
UniRef90-L1IVV5
UniRef90-K2F6J4
UniRef90 L8H2J0
UniRef90-UPI000477BB09
UniRef90_G7MCP2

T S VLS G S G A T L
T SVCT GS
S SVCGAGG
T S V C T G

N $V$ K G A D G K S V Y
GTVCSDAG

GMLCSDQG EAEVGVKVSDLLK

T NGSN

GSTVG

GQLCS GDG

GRPV

TEAVG
VQVC】N D G Q

UniRef90_UPIO0037497E8 UniRef90 ${ }^{-}$W2E9F4 UniRef90_UPI000469ADA7 UniRef90_UPI0003821DE8 UniRef90_UPI00047BF5E2 UniRef90_D7UW03 UniRef90_UPI000467BBD3 UniRef90_UPI00034DEAED UniRef90_B1XJ97 UniRef90-H0BXT9 UniRef90_K2GPN1
UniRef90-B4W0L5 UniRef90-E4T5A7 UniRef90-H5SNZ8 UniRef90-B5XLS5 UniRef90-C7XXU9 UniRef90-A9AVM9 UniRef90_G5JLJo UniRef90-UPIO003449B08 UniRef90-UPIO00367F7B6 UniRef90-K0D681 UniRef90-Q6LSC1 UniRef90-UPIO004054BB4 UniRef90-A9BIE7 UniRef90-A4XJW7 UniRef90-G5CT46 UniRef90-FOR931 UniRef90_UPIOOO21978E5 UniRef90-Q31KE5 UniRef90'UPI00047E5297 UniRet90-Q72GX2 UniRef90-R9C3V1 UniRef90 Q313N3 UniRef90-D1B7T2 UniRef90_UPIO003B46847 UniRef90-B6EI64 UniRef90_K9PEW9 UniRef90-G7VLMO UniRef90-P46338 UniRef90-UPI00036D9136 UniRef90-UPI000304D932 UniRef90-L8GHP3 UniRef90-V6M947 UniRef90-F0K5V2 UniRef90-F4XL12 UniRef90-D4GWM3 UniRef90-S9QNP0 UniRef90_UPIO0030FB863 UniRef90-Q045C8 UniRef90-D3QCX1 UniRef90-L1QF80 UniRef90-UPIO004701DE3 UniRef90-K9UL86 UniRef90-K9V858 UniRef90-UPI0004166C26 UniRef90-UP100035DD8E9 UniRef90-R7AK96 UniRef90-R5E036 UniRef90-M1G185 UniRef90-Q04GC2 UniRef90-A1BFA7 UniRef90-R5C323 UniRef90-K9XF56
UniRet90
S4VR00 UniRef90-S4VROO
UniRef90 UPI00047EA28A UniRef90-UP10002FC3653 UniRef90-F0JHP4 UniRef90-A0A031MFI6 UniRef90 UPIIOOO4687CA1 UniRef90 UPIOOO344C807 UniRef90_Q2YBS7 UniRef90-K4KX59 UniRef90-R7NNP4 UniRef90-10YNW2 UniRef90-Q67RF7
UniRef90-UPIOOO2EE46CE UniRef90-AOA021VWN2 UniRef90-UPIO00361ABE2 UniRef90-A9WAl2 UniRet90-F5SLGG UniRef90-M1PCM5 UniRef90_UPIOOO4693471 UniRef90-082WX5 UniRef90-Q7T6Y2 UniRef90-Q7NPP7 UniRef90-14BBP5 UniRet90-BOJRKO UniRef90-FOSVM5 UniRef90-B4SBF4 UniRef90-UPIO002EA5581 UniRef90_L8H920
UniRef90_A3D2D5
 TVTASGSSALLPLVKAAAKNSNVTVNVTAGGSGTGLKN
K $\square$ T IVGSTA $\square$ QP LVEKASDNPGSNTTVQGGGSGTG SVNYGGSTAWAPI AQTQSDRPELQLRYQDPTNG THTAVGSTALQPLVEAASKNPKAQVNVQGGGSGTGLTQ
 VK DDGSSTVFPEGVAEDFQKMKKGAMKVTVGDSGTG

GSDT
VKTD GSSTVVPVTEAVAEQFMKK
 S $\square^{T V A G S T S V Q P L A D D L A K H P E T K I E V Q G G G S A V G \| K ~}$
$K 1$

S TQVVGSAMQP VQYQKKHPEQKTVQGGGSGTGLSQ SITAAGSSALKPLADDAAKYPDVNITIDAGGSGEGLKQ NVTVSGSTTVLPVMQKMQKDPSVVIELSGGGSGSGIKA KVLAVGSTALQPLAEQSSANSSVQLTVQGGGSGAGLTQ KIVMDGSTTVGPI AKSFAAYTGVQVTVSESGSGNGAKS GGSPTFAPLRSPAAALSQSQRQYQPQGSGTGTKML GVRLNGSGTKSAALLFDV TTSTAGSTSVTPLAEKLAAAPNVKIDVQGDGSSAGVKAS EVITVDGSSTVYPDTQADAKQFQAESQDQATGSGQVKVD NLSSVGSDSLANMMTLWAEEPNVNVQLQAAGSST
K KDGSSTMYPDTEAVAK MK NFQATQKNADKVTV TIAVDGSSTVYPITNEVAQEYKPQ VK DGSSTVFPEAVAEDFQNAKKGAVRVTVGUSGTG E T T A GS TSVQPISEAMAKNPNDKVNVQGGGSGAGПKA GSDTVLPVSQETAEDFMNTHPEQGGSAGVTV VSYQSVDSPQDVKNV TTTASGSTALLPLASFMEEHLNVTVNVSGGGSYNGLQQ VVIDGSGT VYPLMARLAEEYMINEQ PVFAKYHT LIFAAAVSYCQTGSGTGKKVL STTVKGSTTVLPIMQRAVEATGTPVAVSGGGSSNGDKAL SLTAVGSTAMQPLVEEAAKNPNVQVNVQGG
VKTTAVGSta LQPLVEQAGEATDVNTTVQGGGSGTGLTQ $V K I S G S S T V F P \quad$ DTEAVSEDFQAAKKGAIMVTA TVSFGGSTSVVPSWLTAFTSGSVVAKYYSTLSSNSVEETV T I KVDGSSTVFPDTEAVAE
VSIDGGAALSLAVAEEYQR\|HPDARVSVATSGTGGGFSKF Si TAVGSSALQPLAEKAAQDFMAKVNPQA GTGGGKVQV KIVIDGSTTVGPIAKAFAKTTGVQVSVSESGSGNGAKSL GSSTVAPLTGAAGDEPDVDIKNTSTGTTAGFRSF LVGAGSTVVRTWTSAWSSATTAVEYYQASSNQAKQQLV


UniRef90 UPI00037497E8
UniRef90-W2F9F4
UniRef90_UPI000469ADA7 UniRef90_UPIO003821DE8 UniRef90-D7UW03
UniRef90_UPI000467BBD3 UniRef90 ${ }^{-}$UPI00034DEAED UniRef90-B1XJ97 UniRef90_HOBXT9 UniRef90_K2GPN1 UniRef90 B4W0L5 UniRef90_E4T5A7
UniRef90-H5SNZ8
UniRef90-B5XLS5
UniRef90_C7XXU9
UniRef90_A9AVM9
UniRef90 G5JLJ0
UniRef90-UPI0003449B08
UniRef90-UPI000367F7B6
UniRef90-K0D681
UniRef90-Q6LSC1
UniRef90_UPIO004054BB4
UniRef90-A9BIE7
UniRef90-A4XJW7
UniRef90-G5CT46
UniRef90-F0R931
UniRef90-UPI00021978E5 UniRef90_Q31KE5
UniRef90_UPI00047E5297
UniRef90-Q72GX2
UniRef90-R9C3V1
UniRef90-Q313N3
UniRef90-D1B7T2
UniRef90_UPIO003B46847 UniRef90_B6EI64 UniRef90_K9PEW9 UniRef90_G7VLM0
UniRef90-P46338 UniRef90 UPI00036D9136 UniRef90_UPI000304D932 UniRef90-L8GHP3 UniRef90_V6M947 UniRef90_F0K5V2 UniRef90_F4XL12
UniRef90_D4GWM3 UniRef90-S9QNP0 UniRef90-UPI00030FB863 UniRef90_Q045C8
UniRef90-D3QCX1
UniRef90_UPIO004701DE3
UniRef90-K9UL86
UniRef90-K9V858
UniRef90-UPI0004166C26
UniRef90_UPIO0035DD8E9
UniRef90-R7AK96
UniRef90_R5E036
UniRef90-M1GI85
UniRef90_Q04GC2
UniRef90-R5C323
UniRef90-K9XF56
UniRef90-S4VR00
UniRef90_UPI00047EA28A
UniRef90-UPIO002FC3653
UniRef90-FOJHP4
UniRef90_A0A031MFI6
UniRef90_UPI0004687CA1 UniRef90-UPI000344C807
UniRef90-Q2YBS7
UniRef90_K4KX59
UniRef90-R7NNP4
UniRef90-IOYNW2
UniRef90-UPI0002EE46CE UniRef90-A0A021VWN2 UniRef90_UPIO00361ABE2 UniRef90-A9WAl2
UniRef90_F5SLG6
UniRef90-M1PCM5 UniRef90-UPIOOO4693471 UniRef90-Q82WX5 UniRef90_Q7T6Y2 UniRef90-Q7NPP7 UniRef90-14BBP5 UniRef90_B0JRKO UniRef90-FOSVM5
UniRef90 B4SBF4 UniRef90 UPI0002EA5581 UniRef90-L8H920 UniRef90-A3D2D5

S PDSSSG $\square$ R
VQ
LD GKLDFAQSSRPLT
VQQGAVDIGNSDVF




AEEKDGVDASK
A C VK
ACEQ
ACKA MDYADQYEP LN N QLAFSQSSRPLKQEEYEQA GGGSGVGDSALI EGTTTDDAMASRAMKFDEKVKYQDGGKT CRGE

VQSGAVQIGNSDVFAEEKDG口DASK
$V Q A G A V D V G N S D V F A S Q Q N G D N A K K$
 VQS GAVQI GNSDVF AEEKD GI $V$ SQGAVDLGNSDVFAEEKEGDDAKS ATDGSADLGMSSRNLKDSEKSD VTS GAVQU GNSDVPAA A EKDS DPALDAKD A ALF NGTTD: ANSSRWLK DSEELEQMHEE
 $\square S A$ LLDGTTDLAMASRK KKFSEKMKMKQSKHE GVSGTGGGFKVQDKSVTIGNSDDF AEEKDGVDAKK
 CRGE

> ANAMSGVSELGMSSRDLKEEEQGNLKEVVIDA DGTTDI AMASRTMKDKEIKMAAEK SGGGSGNGDKALIDGTTHIANSSREMKSEEVEKAKTKGVT GGGSGTGVAALI NGTVDVANCSRQDKPKELEQATQNTGK AKNGSADLGMSSRNLKASEKE VSQGAVDI GNS DVF AEEKDGDDAKE
$V$ SEGAVQi GNSDVFAEEKEGDDAK
FSGTSGGFEKF

CT GETDINNASRPILTNEMEV
ACNK VATGAATIGNSD $\quad$ I AAEEKQGVPAAE
FSGTSGGFEKF AEEKQ




## UniRef90_UPIO0037497E8

## UniRef90- W2E9F4

 UniRef90_UPIOO0469ADA7 UniRef90_UPIO003821DE8 niRef90 UPI00047BF5E2 UniRef90-D7UW03 UniRef90-UP1000467BBD3 UniRef90-UPI00034DEAED UniRef90_B1XJ97 UniRefofo-HOBXT9 UniRef90-K2GPN1UniRet90-B4W0L5 UniRef90-E4T5A7
UniRet90-H5SNZ8
UniRef90-B5XLS5
UniRef90-C7XXU9 UniRef90-A9AVM9 UniRef90-G5JLJO UniRet90_UPIO003449B08 UniRef90-UP1000367F7B6 UniRef90-K0D681 UniRef90 ${ }^{-66 L S C 1}$ UniRef90_UPIOO04054BB4 UniRef90_A9BIE7
UniRef90 A4XJW7 UniRef90-G5CT46 UniRef90-FOR931 UniRef90_UPIOOO21978E5 UniRef90_Q31KE5 UniRef90_UPI00047E5297 UniRef90-Q72GX2 UniRef90-R9C3V1 UniRef90-Q313N3 UniRef90-D1B7T2 UniRef90_UPI0003B46847 UniRef90-B6E164 UniRef90-K9PEW9 UniRef90-G7VLMO
UniRef90 P46338 UniRef90'UPIOOO36D9136 UniRef90-UPI000304D932 UniRef90-L8GHP3 UniRef90-V6M947 UniRef90-FOK5V2 UniRef90-F4XL12
UniRef90_D4GWM3 UniRef90_UPIo0030FB863 UniRef90-Q045C8 UniRef90-D3QCX1 UniRef90-L1QF80 UniRef90-UPIO004701DE3 UniRef90-K9UL86 UniRef90-K9V858 UniRef90-UPI0004166C26 UniRef90-UPIO0035DD8E9 UniRef90-R7AK96
UniRef90-R5E036 UniRef90-M1G185 UniRef90-Q04GC2
UniRef90 A1BFA7 UniRef90-R5C323 UniRef90-K9XF56 UniRef90-S4VR00 UniRee90-UPI00047EA28A UniRef90-UPI0002FC3653 UniRef90-FOJHP4 UniRef90-A0A031MFI6 UniRef90 UPIOOO4687CA1 UniRef90 UPIOOO344C807 UniRef90-Q2YBS7 UniRef90-K4KX59 UniRef90-R7NNP4 UniRef90-10YNW2
UniRet90
O67RF7 UniRef90-UPIO002EE46CE UniRef90-AOAO21VWN2 UniRef90-UPIOOO361ABE2 UniRef90-A9WAl2 UniRet90-F5SLG6 UniRef90-M1 PCM5 UniRef90_UPIOOO4693471 UniRef90-Q82WX5 UniRef90-Q7T6Y2 UniRet90-O7NPP7 UniRef90-14BBP5 UniRet90-BOJRKO UniRef90-FOSVM5
UniRef90 B4SBF4 UniRef90-UPIOO02EA5581 UniR Ref90-L8H920

LVIDHQVVAVVAMATVVINKDAGVD
NLVDHVVSIAPFALIVNKDVEVE
NLTK KQLLDDVF ${ }^{120}$
NLSKQQAADIFSG SNNELEEVIVAYDALAVIVNPSNPVKKLTKDQALEKIFRG HPDKLTDHKVAVVGMAPVI NKD VGVKNVSMDQLRQUFTG LEQRQVGVDGIAVAVNPSLNLPG ADLVDHKVAVVGMAPVVNKDNGITNLSQKQLDDVETGG A GVAFIELPVAFDALTVAVNPQNSWAKDVTVAELKKVWNG AGIEYIEI PVAYDAISVVINPENDWATCLTTEELASIWSS A GVEYFELPVGFDALSVVVNPKNTFLKQLSVAELKMMWQG NFGKLIVPLAVSGVGVGFNNGDQNPLTVTADDVANDFSG
 LVELDPVADALTVVIHPKNTWAEVMTVAELKKMWQG RGHVAVAGLAVIANPKVKVS NLSSQQLQKIFSG KGREVVEFRVGTDALAVVVSSKNTFVSNLTEAQVADIFSG YK EFKVAQDGVTVAVNKDNDFVTELDKKQLKE RDDTFLEDPIADDGIAV AANRQNNFVQCLTDDELKKMWTH DAEQLVDHQVAVAGLAVIVNEKVTVNDLTEQLRKMETG LVDHRVAVVG| TPLLNKDNGVKNLTTAQLKSUGTG LVETKVAGDGYSIIVNKDVTVTSLTLKQIQDIFSG
 GVAHLAAFND VPSYNDPQLISANET PCEY LVDHKVAVVGMAPVVNKD ANVKSLREQLEGIFRG NGDEYVELPVAYDALSVVVNNENNFATCLTPAQLKTAWDG VENIVA\|DGIAVITDKSNSI TDVSSEDLAKIYKG
 K GMNPKQVVIALDAVIPIVNKSNPVN DLTDQABAG PVKHVVAFDCIIPIVHPSNPVS PVKMVVAFDC|1PPVVAPSNPVS $\qquad$ NLTVDQLKNIYTG APQEFI VGGYALAVYVHHDTPDDKITVPQLAE:YDG NSARFIEIPVVAFDALTIAVNPQNDWAKDITVEELKKIWKR ALVDHQVAVVGIAPLLNKHNGVVKNLTMKQLIJAVFTG

ALVDHQVAVVGMAAAVNPDAGVKDISKDELKKIFTG NGVRVVDKVSVVGMAAVANPGVGVDNL CSYLLQLPLAGQAMVMAYNDPSDPSVVLDRDTLGD: WA C PASELVDHKVAVVGMAAVVNPQ $\quad$ GIIDNLSKQQL TDIFSG TDHKVCATGFAVVTSSDVNVK GGTEYIELPTAFDGLSVVVNKENNFASCLKTAELKKI WQD NDVTPVELKVATDALTVIVNNDNDFLGELTVEQLQTVFSA WPRGPVELAVARDGITFYVHESNPVD SLSLAQLQA:YLG
 YKEY KKIAQDGVTVTVNKDNDFVDSL YDGDALLV NPNNPVKNI NGISYVELPVAYDGTVVVHPENDWVKDTGEDKNVYG
 NNVRF DE $\square P V A F D A L T V A V N P K N T W A K D$ VKSGGNIVAGGAIQQ DANKIVDHQLAVIGVAPIVNKDAGVKNVTMAQLQKI YAG HRVCVVT DPAMAPIVNRSVTAGGVKDLTIQQLTDIFTG PFELPVAVDATVPIVNPKNTLN GLSLDDLRKIYKG
 KGVNPVEHVIALDGI AMVVHPSNRVDALSKAQIGGIYMG DRETII AGDALAVVVHPDNPVDRLTRQQLEDIFRG
 NGTEHIIAYDGI AVVVHPSNDVE GLDKEMITKIFKG
 YGYKPVEIPVALDALAVFAHKDNPDE GLTMAQLDAVFSS ADVEYVELPVAFDAITVAVNPKNDWAKTMTVAELKKIWSG
 VKEGLTETVI CKDGVAlVVNSKN VVKDLSIEQIKKIYSG AKEVLLAMDALAIVMPDNPVS VGIVLVEHRVALAPFVIVVHPENPVDGGLTMEQLAGGLRG TRTAIVQI PTIAGAIALVFKDNAATGLTLTEQQVCQI Y SA SVEHVIALDAVIPIVHPSNPVS NLTSGQLKAIYEG $S G \| T F I E L P V A F D G L S V V V H P Q N T W V D C L T V A E L N L M W T N$ LOQHKVFVVGMGPVVNPKTGVDELTQQQLIDIFTG LVDHKVVGVA|IVMVVNVEGTANLLMDRETLGKIVTG NGVQYIEMPI AFDALTVVVNPGNDWIKSMTVAELKKIWQE E IEDLAVMPLAAFSIVPAYNDPEDKTLVLDIDVIVKIYLG AADQYVELPVAYDALTVMVNPSNTWASTMTVAELKKIWQG NGVEFLELPMAIDGLAVIVNKKNQFAKCLTLKELDRMWN HKVAVVGFATVVNPQVSVDNKNQFAKCLTQQQLVDMFTG KGVNPVEHVVALDGLSIVVHPSNRTNAALKAQIRGIYMG GIDFTETVVANDGLSVIVNPENDWATDLTVEQLAAI WAA


UniRef90_UPIo0037497E8 UniRef90 W2E9F4 UniRef90-UPIo00469ADA7 UniRef90-UPIOOO3821DE8 UniRet90-D7UW03 UniRef90-UPI000467BBD3 UniRef90-UPI00034DEAED UniRef90-B1XJ97 UniRef90-HOBXT9 UniRef90-K2GPN1
UniRef90
B4W0L5 UniRef90-E4T5A7
UniRet90-H5SNZ8
UniRef90-B5XLS5 UniRef90-C7XXU9 UniRef90-A9AVM9 UniRef90-G5JLJO UniRef90_UPIO003449B08 UniRef90 UPIO00367F7B6 UniRef90-K0D681
UniRef90 ${ }^{-66 L S C 1}$
UniRef90-UPI0004054BB4 UniRef90_A9BIE7
UniRef90 A4XJW7 UniRef90-G5CT46 UniRef90-FOR931 UniRef90-UPIO0021978E5 UniRet90_Q31KE5 UniRef90_UPI00047E5297 UniRef90 O72GX2 UniRef90-R9C3V1 UniRef90 O3313N3 UniRe990-D1B7T2
UniRef90 UPIO003B46847 UniRef90-B6EI64 UniRef90-K9PEW9 UniRef90-G7VLMO UniRef90-UPI00036D9136 UniRef90-UPIOOO304D932 UniRef90-L8GHP3 UniRef90-V6M947 UniRef90-FOK5V2 UniRef90-F4XL12
UniRet90-D4GWM3 UniRef90_UPIO0030FB863 UniRef90-Q045C8 UniRef90-D3QCX1 UniRef90-L1QF80 UniRef9O-UPIOOO4701DE3 UniRef90_K9UL86 UniRef90-K9V858 UniRef90 UPIOOO4166C26 UniRef90-UPIOOO35DD8E9
UniRef90-R7AK96 UniRef90_R5E036 UniRef90_M1G185 UniRef90-OO4GC2
UniRef90 A1BFA7 UniRef90-R5C323 UniRef90-K9XF56 UniRef90_S4VR00 UniRef90-UPII00047EA28A UniRef90 UPIOOO2FC3653 UniRef90-FOJHP4 UniRef90_A0A031MFI6 UniRef90 UPIOOO4687CA1 UniRef90-UPIO00344C807
UniRef90 O2YBS7 UniRef90_K4KX59 UniRef90-R7NNP4 UniRefefo-IOYNW2 UniRef90-Q67RF7
UniRef90-UPI0002EE46CE UniRef90-A0A021VWN2 UniRef90-UP1000361ABE2 UniRef90-A9WAl2 UniRef90-F5SLGG UniRef90-M1 PCM5 UniRef90-UPIOOO4693471 UniRet90_Q82WX5 UniRef90_O7T6Y2
UniRet90-Q7NPP7 UniRef90-14BBP5 UniRef90-BOJRKO UniRef90-FOSVM5
UniRef90 B4SBF4 UniRef90_UPIO002EA5581 UniRef90_L8H920
UniRef90_A3D2D5

KIVITNWSEIVGGAA
KVKNWKELG K1 K NWK EVG KITNWKEVG QITNWKQVG KVKNWKEVG KISNWKELG KVTNWNQIRGT OINNWSVGTYPNRPLKLYGAGKDSGTYDYFNEAIVGNK Q| NNWSQVREGFPDAPLTLYGPGTDSGTFDYFTDA|INGEE QI TNWNQLGN YPSKQIMVVYSNVDSGMTKDATRHLAYKA K T T N WNQVGGT GDLP KITNWKOVG VITNWKQVSPR G KTTNWQQVG TYKTWDQVDASYP EAKTWKDVDNKWP $K \square K T W N Q V N P K$
$E$
YTNWEQVGGS EYVTNWEQVGUG KVITNWNQVG AVTNWKDVG EITRWNQVGPNG KIKNWKEVG A T N WNH1N KI TNWKEVG KITNWKEVG KI SNWNQIDPS EI TDWSDLG KI QRWSQ RQG EITNWKQLG KVTNWKEVG KVRNWKEVG TITQWSQLGDA
$\qquad$ KI TRWNQVRAS KVTNWKEVG KIKNWKELG KITRWNQVRANWP KITNWKDVGGA VVTKWNDTRIK VVTKWNDTRI KITNWNQVG KVNNWKQVRPGFP EPTTWSDVNSEW KTUNKEVGGA DAPI K EAKTWKDVNSSWPNKKI K 1 TNWKELGGT DSPIVVVSREEGS TIKRWNQIRPEWPDQEIHLYGPGVESGTYDYFTEAVVGES KI MRWNQVRPSWPDRPLKLFGAGDKSGTFDYFTEAIVGKS KITNWKQVRPSYPDKPLKLYGAGDKSGTFDYFNEAVVGEA K
 KI RNWKEVG KVTNWDQVG KYTNWSQVG KIT NWKEVG KITNWKNVG NVSTWNHPADA EI KNWKEVG KITKWNQVRAS KV RNWKEUG TTSAPIKVVYRSDGSG TITTWGQAGGQWANRDI YGRNSVSG KITRWSOVNPAWPDEAFKLYGAGVNSGIYGYFKEVALCK OVTSWNQVRSDWPDNPGNYGPGDSGTFDYFTQAIVGKA QVTSWNQVRSDWPDNPLNLYGPGEDSGTFDYFTEAVTGEA ETTNWKEVGGASQT
KIVNWKQVG
SITNWNDPADAGPDMKI EITNWQEVG GPDLVE
QYTTWS D
 KVKNWKEVG SURKWNDVN
$\qquad$ E W GPDEA GKDQP
GNDMK
GKDQK T।

140
150
160
$K$
VIVNRPDSSGSRKLIKTLVLGDQ GKDQKI SVI INRAKDSGTRATFENAVLQ GPDLPITP FSQRLLEKA GKDEKI TIINRAEGSGTRAVFEK GHDSPIVVVSREDGSGTREGFE FP
GE
$G P$
$Y P$
$W P$

$F P$ | D ${ }^{\text {R }}$ P |
| :--- |
| D |
| A | VPY S RETSSGTYEFFKEHVL NEK $\begin{array}{llll} & V & N \\ V & 1 & N \\ K & Y & S\end{array}$ AS $S$ G

$S$
$S$
$S$
$S$
$S$
$S$
$S$
$H$

 YDFF FDYF
 GEDKPIVVVTRDTASGTRGAFEDDMS GKDEKINVINRPAASGTRAAFEKTVM GK $A$ ARVVVYSRNTASGTYETFVEKVLEG LLPD KP IVVVIRQDDES DTNGAF E ELVVMKGE GEDARLVVYSRETSGTYEFFKESVSG FKESVLH K GA YFKEAVI GE DFFEELLEVKD

 TYFYFREALLG TFDYFTQATVGKA TRATFEQ TRATFVKY $T \mathrm{~F} D Y \mathrm{~F}$ TEAVVGKA TRATFVKFALDGK NTTELTVVEAVFKRA TRATFSKFALDGT
TRATFTKTVMDGK GTYDYMENTVGKD TYDYFTEATIGEE TYDYFVK EEVL
SRYSFESLLL
 TRALFDDEVMADT TRATFKKYAIG

 GEDRKIVVYSRETSSGTYEFFKESVM, GEDRPVAFSFDPVSGTADVVQQRVLA GKDDEALVRSREAGSGTRGADEGYMDAAE WPDRPLNLYGAGNKSGTFDYFTEAIVGKV KILNWNOVNPAWPNAR KNWMKLIGAGADSGTFDYFTEAVVGKA EVTNWNDVSNYGPNADINVVVQNDESDDNQDFTKFLSQES KITNWKQVGGA DKEILVISRENNSGTHVYFKEHVLRQG RITSWKQINPKFPDERLLLFAPPSDTGTFDYFTQAITGKR KUTNWNEVG GQDGKVVITNRPTSSGTRASFKKYGLNGA KYTNWSQVG GPNSAIVIIQRESNSGTADTFKELVMGKD ETTNWNQVDPAFPDEPLVLFGPGSDSGTLDFFTAALTGQE

D F TKEG

A V I F S T
EELVKNALIS
PDDKPVNAQEQDSNGTVQKIVKQ NEGSNRQLGTNVKYVSSTTEALRQVSN WALKGATPVKAQEQDSSGTVRKVVTE
SNSRSDYTGSEDDNVLVDG
$G A S R G D Y T A S E D D N V V V Q G$
$K A S R G D Y A A T E D D H V V V K G$
$K A S R G D Y A A T E D D H V T V K G \quad V V N$
PHDFQENEDFMDARIGTPSGSALFDPANGDQSVISVMNN FGATVEFIRT
$\square N K N Y M S S \square L S M P A T G A$
KSSRGDY $\square$ ASEDDNV
NAKQSQE
DEA
GKF $\square$
D 1 KAEKNAD
KNGRTDYTPSHNQN ILVQG
QDSNGMVVQFVGS

UniRef90 UPI00037497E8
niRef90 W2F9F4
UniRef90-UPI000469ADA7 UniRef90_UPI0003821DE UniRef90-D7UW03 UniRef90_UPI000467BBD3 UniRef90 B1XJ97 UniRef90-HOBXT9 UniRef90_K2GPN1 UniRef90 B4W0L5 UniRef90_E4T5A7
UniRef90-H5SNZ8
UniRef90-C7XXU9
UniRef90-A9AVM9
UniRef90_G5JLJO
UniRef90 UPI0003449B08
UniRef90-UPI000367F7B6
UniRef90-K0D681
UniRef90- Q6LSC1
UniRef90-UPI0004054BB4
UniRef90-A9BIE7
UniRef90-A4XJW7
UniRef90_G5CT46
UniRef90-F0R931
UniRef90-UPIOO021978E5
UniRef90_Q31KE5
UniRef90-UPI00047E5297
UniRef90_Q72GX2
UniRef90-R9C3V1
UniRef90-Q313N3
UniRef90-D1B7T2
UniRef90_UPIO003B46847 UniRef90-B6EI64
UniRef90_K9PEW9
UniRef90-G7VLM0
UniRef90-P46338
UniRef90 UPI00036D9136
UniRef90 UPI000304D932
UniRef90_L8GHP3
UniRef90_V6M947
UniRef90 F0K5V2
UniRef90-F4XL12
UniRef90-D4GWM3
UniRef90-S9QNP0
UniRef90-UPI00030FB863
UniRef90_Q045C8
UniRef90-D3QCX1
UniRef90-L1QF80
UniRef90_K9UL86
UniRef90-K9V858
UniRef90 UPI0004166C26
UniRef90_UPI00035DD8E9
UniRef90-R7AK96
UniRef90-R5E036
UniRef90-M1GI85
UniRef90-Q04GC2
UniRef90-A1BFA7
UniRef90 R5C323
UniRef90-K9XF56
UniRef90-S4VR00
UniRef90 UPI00047EA28A
UniRef90-UPI0002FC3653
UniRef90_F0JHP4
UniRef90-A0A031MFI6
UniRef90 UPIO004687CA1 UniRef90_UPI000344C807
UniRef90-Q2YBS7
UniRef90_K4KX59
UniRef90-R7NNP4
UniRef90-IOYNW2
UniRef90_Q67RF7
UniRef90 UPI0002EE46CE UniRef90-A0A021VWN2 UniRef90_UPIO00361ABE2 UniRef90-A9WAl2
UniRef90 F5SLG6
UniRef90-M1PCM5 UniRef90-UPIOOO4693471
UniRef90 Q82WX5 UniRef90-Q7T6Y2 UniRef90-Q7NPP7 UniRef90_I4BBP5 UniRef90-B0JRK0 UniRef90-FOSVM5 UniRef90-B4SBF4 UniRef90 UPI0002EA5581 UniRef90-L8H920
UniRef90_A3D2D5

S $\square$ T D S A SGVKINDSVGTVODSNGAVEQAINS

EKFNSQVGPTNLPKLSYSEN NVVYQNSTGAVKQS SQ
EAVKSQE
DGTRGDFTASEDDNIIVQG
ACKYAQEL
KA $\square$ RTDY $\mathrm{Q} P$ TEDDNVT

R V F
R D F R
RASRKDYTAKKKD $\frac{L}{\text { S }}$ GMKVS
G
WGLNGAQSTEAQEQDSSGMVRS\|VST ALD GAEPAEGDTEDSSNTVKKIIAD
GSSRTDYTASEDDQVLVDG
ITEDSSGTVRK!ISK MESFSAAANRSLAQLPPATAVPPRAFALGSSGVRTEWLQN EEAEG
DEKDDDGTT
AGSRGDYTASEDDNLLVQG
PGHRQDYSATEQDRT
KGQDFTERAQTLPGTAAVVNGVEG
G $\square$ T K $\square V N H R L V S D G N P N N G V V N S N S M V K T V V N H$
D IKAEKNADTNVI
E ELTKDASDS
DGSGAVQSVEK
DGSGAVKTTV
KASRGDYTPSEDDEVLVQG
KA TRKDY $\square$ AS E D D 1 A ALLVKG
K KKMKAQE AEASNKSMETDD

HPYKKANV
TAASSQE
$K N Q R V S P R A L L Q N S N G T V V Q T V S K$ FNSTGSIKTAISQ QDSNGTVQKUVST
GKDSP $\square$ SKRAETQASNGAVKSRVSS
KNKNYMAGSLSMPATGAV1QSVSQ
GREFGNVQIVSTATEAILKVAA
VVKDSDESFSPAFAVEFVVAQGRGRVLSDSSPDRVAWVAD KNDDGK KISAVRQDALIAEGNGAVRQNIAG GASRMDYTASEDDQVLVDG
DENDLVS
RMPSNAAMAGKIAG
GDFKSGVNEQPGSASVVQS A

GNSRTDYTASEDDTLLVRG
KSSRGDFTASEDDNVLVQG
NP $\square$ S DKA
KNKNYVQNTGAARTSVAG GWK $\square G V G \square Q L P W T R C V Q H V L T P D N M L S M P A T G A V I Q S V S Q$
DLVDETNDQQEY GD DS P QALVVQDSNGKVVTTVQY
 NGKF GVAAGYFKPDQSFAAAVTAAVSPQSGNSGVVSKVKT $R V F P P G A L L Q A S S G A V L Q A V S K$
GVSRSDYTASEDDYL
DEHRAK GGПEEDSSGTVAQDVA DEHRAK $G$ LKTNKVVASQEQDSSGTVQKVVRQ
KSSRGDFTASEDDNVLVQG
E DF SQE DGQTYNPDLSLQG



EEAAGKALTE DSSGTVKKTVAD
NPIAGKRAET
QSSNGAlK SRVAS
GA I RADYSASEDDDHTVAG
$P R F A T Q V G A G P L V \quad T Y P V E A T N R S V Q T N S D T A F A A V M A A$


UniRef90-UPIO00469ADA7
UniRef90_UPIO003821DE8
UniRef90_UPI00047BF5E2
UniRef90-D7UW03
UniRef90_UPI000467BBD3 UniRef90_UPI0003
UniRef90 B1XJ97 UniRef90_B1XJ97
UniRef90_H0BXT9
UniRef90-K2GPN1
UniRef90-B4W0L5
UniRef90-E4T5A7
UniRef90 H5SNZ8
UniRef90-B5XLS5
UniRef90-C7XXU9
UniRef90-A9AVM9
UniRef90_G5JLJ0
UniRef90-UPI0003449B08
UniRef90-UPI000367F7B6
UniRef90-K0D681
UniRef90_Q6LSC1
UniRef90-UPI0004054BB4
UniRef90-A9BIE7
UniRef90-A4XJW7
UniRef90_G5CT46
UniRef90-F0R931
UniRef90-UPI00021978E5
UniRef90_Q31KE5
UniRef90-UPI00047E5297
UniRef90-Q72GX2
UniRef90_R9C3V1
UniRef90_Q313N3
UniRef90-D1B7T2
UniRef90_UPI0003B46847
UniRef90-B6EI64
UniRef90_K9PEW9
UniRef90-G7VLM0
UniRef90-P46338
UniRef90 UPIO0036D9136
UniRef90-UPI000304D932
UniRef90-L8GHP3
UniRef90_V6M947
UniRef90-F4XL12
UniRef90-D4GWM3
UniRef90 S9QNP0
UniRef90-UPI00030FB863
UniRef90_Q045C8
UniRef90-D3QCX1
UniRef90 L1 QF80
UniRef90-UPI0004701DE3
UniRef90-K9UL86
UniRef90_K9V858
UniRef90 UPI0004166C26
UniRef90_UPI00035DD8E9
UniRef90-R7AK96
UniRef90 R5E036
UniRef90-M1GI85
UniRef90_Q04GC2
UniRef90-A1BFA7
UniRef90 R5C323
UniRef90-K9XF56
UniRef90_S4VR00
UniRef90 UPI00047EA28A
UniRef90-UPI0002FC3653
UniRef90-FOJHP4
UniRef90-A0A031MFI6
UniRef90 UPI0004687CA1
UniRef90_UPI000344C807
UniRef90_Q2YBS7
UniRef90-K4KX59
UniRef90-R7NNP4
UniRef90-10YNW2
UniRef90_Q67RF7
UniRef90 UPIO002EE46CE
UniRef90-A0A021VWN2
UniRef90_UPIO00361ABE2
UniRef90-A9WAI2
UniRef90 F5SLG6
UniRef90-M1PCM5
UniRef90_UPI0004693471
UniRef90 Q82WX5
UniRef90-Q7T6Y2
UniRef90_Q7NPP7
UniRef90-14BBP5
UniRef90-B0JRKO
UniRef90-F0SVM5
UniRef90-B4SBF4
UniRef90_UPI0002EA5581
UniRef90-L8H920
UniRef90 A3D2D5

YPSMANGSN
TPE
Q C P R Q R N Q $\square$ N T
APSSENVKTHKYA $\square$ SRP
SPS S EVVKNAQYQ
APSTATVDDSTYQ
APNEQNV ${ }^{\circ} \mathrm{N}$

VP
EPSLANAVN
A PSUETVNNGTYQ
$\underset{Q}{E} P$ TEAT
WS P
LS QCPGQRNQLNK

## DNVVKN】YT

EPNNKNV
RPF LVLYKTSK $\square$ NPTTQSF $\quad$ DDT


YPSVESATRKE

R ${ }^{P}$
$\frac{R P P S R E T V L}{L}$
EATAENVLEQKYKLSRP

APTLENVLT
RPFLVLYREGKPSVETQKF LD W
LPPSRETVEKAKYQ
KPTKQNVVSGKYA $\square$
KPEAKNV
LPSRETVEKNTYQ

```
SAMADFSDDLDAGNFAVD \(\square Y\)
```

EATSKNV
APNKATI
LS GEYN
PPTPAT
R P
KPTNKNV
R P
$\mathrm{T}_{\mathrm{T}}^{\mathrm{R}} \mathrm{P}$ T L D E TVK
LPSTQTVEK
LPSLETVEKSQYQ
TPAAVNTA WGDAALTPPSTTSTWAAYNDYGDNYPATEPST

PTQENTFN
SPTNKNV
QPTPQNATN
F VGANKTVLNK
Q $\square$ AMR DFSADYADGNLA $\square P \square Y D A P G$
$\frac{R}{R}$
VPSRETVEK $\square$ QYQ
DATPENAV
$L \begin{array}{lll}L & S \\ L & S\end{array}$
S K T V
RPF L Y LTKAAPSGA
LPTMENGTKRQ
TARFG $\square D S \square K \square P S S V A S P D$

APTVKTVV
EPKNENVYT
QSAMADF

RLLS RVQTVQMAS $\square K \square N D D \square I E P N Y D T \square K N A \square S S E S N Q \square A$
E
APTADN

R P
SPSLETVQN
QSAV
SDYMSSVVNPTFTSLL

UniRef90 UPI00037497E8


UniRef90-UPIO00469ADA7 UniRef90_UPIO003821DE8 UniRef90 UPI00047BF5E2 UniRef90-D7UW03 UniRef90_UPI000467BBD3 UniRef90_UPI00034DEAED UniRef90 B1XJ97 UniRef90-HOBXT9 UniRef90_K2GPN1 UniRef90_B4W0L5 UniRef90_E4T5A7 UniRef90-H5SNZ8 UniRef90-B5XLS5 UniRef90_C7XXU9 UniRef90-A9AVM9 UniRef90_G5JLJO UniRef90 UPI0003449B08 UniRef90-UPI000367F7B6 UniRef90-K0D681 UniRef90- Q6LSC1 UniRef90_UPIO004054BB4 UniRef90-A9BIE7 UniRef90-A4XJW7 UniRef90 G5CT46 UniRef90-F0R931 UniRef90-UPIOOO21978E5 UniRef90 Q31KE5 UniRef90 UPI00047E5297 UniRef90_Q72GX2 UniRef90-R9C3V1 UniRef90_Q313N3 UniRef90-D1B7T2
UniRef90-UPI0003B46847 UniRef90-B6EI64 UniRef90_K9PEW9 UniRef90-G7VLM0 UniRef90-P46338 UniRef90_UPI00036D9136 UniRef90-UPI000304D932 UniRef90_L8GHP3 UniRef90_V6M947 UniRef90 F0K5V2 UniRef90-F4XL12 UniRef90-D4GWM3 UniRef90 UPI00030FB863 UniRef90-Q045C8 UniRef90-D3QCX1 UniRef90-L1QF80 UniRef90_UPI0004701DE3 UniRef90-K9UL86 UniRef90 K9V858 UniRef90 UPI0004166C26 UniRef90_UPI00035DD8E9 UniRef90-R7AK96 UniRef90_R5E036 UniRef90_M1G185 UniRef90_Q04GC2 UniRef90 R5C323 UniRef90-K9XF56 UniRef90-S4VR00 UniRef90 UPI00047EA28A UniRef90-UPI0002FC3653 UniRef90-FOJHP4 UniRef90-A0A031MFI6 UniRef90_UPI0004687CA1 UniRef90-UPI000344C807 UniRef90-Q2YBS7 UniRef90 ${ }^{-}$K4KX59 UniRef90-R7NNP4 UniRef90_IOYNW2 UniRef90_Q67RF7 UniRef90 UPI0002EE46CE UniRef90-A0A021VWN2 UniRef90_UPIO00361ABE2 UniRef90-A9WAl2 UniRef90 F5SLG6 UniRef90-M1PCM5 UniRef90-UPIOOO4693471 UniRef90 Q82WX5 UniRef90-Q7T6Y2 UniRef90-Q7NPP7 UniRef90-14BBP5 UniRef90-B0JRK0 UniRef90-FOSVM5 UniRef90-B4SBF4 UniRef90 UPI0002EA5581 UniRef90_L8H920
UniRef90_A3D2D5

QSGEYPVWAYEHM
300310
320
EA DK D GSYKLYGVEHM K S Y P V V R PLFYYYNKKYSEKN

EA $\square K N G S Y P \square T$ TNDFVIVKQNNGQEQQAGEAYA
$K L L$

 D S S Y A L S R P L
ANGQYG $\square$ WS YEH $\square \quad$ YTKGQPTRHVAKF $\square$ AY $\quad \square$ T
 YP $\square S R P L Y M F V D A T N G Y P E T G P V K Q Y L T V G G$ FLFLTKNKP QKRNVDAWPLIAEDSLVYRQTMQSYSKASAGADFIYWTQF

ETTRDGSYPLSRPLFVY $\square$ AK SALEKPQVQAFAEY LVN


TTARNGKFPTARELYM YTNGEPKGEVKAFDD FM $K$ SYP $\square$ ARPLYM $\quad$ YS $\square G E P T G E \square K A Y L D W \square$
$P$ LSRP LLIYVNPWSTQQNGAVYKFVDFYV ATGEYP DWAYQHEHVYTKGKPSEP

P FSRPQF $\square Y$ Y $V$ NA Q
YTKGEPTGNTKAFLEY I M DGNGTATWPISSFLVY I SVARNTTDCTYVQEAGNGVAWAQT ATNQYPVWAYQHM
ENGTYPFWSYEHMYTKGKGNDAAKA FI D YM ADGSYP LSRPEFDYVNKE Y A ANRPEVKAFVEYHLA LQS GAYPLSRELYFELPR


ATNRWH TWSYEHM YTKGKPNKNVQKF DDYM $\square G$ DNSYALSRPLFD YAKEKS LDENKGFQEFMKF

DGSYPLSRPLFMYVNSK ATASPATVDFVNFYL
N Q Y R P L L S R P
NTNGNGAYPLSGTTFLYLYSCYGNNTNGQNLINFLNWFYQ NKWKLWGYEHM YTSKNASKETNAFI KYLLK
AGKYPVWTYEHM YTKGEPDKTAKTFLE
LTAKEGKWPL SRDLYM
GSYTISRLLYM NTKGEPKGITKLGIDDY IY

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



 WAGVDFSGSSLQQAEAI RDLM AYF EGRWP $\square W T Y E Y M$

YTK GEPA GLARAFLEFVLS


DGSYPLSRP $\quad \mathrm{F} \square \mathrm{Y} V \mathrm{R}$ A DS $\square \mathrm{NRPEDAAFVRFYV}$ GKWKVWAYQHMYTPKEGKNNELAQ GFIIDYIL DAPGNNSWPI SWVNY DSMNGKQNDCFRTKELLDFI AWLYT NTWKI WSYEHM M Y SKGNPNYQTAKFI RYIQS GSYPLSRPLFIVVNARSAGK PEVREFVIFYM RSTNSNVWPI TSMI SIVYPTTMKNKDKAVAIAEFMYW TAKGTYPLSRPI F IVYVS N NKAMARPEVKEFVEFY TAKKKYPIARGLQMYL NLASGEKGQAFIDFV AAGTYPIWSYEHM YTKGEATGLTKAYIDYILS

GSYPLSRPLF TYV NNDSFANKPQVKAFVDFYV


UniRef90 UPI00037497E8 UniRef90 W2E9F4 UniRef90_UPI000469ADA7 UniRef90-UPI0003821DE8 UniRef90 UPI00047BF5E2 UniRef90-D7UW03 UniRef90_UPI000467BBD3 UniRef90_UPI00034DEAED UniRef90 B1XJ97 UniRef90_HOBXT9 UniRef90 K2GPN1 UniRef90-B4W0L5 UniRef90-E4T5A7 UniRef90-H5SNZ8 UniRef90 ${ }^{-}$B5XLS5 UniRef90-C7XXU9 UniRef90-A9AVM9 UniRef90_G5JLJO UniRef90 UPI0003449B08 UniRef90-UPI000367F7B6 UniRef90_K0D681 UniRef90-Q6LSC1
UniRef90-A9BIE7
UniRef90-A4XJW7
UniRef90_G5CT46
UniRef90-F0R931
UniRef90_UPIOO021978E5
UniRef90_Q31KE5
UniRef90-UPI00047E5297
UniRef90_Q72GX2
UniRef90-R9C3V1
UniRef90 Q313N3
UniRef90-D1B7T2
UniRef90_UPIO003B46847
UniRef90-B6EI64
UniRef90-K9PEW9
UniRef90-G7VLM0
UniRef90-P46338
UniRef90 UPI00036D9136
UniRef90-UPI000304D932
UniRef90_L8GHP3
UniRef90_V6M947
UniRef90 F0K5V2
UniRef90-F4XL12
UniRef90-D4GWM3
UniRef90 ${ }^{-}$S9QNP0
UniRef90-UPI00030FB863
UniRef90_Q045C8
UniRef90-D3QCX1
UniRef90-L1QF80
UniRef90_UPI0004701DE3
UniRef90-K9UL86
UniRef90 K9V858
UniRef90 UPI0004166C26
UniRef90_UPI00035DD8E9
UniRef90_R7AK96
UniRef90 R5E036
UniRef90-M1GI85
UniRef90-Q04GC2
UniRef90-A1BFA7
UniRef90 R5C323
UniRef90_K9XF56
UniRef90-S4VR00
UniRef90 UPI00047EA28A
UniRef90_UPI0002FC3653
UniRef90_FOJHP4
UniRef90_A0A031MFI6
UniRef90 UPI0004687CA1
UniRef90_UPI000344C807
UniRef90-Q2YBS7
UniRef90 ${ }^{-}$K4KX59
UniRef90-R7NNP4
UniRef90-IOYNW2
UniRef90_Q67RF7
UniRef90 UPI0002EE46CE
UniRef90 A0A021VWN2
UniRef90_UPIO00361ABE2
UniRef90-A9WAl2
UniRef90-F5SLG6
UniRef90-M1PCM5
UniRef90_UPIOOO4693471
UniRef90 Q82WX5
UniRef90-Q7T6Y2
UniRef90-Q7NPP7
UniRef90_14BBP5
UniRef90-B0JRK0
UniRef90-FOSVM5
UniRef90-B4SBF4
UniRef90-UPI0002EA5581
UniRef90_L8H920
UniRef90_A3D2D5

TEEVQNSDVTETGYTPVSSMEVKR
SAEFQNSQVEQLKFLP
LS DAGQN I I K K G GY IP V

## पT DQGQKA $\square \mathrm{E}$ QAGF V

LGDEGQKVVEKHGFV
K NAQKLAT TVGYI PLPDE
TAEENSSLVSEVGYVALNSE $\square Y$ AKAQERTAARTTGS $\square F N G$ KEGSRIMKEVKYVPLPANAYKNNEEHLA
 LANQGQDLISQAGFVRL

SDEVQQNIVTHMGYISIND
$N \nabla N D$ VI LEVGYFPASDEA DGEAKDALVNALTGGSSSN EDKGKSAEEAGYVAAPS ENS WK WVESVGYVSLPDEAYPKVKQKVANGTTG
$S D N \square Q R T L V P K \square G Y \square S \square H D M N V E R$
KGDDFSAKVEEMGYDPMSK

LSSHGQA A EKYHYI
E LLKSFTFNGQQVS $\square$ ND
PANG K LVVAEAGY $\square Q \square P D A L L P K V V D R \square K N Q T T G T V F G G$
LS PAARRADRSTGYVELPSE
LS DEGQK】AAEAGAIPI
KGPNGQRYVAKEGFVTL
LSAEGQK\VQQLGFVPVESN
RNASKTADSVGY DP LPPEAYQ
SKKVQSTLVSKLGYi SI
SEDUQK S V V T D Q GY I P V T DMKVTR
SDENVQK KVVVSKMLGGYIPRATEEMKVER
$N$ DAASRSATARGYAPLDVSFRKRVIDQLPTVCNGEQAYT DEVQKAAVKDLGGFLPITEMKVDRAAD MS S DNKALI EKMGYI
A ENSKLISEVGYVPMPED DMMLVRKRFSEGTVGTVFAN NSTSREDVADEVGYVPDDEDDQQEMLDTLNAA D
LSPEGQRLVTDAGFFPV

VLKDEGKSAEDAGYVALPKDDYKKEQKQLDKF $\square \mathrm{D}$
DNAAA LSQEVGY DPMPDELYKEQKQKFA
NRVSRVADSVGYVPLPNAVRD
QQAAKKS GTVGYI P L PKE
NPTANQA ILRNNSFSSLVTGWQTRDKNGVLTAGSGVA $\square A L$ SDQVQEKLLSRMDY $\square$ S $\| R D M E V T K D K D G L V S P$
MS DEYGKKMESLGGYM

S S N K G S SL: K K LLGY Y I PL P P
LSSNGQAVI K G GEYI PV

QKAPTTVASVGYVPDPEE
MSPAGQKIIAEVGFVPV
LSKEGQEVVFKDGYVPMPKRVVDKVYKELD
KNASALVRGAQYFPLPP
HGRQFVKVVGYVALPDE
$K N A P T L V K E V K F F P L P P$
LS PAGQN I K K G GY IP V
LS DAVQSNLTTMDLAPI PPARRADFRAEVA
P EFQEEYVAELGFVPI TRE
VMEN $\square$ NNFAGETGFAPLPDDETEQLTSELK
DTTNRPA LPTGYAYVDGNADFRSSVVSSINSCDN
QNGAMFAEQALYVPLPETVYQLALQRVERRDTG
SDEDQDSLIPQLGYIPVTQMKVER
$N$
$N$
$N$
$V$
$V$
QHAQQLVEEVRYFPLKKEFYD
KSAPTLVKQVKYVPLPKKAYDVALSHFQKN
MSAEGQKVVRDQDFVPV
P ENSWKWVDGVGYVALPDE
$P \quad D V Q N S V V K S L K K I P I T D$
ENALDDAERALFVPLTEEQVLLAQDELDS
$N T \quad E A L R D A E R Q G F V P L Y S V L L N E L K T C N D E P V S T L A D S N$

UniRef90 UPI00037497E8
UniRef90 W2E9F4
UniRef90_UPI000469ADA7
UniRef90 UPI0003821DE8
UniRef90 UPI00047BF5E2
UniRef90-D7UW03
UniRef90_UPI000467BBD3
UniRef90 UPI00034DEAED
UniRef90-B1XJ97
UniRef90_HOBXT9
UniRef90-K2GPN1
UniRef90 B4WOL5
UniRef90-E4T5A7
UniRef90-H5SNZ8
UniRef90_B5XLS5
UniRef90 ${ }^{-}$C7XXU9
UniRef90-A9AVM9
UniRef90_G5JLJO
UniRef90 UPI0003449B08 UniRef90-UPI000367F7B6 UniRef90-K0D681
UniRef90 Q6LSC1
UniRef90 UPI0004054BB4
UniRef90-A9BIE7
UniRef90_A4XJW7
UniRef90 G5CT46
UniRef90-F0R931
UniRef90-UPI00021978E5
UniRef90 Q31KE5
UniRef90 UPI00047E5297
UniRef90_Q72GX2
UniRef90-R9C3V1
UniRef90 Q313N3
UniRef90-D1B7T2
UniRef90-UPI0003B46847
UniRef90-B6EI64
UniRef90 K9PEW9
UniRef90-G7VLM0
UniRef90-P46338
UniRef90 UPI00036D9136
UniRef90-UPI000304D932
UniRef90_L8GHP3
UniRef90 V6M947
UniRef90 FOK5V2
UniRef90-F4XL12
UniRef90-D4GWM3
UniRef90 S9QNP0
UniRef90-UPI00030FB863
UniRef90_Q045C8
UniRef90 D3QCX1
UniRef90 L1QF80
UniRef90-UPI0004701DE3
UniRef90-K9UL86
UniRef90 K9V858
UniRef90 UPI0004166C26
UniRef90-UPI00035DD8E9
UniRef90-R7AK96
UniRef90 R5E036
UniRef90-M1Gl85
UniRef90-Q04GC2
UniRef90-A1BFA7
UniRef90 R5C323
UniRef90-K9XF56
UniRef90-S4VR00
UniRef90 UPI00047EA28A
UniRef90- UPI0002FC3653
UniRef90-FOJHP4
UniRef90 A0A031MFI6
UniRef90 UPI0004687CA
UniRef90-UPI000344C807
UniRef90_Q2YBS7
UniRef90 K4KX59
UniRef90-R7NNP4
UniRef90-IOYNW2
UniRef90 Q67RF7
UniRef90 UPIO002EE46CE
UniRef90-A0A021VWN2
UniRef90_UPI000361ABE2
UniRef90-A9WAl2
UniRef90 F5SLG6
UniRef90-M1PCM5
UniRef90_UPI0004693471
UniRef90 Q82WX5
UniRef90-Q7T6Y2
UniRef90_Q7NPP7
UniRef90 I4BBP5
UniRef90 BOJRKO
UniRef90-F0SVM5
UniRef90-B4SBF4
UniRef90 UPI0002EA5581
UniRef90-L8H920
UniRef90-A3D2D5

GSTVG
$P D \square C Q G \square G R$

T N T GSAD

GT\CSDKG

G S
$T A Y L V G A G P P \square$

A

ASGGSKDG

T D $\quad$ LIGYGTP L
UniRef90 UPI00047A72DB
UniRef90-UPI0002E4F9ED
UniRef90-DOXDZ0
UniRef90-UPI00034BD2E1
UniRef90_R6KJ12
UniRef90_L8GK64
UniRef90_UPI0004147F53
UniRef90_UPI0003706A17
UniRef90-R7CSZ0
UniRef90_UPI00036D03A2
UniRef90_C5ERQ8
UniRef90-A6UWP9
UniRef90-B6YQR6
UniRef90 Q2LTF4
UniRef90-B7V5R0
UniRef90_F4DWY1
UniRef90-K2CUU3
UniRef90-Q1Q2D4
UniRef90_UPI0003A1891C
UniRef90_L8GLW6
UniRef90_L8GR71
UniRef90_UPI0004787344
UniRef90-Q8KDZ8
UniRef90-B4WLC1
UniRef90_L8HIJ1
UniRef90_S4Y5U0
UniRef90_F7PM96
UniRef90_L8GIX5
UniRef90-F2JSN1
UniRef90-D9R315
UniRef90-B7KF20
UniRef90-R7GNC0
UniRef90-M5DIZ4
UniRef90-L8GSS8
UniRef90-R6ZDHO
UniRef90_C7RMT6
UniRef90_O8TSB1
UniRef90_C2FTP6
UniRef90_UPI0002DA762E
UniRef90_E0U934
UniRef90_UPI00036F7E49
UniRef90_UPI00047B4DE8
UniRef90-W7YKS6
UniRef90-K9ZG83
UniRef90_UPI00036D7753
UniRef90-UPIO004270066
UniRef90-I2JJL1
UniRef90_UPIO004249F0F

UniRef90_W0JXD2
UniRef90-R5RF0
UniRef90-A7IOG7 UniRef90_B9E6T7 UniRef90-UPI0003FBCBBC UniRef90-G4H8C9 UniRef90-B8D0H2 UniRef90-K9YG69 UniRef90_UPI00036203A6 UniRef90 K9PE87
UniRef90-K9U1Y5
UniRef90-Y7Z9V0
UniRef90_L8GU06
UniRef90_E5WIL8
UniRef90_UPIO00476C8E7
UniRef90-M1YXF2
UniRef90-UPIO00345C5B1
UniRef90-NOAUW6
UniRef90_K0N832
UniRef90-L8GDVV5
UniRef90-KOZ4L2
UniRef90_A0A010S805
UniRef90_K9W5K3
UniRef90_C3LW71
UniRef90_UPIOO04786454
UniRef90-D9UDT0
UniRef90_U3CFH6
UniRef90-V9Z342
UniRef90_UPI00036EFEA3
UniRef90-S7TX67
UniRef90_UPI00036D967E
UniRef90-G7GS80
UniRef90_L8H4Z4
UniRef90_UPI00047AE258
UniRef90_UPI00036E07E9
UniRef90-U2D9P6
UniRef90-K9PZK7
UniRef90-L9WYG7
UniRef90_U3A006
$\qquad$ 30
TVIIA GSSTVFPIATAFAEHKDVGFNLLQSTGSGGGFANH

 EVNGDGSTTVAPVVEKATEYPDVTV TVRGGGSGNGI




 SFNYGGSTAWAPI RQLQSDRPELKLRYVSPTEG







 $N L S S V G S D T L A N L M T M W A E E P N V N D Q \square Q A A G S S T$ NLLS S V G G S D S L A N L M T L WA E E P NVVNIUQUAA A G S S T
$N \square N S \square G S D T M N N L M T F W A E Y P N V K V Q \square E G K G S$ A GSVFAA
FSAGSNANKVSYCQTGSGFGKNNQ LLGSGASS P PVYPTWANDF
$S L V I S G S T A L Q P L A S A A A K N S K$
$G S S T V$
$G$

$\square T \square A G S T S V Q P F A E R W A E A Y G A T D H V Q G G G S T A G D Q A$ DIIGTGSQSAQPLLSTSWADSNNVNVTVDSTGTGGGFKNH VK I SUVGSTTDAEPMEKLVEAYKATDEVQGNGSSAGIKAA MSVSMVGSTSMEKFATAMEKYPNVTVQAEFVGSGAGI EA $M N \mathbb{F} Y G G S T S F A P \square R Q E W K E H P D F K L V Y E K P G S G S G I X M L$ $K$ I S DDGSTSMEKFVTA LIGKNPNVTVVEQFTGSSAGU
 VKID GSSTVYPIAEAMAQEFQVHVNVGVSGTSGGFAKF $\mathrm{N} \Pi \mathrm{s} \square \mathrm{s}$
 SITVKGSDTLVILA QKWAEV

 $T \square N \square S G A F A D Y P L V V K W S E H P D \square R F N D S G G G A G K G M$
$G G S T T W A P I R R D V S I C P Q F T L R Y E K P G S G T G I K M L$
 SVA ADGSSTVAPLSSAAAVEPDINVTVATSGTGGGFAAF
 $N \square S S V G S D T L A N M M T F W A E E P N I N I Q L Q A A G S S T$
$\qquad$ $\square$ $\square$

都

$\qquad$

$\qquad$ 1 T A A GTS GLSSPLASSWQTA YHYVRDDLDDVS FS VVI DGSGT VYP FMARMAENYNVSVEVSRSGTSAGFKKG



GGSTTWAPI RKEQK LWW KF QL RYTAPGS GTGUKMLL


$V$ S T E G S T S M E K L I E S F T N E T G DA F T Y N P T G S G S G DQ A
$\nabla Q \square D G S S T V Y P E A V A E E F$ QKK G G GRATVG G DGGTGGGFKK F EI T $\quad$ IS G S T S VAA RI MK Y NQ Q HP E T Y V A V Q GVVG T A G $\square$



$\square R$ G A G GEVGLD A Y S Q WG K Y VS D QLVY T Y T
A MQPLVAAAAENPDADIQVNAGGSGTGLSQ
GSSTVA P L SEAAAS $\quad$ Y Q A D G G QP GVVNVS
GATALY P L Y S A FA QAVYPEENYN
GGSTIWWAIRRDEIDEASGFDLSYDPPGSSAGIKMLL



## UniRef90 W0JXD2 UniRef90_R5RF01 UniRef90_A7I0G7 UniRef90_B9E6T7 UniRef90_D9QSW6 UniRef90_UPI0003FBCBBC UniRef90_G4H8C9 UniRef90_B8D0H2 UniRef90_K9YG69 UniRef90_UPI00036203A6 UniRef90_K9PE87 UniRef90_UPI00047A72DB UniRef90_UPI0002E4F9ED UniRef90_D0XDZ0 UniRef90_UPIO0034BD2E1

 UniRef90_R6KJ12 UniRef90_L8GK64 UniRef90_UPI0004147F53 UniRef90_UPI0003706A17 UniRef90_R7CSZ0UniRef90_UPI00036D03A2 UniRef90_C5ERQ8 UniRef90_A6UWP9 UniRef90-B6YQR6 UniRef90_Q2LTF4 UniRef90_B7V5R0 UniRef90-F4DWY1
UniRef90 K2CUU3 UniRef90-Q1Q2D4 UniRef90_UPI0003A1891C UniRef90_L8GLW6 UniRef90_L8GR71 UniRef90_UPI0004787344 UniRef90_Q8KDZ8 UniRef90-L8HIJ1 UniRef90_S4Y5U0 UniRef90_F7PM96
UniRef90 L8GIX5 UniRef90_F2JSN1 UniRef90_D9R315
UniRef90_B7KF20 UniRef90_R7GNC0 UniRef90_M5DIZ4 UniRef90_L8GSS8
UniRef90 R6ZDH0 UniRef90_M0MBQ9 UniRef90_C7RMT6
UniRef90_Q8TSB1 UniRef90_C2FTP6 UniRef90_B9XLG3 UniRef90_UPI0002DA762E UniRef90_E0U934 UniRef90_UPI00036F7E49 UniRef90_UPI00047B4DE8 UniRef90_W7YKS6 UniRef90_K9ZG83 UniRef90_UPI00036D7753 UniRef90_UPI0004270066
UniRef90-I2JJL1
UniRef90_A1WT79
UniRef90_UPI0004249F0F UniRef90_K9U1Y5 UniRef90_Y7Z9V0
UniRef90_L8GU06
UniRef90_E5WIL8
UniRef90_R5CIK4
UniRef90_UPI000476C8E7
UniRef90_M1YXF2
UniRef90-UPI000345C5B1
UniRef90-NOAUW6
UniRef90_K0N832
UniRef90_L8GDV5
UniRef90 K0Z4L2 UniRef90_A0A010S805
UniRef90_K9W5K3
UniRef90_C3LW71
UniRef90_UPI0004786454
UniRef90_D9UDT0
UniRef90_U3CFH6
UniRef90_V9Z342
UniRef90_UPIO0036EFEA3 UniRef90_S7TX67
 ENCEFSQF VAIDDGIAVVVTHKDNKVS DLTTTDDLKKI YTGG
 $N G \square Y P V P H R V A S D G L T V A V N K D N D F V D Y L T F D E L K K I Y S G$ IYPVP HRVAMDGIAAVVHPSNSVD ELTLDEIKAI Y T G
 Y NEGVLV $N G I Y P V P H R V$ A G I E Y I ELLPVAFD AI SVI KNPENDWA E Y G Y K P T $A$
 , VA LK K

 $Y$ D G $V$ I V
 $N G D E Y$ TELEVAK D GLLSVVVS QENDF LENVSVEELKMI F L A
 LV D HKVAVLTVA PVVNKDVAETVKLTVQQLQDVFTA


 AK D AVV P P V $V$ N $V$ A $N P$ P L E HVVAI D A I VP I V H P A N RII



 SRVGIVQIPTLAGAIHSAATNPSTATLALTTAQVCQI YS G



 $R D G I L Q F P L F G Q A M V V A Y N L P S D T F L V L D R S T L G A I W A G$







 AKDAVI
 $R G F T L E Q R Q V G V D G I A V V V N Q T L K V P \quad G L I T I D Q L Q Q \mid \quad Y \quad L G$










 VHVVGRD A V A CVI S SEVY QA GVTSLSRDEI RAI Y Q G

 A GKNILQMPFLGGTAMVAGYNLPAGDSVVLDGETLARII LGG

 A Q NT L HT FT LAF DGLAIVVNQANPV TNLTREQLYGDYKG

 E GVK Y E E F MVA N D GLL S V V V S K D N D F V D C
$K G V Y P$ VP $\operatorname{F}$ GV A Y D C 1
GNPRLDENRVAVSAFALVVNDDVPVR DL

 LVDHKVAVVGI TAAVNP GVGIKDDSKEANARIVLG





UniRef90 WoJXD2 UniRef90-R5RF01
UniRef90_A710G7 UniRef90_B9E6T7 UniRef90-D9QSW6 UniRef90_UPI0003FBCBBC UniRef90-G4H8C9 UniRef90-B8DOH2 UniRef90_K9YG69
UniRef90_UPIO0036203A6 UniRef90-K9PE87 UniRef90-UPI00047A72DB UniRef90_UPI0002E4F9ED UniRef90-DOXDZ0 UniRef90_UPI00034BD2E1 UniRef90-R6KJ12 UniRef90-L8GK64 UniRef90_UPI0004147F53 UniRef90-UPI0003706A17 UniRef90-R7CSZ0 UniRef90_UPI00036D03A2 UniRef90_C5ERQ8 UniRef90-A6UWP9 UniRef90-B6YQR6 UniRef90_Q2LTF4 UniRef90-B7V5R0 UniRef90-F4DWY1 UniRef90_K2CUU3 UniRef90-Q1Q2D4 UniRef90_UPI0003A1891C UniRef90-L8GLW6 UniRef90-L8GR71
UniRef90-UPIO004787344
UniRef90-Q8KDZ8
UniRef90-B4WLC1
UniRef90_L8HIJ1
UniRef90_S4Y5U0
UniRef90_F7PM96
UniRef90-L8GIX5
UniRef90-F2JSN1
UniRef90-D9R315
UniRef90 B7KF20
UniRef90-B7KF20
UniRef90 R7GNC0
UniRet90-M7GNC0
UniRef90-L8GSS8
UniRef90-R6ZDBH0
UniRef90_MOMBQ9
UniRef90-C7RMT6
UniRef90_Q8TSB1
UniRef90-C2FTP6
UniRef90-B9XLG3
UniRef90_UPI0002DA762E
UniRef90_E0U934
UniRef90_UPI00036F7E49
UniRef90-UPI00047B4DE8
UniRef90-W7YKS6
UniRef90-K9ZG83
UniRef90_UPIO0036D7753
UniRef90-UPIO004270066
UniRef90-I2JJL1
UniRef90-A1WT79
UniRef90_UPI0004249F0F
UniRef90-K9U1Y5
UniRef90-Y7Z9V0
UniRef90_L8GU06
UniRef90-E5WIL8
UniRef90_R5CIK4
UniRef90_UPIO00476C8E7
UniRef90-M1YXF2
UniRef90-UPIO00345C5B1
UniRef90-NOAUW6
UniRef90-KON832
UniRef90 L8GDV5
UniRef90-KOZ4L2
UniRef90_A0A010S805
UniRef90_K9W5K3
UniRef90_C3LW71
UniRef90_UPIOOO4786454
UniRef90-D9UDT0
UniRef90_U3CFH6
UniRef90-V9Z342
UniRef90-UPIO0036EFEA3
UniRef90_S7TX67
UniRef90_UPI00036D967E
UniRef90-G7GS80
UniRef90_L8H4Z4
UniRef90_UPIO0047AE258
UniRef90_UPI00036E07E9
UniRef90-U2D9P6
UniRef90-K9PZK7
UniRef90-L9WYG7
UniRef90_UЗA006

130
140
150
160
EESTWNEVVNDDWPDEDI EELIFGPSDASGTYDYFDEATLHSG E IT NWKDLG GDDQAIVVVGREAGSGTRGAFEEILGIED
 EAKTWKDVRA K IV NWSEVGGT SELKI NVI NRPAASGTRATFEKTAMK GNDERIVVVSRDSSSGTFEVFGEEIVLEGE KVKTWADVREGWPAEEIKIYSPGTDHGTFDYFTEAINGEA KI TNWKELG GKDQEI VVVSRDSSSGTFAVFNDI EI NNWQQVRSSFPDRKLSLYGPGVDSGTFDYFTEA DAGEG

 QI T NWKQVG GoDLP寝TPESLLN kVonwkovg gndopiavvitiensgsbysfestl kisnwnovissfanaplstygrokesgyoyftlalvige KI TNWSEVGGS K NWS EVGGS DI RQWDHEDIAQWNEGVTLTTYWSASSGGYTAVFEEGVEYSE EATKWSDDNSEWPDEEIVIFSPGHDSGTFDYFNEVILEDN TVTHWDHVRAGWPHEKI NLYGAGTESGTFDYFTEAIVGEA

 GNDEPI NTYT KIKTWGAVLGTSSKTCVHVFTRSDACGAAETWASWFNARQ KI RNWKEVGGGDNRPIVVVSRDSSSGTYESWGHLVLNGA TVK T WG DL G G D WA K K P V QL F GRNSVGGTYGYFKEEALCK


 CI TRWNHANITLPDHDVVVAYTATAAVQTVLFTSALSASV RI QKWNHPLVVLPDRFVRVVYPASASASTSALHQLLAKAV KI TNWKELGGA DQKI TLVNRPDSSGTRAVFNKL RVTNWKQVGGPNARIVVIQRESNSGTQSSFEE EITRWSQURADWPDEPUTLYGPGEESGTFDYFTEVVVGEE
 EITRWAGHGGQGR KITVITREEGSGTRGAFEELVMKGR

 G A DQPIVVIGRESG
D $A$ ADKPFSRDPEDG

GKDEK IVVIGREAA | $K$ | $T N W S Q$ |
| :--- | :--- |
| $E$ | $T$ | KITKWNQVNPAWPDEKFKLYGAGRDSGTRGAFEELLEVK D NLTMWDDVAAADPHQADVVITESDDSAVTHDFTSVLSATV ETKNWSELG GEDAPIVVIGREAGSGTRGAFEELVGVED E 1 T NWGDLVDADVDEEI TVVYGRSDASAAYKQWGDFLAGED






$\qquad$


 $K \square T N W S Q L G \quad G E N L P I V P Y T R H P Q D G S$ KAKTWK DVNSKWPDKKINAVSPNSSHGTYDFFENEDVMKE


 RIT N WKEVGG GPDRSIIVIDKEPHRGTRHAFMRFVRGDE


 EVKTWEELGGTG GPVNLYARDDHSGTYDTFKELVL KV S R WN QV R A GLD NAP L RLYGAGPDS GTFDYFTEAIVGKP QI TN WK QVG GNDQKIAVVTRREASSGTRYSFESLDM QVKNWNELNPSYPAQPI QLYSPGTDSGTFDYEVEAVLEKD DLTHWRQLKGWAPDLPVTVVSRTS GSGTRATAEHTLLHKG KIT N WK DVGGADRT I AVVTRETSSGSRYAFED KV N N WN QV D P K FP D QELLELVGA GT D S GT F DYFT DADN GEE


 | $R$ | $T$ | $R$ | $W N$ | $D$ | $P$ | $V$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Q$ | $T$ | $S$ | $W$ | $D$ | $D$ | $V$ | $A$ |
| $I$ | $A$ | $G$ |  |  |  |  |  |

KITNWKDVG GKDQKIVLVNRPDASGTRAVFNKF
K $V$ T KI T NWKEVG GKDEKI KAFQRPQNSGSQTMLQKFMEGKT
 E I T N W W D E L V D A D DD E P I Y VVY G R S D S S A A Y K Q WG N F L G GE D

UniRef90_W0JXD2
UniRef90-R5RF01 UniRef90-A7I0G7 UniRef90_B9E6T7 UniRef90_D9QSN6 UniRef90-G4H8C9 UniRef90-B8D0H2 UniRef90 K9YG69 UniRef90-UPI00036203A6 UniRef90-K9PE87 UniRef90-UPI00047A72DB UniRef90_UPI0002E4F9ED UniRef90-DOXDZ0 UniRef90-UPI00034BD2E1 UniRef90 R6KJ12 UniRef90_L8GK64 UniRef90_UPI0004147F53 UniRef90-UPI0003706A17 UniRef90-R7CSZ0 UniRef90_UPI00036D03A2 UniRef90_C5ERQ8 UniRef90-A6UWP9 UniRef90-B6YQR6 UniRef90-Q2LTF4 UniRef90 B7V5R0 UniRef90-F4DWY1 UniRef90-K2CUU3 UniRef90 UPI0003A1891C UniRef90-L8GLW6 UniRef90_L8GR71 UniRef90 UPI0004787344 UniRef90-Q8KDZ8 UniRef90-B4WLC1 UniRef90_L8HIJ1 UniRef90_S4Y5U0 UniRef90_F7PM96 UniRef90-L8GIX5 UniRef90_F2JSN UniRef90-D9R315 UniRef90_B7KF20 UniRef90-R7GNC0 UniRef90 M5DIZ4 UniRef90-L8GSS8 UniRef90-R6ZDH0 UniRef90_MOMBQ9 UniRef90_Q8TSB1 UniRef90-C2FTP6 UniRef90 B9XLG3 UniRef90_UPI0002DA762E UniRef90-E0U934 UniRef90-UPI00036F7E49 UniRef90-UPI00047B4DE8 UniRef90-W7YKS6 UniRef90-K9ZG83 UniRef90_UPIO0036D7753 UniRef90-UPI0004270066 UniRef90-I2JJL1 UniRef90-A1WT79 UniRef90 UPI0004249F0F UniRef90-K9U1Y5 UniRef90-Y7Z9V0 UniRef90_L8GU06 UniRef90-E5WIL8 UniRef90-R5CIK4 UniRef90_UPI000476C8E7 UniRef90 M1YXF2 UniRef90-UPI000345C5B1 UniRef90-NOAUW6 UniRef90-K0N832 UniRef90_L8GDV5 UniRef90_K0Z4L2 UniRef90-A0A010S805 UniRef90_K9W5K3 UniRef90-C3LW71 UniRef90_UPIOO04786454 UniRef90_D9UDT0 UniRef90_U3CFH6 UniRef90-V9Z342 UniRef90_UPIO0036EFEA3 UniRef90 S7TX67 UniRef90_UPI00036D967E UniRef90-G7GS80 UniRef90-L8H4Z4 UniRef90 UPIO0047AE258 UniRef90_UPI00036E07E9 UniRef90-U2D9P6 UniRef90 K9PZK7 UniRef90-L9WYG7

 $R$ VTPSALMQASNGAVASVVAD QS S RNDSQ ${ }^{\text {T T F }}$ ANDGELNNEALRVTSRALLQADTNAVVQGVAG GASRGDYTASEDDNVIVQG GDFKNNVNEQPGSASVVQSVIS Q G GKLGTNVK VVDDTTSGVRKVVAS KNGRTDYTPSHNQNLLVQ LE Y T DPVIF SAQTDVNKQQL GSNVKYVDSTTEALRQVSK GLTK\INNRLVSDINPNNLVVNSNSMVKTIVNH GKSRSDFSPSKTDTALVEG

KGNGDVKTTVS T
EELVVKDAIIS PAFAAALAAANNALEQMEPSLGPNKWAFAGDDKRDNLTAA EMKEGENVTLSEDDNTLVKG
RSCRTDYTASED
EEASNKSLETDD
GASRADYTASEDDN LLVLG
ICRYSNEL
Nis DKA
E D L K A TS $\square \mathrm{F}$

SSEDKT■
$D N G L V S G V A G$
$S$ GTLMQSVA $V$
DSTGAVMAKVAS
KVTPRAQLQASDPGAVADAVQK GDFRPNVNEQPGSASVVQSVSQ GDFKSNVNEQPGSASVVQSISS A LIFKGDFKADTLLLPSSEGVIVEEVVE NNFTPNQTFNSA LPGGVSTVYGSRADGASGNNGVVSAVRA $P A F A T Q L$ $P$ LF NA S VA D A S S M Y S
 MALDGATPAEGVTEDASNTVKK\|INE
GASRTDYTASED
MALGKGMRVVRTAETAASNGAVKSRVAS DDELVQGVRS R I T S A $M P P A L A G H A F E A V R Q N$
$L V Q D S T G A V R M V A S$ YDHTTDHEPNEKDND
 ENKASTIVETALVSE TALANGDFAG■AAGTGAVMATVGN ACKYSNEL
ASFASSVNPYVYDTTD DSTGAVMAKVAS
KCKYAQELPYVYTTD
KSRRSDFTASADDNVLVQG
DNTGAVVAKCAS
 DAYTENELEEDADANHNGDQPV AEAVAN KASRADATTAEDHAVLVQG E D $\square K G$

EYRPDA KGKDFVAS GIFGDPGAQA K $P L L T K Q T \square N S T$ NTVYVYSTTEALRRVSK $N$ N DGDFKNANNE F S SNVEFVST

QPGSASVVQGVTE EN $\ K G$
$\square G \square Y G P P Q A L K A A$ GDNRGTNVIYSPTTTEAIRKIAS
GA $\square R T D Y S P S E D D N V T V Q G$
KGDFKN
DGDFKDA $\quad$ N
KGDYKNSVN QPGSASVVQGVSE
D $\square_{K A E K N A D}$

AALAASDNGAGYSSDVVADRQS
QDLPENDNLQQDYSTLVDLVSK
REPGTNSD DCHNRDPGSPGGVVRCARDSTDAVLRTVAD K A
 P IVQSATLSEDDNI

G $\square K T N K V K T S Q E Q D$
SAFKAAYESVGRNLT QMPPRADGRMNDTAGSGVYQMVST SAFKAAYESVGRNLT QMPPRADGRMNDTAGHTAQALFVAN
QNKYRQELT
$\square H R G K V L A G S A K R$
FESSEQLSDAVSQ KSSRRDYTPSEDDNVLVQG

V A R GLTKTVKDREVSDVAPTALVVNSNSMMKTLVNH
 GASRTDVGNDSEDLNDRRVSTUSPTSLVVSTNSMMKTLI SY (TVGIVAAAQVANGNGMVKTLVAN GEPA FTSRDCRNRNSPEDKVVRCELDSTDQVLRTVAR SPTWELAPSSFVPTTGKDYNP $P V L A A E L E A N A T L A Y \square P A V$ D GASRTDYTASENDNVTVQG LMSPPSEDVVS

DSYTENEGEDFADGN

UniRef90 woJXD2 UniRef90-R5RF01
UniRef90_A710G7 UniRef90-B9E6T7 UniRef90-D9QSW6 UniRef90-UPI0003FBCBBC UniRef90-G4H8C9 UniRef90-B8D0H2 UniRef90-K9YG6 UniRef90-UPIO0036203A6 UniRef90-K9PE87 UniRef90 UPI00047A72DB UniRef90_UPI0002E4F9ED UniRef90-DOXDZ0 UniRef90_UPI00034BD2E UniRef90-R6KJ12 UniRef90-L8GK64 UniRef90_UPI0004147F53 UniRef90-UPI0003706A17 UniRef90-R7CSZ0 UniRef90_UPI00036D03A2 UniRef90_C5ERQ8 UniRef90_A6UWP9 UniRef90-B6YQR6 UniRef90_Q2LTF4 UniRef90-B7V5R0 UniRef90-F4DWY1 UniRef90-K2CUU3 UniRef90-Q1Q2D4 UniRef90-UPIO003A1891C UniRef90-L8GLW6 UniRef90_L8GR71 UniRef90-UPIO004787344 UniRef90_Q8KDZ8 UniRef90-B4WLC1 UniRef90_L8HIJ1 UniRef90_S4Y5U0 UniRef90-F7PM96 UniRef90-L8GIX5 UniRef90-F2JSN1 UniRef90_D9R315
UniRef90 UniRef90-R7GNC0 UniRef90-M5DIZ4 UniRef90-L8GSS8 UniRef90-R6ZDH0 UniRef90-MOMBQ9 UniRef90_C7RMT6 UniRef90_Q8TSB1 UniRef90-B9XLG3 UniRef90_UPI0002DA762E UniRef90-E0U934 UniRef90_UPI00036F7E49 UniRef90-UPI00047B4DE8 UniRef90-W7YKS6 UniRef90-K9ZG83 UniRef90_UPI00036D7753 UniRef90_UPI0004270066 UniRef90-I2JJL1 UniRef90-A1WT79 UniRef90_UPI0004249F0F UniRef90-K9U1Y5 UniRef90_Y7Z9V0 UniRef90_L8GU06 UniRef90_E5WIL8 UniRef90-R5CIK4 UniRef90_UPI000476C8E7 UniRef90-M1YXF2 UniRef90_UPI000345C5B1 UniRef90-N0AUW6 UniRef90-K0N832 UniRef90_L8GDV5 UniRef90-KOZ4L2 UniRef90-A0A010S805 UniRef90_K9W5K3 UniRef90_C3LW71
UniRef90_UPI0004786454 UniRef90-D9UDT0 UniRef90_U3CFH6 UniRef90-V9Z342 UniRef90_UPI00036EFEA3 UniRef90-S7TX67 UniRef90_UPIO0036D967E UniRef90-G7GS80 UniRef90_L8H4Z4 UniRef90_UPIO0047AE258 UniRef90_UPI00036E07E9 UniRef90-U2D9P6 UniRef90-K9PZK7 UniRef90_L9WYG7 UniRef90 UЗA006

210
SEFAMGYLGYAYYSENTDVVVRGPVDDGDG
E P|V|
 TPFSI GYTGESYA
NKAGI GFFGYNFYQENKDNDKAVK $\square$ QKEGK GEGV
NENAI GYVGLGYLSDNDKAVK V N GV
 TPGAI GY G L GY LN DDVKAVKLNGHLPS DS QYM
 DASALGYVGISYYIQNQEKLNLVAVENGKGKCEKPVPV DLGGIYYATADEVLSQCKVKPLPIGSKADQMVSPYQEPLV






DKNGI GY ISVGYIDESVKPVALDGVSPTKENDKKGDYKGA DKFGI GYNNI SYAYNRKTKKLNEGL
NRYAI GY $\square G L G Y \square N R S V K G L T V N G V Q A S S D N V L A K T Y P \square A$ SLNGI GYSGI GYKTASVKTVALAKKEGAA

NSNAVGYA D GEVVLQSARYATVDSFDPTQFGKNSAGQAT TPYSFTMWSFPD FYYT RKDQUGSMVDVSGDUVRPD
$T \square N G$ N

 $T T Y G M T F V R R Q A M S V A A G L S W A N M V N K A G K T V E P S V S T V$
$D P A S \square G Y I S D D L V D T S V K P L R V D G V E P T E A A U D A G R Y R L V$ DQYAMGY G GFAYYTENSDRVKAVPVDGGSGGGCVP
 TPGSI GYVS LDVLDDTVKTMKLENTEPTPENVKAGSYFLS TPGGUGYATASEVCPLKTVPIKALLMTKEDNNYQ
 TPYSFAF WDL Y D DTMSRSVSAASLDNTSGNTVAANVDSVG
 NANA $\operatorname{G} Y \mathrm{G}$ GVAY LDDSVKALSADA GEG GDGKD
 D
PGGLYYTSASAVVPQ
CTVKLLPLGF
Y $\square S S T A E L D N Q C R \square K P \square S \square S R Q G G E N F I L P Y K P Q$
 DPAGUAFNNTDFAYNDNTGKKQPGIE
 AAGAMGFFGLSYAEENPDAVKIVQVDNGDGC
S SLNSIGYSGlGY KVAGVKAVSLSKKGGPFV
TPGAI YYASARAVVHQCGVKP IPLGENSD
NKEGIGYFGYNFYVQNKDKLKEVKIKDENGKATEPT
RVNGTAYT LGYFTLQSQSGLKVAAMQDADGTTVAASAATV
 VPGAMGYSELGAATDRK DTGGI YYASAPEVVGQCTVKPLP LGRKKSEQLI PPYQEPF EKNAI GYFGFAYY




 TPGAI GYAE
NQQAI GF $\square$ SMGS $\square D A S V K P L N F D G V V P N S V N L L N K S Y E L A$ SKGGLGYFGLSYFEENQDKLKALKIDGGDGC LV NDYAI SY YSL GSVDDNLLKSLKVDNVEASEKNDL NPNAVGYIGIGYLNDQVKPLTVGGIEGS

TAGAVGY LAFSYFTDDKVTPLA\DGVEPTDENVQSGKFPI


| UniRef90＿W0JXD2 | EPSGANARSGEYS 260 270 280 |
| :---: | :---: |
| UniRef90－R5RF01 | R P |
| UniRef90－A710G7 |  |
| UniRef90－B9E6T7 | EATEETVK |
| UniRef90－D9QSW6 | KPTNATV |
| UniRef90＿UPI0003FBCBBC | Y P F WS Y E Y M $\square$ T K G N P Q K G $\square$ K G Y $\square$ D F V R S D D F A D K V T S M G Y |
| UniRef90＿G4H8C9 | APSMET】K |
| UniRef90＿B8D0H2 |  |
| UniRef90－K9YG69 | P P S A ATV |
| UniRef90－UPI00036203A6 | A A P ENAL |
| UniRef90－K9PE87 | D NVVKN【Y T |
| UniRef90＿UPI00047A72DB | EPS Q P P QRNRLNR |
| UniRef90＿UPI0002E4F9ED | TPE QCPRQRNQVNT |
| UniRef90－D0XDZ0 | R P |
| UniRef90＿UPI00034BD2E1 | A D S R Y Q |
| UniRef90－R6KJ12 | R P F L A |
| UniRef90－L8GK64 | QAAMDQFSDLIN N G T L V IDVVDS N |
| UniRef90＿UPIO004147F53 | QS GEYT |
| UniRef90－UPI0003706A17 | LA TNET UVNGTYQ |
| UniRef90－R7CSZ0 | A P TLENTYN |
| UniRef90＿UPI00036D03A2 | S PTAENV |
| UniRef90＿C5ERQ8 | EPTEEN】K |
| UniRef90－A6UWP9 | $R \mathrm{P}$（ A $\square \square \square \mathrm{D}$ VNGNGK $\square$ DPEESFYETMES $\square$ |
| UniRef90－B6YQR6 |  |
| UniRef90＿Q2LTF4 | R P |
| UniRef90＿B7V5R0 | F V E D N E |
| UniRef90－F4DWY1 | L |
| UniRef90－K2CUU3 | 1 P S A A TV |
| UniRef90－Q1Q2D4 | EAKSENVLN |
| UniRef90＿UPIO003A1891C |  |
| UniRef90＿L8GLW6 UniRef90＿L8GR71 | VELDD N A L LT T L LD F A P QLVGAPGPNS T G G L Y |
| UniRef90＿UPIO004787344 | EPTTENVTT |
| UniRef90－Q8KDZ8 |  |
| UniRef90－B4WLC1 | EPTGETLRSGEYQ |
| UniRef90－L8HIJ1 |  |
| UniRef90＿S4Y5U0 | R P |
| UniRef90－F7PM96 | P T $\square$ E N A T |
| UniRef90－L8GIX5 | QSAM T DFRSF【VNGNGSNLF |
| UniRef90－F2JSN1 | R P LI LVA Q P S $\square \mathrm{K}$ A |
| UniRef90＿D9R315 | R P |
| UniRef90＿B7KF20 | S P CK G N EVNQEVFL |
| UniRef90－R7GNC0 | R P |
| UniRef90＿M5DIZ4 |  |
| UniRef90－L8GSS8 | $\frac{\mathrm{V}}{\mathrm{R}} \mathrm{S}$ A $\square \mathrm{N}$ D Y $\square$ A S S A T H A F D T $\square$ S $\square \mathrm{G}$ G E |
| UniRef90＿R6ZDHO UniRef90 MOMBQ9 | RP P PVPLDRDGEG $\square$ SEE EDFYETRDEF $\square$ |
| UniRef90－C7RMT6 | $\square P T \square A N \Pi R$ |
| UniRef90＿Q8TSB1 | APSSENIL |
| UniRef90－C2FTP6 |  |
| UniRef90＿B9XLG3 | EPNEETVLN |
| UniRef90－UPIO002DA762E | TPTQL VSLYREPLVPPNQCPPKRNQ |
| UniRef90－E0U934 | K $\square$ DPKKCNNQLN $\square$ |
| UniRef90＿UPI00036F7E49 | EP】A E N A |
| UniRef90－UP100047B4DE8 | LP S ECPGKRNK L N |
| UniRef90－W7YKS6 |  |
| UniRef90－K9ZG83 | \P S S Q Q CPGKRNQLNL |
| UniRef90－UPI00036D7753 | GPTAQGVL |
| UniRef90＿UPI0004270066 | TPSAETVQDETYA |
| UniRef90＿I2JJL1 | D A A ENAT |
| UniRef90－A1WT79 | EPNAENAV |
| UniRef90＿UPI0004249F0F | EATMANA |
| UniRef90－K9U1Y5 | R F VALLY R E P L S Q P C P N Q R H Q P NL |
| UniRef90＿Y7Z9V0 |  |
| UniRef90＿L8GU06 | Q T A M A Y FRASVFS RVVVIA D $\square$ S G G |
| UniRef90－E5WIL8 UniRef90 R5CIK4 | EP SLLD T ${ }_{\text {Y }}$ PR |
| UniRef90＿R5CIK4 | YPTMEMGRRH $\square$ |
| UniRef90＿UPIO00476C8E7 UniRef90－M1 YXF2 |  |
| UniRef90＿M1YXF2 UniRef90＿UPIOO0345C5B1 | QPTLENVRNGL VSLQSCPSQRNQLNT |
| UniRef90－N0AUW6 | G P VT P S AK T $\square$ K S GE Y A |
| UniRef90＿K0N832 | QP T DKNVTT |
| UniRef90－L8GDV5 |  |
| UniRef90＿K0Z4L2 |  |
| UniRef90－A0A010S805 | LP $\mathrm{L}^{\text {a }}$ |
| UniRef90＿K9W5K3 | LP S A Q TVR S G K Y Q |
| UniRef90－C3LW71 | R P |
| UniRef90－UPIO004786454 | APTEETA |
| UniRef90－D9UDT0 |  |
| UniRef90－U3CFH6 | R P |
| UniRef90＿V9Z342 | A P S VETV |
| UniRef90－UPI00036EFEA3 |  |
| UniRef90＿S7TX67 | K |
| UniRef90＿UPI00036D967E | T P A A |
| UniRef90－G7GS80 | EPA L N S VR\｜VGSKNTAGT\｜VDDF TLL |
| UniRef90－L8H4Z4 | A $\square$ T QASVQAALDDFSPSSTDSDELERY IL |
| UniRef90＿UPI00047AE258 | WA YEHSYTKGEPSGAAKEFLD Y LM S D |
| UniRef90－UPI00036E07E9 | EPSLQTAQDNTYK |
| UniRef90－U2D9P6 | YPSKET $\mathrm{C}_{\text {K S K E }}$ |
| UniRef90－K9PZK7 | QP |
| UniRef90－L9WYG7 | P $\square$ P $\square \mathrm{D}$ LD E S G T LS A E E D Y Y E T R D D F $L$ |
| UniRef90＿U3A006 | R P |

# 300 ( 310 <br> 320 

 DNSYPLSRPLY $\square Y$ Y $V$ KK EMERPEVKAFVDFY $L$ E E GTYPLARPDFDYVSKSA AEEKPQVQQFDEFYMD A GKYPLARYLYVYVNKKPNQP LAPQENEFIKMV


## $P \square S R P V F \square Y$ VKK $\quad$ SAVKRPEVKAFSSFYV


$P$ LSRPLFTYVNNASLK DKPQVADFAKYVL
PLSRPLLIYINKT
GTYPVYGYEHM YTKGEAKDAVKAFL


T A $\square$ N D GRYPSPPARY $\square Y$ Y VTKGK PTSPALISF LKY $\square L S$
QNA LDNGTYPSRFLYVYVNKAPNKPDD P LEAQF LKK LV
S GKYPLARFFYVYLNKAPNSPLDAEFVK
ADSSYLISRNLYM TAA $\square T$ NAYP $\backslash A A \square T Y L A G Y T S G N S A A H V Q A V K D L F G \square F Y N$
$\square G P D A T G W P L V G M G A M A F H T H P T N C A S A R A D N D F \square W W T Q T$ GKFPVWAYEHA YTKGEPNEVAKAFLDYM M
$P$ PS R P L F DYVRADGL EENSALSSFVEYY L A

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

S GTYP $\square$ TRRDFVI IKENGGNDQKAGEAY VRLL
DGTYPLSRPDF TYVNMK AAEKPELQEFVAFYM
GAGSWPLAAFSFLYRSTSMTDCVKAAALADFLLWTQT
A AVEAGEYPAPPAREMFDASNGPFEDEAAE FVEWVLT
S G GYPLSRPDF LYVSEK


E A V A
SGEYPLARALYF QTYPlWRYDYNYVNPALDKGE VASYLSWU EVIK NGSYPI DSKL FVIIKRNKGREQQAGEAYT $\quad$ RLL
 EAFQSGKYPITRNLFVVVKQNSQTEQQAGVAYA NLL
 DGTYP IARPLYMYSLGTPEPQEQGSYLDWDF
K GSYP LSRFLYVYVNKAPNKP LAPLEREFDK LV

> S G D Y P L S R F L Y V V Y V N K D P N G E L P P I E R E F L \| R

SGKYPLSRFLYVYVNKHPNKP LSPLQAEFIK AAFADGSYPLTRNLYAIVKQDGGRAQQAGEAYT
$K L$
GNGSYPLAYLSSVAFYKTVNTSRNCPKMRDMLDYLAW
 FPlARNLNLI TVGLPQGEVKAFDD YL TAFQTGDYPI TRRLFVVVKQNGQDQQAGESYANFL

PLSRPLFTYVKNSAVKDQ SEVYDFVKYTL



ESGEYP $\square S R P \square F \square \quad Y S A K T \square M D Q K P Q V A A F \square N Y Y \square S$
QDGSYP LSRPLF YPKASS $\square E K$ PEVEKF VEFYV SGQYSI ARPFI LLFKNEDDPQAADFI R Y



 EAFKTGAYP IMRSDFVIVKQNDGVEEEAGMAYA
TAVEEGFYPAPPAREMFIAANEEFEDEAA DFAAWVLT

TLENAKDASKESGYVPLEDKVYEEDGKKLE LS S K GQE】AENQGYVPL

ENAGS $\square$ A GEVGFVPLQDEQYEEEKGKLA
SAN REVVTEVGYVALSDSTYEKALT RFN
LSKTGQEVVDKDGYIPLPAKVIKKVLATDK ENSWKWVDSVGYVALPDEAYVKVKRKFAT
LS NQGQKLI NDAGFISL
LT DQGQQA』EQAGFA

## SPDNANLILQVGDVPLPSVALEAAGLRLDNGQTGTKFGG

NEAVADVFV ENQFAPDTNPYRRRLINELYTDT
NNAGAAAEEEGYVALPQEKDDEQLEEIGKGI
DNAPTLVPETGYVALSPEAYKLVKARFNAGTTG
QSDEYGHEI EKQGY
DNAAQVVPEVGYVPLSDDRYAS $\square L A$
SDEGAEIVKSVGLIAVDK
EGQKYE VETGY $\square$ G $\square$ S QNE LD KE $\square E K \square K$
LS K T GQQVVVKDGY円P LPAKVAEKA IKEL
LSKQGQEVVVKDGYIPLPSKVVEKTMKEL
MSTEAQQIVEDDGFVPI
LSNEGQQUV IV DGYMPLPSSVVEKEDKKDE
STTRPALDTGFAY $\square D G V A A F R Q Q V L N T V S T C V$
DTNAFDDA LENGA $\square V A L P Q$ VRRA $\square L R A L A E A T S S \square C \square N D$ SDEVQTNIVTKQGYIPVTSMKVER

NARTVVDDVGYEPDPNEAYA DADDHD

LE QAGTDLVSEVGYVPDDEETRDDNLAKLL
NS GAANUASKGGYAPLDNGFRKRMUDSLGTDTNGKKALG

## LT DEGQK LIA QS G L V P L

K N A SA LVKGSQYFPLPPRAYAANMEFFKT
SATS $\square R \square A K R Q G F \square S S D A E L K K R F F D Q \square K A F T C A \square S G S G$
EGQEYVRENGYVPLEDERLTEAQENLA
SMKNAARVVEEVNYLPLPARAYNENLERL
LSETGQSLVTEVGYFPVSQ
LEKQQQS L LENGYVPLHEDIIA
RSDEGQKIVVEVGYYPLPANLREK
LTDQGQKAI EQSGF PPV

LTEQGQELI SQAGFVKI

SPAGQGIVEKTGYVPV
LS KQGQEVVVKDGY DP DPASVVAK DKAK LE
LSKEGQEVVRRDGFIPMPAEAAEREKERL
LSEQGQGIVKKDGYIPDPVTVVEKELAKL
$\underline{L}$ SQGQQALRQAGFV
 $T M E N A Q D V A A E T G F A P L S D E D \square Q A S L D A L N$
$L S P K G Q Q U V M K S G Y V P B$

LGPKGQA VQKSGY $\square P V N G P V$
LTEQGQKLITQAGFVRI
ENAADLSEEVGYVRLPDAEYKKDLDKLE
QSKNVQKLVPKLGYI PVTQMTVAR
TQTNTAA $\ A G Q R S Y S \| L P V P L F R L L L D A F$
QS SKGQA VAANGF！
NNASRLSAAVGYVALPAN
TVED VILDVGYFPASAEALNQAKQRWDEAT

MSDTGQS IVAEQGY I
HPEKGQKFVEKSGYVPL
I RGAGQDVVRSHGHLP
$\frac{1}{N D Q Q D D A S P T E T G Y V R D S S H D R S A A M R S V Y Q A}$
$N S Q 1 L D D$ TEQLGYTPLTAAYR
$S \square D D$
$\square R Q G Q Y \operatorname{L}$ EKTGYTPINDT
DTEQGQDLLI EKAGF VR I EGQQYVRENGYAP $I$ S DER $\square$ A E ERDR $\square$ EERHDT $\square$ T

UniRef90 W0JXD2
UniRef90-R5RF01
UniRef90-A710G7
UniRef90 B9E6T7
UniRef90 D9QSW6
UniRef90_UPI0003FBCBBC
UniRef90-G4H8C9
UniRef90 B8D0H2
UniRef90-K9YG69
UniRef90-UPI00036203A6
UniRef90-K9PE87
UniRef90 UPI00047A72DB
UniRef90_UPI0002E4F9ED
UniRef90-DOXDZ0
UniRef90_UPI00034BD2E1 K G S V L GVK Q D A $\square$ K
UniRef90-R6KJ12
UniRef90-L8GK64
UniRef90-UPI0004147F53
UniRef90 UPI0003706A17
UniRef90-R7CSZ0
UniRef90_UPIO0036D03A2
UniRef90_C5ERQ8
UniRef90 A6UWP9
UniRef90-B6YQR6
UniRef90-Q2LTF4
UniRef90 B7V5R0
UniRef90-F4DWY1
UniRef90-K2CUU3
UniRef90_Q1Q2D4
UniRef90_UPI0003A1891C
UniRef90-L8GLW6
UniRef90-L8GR71
UniRef90-UPI0004787344
UniRef90-Q8KDZ8
UniRef90-B4WLC1
UniRef90 L8HIJ1
UniRef90-S4Y5U0
UniRef90-F7PM96
UniRef90-L8GIX5
UniRef90_F2JSN
UniRef90-D9R315
UniRef90-B7KF20
UniRef90-R7GNC0
UniRef90 M5DIZ4
UniRef90_L8GSS8
UniRef90-R6ZDH0
UniRef90 M0MBQ9
UniRef90 C7RMT6
UniRef90_-Q8TSB1
UniRef90_C2FTP6
UniRef90 B9XLG3
UniRef90_UPI0002DA762E
UniRef90-EOU934
UniRef90 UPI00036F7E49
UniRef90 UPI00047B4DE8
UniRef90-W7YKS6
UniRef90 ${ }^{-}$K9ZG83
UniRef90 UPI00036D7753
UniRef90-UPI0004270066
UniRef90-I2JJL1
UniRef90 A1WT79
UniRef90 UPI0004249F0F
UniRef90-K9U1Y5
UniRef90-Y7Z9V0
UniRef90 L8GU06
UniRef90-E5WIL8
UniRef90-R5CIK4
UniRef90 UPI000476C8E7
UniRef90 M1YXF2
UniRef90-UPI000345C5B1
UniRef90-N0AUW6
UniRef90_K0N832
UniRef90-L8GDV5
UniRef90-KOZ4L2
UniRef90-A0A010S805
UniRef90 K9W5K3
UniRef90_C3LW71
UniRef90-UPI0004786454
UniRef90_D9UDT0
UniRef90 U3CFH6
UniRef90-V9Z342
UniRef90_UPIO0036EFEA3
UniRef90 S7TX67
UniRef90-UPI00036D967E
UniRef90_G7GS80
UniRef90-L8H4Z4
UniRef90 UPI00047AE258
UniRef90-UPI00036E07E9
UniRef90_U2D9P6
UniRef90 K9PZK7
UniRef90_L9WYG7
UniRef90 U3A006

UniRef90 UPI00037E53AA
UniRef90- R6R7Y3
UniRef90-UPloo03157868
UniRef90_I4C2A0
UniRef90_S3ZSD0
UniRef90-LOIBK5
UniRef90-E3CZM0
UniRef9O-UPIO004661516
UniRef90-F7RY82
UniRef90-FOT911
UniRef90-UPI0002FD37E8
UniRef90-R6E5DO
UniRef90-K9F2Q7
UniRef90-D6TFV4
UniRef90-L9XX04
UniRe99_W9ARN8
UniRef90_UPI0001 E897E6
UniRef90 B3QVL3
UniRef90-W402T9
UniRet90 R6DU59
UniRef90-R5CHJ9
UniRef90 L9ZKF4
UniRef90_UPIO0037111C7
UniRef90_N9VE69
UniRef90-U4TUX3
UniRef90-UPI00046F7283 UniRef90-U7PGH5 UniRef90-H1G4W0 UniRef90 U1NP53 UniRef90-UPIO0034855B4 UniRef90-N1WN17 UniRef90-F1TTM6
UniRef90-B1WUR2
UniRef90-B21W15
UniRef90-UP10003B313DD UniRef90_131HJ1
UniRet90_C4UCE6
UniRef90-K6IAJ1
UniRet90-K2QEF8
UniRef90_C4L7P9
UniRef90-W8T6Q6
UniRef90 V7E886
UniRef90_UPIo0047AA23E
UniRet90_G1UW65
UniRef90-Q0YV02
UniRef 90 -K9XB79
UniRef90_U5E4X5
UniRef90_S9UWI2
UniRef90_L8GUQ7
UniRef90-U1NRY6
UniRef90-U7DMP9
UniRef90_F7XQ24
UniRef90-A4C751
UniRefol -KOIK16
UniRef90-UP10002DD19CC
UniRef90-U1ZQT8
UniRef90-KOB181
UniRef90_R8VTT4
UniRef90-S6H8E3
UniRef90 R7GOM7
UniRef90 UPIOO037434B6
UniRef90 UPI00035FB13E
UniRef90-R7XU44
UniRef90-L8G.JF2
UniRet90 MoLGO6
UniRet90-XOR4R3 UniRef90-W9DPN9
UniRet90 W759A8
UniRef90-A4J6V2
UniRef90_M6BVZ8
UniRef90-UPI0002EDF7C0
UniRef90_G7WMC7
UniRef90-U2QCZ6
UniRef90 A7GSW9
UniRef90-UPI00046311A1
UniRef90-K9F8F4
UniRef90-UPIO0036AFD7B UniRet90_A1BFA8
UniRet90_U7P213
UniRef90-R9PKX7
UniRef90-G7WMC3
UniRef90-G9YQS8
UniRef90-UPIO0035DEC4C UniRef90_S3FBD1
UniRef90_14CT06
UniRef90-E3BMVO
UniRef90 Q3ATA1
UniRef90 UPI000255994B UniRef90_UPIO003B4F213 UniRef90_EOUKZ2

GGSTTWAPI TWSQF QLDRYTNPASD KPGS GTGLKML $N L K S V G G D T L N N L M A L W A K Y P S V K D S V E G K G Y S T$ ELT LTGGSTALKPVAEELKACPGARITVVSHGSRDGVTEL
 TLVVGGASSVAT IVTA YTAATGDSFAYASSSSGQGQKDM




 V VI
 D L S G S G S G TVVY P L M S V DA E E Y M Y T E Q E NV S ELTGTGSTSMEKVISFMAQNGAVTVNYNPTGSGSGVVVS EVTAAGSSALLPLAKFMDANPDCSVTVNGGGSGSGMA

TGGSSTI A PLATVEAA A HPGVKVDVQAGGSARGV
 $R L S L T$
 EVK G D G S S TVG P D DEFA QK YPNVTVS S GTS GTGGGGEEKF $N$ L S S I G D I G I A
 RQ F V D S Q P E L Q L Y SK K S
S I S LA G S T S ME K M C
I K I D G S S T V Y P I T E AV A E E F Q N K V QV T V G $\square$ S G T G
GGSTTWAPIRKDVSQCPRFILRYTQPPSG
$Q \mid R I V G G S T V V Y P G S Y V A E E F G A T T K Y E S T G G S G G G$ NLNSI GS DTMNNTMTYWAEYPNVKIQDEGKGS $N L S S V G S D T L A N L M S L W G D Y P G V N L Q U Q A A G S S T$


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

> |  | V |  |
| :--- | :--- | :--- |
| D | G | $\mathrm{V} V$ |

GGSTTWAP DRSEQSVWPEFRLRYTAPGSATGGRML $S L T \| V G S T A M A P M I R R A A Q \quad$ TYEKTCTGAHFTBD $K L T G T G S S T V Y P D A E A D A E E F G V R V S V G T A G T G G G F K R F$ S GPS S L N S V F S T WQ T A Y DLLT FTYTP V
$E \square S \square A$ G S S T VVF P L M S A $\square$ G E
VEVEVAAHGSTTGFTA
GSDT $\square$ A NMMTFWAEEPN $V N \square Q \square Q A A G S S T$


#### Abstract

$\prod R \nabla D V S A H G S G T G F$ $V 1 \vee V \vee A A H G S G T G F$  I A T G G S T S VVEKV DGALS ENP DVVDI TYDP T G S GA G $\square$ T $N L S S V G S D T L A N L M T L W T E Y Y N D N D Q \square Q A A G S S T$

GS S TLLAP V 1 T S F F D T Y GTVD A Y D S S L DP K E D $\square$ A $\square Y$ $K \square T \square N G S T A L L P L T L L Q A A K H P K V S F A A S G K G S V T G$ $K V T A Q G S T A L L P L L Q F E G K N P K V T D N D T G G G S T T G M N Q$ GSSTVVEMSKAASENPDVRVTVAASGTGGGFEKF



$L Q L T G S G A T A M Y P$ L $\quad$ G A A F V E A T Y P K G DY Q P Y K S R VQ V S I K $\square$ G G S S T L A P V I A K F T E E Y K T WN K V D P K L P E E E P $L T \square D G S V T \square V A L M K Q L Q \square A F N P V N P S L P T$ T Y G G L L $\quad \square P S$ G

GSTS MEEV DQFMADNS GVS VTYNPTGS GAG GEA VRVDGSSTVFPAVAEEYTKKEPHVKVNDS IVGTGGGFQ $T L T V T$ GS TA FAP PVVRELLAKCPGSTVNVTAHGSTA GDREDL
 $V T \cap N G S T A M L P Q A A K E F Q K L H P K V K I A A S G K G S Q V G P Q A V$ S V L D G S T T V G P DA K S FAA Y F T K K V TVVSES G S GN GA K S L
 K I T S V V G S D T L A N L M T F WS Q E P QV G F Q I Q A S G S S T



$S$ ST SVGS DT LDA G DM T LWVEA P SVN GQVQAS G S S T
$\square R I V G S S T V F P F A S Y E E F G K T T G N Q T P V E S T G S G G G$ NLSSVGS DTLANLMTLWAEEPNVNDQLQAAGSST DI A IDGS STVFP MEAVAEEPNVNDQLQAAGSSTV






UniRef90 UPI00037E53AA UniRef90 R6R7Y3 UniRef90-UPIO003157868 UniRef90_I4C2A0 UniRef90_S3ZSD0 UniRef90-LOIBK5
UniRef90 E3CZM0 UniRef90-UPI0004661516 UniRef90_F7RY82 UniRef90-FOT911 UniRef90_UPI0002FD37E8 UniRef90_R6E5D0 UniRef90_K9F2Q7 UniRef90_L9XX04 UniRef90-W9ARN8 UniRef90-UPI0001E897E6 UniRef90_B3QVL3 UniRef90_W4Q2T9 UniRef90-R6DU59
UniRef90-R5CHJ9 UniRef90-L9ZKF4
UniRef90-UPI00037111C7
UniRef90_N9VE69
UniRef90_U4TUX3
UniRef90- UPI00046F7283
UniRef90-U7PGH5
UniRef90-H1G4W0
UniRef90-U1NP53
UniRef90- UPI00034855B4
UniRef90-N1WN17
UniRef90-F1T6M6
UniRef90 B1WUR2
UniRef90-B2IW15
UniRef90_UPI0003B313DD
UniRef90 I3IHJ1
UniRef90 C4UCE6
UniRef90-K6IAJ1
UniRef90_K2QEF8
UniRef90 C4L7P9
UniRef90 W8T6Q6
UniRef90-V7E886
UniRef90-UPI00047AA23E
UniRef90 G1UW65
UniRef90-Q0YV02
UniRef90_K9XB79
UniRef90 U5E4X5
UniRef90- S9UWI2
UniRef90_L8GUQ7
UniRef90_U1NRY6
UniRef90 U7DMP9
UniRef90-F7XQ24
UniRef90-A4C751
UniRef90-KolK16
UniRef90 UPI0002DD19CC
UniRef90-U1ZQT8
UniRef90-K0B181
UniRef90- R8VTT4
UniRef90-S6H8E3
UniRef90-R7G0M7
UniRef90-UPI00037434B6
UniRef90 UPI00035FB13E
UniRef90_R7XU44
UniRef90-L8GJF2
UniRef90 M0LGQ6
UniRef90-K4MA90
UniRef90-XOR4R3
UniRef90 W9DPN9
UniRef90 W7S9A8
UniRef90-A4J6V2
UniRef90-M6BVZ8
UniRef90 UPI0002EDF7C0
UniRef90 G7WMC7
UniRef90_U2QCZ6
UniRef90-A7GSW9
UniRef90 UPI00046311A1
UniRef90-K9F8F4
UniRef90_UPI00036AFD7B
UniRef90-A1BFA8
UniRef90 U7P213
UniRef90_R9PKX7
UniRef90-F5ZEM4
UniRef90 G7WMC3
UniRef90-G9YQS8
UniRef90_UPIO0035DEC4C
UniRef90 S3FBD
UniRef90-14CT06
UniRef90-E3BMV0
UniRef90-Q3ATA1
UniRef90 UPIO00255994B
UniRef90-UPI0003B4F213
UniRef90_EOUKZ2

UniRef90 UPI00037E53AA
UniRef90 R6R7Y3 UniRef90-UPI0003157868 UniRef90_I4C2A0 niRef90 S3ZSD UniRef90-LOIBK5 UniRef90-E3CZM0 UniRef90 UPI0004661516 UniRef90 ${ }^{-}$F7RY82 UniRef90_FOT911
UniRef90-UPI0002FD37E8 UniRef90 R6E5D0 UniRef90-K9F2Q7 UniRef90-D6TFV4 UniRef90 W9ARN8 UniRef90-UPI0001E897E6 UniRef90_B3QVL3 UniRef90 W4Q2T9 UniRef90-R6DU59 UniRef90-R5CHJ9 UniRef90 L9ZKF4 UniRef90 UPI00037111C7 UniRef90-N9VE69 UniRef90-U4TUX3 UniRef90 UPI00046F7283 UniRef90-U7PGH5 UniRef90-H1G4W0 UniRef90_U1NP53 UniRef90 UPI00034855B4 UniRef90-N1WN17 UniRef90-F1T6M6 UniRef90 B1WUR2 UniRef90-B2IW15 UniRef90_UPI0003B313DD UniRef90_I3IHJ1 UniRef90 C4UCE6 UniRef90-K6IAJ1 UniRef90-K2QEF8 UniRef90 C4L7P9 UniRef90 ${ }^{-}$W8T6Q6 UniRef90-V7E886 UniRef90-UPI00047AA23E UniRef90 G1UW65 UniRef90-Q0YV02 UniRef90-K9XB79 UniRef90-U5E4X5 UniRef90 S9UWI2 UniRef90-L8GUQ7 UniRef90_U1NRY6 UniRef90 U7DMP9 UniRef90 F7XQ24 UniRef90-A4C751 UniRef90_KOIK16 UniRef90 UPI0002DD19CC UniRef90-U1ZQT8 UniRef90-K0B181 UniRef90 R8VTT4 UniRef90-S6H8E3 UniRef90-R7G0M7 UniRef90-UPI00037434B6 UniRef90 UPI00035FB13E UniRef90-R7XU44 UniRef90_L8GJF2 UniRef90 M0LGQ6 UniRef90-K4MA90 UniRef90- X0R4R3 UniRef90_W9DPN9 UniRef90 W7S9A8 UniRef90-A4J6V2 UniRef90-M6BVZ8 UniRef90 UPI0002EDF7C0 UniRef90 G7WMC7 UniRef90_U2QCZ6 UniRef90-A7GSW9 UniRef90 UPIO0046311A1 UniRef90-K9F8F4 UniRef90_UPI00036AFD7B UniRef90 A1BFA8 UniRef90 U7P213 UniRef90-R9PKX7 UniRef90_F5ZEM4 UniRet90 G7WMC3 UniRef90-G9YQS8 UniRef90_UPI00035DEC4C UniRef90 S3FBD UniRef90- I4CT06 UniRef90-E3BMV0 UniRef90_Q3ATA1 UniRef90 UPIOOO255994B UniRef90-UPI0003B4F213 UniRef90_EOUKZ2

A A $\square$ QS GEYP $\square$ TRR $\square F V I \quad K Q N G Q E D E Q A G R A Y A$ SGDYPLARFLFIYFNHKPQEP DNPDMAEFDKY ALL

## LIF F Y A N S E K VAEKEHLQEF $\square$ RFY $\square$ D

 GS GEYPLS RFLY VYVNKHPNDPVTAEFVK
$P \square S R P L F V F V N N K \quad K \square I E N E S F Y D F M K F$
 TAVEDGRYPSPPARDMYDAANGEFDDAAA DFVEWVLT

 $D G T Y P L A R P L F \square Y \quad$ PAEGALEREPVYEFVKF Y L
 E T GTWPLWA YEHLYVK GKPTLDAEV QSGAYPI T SEFYAVMAERRGKQPPNP DASRFRQQYQL


EA $\square$ KNGSYPMTTQLF VI $\quad$ K Q NQGREQQAGEAY T $\quad R \quad L L$

QAFRSGDYATTRNLFVIIKQNQTDQQAGEAYANWL
AS G E Y P V S R S L F FY V K G N H L G K V V P G E E Y D N L F F L S E K M

 GTYPLSRYLFVYVNKAPNKPLD_PMQKEFLKM M

 AK GTYTVTRLLYM


D G S Y P L S R P LF T Y VN K K K L E Q P E VK A F VD Y Y M $G N G S W P M S L A S V V L V T Q N L P L T G K Q Q Q V N D Y$
$S L I A T E D Y P L S R R L F F Y L P P N S K N P \quad W A E A L V A F \quad T$
 A S G Q Y P L S R FL Y V Y VN K H P N K D L S P DETE F L K MV



GTYP LARF LYYVYVNKKPGHALP PMEREF LKMV $D G S Y \| I Q R P L L I V G S G D P T D V Q Q A \quad F L D$

P LTARPDFTYVSNASY
T D N A A VAS Y VD FY V
NGAGNATWPLAYTVFLLHTKQAKDCGPAEGLMRFLSWAQT EGSYPLARPIFWYVNQQ K K LQENEALQEFMRFADE
 AS GQYK IARPL LLVTKEQPNERQ


EGFRNGNYPLTRRLFVIVKADGTDETAGRAYGNML
 A T G K Y P L S R F L Y V Y Y V N K H P N K P E L L A P M E R E F L K M $\quad$ L
 $G A G A \vee P \vee A$ $D G S Y K L A R G L N \quad C F T N G K P S G N A K K F D D F D L T$
 A T E D Y P L L S R R L F GS GK Y P A GKYPLARSLY VY $\operatorname{L}$ NKK D Q S Y P L S R PLL

UniRef90 UPI00037E53AA UniRef90 R6R7Y3 UniRef90-UPIO003157868 UniRef90_I4C2A0 UniRef90 S3ZSD0 UniRef90-LOIBK5
UniRef90 E3CZM0 UniRef90 UPI0004661516 UniRef90 F7RY82 UniRef90-FOT911 UniRef90 UPI0002FD37E8 UniRef90 R6E5D0 UniRef90-K9F2Q7 UniRef90-D6TFV4 UniRef90_L9XX04 UniRef90 W9ARN8 UniRef90_UPI0001E897E6 UniRef90-B3QVL3 UniRef90 W4Q2T9 UniRef90-R6DU59 UniRef90-R5CHJ9 UniRef90-L9ZKF4 UniRef90 UPI00037111C7 UniRef90-N9VE69 UniRef90_U4TUX3 UniRef90 UPI00046F7283 UniRef90-U7PGH5 UniRef90-H1G4W0 UniRef90_U1NP53 UniRef90 UPI00034855B4 UniRef90-N1WN17 UniRef90-F1T6M6 UniRef90_BIWUR2 UniRef90_B2IW15
UniRef90_UPIO003B313DD UniRef90 I3IHJ1 UniRef90 C4UCE6 UniRef90-K6IAJ1 UniRef90-K2QEF8 UniRef90_C4L7P9 UniRef90-W8T6Q6 UniRef90-V7E886 UniRef90_UPI00047AA23E UniRef90 G1UW65 UniRef90-Q0YV02 UniRef90-K9XB79 UniRef90 U5E4X5 UniRef90 S9UWI2 UniRef90_L8GUQ7 UniRef90_U1NRY6 UniRef90- U7DMP9 UniRef90_F7XQ24 UniRef90_A4C751 UniRef90 UPI0002DD19CC UniRef90-U1ZQT8 UniRef90-K0B181 UniRef90 R8VTT4 UniRef90-S6H8E3 UniRef90-R7GOM7 UniRef90_UPI00037434B6 UniRef90 UPI00035FB13E UniRef90-R7XU44
UniRef90-L8GJF2 UniRef90 M0LGQ6 UniRef90-K4MA90 UniRef90- X0R4R3 UniRef90-W9DPN9 UniRef90 W7S9A8 UniRef90-A4J6V2 UniRef90-M6BVZ8 UniRef90 UPI0002EDF7C0 UniRef90 G7WMC7 UniRef90_U2QCZ6 UniRef90-A7GSW9 UniRef90 UPIO0046311A1 UniRef90-K9F8F4 UniRef90_UPI00036AFD7B UniRef90 A1BFA8 UniRef90 U7P213 UniRef90_R9PKX7 UniRef90_F5ZEM4 UniRef90 G7WMC3 UniRef90-G9YQS8 UniRef90_UPIO0035DEC4C UniRef90 S3FBD1 UniRef90- I4CT06 UniRef90-E3BMV0 UniRef90_Q3ATA1 UniRef90 UPI000255994B UniRef90-UPI0003B4F213 UniRef90_EOUKZ2

LSNEGQK LVDLAGFDPT
■SAQGQE LIKNAGF $\square$ S L
SKEGQQUVIKDGFYPVSGTLAAE
K T T DKK L M AER $\square$ GY $V$

T LENAGDMAEAVGYVRLPDDKYREELKTLE
KEGQRFNEPAGYVQI S GKMQSENKSLLRNASKA
LSDEGQAALSSDGFARL
LGSDVQQKAQEMGYVPI
EGQQYVRENGYAP IGDEKLEKQRE $\square L A E A S$
TMKNAQAVAADTGFAPDTDE
LSKDGQAlVEKEGYVPLT
VANNVNEFAGETGFAPLPEEEVQAYVDALE
MGDEFGESDEAMGY
ENTSADWDADEVGYVPANQDMVDENMTKLENA
$\square S K S G Q G \square V A K D G Y \prod P L P A K V V E R D L K T \square$
SAKVQKSLVTKMGYLPI
SDEGQSLVEATGYFPL
DSEDKGKSAEKAGYVALPEKDYKDQLKKDEDSTK LS KQGQE IVFRDGYIPLPASVAAQVRERV

QTEQGQKA $\square E$ QAGF VPP EKSRESVASSGS


$L S P Q G Q R L A T H D G Y L P L P P E M L D Q T R N T V$
TSEEGQKTVLKSGY
पskTGQN VVEKDGYTPपPAKVVEK
LSEEGMKTVEKMGYVP
QSSKGQA VAANGFIPMPGDYQA $\square A R Q A$
LGT DG G LTE TGLI P LTT DDVRTKARAKVLNSEK
S P A GKE IV S GA GYI P

$K N V G N D A K E V G Y$ V $A$
$A V Q L T Q N D G Y \square P L D \square A Y R R \quad N L I D V M G$
QSSKGQA IVAANGF $\square$
LSDEGQDLVSE $\square G Y$
$L S K M G Q E V V E K D G Y V P \square S A K L V E Q E L T K L$
DRDNGQQTLSEVQY

MSK S GQEVVVKDGY DP DPAKVVMK Q $\square K$ A LDD
LGETGQKTVEDMGFIPM

NDRAGTTI NAQ
LS GDRS IVSED GGYVAMNDQEVQENLDRDEAA DDG

DK G G A A LVVAKVGGVPV
LSKKGLKKVEDMGFIP
GDDGQA $\square$ AEE $\square$ GF V $V \square$
E $\square A E E \square G Y \nabla R \square P E E$
$\square$ S S E GQT LIE QA GF VP $V$
ETMDGEGYLGDLGLIPDPEAEREQTREKVANRAK
LSKTGQT VVAKDGYVPLPSKVV
LSEQGQEQVARDGYFP1
QSAEGQR\|VAESGFVPV
P DGQK VASTGFVP
TSEEGQSLVEKTGYVPLATN
SPEGQAIVEKSGYVPLPEAYQQDAKEA
$S Q Q G Q S L V S K E G Y V P I S A R \square A Q S E L K K V$
EK MDGDGYLKK DGLI P L P KKEREA IRANWNA
LSKi GQEVVVKDGYi PLPAKVVEKQMKDL
$L N D N A G D L A E E V G Y V A A P E E V Y E E N T Q K I D E V V N$

UniRef90 UPI00037E53AA
UniRef90 R6R7Y3
UniRef90-UPI0003157868
UniRef90-14C2A0
UniRef90 S3ZSDO
UniRef90_LOIBK5
UniRef90-E3CZM0
UniRef90 UPI0004661516
UniRef90 F7RY82
UniRef90-FOT911
UniRef90 UPI0002FD37E8
UniRef90 R6E5D0
UniRef90-K9F2Q7
UniRef90-D6TFV4
UniRef90 L9XX04
UniRef90 ${ }^{-}$W9ARN8
UniRef90-UPI0001E897E6
UniRef90-B3QVL3
UniRef90 W4Q2T9
UniRef90-R6DU59
UniRef90-R5CHJ9
UniRef90_L9ZKF4
UniRef90 UPI00037111C7
UniRef90-N9VE69
UniRef90-U4TUX3
UniRef90 UPI00046F7283
UniRef90-U7PGH5
UniRef90-H1G4W0
UniRef90 U1NP53
UniRef90- UPI00034855B4
UniRef90-N1WN17
UniRef90-F1T6M6
UniRef90 B1WUR2
UniRef90-B2IW15
UniRef90_UPIO003B313DD
UniRef90 I3IHJ1
UniRef90 C4UCE6
UniRef90-K6IAJ1
UniRef90-K2QEF8
UniRef90_C4L7P9
UniRef90 ${ }^{-}$W8T6Q6
UniRef90-V7E886
UniRef90-UPI00047AA23E
UniRef90 G1UW65 UniRef90-Q0YV02 UniRef90-K9XB79 UniRef90 U5E4X5 UniRef90- S9UWI2 UniRef90_L8GUQ7 UniRef90_U1NRY6 UniRef90 U7DMP9 UniRef90-F7XQ24 UniRef90-A4C75
UniRef90 KOIK16
UniRef90 UPI0002DD19CC
UniRef90-U1ZQT8
UniRef90 K0B181
UniRef90 R8VTT4
UniRef90-S6H8E3
UniRef90-R7G0M7
UniRef90 UPI00037434B6
UniRef90 UPI00035FB13E
UniRef90-R7XU44
UniRef90-L8GJF2
UniRef90 M0LGQ6
UniRef90-K4MA90
UniRef90-XOR4R3
UniRef90 W9DPN9
UniRef90 W7S9A8
UniRef90-A4J6V2
UniRef90_M6BVZ8
UniRef90 UPI0002EDF7C0
UniRef90-G7WMC7
UniRef90_U2QCZ6
UniRef90-A7GSW9
UniRef90 UPI00046311A1
UniRef90-K9F8F4
UniRef90_UPI00036AFD7B
UniRef90 A1BFA8
UniRef90 U7P213
UniRef90-R9PKX7
UniRef90_F5ZEM4
UniRef90 G7WMC3
UniRef90-G9YQS8
UniRef90-UPIO0035DEC4C
UniRef90 S3FBD1
UniRef90-14CT06
UniRef90-E3BMV0
UniRef90 Q3ATA1
UniRef90 UPIOOO255994B
UniRef90-UPI0003B4F213
UniRef90_EOUKZ2

T VT C N G D

UniRef90_UPIo00467207A
UniRef90-U1M6P5
UniRef90-UPIOOO37A2DDO UniRef90-L8EJJ7
UniRef90 WOJWM
UniRef90-F8E3T4
UniRef90-UPIO0036F9B4E
UniRef90_A0A031MHM1
UniRef90-B6IWFO
UniRef90-V4IPW8
UniRef90-E2SPM5
UniRef90 - UPIO0003601035
UniRef90-FOM076
UniRef90-A0YCC9
UniRef90-F6AER0
UniRef90-A1ATTO
UniRef90-LOECZ2
UniRef90-A4G2F9
UniRef90 UPI0003736021
UniRef90-A3ZRD8
UniRef90-G4WWCS
UniRef90-A3ZU89
UniRet90-FOSHGO
UniRef90-R7ZGC8
UniRef90-C7R741
UniRef90-C2U2M8
UniRef90-DOICU5
UniRef90_UPIOO03452B65
UniRef90-UPI000467BDOD
UniRef90-C2SQ81
UniRef90-UPIOOO369A187
UniRef90-M5U5E8
UniRef90-L8GJM3
UniRef90-UPIO0030E5684
UniRef90-UPIO003668476
UniRef90-A0A024PNF9
UniRef90_E1VCD7
UniRef90-QOYVO3
UniRef90-W8ZCE2
UniRef90-LOHCGO
UniRef90-COEBMO
UniRef90-B1YOD1
UniRef90 M9TZD9
UniRef90-UPIO0039C03C1
UniRef90-C6CZT6
UniRef90-B3PBS8
UniRef90_B6EK85
UniRef90-UPI00037DF03B
UniRef90-UPI0002B93AE3 UniRef90_IXXF10
UniRef90_K9QDV3
UniRef90-Q3IS10
UniRef90-D9XJTO
UniRef90_UPI000348A028
UniRef90-M4ZWL9
UniRef90-R6CPS3
UniRef90-UPIO00468FCC9
UniRef90_H9UGU3
UniRet90_S5DKU2
UniRef90-E31625
UnRefo-
I4
UniRef90_14Х3А9
UniRet90_UPIO003693EAB
UniRef90-K9V208
UniRef90-UPIO00225B554
UniRef90_S4VV57
UniRef90-J3DPN0
UniRef90-D1AQF5
UniRef90 UPI00047EF906
UniRef90-L8GZH3
UniRef90-14C7C5
UniRef90_UPIO0047D68C9
UniRef90-UPIo002D49F60
UniRef90_MOMEG1
UniRet90_L9ZNV6
UniRet90-F4XVR7
UniRef90-W4QGF1
UniRef90-UPI0001D2F39B
UniRef90-UPIO0037D1660
UniRef90-K9PVA1
UniRef90_A8MIYO
UniRef90-F9RLJ4
UniRef90-M4U326
UniRef90_W4LIS1
UniRef90 UPIIO0047258AB
UniRef90-J1JG85
UniRef90 A1 OZO9
UniRef90-UPI00047ED242
UniRef90-X6GR61
UniRef90_A0АО2ЗМL29

GSDT $\square A N \square M T \square W A E E P N V N \square Q \square Q A A G S S T$ $R \square T V D G S T A F A P P M R E \square A D Q$

DVTVSTSMTGTGGGFSNA

$\square R$ VGSSTVFPATVVERFGQTTSFPAP SLEVTGSTAFAPVAEELAECPGSKDTVTAHGSTTGLRELD T回HAAGSTTVLPVVSTAAQHPDVTVT

EYNATHPDSYVAVQGVGSTAGDT NपSSVGSDTLANLMTLWAEYPNVNIQUAAGSST KVSVTIAAHGSGTGFTA NLNSTGSDSLNNLMTYWAKYPNVNLQUEGKGSST KLSGSGSSTVYPL N FTSVGSDTLNNLMTLWAEEPNVNTQVQGAGSST ETRIVGSSTVYPVAQEYKNKTGQNVVVESTGSGGGHKDF TISSKGSDTMNNLMSLWA VYPNVKVEIIEGKGSSTFDEDH EVRTVGSDTMKEVMQKFAASPGVAMSQESAGSAT
GATAMYPYYAAFVEATYPKKSYPPYES NLSSVGSDTLANLMTLWAEEPNVNDQQAAGSSTG
NVGVGSDT位NLVTQWFKQYYPSVNVQ1QTSGS
NLSTVGSDTVANLVTQWFKQYYPSVNVQUQTSGS
TLNIUGGTAMKNDMQAYMAEPMMTAAGGTGVGIKQ
VRVDGSSTVFPAVAEEYTKAHPNVKISISDSGTGGGFN
DSGSGSDTMNNEMTLWAEYPNVRIDESHGSGT
TGEGSVS DIYNSLGAAYLNAKDVVSV
A Y T T
पRDDGATSLAQVNVALKQGKFAGTSVTVQAKGS $V V I D G S G T$ VYPLMSRDAEEYMTTEQ

KTVVNGSSALLPLTEFKKLNPKVRTSASAAGSSDG\|VVR KITVSGAFALYPMMVKWAEHPDVKIEDSAGGAGKGMTDT KLTLNGSTSMAPVCQATEKNPDVTIEQGGTGSGD
T LTVTGSTAFKPVLEELGK TYEDECEGAT $\square R$ QLD TI QIVGSSTVYPFTTAVAEQFGARTAVESTGTGGGMK $K \| V I N G S S A L L P D T L Q A A N N P K V K \square S A S A A G S \square T G$

 GATAAYPLYASAF YALSVIPEDFHSW EY $\square$ TLANLMTLWAEEPNVSIQDQAAGSST GGSTAWASURQLVFQLLYVNPTDGSPGSGAGDRMLL
 GGALYFAPLVSMQQSHPYFEL RYT $D \square N \square S G S S T V E P V S V R V Q E E P N V N I T V D G P G T G D G F Q L F$


GATAAYPVYGS $\square$
T TN CGGATSFQPLVEA
NIAGEGSSLQRSAQTAWSVCATPTVTYTATSSGRCMDKW
LRVNGAAAS DQVALWAKSFHAENPNMNVLVVGSSAG
VVI DGS GT VYPLMAKIA E E Y DVSVEV SRAGTGA GFKK F
 PMAEFFAS $\square Y G Y Q V N V G L S H S G T G U E$ $T \square D A S G S N T V A P D T A W A E Y R D V L V D V A P E G T G A G F Q E F$



GATAMYPDYAAFAQEVYPNRNYP LY DSEVS LT Q
K L V LT
 GA T A A Y P V Y A A F V E A V Y T K D I Y S A F V S S E E Y P L



 $\stackrel{L}{N}$ S V $V$ S F D P Q G S G E G R GVV $Q \square Q \square V G S S T V F P F T T A D A E K D G K T P V V E S T G T G G G M K$

UniRef90_UPIO00467207A
UniRef90_U1M6P5 UniRef90_UPI00037A2DD0 UniRef90_L8EJJ7
UniRef90_W0JWM
UniRef90-F8E3T4
UniRef90_UPI00036F9B4E
UniRef90_A0A031MHM1
UniRef90_B6IWFO
UniRef90_V4IPW8
UniRef90-E2SPM5
UniRef90-UPI0003601035
UniRef90-FOM076
UniRef90-A0YCC9
UniRef90 F6AER0
UniRef90-A1ATT0
UniRef90_LOECZ2
UniRef90 A4G2F9
UniRef90-UPI0003736021
UniRef90-A3ZRD8
UniRef90-G4WWCS
UniRef90_A3ZU89
UniRef90_FOSHGO
UniRef90_R7ZGC8
UniRef90-C7R741
UniRef90-C2U2M8
UniRef90-DOICU5
UniRef90_UPI0003452B65
UniRef90-UPI000467BD0D
UniRef90 C2SQ81
UniRef90_UPI000369A187
UniRef90-M5U5E8
UniRef90-L8GJM3
UniRef90-UPIO0030E5684 UniRef90_UPI0003668476 UniRef90-A0A024PNF9
UniRef90_E1VCD7 UniRef90-Q0YV03
UniRef90-W8ZCE2
UniRef90 ${ }^{-}$LOHCG0
UniRef90_COEBM0
UniRef90-B1YOD1
UniRef90 M9TZD9
UniRef90-UPI00039C03C1
UniRef90-C6CZT6
UniRef90-B3PBS8
UniRef90- UPIO0037DF03B
UniRef90_UPI0002B93AE3 UniRef90-I1XF10
UniRef90-K9QDV3 UniRef90-Q3IS10
UniRef90_D9XJT0 UniRef90_UPI000348A028 UniRef90-M4ZWL9 UniRef90_R6CPS3
UniRef90_UPI000468FCC9
UniRef90_H9UGU3
UniRef90-S5DKU2
UniRef90-E31625
UniRef90-14ХЗА9
UniRef90_UPI0003693EAB
UniRef90_K9V208
UniRef90_UPI000225B554
UniRef90_S4VV57
UniRef90-J3DPN0
UniRef90-D1AQF5
UniRef90_R7AA40
UniRef90_UPI00047EF906 UniRef90-L8GZH3
UniRef90
I4C7C5
UniRef90_F9DTX9
UniRef90_UPI00047D68C9
UniRef90-UPI0002D49F60 UniRef90_MOMEG1
UniRef90_L9ZNV6
UniRef90-W4QGF1
UniRef90-U1NKH7
UniRef90_UPI0001D2F39B
UniRef90-UPIO0037D1660 UniRef90_K9PVA1
UniRef90_A8MIYO UniRef90-M4U326 UniRef90_W4LIS1 UniRef90_UPIO0047258AB UniRef90-J1JG85 UniRef90-A1QZ09
UniRef90_UPI00047ED242 UniRef90_X6GR61
UniRef90_A0A023ML29
 AHGSSTAFKALNANMAQIGMSSRKIKTSEVEADKGQSGD
 FCPNMT DINNASREI ADADIEQ
 AHGSTTGFTGLIDRTGQIAASSRPGKDSEVTALKNAGNM $L F C A G V G A D H P D I T G A S R A M K A S E F D Q C Q K N G V$
$G A A K D G A P G L V$
$A L S D G P A P R G Q E T G D A G T E G G$
 $S G G G S G V G D A S M \| Q G T A D I G M A S R E D D A E E \quad$ TAKLDH
 GVSGTGGGFERFCAGEDPGADASRPMKKDSEDEAFAQACKK CDGNDMS

TPD DTNSSRRQKSSELKKCKANGV $A P D A L T K G T A M F G P M S R P M K K S E I D A F E K R Y Q Y$
$F P D D L Q G G A$
$A$ AHGSSTAFTDLLQGGA

ADTRIGVADI GMASRPDKPDESELTAHQDAA



CNG


 TTTTVNTSLGALSGGRVNFVGTSSSM ATYYTSA ERGLASLLAGSIDIAAMSRPLTPQEQAQ
 ASAPPALTAGTTLIGPMSRPMTEDEKAAFEH R
 LS G M

AVPAVTGGTALI GNLSRELKDSE
HAHGTATAFTDLAAGTADVGMASRPIKKDEDAAAQADGD VHGSNAGVRKLDALGAK AGS AGSPSMIALSDGPRPA

LF CAGVGSSEPDFTNASRRDKASEFEMCQENGV AHGSSTAF T DLMSGKADMGMSSRRDKQQERELLMEKGQD


AAAGEKAEHGSPPL VAL S D GPKPGGMPELRE QDQSYTKGDQMLLNGELSFAFNGRPLTAQEYAQAKDQ C EAGTD C GSASRAIKD EEAAACAE
 A A A GTVDFGMSSRTLREDEQQ
GVSGTGGGFKKFCPGETSDSNASRPIKDKEKD DCAE


 KAASADLLAASS KAASADLAASS RPIKDS
 $G A S G G A L Q T A V N Y C G T D D A P T S T Q V T N D N T A T G A$
L KGFES LIFEKRAE $\square$ G $\square$ ASR LIS PEEMKTAESKNMK TENGTDFNDASRPI K DEEKEEAEKLGME


C



T PEAYKRLDKGEVDDIFV APPSEGQKSMA
R R
SDAAEGLNDLGMVSRDLKPEEKTAFQDWADA



RLSTTKGAYEAA ANKEVDMIFVAKPNNDEQINKAKQNGVN
 GATTSPDATAGSPKGALQFGAADEPPKPAEIAAANNAGTA

UniRef90 UPI000467207A
UniRef90-U1M6P5
UniRef90_UPI00037A2DD0 UniRef90_L8EJJ7 UniRef90_W0JWM5 UniRef90-F8E3T4 UniRef90_UPI00036F9B4E UniRef90_A0A031MHM1 UniRef90_B6IWF0 UniRef90_V4IPW8 UniRef90-E2SPM5 UniRef90_UPI0003601035 UniRef90_F0M076
UniRef90_A0YCC9
UniRef90-A0YCC9
UniRef90-F6AER0 UniRef90_A1ATT0 UniRef90_LOECZ2 UniRef90_A4G2F9
UniRef90_UPI0003736021 UniRef90_A3ZRD8 UniRef90_G4WWC9 UniRef90_A3ZU89 UniRef90_F0SHG0 UniRef90_R7ZGC8 UniRef90-C7R741
UniRef90 C2U2M8 UniRef90_DOICU5 UniRef90_UPI0003452B65 UniRef90_UPI000467BD0D UniRef90-C2SQ81
UniRef90_UPI000369A187
UniRef90_M5U5E8
UniRef90_L8GJM3 UniRef90_UPI00030E5684 UniRef90_UPI0003668476 UniRef90_A0A024PNF9
UniRef90_E1VCD7 UniRef90_Q0YV03 UniRef90_W8ZCE2
UniRef90_LOHCG0 UniRef90_C0EBM0 UniRef90_B1Y0D1 UniRef90_M9TZD9
UniRef90-UPI00039C03C1 UniRef90_C6CZT6
UniRef90_B3PBS8 UniRef90_B6EK85 UniRef90_UPI00037DF03B UniRef90_UPI0002B93AE3 UniRef90_I1XF10
UniRef90_K9QDV3 UniRef90_Q3IS10
UniRef90_D9XJT0 UniRef90_UPI000348A028 UniRef90-M4ZWL9 UniRef90-R6CPS3 UniRef90_UPIO00468FCC9 UniRef90_H9UGU3 UniRef90_S5DKU2
UniRef90 E3I625 UniRef90_E3I625
UniRef90-14X3A9 UniRef90_UPI0003693EAB UniRef90_K9V208 UniRef90_UPI000225B554 UniRef90_S4VV57 UniRef90_J3DPN0 UniRef90_D1AQF5
UniRef90 R7AA40 UniRef90_UPI00047EF906 UniRef90_L8GZH3 UniRef90_I4C7C5
UniRef90 F9DTX9 UniRef90_UPI00047D68C9 UniRef90_UPI0002D49F60 UniRef90_MOMEG1 UniRef90_L9ZNV6 UniRef90_F4XVR7
UniRef90_W4QGF1 UniRef90_U1NKH7 UniRef90_UPI0001D2F39B UniRef90_UPI00037D1660 UniRef90_K9PVA1 UniRef90_A8MIY0 UniRef90_F9RLJ4
UniRef90_M4U326 UniRef90-W4LIS1 UniRef90_UPIO0047258AB UniRef90_J1JG85 UniRef90_A1QZ09 UniRef90_UPIO0047ED242 UniRef90_X6GR61


 E G R R

 $N$
$L$
 E G G K E A E Q V I GLDD G L A V I M H P E N P L D
 GK V K







 $L D M V P I G R E A F V F F V$ H HKNNVD
 NS DQFTPPEVA YD GLLTIVVNRHNTWVDNMTVDELDRLLWS G


 $K F \mid Q F T P F E V A Y D G L T I V V N R Q N T W V N N M T \| D E L R L L W S G$
 A A A T Y A QI P VMATAMVPA YT LVVSGSVLDTLTGPVVAGMWDG

 YGYPPRALVVARDALVVVVHRHNPLQSSLRPQLDAI FSH
 TK D AVVPTVVS DNPVLAADLQSNG NPSDFEVVTIALDGI AVVVN GESKVADLTKDQIAS I F S G


A N

## L F R S S

 <br> \section*{\section*{N}} <br> \section*{\section*{N}}

> A | $A$ | $I$ | $V$ | $A$ | $R$ | $D$ | $A$ | $L$ | $T$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $G$ | $V$ | $D$ |  |  |  |  |  |  |
| $D$ | $G$ | $S$ | $M$ | $V$ | $G$ | $D$ | $G$ | $I$ | $A$ |






 A H P DLT L V P A GA Y P VV F C Y N V P G L M Q L V L S V D V A M R I L L A




NGRE LK LTTP $\square G R E A F V F F V N G E N P V E \quad G L T T E Q \prod R G D Y S G$ $K D G L A$
 F GYKP TELLRVAIDDAIVGIVHRDNPID
 FGYKPTAAVKVAA DA L A M F V H K D N P I E LK F T P $\quad$ GREAFVF FVVSKNSVNG





UniRef90_UPIo00467207A
UniRef90_U1M6P5
UniRef90_UPI00037A2DD0 UniRef90-L8EJJ7
UniRef90_W0JWM
UniRef90-F8E3T4
UniRef90_UPI00036F9B4E UniRef90-A0A031MHM1 UniRef90_B6IWFO UniRef90-V4IPW8
UniRef90 E2SPM5 UniRef90-UPI0003601035 UniRef90-F0M076
UniRef90-AOYCC9
UniRef90-F6AER0
UniRef90_A1ATT0
UniRef90_A4G2F9
UniRef90_UPI0003736021 UniRef90-A3ZRD8 UniRef90-G4WWC UniRef90_A3ZU89 UniRef90_FOSHGO
UniRef90_R7ZGC8
UniRef90-C7R741
UniRef90-C2U2M8 UniRef90-DOICU5 UniRef90_UPIOO03452B65 UniRef90_UPI000467BD0D UniRef90 C2SQ81 UniRef90_UPIO00369A187 UniRef90-M5U5E8 UniRef90-L8GJM3 UniRef90_UPI00030E5684 UniRef90_UPI0003668476 UniRef90-A0A024PNF9 UniRef90-E1VCD7 UniRef90-Q0YV03 UniRef90-W8ZCE2
UniRef90-LOHCG0 UniRef90_COEBM0 UniRef90-B1Y0D1 UniRef90-M9TZD9 UniRef90_UPI00039C03C1 UniRef90_C6CZT6

## UniRef90_B3PBS8

 UniRef90-B6EK85 UniRef90_UPI00037DF03B UniRef90_UPI0002B93AE3 UniRef90-I1XF10 UniRef90-K9QDV3 UniRef90-Q3IS10UniRef90_D9XJT0 UniRef90_UPI000348A028 UniRef90_M4ZWL9 UniRef90-R6CPS3 UniRef90_UPI000468FCC9 UniRef90-H9UGU3 UniRef90-S5DKU2
UniRef90-E31625
UniRef90-14Х3А9
UniRef90_UPIO003693EAB
UniRef90-K9V208
UniRef90_UPI000225B554
UniRef90_S4VV57 UniRef90-J3DPN0 UniRef90-D1AQF5 UniRef90_UPI00047EF906 UniRef90-L8GZH3
UniRef90_-14C7C5
UniRef90-F9DTX9 UniRef90_UPIO0047D68C9 UniRef90_UPI0002D49F60 UniRef90-MOMEG1 UniRef90_L9ZNV6 UniRet90-_4XVR7
UniRef90
W4QGF1 UniRef90-U1NKH7 UniRef90_UPIO001D2F39B UniRef90-UPIO0037D1660 UniRef90_K9PVA1 UniRef90_A8MIYO UniRef90-F9RLJ4
UniRef90-M4U326 UniRef90_W4LIS1 UniRef90_UPIO0047258AB UniRef90-J1JG85 UniRef90-A1QZ09 UniRef90-UPI00047ED242 UniRef90-X6GR61
UniRef90_A0A023ML29

K|I NNWS E|V|G
130 GPDDAVV V $V^{140}$

150
E D N WA EIG GDQAP KVFAKEPGRGTREVLDKYTYGD TIKTWGEAGVKGEDKSI QLYGRNSVSGTYGYYKKIALCK R ${ }^{\prime}$ T N WK QLG GAQRWSDVRDE EVEYWDE NSEWPDEEI EFFGSATTSGTHEYFVEAIIGEE
 QVSDWAQLG QI K RWS DVDPS EVTDWREVG EI TNWMEVG EI KNWKNVG L
G
G
S
G TIT N WK QV G G S TRKCKAGLS S DQKI
WTNRD
SRPGA
E I T T WGQVGVT GKSKPI TVKTWADVGEGWPAEEI DITKWGQVGGE EI T T WGQLGLK EVTNWSEVG KLRWGKFVMPP QANNWNEVG E!PNWREVG TISNWADLDLA GNGER
 REKRWSQVHSTWPRAD KFYAPGVD
 KVSRWSEDDASLPDREIAVYGPPTTSGTRDAFEELVMEAA KI K S F EKLGGLNA GKI NLYVRDASSGTMEVFTSEGIKKA RLKRWSQI HSSWPREQVKFYAPGVDSGTYDYFQNVVLQNN EITNWHDVGGA DDPI NVYRRDNKSGTFDTFKSLVLQPS DVRTWGQAGGAFASQPI SLYGRNSASGTYGYFKK TYTA WNDTGVAAVNANVKI IYCNDVLGEGGVLANYDSADS QLTNWSQVG GQNSEI RVIVRPEHSGTHQAFKEMVLQ RITNWQQVG GQDLDAIVVFSRRDLDG

## N D DF S E QVLK GQ

 GVEKWSDI NPDWPDEKI NAVGPNENHGTYEFFYENILEEK ALRRWSSLIDG A YTNWKEVG K VK N WK DVG KTTTWGQVAGPG ETTDWSEVGGDA QVTNWAEVGGT QI T NWSEI DPA KVTNWKEVG K V NNWS QL G T I NRWQDLGGS KLRNWRQVG
A
TITDWSQLGVE
QI TNWK QVG
DVETWSDVRPA
EI ANWSELG
KI T NWRQL G
A DQGRI A LHGRNAVSGTHEDFRREVL

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

$S G P$ GPDLE $\quad$ R

GFGNWSDAEGNLPDAELEIYGPGEESGTFDSFIEIVLEDL ELTTWD QVDASLPAETVNVY IRDDS GGAYEVFQKSVMGDS KYKKWSDI DASSLPNREIIIYGPPTSSGTRDAFEELVMEKM EIDTWS QLTVSAGAAAPVAAPGGTPSNRTPQRSRIVV,VS AVSNWNQVRSDFPDEE NNLFGPGTDSGTFDYFNEEITEEL D IK K WK DVG TTKMWSDI DPEWPDEEVVFYAPGTASGTYDYFNEVILEEA AAQTWDEVRDEFPNEEI RRFGPADTSGTYDYFDENVTGDA SVTNWQQLGGGQNAQUVVLDRPDESAKRLLRKYYL EITNWGDVGGANDS $\operatorname{T}$ RAFQRPADSGSQTTLDEQLMADT EI TRWDHPDNPGVALPAAGILFVGKTGSSIYTGTVSRAFA EVKTWEE $\square$ GGHG GA $\operatorname{GHLYARDDQSGTYDTFRELVLG}$ KIKNWKKAG GQRAKIMAFQRPENSGSQTDMENKVMNGD QIT DWSEVGGTA GTI NVINREAGSGTRATFEAAVLQGA T TTAWSSIAGGSCTGTIDRVVRTDSSGTSYQLKHYLNQNS




 E IT N WS EAI SYS | D | D | T | W | S | D |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Q | I | K | N | W | L |

QUK N W Q S L P N

$\square T R W N Q V G G G$
A ENNWQNLG
N NGONKR
E S DWGGGGGSWTGRRDI Q
TYKRGGQDAKTWADVGL KlKRWSEVGEGFLYGDEILAYQRDGSGSQSADENFMG KVLK WN AVNSTLPDWTVAAY IPRGEKHGTREVFEEKLLAVG NIRNWQQVG

GHDAK $H N F D N R D S S S G S H S S \emptyset K E L V L D K$
$G V D A A G T A C K A D S S G T T Y A Q K N Y L R D D K$ DFSTWGQPNDAGVDAAGTTACKADSSGTTYAQKNYLRDDK


UniRef90_UPI000467207A
UniRef90-U1M6P5
UniRef90_UPI00037A2DD0 UniRef90_L8EJJ7
UniRef90_W0JWM5
UniRef90-F8E3T4
UniRef90_UPI00036F9B4E UniRef90-A0A031MHM1 UniRef90_B6IWF0 UniRef90-V4IPW8 UniRef90-UPI0003601035 UniRef90_F0M076 UniRef90-A0YCC9 UniRef90 F6AER0 UniRef90_A1ATTO UniRef90_LOECZ2 UniRef90-A4G2F9 UniRef90 UPI0003736021 UniRef90-A3ZRD8 UniRef90-G4WWC UniRef90_A3ZU89 UniRef90-R7ZGC8 UniRef90-C7R741 UniRef90-C2U2M8 UniRef90-DOICU5 UniRef90_UPI0003452B65 UniRef90 UPI000467BD0D UniRef90 C2SQ8 UniRef90-UPIO00369A187 UniRef90-M5U5E8 UniRef90 L8GJM3 UniRef90-UPI00030E5684 UniRef90_UPI0003668476 UniRef90-A0A024PNF9 UniRef90 E1VCD7 UniRef90-Q0YV03 UniRef90-W8ZCE2 UniRef90 ${ }^{-}$LOHCG0 UniRef90_C0EBM0 UniRef90-B1YOD1
UniRef90 M9TZD9 UniRef90 UPI00039C03C1 UniRef90-C6CZT6 UniRef90-B3PBS8 UniRef90 B6EK85 UniRef90-UPI00037DF03B UniRef90_UPI0002B93AE3 UniRef90-I1XF10
UniRef90 K9QDV3 UniRef90 Q3IS10 UniRef90-D9XJT0 UniRef90_UPI000348A028 UniRef90_M4ZWL9 UniRef90-R6CPS3 UniRef90_UPI000468FCC9 UniRef90 H9UGU3 UniRef90-S5DKU2 UniRef90-E31625 UniRef90-14Х3А9 UniRef90 UPI0003693EAB UniRef90-K9V208 UniRef90-UPIO00225B554 UniRef90 S4VV57 UniRef90-J3DPN0 UniRef90_D1AQF5 UniRef90_R7AA40 UniRef90 UPI00047EF906 UniRef90_L8GZH3 UniRef90-14C7C5
UniRef90-UPIO0047D68C9 UniRef90_UPIO002D49F60 UniRef90_MOMEG1
UniRef90_L9ZNV6 UniRef90-F4XVR7
UniRef90 W4QGF1 UniRef90 U1NKH7 UniRef90 UPI0001D2F39B UniRef90_UPI00037D1660 UniRef90_K9PVA1
UniRef90 A8MIY0 UniRef90 F9RLJ4 UniRef90-M4U326 UniRef90 W4LIS1 UniRef90_UPIO0047258AB UniRef90-J1JG85 UniRef90_A1QZ09 UniRef90 UPI00047ED242 UniRef90-X6GR61
UniRef90_A0A023ML29

K A

EPGTVSSYDCSGKDRD ETHRTDYRGTERDRS IVQG
SEEDPAYGGEYTK $\square R Q D G A Y V P A G$
PNQVDLLADA
 PAVKSLAAARKKAVCQTMREDGVFDEAGENDNLI VQRLEQ FEPPASSRDCSRKDNPKA PVIRCELDTTDQVIATVAR $L 1 P P$ LIK K DVAS GMGDVVT

PVIRCELDTTDQVIATVAR RAPGASVISGSNNEEQSLVAH KGDFKNTGNTK I IV DRLVSD■SPNNLVVNSNSMVKTLINH G

KQLSAKAKRFESSEQLSDSVAG
GDFKNTVKEQPGSASVVEGVAR G $\square R S D G Q \square S F S E D D N T V Q G V A G N$
DFKR NMAEQPGSASVVQSVAT $\square A E M K N S D G K M F K N \square A H T \square R E D G Y W \square S G E N D N A I V Q T L V N$ KALFEGDYRDTVQEQPGSAAVVQSVAN
$K$ VT L A L A A K R Y
FRADMQSYQDSAEVVKAVGG
TKVKADVIVGE $\square$ MEAPTEDV
KGDFKNSVNE $R \| V K K V S L S E D D Q V$
 GGFRPDNEQPGSASMQGVMH SEAMDAYGGEGFTD】RTDGAY $\backslash D A G E N D N L I V Q R L A E$ EISQDAKV
RLVKTVSLSEDDQV
VAS NAAMKTAVLS
GGTKRDUSPQAKPFE
1 MQGVMN
PAIKKAVDQYKTDGFAFGGDYKDEVKEQPGSSSVVQGCAS
GQSFGKTPNDTTLINDETTGLIRQLG

P
$\stackrel{P}{D L V S D V N L Q Q E Y}$
NGAFRPEVSEH
PLSMK
DF1 TK
ENLQG
KTKYG
A LVGTARRHED
ELATS SR RDCVTKDYADAPVLRCEDDGTDAVLDAEVAE LAEMEESDGDRFEA $\square A H T \square R E D Q R W \square D A G E N D A \square V Q T L T K$ DFMTK GQNYKEVKTSGDMKTAVES QAS
DGDFK


PRGDVVNEQPGSGSVVQGVSA SQVMK $\stackrel{P R G D A L A S T A Q R F E S N D R L A E A V L K}{V}$
KGDYKNSVNE

## QNDS S QVEYVPYS ASVVQGVTK

GNDRNDYSASSDTNVIVRG V E IANS SAVDCVHKDDPAAPVLRCEDGSTEQVLATVAAE ENVELLGLNSDSQDPQATEYVSNYTQALRKVDA ADERGQEADTRPDYNPSADDNV
EVTASATQSASMTELATN
 REPGSGTRGAFETALDFRDQLGLGADELDGSAAVRAAVAR GGSRSDYTASEDDNVLVNG $D \square V S S A T \square S E D D N T$ GHTDDYSATEK

GKDLKNAANANAI AEGVSG $P \square M T P \quad P T E K D L K N A A N A V V L R K E G E L D Q T I Q S$ QHSAAFAAAYGNGSNDVAWPVAATNRSVVSTDEYVDTLKT QMHGKTLSGSARRFESSEQLSDAVSQ
QMAPP LEE EYYELMGG VVNGVAS
VDSSGTVVEQVAA
 PDFKR IVGVGANVQSGTTHYSPGKLPDAQALLTGCAAAVDN PYAPSTIKAESWCANAKDLP $\square G \square G P V P \square N G T S G G A K V L$ DMSDH【NLQQEY

GCKA GGDKLQLAK TEGCKST
AE $\square$
S QVK A DVVIGD
DLVDSVNLQQEY
GEAYTQNDQLGLSDANFNGDQPV
AQAI GE PSNLPDNSFQKLVDNDTAYGRTVNWDGASGSDAVASAlAA ATDDQSDVVIGD PPRENRVSGMGGIIKQTAN
PMLLA
K G D Y K K

## PTEETYAGGMGEI SRVAN

GDFLNNVNEQPGSASVVQSVAS
$N V N E Q P G S A S V V Q S V A S$
GRNSASGTYGMFKKIA L
E\VRDMEPKKDEVVGLMS G\|IEQVAS
CEASGAFDAMKSMGMD DKAUHAACVAVRKDGKADD D D LLKNPEEAQFRQDSIMVKSNGEVI EKISL SSDFPTS LGNTAWPADTGASAVVRADAGGGSDMDKLKLQT CQEEVKAANEKGCGEDREDGAFV EAGENDNLIVQKLEA

UniRef90 UPIo00467207A
UniRef90_U1M6P5
UniRef90_UPI00037A2DD0 UniRef90_L8EJJ7
UniRef90_W0JWM
UniRef90-F8E3T4
UniRef90-UPI00036F9B4E
UniRef90-A0A031MHM1
UniRef90_B6IWF0
UniRef90_V4IPW8
UniRef90-UPI0003601035
UniRef90_F0M076
UniRef90-A0YCC9
UniRef90-F6AER0
UniRef90_A1ATT0
UniRef90-LOECZ2
UniRef90-UPI0003736021
UniRef90-A3ZRD8
UniRef90-G4WWCS
UniRef90_A3ZU89
UniRef90-R7ZGC8
UniRef90-C7R741
UniRef90_C2U2M8
UniRef90-DOICU5
UniRef90_UPI0003452B65
UniRef90_UPI000467BD0D
UniRef90 C2SQ81
UniRef90-UPI000369A187
UniRef90-M5U5E8
UniRef90-L8GJM3
UniRef90-UPI00030E5684 UniRef90_UPI0003668476 UniRef90_A0A024PNF9
UniRef90 E1VCD7 UniRef90-Q0YV03
UniRef90-W8ZCE2
UniRef90 ${ }^{-}$LOHCG0
UniRef90_C0EBM0
UniRef90-B1YOD1
UniRef90-UPI00039C03C1
UniRef90-C6CZT6
UniRef90-B3PBS8
UniRef90-B6EK85
UniRef90-UPI00037DF03B
UniRef90_UPI0002B93AE3
UniRef90-I1XF10
UniRef90_K9QDV3
UniRef90-Q3IS10
UniRef90-D9XJT0
UniRef90-UPI000348A028
UniRef90_M4ZWL9
UniRef90-R6CPS3
UniRef90_UPI000468FCC9
UniRef90_H9UGU3
UniRef90-S5DKU2
UniRef90-E31625
UniRef90-14Х3А9
UniRef90 UPI0003693EAB
UniRef90-K9V208
UniRef90-UPI000225B554
UniRef90-S4VV57
UniRef90-J3DPN0
UniRef90-D1AQF5
UniRef90-R7AA40
UniRef90 UPI00047EF906
UniRef90_L8GZH3
UniRef90-14C7C5
UniRef90-UPIO0047D68C9
UniRef90_UPIO002D49F60
UniRef90-M0MEG1
UniRef90-L9ZNV6
UniRef90-F4XVR7
UniRef90-W4QGF1
UniRef90 UPI0001D2F39B UniRef90_UPI00037D1660 UniRef90-K9PVA1
UniRef90-A8MIYO
UniRef90-F9RLJ4
UniRef90-M4U326
UniRef90 W4LIS1
UniRef90_UPIO0047258AB
UniRef90-J1JG85
UniRef90-A1QZ09
UniRef90_UPIO0047ED242
UniRef90-X6GR61
UniRef90_A0A023ML29

TPGAVAP|LSTSFTEGRKGLAAVTL
DDYAI GFIGLNYIR
SLNGUGYSGIGYKTAGVRALPLSKKE
VPGGI GYAEVYAA
SQYS, GYF GFAYYDENPDQ TKA $\square G \square D$
KALDDGDGC

DRNAVGFVGLDAY IDEAKALSDTAG

$\begin{array}{llll}V P G A & G Y S E D \\ R D N A & G Y S F R Y Y T Q E M V K N K G \square R L L K\end{array}$
SNSA GMLSNAWLNDAVR
NSQAI GFVSTGSVDKSVKADQFEGDDATGVAVGEGHHAV

DVNGI GF $\square$ GLPYVRRAKA
DVAAVGYSGI GY
KGGI GYF GFA Y YEENTDK LKVVP DDGGNG
Q $\square \mathrm{NA}^{\prime} \mathrm{GYSGDGYKTSGDRALPLSKKK}$
TPTAI GDFGYSFDDQNGDKIRGAFV
$D \square A G U G Y S G D G Y K D N G V R T V P L A K E G N K$

TKNAI GYVS IGTAEADI QAGVRIRLLPDD


S LNA AYAG $\square$ GYRTAGAKMLD
NTDAFGDFGYSF

## FVDDSVKADC\|DN

DKNA: GF VGGAYYMANRDKVKADQV
DPKGI GF G LP Y $\square$ G
DKYGI GYSGUGY
HPKSVVFFMYPDFKKNSTGDS $\square$ AKMADKTGTVVADTVT


DPRAI GYAGLNHLTPGVHP VAVRGADGVLHRPDPATV
TPNAIGYDG HGWIDSSVRPLLVNGDDHT
TPNSIGY DLVYVTDKMTALKIDNVAPTTDNVINGSY
DRDGVGYNNIGFAYDADTGKPLDGL
DKNAI GYVSLASVDESKG $\square K A L \quad$ TVDG $\square$
DPQAI GFIGGLPYVRN
TPTAFGVFGYSFLEQNQNRLQGAMV
TPGATGYLDFAYITTKMTGVSINGVAPTVDNVINGKYDGV


$D \stackrel{D}{D}$ GI GFVGL
DPNGSi GYTGLYYATQMDADKNTKLLAA
STNGLGYSGDGYKTSGVKLVPLAK
TPGSVYYASAR
NRNA
NRNAI GFGGAGFYYENEDQLRLVGVDDGNGCVRPTRETI
LP GAI GYSELDNLA

NKAAFG $\square F G Y S F L A E N A D K \square D A A K \square D G K$
NPAA 1 GY $\square$ S SGFLRPEVAALEGAAFDGAA
SPGGLGYFGLAYFSENADTLNAVEVDGGDGC
$\begin{array}{llll}D P N G G & G F S G F A Y \| R N A K \\ S P N S & G F F G Y A Y Y I A N Q D T L K L V P I E\end{array}$
SEFAVGYFGFAYYFQNPDQLKALGIDDGDG GQV TPHSI GAFSDAHAVSHKLPVNRLSLN N
YKNAI GYTFRFYSNEM TPYAI AYT AHHVVLRQRNLREARFDSADGGSTAL DPHGI GF $\square G \square P Y V \square$
YKNSIGYSFRYYVTGM
TEGSi SYVAFNYYETNEGDKAL
$K P G T I G Y V A L S D A R S \square Y V A G G N Y \square R \square P A E S A T Y D P S S N G L$
TSYSLAFA PQFKFSGVHSASWGNQANA WNVTVPESGLGL
DKNGDAFFGYGYYVNNEDQLQADS VDFGKGAV
 SDNA!AY IAL
T THAFGWGGLGY $\square R$ D $\square E D E Q P \square E A V S D A D G E F Y \square P T Q E N \square$ NPNAlGYVSIGAAEYSMQEGISIKLLALDG
$D V N G \| A F F G F G Y Y V N N Q D Q L Q A V N$
VDFGSGPV
EENAI SLINNIINYVY
NHGRI GY YKNALGFSFLFYATEMV RDGD $\quad$ RLLS $\square D G V$ NPNAI GYVSIGAAEQEIAAGTP $\square K L L A M N G$
YKNAI NSIGYSFMYYSSEMVKNNQIK

SLNA IGYSGUGYRTSGVRAVA\|AKK
$R \square S \square D G \square$
DFKDTVKEQPGSSSVVQGVASDVGTKYL


TDGGUSYADLATARSKGFDTAAGAAGDTDST■VERKGDGV
NPNAFGVFGFSFGDQNADKDQGHKV
THNA I GYTFRYYATQMHSNKE

UniRef90 UPIO00467207A
UniRef90-U1M6P5
UniRef90_UPI00037A2DD0 UniRef90-L8EJJ7
UniRef90 WoJWM5
UniRef90-F8E3T4
UniRef90-UPIO0036F9B4E UniRef90-A0A031MHM1 UniRef90-B6IWFO UniRef90-V4IPW8
UniRet90 E2SPM5 UniRef90-UPIO003601035 UniRef90-F0M076 UniRef90-A0YCC9 UniRef90_F6AER0
UniRef90-A1ATTO
UniRef90-LOECZ2
UniRef90-A4G2F9 UniRef90 UPI0003736021 UniRef90-A3ZRD8 UniRef90_G4WWC9 UniRef90 A3ZU89 UniRef90 FOSHGO UniRef90-R7ZGC8 UniRef90-C7R741 UniRef90_C2U2M8 UniRef90-DOICU5 UniRef90_UPIOOO3452B65 UniRef90-UPI000467BDOD UniRef90 C2SQ81 UniRef90_UPIOOO369A187 UniRef90-M5U5E8 UniRef90-L8GJM3 UniRef90-UPI00030E5684 UniRef90_UPI0003668476 UniRef90-A0A024PNF9 UniRef90 E1VCD7 UniRef90-QOYVO3 UniRef90-W8ZCE2 UniRef90-LOHCGO UniRef90_COEBMO
UniRef90-B1YOD1
UniRef90-M9TZD9 UniRef90 UPIO0039C03C1 UniRef90-C6CZT6 UniRef90-B3PBS8 UniRef90 B6EK85
UniRef90 UPI00037DF03B UniRef90_UPI0002B93AE3 UniRef90-I1XF10 UniRef90-K9QDV3
UniRef90 ${ }^{-}$Q3IS10
UniRef90-D9XJTO UniRef90-UPI000348A028 UniRef90-M4ZWL9 UniRef90-R6CPS3 UniRef90-UPIO00468FCC9 UniRef90 H9UGU3 UniRef90-S5DKU2
UniRef90-E31625
UniRef90_14Х3А9
UniRef90 UPIO003693EAB
UniRef90-K9V208
UniRef90_UPIoooe225B554
UniRef90 S4VV57
UniRef90-J3DPN0
UniRefofo-D1AQF5
UniRef90_R7AA40
UniRef90 UPI00047EF906
UniRef90_L8GZH3
UniRef90-14C7C5
UniRef90 F9DTX9
UniRef90_UPIO0047D68C9
UniRef90-UPIo002D49F60
UniRef90-MOMEG1
UniRef90 L9ZNV6
UniRef90-F4XVR7
UniRef90-W4QGF1
UniRef90 U1NKH7
UniRef90 UPI0001D2F39B
UniRef90_UPIO0037D1660
UniRef90-K9PVA1
UniRef90 A8MIYO
UniRef90-F9RLJ4
UniRef90-M4U326
UniRef90 W4LIS1
UniRef90 UPIO0047258AB
UniRef90-J1JG85
UniRef90-A1 QZ09
UniRef90_UPI00047ED242
UniRef90-X6GR61
UniRe90_A0A023ML29

EPSPEND
SMTPN AABN
AKHPRVVGПRपNGREPDDEWGGQRN
EPSLEAAM
APTKENTQN
YPSKALV
EPSVENTRT
LPDLQHVR
RPFLVLHYSEKASKEAKAF回DF
AATSDNAVT
A
RAVPLSVKDGAPAAAAT Y
EPTLDTLK
QPDAVHSI
APTHENV
S
DPD $\square$ AKRFQY $V$ Y
APTKENDRN
EANAENAI
KPDSRSLFTYVNDAS $\square R Q K \square N D A N Y$
EPTP
SPSKFTVKN
KtadVrava
TLAQVTTAMAASTLNNNGMYS
KRTLFYVYKNPPS
VAAYEGSLATCPT AEDGEYADFTRPVF
RNR■NT R R

P
A 1 P $\square D \square$ NENGN $\square \mathrm{DPNEQVYATRHE} \mathrm{\square V}$
 ASAVSVSDGAAVP LRPSH

EPSFDND
S
NPTTDNII N
RA $\square$ A $V$ S SGGAQA LPPTPDS $\square$ ATED
A P TAEN $\square R$ N
EANGENA
SEQLVSLYREPVVQSNQCPRQRNQLNT ENEEYTPLTRPMYVYLSTE RLDDPAVQAFARFYFEE DD

ASENSTNY $\square$ N PFTAGKTNDK $\square \mathrm{FKN}$
TPTAET1
EATTEN $\square$ SGTYT $\square$ QRPVTGDT $\square$ S DSEQKF $\square \mathrm{DYVFSQVGY}$ KPTPLTI

VS PLEALDGAD
PपsVASNCG【VSTPDV
EPNAETDESGEYA
EPSLETAASGEYS
APTLET\RN
EPERETTLDAAVAEVAAASGGDGS LDRLAFVV
KAVA $\square$ A DGQSMAMLPLNSLIATED
EPSRENDRT
EPTQENV

EPAMNT $\square$
ETMARDQSNKQGVGVFGLSFYENNKDKLKVATDNGVEPSL ETLARIASNKTGVGVFGLSFYENNADKLKVATVEGUVPST

APS LDT TDESGDYAPFTRPV
ALESGELEGD IRPDPDDRDGDGDSDQEK FYETRDEFD APTPSNADVA WS GVTPSASWKYTDYNVYAKTFPATTS LLP MPERTT $\square$

EPSPGNПRN
DATRANIL
EPSDENA

KPTKENIKN
APNVETI SRGEYLISRPLF
TKDKYNIKRRLIAITNSISEDQNULDF
YQSPALNDVNGTTDTGANCKNVTYKDVTTGALPTVQQSWY
A P TVEN

UniRef90 UPI000467207A
UniRef90-U1M6P5 UniRef90_UPI00037A2DD0 UniRef90_L8EJJ7 UniRef90 W0JWM UniRef90-F8E3T4 UniRef90-UPI00036F9B4E UniRef90 A0A031MHM1 UniRef90 B6IWFO UniRef90_V4IPW8 UniRef90-E2SPM5 UniRef90 UPI0003601035 UniRef90-F0M076 UniRef90-AOYCC9 UniRef90 F6AERO UniRef90-A1ATT0 UniRef90-LOECZ2 UniRef90-A4G2F9 UniRef90 UPI0003736021 UniRef90 A3ZRD8 UniRef90-G4WWCS UniRef90-A3ZU89 UniRef90 FOSHG0 UniRef90-R7ZGC8 UniRef90_C7R741 UniRef90 C2U2M8 UniRef90-DOICU5 UniRef90_UPIO003452B65 UniRef90 UPI000467BD0L UniRef90 C2SQ81 UniRef90_UPI000369A187 UniRef90-M5U5E8 UniRef90 L8GJM3 UniRef90-UPI00030E5684 UniRef90_UPI0003668476 UniRef90_A0A024PNF9
UniRef90 E1VCD7 UniRef90_Q0YV03 UniRef90-W8ZCE2 UniRef90 LOHCG0 UniRef90_C0EBM0 UniRef90-B1Y0D1 UniRef90_M9TZD9 UniRef90 UPI00039C03C1 UniRef90_C6CZT6 UniRef90-B3PBS8 UniRef90 B6EK85 UniRef90 UPI00037DF03B UniRef90-UPI0002B93AE3 UniRef90_11XF10
UniRef90 K9QDV3 UniRef90 ${ }^{-}$Q3IS10 UniRef90-D9XJT0 UniRef90_UPI000348A028 UniRef90 M4ZWL9 UniRef90-R6CPS3 UniRef90-UPI000468FCC9 UniRef90 H9UGU3 UniRef90-S5DKU2 UniRef90-E31625 UniRef90_14X3A9 UniRef90 UPI0003693EAB UniRef90-K9V208 UniRef90-UPI000225B554 UniRef90 S4VV57 UniRef90-J3DPN0 UniRef90_D1AQF5 UniRef90_R7AA40 UniRef90 UPI00047EF906 UniRef90_L8GZH3 UniRef90-14C7C5 UniRef90 F9DTX9 UniRef90 UPI00047D68C9 UniRef90_UPI0002D49F60 UniRef90_MOMEG1 UniRef90 L9ZNV6 UniRef90-F4XVR7
UniRef90 W4QGF1 UniRef90-U1NKH7 UniRef90 UPI0001D2F39B UniRef90-UPI00037D1660 UniRef90_K9PVA1 UniRef90 A8MIY0 UniRef90-F9RLJ4 UniRef90-M4U326 UniRef90_W4LIS1 UniRef90 UPIO0047258AB UniRef90-J1JG85 UniRef90-A1QZ09 UniRef90_UPI00047ED242 UniRef90-X6GR61

ASGRYPMARP 290 Y $L$
300
310
320 GTYPLARVLYVYVNKKYPNAKLAPMTREFMNFALD YPFWTVEYLYTYGQPEDGSLAAKFRAFMD
 SGKYPVVRSLYFYVKKDHDGKVPGDAYVDDLELSEKM

 GEYPLSRYLYVYVNKAPNQP LSPDDREF IKK V TEDYPLSRRLFLYAAPKRSNPWWEALLKF WK K K




 GTYPGTSEFYAV TVGTDNPNVTRFVDWDI SGNYPLGRQLIVYVNKHPNKP LSPIELEFMKMV
 DA IGSGEYPVSRSLFFYVKNQHTDEVPA MYEYA

E EYPLARRDY LYTLGAPANP TARELLEF A A GEYPLARFLYLYVNHK PGSDLDPLRREFDRYVF T NQASGAWPLSTVSSMVLYNDDGDCATIKEVLSFLSWIQL KAFQDGTYP $\square$ TRN $\square S V V K Q N N S R E Q Q A G E A Y A$ GDYPLARDLRLYV VT $\square$ K D GSYPLSRPLYM AKEKPEV
$N \stackrel{1}{L} P P G E V L D P D R A F V D$

| $N-\frac{L}{L}$ |
| :---: |
| $A$ |
| $\frac{Y}{4}$ | YTNGKPFGVLQRFV NA $\square$ NTGKYPSARE $\square$ N $\square V A K T R F S G P T$ FVQUYK K GS S DPLVKAWF FTVATEDYALSRRLY $\square Y$ VGREAP ELGARFVT



AS GDYP $\square$ SRT $\square$ F $\quad V Y$ AKGQHAELVPGFQEFVNEYTS
TEDYPLARRLYFYLPQHNLHAEAEEFAK FS G Q Y P L A R F L Y L Y I N K P P P T A K L P K L D A E F $\square R$ R Y M
 ADGSYPMSRFLWVYVNKAPNKP MSPIDREFMKMI AVIKNATYPDTAKLFMDQQNQGQEQQVGEAYAKLL DAVHESAV EAGIAAPNETLTWTQW

## GTYPLTRRLF IVIRQDGPDQFAGKAYAEML

ASGEYPI SRPLFIYV NNAKAAESPALQAFVDFYV




GEYP $\square$ TETFYVV
TAGSENPNDEPFTEWT
GASGPRAWPMANVALVLIHSTMPDPVRARQLVRWLYWTQT YPLSRRLFFYLPPKRNNP WAEALVAF A
GKYPYTDDFY I TTRKDVKN
ESGDFNIWAYEHMYTRSD EDEATAAVTQAFI DYi M


AEDGAYPFTRPVFTYLNVDHAKEKPQVLDFTHY ETVASGKYPVSRPLYFYVKKAHLGVIPGKEYVEFFTSDKI
 EFAREAGY

FTY $\quad \mathrm{LN}$ VDMAKEKPQV
SAVERSDYPSPPAREMWL AANTEFTPDAAAFVDFAYY LAKGANAYPAVGTPHAYLYSCYSSTTRVTNLKSFLVWFYD ANGEYPLATEFYAV TAGSDNPNLDPLIEWI

KTYPFTVPVYAVTLKSNDDEN VDKFПQWD

 GSYPLTSQUYAVT $\square$ DGEESPETTKFLEW
$D \nabla T G S A S Y P \nabla C A L T Y E L V W E D L A K A A Q A R G V K D Y \square G Y \square L N$

UniRef90 UPI000467207A UniRef90 U1M6P5 UniRef90_UPI00037A2DD0 UniRef90_L8EJJ7 UniRef90_W0JWM5 UniRef90-F8E3T4 UniRef90_UPI00036F9B4E UniRef90 ${ }^{-}$A0A031MHM1 UniRef90-B6IWFO UniRef90-V4IPW8 UniRef90-E2SPM5 UniRef90 UPI0003601035 UniRef90-F0M076 UniRef90-AOYCC9 UniRef90_F6AER0 UniRef90_A1ATT0 UniRef90-LOECZ2 UniRef90-A4G2F9 UniRef90 UPI0003736021 UniRef90-A3ZRD8 UniRef90_G4WWCS UniRef90-A3ZU89 UniRef90-FOSHG0 UniRef90-R7ZGC8 UniRef90-C7R741 UniRef90_C2U2M8 UniRef90-DOICU5 UniRef90_UPI0003452B65 UniRef90_UPI000467BD0D UniRef90 C2SQ81 UniRef90_UPI000369A187 UniRef90-M5U5E8 UniRef90-L8GJM3 UniRef90-UPIO0030E5684 UniRef90_UPI0003668476 UniRef90-A0A024PNF9 UniRef90_E1VCD7 UniRef90-Q0YV03 UniRef90-W8ZCE2 UniRef90 ${ }^{-}$LOHCG0 UniRef90_C0EBM0 UniRef90-B1Y0D1 UniRef90-M9TZD9 UniRef90 UPI00039C03C1 UniRef90_C6CZT6 UniRef90-B3PBS8 UniRef90_B6EK85 UniRef90-UPI00037DF03B UniRef90_UPI0002B93AE3 UniRef90-I1XF10 UniRef90 K9QDV3 UniRef90-Q3IS10 UniRef90-D9XJT0 UniRef90_UPIO00348A028 UniRef90 ${ }^{-}$M4ZWL9 UniRef90-R6CPS3 UniRef90_UPI000468FCC9 UniRef90_H9UGU3 UniRef90-S5DKU2 UniRef90-E31625 UniRef90-14Х3А9 UniRef90 UPI0003693EAB UniRef90-K9V208 UniRef90_UPI000225B554 UniRef90_S4VV57 UniRef90-J3DPN0 UniRef90-D1AQF5 UniRef90_R7AA40 UniRef90_UPIO0047EF906 UniRef90_L8GZH3 UniRef90-14C7C5 UniRef90_F9DTX9 UniRef90 UPI00047D68C9 UniRef90_UPI0002D49F60 UniRef90_MOMEG1 UniRef90 L9ZNV6 UniRef90-F4XVR7 UniRef90-W4QGF1 UniRef90 UPI0001D2F39B UniRef90_UPI00037D1660 UniRef90_K9PVA UniRef90_A8MIY0 UniRef90-F9RLJ4 UniRef90-M4U326 UniRef90_W4LIS1 UniRef90_UPI00047258AB UniRef90-J1JG85 UniRef90-A1QZ09 UniRef90_UPI00047ED242 UniRef90_X6GR61
UniRef90_A0A023ML29
QSKA GQDIVDQVGFVGMPDDYRKLAEEA
ERAAGDGYLADKGLVAMPKERLAKVQETVKSLT

S SPEGKEEGIEKTGYV
$\square S K A G Q E V V V K D G Y!P L P A K V V A R$
LSKEGQQUVVKDGYDPLTAKLVDNQLKNLK ENDGGMAKEDGYVPLPDEKYAEEAAKI K
LSKQGQNVVVKDGFVPMPARMAAKAAEEL

SQEGQVEVIKDGYL PLNAVQAKEQLKFVKDSFA
AT E RGQSUVED
SEEGQT LVDKVGYVPV
$\square S K \| G Q E V V V K D G Y I P L P A S \square A E R E L Q K \square$
LS RQGQA LVGAEGFVP DPKNLIEQQ LN E LD
NTFMSEQMIGELGYIPAPEEMREKARQAVAD

LS D DAQATVTDAEFV
SKQGQQDVVKDGYFPVPAA $\square$ A QEALSSV
N DNAATLVKSSGFLPLTGRQRMNMLDAL
LSTPAQEADAKAGFV
VVMNVNTFAGETGFAP\PESLIEEDEA
LSPEGQA IAAEGGFVALPQEVLERQRRED
KTYEGQRAVIENGYV
DGQQYVEGSGYTALPKERVNE
RSDEGQKIIEDAGLVP
$A S D E A Q R \| A D A Q G F I Q \square P D A$
E E A MGEGY $\square$ TEKG $L \square P \square P A D R V E E V R A A$
NSERGQG\VED IGGT
LS EEGQLRV EQDGYIALSERFV

LS K VG Q Q EVVVVK
LTEQGQRAITQAGFVPV
AARRVGYYAAPDEVVDESRAKLEQK
$\square S K E G Q E \square V E L A G L L P$
A DGLDTAVAEVGYVELADDAKAAVRAAW
SSDG VLKT $\quad \mathrm{GLIP}$ MAKD $\square K$ QE $\square$ QASV
ETMDDLVADGY DNMPTDKKASSLAAW
LS DKAQDII SEAGFI
ENAGAMAEAVGYVALNEEDYEAGLADLEA
QTTNEDLVAGDVGYVPATEETQEAQLEKLEDAD
पS S QGQS I IE K TGYVP TGS DL
A ATAVQNVTGVYGLADLPAVWSDVLGMLVNVTVDGVHVNP
QSRQGQAIVAANGFI
LS DEGQEVVEKTGYVPD
SEDVQSTTVIDEQGFIPVSNMKVKK
$\square$ ITAGATANNNKDYQRLPTDVRTAAQSGVNAD
NSTQAHH【LNDSDLVPVGKVVRGKVLDELVQU
LIENMNKFAAETGFAPTPEN
LSADGP LVEYGLVPLPDAERKEVQELVKS
DQMVGPESLAEYGLVAAPDAERQQQRDDFDA
$E F G Q T Q F V E A N D Y F K L P P N R R E E E R S K \square A E P E K D \square E Y S G$
VVNNVNNFAGETGFAPDPEE
DGQQHVSDNGYVPLEQTRLEDGLETLESN
DARS RNDLVNNGFHSLSTTWIQNDKSQFLQGSKTTS DTA LS PQGQELVELTGYTPL
LSEEGQLLIENTGYV
SQQGQKLVEQDGYVADSPEDAQQEDEKV
LSQQGQEIVSKDGYIPLSNKFIAK
LSKDGQNVVVKDGYYPLPAPVATASDDELK
LS NQGQEILEKVGYV
VT GGQAA $\square A P A G Y Q G L P T V V$
$\square S P Q G Q Q L V Q D / V G Y / P / L$

UniRef90 UPI000467207A
UniRef90-U1M6P5
UniRef90_UPI00037A2DD0
UniRef90 L8EJJ7
UniRef90 WOJWM
UniRef90-F8E3T4
UniRef90-UPI00036F9B4E
UniRef90 A0A031MHM1
UniRef90 B6IWFO
UniRef90_V4IPW8
UniRef90 E2SPM5
UniRef90 UPI0003601035
UniRef90_F0M076
UniRef90-A0YCC9
UniRef90 F6AER0
UniRef90- A1ATTO
UniRef90-LOECZ2
UniRef90-A4G2F9
UniRef90 UPI0003736021
UniRef90 ${ }^{-}$A3ZRD8
UniRef90-G4WWCS
UniRef90 A3ZU89
UniRef90 FOSHGO
UniRef90-R7ZGC8
UniRef90-C7R741
UniRef90 C2U2M8
UniRef90-DOICU5
UniRef90_UPIO003452B65
UniRef90 UPIO00467BDOD
UniRef90 C2SQ8
UniRef90- UPI000369A187
UniRef90-M5U5E8
UniRef90 L8GJM3
UniRef90-UPIO0030E5684
UniRef90_UPI0003668476
UniRef90 A0A024PNF9
UniRef90 E1VCD7
UniRef90_Q0YV03
UniRef90-W8ZCE2
UniRef90 LOHCG0
UniRef90 C0EBM0
UniRef90_B1 Y0D1
UniRef90-M9TZD9
UniRef90 UPI00039C03C1
UniRef90_C6CZT6
UniRef90-B3PBS8
UniRef90_B6EK85
UniRef90 UPI00037DF03B
UniRef90-UPI0002B93AE3
UniRef90-I1XF10
UniRef90 K9QDV3
UniRef90-Q3IS10
UniRef90-D9XJT0
UniRef90_UPI000348A028
UniRef90 M4ZWL9
UniRef90-R6CPS3
UniRef90-UPI000468FCCS
UniRef90 H9UGU3
UniRef90-S5DKU2
UniRef90-E31625
UniRef90 $14 \times 3$ А9
UniRef90_UPI0003693EAB
UniRef90-K9V208
UniRef90-UPIO00225B554
UniRef90_S4VV57
UniRef90-J3DPNO
UniRef90-D1AQF5
UniRef90 R7AA40
UniRef90 UPI00047EF906
UniRef90-L8GZH3
UniRef90-14C7C5
UniRef90_F9DTX9
UniRef90-UPI00047D68C9
UniRef90_UPI0002D49F60
UniRef90-M0MEG1
UniRef90 L9ZNV6
UniRef90-F4XVR7
UniRef90-W4QGF1
UniRef90 U1NKH7
UniRef90_UPI0001D2F39B
UniRef90-UPI00037D1660
UniRef90_K9PVA1
UniRef90 A8MIYO
UniRef90-F9RLJ4
UniRef90-M4U32
UniRef90_W4LIS
UniRef90-UPIO0047258AB
UniRef90-J1JG85
UniRef90 A1QZ0
UniRef90 UPIO0047ED242
UniRef90-X6GR61
UniRef90_A0A023ML29

LWP CF G D G

G N A S S G N

Y N A L S K V

UniRef90 B3CNH3
UniRef90 V4Y121
UniRef90＿UPIOOO4176DD7 UniRet90＿O3A6U3
UniRef90 D1W908 UniRef90－UPIo003753BFE UniRef90＿UP100030во03C UniRef90 F7SLX5 UniRef90＿U3ARU0 UniRef90＿L8HET3 UniRef90＿OOBXX6 UniRef90－UPI0004717E71 UniRef90－G4E8C3 UniRef90＿UPI00037994AF UniRef90－UPI00017452FF UniRef90 WoA7A6
UniRef90＿UPI0002557DD5 UniRef90－UPI000477EA59 UniRef90 U5L757 UniRef90－D8G8Y0 UniRef90－вотзм7 UniRef90－G8AFB0 UniRef90－UPIO00367375F UniRef90－88H5Y0 UniRef90－13YD57 UniRef90－UPI000312C6BE UniRef90－JIFIA1 UniRef90＿M4ZG63
UniRef90 ${ }^{-}$Q0G1X7 UniRef90－UPIO00469174F UniRef90－N9PT89 UniRef90－UPIOOO3603130
UniRef90 D6PLK1 UniRef90－S3FJW4 UniRef90－M1P154 UniRef90＿E6YTM7 UniRef90 UPI00030ED210 UniRef90－R4VPI9 Uniinefoo－F3KDB6 UniRef90－R6ALR4 UniRef90＿UPIOOO35CE954 UniRef90＿J1V16 UniRef90 D6Z1H7 UniRef90－UPIO0026CCE34 UniRef90－UPIO001DD03C4 UniRef90＿UPIOOO37177B7 UniRef90－MOLVQ5 UniRef90－UPI000262C97C UniRef90－F3LES3
UniRef90 D3AAB4 UniRef90－L9WK39
UniRef90－J2D0R9 UniRef90 G2FHS7 UniRef90 UPI000476E873 UniRef90－UPIO003733A9C UniRef90＿UPI0003628DAB UniRef90＿UPI0002488580 UniRef90－K9Q8X5 UniRef90－AONR65 UniRef90－R5GC68 UniRet90 N1MFX6 UniRef90－TOHHY4 UniRef90－UPI000197ABC8 UniRef90 W6M667 UniRef90＿UPIO0036A296A UniRef90－QoVL15 UniRef90＿K9WWL3 UniRef90＿－＿VO3PO UniRef90＿ZKYY4
UniRef90 K2HOH1 UniRef90－G4R8R2 UniRef90－UPIO003B3EEA9 UniRef90－UPIO003B4D9F6 UniRef90 UPI0003B74A67 UniRef90＿UPI0003621352 UniRef90－W1SAD4 UniRef90－DORQ90 UniRef90－R5F6B6 UniRef90 C7D515 UniRef90－QOASP8 UniRef90＿D3NQ13 UniRef90＿K1YT57

1 10 20 $\square R \square V G S S T V F P F \square S F \square S E E F S R \square F S V E S \square G S G S G F K M$
 $D!R V V G S S T V Y P V A Q E F K N K T G Y N V V V E S T G S G G G$ NLNSIGSDTLNNLMALWK QYPNVNIQVEGKGSST
$E D K D S G Y D S V Y P A D K V L A S A$ QI RIVGSSTVYPFASYVTEEFGATTGMESTGSGGGLRLF $N L L S V G S D T L A G M T S L W S \square Y P N \square N A Q \amalg Q A S G S S T$

## $K \prod K \ V G S T T V A F S R T V A E R F G A T P \| V E T T G T G G G F K A F$

 $L V I A A G A S T L Q P D L E A Y Q A H T G Q A D Q \square T A G G S G A G U R Q$ GS DTMA GL MLLR WARYPEVNL QFQAT GS GVAT DWQVSA DVD G D G VE V IE $\square$ $Q \backslash R \square V G S S T V Y P A V A E W F V R T N P R F K V E Q T G T G A G$ $N L Q V A G S S T V L P Y A S \| V A E A F G E N F E V V E S G G S A G L K R F$ K A YPRLLSVTMEAKAS GAG
 $\square T \square S$ GS G S LLFE IAAK P Y E T A HP GVKIDVK ENATWRGI A A GS STVVFFSTRTAENFAKKTK，ES LDGTGGGGVKMF $Q \prod R A V G S S T V F P F T T A D A E A F G K T P V V E S T G T G G G L K$

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

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


 $Q ⿴ 囗 ⿰ 丿 ㇄$ VHIVVGSSTVLPYGVA EVFGEMYDFKVPVESGGSGA GIIK


$N!E \| V G S S T V Y P V A E N F A K N S G V A P K V E S T G T G G G M K$





LRA G GS S TVYP $\square V S T A A N E P Y W H P D V Y G \square E T Q Q H L A D Y$ $V S D A G S S T V L P F A T V V A E R L G R T Y N V E S$ G G S S SVGKKGV $N I S V G G S T V Y P F A T V V A E K F G K T T T I E S T G S G G G A K L G$
$E \| V V D G S N T L R P A E Q F M W Q N N Q V E \square P V R P A G T G A G F Q Q F$ Qi RAVGGS S TVVYP FA A AVA ENP GMK SPIESTGTGGGGMK




GSSTVFPFSTAVAEAVGNFP VESTGSGAG

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

$I S\|V G S S T V Y P F S T V V A E Q F G K T S K\| E S T G T G G G F K L G$
conf
sol25

UniRef90 B3CNH3
UniRef90_V4Y121
UniRef9O_UP10004176DD7 UniRef90-Q3A6U3 UniRef90- D1W908 UniRef90-UPIO003753BFE UniRef90_UP100030B003C UniRef90_F7SLX5
UniRef90-U3ARU0
UniRef90-L8HET3
UniRef90-UPI0004717E71
UniRef90-G4E8C3
UniRef90_UPI00037994AF UniRef90-UPI00017452FF UniRef90 WoA7A6
UniRef90_UPI0002557DD5
UniRef90-UPI000477EA59
UniRef90 U5L757
UniRef90-D8G8Y0
UniRef90-вотзМ7
UniRef90- G8AFB0
UniRef90-UPIOO0367375F
UniRef90-88H5YO
UniRef90-13YD57
UniRee90-UPIo00312C6BE
UniRef90- J1FIA1
UniRef90-M4ZG63
UniRet90_Q0G1X7
UniRef90'UPI000469174F
UniRef90-N9PT89
UniRef90-UPIO003603130
UniRef90 D6PLK1
UniRef90-S3FJW4
UniRef90-M1P154
UniRef90-UPIO0030ED210
UniRef90-R4VPI9
Uniinefoo-F3KDB6
UniRef90-R6ALR4
UniRef90_UPIOOO35CE954
UniRef90-JIV1616
UniRef90- D6Z1H7
UniRef90-UP100026CCE34
UniRef90-UP100001DDOOBC4
UniRef90 MOLVQ5
UniRef90-UPI000262C97C
UniRef90-F3LESS
UniRef90_D3AAB4
UniRet90-L9WK39
UniRef90-J2DOR9
UniRef90 UPI000476E873
UniRef90_UPIOо03733A9C UniRef90-UPI0003628DAB UniRef90_KP10002 UniRef90-AONR65 UniRef90-R5GC68 UniRef90 N1MFX6 UniRef90-TOHHY4
UniRef90-UPI000197ABC8 UniRef90 W6M667 UniRef90-UPI00036A296A UniRef90-QOVL15 UniRef90_K9WWL3 UniRet90 -77 Q 3 PO UniRef90 Z5XY45
UniRef90 K2HOH1 UniRef90-G4R8R2 UniRef90-UP10003B3EEA9 UniRef90-UPIO003B4D9F6 UniRef90_UPI0003B74A67 UniRef90_UPI0003621352 UniRef90-W1SAD4 UniRef90-DORQ90 RSFGB6 UniRef90-QOASP8 UniRef90_D3NQ13 UniRef90_K1YT57

HKDFCSGADATYPDI TNSSRRQKKSEFDNCVKNNV APPALVEGTSQIGPMSRKMKRVEIEAF EKK $\square Y T N E S D A \Pi N K L L K G E V F M A D T S R D F T K D E L E S \square K A N K Q F$ NHTGVGLEKLERGQVDDGDASAPVSAEFPDRSEEELEP TPTKLEVSIAAVKDGLLDI GTLSRELKPEEKE CNG APPAVGEGTPDITNASRRMKPSEFERCEENGVT

CEGVGPVSPS TANASRPMKDSERELCAKAGVK LFCA VMEEHAHVGMVSRALTTDEQA
ASVPPALTAGTTRLGLMSRPMYAGERQAF! DR QPHGSSTAFSGLAAGHCDIGMASRPAAAGDFVDAALFKET CEG

RRMKKSEYEDCARNGVK FTNTTYAYERLLSGTADLAPAGRELPAEEQAFVDKFGYK C ADVRQGTADIGMVARSMKADEKDLLASTITAK CGGMGEKFP DIANASRPMKKSEFDACRAKGVN

LFCAGVGPQHPDVANASRRTKKSEVEQCAANGVA
LFCAGVGAGHPDAANASRAIKKSEFDDCQKNGV CGGAGEKFPAGVGVDHPDMNASRQMKKSEFDACQKAGVK

C E G
FCQGVGPETTDTANSSRQTRDDEVQCNDAGVK
TGGGLKQFCQGVGENTIDIANASRQUKDSELDACKKSGV
CANSAKGTP
VSGTGGGFKRFVT GETDFSNASRE

LF CASAGAESPDMTGASRRIKETELAD CD CKK
GAGARAVLDGTADFGMVGREVRDSERTAMSNYQS




GTDLVIA YEPGESVKK
CRGE
TDLQNASRELADDEAEM
R ا K E
CGGVGAKCAGVGVEHPDITNASRRIKKSEVERCSKQGV

lupas_21
lupas_14
lupas_28
jnet
conf
sol25

## UniRef90 B3CNH3 <br> UniRef90-V4Y121 UniRef90-UP10004176DD7 UniRef90-Q3A6U3 <br> UniRee90-D1W908 UniRef90-UPIOOO3753BFE UniRef90_UP100030B003C UniRef90-F7SLX5

 UniRef90-U3ARUO UniRef90-L8HET3 UniRef90-Q0BXX6UniRef90 UPIO004717E71 UniRef90-G4E8C3 UniRef90_UPIo0037994AF UniRef90-UPI00017452FF UniRef90-W0A7A6 UniRef90_UPI0002557DD5 UniRef90_UPIOO0477EA59 UniRef90-U5L757 UniRef90-D8G8Y0 UniRef90-вотзМ7 UniRef90-G8AFBO UniRef90-UPIIOOO367375F UniRefoto-B8H5YO
UniRef90 $13 Y D 57$ UniRef90-UPIO00312C6BE UniRef90- J1FIA1
UniRef90-M4ZG63
UniRef90-Q0G1X7 UniRef90-UPI000469174F UniRef90-N9PT89 UniRef90-UPIOOO3603130 UniRef90-D6PLK1 UniRef90-S3FJW4 UniRef90-M1P154
UniRef90 E6YTM7 UniRef90-UPIO0030ED210 UniRef90-R4VP19 Uniinefoo-F3KDB6 UniRef90-G4T2A7 UniRee90_R6ALR4
UniRef90_UPIO0035CE954 UniRef90-J1IV16 UniRef90-D6Z1H7 UniRef90-UPIO0026CCE34 UniRef90-UP100001DDOOC4 UniRef90-UPI00037177B7 UniRef90-MOLVQ5 UniRef90-UPIOOO262C97C UniRef90-F3LES3 UniRet90-D3AAB4 UniRet90_L9WK39
UniRefifo J2DOR9 UniRef90-UPIOO0476E873 UniRef90_UPIO003733A9C UniRef90_UP10003628DAB UniRef90-UPIOOO2488580 UniRef90-K9Q8X5 UniRef90-AONR65 UniRef90-N1MFX6 UniRef90-TOHHY4 UniRef90-UPI000197ABC8 UniRef90 W6M667 UniRef90_UPIO0036A296A UniRef90-QoVL15 UniRef90_K9WWL3 UniRef90_J7Q3P0 UniRef90-K2HOH1 UniRef90-G4R8R2 UniRef90-UPIO003B3EEA9 UniRef90-UPIO003B4D9F6 UniRef90-UPI0003B74A67 UniRef90_UPIOOO3621352 UniRef90 W1SAD4 UniRef90-DORQ90 UniRef90-R5F6B6 UniRef90_C7D515
UniRef9_-Q0ASP UniRef90-D3NQ13 UniRef90_K1YT57



FGYDGIVFASAASGESFALTP EMVYKAMGAQVPQDGEMG NDIIEVRIGYDGIVFASQDDGP EFTAFEASDIFNG $N Q V Q E I K V G Y D G U V F A S N V K K A A Y K L K P V H V F M A L S N G$ LDPALVVVAMAAEAPSYPLSLRAHLWLALAAKVPVDLVAN TTISVTQLVVAVDGLSVVMKKGSAAETCLSVGQLRWMFSA NGVEYTEI AVALD GLAAVVVNPENDWADDITMDELNKMWTD
D
D
D
 D VEE RIGYDGUVFATD IKGPHWVDIYKALAAQIIRN
 SS VVEVKVGYDGITIARSNRGKAF DLTLKQL F LALAAK H HLDATQAMIASDAIALVVNKENKDSLDITLDE:KDIVTG


 $R G F A L K Q V P V A L D G L V F F T H P D V S I P$ G $G$ L SVDQLQDIVRG YTDHVVGGVAQPIVVSQAVYEAGVTEISAKTLKAIYTG $N G V K L T E D V G Y D G I V V A N S K S G E Q L L N L G K A L T A E V A D G$ NGTDVVEVLI GFDGUVVANSNKSKQLELTRKDLFLALAK EGDNLI IKPI GRDALVFMAN QGNPVNSLTGRQVIDIYSG
 NGVDVVEVKIGYDGUADANSKHAAQFELTRRDLFLALADG
 Y $\operatorname{EMVVELQIGGDGGIALGESKAGANMGLTEEDVYKALAAN}$ NGVTPVEVQIGYDGIVLANSRKGPKFGTLTVEQIFEALAE DRADLVVATDAMALVVNKSNPDSL I TLDEVRGUVTG DIIEVVQVGVDGLAFAEAKNGPDYKLTKIVYEALAANPYG
 D DNVVEIVI GFDGIVLATSKKSKPM D
 F GYKPTAVLVA DDALA $\square Y$ Y V K K DNPL KCI SMEQMERVFAG QUVIAQDALAFFINSSLNDDNLTSNEMRSVYQG $D V R E V I F F D G I V F A T G I D Q G D F A L D P V H L Y N A D A A Q V V D G$ DSEQLLGYDGI ALATSRDGEVFDISLAELHOALAAEVADG
 D DGY VRTVQIAMDGIAFIVNKSNKND V I SVDDLRKUVAG T
lupas_21
lupas_14
lupas 28
lupas
jnet
jnet
sol25


[^0]

UniRef90 B3CNH3
UniRef90 ${ }^{-}$V4Y121
UniRef90_UPIO004176DD7 UniRef90_Q3A6U3
UniRef90_D1W908
UniRef90_UPIO003753BFE UniRef90_UPI00030B003C UniRef90-F7SLX5
UniRef90_U3ARU0
UniRef90-L8HET3
UniRef90_Q0BXX6
UniRef90-UPI0004717E71
UniRef90-G4E8C3
UniRef90_UPI00037994AF UniRef90-UPI00017452FF UniRef90 ${ }^{-}$W0A7A6
UniRef90_UPI0002557DD5
UniRef90-UPI000477EA59
UniRef90 U5L757
UniRef90-D8G8Y0
UniRef90-B0T3M7
UniRef90-G8AFB0
UniRef90_UPI000367375F
UniRef90-B8H5Y0
UniRef90-I3YD57
UniRef90-UPI000312C6BE
UniRef90- J1FIA1
UniRef90-M4ZG63
UniRef90-Q0G1X7
UniRef90-UPI000469174F
UniRef90_N9PT89
UniRef90-UPI0003603130
UniRef90_D6PLK1
UniRef90_S3FJW4
UniRef90-M1P154
UniRef90_E6YTM7
UniRef90 UPI00030ED210 UniRef90-R4VPI9
UniRef90-F3KDB6
UniRef90_G4T2A7
UniRef90_R6ALR4
UniRef90_UPIO0035CE954 UniRef90-J1IV16
UniRef90 D6Z1H7
UniRef90_UPIO0026CCE34 UniRef90_UPI0001DD03C4 UniRef90-UPI00037177B7 UniRef90-MOLVQ5
UniRef90_UPI000262C97C UniRef90-F3LES3
UniRef90-D3AAB4 UniRef90_L9WK39 UniRef90_J2D0R9 UniRef90_G2FHS7 UniRef90_UPI000476E873 UniRef90_UPI0003733A9C UniRef90_UPI0003628DAB UniRef90_UPI0002488580 UniRef90-K9Q8X5 UniRef90-A0NR65 UniRef90_R5GC68 UniRef90-N1MFX6 UniRef90-TOHHY4 UniRef90_UPI000197ABC8 UniRef90- W6M667 UniRef90_UPI00036A296A UniRef90-Q0VL15 UniRef90-K9WWL3 UniRef90_J7Q3PO UniRef90-Z5XY45
UniRef90
K2H0H1 UniRef90-G4R8R2 UniRef90_UPI0003B3EEA9 UniRef90_UPI0003B4D9F6 UniRef90-UPI0003B74A67 UniRef90-UPIOO03621352 UniRef90-W1SAD4 UniRef90-D0RQ90 UniRef90-R5F6B6 UniRef90_C7D515 UniRef90-Q0ASP8 UniRef90_D3NQ13 UniRef90_K1YT57
 EAYTQDELEGDSDGN MAELLLKADKKAFANNAHTDREDGKWDDAGENDALVQTLVN SGTYGYFKK HALFKGDYKD $\square V K E Q P G S A S V V L S V T$ P $\square$ A N K N V HALFKGDYKDVKKTE V VIVKVEE
 SEEMGAYGDEGYTEDRSDG VY IDAGENDNLIVQRLSE GGDFK

TRVNEQPGSASVVQSVAS
VGSGDLVTFPVQSAGNNRS $\square G \operatorname{LDND}$ DNTMTYLRD KESDGDAFAERAHTVRTDGVWVD FGENDSAIVQSLVK LIAADKSEDKSRYKAICHAMREDGAFDEAGENDNLI QKLKA PQRGSSSHPPRDSQQAIDDGSNDESLTLVGG GNFRPDISEHPGSSAVVASVGE KALKERDADRKSVFPDGRLA DAMVNTGGNDNLAMA G $K A L K E R D A D R H K A I C T K V R E D G A Y I N T G E N D N L I V Q K L G A$
$C E A T G A L E A B M V A S G M S E D D A E D A C D A V R T D G K S A S I E S$ YKDN【QFVKGKGFTHAFTVA

DTPI $\frac{A}{1} E P \square K E E$ VPEGMGGIIEQVAN
SADRADVVVTE
KKFPTAKALHDTDEKAFKAKVDP $\square R T A G E N D N A M I$ GTIEK EVKAAVADEKAREKACMTIREDGGYVEAGENDNLI QKLTA AEKVKKSDAKAFDRSWKTIREDGAYI DAGENDNLI QKLEA
 CNS SPEDKADKKSDEKKHKADCGGDEAGENDNLIVQKLAS P

LP P T ASASNSHPA LDDYVAK GGWLA GNGTGEVADTVNS CEDSG MDSGMDEDAAEDACDEVRGNGDTVDDDGDYTETLAR VDS CEAFDYYDDQKKACSTFRKDGRVIEVAGDYTETLAR LK KT PAMAAQPGRTGTQSSDANVEV

DtDVR
K ES GA TEEMKTLGMDDKA TH
QDAOLSEDDNVLVTGVAG A ACVAVRKDGKVI DI D KASGAVEQMKALGMSDKAI N KESGAVEIVMKSLGMDDKAIHVACDAVRKDGKADD SEAAGYPEEYTDDRSD
KGDYKN
QAFPKDSNESAYRTMCHSTRED
G GYVDSGENDNLI QRTTE REDGAYVEAGENDNLI QKLDT CNGKDLKGNVYASEGKSNQSVLDMVQA

 LADHKDKDPAAYAKGCTADREDGAYVDAGENDNLIQKLQS ALKDSDEDAFERTCTEVRSDGKYVDQGEQDND IVQK QG GQEDGQUSSRVNFIRDYTEG N A YCKKDADAKAADKAAGKKAK DPGDDVRKGENQQVKQUVNG GMEGGCKKVS WIKKDISSASKKAKKAGDKLLSKSLKN AMAEAPQDFVVSEMGELIEKV

SAYDN
TGNVGNIRNDYSGTPDTNAlIRGVRD ETDPAMEEDKKKSEDEFKATCTRDREDGKNDNLIVQKLGA AKAFSDLKALRKAKGEDQVKPLMAKLGDPERAYNKKG PGCHAAGGKEACTEDREDGVW IDAGENDNVIVQKLSA
 CDANPEMKTLKSSDKDKHKEVCTKVESGENDNLDVQKLVA
 LDGQEFRGNDYAQGSNEAVLETVKE QS DPAMKEDKEKNEDEYKATCTRVREDGKNDNLIVQKLGA KEKNEDEYKATCTR $\square R E D G K Y V D$ SGENDNLIVQKLGA KTSWDKADKKADKNRYKS DCHSVREDGAY DETGIVQKLTT CKEFPAVKDLEKADEKQFKKVCQTDEAGENDNLIVQKLAA EMEDADEDKWEQVCSRMRTDGPF $\square E A G E N D N \square D V Q R I E A$
 A $\square A A F K N L Q T Q N Q Q Q N T L I T S S T G A \square T T L P T L N M L Q Q V K D$ DFK DDIKMQVGSEAVVSAVGA DKDPDTSY $\square R$ L $K$ NAGNRGLFSNQRVSLYDHFNQALGUVQR E $\square K A M D K D A Q K S A C L S L R Q D G R I I E I$ AGDYTETLARLQAQ CEEAGEMEEEAMEAACLTPRQDVVVEDAGDYTETARALQQS CSEFEADEALHESDEVRYEEVCQRMEAGENDNLIVQRLDS
 CDANPEMKALKDSDKKKHDDVCTQVRAGENDNLIVQKI EA KTFKWLADIKKQDKNKYSVREDGPYDEVGENDNLISKLNA QSDPAMEALKEKNEDEYKATCTRDREDGKNDNLIVQKLGA CSKTAKAAYEAVGKKAKKACVKLREDGFADEAGENDTLSA TLYKGLDF

AQKSNQAVID YVA Q CEATGAFEA $\square$ MAANGGDKKAAEGACDELRTDGRSVDIIES $M D E D R D A D R D R F E Q \square A S R D R E D G A W I D A G E N D A D V Q T L V N$ EVARVVPDEAARERACMTIREDGAYVEAGENDNLIQKLAA NLKKSDEKAHKKVCQTVRED GAYVEAGENDNLIVQKLQS
lupas_21
lupas_14
lupas_28
jnet
sol25


## UniRef90 B3CNH3

UniRef90-V4Y121
UniRef90_UP10004176DD7
UniRef90-Q3A6U3
UniRef90 D1W908
UniRef90-UPIooo3753BFE UniRef90_UP100030B003C UniRef90- F7SLX5 UniRef90_U3ARU0 UniRef90_L8HET3 UniRef90-Q0BXX6 UniRef90-UPI0004717E71 UniRef90-G4E8C3 UniRef90-UPIO0037994AF UniRef90-UPI00017452FF UniRef90 ${ }^{-}$W0A7A6 UniRef90_UPI0002557DD5 UniRef90-UPIO00477EA59 UniRef90 U5L757 UniRef90-D8G8Y0 UniRef90-вотзМ7 UniRef90- G8AFB0 UniRef90_UPI000367375F UniRef90-B8H5YO UniRef90-I3YD57 UniRef90-UPI000312C6BE UniRef90- JIFIA1 UniRef90_M4ZG63 UniRet90_Q0G1X7 UniRef90 UPI000469174F UniRef90-N9PT89 UniRef90-UPIOOO3603130 UniRef90 D6PLK1 UniRef90-S3FJW4 UniRef90-M1P154 UniRef90_E6YTM7 UniRef90 UPIO0030ED210 UniRef90-R4VPI9 UniRef90-F3KDB6 UniRef90_G4T2A7 UniRef90 R6ALR4 UniRef90_UPIOOO35CE954 UniRef90_J1IV16 UniRef90 D6Z1H7 UniRef90-UPIO0026CCE34 UniRef90-UPI0001DD03C4 UniRef90-UPI00037177B7 UniRef90-MOLVQ5 UniRef90_UPI000262C97C UniRef90-F3LES3
UniRef90- D3AAB4 UniRef90-L9WK39
UniRef90-J2DOR9
UniRef90- G2FHS7 UniRef90 UPIOOO476E873 UniRef90_UPIOо03733A9C UniRef90-UPI0003628DAB UniRef90-UPI0002488580 UniRef90-K9Q8X5 UniRef90-AONR65 UniRef90-R5GC68 UniRef90- N1MFX6 UniRef90-TOHHY4 UniRef90-UPI000197ABC8 UniRef90 W6M667 UniRef90-UPI00036A296A UniRef90-QoVL15 UniRef90_K9WWL3 UniRef90_- J703P0 UniRef90 Z5XY45
UniRef90 K2HOH1 UniRef90-G4R8R2 UniRef90-UPIO003B3EEA9 UniRef90-UPIO003B4D9F6 UniRef90_UPI0003B74A67 UniRef90-UPI0003621352 UniRef90-W1SAD4 UniRef90-DORQ90 UniRef90-R5F6B6 UniRef90 C7D515 UniRef90-Q0ASP8 UniRef90_D3NQ13 UniRef90_K1YT57

NPNALGIFGYSFLEENMDRL
NPNAIGVFGLAFYENNTDKLKVATM
HPGGLTYALLANVTPNVKVVPLAASE YDNSIGFSFRFFATGM
KPESI GFSS $\$ GVVESDKDTKLLPD
TPGALGVFGYSFLEENANK KGA

|  |
| :---: |
|  |  |
|  |  | NPDAFGVFGYSFYDQNRDKLQTAKM NPKAVGIFGYSFLEENGSQIKGATVEGKA TPNALGVFGYSFLEENSRIKGASI KGV NKNALGVFGYSFLDQNTDKVQGSKIAGVEPTYETDSDGS

SPNAMGYAGYNHLTPMVRAVALADEQ NENATGVIGVNWISDRDDT
NAGRIGYVSNDFAKPYNSAP LSASVQNRARGVYHPGDGGV NDGAI GEISGDYTETLARDDANPQAVGVFGLAFY
NPNGI GVFGLAFYENNTNKLKVATI

TKNAIGFFGYAYYDENESTLKGLKVEENADKLKVSDTVGV
GDYSETFARLTSSKTGI GVFGLFFYENNADKLKVASINGV
 NKDAVGIA GFSF LEE ENSDVQAATV

NPNVIGIVGANWLMDKTGN
 NRRAlGYASYSVAEAYGKQLAVFSL NPNAIGDFGYSYLEENKDKLNGVPL NKNAVGUFGYSYLEENVQGLPMNGVEPTYDNDASFKYPGA SDNAIAYMALAFVDDSV
DPKAYGDFGFSYLDQNSDTLQGAELSGVVPTFEATGDGSY KYKGTCHIREDGAYDESGENDNLIVQKLTKNPDSLGGFGF TGEALGYSVYYYA KNMYQKPELKFMAVDGVMPSSDTD NRHAIGFGGAGYYYENEDDLELDEVDDGDGCE
NPNAVGVFGYSFLEE
KK VFKAVAHADREDGAYTEAGENDNLIVQKDEA NPGAVGVFGFSYLEENGDKVKGATIAATYNNDANSGV NPGDVGIFGYSYLEENVQDLPMNGVQATYENTANFSYPGA $N K N G I G V F G L A F F E N N A D K L K V A T V N G \square V P S V E T \square A S G E$ NPDAI GLFGYSFDEENLDKVRGVKLQ
$R T G S I G F A T L S Q V F G Q C S A Y P G A l$
$N P V T V G 円 F G Y S F L M Q N R D K I G V G V$

NPNAVGVFGYSFLEENRDSLKDTPT NGVEASYETVSTGQ NPNALGIFGFSFLEENKDTLKDVPI NGVKATYETVSTGQ

 D $\square \mathrm{GS} \square \mathrm{GFATFSQVFGQCSAYPLAVV}$
DKYAMGYSGIGYKTAEVRAVPLSSGKS
IPNAMAYDSY
AD AVGVFGLSFYDQNRDRLKVATD NGVTPSLETDGSGE
NPEALGVFGLSFYDQNRDTLKVATV
DPTAYGI FGYSFFYENQDSLQVVSIE
NPDAMGIFGFSFRDQNTDKIQGSYUE DGV NPKADGIFGFSYV
NPNSLGVGGYSFLDON
NPNAVGVFGFSFLEENKDTLQDVP $\quad$ NGVQATYETVSTGQ DPELFGLFGFSYLVANKDKIK AAKVNGVVPSLEGIQNYS DANSIGVFGLSFYENNTDKLRVATM
TPTAFGVFGFSFLDQNSDRISAVSDDGVAPEFDNDADGS
NPDAFGIIFGYSYLDQNRDTLQSATM
NAKAFGIFGFSFLDQNGDKLQGSVIEGKA

[^1]

$\begin{array}{llllllllllllllllllllllllllllllllllllll}8 & 5 & 4 & 6 & 6 & 3 & 1 & 2 & 2 & 1 & 1 & 3 & 8 & 3 & 2 & 1 & 1 & 1 & 1 & 0 & 0 & 3 & 3 & 6 & 7 & 8 & 7 & 7 & 5 & 0 & 0 & 5 & 7 & 7 & 8 & 7 & 5 & 1 \\ B & B & B & B & B & B & B & B & B & B & B & B & & B & & & & B & & B & B & & B & & B & & & & & B & B & B & & & & & B & B\end{array}$


[^2]

UniRef90 B3CNH3
UniRef90 V4Y121 UniRef90-UPIO004176DD7 UniRef90_Q3A6U3 UniRef90 D1W908 UniRef90-UPI0003753BFE UniRef90_UPI00030B003C UniRef90 F7SLX5 UniRef90 U3ARU0 UniRef90_L8HET3 UniRef90-Q0BXX6 UniRef90-UPI0004717E71 UniRef90 G4E8C3 UniRef90_UPI00037994AF UniRef90 UPI00017452FF UniRef90- W0A7A6 UniRef90_UPI0002557DD5 UniRef90-UPI000477EA59 UniRef90-U5L757 UniRef90-D8G8Y0 UniRef90-B0T3M7 UniRef90_G8AFB0 UniRef90 UPI000367375F UniRef90-B8H5Y0 UniRef90-I3YD57 UniRef90 UPI000312C6BE UniRef90 J1FIA1 UniRef90-M4ZG63 UniRef90-Q0G1X7 UniRef90 UPI000469174F UniRef90-N9PT89 UniRef90-UPI0003603130 UniRef90 D6PLK1 UniRef90-S3FJW4 UniRef90-M1P154 UniRef90-E6YTM7 UniRef90 UPIO0030ED210 UniRef90-R4VPI9 UniRef90-F3KDB6 UniRef90_G4T2A7 UniRef90- R6ALR4 UniRef90_UPIO0035CE954 UniRef90 J1IV16 UniRef90 D6Z1H7 UniRef90_UPI00026CCE34 UniRef90_UPI0001DD03C4 UniRef90 UPI00037177B7 UniRef90 ${ }^{-}$MOLVQ5 UniRef90_UPI000262C97C UniRef90-F3LES3 UniRef90 D3AAB4 UniRef90-L9WK39
UniRef90_J2D0R9
UniRef90 G2FHS7
UniRef90 UPI000476E873 UniRef90-UPI0003733A9C UniRef90-UPI0003628DAB UniRef90 UPIO002488580 UniRef90 ${ }^{-}$K9Q8X5 UniRef90-A0NR65 UniRef90_R5GC68 UniRef90 N1MFX6 UniRef90_T0HHY4
UniRef90-UPI000197ABC8 UniRef90 W6M667 UniRef90-UPI00036A296A UniRef90_QOVL15 UniRef90_K9WWL3 UniRef90 J7Q3P0 UniRef90_Z5XY45 UniRef90-K2HOH1 UniRef90 G4R8R2 UniRef90_UPI0003B3EEA9 UniRef90_UPI0003B4D9F6 UniRef90-UPI0003B74A67 UniRef90 UPIOO03621352 UniRef90_W1SAD4 UniRef90-D0RQ90 UniRef90-R5F6B6 UniRef90-C7D515 UniRef90-Q0ASP8 UniRef90_D3NQl3 UniRef90_K1YT57
 AAVERGDYPAPPAREMWLAANGEFGSDSAA FVVWVLT A A GDYHVARSLYFY KKSHVDMTPG DQEFLEFTSD
 ENLGTLDYPLSRALHCYTWDGTSNKEAA F $\square R \mathrm{M} \square$

EVP PMYD Y
ANMFMEELDM
 LSPGADSWPIASFAS』IYHQTMEDCAEAAALANFLYWAQT

```
        GDGSYPVSRSMFFYVKKAHEN V\PG\KEYVHQF
        SG\YPI QRQLNLVYKS NTMALITALIQQQA
RASGGSA
                                    DAERQRVAKEF|
```



```
EA\squareADGTYKVSRPLYVYFKKQHV GVIPGGLKEF\EYASD
        ASGQYPLSRSLYIIYVKKS QV GVVTPGLLKEFVVSEFVS
```

            T YPDSRTGYLYVNLPPGEALPAAE QAFLELVFS
    $A Y \cap A Q G E Y P L R R F W Y I \quad$ STEGRAGLGTGFAS YV

D G S Y LVSRP $\square$ FFY VK GEH $\square K S \square K G P Q F A E F F D N K K \square$
DRSYPLVRTLYLYV KGAHFSRTPGLGRFVSTYLS
NTVRDGSYPLSRPLFMNVNN DKWEVVSSFLHWAY
YPLSRPIYTYVNNASMQEKPQVVNFARFM

EDYPVARS LWFY $\square$ KEAHEGVVPGDEYVS $\square$ FMDD $\square M$
YPLLRSVY $\| \quad H \quad$ T DPRSQSQLKNFF F Y A

$\nabla A D P A G T$
AAMRDGTYPDTRRMF $\square G F R Q D G T D Q L A G D A F V N M L$
 D GSYPYVSDFYAAVRKDEPKDSNAYRLFEWLT
 ETVSTGQYPGARPLY


E VF KTRSYPLGYPLVVLYPGDNSRPP $\square G Q K F A E M L R$
QP $\square$ ATGEYPLLRSVYVIT T DPRVTSMVKNFF FF L

> ADGAYPTSRPLYFYVKKAHV
> $G K V P G D M E F D E E F T S$ ADGKYPVSRPLF $\square Y \mathrm{~V} V K K A H I$
> GVIPGllKEFIAEFTS

QVFRTGSYPLGYPIIVLYPGDNSRPPDGQKFADMLRTA $D N T Y S R K Y P L A R G L Y \| Y L L K D P K K P \square D T \quad L S G E F V T \quad Y V$ GSPLEAAGLIP $\square \quad$ NDEERAKEVADF A D GS YPVSRPDF $\mathbb{D} Y$ YKNAHRGPGMEAFDEEATN ADGSYPVSRPLFFYVKKAHVGTDPGKEYLAEFTSEKA

[^3]UniRef90 B3CNH3
UniRef90 ${ }^{-14 Y 121}$
UniRef90_UPI0004176DD7
UniRet90_O3A6U3
UniRef90 D1W908 UniRef90-UPIo003753BFE UniRef90_UP100030B003C UniRef90 F7SLX5 UniRef90- U3ARU0
UniRef90_L8HET3
UniRef90-Q0BXX6 UniRef90-UPI0004717E71
UniRef90-G4E8C3
UniRef90-UPIOOO37994AF UniRef90 UPIO0017452FF UniRef90 ${ }^{-}$W0A7A6
UniRef90_UPI0002557DD5 UniRef90-UPIO00477EA59 UniRef90-U5L757
UniRef90-D8G8Y0
UniRef90-вотзм7
UniRef90 G8AFB0
UniRef90-UPI000367375F
UniRef90-B8H5YO
UniRef90-I3YD57
UniRef90 UPIoo0312C6BE
UniRef90-J1FIA1
UniRef90_M4ZG63
UniRef90 ${ }^{-}$Q0G1X7
UniRef90-UPI000469174F
UniRef90-N9PT89
UniRef90-UPIO003603130
UniRef90 D6PLK1
UniRef90-S3FJW4
UniRef90-M1P154
UniRef90-E6YTM7
UniRef90 UPIO0030ED210
UniRef90-R4VPI9
UniRef90-F3KDB6
UniRef90_G4T2A7
UniRef90-R6ALR4
UniRef90_UPIOOO35CE954
UniRef90 J1IV16
UniRef90 D6Z1H7
UniRef90-UPIO0026CCE34
UniRef90-UPI0001DD03C4 UniRef90 UPI00037177B7
UniRef90- MOLVQ5
UniRef90_UPI000262C97C
UniRef90 F3LES3
UniRef90 D3AAB4
UniRef90-L9WK39
UniRef90-J2DOR9
UniRef90 G2FHS7
UniRef90- UPIO00476E873
UniRef90-UPIO003733A9C
UniRef90-UPIO003628DAE
UniRef90 UPI0002488580
UniRef90-K9Q8X5
UniRef90-AONR65
UniRef90 R5GC68
UniRef90 N1MFX6
UniRef90-TOHHY4
UniRef90-UPI000197ABC8 UniRef90 W6M667
UniRef90_UPIo0036A296A
UniRef90-Q0VL15
UniRef90_K9WWL3
UniRef90 J703P0
UniRef90-Z5XY45
UniRef90- K 2 HOH UniRef90 G4R8R2
UniRef90-UPI0003B3EEA9 UniRef90_UPIOOO3B4D9F6 UniRef90-UPI0003B74A67 UniRef90 UPIOOO3621352 UniRef90-W1SAD4 UniRef90-DoRQ90 UniRef90-R5F6B6 UniRef90 ${ }^{-}$C7D515 UniRef90-COASP8 UniRef90-D3NQ13 UniRef90-K1YT57

340
$\qquad$ ■K $\quad 350$
$S \square S T E G G Y|L S R| L G L I|P| L S E N \square K K V L E K V R D \square I$
EGQQYVSENGYVPL
AAVGPGGYLEEDGLVPLPDADRAAVRATVEN
LS KEGQEVVVKDGYLPLPA QVVAK QLEALK
SQDKGQKIVLRSGLLPDEDEFRQEQDDAL



T A DEA
TSSHGQQLVTEFGFiPV
LSEEGQR ARAAGFVPLPDDDपDAQR
MSPTGQRIAEDVGF
DSREGQDVVAKEGYTP पTPAVVKEE पAK DDQA
QGEQGQQUVEEVGYI
LSQEAQAVVKOKKFAPV
DSAGGRYLQRGLIPL

KAMGEEGYDTEKGLVPDPKEMATTAEDA
DAATGRGYLQNRGMIPLPPAV
A EGQQVVQAAGFVALPDHLRS
ASDRGQRII LKSGLVPATMPVR
SSQDGASVLQNNGFNALNSAFVTTTSSSY价AGSGVATAD TGEGSPTV EYGLVPLSADERQTQMDQFES

SGKG SK EKAGLIPRSDKERAK LLADFKA
DPMDGPEGLPELGLVPLAATARQAAVQR
SGDGTAVISEVGYVPLDDA
NENAGALAEEVGYVAMEQA
$\square G \square H S P \quad \square T E Y G L V P G S E R R Q \square Q R D A F S S$
■GTDG LLIEEGLIPLPAEWRERVENRVD
KGQKGQT II

SWDPKGPLVAK GLIAAPDDVRKRSAQLKDET
पsKEGQQ VEKAGLVPM
GPEG YLAERGMTPLSDELRAK
SDDGQALINALGYVGVRDE
DNTQAASLDVGFFEVEDETDEEQHERLD
ANWNPDGALTKRGMVAAPEDVRKKS WGDEG YLADKGMI PMP KAERDAFASDVRSL
dSASGEEYLADKGLIALPADQLAAQRAAV

TTEVQQLLEKTGLVP口
TGQRGQLI
EDATGDEYTTDKGLIPLSYEKDEEMRKSVMS
EKAVGDDYLSKKGLIPLPAAKRKQAAA


EAADGPGYDTDTGLVPAPENERAETRESV
WGDEG YLTDRGLIDPMPAAERKQYSDAVKNLI
lupas_21
lupas_14
lupas_28
jnet
conf
sol25

UniRef90 B3CNH3
UniRef90-V4Y121
UniRef90-UPI0004176DD7
UniRef90 Q3A6U3
UniRef90 D1W908
UniRef90-UPI0003753BFE
UniRef90-UPI00030B003C
UniRef90 F7SLX5
UniRef90 U3ARU0
UniRef90-L8HET3
UniRef90 Q0BXX6
UniRef90 UPI0004717E71
UniRef90-G4E8C3
UniRef90_UPI00037994AF
UniRef90 UPI00017452FF
UniRef90- W0A7A6
UniRef90_UPI0002557DD5
UniRef90-UPI000477EA59
UniRef90 U5L757
UniRef90-D8G8Y0
UniRef90-B0T3M7
UniRef90 G8AFB0
UniRef90_UPI000367375F
UniRef90-B8H5Y0
UniRef90-I3YD57
UniRef90 UPI000312C6BE UniRef90-J1FIA1
UniRef90_M4ZG63
UniRef90 Q0G1X7
UniRef90 UPI000469174F
UniRef90_N9PT89
UniRef90-UPIOOO3603130
UniRef90 D6PLK1
UniRef90-S3FJW4
UniRef90_M1P154
UniRef90 E6YTM7
UniRef90 UPIO0030ED210
UniRef90-R4VPI9
UniRef90-F3KDBE
UniRef90 G4T2A7
UniRef90-R6ALR4
UniRef90_UPIO0035CE954
UniRef90-J1IV16
UniRef90 D6Z1H7
UniRef90 UPIO0026CCE34
UniRef90-UPIO001DD03C
UniRef90 UPI00037177B7
UniRef90-M0LVQ5
UniRef90_UPI000262C97C
UniRef90_F3LES3
UniRef90 D3AAB4
UniRef90_L9WK39
UniRef90-J2D0R9
UniRef90 G2FHS
UniRef90-UPI000476E873
UniRef90-UPI0003733A90
UniRef90-UPIO003628DAE
UniRef90 UPI0002488580
UniRef90-K9Q8X5
UniRef90-A0NR65
UniRef90 R5GC68
UniRef90 N1MFX6
UniRef90-TOHHY4
UniRef90-UPI000197ABC8
UniRef90 W6M667
UniRef90-UPI00036A296A
UniRef90_QOVL15
UniRef90_K9WWL3
UniRef90 J7Q3P0
UniRef90-Z5XY45
UniRef90-K2HOH
UniRef90_G4R8R2
UniRef90-UPIO003B3EEA9
UniRef90-UPI0003B4D9F6
UniRef90-UPI0003B74A67
UniRef90 UPI0003621352
UniRef90-W1SAD4
UniRef90-D0RQ90 UniRef90 R5F6B6 UniRef90 C7D515 UniRef90_Q0ASP8 UniRef90-D3NQl3 UniRef90_K1YT57

G QLCS G A G

S S T

G S

|  |  |  |  | 10 |  |  | 20 |  | 30 |  |  | 40 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| sol5 |  |  | B |  | B | B |  |  |  |  | B |  |
| sol0 |  |  |  | $\pm$ |  |  |  |  |  |  |  |  |
| jpssm |  |  |  | - |  |  |  |  |  |  |  |  |


sol5
sol0
jhmm
jpssm

|  |  |  | 250 | 260 |  | 270 | 280 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| sol5 | B | B |  |  | B |  |  |
| sol0 |  | B |  |  |  |  |  |
| jhmm | - |  |  |  |  |  |  |
| jpssm | $\Rightarrow t$ | 5 |  |  |  |  |  |


[^0]:    lupas_21
    lupas_14
    lupas 28
    jnet
    cont
    sol

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    cont
    sol

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet

[^3]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25

