


## QUERY

## UniRef90_R7W2E1

UniRef90-MOS113 UniRef90-T1NBR6 UniRef90-C5XEB6 UniRef90_UPIO00350ACA7 UniRef90 R0HE54 UniRef90_UPI0003511DB0 UniRef90-V7CLW3 UniRef90-Q8VYN5 UniRef90-F2DE42 UniRef90-Q9SPE0 UniRef90-W5CYH5 UniRef90-B8ACW7 UniRef90-UPI00032A6A06 UniRef90-K4BAP4 UniRef90-V4M4M2 UniRef90-W5BWV9 UniRef90-UPI0002C305DA UniRef90-I1HBC4 UniRef90-M8A6F9 UniRef90-I1JCG6 UniRef90-R0FM99 UniRef90-B9H118 UniRef90_A0A059ASG6 UniRef90-B6SV77 UniRef90-W9SSV3 UniRef90-C7IXE5 UniRef90-F2D236 UniRef90-M1A6R3 UniRef90-T1MKJ1 UniRef90-Q5XUG7 UniRef90_O04521 UniRef90-A0A059C1LO UniRef90_S5VK41 UniRef90_W1PN90 UniRef90-V4UQU0 UniRef90-M4D9Y5 UniRef90-I3RTU5 UniRef90_A5BQ94 UniRef90-11HBD2 UniRef90-W5CXJ6
UniRef90 V7AR04 UniRef90-E5RDD8 UniRef90_UPIO002B47592 UniRef90-C9E215 UniRef90-W9T0S1
UniRef90-S8C0C5 UniRef90_UPIO003D7325F UniRef90_UPI0003D7325F UniRef90-B9HR84 UniRef90_UPI0002B46186 UniRef90_UPI00042B354B UniRef90_UPI00042B60AB UniRef90_V4MJJ7 UniRef90-M0S719 UniRef90-W1Q0D4 UniRef90-F8U3U5 UniRef90-Q2VAC9 UniRef90-B9H7B6 UniRef90-11HBD4
UniRef90 M0RXX1 UniRef90_MORXX1
UniRef90_UPIO002B46278 UniRef90_UPI0002BCA2DC UniRef90-UPIO002BCA2DC UniRef90_D8T8E9 UniRef90_Q38925 UniRef90_EOCQ79 UniRef90-A0AO22QR50 UniRef90-K7MH02 UniRef90-L7TV20 UniRef90-MORWG6 UniRef90-MORWG6 UniRef90_UPI0002B41A99 UniRef90_UPI0002C2FFF1 UniRef90_G7LC27 UniRef90-I11HR6 UniRef90_UPI00032A84DD UniRef90_UPI00032A84DD UniRef90-G7LC24 UniRef90-K7M5H5 UniRef90-M4D5Y8 UniRef90-M4DHK3 UniRef90-M5WZE5 UniRef90-K4NQ03 UniRef90-B912B1
UniRef90-K7LP22 UniRef90-K7LP22
UniRef90-A0A022REJ0 UniRef90 O22973 UniRef90_UPIO0042B3156 UniRef90_P50700


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GRPPTTLAEFSLNQYGKDYDDTSNKGFNVPMNFSPTTR

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F GQFNNT
GSDGRD
GQNSQD
GQQTSD
GGGTD GQAAP N T M M A E F A L L A Q F N N D


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 }A GVSPNTLAEFGLA $\begin{array}{llll}G A & P & P & N \\ G & T & L & A \\ A & E \\ A & A \\ A & P & P & N\end{array}$
 GS P P N T V A E A EPPATLAAEFTLL

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A K P A A

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& \text { A }
\end{aligned}
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\begin{aligned} & \mathrm{G} \\ & \mathrm{~A} \end{aligned}
$$ <br> A

AKPPATAE
GVPPATLAETT

A $T$
AAKPASTLEETHT
AKPPATLAEFT
$\begin{array}{lll}\text { A K P P A T } \\ \text { A T P P A S } \\ \text { G } & \text { A } \\ \text { F E }\end{array}$


NSTGMDGYDV NGANGDFYDVSLVDGYNLPDTVPSSGN GQNNKDFFDLSVIDGFNVPMSFEPLGGG NMYNDDFYDISLVGFNIPIQLTPSUNA GNSSPDYYDVSLVDGYNLPVMVETSSGS VGSGGKDFYDVSLVDGYNVGVGVRATTGD NGTGGDFYDVSLVDGYNLPVLILPKKGG GHEQD FYDVSLVDGYNLAMSIMPVKGK NQFNDDFFDISNVDGYNVGTDFSPTTSR GTNVKDYYDVSLVDGYNLPLVAAPDHGA NGADGDFYDVSSVDGYNLPMAKDGTRGG GSRKQDFYDVSLVDGYNVPMASGGSEGT

## QUERY

UniRef90＿R7W2E1
UniRef90－M0S113 UniRef90＿T1NBR6 UniRef90＿C5XEB6 UniRef90＿UPI000350ACA7 UniRef90＿ROHE54 UniRef90＿UPI0003511DB0 UniRef90＿V7CLW3 UniRef90＿Q8VYN5 UniRef90－F2DE42 UniRef90＿Q9SPE0 UniRef90－W5CYH5 UniRef90＿B8ACW7 UniRef90－UPI00032A6A06 UniRef90＿K4BAP4 UniRef90＿V4M4M2 UniRef90＿W5BWV9 UniRef90＿UPI0002C305DA UniRef90－I1HBC4 UniRef90＿M8A6F9 UniRef90 I1JCG6 UniRef90＿R0FM99 UniRef90＿B9H118 UniRef90＿A0A059ASG6 UniRef90＿B6SV77 UniRef90－W9SSV3 UniRef90＿C7IXE5 UniRef90＿F2D236 UniRef90－M1A6R3 UniRef90－T1MKJ1 UniRef90＿Q5XUG7 UniRef90＿O04521 UniRef90＿A0A059C1L0 UniRef90＿S5VK41 UniRef90＿W1PN90 UniRef90－V4UQU0
UniRef90 M4D9Y5 UniRef90＿M4D9Y5
UniRef90－I3RTU5 UniRef90＿A5BQ94 UniRef90－I1HBD2 UniRef90－W5CXJ6 UniRef90＿E5RDD8 UniRef90＿UPI0002B47592 UniRef90 C9E2I5 UniRef90＿W9T0S1 UniRef90＿S8C0C5 UniRef90＿UPI0003D7325F UniRef90＿UPI0003D7325F UniRef90＿B9HR84 UniRef90＿UPI0002B46186 UniRef90＿UPI00042B354B UniRef90＿UPI00042B60AB UniRef90＿V4MJJ7 UniRef90－M0S719 UniRef90＿W1Q0D4 UniRef90＿F8U3U5 UniRef90－Q2VAC9 UniRef90＿B9H7B6 UniRef90＿I1HBD4
UniRef90 M0RXX1 UniRef90＿UPI0002B46278 UniRef90＿UPI0002BCA2DC UniRef90－D8T8E9
UniRef90－Q38925
UniRef90－E0CQ79
UniRef90－A0A022QR50
UniRef90＿K7MH02
UniRef90＿L7TV20 UniRef90＿M0RWG6 UniRef90＿M0RWG6 UniRef90＿UPI0002B41A99 UniRef90＿UPI0002C2FFF1 UniRef90＿G7LC27 UniRef90＿－I1IHR6 UniRef90＿UPIO0032A84DD UniRef90＿UPI00032A84DD UniRef90＿G7LC24 UniRef90＿K7M5H5 UniRef90＿M4D5Y8 UniRef90－M4DHK3 UniRef90－M5WZE5 UniRef90＿K4NQ03 UniRef90＿B912B1
UniRef90 K7LP22 UniRef90＿A0A022REJ0 UniRef90＿O22973 UniRef90＿UPIO0042B3156

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CR 130 ， 140
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G $V$ CAADIVGQCPAKLKAPGGGCNDACTVFQTSEYCCT VA D $\ T$ S Q C P S N L K V P G G C N N A C T
$R \mathrm{NR}$ SAACRSACGAFGRPEFCCSGE
S K G P H C SRGAP R C A A A N L N N K T C P S S E L
 TKGPHCGASI TSQCPSELKAPGGCNSACFQKQNYDMYCCE

 CKSTGCPTDLNAVCPTELLKCQGPCAA FNLQFFCCVGNHST

GKGPRCAANITSQCPSELTAPGGCNN ACTVFKQDRYCCT CATTGCAT DLNRSCPNELKVEDGDCKSACDAFGTPEYCCN
 CAATGCGADLNRRCPAELRVDGGDACQSACRAFGKPEFCC


CVSTGCTTTDLNRQC

SK GPRCPANITSQCP


 C S S A G C D G D L

○
SKGPRCAAN LINGACP
 C GS T G C V V

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CAATGCLADLN R C P
CRVIKCTGDLVGRCP
G V G CPNELKVPGGCQG
C SA G C D A D L R D T C P
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| UniRef90_R7W2E1 |  |
| UniRefolo-MOS113 | $\mathrm{P}$ |
| UniRef90-J3KVU7 | N |
| iRef90-TINBR6 |  |
|  | NNCEPTTYSVFFVRGCP |
| UniRef90-UP1000350ACA7 | C |
| Re90-RO- |  |
| P1 |  |
| V7 |  |
| Q8 |  |
| 2DE4 |  |
|  | NDKCGPTDYSRFFKTRCPDAYSYPQDDPTTFTCPGGANYR |
| UniRef90-W5C | GRHCESNKYSA |
| UniRet90 B8ACV | T |
| P100032A | PETCEPS |
|  | Q |
| V4 |  |
| UniRef90 W5BWV9 |  |
|  | PDTCKPSIYSQLFKSACPKSYSYAYDDASSTETCTGADYT |
|  | GDDCDSNKYSAFFVRMCPEALSYSRDAPTAFTCPFQTNYQ |
| UniRet90_M8AE | GSNCSTTDYSD |
| UniRet90_11JCG6 |  |
|  | GEYCPPSLIMKNFKNECPLAYSYAYDDTITFRCSNSPNYV |
| IRet90_B9H1 | CPSAYTYP |
| UniRef90 A0A059ASG6 | GAYCKPSLYYSQ\\|FKNACPRSYSYAFDDATSTFTCTGADYT |
|  |  |
| UniRef90_CIIXE5 | GTTGTPTTFSLPFVRMCPDAYSLDDSSSTTFTCPSGTNYQ |
|  |  |
| UniRef90-M1A |  |
| UniRef90-T1M |  |
|  | NGPCGPTDYSKFFKQRCPDAYSYPLDDPTSFTCHAGTNYK |
| UniRef90-OO45 | TDYSRYFKDRCPDAYSYPKDDATSFTC |
| UniRet90-S5VK | RFFKTRCPDAYSYPKDD |
| UniRef90-W1PN90 |  |
|  |  |
| UniRef90_M4D |  |
| 3RTU |  |
| A5BC |  |
| W5 | GTNCKSTSYSTIFKQMCPDAFSYPLDSSGTFACPTGTSYQ |
| UniRef90-V7 | PNTCKPTAYSQ円FKNACPRAYSYAYDDTSTFTCASSADYT |
| UniRef90 E5RDL | GAYCKPSKYSEI |
| 002 |  |
|  |  |
|  |  |
| UniRef90_S8COC5 | $G_{R}^{G}$ |
|  |  |
| $\begin{aligned} & \text { UniRef90_UPIO0 } \\ & \text { UniRef90_B9HR } \end{aligned}$ | RETCGPS |
| UniRef90-UPI0002B46186 | P |
| UniRet90 | KHACPRA |
|  |  |
| UniRef90-V4 | ${ }_{\mathrm{H}}^{\mathrm{H}}$ |
| UniRef90-Mostia | P |
| UniRet90-F8U3U5 | S |
| UniRef90-O2VA | T |
|  |  |
| 1 H |  |
|  | P |
| UniRet90-UP10002B46 | PMTCRPTFYSKKFK |
| U1000 |  |
| $\begin{aligned} & \text { UPIC } \\ & \text { W8T } \end{aligned}$ | C |
| ef9 |  |
|  |  |
| UniRef90 E0CQ79 | PTTCKPSVYSEITFKTACPKSYSYAYDDATSTFTCSGANYM |
|  | PETCKASSYSQLIFKSAC |
| UniRef90-L7TV20 | Q |
| UniRef90 M0RWG6 | PNTCKPSSYSQFFKNACPKAYSYAYDDATST |
| ef9 |  |
| UniRet90_UPIO002841A99 |  |
| F |  |
|  | P |
|  | E |
|  | S |
| UniRef90 G7LC24 | GAFCSPSVYSEMFKSACPKSYSYAFDDATTFTCTAADD |
| UniRef90 ${ }^{-} \mathrm{K} 7 \mathrm{M} 5 \mathrm{H} 5$ | GDHCSPTLYSKПFKNACPAAYSYAYDDPSSTCTCSGSD |
|  | PDTCQPSVYSLFFKHACPRAYSYAYDDTSTYTCATGADYV |
|  |  |
| ef90-M5WZ | SGRCGSTNLSKFFKDRCRDAYSYPKDDTSTFTCPGGTNYK |
| et90-K4N |  |
| 99 |  |
| UniRef90-K7LP22 | DMCGPSPYSLFFKHACPRAYSYAYDDKTSTYTCANANYL |
|  | M |
| UniRer90-O22973 | PTTCRPSFYSETHKSACPRAYSYAYDDGTSTFTCKA |
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| -R7W2E1 |  |
| Ref90_MOS113 |  |
| J3KVU7 |  |
| UniRef90-T1N |  |
| UniRef90-C5XEB6 |  |
| UniRef90-UPIOOO350ACA7 |  |
| UniRef90-ROHE54 |  |
| UniRef90-UPIO003511DB0 |  |
| UniRef90-V7CLW3 |  |
| UniRef90-Q8VY |  |
| F2DE |  |
| UniRef90 Q9SP | $\checkmark \mathrm{V}$ |
| UniRef90-W5CYH5 |  |
| UniRet90_B8ACW7 |  |
| UniRef90-UPIOO032A6A06 |  |
| UniRef90-K4BAP4 |  |
| UniRef90-V4M4M |  |
| UniRef90 W5BWVs |  |
| UniRef90-UPIO002C305DA |  |
| UniRef90-11 $\mathrm{HBC4}$ |  |
| UniRef90-M8A6F9 |  |
| UniRef90-11JCG6 |  |
| UniRef90-R0FM99 |  |
| UniRef90-B9H118 |  |
| UniRef90_A0A059ASG |  |
| UniRef90-B6SV7 |  |
| UniRet90_W9sva |  |
|  |  |
| IRe990-2D236 |  |
| iRe990-M1A6R3 |  |
| Ref90-T1MKJ1 |  |
| 5 |  |
| UniR |  |
| UniRet90-A0A059C1L |  |
| UniRet90-S5VK |  |
| UniRet90_W1PN90 |  |
| UniRef90_V4UQU0 |  |
| UniRet90_M4D9 |  |
| UniRef90 I3RTU |  |
| UniRef90-A5BQ94 |  |
| niRet90_11 HB |  |
| W5CXJ6 |  |
| iRef90_V7AR04 |  |
| UniRef90_E5RDD8 |  |
| niRef90_UP10002B475 |  |
|  |  |
| UniRet90_W9TOS 1 |  |
| UniRef90_S8C0C5 |  |
|  |  |
| iRe990_UPIO003D7325F |  |
| niRet90_B9HR84 |  |
| UniRef90_UP10002B461. |  |
| UniRef90-UPIO |  |
| UniRef90-UPI00042B60AB |  |
|  |  |
| Ref90_MOS719 |  |
|  |  |
| iRef90-F8U3U5 |  |
| Q2VAC9 |  |
|  |  |
| UniRef90-11HBD4 |  |
| niRef90_MOR |  |
| UniRef90-UPI00028 |  |
| iRet90_UPIOOO2BCA | $\begin{aligned} & \mathrm{V} F \\ & \mathrm{~V} \end{aligned}$ |
| niRef90-UPIO002BCA2DC |  |
| UniRef90 D8T8E9 |  |
| UniRe90- EOC |  |
| UniRef90- ${ }^{\text {a }}$ A022QR |  |
| UniRef90-K7MH02 |  |
| UniRef90-L7TV20 |  |
| UniRef90 M0RWG6 |  |
| UniRef90 MoR |  |
| UniRet90-UPIO002B41A99 |  |
| UniRef90_UP10002C2FFF1 |  |
| UniReef90-G7LC2 |  |
| UniReef90-11/RR6 |  |
| UniRef90-UP100032A84DD |  |
| UniRer90 - G7LC24 |  |
| UniRef90-K7M5H5 |  |
| UniRet90_M4D5Y8 |  |
| UniRef90_M4DHK3 |  |
| UniRef90-M5WZES |  |
| UniRet90_K4NQ03 |  |
| UniRef90_B912B1 |  |
| UniRef90_K7LP22 |  |
| A0A022REJO |  |
| UniRef90-O22973 | 1 TFCPS |
| Ret90_UP100042B3156 |  |
| UniRef90_P50700 | VF |




UniRef90_W9QYL2 UniRef90-A9ZMG0 UniRef90-B8LQJ2 UniRef90-W9QVQ5 UniRef90-F4JQT1 UniRef90-F4JQT1 UniRef90_V4SIQ5 UniRef90_Q9LZL8 UniRef90-D7SNY7 UniRef90_K3YZ07
UniRef90 UniRef90_A0A059AWN8 UniRef90_G7K661 UniRef90-A0A059AWZ5 UniRef90_I1Q4R2 UniRef90-S8D166 UniRef90-UPI0002B46BF1 UniRef90-V4SFT7 UniRef90-V7D2L8 UniRef90-W1NF62 UniRef90-ROIBH8 UniRef90-G717Q3 UniRef90_A0A022RIS2 UniRef90_W5CLB7 UniRef90-V4MG93 UniRef90_UPI00032A9140 UniRef90_ROF493 UniRef90-V4UQW3 UniRef90-M1A6R4 UniRef90_Q93XD2 UniRef90-B9SOC7 UniRef90_M4CZY0
UniRef90_M4DH97 UniRef90-P28493 UniRef90_V7CM78 UniRef90_UPI00032A72CD UniRef90_D0ESA0 UniRef90-P93621 UniRef90-A0A059CH61 UniRef90 G7LB07 UniRef90_A0A059AGH0 UniRef90_Q5DWG1 UniRef90-R0HIX1 UniRef90_J9PDH8 UniRef90-B9T6D4 UniRef90-M0U4K7 UniRef90-I11HR5 UniRef90-A9NYU8 UniRef90-A0A058ZQQ3 UniRef90_UPI0002B4D6D3 UniRef90-D7MCV0 UniRef90-D7MCV0 UniRef90-M5WD98 UniRef90-D7KXZ7 UniRef90-R0GI79 UniRef90-UPI0002B42960 UniRef90-D8SVY8 UniRef90_UPI0002C34AC7 UniRef90-B8LPH4 UniRef90_A0A059CGJ7 UniRef90-K7KUX7 UniRef90-Q9SNY0 UniRef90_V4JQZ7 UniRef90_K4BVN5 UniRef90_S1RTW5
UniRef90_Q9C9Q0 UniRef90-M5Y1F2 UniRef90-Q69JY6 UniRef90-B9T382 UniRef90_G5DC91 UniRef90_V7CTG5 UniRef90_A0A059APB0 UniRef90_UPIO0032A6818 UniRef90_V4M3B7 UniRef90_UPI00032AB8F1 UniRef90-M4D7Z9 UniRef90 Q10P77 UniRef90_A0A059CH64 UniRef90_Q5DWG0 UniRef90-S8EK82 UniRef90-D7T029 UniRef90-F6HOU2 UniRef90-J3LRC9 UniRef90_A0A059BXD0 UniRef90-P25871

GRAPHT|V|AEYS|I|NQDNNNVFY\|S|VV|EGFN|l|lQEFSSSDCS GSPPNTLAEYALNQYMNDFFDMSLVDGFNVPMSFLPTSNG
 AKPPATLAEFTLAG GDEYDVSLVDGFNLPMVVTPINGN

 AVPPATVVEMTLGGSGGHFYDVSLVDGGNNPMTQSGTAGN ASPPATLAEFTLGSGSQDYYDVSLVDGYNMMVEGRSKSGA AKPPATLAEFTFGHGGDDFYDVSLVDGYNLPMLVEPRHPN
 AAPPTSLEEDT GQDQQDYYDVSMVDGYNLPMRGVYGKSA A A P P ATLAE GAPPATMAEDTLASTPQDFYDVSLVDGYNIPIAMTPSHGN







 S WA DV T Y Y V Y L N N N D S G F S S Y T I S L E F G Y N L P P VMVVVP SH G T GSPPATMAE TATMGQQQD FYDVSLVDGYNIAMSILPDRGK


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UniRef90_V4SL03

UniRef90_W9QYL2 UniRef90_A9ZMG0
UniRef90-B8LQJ2 UniRef90-W9QVQ5 UniRef90-UPI0002C2EFCE UniRef90-F4JQT1
UniRef90-F4JQT1 UniRef90-F4JQT1 UniRef90-Q9LZL8 UniRef90-D7SNY7 UniRef90_K3YZ07 UniRef90_C5XNQ8
UniRef90_A0A059AWN8 UniRef90-G7K661 UniRef90-A0A059AWZ5 UniRef90_I1Q4R2 UniRef90-S8D166 UniRef90 UPIO002B46BF1 UniRef90-V4SFT7 UniRef90-V7D2L8 UniRef90_P81295 UniRef90-W1NF62
UniRef90-ROIBH8 UniRef90-G717Q3 UniRef90-A0A022RIS2 UniRef90-W5CLB7 UniRef90_V4MG93 UniRef90-K4BVN4 UniRef90-UPIO0032A9140 UniRef90-R0F493 UniRef90-V4UQW3 UniRef90-M1A6R4 UniRef90-Q93XD2 UniRef90-B9SOC7 UniRef90_M4CZY0
UniRef90_M4DH97 UniRef90-P28493 UniRef90-V7CM78 UniRef90-UPI00032A72CD UniRef90_D0ESA0 UniRef90-P93621 UniRef90-A0A059CH61 UniRef90 G7LB07 UniRef90-AOAO59AGHO UniRef90_Q5DWG1 UniRef90-ROHIX1 UniRef90-J9PDH8 UniRef90-B9T6D4 UniRef90_C5X4K3
UniRef90-M0U4K7 UniRef90_I11HR5 UniRef90-A9NYU8 UniRef90-A0A058ZQQ3 UniRef90_UP10002B4D6D3 UniRef90-D7MCV0 UniRef90-D7MCV0 UniRef90-M5WD98 UniRef90-D7KXZ7 UniRef90-ROGI79 UniRef90_UPI0002B42960 UniRef90-D8SVY8 UniRef90_UPI0002C34AC7 UniRef90-B8LPH4 UniRef90_A0A059CGJ7 UniRef90-K7KUX7 UniRef90-Q9SNY0 UniRef90_V4JQZ7 UniRef90_K4BVN5 UniRef90-S1RTW5 UniRef90-Q9C9Q0 UniRef90-M5Y1F2 UniRef90-Q69JY6 UniRef90-B9T382 UniRef90-G5DC91 UniRef90-Q9FSG7 UniRef90_V7CTG5
UniRef90_A0A059APB0 UniRef90-UPI00032A6818 UniRef90 ${ }^{-}$V4M3B7 UniRef90_UPI00032AB8F1 UniRef90-M4D7Z9 UniRef90_Q10P77 UniRef90_A0A059CH64 UniRef90_Q5DWG0 UniRef90-S8EK82 UniRef90-D7T029 UniRef90-F6HOU2 UniRef90-J3LRC9 UniRef90_A0A059BXD0 UniRef90-P25871

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

 CHADSCAADI NAKCPPELRVEGGCLDSACVKVGVPRYCCT CRGISCNADI NGQCPNELRA SGGCNNPCTVFGGDQYCCT
 CTAPACKADI NAVCPSELKVDGGCNSACNVFKTDQYCCR

 SKGPRCAANITSQCPRELEAPGGCSNACTGSTAS CKSDKCVVDMNNTCPDDLRQSNSDCRTSCQRNQSRELCCR



 CNATGCVADI NUSCPKELQVMGVACKSACEAFGLDQYCCN CKYAGCV SDLNMDCPNELRVMDPQNNVACAAFNKEEYCCT

c
CRQUKCTSDVNGQCPNQLKAPGGCN
CMTTGCMVDLNTACPTELLKAPGGCNN PCTVVFKTDEYCCT
CTATGCAADLNVGCPQELKVTGVACKSACGAFGDPQYCCS
 CRGIKCAAQI NRECPNQLKAPGGCNN PCTVFKTDQYCCN CTVTGCSVELINNACPSELKVMDSENGESCEAFGNPEYCCN CSSAGCDGDLRDNCPSELAVKFDGCRSACDVFNTDQYCCR GCHADSCAADINARCPPELKVDGGCASACLKFNTDRYCCQ
$C T Y A G C D S D L N L D C P P N E Q G C V M A C K S A C C A F S T P Q Y C C T$
$C T A T G C A A D L E A G C P K E L Q V D S V A C K S A C E A F G D P Q Y C C T$


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


## C

UniRef90_V4SL03

|  |  |
| :---: | :---: |
| UniRe90－A97MGO |  |
| UniRef90－B8LQJ2 | GDNCPPTDYSRFFKGECPQAYSYARDDATTFTCPGGTNYK |
| UniRef90 W9QVQ5 | PVVCQPTYYSKKFKDACPKAYSYAYDDPTS自FTCSGTDYV |
| UniRef90－UPIO002C2EFCE | PETCAPSVFSLYFKH\｜CPRAYSYAYDDKTSTYTCASAD |
| UniRef90－F4JQT1 | RQNCKP |
| UniRet90－F4JQT1 | RQNCKPTVYTQNFERACPLA |
| UniRet90－V4SIO5 |  |
| ＋90－091 | GEYCKPTLFANLFKADCPKAYSYAFDDSS |
| UniRef90＿D7SNY7 | PSTCKPSVYSEDFKSACPRSYSYAYD |
| UniRe | －DAYTNPSDDNKTFTCPAGTDYQ |
| UniRef90－A0A059AWN8 | SYSYA |
| UniRef90－G7K661 |  |
| UniRef90－A0A059AWZ5 | PQTCKPSSYSELFKSACPQAYSYAYDDSTSTFTCADAD |
| UniRef90－11Q4R22 | PQQCKPTAYSRLFKTACPKAYSYAYD |
| UniRef90－S8D166 | GAYGSPSTYSRIFKSACPQAYSYAYDDR |
| UniRef90－F2EDE | PPTCGPTDYSRFFKGLCPDAYSYAYDDSSTFTCPVGSDYQ |
| UniRef90－UP10002B46BF1 | DPNCGPTDYSRFFKDRCPDAYSYPKDDATTFTCPGGTNYR |
| UniRef90－V4S | PDTCFPSVYSLEFKHVCPRAYSYAYDDKTSTYTCGSADYV |
| 70 | CGPTEYSR FKNACPKAYSYAFD |
| 81 | 俍 |
| UniRet90＿W1NF62 | G |
| UniRet90＿R01BH8 |  |
| G7 |  |
| UniRef90－A0A022RIS2 | AYSAVFKSACPRSYSYAYDDG |
|  | SYSAFVKQMCPDAYSKP DDT |
| UniRef90－V4MG |  |
| UniRet90＿K4BVI | PTTCKPSSYS |
| UniRef90＿UP100032A | GKHSTPTHYSEIFKKACPTAYSYAYDDASSTCTCSGSDYR |
| niRet90＿ROF493 |  |
| V4U0 |  |
| UniRef90－M1AE | EAYCHPSSYSLEFKHACPRSYSYAYDDKTSTFTCASADYL |
|  | NYSRFKERCRD |
| UniRef90 M4CZYO | PNTCRPSSYSTVFKRACPRAYSYAFDDGSSTFTCKASEYA |
| UniRef90－M4DH97 | GAHCSPTTYSMTFKKACPDAYSYAYDDETSTFTCAGANYL |
| UniRet90－P28 |  |
| 7CM78 |  |
| UniRet90 UPI00032A7 | C |
| UniRef90－DoESA0 | SPNCPPTEYSKIFKDQCPQAYSYAYDDSSTFTCNGGPDYV |
|  |  |
| A0A059CH61 |  |
| UniRef90＿G7LB |  |
| UniRef90＿A0A059 |  |
|  | GDHCSPSKYSQVFKSACPTAYSYAYDDATSTFTCSNADYT |
| UniRef90－ROHIX1 | SKNFKNECPLIAYSYAYDDSNTTVRCSNANYU |
| UniRef90 B9T604 | PNTCKPSSYSEFFKTACPRAYSYAYDDGTSTFTCAGADYE |
| UniRef90 C5X4K3 | PDACHPTVYSSIFKSACPRAYSYAYDDRTSTFTCRAVDYT |
| MOU4K7 |  |
| 11H |  |
|  |  |
|  | EFFKQACPTAYSYAYDDGTSIFTCASADYV |
| UniRef90－UP10002B4D6D3 | NDHCPPTKYSEMFKNACPSAYSYAYDDASSTCTCTGSDY |
| UniRef90 D7MCV0 | QYTQNFEQACPSAYSYA |
| UniRef90 M5WD98 | STRCGPTSYSRFFKARCPEAYTYPLDSDATFTCPAGTNYM |
| UniRef90－D7KXZ7 | LCCCKRTПYSRTFNHACPSAYSYTYDDNSSFTCPYFSNFV |
| Uni |  |
| UniRef90－UP10002B42960 | SDYS |
| UniRef90－D8S | GSHCSPTYFSR】FKDACPQAYSYAYDDATTFTCGSGGGYT |
| UniRef90－UPIO002C34AC7 | PDTCTPSSYSQFFKNACPKAYSYAYDDGTSTFTCAAADYL |
| UniRef90＿B8LI | GDYCPSTTYSQ |
| UniRef90－A0A059C |  |
| UniRef90－K7KUX7 | PNTCQPSYYSTTFKKACPRAYSYAFDDGTSTFTCKA |
| UniRef90－Q9 | SEDFKKACPTAYSYAYDDPTSTCTCTGANY |
| UniRef90－V4JQZ7 | PETCAPTNYSMTFKKACPSAYSYAYDDATSTETCSGASYL |
| UniRef90 K4BVN5 | GAYCKPSSYSAMFKNACPKSYSYAYDDP |
| UniRet90－S1RTW5 |  |
| UniRef90 Q9C9Q0 | GAHCSPTHYSAMFKSACPGAYSYAYDDATSTFTCTGSNYL |
| UniRet90＿M5Y1F2 |  |
| UniRef90＿Q69JY6 | G D |
| UniRef90－89 | PDTCSPSIYSLIFFKHACPRAYSYAYDDKTSTYTCAKTDYL |
|  |  |
| UniRe990－Q9F | EKQCPQAYSYAYDDNSTFTCSGGPDYV |
| UniRet90＿V7C | GAYCKPSITYSQVFKSACPKSYSYAYDDATSTFTCTGADYT |
|  | PDTCQPSPYSLFFKNACPRSYSYAYDDKTSTYTCAGAD |
| UniRef90 UPIO0033 | PNKCQPSSYSKVFKASCPQAYSYAYDDATSTFTCHGADY |
| UniRef90－V4M3B7 | PDTCKPSEYSGLFKKACPTAYSYAYDDGTSTFTCSGADY |
| UniRef90＿UPI00032AB8F1 |  |
| UniRef90 Q 10 F | PNTCRPTAYSQVFKSACPRSYSYAYDDPTTFTCAGGRD |
| UniRef90－A0A059CH64 | SASCGPTNFSKFFKDRCPDAFSYPMDDTSTFTCPAGTNY |
| UniRet90－Q5DWG0 | GANCNQTLYSRFFKEQCPQAYSYAKDDV |
| UniRef90＿S8EK82 |  |
| UniRef90－D7T0 | GAYGNPTNYSRSFKQACPVAYSYAFDDPTSILTCNAPEYI |
| UniRef90－F6 |  |
|  | GDNCGPTDYSRFFKGLCPDAYSYPKDDTSTFTCPGGTNYQ |
| 9BXD0 | E |
|  | CTST |
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| UniRef90_W9QYL2 | VI F C P T |
| :---: | :---: |
| UniRef90-A9ZMG0 | $\checkmark \mathrm{V}$ F C |
| UniRef90-B8LQJ2 | $\checkmark \vee \mathrm{F}$ |
| UniRef90-W9QVQ5 | 1 AF C |
| UniRef90-UPI0002C2EFCE | 1 DF CP |
| UniRef90-F4JQT1 | 1 T |
| UniRef90-F4JQT1 | I |
| UniRef90-V4SIQ5 | I T F C |
| UniRef90_Q9LZL8 | T |
| UniRef90-D7SNY7 | 1 T |
| UniRef90-K3YZ07 | 1 TFCPS |
| UniRef90-C5XNQ8 | L VF C P S |
| UniRef90_A0A059AWN8 | 1 TFCP S |
| UniRef90_G7K661 | 1 VF CP T |
| UniRef90-A0A059AWZ5 | 1 TFCPS |
| UniRef90-I1Q4R2 | $\checkmark$ T |
| UniRef90-S8D166 | LTFCP |
| UniRef90-F2EDB2 | L V |
| UniRef90_UPI0002B46BF1 | V V F C |
| UniRef90-V4SFT7 | 11 FCP |
| UniRef90-V7D2L8 | VTFCP |
| UniRef90-P81295 | \| V VFC |
| UniRef90-W1NF62 | $\checkmark$ AFCP |
| UniRef90-ROIBH8 | VT F C P T |
| UniRef90-G717Q3 | 1 T F C S S |
| UniRef90-A0A022RIS2 | 1 T |
| UniRef90-W5CLB7 | V DF C |
| UniRef90-V4MG93 | 1 TFCPT |
| UniRef90-K4BVN4 | 1 T F C P S |
| UniRef90-UPI00032A9140 | 11 T F C P |
| UniRef90-R0F493 | V T F C P S |
| UniRef90-V4UQW3 | LTF C |
| UniRef90-M1A6R4 | 11 FC |
| UniRef90-Q93XD2 | \| V V F |
| UniRef90-B9S0C7 | 1 TFCP |
| UniRef90-M4CZY0 | \| $\square \mathrm{FCP}$ |
| UniRef90-M4DH97 | 1 |
| UniRef90-P28493 | 1 T F C P |
| UniRef90-V7CM78 | V LF C P |
| UniRef90-UPI00032A72CD | 1 T F CP |
| UniRef90-D0ESA0 | 1 TFCP |
| UniRef90-P93621 | V I F C |
| UniRef90-A0A059CH61 | V V F CPM |
| UniRef90_G7LB07 | 1 TFCPT |
| UniRef90_A0A059AGH0 | 1 T F C |
| UniRef90_Q5DWG1 | 1 T |
| UniRef90_R0HIX1 | 1 T |
| UniRef90-J9PDH8 | V V F C |
| UniRef90-B9T6D4 | 1 S F C |
| UniRef90_C5X4K3 | A |
| UniRef90-M0U4K7 | $\checkmark$ S F C |
| UniRef90-I1IHR5 |  |
| UniRef90-A9NYU8 | T |
| UniRef90_A0A058ZQQ3 | 1 T F C P S |
| UniRef90-UPI0002B4D6D3 | S F CPS |
| UniRef90-D7MCV0 |  |
| UniRef90-D7MCV0 | 1 T |
| UniRef90-M5WD98 | 1 V |
| UniRef90-D7KXZ7 | 1 TFCPS |
| UniRef90-R0G179 | $V$ AFCP |
| UniRef90-UPI0002B42960 | 1 V F C P |
| UniRef90-D8SVY8 | 1 T F CPS |
| UniRef90-UPI0002C34AC7 | 1 TFCPS |
| UniRef90-B8LPH4 | 1 V F |
| UniRef90-A0A059CGJ7 | VTFCP |
| UniRef90-K7KUX7 | 1 VF F P |
| UniRef90-Q9SNY0 | 1 T F C |
| UniRef90-V4JQZ7 | 1 T F C P T |
| UniRef90-K4BVN5 | 1 T F C P S |
| UniRef90-S1RTW5 | 1 V F C |
| UniRef90-Q9C9Q0 | 1 S F C P T |
| UniRef90-M5Y1F2 | $1 \mathrm{~T} F \mathrm{CP}$ |
| UniRef90-Q69JY6 | 1 TFCP |
| UniRef90-B9T382 | 1 l FCP |
| UniRef90-G5DC91 | $\mathrm{V} \mathrm{V} \mathrm{F} \mathrm{C} P$ |
| UniRef90-Q9FSG7 | 1 TFCP |
| UniRef90-V7CTG5 | 1 T T C P S |
| UniRef90-A0A059APB0 | 1 DFCP |
| UniRef90-UPI00032A6818 | 1 RFC |
| UniRef90-V4M3B7 | 1 T F C |
| UniRef90-UPI00032AB8F1 | I T F C |
| UniRef90-M4D7Z9 | L T F C P |
| UniRef90-Q10P77 | 1 T F CP |
| UniRef90-A0A059CH64 | $\checkmark \mathrm{V}$ F CP |
| UniRef90_Q5DWG0 | 1 V F C |
| UniRef90-S8EK82 | 1 T F C |
| UniRef90-D7T029 | $\checkmark$ T F C |
| UniRef90_F6H0U2 | 1 T F C G S |
| UniRef90-J3LRC9 | $\checkmark \mathrm{V}$ F CP |
| UniRef90-A0A059BXD0 | 11 FCP |
| UniRef90-P25871 | $\checkmark$ MF C |
| UniRef90_V4SL03 |  |



## UniRef90 M4CHJO UniRef90-B9H178

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UniRef90 ${ }^{-1}$ MWH 58 UniRef90-V4SYH8 UniRef90-MOU934 UniRef90-V4K9D5 UniRef90-M5WTU6 UniRef90-K3YLN1 UniRef90-K4AEQ9 UniRef90-JJLCG9 UniRef90-G7LDC8 UniRef90_UPIO003D28C2F UniRef90_U5D853 UniRef90-B9SDY3 UniRet90-Q9LN66 UniRef90-F2CUN8 UniRef90-V7CV53 UniRef90-M5XPJ4 UniRef90-V7B730 UniRef90-F8RNZ5 UniRef90-M5XPR4 UniRef90-I11H18 UniRef90-K3YIT6 UniRef90-D7TLQ7 UniRef90-W9RIM7
UniRef90 B9FYG3 UniRef90-C5YR54 UniRef90-K4AY77 UniRef90-ROF8U7 UniRef90-W9RM61 UniRet90-ROFSK UniRef90-W9R8D6 UniRef90_UPIO002B4785F UniRef90-COHG83 UniRef90-A9U165 UniRef90_V7C1F4 UniRef90_V7CSX4 UniRef90-A0A022QHM5 UniRef90_A0A059AR32 UniRef90-G7KK13 UniRef90-MOWEU2 UniRef90_UPI0002C34128
A
-
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A
C A EVPQNWSGRIWGRQGCCFDPSTKGSCLTGDCAGLQCRGLG DVP ESWT GHVWGRTHCNQSSKGSFSCSTADCGTIECEGNG APPG WS GRFWGRTGCSFDPTGQGNCQTADCGSNQCNGAG PAPHGWSGR LWGRTHCSTDTSSRFACATANCGSGRCAGHG

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UniRef90_M4CHJO UniRef90_B9H178 UniRef90_UPI0002C344D6 UniRef90_UPI0002C2E4E4 UniRef90-UPIO002B464EE UniRef90-C5Z3T8 UniRef90-UPI0002B41970 UniRef90_B5G511 UniRef90_UPI00042B490D UniRef90-P83335 UniRef90-B9RHG5 UniRef90-K4BV68 UniRef90_V4S9T2 UniRef90-A0A059BQ41 UniRef90_B9MVF0 UniRef90-D3IZ06 UniRef90-B9GZG3 UniRef90-G9CM53 UniRef90-ROFVS4 UniRef90-I1QSL3
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UniRef90_V4K9D5 UniRef90-M5WTU6 UniRef90-K3YLN1 UniRef90-K4AEQ9 UniRef90-J3LCG9 UniRef90_G7LDC8 UniRef90_UP10003D28C2F UniRef90-U5D853 UniRef90_Q9LN66 UniRef90-A5C9F2 UniRef90-F2CUN8 UniRef90-V7CV53 UniRef90-M5XPJ4 UniRef90_V7B730 UniRef90-F8RNZ5 UniRef90-M5XPR4 UniRef90-111H18 UniRef90_K3YIT6 UniRef90-D7TLQ7
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UniRef90_S8DXA0 UniRef90-W9R8D6 UniRef90_UPIO002B4785F UniRet90_C0HG83
UniRef90 A9U165 UniRef90-V7C1F4 UniRef90_V7CSX4 UniRef90-A0A022QHM5 UniRef90_A0A059AR32 UniRef90-G7KK13 UniRef90-MOWEU2 UniRef90_UPI0002C34128

90
100
110
120
GKPPAS|L|AEFT|LAT LDFYDV|S|LV|DGFN|LPMSV|TPLNGN AAPPATLAEFTLGSGGQDFYDVSLVDGYNLPMVVEGSGGS GVPPATKVEMTLGTPKSHFYDVSLVDGFNVPVSMVPDGGG GKQPATLAEDSLNDTDGMDYDVNVEYGFNLPMVVEPRSSN



## G

## -

 GAPPVTLAAEFTTG A APPATMLAEFTLL A N N
A G G

D D \begin{tabular}{llll|l|ll|lll}
$D$ \& $F$ \& $Y$ \& $D$ \& $V$ \& $S$ \& $L$ \& $V$ \& $D$ \& $G$

 

$N$ \& \& $P$ <br>
$N$ \& \& $P$ <br>
N \& P <br>
N \& I \& P <br>
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\end{tabular} AKTNKD

 KKNKPSFYDVS $L \vee D G$ YNVG GAPPVSLAEFTVASGGLDFFDVSLVDGYNLPMSATSGSGK AAPPATLAEFTLGSGGMDFYDVSLVDGYNLPPQGAAPGGN
 GSRPATLADFTLGG

$82 \quad$| a |
| ---: |
| $G$ |
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$G A$
GDPPATLAEFTL
GATPTTLVEYS

## -

GTPPATLAVEI

## G

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A A P P A T L A E F T V A S S S R D F Y D V V L V V D G Y N L P V L V E A S R G




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## A <br> G

GDPPASLAEFTL





AAPPATLAEFTLGSGGMDFYDVSUVDGSNLPSSGAAAAPD GTPPASSLAEFTLLDSMMDFYDVSFVDGFNIPDSVYPSCGN
 GRAPNT LAAYS LLNQRNNDVFYI SVVEGFNDPMEFSVVNCS
 GAPPATVVEDTIAKNS QDFYDVSNVDGFNVPVSVVPQGGC


 GRPP P NTLAAE Y A L N Q F N N D F F D I S S L V D G F N V P M E F S P P T S N G
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## UniRef90 M4CHJO UniRef90-B9H178

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UniRef90-E1ACG9 UniRef90-A0AO22RM84 UniRef90_MOREW2 UniRef90-C5XN52 UniRef90-UPI0002C365BC UniRef90_13RZK9 UniRef90-A0A022Q8G1 UniRef90-11H7U9 UniRef90_O5RZ93 UniRef90-11R971
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CSVAGCVADLRPKCPRELALIUKSNSCRSACDVFDKDEYCCR CASTGCISDLNTQCPQELR
VGCGVAAADLNVCCPDKKRGRVVGCKSACDAAKTDRYCCT CKSSGCSADLNGECPKGNQETVACMSPCMAYNNNPQYCCT CQSTGCAAELNRRCPSELRAGEGKCRSACEAFGNPEYCCS C LLT GCVMDLNAACPAAVACKSACEAFGTAEHCCHGEHGN GGGNCTTTDLNSECPSELREKSVACKSACEAFGDAQYCCS CQYAGCVNDLNTNCPAELQMTDSGCKSACAAFNTPEYCCT $C T P V S C T A N V N A V C P Q E L Q V K G S D C K S A C D A F N Q S Q Y C C T$ CKMGSCAANVNLVCPSELGKIGSDCLSACVVKGEPQYCCT
$C K K V E C F S N L N P R C P K D L Q V I N N G C K S A C T A Y N T P K Y C C S$
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 CKKDGCTSNINADCPSQLKVTDGCK SACAAFNTPQYCCT CSVSGCDGDL RQNCSSGLAVKSDGCRSACDAFNTDEYCCR CQYAGCVADLNGNCPPELQVTDSGNVVACPEFCCTGDHAT CKP $\square$ K CVVDI DKKCPSELILNDSSNNPCCVGLYVDED DRG CAATGCVAELNGACPADLRVPAVACRSACEAFGSAEYCCN
 KGRDTCLSDINSKCPSELKVKGGCK SACARYNTPQYCCT

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 CTSTGCVVDLNGACPSELKVTGVACRSACEAFREPQYCCS CRGDQCSAN NGQCPSELKAPDGCNN P CQTVKCLTDLNQHCPMKKNDTVIGCKSACLAFNKPEYCCT CGDASCETDINACCPSALEVRAGGCKSACLAMQSAKYCCT CRSTSAANVNAVCDSKLEVVKGSGCKSACLAMQSAKYCCT CTAAGCDGDLRERCPSELAMKVGGCRSACDVFDTDQYCCN CGVAACEADLNQSPEYCQGKVVGCKSACLATNSPKYCCT CSKVGCTADI NGQCPQALKAAGGCNN PCQVFKTDKYCCF CQTVTCAANINSGCPSELVVKGPNCKSACVAFNEPQYCCS CNATGCCPKELRGGGGVVACRSACEAFGLDEYCCSGEYAN GKGPSCKADVNAKCPAKLKVPGGCASACEKLGGDTYCCR CKPSSCPANVNNVCPAELQVKVIACKSACLAFNEPQYCCT CTDQGCDKDLKRCCDHNAKGEVVACKSACLAFDNDKFCCR CSVAGCDADLRTNCPAELAVKGGGRNVACDVFDTDEYCCR CTAPACKADVNAACPAELKVNSGCNSACNVFQTDQYCCN GRGPRCGVDITARCDPELRVPGGC ASACGKFGGDVYCCY CNSTSCASNVNTVCPPKLSVKGSDCKSACMALNQPQYCCT C AAAGCVVDI SQRCPAELRCRSACDAFRKPEYCCSGAYCS CAAAGCVVD SQRCPAELRCRSACDAFRKPEYCCSGAYAS $C K Y A G C V S D L N E D C P S E L R D M D P N N N G S C A A F N S P E F C C T$
$C G D G G C L K N L K S W C P E N K G E V V A C K S A C L A F N T D P F C C T$ CNATGCTADLNRSCPRELQVDRGGCRSACEAFGQDQYCCT KGGPRCRADVTAQCPAELRATGGCNNPCTVFKTDQYCCT CVPTGCMVDLNGRCPAELRGDGVACKSACEAFGSAQYCCN

 CKTAGCVSDVNAICPKELQVTGPSCKSACEAFNKPEYCCT
 CRYAGCAADLNAACPEELQVRDSGCKSACAAFNTPEFCCT CSTAGCDRDLRQSCPSELAAKVIACRSACNVFNTDEYCCN CSVAGCDGDLRDTCPAELSVKGPSCRSACDVFNTDQYCCR CKTASCPKNVNKVCPRELQKKGANCLSACVAFQKPKYCCT CGVAACEADLNVCCPVMKQGKVVGCKSACLAANSDRYCCR SCHADSCAADINAKCPAALKVNGGCVSACIKFNTEQYCCR CSAAGCDGDLRRTCPPELAVKAGGCRSACDVFDTDRYCCR CKAVRCVSDUNRGCPDGLQVRVVACMSACMAFNQPEYCCT CAPTGCLVDLNAACPADLRDDVVACKSACLAFGSPEYCCS CSNDQCSSDINLQCPQELQLKTYDCKSACFAFNKPEYCCT CTPAGCVVDLNKTCPEDLKTFSGECSSSCQESGAPEDCCT CISSRCVVDLDKTCPNDLKKLVGGCTSACHKYKTDENCCS $C S D A G C D R D L R Q N C P P E G R T T V M A C N S A C T V L N T D E Y C C R$
$K K S S C P T N S I N T D C Q K K Q V K D G S K S A C T V F N T D R C C T$ CPTVECAKDINSHCPAKLRGKGVACKSACEAFGDAKYCCS CAAAGCAADLNAMCPAELRAGGGACRSACDAFARPEYCCT CGAPECSSNLNDMCPEVLQFSVIGCNSACNAFSEPKYCCT CRGITCNADINGQCPSELKTDGGCNN PCTVFKTDEYCCN CRVTACGADVLGDCPPELQVIGVACKSACLRFGTPEFCCT CNVQGCFKDVKSLCPREVACKSACLAFDLDNFCCRNDYGS
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82

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 $P Q A C R P T P Y S E A F K S A C P A A Y S Y A Y D D A T S T F T C A G A D Y$
$P Q T C S P T Q Y S V M F K N A C P T A Y S Y A Y D D A S S T C T C T G S D Y L ~$ GNNCSPTNYSKFFKQQCPQAYSYAKDDATTFTCPSGANHN
$G A Y C D P T N Y S R S F K Q V C P A A A S Y A F D D S D S I I T C S A S E Y V V$ PQTCSPTQYSVMFKTACPTAYSYAYDDASSTCTCAGSDYL PENCNRT $\square$ YSKTFNHECRDAYSYAYDN KYFTCPGSSNFV PNTCRPSAYSEFFKAACPRAYSYAYDDSTSTFTCGATDYA GDHCSPTAYSADFKNACPSAYSYAYDDASSTCTCSGSDYM
$P$ STCKPSAYSQFFKNACPRAYSYAYDDATSTFTCAGGDY T GNNCSPTNYSKFFKGQCPQAYSYAKDDATTFTCPSGTNYK PDKCPPTDYSR■FKNQCPQAYSYAYDDSSTFTCSGGANYA PMTCDPTNYSRSFKQVCPAAYSFGYDDPT

RNHCPNNEYAARFKDSCP

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120 GKPPATLAEFTLNGATNDFFDINSVDGYNIPVTIVPHVGK



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 A APPATLAEFTMGSGGMDFYDVSLVDGYNLPMAAAAAGGS A T P P A T L A E F T L G S G G LD F Y D V S L V D G Y N V P M L V V P Q G G N


 GATPATVVEMTLGTPQMHFYDVSLVDGFNAPVSMTPVGGGG
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 GS G P A T LLA Q V S L H H E D Y S S Y G V S L V D G F N L P A T V T P P H E G K AAPPATLAEFTLNGAGGDFYDVSLVDGYNLPMLITPXGGN G S S P V S A A P P V T L A Q F S M D G S G G M D Y DV S L V D G Y N L P MVV VR QE G N GVPPASLAEFTLGDGGKDFYDVSLVDGYNLPVLIDPNDGC




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| UniRef90-T1LHD7 | V V |
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| UniRef90-A9SI63 | 1 T F CPT |
| UniRef90-E9LTM2 | I |
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| UniRef90-K4D3R8 | $\checkmark$ T |
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| UniRef90-111S93 | \|V T |
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 ATLNIRNNCPYTI WPGTLTGGGQLPNTGFELAPQASNSIN LIVVNNCKESVWPGINGGHPSPKHGGFHLGSGEEVVI VFTLRNNCSHTI WPATLSGNSAAAGGGFELSPYATVSF FHVQNRLGYRVWVGINPGKGTPEGGGFALNNGQRRTVR
 AVLTMKNNCGFE: WPGTLTGSPVLVPTGFHLAPQASKTIN
A

FVFTNNCHEVLYPGVLTPATAQPTTGFELQPGASAAYD
VRNQCSFIVWAAARPGGGRRDD
QTKIYNKCPFTTWAGLLGGPGNPEGGGFRLNAGEARSMY
AAHFD VNVCQETIWPGIITQ
AHFDIRNNCPFTVWAAATPG
LTLVNNCPFT YAAATPG GGRQLNRGENWGDD

TLTVVNNCKEPVWPATITGSGNFHGEDFKLEPGQTADYNAATLALYNRCAETVWPGI QPGKELLARGGGGROL GQSASYN GGRQL AQLILVNNCGESVWPGILGGAGQ TLTVNKCPFTHWPGLGGPGNPAEGGFTLEEEESRDUE ATFEIVNWCPFTVWAAAVPG GGRQLDRGQTWVLD LTLVNNCPFPVWPATNAGHPVLERGGFYLHSLTHRSFP SSFSFTNSCQYPVWVGVLHGSPALARSGFYLAPSGTYHAA T $\square T V K N N C N Y T I W P A V F T P P G H P A P T G W K A P P G H K K S F K$ RNNCPYTVWAAALPG VNF\|IKNNCRDPIWPGALTGAGPПSTTGEKLDPGVWRUG 7 KVYNKCPFTTWAGTLGKPEDPAGGGFRLNAGETKSVF
 TDTVVNNCPHKIWPATQSGAGQGAPTGFRLASRGTKKFD TFTVRNNCPFTVWPAHFTNPDSPQVAGWDAPARSQKSFQ $\square T V V N H C P F T V W P A D N A G H P V L E K G G F A D P T N T H R S F S$ ASF TFTNACKHAVWVGA HGSPPGARSGFY DAPSATSSMD ATFDIVNQCSFTVWAAAVPG

RCPETIYPGVLPGKPGFPTTGFALPPGPDAAFP FTVTNSCSYPVWPGINAGTPPPPTTGFALSPGQSLPV TFTVQNFCQFTI WPAINAGSSALSATGWEAPAGSKVSFT
 NKCAYTVWPAALPG $N$ ASSFTIGGTVLNTGDSWFDD FTVRNACSFTIWPAAFVSDGSHRDGGGGASKYFSWIRG


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UniRef90 ${ }^{\text {Q949L8 }}$ UniRef90-Q949L8
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UniRef90-LOAVH1 UniRef90- Q7F267 UniRet90-UPI0002C2E881 UniRef90-A0A022RRP4 UniRef90-B9SRI3 UniRef90-K4NPE1 UniRefofo-F5H9M3 UniRef90-Q8GVI7
UniRef90-U5CNN8 UniRef90-Q9N326 UniRef90-E3P7J7 UniRef90-UPI000234FB56 UniRef90-C68SM7 UniRef90-D8S906
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UniRef90
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UniRef90 UniRef90-C5WQD8 UniRef90_L8WFG8 UniRef90-L8WFG8 UniRef90-UPI0002B45527 UniRet90-F2E306 UniRef90-A0A022R378 UniRef90_K4Q0G5 UniRet90-13SX98 UniRef90-B6TTJ7 UniRef90-MOTIG3 UniRef90-UPIO0023B2844 UniRef90-W9T0K2
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As APSHPWSGRIWARTGCTGAGAQLHCATGDCGGRQCAGLG
THDG WGGRFWARTGCNFDGNGQGPCETGDCGNK LAPAGWSGRVWGRQGCSFDAAGRGRCATGDCGGALYCNGA VKDEKWSGRI WGRQGCSFDNDGHGNCLITGDCNEMLCRGQG VDHSWKSARI WARTGCDEN APNAHWSGRIWARTGCNY QHGKFYCATGDCGGRDCDGLG VNPGTTGGRIWARTGCSFDGSGSGSCQTGDCGGVLACQGY APAQHWSGRFWARTGCAVAHGKFSCVAGDCGHRLESNGLG VPSNWVSGRHWGRTGCDFSKKVPGQCKTGGCNGGLKCGGT VTQGPMTARDWARTNCNFDANGNGRCLTGDCNGKLQCQSN GVPGTWAGRHWPRHRCSTGASPAGSCASGDCGGRECNGAG VPDDWTAGR| WARTGCVYDQDGDFQCLTGQCNGDVTCKNS AP PAPWTGRGWARTFC
 DVPDTWSGRVWGRTGCTTDASGKFVCATADCGSGQCNGAG LPNSWSGRIWARHDCSFSDQNFTCDSGDCKSDECNGAG APTQHWSGRIWARTGCTY ANGRFSCATGDCGGRECGGLG VPDRWAGRFWGRRNCDFSKQGPSSCATGGCNGCDARTGS VNPGTTGARIWARTGCSFNGAGRGRCQTGDCGGVLQCTAY APSSTWSGTLWARTGCVADPTGRFSCATADCGTGDCQGRG VNPGTTGGRVWARTDCSFDGSGSGSCQTGDCGGLLECQGY PLAAGWSGRLWARTDCAYNNS SFSCVTGDCGTGTCSGHG VPDNWKSGRI WARTGCDFTKNAGESCVTGGCQGECDARVV GAPGDWSGRIWARTGCNFNTNHKPACETGDCDGKECEGTV
PSSGAWSGNFWARTGCAVDSTGRILACATADCGTGDCAGRG VPAGTRNGRVWGRTGCGFIINGTGQCOTGDCGGTLVCGKV ASNAANHERKQGRSDCNFSVNPPNSCDTGGCNGCDNTTGT ASNAANHERKQGRSDCNFSVNPPNSCLTGGCNGCDNTTGT EMPERWSGRVWPRQGCHFDQKTGGSCQTGDCAGLQCRGTG PSSGSWSGTFWARTGCAVDETGRILACATADCGSGDCDGRG ПPPYGWSGRFWGRTGCNFNDSGVGPCDTGD ASPADCGGKL VPDTHWAGRAWARTGCSTANNKFSCDTGDCGNSDQCHGAG A PAGWSGRMWARTLCAADATGRFSCATGDCGSVQCNGGG LAPAGWSGRFWARTGCSFDGFGHGSCATGDCGSGQVECK AT QGWSGRFWGRCSCSFDNSGXGSCDP


UniRef90_UPI0001B671B6 UniRef90_O949L8
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U4D617 UniRef90-M4D617
UniRef90-A5BPC6 UniRef90-B6THQ3 UniReffo-MOT138 UniRef90 UniRef90-I1GVA8
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UniRef90 MoTIG3 UniRef90-MOTIG3 UniRef90-UPIO0023B2844 UniRef90 W9TOK2
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GATPATVVEMTLIGTSAMHFYDVISLVIDGFNAPIVSMAAVGGG GRGPNTLAEYALKQWNDDFFDISLLVGFNVPMSFLPTNGC GRAPNTLAEFSLNQNNNDFFDVSNVAGYNVGDDFSPTTGG AAPPASLVEFTLGSGGMDFFDVSLVDGYNLPMLIVPQGPK AKSPNSTAEYALNQFSNDFWDLSM1 EGFNIPMTFAPTNGK RFPPATLAEFTVGSGNDDTDDYSUVDGYNVKMGAEPGTGD GEPPATLAEFTLGDAGKDFYDVSLVDGYNLPVLIDVGIGC RVVITTLAEFNLAATPEDYYDVSVINGYNLPLLVTPENEK GQPPATLAEVTLSPNGQDFYDSNVDGFNIPVTMEPQGG AAPPCSLAEFTLGSGGNDFYDVSVVDGSNLPMVQGGGGSG GEPPATLAETTLADSDTPFKAAS GAPPATLVEVNLHADQSKSYDVSVVDGYNLPVAVWTRPGD GSPPNTLAEFALNQFNNDFFDLSLVDGFNVPMDFSPTSGG PEACCTRDFNCKPTVYTQNFERACPLAHTYAYDDNNSTVT PEACCTRDFNCKPTVYTQNFERACPLAHIYAYDDNNSTVT VSLVEFTLASNKQDFYVVSLVDGFNLPVLVTPQGGG GVPPASLAEFTLGRAGQDFYDVSMVDGYNIPVFIQPHSGC

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GSPPATVVOTVGNNKDFYDV
GAGAAPPAETLTL




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UniRef90-E3P7J7 UniRef90-E3P7J7 UniRef90 UPI000234FB56 UniRef90_Q68SM7 UniRef90_D8S906
UniRef90-V4SC78 UniRef90-M5WT96 UniRef90_B9HPJ3 UniRef90_A8NZU8 UniRef90 UPI00042B3AFF UniRef90_K3XLA5 UniRef90_LOATL9 UniRef90_B8B1U3 UniRef90_K7MT70 UniRef90_H2VJS6 UniRef90_Q41350 UniRef90_M0U3M6 UniRef90_D2KU75 UniRef90-I1PIZ5 UniRef90_UPI0004414938 UniRef90_S8C862 UniRef90_UPI0002B49C1F UniRef90_C5X4E4 UniRef90 E6R6G2 UniRef90 R4KY79 UniRef90_E8ZB60 UniRef90_E3MSC3 UniRef90_H2WRC4 UniRef90-A0A059C465 UniRef90_MOSCJ2 UniRef90 ${ }^{-}$K4BNN8 UniRef90-M0S8G5 UniRef90_E3L7F9 UniRef90_M4D617 UniRef90_A5BPC6 UniRef90_B6THQ3 UniRef90-MOTI38 UniRef90_K4A2D1 UniRef90 I1GVA8 UniRef90_M5C643 UniRef90-K4BBQ9 UniRef90_C5WQD8 UniRef90_L8WFG8 UniRef90_L8WFG8 UniRef90_UPI0002B45527 UniRef90_F2E3U6 UniRef90_A0A022R378 UniRef90_K4Q0G5 UniRef90_I3SX98 UniRef90_B6TTJ7 UniRef90_MOTIG3 UniRef90_UPI00023B2844 UniRef90_W9T0K2

CGADVNVVCCPSALEVRDREGRVAGCRSACRAMGGDRYCCT NRGPTCAADLNGPCPGPLRANGGCNN CRG GRCSANDVGECPSQLRAPGGCNNDCTVFGTEQYCCN A GCGDANVCCPSTLVVKRRGKVVGCKSACLAAKTERYCCT CMATGCLVDLNGACPADLKVMSVACRSACEAFGSPQYCCS C HAVVQCTMAN NGECPN QLKVNGGCNN
 K R A G GCFKD N NEFCPGDLA I K K D GCKS GCLLAYNND QECCR




 CRGDRCAA DI N G Q
CLNSTA YVIT F F ACKSACRQSASDENCCC TNYFKY

 K RA GGCVKKDDNAECPAALSVVKGHNCKS GCLGYNTDDQECCR
 C

A

C
CRTSTCRANVNANCPRELLQVTGAGCMSACTKFGEPRYCCT
C Q AVT CA A NI NSACPNELVVVGVGCK GACDAFNTPRYCCCY

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


## C

 $C$$C$
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$C$ GGGDNRVVGCRSACAA YGA PQYGCCTG Q C GVIA S CEVDLNDVCCPVKDNGKVVGCKSACLAMQSAKY C C T K RAGRCDKNMNDECPEDLAVTGRDCKSACLAYDTDEYCCR CPVVGCRANLLDESCPAVLQFRSHGCKSACEAFKSDEFCCR C S AI R N C
CPVVGCRADLLATCPQNLQVRSPPCKSGCEAFGTDELCCR

 CK S VAC G R S VN P V C P P E MA VK S P R CK S A C MA F N K P E Y C C S
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 CSTTS CAGNVNSVCPSELAVKKGDCKSACLALDQPQYCCT GQCGRAGCAA
DCG\ADCVVCGEQVDLEVRDQNETCKSGCLAFNRDELCCT GQV V G CKS GCQAFGTDELCCRNMYNS
CPSPSCRDDLNPGCPEDRMCLSACQANLDGNHGNSANCCT

 CRPAACAGDVNAVCPGDLRVGVVACKSACDXYGSARYCCT | $Y$ | $C$ | $C$ |
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 C L I R G C T K N L K D T C P P E L Q V QV V A C K S A C L A F NL D S F C C R CHAA A C A G DVVNAVCPS DLLRVVSGGSCKSACNA YGSAR YCCT GGASRCARGAGPSCPVQE TTFDCPSEQRRVAGCGNPCDGQ
 C GVAA CAA DLNRCCPVKREGKVVGCKS GCLAAKSAKYCCR CQAAACAGDVNAACPSDLRVLSGGCKSACNAYGSARYCCT CTSVGGCVEDLDGMCPAELKRNDGGACRSACNAFNTADVHCCR
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CKAVTCVSDLN QRCPKDLQVTVVACNSACMPFNKPEYCCT


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UniRef90 UniRef90-D7LK3
UniRef90-I1L923 UniRef90-Q68SM6 UniRef90-I11S92 UniRef90-E3NP84 UniRef90-Q14US7 UniRef90-W5A8T9 UniRef90-MOTBU2 UniRef90-O49728 UniRef90_O49728 UniRef90-K7L795 UniRef90 - Q19874 UniRef90-A0A022RNM6 UniRef90-UPIOOO42B6059 UniRef90-K7LRK1 UniRef90-K3ZZX2 UniRef90-K4AMQ5 UniRef90 LOAVH1 UniRef90_UPIOOO2C2E881 UniRef90-A0A022RRP4 UniRef90-B9SRI3 UniRef90-K4NPE1 UniRefofo-F5H9M3 UniRef90_O8GV17
UniRef9O-U5CNN8 UniRef90-Q9N326 UniRef90-E3P7J7 UniRef90_UPI000234FB56 UniRef90-C68SM7 UniRef90-D889066 UniRef90-M5WT96 UniRef90-B9HPJ3 UniRef90-A8NZU8 UniRef90-UPIO0042B3AFF UniRef90-K3XLA5 UniRef90-LOATL9 UniRef90-K7MT70 UniRef90_H2VJS6 UniR Refo -Q41350 UniRef90_M0U3M6 UniRef90 D2KU75 UniRef90-I1PIZ5 UniRef90-UPIOOO4414938 UniRef90-S8C862 UniRef90_UPI0002B49C1F UniRef90-C5X4E4 UniRef90-E6R6G2 UniRef90_R4KY79 UniRef90-E8ZB60
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UniRef90
M4D617 UniRef90-A5BPC6 UniRef90-B6THQ3 UniR Refo-MOT138 UniRef90 ${ }^{-}$K4A2D1 UniRef90-M5C643 UniRef90 ${ }^{-K 4 B B Q 9}$ UniRef90_C5WQD8 UniRef90-L8WFG8 UniRef90-L8WFG8 UniRef90_UPI0002B45527 UniRef90-F2E3U6 UniRef90-A0AO22R378 UniRef90_K4Q0G5 UniRef90-13SX98 UniRet90-B6TTJ7 UniRef90-UPI00023B2844 UniRef90_W9TOK2
UniRef90_Q9SPH1

GEYCK P T $\square F$ S H LF K A DCPKA Y S FAF D DA S G LIKT CKA S R Y A PNTCRPSTYSQFFKSACPRAYSYAYDDSTTFTCAAGTNYA $\square G Q C G P N D L S R F F K Q R C P D A Y S Y P Q D D P T S F A C P S S T N Y R$ GAHSKPEQCYKWWK DSCPYS YVYAY DESSSGFTCEKMVVDYV GEFGTPDRCRQQIFKDACPTAYSYAYDDGTSTFTCKNANYV GNYCK QTNYSQTFNNVCPRAYSYAYDNSSTFTCQYSSNFV E ETCPPTNYS QDFEEQCPDAYSYAYDDSSTFTCTNGPD YA RASSWPRNYPAFFKNLCPDAYSYAYDDRRSTFTCEKT GYR

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 KQTCKPTPYVQNFDRACPS

 GAYGTPG

, PDKCAPSEYSRLFKA QCPGA

GF GQEDLY GNSRACFKTNRCPDA
PDKCPPSQYSKFFKDKCPQAYSYAYDDSSTFTCTSGASYQ


 K S S T W K P T GAFCLASNYSKSFKQVCPAASSYAFDDRT S GRCEPT DLSRFFKMRCPDAYT P QTCRASSFSEFFKHACPATFTYAHDSPSTHECSSPRELK GQFNTPVQFYSYEKNNCPRAYAYAYDEPSGLTCPGSACYT

 RS Y CKP T L F N HLLFKA IDCPKAYMSEMDEAPSFA
GEFRTPSKCRQQFKDACPTASSYAFDASSSFTCQNSATYV NHYCKPSSYSQFFKHACPATFTYAHDSPSMHECSSPRELK P DAYSYPKDDATTFTCPGNGDYK
NHYNSPSSFSEFFKHACPATMTYAHDSPSMHDCSSPRELK G A Y C G P T D Y S QVFF K A A C P A A Y S Y A Y D D S S T F T C F GA S S Y D
T C P A N K V GPTCGPTNMSRFFKARCRDAFTFPMDDPTTFTCPMGTNYN GDHCPPTNYSRDFKRQCPQAYSYAYDDTSTFTCTGGANYA
 NHYNSPSNYSQRFKHACPATFTYAHDSPSMHECSSPREGK

 GAYCPPTKYSK $\square F K D Q C P Q A Y S Y A Y D D S S$

P Q T C K P S $\square Y S L T L K K L C$ PRTCRASSYSEFFKHACPA
 NHYNSPSSHSLDFKHACPSTMTFAHDSPSMHDCSSPRELK SGSCGPTDYSRYFKTRCPDAYSYPKDDTSTFTCPGGTNYD GQMCGPTNYSQVVFKSACPSAYSYAYDDATTFTCSGPS SYS
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 S S S C GPNNGTEYFKKACPQTVVYPRDTSNTTFCPA GTSYE


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 PQTCRPSAYSELLFKSACPQAYSYAFDDATTFTCAAAQSYA



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| UniRef90-094948 | V T |
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| UniRet90_B9HTG2 |  |
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| UniRef90 A8XX32 | V Q |
| UniRef90 M5W632 | 1 TFCPS |
| UniRef90-D7LK34 | 1 TFCPS |
| UniRet90_11L923 |  |
| UniRef90 Q68SM6 |  |
| UniRet90-111592 | 1 EFCPS |
| UniRef90-E3NP84 | IV Q |
| UniRet90_Q14US7 | $\checkmark$ T |
| UniRet90 W5A8T9 | VTFCPS |
| UniRef90-M0TBU2 | V VF C |
| UniRef90_O49728 |  |
| UniRef90 O49728 |  |
| UniRef90-K7L795 | T ${ }^{\text {T }}$ |
| UniRef90-O45533 | VQF |
| UniRef90-Q19874 | VQFC |
| UniRef90_AOAC |  |
| UniRef90-UP10004 | 1 T F C P |
| UniRef90-K7LRK1 |  |
| UniRef90 K3ZZX2 | V |
| UniRef90_K4AMQ5 | T |
| UniRef90 LOAVH1 | VF |
| UniRef90-Q7F267 | 1 TFC |
| UniRef90_UPIO002C2E881 | I T F |
| UniRet90_A0A022RRP4 | T |
| UniRef90_b9SRI3 | $\checkmark$ A |
| UniRet90_K4NPE1 |  |
| UniRet90_F5H9M3 | VEF |
| UniRef90-Q8GV17 |  |
| UniRef90_U5CNN8 | $\checkmark 1$ |
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| UniRet90_UP1000234FB56 | A |
| UniRet90_O68SM7 |  |
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| UniRef90-M5WT96 |  |
| UniRet90_B9HPJ3 |  |
| UniRet90 A8NZU8 | T |
| UniRef90 UPIO0042B3AFF | $\checkmark$ |
| UniRef90KK3XLA5 | $V$ |
| UniRet90-B8B1U3 | $\checkmark$ VFCP |
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| UniRet90 D2KU75 |  |
| UniRet |  |
| UniRef90-UPIOOO4414938 | $\checkmark$ T |
| UniRef90_S8C862 | VF CP |
| UniRef90_UPIO002B49C1F | 1 TFCP |
| UniRet90-C5X4E4 | $\checkmark \mathrm{V}$ |
| UniRet90_E6R6G2 | VEFCP |
| UniRef90 R4KY79 |  |
| UniRef90 E8ZB60 |  |
| UniRef90-E3MSC3 | VQFC |
| UniReef90 H2WRC4 |  |
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| UniRef90 Moscu2 | $\checkmark$ T |
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| UniRef90 MOS8G5 |  |
| UniRef90-E3L779 | $V$ |
| UniRef90 M4D617 |  |
| UniRef90-ASBPC6 |  |
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| UniRet90_K4A2D1 |  |
| UniRef90 11 GV A8 | V |
| UniRet90-M5C643 |  |
| UniRef90 K4BBQ9 | 1 T F |
| UniRet90-W5FJF7 |  |
| UniRer90-C5WQD8 | $\square$ |
| UniRef90-L8WFG8 |  |
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| UniRef90-F2E3U6 | TT F C P |
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| UniRef90_W9T0K2 |  |
| UniRef90_O9SPH1 | V I F C |

UniRef90 A0A022QIF1

## UniRef90-B9SZE5

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1 T 10
10

 LTLVNNCPYTIYPAINSGSPVLEKGGFPLTTGTHRSFP | $V I T L Q N Q C G Y T V W P G T L S G N G P L$ |  |
| ---: | :--- |
| $F$ | G | TFTVKNKCSYTVWPATYTDKSSPVPTGWEAKAGSEVSFN TFTVTNNCSYTVWPAI FTDPNVGHPTGWEAPPRSSVSFM TFTVTNNCAYTVWPA VFTDPNVGSPNGWEAAPGNTVSFS ATFNIKNNCPYTVWPAATP ATFTLKNNCPYTIWPGTLSGAALLGGGGFELSLNDTAS

NNCPYTVWAAASPG
GGRRPDRGQSWTLN TFTVYNACPFTI WPA $\square$ NA GTSVPSENGWEAPAYSKRAFT

 VIFEI 1 NREPGPVWVGINPGHPHLNGGGFVLNQGQVVTVS $L T L V N N C P F P L W P G U N S G H P V L E R G G F Y L P A L S H R S F P$
 MTLVNNCPYPIWPAGNAGHPVPERGGFYLSSGSHRSFP

VIT K N NCPFTDWPGDNPGHEHLGNGGFS LGSQKTHTFN FRITNNCSFTVWPGINPGHKHLENGGFTLDPYRTH LV
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 VQLEIVNACDHPI WPA LLPGHPSLADGGFFLPSGRS SIL $V F T I I N Q C K T D I W P A V T P S G G G A S D G G F L L R A G Q S M V F T$ TIT MNSCPTTIWPGASEGHDVLEQGGFALESGKSRSFS
 TFVVYNGCPFTVWPAIFTGSGTAPSTGWEADAYTDVTFS $\square T \| E N K C D Y T V W P G F S N S F D D \square G T T G F A L E K G E S R V I L$

$$
F E \square R N S C P Y T V W A A A L P G \quad G G R X L D Q G Q T R N L S
$$

TFYVKNKCSYTVWPA IFTPGNSPAPTGWEAPPNSLWRFT ANFDVINRCPYTVWAAASPG

GGRRLETGQTWSLK $T I V V Y N N C P F P I W P A V L \quad G P G N P E G G G F R L D A W T A R N L N$
 TITVVKNSCKDTI WPAMFTQDPSSQAPT GWVQKPGEVVSFA ATFEI RNQCPYTVWAAAVPGGGRRRLG

FTITNKCPY TIWPA ISNYLK P I GP G G WEAK P G T S K T V T TFTVY NACPFTDWPAVFTGSAVPSETGWEAPAWSKRTTN FMFTSNCRDVI YPGVLTGSGRPPXPGFELQPGATADYA MTVKNNCDFTVWPAI FTGDSPDHATGWEAAAGSTEQFE IEI YNRCPFPVWPGIV GPGNPE GGGFR LENEQSRKDS
 P G I SA GE K LL A G G GF E L P ANK S R T IQ
N NCPFT IWP A NA GHYVVEKGGFABLET LQHK SFA T F T IT N N K C S Y TVWP GI F S G S A A L S T T G F S L E K N E S R T LT T
 MVNRCS YTVWPGALPG
 A


M D P G Q Q WV ID
TFTVK N NCAYTVWPADFTDKNVGSSTGWEAAPGSSVVSFS $\square T$ Y N K CP F II WP GI Q GPGNPSEGGFT LNS GQSRRDI


 F E I V A RLDI TNNC $P$ L H R E GRCRSRAA G GS L
 $V$ K N N C GYTVWGAATPGGAKELP ANGGSWTFN TI ENKCNHTVWPVIYSWNS QVSPTGFSLTRGEARADQ SFTVVNKCSYTUWPALTVGAGPSHPTGWEAPS GNSVTMS TFTVVNPCPYNVWPAA VVPVGGGRRLDPGQVWSLD




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50
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70
$1 \quad$ PTGWSGRFWARTGCSFDPS QNGNCATGDCGGFQCDDDG
 A PA GWS GRFWGRTDCSFDGSGTGTCVTGDYPS GAQFTVA APAGWSG VPD GWKSGR $\quad$ WWRKDCDFSKNPPNSCPAGGCNGCDAST $V$ PDNWAS GRI WGRRDCDFDANGNGTCVDGGCNGGLVCDP H
 NAPSTWSGRMWARTLCTTDSTNNFTCQTGDCGSNKCLGGG VAPGTAMARDWGRTNCNFDSS GRGRCATGDCGALECKG W $V$ P D D WK A GRI WGRTMCDFSKNPGSSCDTGGCNGCDN KTGV
 TSDD WA GRII WARTNC FPNVPKLAKIWARTNCTFDSSSGQGSCE
 VA A GTKQARIWGRTGCSFDAGGRGRCNTGDCGGLLNCQGY


 YASTGWSGKFWGRPNCQFDTVGTGCCETGDCSNA $\square G C N S T$ A PA GWS GRDWARTGCVVDAD GA GVCQTGDCGGRECRDAG
 $V P D A H W S G R V W A R T G C A Y S G T A$ G $\operatorname{V}$ G S CAS GDCGGRQCN GA G

 VANPWNGVVWARTGCSFS GEKGSCLTGDCDGKQCNGTG
 VAAGTKMARI WGRTNCNFDSSGRGRCETGDCNGGLQCTGW ASPL GS GA I WGRTMCS R NS T GK F S C A T G D C G S GEVIE C A E VS SNTTQGRF

 DLPSPWS GRFWGRTGCSNN NGKF $\stackrel{N}{\mathrm{~N}}$ VPDVWKAAR】WGRTHCNADGT
ARAGTTQAR
 TS D D WA GRLWGRTNCTE DDTGRRSCDTGDCGS GK DE CPA
 $V P D N W T A G R I W G R T G C D F S S T Q D Q S C A T G G C N G C A T E G G T$ $V E N D W E$ GVI WGRTFCDRRMR CR CNTGDCGNRQCNGTLL $V$ PDNWTAGRIWGRRDCDFSTNPPNSCVDGGCNGGLDCTQP AS P GDCGGKLKC G GA G GSPPATL LPLLWS GVFWSRHGCTFDKYGRGRCTTGDCGGYSCNGSG
 AADD WGGRFWSRTWCYEDENNH CYTGDCGNKECEGAG VTA GTPAARDWPRTGCSFDGAGRGRCAT$\quad G R L R R R A V$ $V$ P D D WGS GRIWWARLECDFSNSSTGTCLSGSCS GGLLECTAP A P A GWS G
VP D N WTA GR $\square$ WGRRECDFSTNPPNSCVDGGCNGGLLCTDP YGPTGWS GRFWARSG CNFNGGKGTRVV
VP NNWQA GR IWGRRDCDFSRTPPLTCAS GS CNGGLETCST IA MASSSARVGENP
PAPA GWSGRIWARTGCDFSGAGGAAAQTGDCGGRECGGTG
 PVTFS GRI WGRTGCNFDKNGNGSCLTGDCGPSLKCTGT VPA GTTGGRVVWARTGCSTDGSGNGRCQTGDCGGVLRCAAY



 $\begin{array}{ll}A & A D D W A G R F W P R T W C D P D T Q Q H \\ V & P A G W G G R V W G R T G C S S S A S G A G H C D L S G D C G G G V F Q C K G A\end{array}$
 APSHHWSGRIWARTGCTY $\square$ WGKFSCVT GDCGGRECS GS G



 PAPA GWSGRIWARTGCDFSGAGGAAAQTGDCGGRECGGTG
 YAP Q GWS GRFWGRS GCTFNASGKGSCATGDCGSVECRGAG


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UniRef90 UniRef90-I1J3R1 UniRef90-D3IZ05 UniRef90-J0D8C2 UniRef90-D7LZN4 UniRef90-M4CWU1 UniRef90-E0Z862 UniRef90_UPI00023B25B4 UniRef90-UPI00044082AC UniRef90-K4JIB8 UniRef90-K7HD55 UniRef90-H9BPIO UniRef90-J5T914 UniRef90_B9IM32 UniRef90_M7WU47 UniRef90_B9H114
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UniRef90_S7PVC8 UniRef90_GOP6Y8 UniRef90_UPI000440883E UniRef90-Q84ML2 UniRef90_UPIO004623B0B UniRef90_D8QYU7 UniRef90-D6W9V9 UniRef90-C7PXJ5 UniRef90_A0A059C2H0 UniRef90-F6GV28 UniRef90_A0A022S1N8 UniRef90-H2DQ00 UniRef90_ROFAXO UniRef90_S8EAC8
UniRef90_V4NLE6 UniRef90-I1HBD5 UniRef90-B8B8W7 UniRef90-MOTVNO
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100
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120
GQPPAS|L|AEFS|L|GDGRDDFYDVVYV|DGFNVV|IUY\|YATSGN GATPATLAQFSLHHGHNDFYGVSLVDGFNIPMTVTPHEGK A A
$\begin{array}{lllllllllll}G & P & P & V & T \\ G & P & P & A & S \\ G & A & T & P & A & F & T \\ A & E & W & I \\ G & L\end{array}$


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## A


 GVVP P A T LLA E F K LL G D G G K D Y Y G D V GQPPATMVEMTLGTPSNHFYDVSDVDGFNVPASMDPS GGD

 GQPPNTLAEYALNQYNNDFYDISLVDGFNIPMSLVY


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 GAPPATLAEFAGGDFNGDFFDVSVADGFNLPGLVVPSRQN


RGMDYYDVSLVDGYNLPMAQGGSGGG GVPPASLAEFTLNANNMDYYDVSLVDGFNDPMADDNTAG GVPPTTSAEFTLASSVPDYYDVSDSDGFNLPM QDTNNVK








 GAAPATLAQFTLHHGQNDFYAVSGVDGFNLPMTVTPHEGK

## G




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${ }^{\text {AT }}$


[^0] NGDGLDWYDVSLVDGFNLPDSITNNKG
 GN G Q D F Y D I S SVI D G F N V P P L S
 GASGQDYTDVSVVDGFNLPDRDSNTAG
\[

$$
\begin{aligned}
& \text { G } \\
& \text { G C } \\
& \text { GS }
\end{aligned}
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$\begin{array}{llll} & \text { E } & P & T \\ F & T \\ T & P & T \\ E & P & V \\ T & P & H\end{array}$

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## UniRef90-B9SZE5

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UniRef90 S8FPQ1 UniRef90-MORND9 UniRef90-UPI000455CECC UniRef90-M7ZZH4 UniRef90-V2XDN7 UniRef90-U5D057 UniRef90-I1QK67 UniRef90-D6W9V7 UniRef90-A8NZU7 UniRef90_M1A833 UniRet90_O04363
UniRef90_S7PVC8 UniRef90_G0P6Y8 UniRef90_UPI000440883E UniRef90-Q84ML2 UniRef90_UPIO004623B0B UniRef90_D8QYU7 UniRef90-D6W9V9 UniRef90-C7PXJ5 UniRef90_A0A059C2H0 UniRef90-F6GV28 UniRef90_A0A022S1N8 UniRef90-H2DQ00 UniRef90_ROFAXO UniRef90_S8EAC8
UniRef90_V4NLE6 UniRef90-I1HBD5 UniRef90-B8B8W7 UniRef90-MOTVNO UniRef90_UPI00023C018D UniRef90_K7VW70 UniRef90-C5YSK3
 KTNQYCCTNG
 $C T K V R C S S D I N S K C P A E L R V A D G C K N S A C A A F N T P Q Y C C T$
$C K R G V K R T C D I N G P C P N E L R D P G G C N N P C T V F N N T Q Y C C N$ CPTSDCTNDIGKTCPSELKRGDDGCLSACANPKNSPNCCT $C K T V R C D V N L N$
$N$
$N$ CKTSSCPANI NSVCPAQLQMKGSDCQSACLKFNTDEYCCT CPAPKCVKDLNPGCPAELKPKDGGDGCLSQHADNNPNCCS CRGDRCAADINGQCPNPLRASGG
CPDDGNVI GCLSACMAGI NAQDPSYNCCSGIYNSVQAC
 GGAVVGCKS GCDAFDRDDLCCRG CPEASCPKELNADCPAEDQKKDGDGKVVGCYTSNSPNCCS CLRAGGCFSDINEDCPERMR【TTGRCRSPCAALQSDRECCT $C S V A S C P V D L G P N C P A A L Q G P Y D S T G F P N S A N C C S G Q Y D T$
$C Q T A G C V S D V N A D C P N E L R V T G V A C K S A C E A F N K P E Y C C T$ RAVEEAKQAKHWLAARYIKYVFRPDFHKSLFSSAHCCTN CPVVGCREDLLATCPTQLRCKSGCEAFGTDELCCRNQYNS CTSTGCNT
CKKAQCATQTNSDCPSELQVKSPDCNSACNAFLTEEYCCS GRGPSCAVDI TARCDPELRVPGGCASACGKFGGDTYCCR
 CSQASCPVDLNPNCPSDUAGPTDDGNQADSANCCSGSHNT GARGTPPAHPGLACRSACEAFGKPEFCCNGAYGNPD
CPVAECTVDLNAACPRQLQCLSSCLANLDGRQTNSPNCCT $C P V A E C T V D L N A A C P R Q L Q C L S S C D A N L D G R Q T N S P N C C T$
$C R A L T C N A D I N G Q C P T Q L Q V P G G C Q G P C T V F Q T D Q Y C C P$ CATTGCTADLNRSCPKELQQVDGVDCRSACEAFGEEEYCCT
 CSVA GCNGDLRQNCPSELAVKNNGCRSACDVFNTDEYCCR VRKGGCEADVAGQCPSELRAPGGCNNACTVFKQDQYCCT CSVADCPADLNPQCPDPLKGPTDDGNPQDSANCCSGSHNT SRAGGCVKDINAECPVALSVKGSSCKSACDKYGTDQECCT

 C GVAGCSADLNSKCPWNPRGMAVGCSSPCVAFGADEFCCE CTKCACSVNLDDDCPQEDKIINGECNSACGAFNTDEYCCC GTDPVSQNGCYQGCPGPMQVQVVACTTPCAAFGGDAYCCR CNWVFKCTADVVGQCPAALKVPGGCNGPCPVFKTEEHCWN

 CISAGCDVELNKTCPKNLMIMSGKCSSTCQEFNTPETCCT

 S GTV



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GAHNRPVNYPA $\square F K Q S C P D A Y S Y A Y D D T S S T F T C H S T G Y V$ PQTCNASSFSRFFKDACPSTFTYAHDTPSMHECAAPREDK PDTCHPSQYSQLFKSACPKSYSYAYDDATSTFTCNHTDYT GSHNWPKNYPSYFKAACPDAYSYAYDDTTSTFTCCRGTNYD
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$P D R C G P S D Y S R F F K Q Q C P Q A Y S Y A Y D D S S T F T C S S G A S Y H$ GDFDKPVQYYDYFKDGCPNSYAYAYDESSGTTCTGGSADYT
PDTCFRSHVAQTFKDACPGAYSYRFDDATSFGCQSNAEYLL



GSHSTPVDYPA $\quad$ FKSACPDAYSYAYDDHKSTFTCDAS QYN EHVCPPTSYSMFFKGLCPDAYSYAKDDTSTFTCPAGTNYR SHGTAATDYYSFFKGNCPDAYAYAYDESSGTTCSKNPDYT PNTCKPSSYSQFFKNACPKAYSYAFDDATSTFTCADADYL A ATCPPSGHYDYFKSSCPNSYAYAYDESSGTAYSASTDYT
 PATCRPTAYSADFKTACPRAYSYAYDDGTSTFTCSAAAYT
KSSSWPENYPKFFKDRCPDAYSYAYDDHKSTFTCKAPAYLL $K S S S W P E N Y P K F F K D R C P D A Y S Y A Y D D H K S T F T C K A P A Y L$
$G E F S T P V Q Y Y D Y F K R S C P N S Y V Y A Y D E S S G H T C P T N A D Y T ~$
 GNNCGPTNYSQFFKGDCPDAYSYPKDDTSTFTCPAGTNYQ ADTCPPSQYYDYFKSSCPNSYVYAYDESSGTTCDSSPDYT
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GEFNSPVAYYEHFKGNCPNAYAYAYDDATADFSCDSTDYT KEHCHPNVFSVLFKSCCPAAATYPFDWKSAWNCSAGSDYT K S S D WP VDYPAFFKSNCPDAYSYAYDDHKSTFTCQAEKYR $G Q W A W P V D Y A K V Y K D A E P Y A Y S Y A F D D S A T M S C K G D C D Y R ~$
$S G S C G P T V Y S R Y F N D R C P D A Y S Y P K D D A N T R A C P G G T N Y N ~$ NHYNSPSSFSEFFKHACPATFTYAHD
GAYCKPTNYSRDFKDACPDARSYAFDDASHTDCQRGVSYT EQNCPPNRYSKIFKGLCPQAYSYAKDDSSTFTCPSGTNYV KQNCKPTVYTRNFERACPDAQDYAYDDNSTVTCDNSTDYV SHSTPATQYYSYFKNNCPNSYAYAYDESSGTTCNKAADYT PETCKPTLYS QNFKSACPRAAYSYAFDDSSTGTCANNPN Y V


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| UniRef90-Q75GX3 | V F C P |
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$\square$ F NHCPFADWPGLNPNKA DPENGGFYLDKYHTRVFQ AKFRISNECDSTVWPAIVANST
 A $\square \mathrm{FTLENKCKETIWPGULAGSPVLMNGGVRLNAGEN} \mathrm{\square KIE}$




#### Abstract

TFTVKNNCPFTDWPAT $\square T$ GSALLPQTGQE $\square$ A Y GESQS LD 





TGWEASAWSVRSFN TFTVYNNCPFTTWPATFTGSAVPDPSGWEAAAYAVVSFY
 LTMVNKCDSTIWPGIATQAGGPGTGGFELGTQGKSKDLW $T F T V Y N A C P F T I W P A V F T G S A V P D P T G W E A P A W S V R T F Y$

[^1]VT FHVTNKCPFPVWPAPNSGHPVLAGGGFF LDPGXSKRVD


TFNDHNNCPYT ITWPATNSGDPQLSTTGFALGQGVTSS\} FTIENKCAYTVWPGFLTMTTALDPTTGFSLKKGETRVIN $\square V V H N N C P F T V W P G L F T A P G G P H P T G W V A P P G S S N T V T$



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NTTFIPPNTNAWCPWIKRPDFSPCLSQCAATGRDEDCCV CGVASCPVDLGPDCPAALQCKSACDANLDGDPSNSPNCCT
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CPVADCPVDLGPNCPQLKGPFDSTGFPVGCKSNNPNCCT CPVADCPVDLGPNCPSQLKGPFDSTGFPVGCKSNNPNCCT
$C P T A G C P V D L V A N C P S Q L K C K S A C D A N L D G N P N D S A N C C T$
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GEFCGPTAYSQFFKNACPRAYSYAYDDATTFTCPTAAGYT GNYSTPVQYFSYFKGNCPNALAYVYDEGSTWVCASKPEYT
PKTCKPT $\square F A H \square F K A D C P K A Y S Y A F D E S S S \square N R C R A T R Y V$ GAHNWPKNYPAIIFKQSCPDAYSYAYDDTSSTFTCHGTGYVV
GAFGGPNTC
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GHY
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$P S S G V D F Y S Y F K S N C P N A Y A Y A F D D P T S L R A C D S A D Y T$
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QGPCGPTDNSRFFKAKCPDAYSYAKDDTSTFTCPAGTNYQ GDYCKPGRYSSDMKADCPDAYSFAFDDQSTF $\square V P S G G G W E$ GQYDTAVAYYSYFKDNCPDSYCYAYDESSGTTCTSLDDYT PSSGVAYYSYFK SNCPNSYAYAFDENSGTACNSAANYQ GKYCDPSLYSENAKTVCPDAYSYAFDDTSTF IVPNGGGWE PKKCQPTSYSKVFKASCPQAYSYAYDDATSTETCQGANYL
P S
GSHNTPVQYYDYFKSRCPNSYVYAYDESSGTTCSSAADYT PDSCKPSMYSQVFKSACPKSYSYAYDDATSTFTCSGADYT GSYDEPTKCPRNANTीCPDAYGYAFDDTSTFVIPTGGGWE TQSCGANGDSKFFKQRCPDAYSFPKDDSSTFSCPPGTNYK GQYNTPVAYYSYFHGRCPTAYAYAYDDVNADKTCAGADYT AATCPPSEYYSYFKDNCPDAYAYAYDESSGTTCDSGADYT A A CPK SYSYAFDDPTTFTCTGGADYT GE WR WPVDYTQVFKKAEPFAYSYAFDDSATMSCKGGCDYR P
PETCPPKKYSKПFKGACPTANSYVYNYASSRFTCNN
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 $F H L Q N N E P G P V W V G D P E B T H L S N G G L I L D Q Q Q Q V V L Q Q$ TFTVYNGCPFTI WPAMFTGASPAYTTGWAANAYTAVVFS TVNNDCPFTIWPA IVYTSNTSAVTTGWWAAPNSSRSTVV



#### Abstract

TFTVY N A CPFT TWWPALT A GTAVP SATGWQADSYTAVSFS LKI TN S C G D T I WP GI T T Q H GVVP GT G G F E LAA A G D S R E L ATFTVRNNCGFTVWPAAIP VGGGTQLNPGWTWTFD TFTVTNNCPFTIWPAIFTGTAVPDPTGWEQGAHQSVSFN    TFTVYNGCPFTDCPAFYTGAGSSRPTGWEAGAYTHVAFS TFTVVNNCPFTI WSLFNVGSATPDPTGWEQDAAQTVSFT  T F V K N S C GTT L WP AL F T G G $1 P \mathrm{P}$ T GWELSPGNSTQFQ  TFTVYN GCPFTVVWPA DYTNADVPQYQTGGWQADAYTYTVNFS VKFTFRNNCPETVWPETLTSSGPFPTTGFPLPPGASLSFS 


[^2]VK N N C G Y T VWGARHRWAKE LD ANAHG $\square$ S MS $\square$ P A RAG
 TFTVYNGCPFTGWPAMFTQNPANATTGWAADAYTAVS FY
$T \square T V R N N C A Y T V W P A \square F T G T A P D Q P T G W Q A D P N S S D T F D$
 VILNIE N QCSYTVWLAASPSSGDFNSE HAPGTIEI F NNCNYTVWPADNAGHPVLAGGGFTLHTLTHQSIP
 TF TVYNACPFTI WPA I NAGSSVPAENGWEAPAYSKRSFT
 FTVTNACPFTI WPAVVTNTSPSVVEGGWEAPTNSSKQFA TFTVYNACPFTIWPAMFTDLDVGTATGWEAPAYSKVSFT RNNCPYTVWAA GVPA TNRCSFTVWPAATP
 $T F T$ QNNCPFTIWPAYFNNPDSPSPAGWEAPGGDVRTM T $V V N K C S Y T V W P G L F T G T A M V P D P T G W E Q P S$ GQQTVTT T

$\prod N \prod Y$ N RCPFTVWP G V V GP GNPE G G GFRRLENEQSRRKI F


T F T TY N Q C P F T $\ \mathrm{WW} \mathrm{V}$
D LF S S FDRWA QD A Y Q TVSF Y FTLDNQCKTEVWPAVTPGQS FRGGGYALGPGESVIFT TFTVTNSSCPFTI WYMFTAGTAVPNPTGWEAPPTNSVTFA LVVVTNQCDS K I WP GDATQS GTP GT GGFEELAPGKN KTM W T F TLVN Y CKET I WP Gl T R S RSDNHS
HPVI A G D


 T N R CSFTVWPAAT P
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 TFTVYNACPFTVWPAVFTGSAVPSET GWEAAAYTKRTTT $\square N$ Y N RCPFPVWP GIV GPGNPAGGGFR LDNEQDRK DS
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 VQLII VNNCK Q S I WP GIN A GHP TP R D G GFYYL

50
60
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FPSALWSGYFWARTGCSFNRTTHGPCDTGGCNGSLGCKAP V PASWSGR $\square W$ GP TLCSQDPT GKFACLTGDCGSSALECS WSGRFWARTGCNFDEAGNGQCKTGNCGGA LIKCTGG GAPATWNGRFWGRTGCNF VPD T WTAGRDWARTQCDFNSGQ GSCLTGNCFGCDQT QGY $V P D N W K A G R I W G R R N C D F S V N P P N S C V T G G C N G C D P H T G T$ AEDN WAGRFWGRTWCDPATNH CNQTGDCGNKDCAGAG VPE GWT G GYI WGRRDCDFSNTTTGGCVSSGGCAGGLVCT GL PEDSSWS GTFWART GCAT DAT GRFSCATADCGGSGDCD GRG VP D N WK S G R $\quad$ DWGRRDCD FSTNPPNSCDDGGCNGCDP HTGT VPD NWRAGRDWGRRDCDFSTNPPNSCLDGGCNGCDPHTGT $V G P T W Q G R A W G R T N C T V S G E S A G C C A T G D C F G K D D C E F S$ AP P GTS GRVVWGRS GCS F N G WWGHCDDSGDC G GA Y S C S L S VP N NWA A GR W WRRDCNFSVNPPGSCCVGGCSGCDP HN GT
 A P SPWSGRFFGRTRCSTDASGKFTCCATADCGSGQCNGN G $\square P D N W K A G R \square W G R R D C N F S T N P P N S C D D G G C N G C D P H T G T$ TVVPG WS GWI WARTGCTF DAA GVGKCQTGNGQ $V P D D W T A G R I W G R R D C D F S D S N P A T C A D G G C N G C A L S G G T$ $V P D N W Q A G R I W G R R D C D F S T G T P G Q C L D G G C N G C D P H T G T$ $V G P T W N G R V W G R T N C T V S N E T A T C C T G D C F G L L E C D Y S$ $V$ D D GWTS GRV WARTGCVQ GPQGLTCCLTGGCGLI V N S SA T

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 I PA GTQSARIWGRTGCNFDGSGRGSCQTGDCGGDLSCHLS


## VWGRTGCTSNGGNNLQCTTGGCGTFDCGMNS

NMDDHYSGSDWVRTGCSTNASNYFSCET GDCGNMECA GLN VPD D WQA GRIWARRDCTFDS GSPNTCLDGGCNGGLVCDPY C GTSLKCSAA VD D WKCGR DWGRA GCDFGGDV GSCLT GSCEGRLIECTGS V P A GTSMARI WGRTNCNFD GSGX GRC QT GDCTGGGLDECK G W SMPEPWTGSI WARTKCSNNESFYFSCETGDCGTGQCQGPM VPDVHWSGRVWARTGCTYSGTA FSCASGDCGGRQCNGAG
 $V P D D W K S G R I W G R T Q C D F S K T P T G S C L T G G C N G G L V C D G R$ PAPA GWS GRLWARTGCAFGAGGEGTCQTGDCGGRECAGA G
 $V$ P D N WA A G R WAR R GCNFNS Q GPESCCVTGGGCTGGLNCTES
 VPA GTSSGRRVWGRTGCSFD GA GRGRCAT GDCGGALSSCRLS $V$ S FHWAGRIWARESCDY HADCLIA G $V \quad P D G W A G R F W G R R N C D F G S T L P S T C V V G G C N G G L V C D G T$ V P D N WK A GR DWGRRDCD F STNNP N N C CADGGCN GCDAAHTGT A DP P SWS GHLLWARTLCAND $\square$ NGKFACDVTGDCSSSTVVECD D

 | $V$ | $E N G W E$ | $G V I$ | $W G R T F C D N R M N C S$ |
| :--- | :--- | :--- | :--- | :--- |
| $V$ | $G P T W Q$ | $G R A W G R T N C T V N G G E S A$ |  | $V P D H W A G R F W G R T G C D A S \quad G H C Q T G D C G N K I C N G A G$






CPVVDCDADLSNVCAPELVATNKNCNSPCDALRDARFCCT CPVVGCRAELLATCPSVLQGPVVACKSGCEAFHTDELCCR CACLGTSGYLAPWCPWDLQVHFDPCLSACSKSNSPVDCCT R GC G
C GAAECTVNLNKDCPEALRGPVDANG CNATGCTADLN
CHDA DCPVDLAPNCPAKLKGPFDSKGNPVPDPANSPYCCT

FDSSGFPVGCKSACFANLDGNQGDSGNCCSGSHNTAATCP
T LT C R ER S C
$R H C R A T E C T R D P L C P Q E L Q V V D D T C K S A C S K Y G L D Q Y C C T$ CPTPQCAVDLNAICPDDRGCLSACQANLDGNREDSANCCT
 CTMVGCDVDLNSLCPSEAKLMRGSDCVACKNAGA
T R G I K C T A DI N G Q C P S Q L RAE G GCN N P CTVVFKTN QYYC N




C P VA D C P VDLGPNCPAP $\square$ QGPFDSTGFPCAANLDGDPTDS


 CPVVADCPVDLGPNCPDNLKKPFDPSNSPACCSGQWSGGP Q CSSGVGLTCRDSRC
CGVPD CPVDLGPNCPDNLKGPFNPSNSPACCSGQWAGGPQ
 $C T L S G Q P P L T L A E F T \square G G S Q D F Y D L D V I D G Y N L P M S F S C S$ CAVVGCPT DLLSHCPPENLTKDGKTGKPLV GSHSTA CVN
 $Y$ DSSGFPVGCKSACFANLDGNQANSGNCCSGSHNTPATCP QRAGGCISDDNEVCPERMRITNGRRRENGNVVGADP
CGVAS CPVDLGPNCPFPVGCKSACEANLDGNQANSPNCCS
 CACDATE GWWLYA WCPWPNRPSTSPCKSACATTGSDKDCCD CSTGVGGVGRDSSCPDAYHNPPDRKTHACGGNSNYQVTVC $S G V G W R L V R R$
CTKAGCTHDASASCPSVLQVKVTACKSSCLALGGDQMCCL


UniRef90 D8RAB1 UniRef90-A0A059AID2 UniRef90-Q9MB90 UniRef90-W5EIY7 UniRef90-UP10004408ACC UniRef90-Q4TZV4 UniRef90-Q1ERD1 UniRef90-х8Јз3M7 UniRef90-I1IVF3 UniRef90-S7RGT1 UniRef90 B8AK06 UniRef90-UPIOOO440C782 UniRef90-N4VY75 UniRef90 ${ }^{-}$K3ZDY7 UniRef90-UPI0004622BF4 UniRef90-X5IBM1 UniRef90_W4JWD8 UniRee90 ${ }^{-}$UPI00046E1872 UniRef90-W4JW13 UniRef90-K7KLR5 UniRef90-S8FKQ5 UniRef90-UPI0004622C22 UniRef90-W3WVG7 UniRef90-R7SDT2 UniRef90-D31Z13 UniRef90-MoW1A4 UniRefe90-M5G729 UniRef90-E9E4M8 UniRef90-A9NMN2 UniRef90-UPIO003EA8B38 UniRef90-N4WZN3 UniRet90-R7SDS3 UniRef90-O51209 UniRef90-O81927 UniRef90-Q41584 UniRef90-P31110 UniRef90_U5CXS3 UniRef90 Q38746 UniRef90-UPI000234FD18 UniRef90-K7LHQ6 UniRef90-M5FQ08
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UniRef90_N1JBV8 UniRef90-W5ED96 UniRef90-M5CAR2 UniRef90-K7TU96 UniRef90-UPIOOO444AOCB UniRef90-X8J7U5 UniRef90_BoD4F2 UniRef90-K4CP59
UniRef90 O2QLS8 UniRef90_l1CHU3 UniRef90-F4RJS1 UniRef90-R7SLX7 UniRet90-G7KO19 UniRef90-M5WR86 UniRef90-H2VJS4 UniRef90-TOK3J8 UniRef90-Q1M2M2 UniRef90-F6HUG4 UniRef90-UPIOOO4411053 UniRef90-F2CXV8 UniRef90 UPIo004622B0D UniRef90-M1VXYO UniRef90-C6T6P3 UniRef90-W1POS5 UniRef90-A7EJBO UniRef90 D807W8 UniRet90-O2QLS9 UniRef90-D8PUG5 UniRef90-J3N2L4
UniRef90 OOILR3 UniRef90_UPI00047525B1 UniRef90_UPI000440FB13 UniRef90-UPI0001983EBF UniRef90_L8WKM2 UniRef90-A8XX34 UniRef90-K5WCV8 UniRef90-C4WWA7 UniRef90-M5C7Z2 UniRef90-T5A529 UniRef90-C5YSK7 UniRef90-E5GC75 UniRef90-C7PXJ4 UniRef90_O9FET7 UniRef90_B5M8X0
 PNTCNPSQYSEFFKRACPKAYSYAYDDGTSTFTCASADYE
GDHCPPTQYSKGFKDACPSAYSYAYDDASSTCTCSGSDYL
QCPVGGVKHYDYFKKACPDSYAYAFDEDSGTACDTNADYA AETCPPSQFYSYFKDNCPDAYAYAFDESSGTTCDSGADYT GDHDWPVDYPAYFKSNCPDAYSYAYDDHKSTFTCQAFAYT NQDGNPVPFYDYFKNACPFAYAYSQDTTSGTTCAGSSDYT
NADGGPTSYSELIFKSACPDAYSYAYDDATTFTCAGASGYH TCPSSGVAYYSYFKGNCPNSYAYAYDESSNTTCNSSADYT GSHDTAVLHYDYFKGNCPDAYAYAYDESSGTTCDSAADYT GKWHDPNDYSKHAKAMCPDAYSFAFDDTSTFIVPSGGGWE
俭 TCPSSGVAFYSYFKGNCPNSYAYAFDESSNTTCSSSADFT

TCPSSGVQFYSYFKNNCPNSYAFAFDEPSGTTCPSSASYT NT CKPSYYSTDFKKACPRSYSYAFDDGTSTFTCKAYEYD TCPSSGVAYYSYFKDNCPNSYAYAYDESSGTTCPAGADYT GSFNTPATCYSYFKSNCPDSYAYAFDESSGTTCASAADYT $G D Y N D P T K Y A K N A K A V C P D A Y S F A Y D D T S T F I I P S G G G W E ~$
$G G Y N D P T D Y Y V F K D N C P M A Y G T K S E K T G T C P S S S D Y T ~$ AETCRGSVYS RCTEDKCPDAYGYPGDGTKTRTCSSGGNYY PSSGVAFYWFFKGYCPNAYAYPFDESSGTTCPSNADYT

GRYCKPSSYSKAVKAVCPDAYSFAFDDQSTF\|DPKGGGWE SP AFSKAFQKACPRAFPY RSGTDCPPSTASYT GNTCEPTTYSDPFVRMCPDAYSYSRSDASSFTCPSGTNYH PQFNPCYSACAKNNRCCTGKYSYAFDDSSTF\|IPSGAGFE GQFGTPDHYYHLLFKDNCPNSYAVSDSGTALWTCPSAPDYT
QRSDWPTDYAAPFKNACPNAYSYAYDDGGLMTCKANEYI QRSDWPTDYAAPFKNACPNAYSYAYDDPGSLMTCKANEYV ADKCPDAYLFPTDDTKNHACNGNNNYQ VTVCRDSRCPDAYLFPEDNTKTHACSGNSNYQ
NYSRFLKDRCPDAYSYPKDDSSTFTCPSRTNHR GNNCDPTNYSRFLKDRCPDAYSYPKDDSSTFTCPSRTNHR GQYCPPNKYSMDFKGLCPQAYSYAKDDSSTFTCPSGTNYV
 GVYCQPAYCSKKFKENCPDAYSYAYDESSGTACPSAADYT GSHSQPANCYAYFKNNCPRAYAFVYDESSS\|NTCAGPDYT
ENFCQPNQYSKKFKQLCGLAHTYPADNNPPTYSCGGANYN NHFNSPSKYSNFFKHACQTKVTFAEENPLFRNCSPPRGDK G $\square Y C K P P \square Y A K Q A K S V C P D A Y S F A Y D D T S T F \square V P S G G G W K$

GSHNTAATCYHYFKDNCPNAYAYAYDESSGTTCPSKADFT GQFETPESFFDYFRGSCPTAYAWTFDGSNDKNCPGTADYT PS GVAFYSYFKKNCPNSYVYAYDESSGTTCDAAADYT PDAYQYPSDDSK $\square R S C N G N S N Y R$ GKYSEPNRFAREVERVCPDSYSYAFDDDTSIYGCRSNGYN TCPSSGVQFYDFFKSNCQDAYAYAYDESSLWTCSGGSDYT THNTAATQDYSYFKNNCPNSYAYAYDESSGTTCDSGADYT SGSCKPTDFSRFFKSRCPDAYSYPQDDQT
GAFSSPTTCFQTFKDACPAAYTYDFDDATSFGCENNAEYL GSWHDPNKYSKHAKSDCPDAYSFAFDDTSTF\|IPSGGGWE GAHNRPVNYPAMFKKSCPEAYSYAYDDHSSTFTCHGTGYVV SGSCGPTDYSRYFKTRCPDAYSYPKDDTSTFTCPGGTNYD SHNTAATDYYSYFKNNCPNAYAYAYDEASGYTCPAAADYT

ANCCSGSHYYGYFKGNCPNAYAYAFDESSNTTCDSGADYT GKYCKPSSYSKKVKSVCPDAYSFAFDDQSTF\|VPKGGGWE GTYGNP
ND YCHPSMYSTMFKDACPAYFSYAYDMPPPLYSCDASEYVV GAY DEPNLCPRNENK DCP DAYGYPFDDTSTF』IPTGGGWE DCPSSGSSSYNYFKSNCPNSYAYAYDEPSGTACDASADYT
 A ETCRRGSAYSRLARGAAPXXXXXXXXAAAAR CYAQDYVV S GVT PNRDAKTAYVEALLTKQCPTAAYAWSKHDAESRQCSHCKGLT PNDVD DYSY $\quad$ FKENCPRTYVVYAYDESSSGTTCNSSA DYQ GNF CQPNEYSKRFKE LCGGLAHTYPADKPEDYRCKDAA TYN PS

GQY DTADVAYYSYEKGNCPNAYAYAYDESSGTTCNSAPDYT K $\square$ S SWPKNYNPFFKKACPNAHSHAFDASTSSFTCRGTKYD ESNDAFFD YFRESCPGAYAWTFDNQNVLKTCSGADYT $\underset{P}{P} N I C K P S Q Y S T S V K A V C P D A Y S F A F D D Q S T F I V P K G G G W E$ ${ }_{P}^{P}$

| UniRef90_D8RAB1 | $\checkmark 1$ |
| :---: | :---: |
| UniRef90-A0A059AID2 | $1 \mathrm{~T} F \mathrm{C}$ |
| UniRef90-Q9MB90 | 1 T F C P |
| UniRef90-W5EIY7 |  |
| UniRef90-J0CXQ3 | 1 1 L C |
| UniRef90-UPI0004408ACC | LT F C |
| UniRef90-Q4TZV4 | V T |
| UniRef90-Q1ERD1 | 1 T F C |
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| UniRef90_N4VY75 | V VFCP |
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| UniRef90-UPI0004622BF4 | V T F C |
| UniRef90-X5IBM1 | 1 T F C P |
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| UniRef90-UPI00046E1872 |  |
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| UniRef90-UPI0004622C22 | 1 TFCP |
| UniRef90-W3WVG7 | V VF C P |
| UniRef90-R7SDT2 | V EFCP |
| UniRef90-D3IZ13 | VF CP |
| UniRef90-M0W1A4 | LTFCPS |
| UniRef90-M5G729 | $\square$ T F C P |
| UniRef90-C5X4F1 |  |
| UniRef90-E9E4M8 | V VM C P S |
| UniRef90-A9NMN2 | LTFCP |
| UniRef90-UPIO003EA8B38 | 1 IFCP |
| UniRef90-N4WZN3 | V VF C P |
| UniRef90-R7SDS3 | V T F CAS |
| UniRef90-Q5I209 | 1 N |
| UniRef90-081927 | 1 V F C P |
| UniRef90-Q41584 | VTFCP |
| UniRef90-P31110 | $\checkmark \mathrm{V}$ F CP |
| UniRef90-U5CXS3 | V V F C P |
| UniRef90-Q38746 | VTFCP |
| UniRef90_UPI000234FD18 | 1 T F C P |
| UniRef90-K7LHQ6 | 1 T F C P |
| UniRef90-M5FQ08 | 1 T F C P |
| UniRef90_B9RJ48 | 1 S F C S S |
| UniRef90_V2XNJ0 | LT F C P |
| UniRef90-D2JWP3 |  |
| UniRef90-V4SX25 | VT F C P |
| UniRef90-T2DN75 | A ${ }^{\text {a }} \mathrm{F}$ C |
| UniRef90-N1JBV8 | VQ F C P |
| UniRef90-W5ED96 |  |
| UniRef90-M5CAR2 |  |
| UniRef90-K7TU96 |  |
| UniRef90-UPI000444A0CB | 1 Q F C P |
| UniRef90-X8J7U5 | VT F CP |
| UniRef90-B0D4F2 | $\checkmark$ T F C P |
| UniRef90-K4CP59 |  |
| UniRef90-Q2QLS8 | V V F C P |
| UniRef90-11CHU3 | V I F CP |
| UniRef90-F4RJS1 | $V \mathrm{I}$ F P |
| UniRef90-R7SLX7 | 1 TFCP |
| UniRef90_G7K019 | 1 T F C P |
| UniRef90 M5WR86 |  |
| UniRef90-H2VJS4 |  |
| UniRef90-T0K3J8 | V VF C P |
| UniRef90-Q1M2M2 | $\checkmark$ QF C |
| UniRef90-F6HUG4 | V DF CP |
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| UniRef90-F2CXV8 |  |
| UniRef90_UPIO004622B0D | LT F C P |
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| UniRef90-C6T6P3 |  |
| UniRef90-W1P0S5 | VTF C P S |
| UniRef90-A7EJB0 | 1 V FCP |
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| UniRef90-Q2QLS9 | V V F C P |
| UniRef90-D8PUG5 | LTFCP |
| UniRef90-J3N2L4 | $\checkmark$ AFCPS |
| UniRef90-Q0ILR3 | V V F C P |
| UniRef90-UPI00047525B1 | $\checkmark T$ |
| UniRef90_UPI000440FB13 | $\checkmark$ T F C P |
| UniRef90-UPI0001983EBF | 1 T F C P |
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| UniRef90-A8XX34 |  |
| UniRef90-K5WCV8 | VT F C P |
| UniRef90-C4WWA7 | 1 DFCP |
| UniRef90-M5C7Z2 | VTFCP |
| UniRef90-T5A529 | $\checkmark \mathrm{V}$ M C P |
| UniRef90-C5YSK7 |  |
| UniRef90-E5GC75 |  |
| UniRef90-C7PXJ4 |  |
| UniRef90-Q9FET7 | V VFCP |
| UniRef90_B5M8X0 | V V\|F C P |

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UniRef90-B6TA80
UniRef90-B9F933
UniRe90-_4FCW9
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UniRef90 GOS1V8 UniRef90-A0A014P3G3 UniRef90-G1XJ54 UniRee90-UPI00034B634C UniRef90-D8QT50 UniRef90-UPIOOO2C30D08 UniRef90-F2DTG3 UniRef90-A3AQX2 UniRef90-MOZYQ1 UniRef90-ROHWC2 UniRef90-A9RSU4 UniRet90_K4AK76 UniRef90-111J49 UniRef90-K3ZNS8 UniRef90 B4FF40 UniRet90-Q84U57 UniRef90-B7FMG4 UniRef90-P27357 UniRef90-W9YB34 UniRef90-B9SLL4 UniRef90-M7XLO3 UniRef90-D8SJM8 UniRef90-S22JVQ1 UniRef90 11BH28
 TFTFLNRCDFTVWPG\|LAGSPKLETTGXVLPKGSSRGFQ
MTVTNNCAYTTWPGMFTDAVPTQTTGWEQDAGATVSFS TFEVKNNCPYTVWGAAVPG GGRQMNSGDTWTVT AP KI TNKPNTIWPGWGTQAGTGPGGGFELASGASRDYT TFTVFNACPFTI WPAMTAGTAVPDPTGWEADPMTSVSFT


$$
\begin{aligned}
& \text { ATFTVRNNCGFTVWPA SGSAALSTTGFSLEKNESKTLT } \\
& \text { FRVVNKCPFPVWPAANAGHPVLAGGGFQLPPGSSRDVN } \\
& \text { VTFVNSTGETLWDGASADGSRPITGLPVLRPGASATID } \\
& \text { TLTVTNHCGHTVWPGMLSGAKPPAT } \\
& \text { TVVKNSCSQTVWPGVSPGKDDSQSGGFEDASGGSRTVS }
\end{aligned}
$$

ATDTFTNKCSYTVWLGTDTQQPQLSTTGFELASQAT SLV ATFDTSNRCGYTVWAAASPGS GRRLESGQSWLIN


## VITLVNNCNTT $\square W P G F Q S Q R S E F \square E D G F E R P G Q S A N \square T$

TVTFRNRTDSRTWVGVNADGSAALTGLPVLDPGQSATMT SFS $\square$ TNRCSFTVWPAATP VGGGRQLNNGQTWNLD TFTVYNACPFTTWPALFTGSAVPNFTGWEAPAWSTVTFS MNIKNSCEDTI WPAYVSKPHPKNSTGFTLRPGESK IV TFTITNRCAYTVWPAAIP

NNCRYTVWPAATP
VGGGARLDPGQTWY LiN
TVTFVNGTKQT $\begin{aligned} & \text { WWDGVNADGSVNFAK } \square P R \square A P G Q S A T V T\end{aligned}$ TMTVYNGCPFTVWPAMFTDMNVPNPTGWVADAYTHVTFT TLNCSFTTWVGLQ GPRNPANGGFKLEAGARQT Y
TFTVYNACPFTTWPAVFTGSAVPAETGWEAPAWSVKTFT TFFLENNCLNTLWLASSPSNGDLUPE NGPGTLEVL

VTFYTHNKCPFPTWPATNTGQP TIAYGGFCLASSQTKKПQ IVVSNQCGETI WPGVGTQHGGPGTGGFELQAGKSREFN TVVVTNKCGYTVWPAALPG TFNFDNECSFSVWLAASPGDGDPERG TFTVSNNCPFTICIASSTGVTPDYVTGWEAAPGTFVSFY MKNETDSKI WAGVNADGSAELTGLPTLDPGKSATVT

 $T \mathbb{T V K N N C D K V S V G V L T N S A A D P E D S M D Q P P G G S S S F S}$ VFTLSNRCNFTVWPG\|LTNRTLLRGGGFALASGSSVNLT NRCGYTVWPA A $\square D L Q N N C P F T V W A A F \square G$

## 

A AFATEDSCPSTVWQGT $T$ T D DNN $\square G A G G F Q \square N P G A S A Q \square T$ $\prod R \ T N S C A D T I W P A V A T Q H G R G P G L G G F E L G G G K T R D F$ LVVTNNCDETIWPGATQNGLGPTVGGFELAPGKSKK L




STVIFYNKCKDTVLPGSSAGEKLLAGGGFELPTNKSHTVQ ARIDI $\square$ NQCGQTITACATCCGGAQVNCYALGGRGGRQQIN HVANRCPFPVWPASNTGHPVLAGGGFLVPPGKSRRV
LTLHNMCPYTIWPGITPNSGLPSLLPSDSDDENSFTPF


N CPYTVCAAATPGAAPPAGGGRRLERGSWWFW
AK ITFMNKCPYTVWPGTLTQKPQLSKTGFELASGKSDSVD
$K N N C G F T I W P A \quad G I P V G G G F A G G S G Q T S S I N$

 NACPFPVWPA WLP


UniRef90 RokB39 UniRef90-A5BG46 UniRef90-M8AJD9 UniRef90-UPIOOO46D9746 UniRef90_UPI0004449873 UniRef90-Q6PP01 UniRef90-S3CKW7 UniRef90-E3MR71 UniRef90_M2PK89 UniRef90_L2FWJ9 UniRef90 JoWRS9 UniRef90-B9H1A6 UniRef90-B6TA80 UniRef90-B9F9.3 UniRef90-F4FCW9 UniRef90-UPIOOO3512F21 UniRef90-R4XFA3 UniRef90-V4V9L4 UniRef90-Q9FF05 UniRef90_M5W5S4 UniRef90-A0A022PQH1 UniRef90-D8HMN1 | UniRef90-M7XDA6 |
| :--- |
| UniRef90 | UniRef90-B9SLM3 UniRef90_MOSS22 UniRefofo-j3NF26 UniRet90-K4QXP5 UniRe90_M8AS69

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UniRet90-UP7 UniRef90-F7VQB9 UniRef90- E3MR72 UniRef90-UPIO0046DD1B7 UniRef90-X8J2G44 UniRef90-B9SOC6 UniRef90-E7ELZ5 UniRef90-UP100032A76CE UniRef90-G5EHT9 UniRef90-K4AKK0 UniRef90_l3SCW7 UniRef90_UPI00042B5F22 UniRef90-K5W679 UniRef90-V6K3U7 UniReffo-O2QLT3 UniRef90_11HYP3 UniRef90-R7YJP6 UniRef90-M8C4V8
UniRef90 UniRef90-I1C7W7 UniRef90-A8XX33 UniRef90-A0A059Cl25 UniRef90_Q9SK51 UniRef90-K3ZA62 UniRef90-MoZYP8 UniRet90-UPIOOO37E7D03 UniRef90-UPI00032A96D2 UniRef90-M7ZIL9 UniRef90_M4DH96 UniRef90_J3PE19 UniRef90- GOS1V8 UniRef90-A0AO14P3G3 UniRef90-G1XJ54 UniRef90-UPI00034B634C UniRef90-D8QT50 UniRef90-UPIO002C30D08 UniRef90-F2DTG3 UniRef90-A3AQX2 UniRef90-MOZYQ1 UniRef90-ROHWC2 UniRef90-A9RSU4 UniRet90_K4AK76 UniRef90-111J49 UniRef90-K3ZNS8 UniRef90 B4FF40 UniRet90-Q84U57 UniRef90-B7FMG4 UniRef90-P27357 UniRef90-W9YB34 UniRef90-B9SLL4 UniRef90-M7XLO3 UniRef90-D8SJM8 UniRef90-S22JVQ1 UniRef90 11BH28

VSEDWQ GRVWGRTNCSFSDDGSSACATGOCNGALINCQVGG A PTGWSXRFWGXTGCNFBGSGHGTCATGBCGSXQCNGAX

ARワWGRTGCSFDEAGRGKCLTCDCGGLLKCQDS VPDNWTAGRIWGRTSCDFTTNPPNSCTTGGCNGGLVCDPT
 $V$ VDDWQ GII WGRTFCDNRMR VPDNWTAGRIWGRRDCNFT $\square$ TSGPTCLT GWCNGCDPHTGT WSAGCTTGDCFGKDNCEFS VPQGWRAGRDWGRRDCNFAQPATSQCVTGGCSGCQGAGGD GRUWGRTNCNFDSLGHSQCQTGDCNGLECQTFS $A P D S W T G R F W G R T Y C T E D S S G N F S C I S G D C G S G K C S G N G$
$V Q A G T S G G R D W G R T G C S F S G G R G R C A T G D C G G A Y S C S D S$ APPTWNGRFWGRTGCNFTSTATNHCHGNAAASCDTGDCG
GRPGHWRGRFFARQRCSGEPGSTFRCLVGDCGVVPDRCER GRPGHWRGRFFARQRCSGEPGSTFRCLVGD VPTD WDAGRDFART GCSGSGS SFHCAVGDCGAYSCVDNT
ERKWSGRUPRQGCCFDETTKGSCQTGDCAGRQCKGLG
TT LVPWDGRFWGRTGCSTDASGRFNCATAECGSGQCNGNG VAPGTNEARDWGRTNCNFDESGQGQCQTCDCNGRDKCQGY VPPGHWRGKFFARQGCTGTSGRDFHCAVGDCGVYADHCAT KVAEDWNGRIWARTGCKFDGSTPSTCVTGGCNGCARVGGT
$M G R I W S R T N C N F D G N G G K C Q T R D C N G R L K C Q G F$ A PAVWSLY IWGRSGCSFNSLGYGGCVTGDCGGRCPLGRF

R GRCVTTGDCRNALACSVS VPERHWRGKFFARQGCGGEEGSTFHCAVGDCGPYADHCSL I PDGTSSARDWGRTGCSFNGNSGRCSTGDCGGALSCTLS


 DP PGHWRGKFFARQGCTGQSGNGFHCQDGDCGPAA D G GA G $V P D N W Q A G R D W G R R D C D F S T N P P N S C L D G G C N G C A T S$ G G T


VP D N WK A GR $\square$ WGRRNC D F S T N P P N S C LT G G CN G G L Q C D S H SMPDPWSGSIWWARTKCTTNETGYFSCETGDCGSRDCHGAP GCAFDEPGNGKC $\square T$ GDCGGTLKC $\square G G$
A P WS WS GR TWAS T GCNFDNSWKPSCET GDSDGKACNG LI VS WDWQGRIWGRTNCTFNSDGSGACTTGDCFGRLNCEFT

 VP DNWQA GHLWARRDCDFNDPNPATCADGGCNGCDPHTGT I P ENHWR GKFFARRQGCE GES GSTFHCADVADCGPFADRCS T



ESDT WGGRVWGRYQCSGSSGKDAT QCG!AG F V NP TWT GTIWWRRTDCGEDMD CATGGCGPHECNGAS GMNMAH 1 WARTNCNFHANGQTGGCNRHLDCQGW VS PENV V PA GTS GRFWGRTGCSFN GGSGHCDSADCA GALSCTVS
 MDDT WSGGSIWARTKCTTNASGYFSCETGDCRTPECADT T

ASSE WS GHVWARTGCEFDSSGQGSCVIGDCVDFTCAGS G $N V S F D W Q G R V W G R T N C T F N A N D T G A C A T G D C F G V R D C A G G$



 FPSTFWAGRVAARTGCDRGTSPPRGCFTGD
PSSGTWSGTFWARTGCADVSSTRFTCATADCGSGDCNGRG
 VGGNWPAGVIWGFPGGSANPNE GNN VAPATWNGRFWARTGCNFTANGGAACLTGDCE GRACNGSV PA GQAWS GR IVARTGCVSVGPYASDPDSELFAATRCAT GD FPPGAWSGRVVARTGCA\|EGDGGGEEDVGRCATGD

LAEFTLGGSGGLDFFDVSLVDGYNVPMLIVP APP GTKMARIWGRTNCNFDGAGRGGCQT GDC GGVLECKK W W $V$ PS P WE GRFWGRTTGCS SNAGKFSCATADC GS GQCN GA G $V$ P A GT QA GRIW WARTGCSFN GGSGSCQT GDC G GQLLS CS LDS

 AST GWS GKFWGRPN C QF DTVVGT GCCET GDCSNADGCNST SKSDSWGGRVWARYHCSGSAGKDSS

|  |  |
| :---: | :---: |
| UniRef90- A5BG446 | DVSLV |
| UniRef90-M8AJD9 | PPATLAEYTLGKGSPDFYDISLVDGFNVPMSFGPAGGG |
| UniRef90-UPIO | SLV |
| UniRef90-UP | GVPPATVAEFTLSTSDLPDYDVSLVDGFNTPM EVTVTGG |
| UniRet90-Q6PP017 | GQPPNTLAEYALKQFNNDFFDISLLDGFNVPMTFLPISNG |
| UniRet90-S3CKW7 | GVAPASL |
| UniRet90-E3MR71 | GRAPFTAAEFSLNEANDEDVYVSLINGYN |
| UniRef90-M2PK89 | GVPPASVAEWTLQGDMSQDFYDSLVDGYDLPM MIT NDVN |
| UniRef90_L2FWJ9 | GAVPATLAEFNLASGRQTFYDTSLVDGYNIP |
| UniRef90--Jow | GAPPATLAEWTLDDPQNDFYDVSLVDGY |
| UniRef90-M0ZYP7 | NTPPNTLAENALNQYNNNFFDLSLVEGFNVPMEFSPVFAC |
| UniRef90 B9H1A6 | GALPVTLAEFSLGFNGLDFFDVSLVDGFNLPLLVVPSRQN |
| UniRet90 B6TA80 |  |
| B9F9,3 |  |
|  |  |
| ef90 |  |
|  | Y NTS |
| UniRef90-V4V | PATLVEMTLGTQASHYYDVSLVDGFNVPVSMAPDGGG |
| UniRef90_Q9FF | NTLAEYALNOFNDFUDISLVDGN |
|  | AVPPATLVENLPGGQDFYDVSLDGFNVSVSSQGSTGD |
| UniRet90-A0AO22 | GEEPPASLAEFSNFDTADGPWYDVSYVNAFSL |
| UniRef90-M7XDA6 | GVVPPATLGEWNLASPDQDWYDVSAVDGTNVPMSIANDAG |
| UniRef90-K4DF | GSPPNTLAEFALNQPNNDFFDISLVDG |
|  | ITMVTL |
| UniRe | ATLAEFTLGSGGMDFYDVSLVDGYNL |
| UniRef90-J3NF76 | TLAEYTLGTPSTDYFDLSVIDGFNV |
| UniRef90K4QXP5 | GEQPTGLAEFNFDPADAPWYNVSYVNAVSVPITTDTPDNGE |
| UniRet90-M8AS69 | GVPPATVAEFTLGDPTMDFYDVSLVDGYNLPMR |
| UniR | GVPPATIAVVKLNPN隹PDYMISSVDGYNLPARI |
|  | AAT TLPKGAAGEYAYSVSLAKGFNLPM |
|  | TTLAEFTL TGDMDYYDISVIDGFNVP |
| UniRef90-C5YSV2 | (LTLAEFTLGTSNQDFYDISVIDGYNLA |
| UniRef90_S8E178 | GDRD |
| UniRet90_W5WIV4 | QPASLAEFNFG |
| UniRet90_UP1000441 | GVPPATVAEFTFDGTNDNYDVSVDG |
|  | GSPPMTVAEFSFETNGFNDTYVSMLNGFN V |
| UP100046DD1B7 | FXDVSLVDGYNLPMIVEGSGGS |
| UniR |  |
| UniRef90 B9SOC6 | PTNPGTLLNFNLNSNAVSYEVSLIHGHNLAVR |
| UniRet90_- 5 GLC0 | GSPPVGPVE Did |
| UniRef90_E7ELZ5 | GAPPATLAEITLGA |
| UniRet90_UP100032A76CE | GTPPATLDEDTLDKGKTNFYGV |
| UniRef90-G5EHT9 | GGVPATA |
|  |  |
| UniRet90-UPI00042B5F22 | QNVVTYEVNLNGFNVPVRIKPVGGP |
| UniRef90- K5W679 | AlPPVTVADFTLHGEDVDYV |
| UniRef90-V6K3U7 |  |
| Q2QLT3 |  |
|  | GQPPATLAEFTLGGAQDF |
| UniRef90-R7YJP6 |  |
| UniRef90_M8C |  |
| M7Y465 |  |
| et90_1C7W |  |
| A88 | GS |
| UniRet90-A0A | GSPPNTSAEFALNQPNNRFLDISLLVDGNIPMDFNPTTGA |
|  | TSHTSRIQNRLLWKEIURTRFLRRESRRRLQRSELIRVNGS |
| UniRef90 M M 2 ZP8 | NNDVGSVDGFNTPMEFSPVSAD |
| UniRef90-UPI00037E7D03 | A ${ }^{\text {SPPTTLGEFTFDAYAMDFYDVSMVDGSNLPMWTNISHTT}}$ |
| UniRef90-UP100032A96D2 | PNFPVTLLNFNVNQSUVSYQ1 SLIHGQN |
| M7 |  |
| UniRef90-M4DH96 | K DYFDVVDGTNVKLGVKPQGDN |
|  | P TLAEFTLQGGKQTFYDISLVDGYNLPVGIVYIPAP |
| UniRef90-GOS |  |
| UniRee90-A0AO14P3G3 | GLAPVSA |
| UniRei90 - UPI00034B634C | ADTKVEINFPNLSSTEQAWYNISLVDGYSIPMEIKPRGGE |
| UniRef90-D8QT50 | GTPPATIAQLNL PARYSVSLLEGYNLAISIAPRNSS |
| UniRef90-UP |  |
|  |  |
| UniRee90-A3AQ) | GSGGQDFYDVSLVDGFN |
| UniRef90_M0ZYQ1 | PVTLAEYALNQFNNNFLDISLVDGFNIPMEFSPASAD |
| UniRe990 ROHWC2 |  |
| UniRet90_A9RSU4 |  |
| UniRef90_K4AK76 | G T |
| UniRef90-11 J49 | PPEPVTVAQVSVGSDGIAAYSVSLVDGFNVPSFVSGSGGG |
|  | PVTVAQVSVGGPGGRAYSVSLVDGFNVAAVVTPHGRR |
| UniRef90-B4F | AQGAGGGGSSSSSNGSAGGSSKCMATGCLVDVNGACPADLL |
|  | AVPPATA |
| UniRef90-P27357 | GRPPATLAEYTIGGSTQDFYDISVIDGFNLAMDFSCSTGD |
| UniRef90 ${ }^{\text {W9YB334 }}$ | APATLAEFTMSDTYQSFYD |
| UniRef90' ${ }^{\text {b9SLL4 }}$ | , |
|  |  |
|  |  |
|  | GGKDYYDISLLVGYNMPMSIVPSGGA |
| UniRef90-11BH28 |  |


| UniRef90 Ro | $\frac{50}{J 0} \text { Y Y P D D N } \square \mathrm{N} \mathrm{~N}^{160}$ |
| :---: | :---: |
| UniRef90-A5BG46 |  |
| UniRef90-M8AJD9 | HATSCAADINANCPSELKVD |
| UniRee90-UPIO0046D97 | AKGIRCVADISRDCPFEL |
| UniRet90-UPIO004449873 | CSTASCPVDLNPDCPSDI |
| UniRef90 Q6PP01 | CTRGPVCKADVNAQCPAQLITNGGCNNPCTVYKTDNYCC |
| Ree90 S3CKW7 | Q |
| UniRef90-E3MR71 | CPTAGCAVDLGPICPSPIQGPFDSTGFPCAANLDGDPTNS |
| UniRef90-L2FWJ9 | NTSYПPPNLTNCWCPWPMRPDFSPCKSQCAATNSDKDCCD |
| UniRef90-Jow | CPDAGCFVDLGPGCPDQLKG |
|  |  |
| UniRef90-89H1 | S |
| UniRef90 B6TA80 |  |
| ef90 B9F9.3 | AVCPPELQVIT A A A AVVACKSACVAFGTDAFCCRGA |
| UniRei90-UPIO003512F21 | GACPAELRVGSSDGRAVACRSACEAFGSAEHCCHGEHGN |
|  |  |
| UniRef90-V4V9L | AGCGVAAADLNDCCP |
| UniRef90-Q9FFC | CRGIKCTADINGQCPNELRVPSGCNN PCTVFKTNEYCCT |
| UniReef90 M5W5 | TSTCPANVNVACPAELQVTGSDDV |
| UniRef9-D8HMN1 | VP PGSTSCGSAGCPENLLSYCPAEDRR |
| UniRef90-M7XDA6 | CAQPSCMKDDNEVCPTEGCLTT |
| UniRef90-K4DF |  |
| UniRef90_B9S | CQESSCLSDVNSICPAELQVRVNNCKSACL |
| UniRet90-MOS | CSSTGCPVDLNGVCPSDLKVESVACKSACEAFGSPQYCCS |
| UniRef90_J3N | ERCPTCAVD TAQCLP ELRVAGGCD SACGRFGGDTYCCY |
| UniRet90 K4QXP5 | AGCAEELLSACPADDLVKD |
| UniReef90- UPIO0044177 | VDLGPNCPAPLKGPFDSVGFPVGGNQANSPNCC |
| UniRef90 V2XHH0 | CPVAECAKDLGPNCPAPLKGPFDSTGFPDGHPQDSANCCS |
|  | CKATGCVADLNKECPKDVQVVRGNDVIGC |
| UniR | CSSGNALRCSDGGCGDAYHQPNDVKTHACGGGN |
| UniRet90-C5YSV2 |  |
| UniRef90-S8E178 |  |
| UniRet90_W5WIV4 | APPPGGGSCEQMGCPENLLPYC |
| UniRet90 UP10004417 | CPVADCPVDLGPNCPAPLQGPFDSTGFPDGNQANSPNCCS |
| UniRet90-F7V | AGGP NLNCVCDASAGFLDPPSRSGYYYNNNRECCR |
| UniRef90-UPIo0046DD1B7 | CASTGCATDLNRRCPAELKVDGGGCKSACDAFGSPEYCCN |
| UniRefoto X8J2G4 | CPVANCAIVDLGPDCPAPLKGP |
| B9SOC6 |  |
| UniRef90-U5GLC0 | CVADKGNCPTELRVMDSGST |
| UniRef90 E7ELZ5 | CSSAGCVSDLNAMCPVGLQVKSHDCKSACS |
| UniRet90 UPIOOO32A76CE |  |
| UniRef90-G5EHT9 | NMTYUPPNLNPSCPRARSGTDHYTNSSYPMPYEPDQDNN |
| UniRef90-K4AK | GRRAPCRRS TFNCPFEQRAKAGC |
| UniRef90-_3scw | PMVECNK |
| P5W679 | , |
| iRef90-K5W679 | CGIPSCPVDLNPDCKLIFACCKNACEANTDGDPANS |
| UniRet90-V6K3U7 |  |
| UniRef90-O2QLT3 | ANS |
| UniRef90-R7YJP6 |  |
| R8 |  |
| UniRef90 M8C4V8 | 俍 |
| UniRef90-M7MH65 | A |
| UniRef90- A8XX33 | ERAGGCIMNPNDACPMEFAlIQRARCKTGCLVYNNNRECCN |
| UniRef90-A0f | CRGПGCAVD $\square$ NGRCLAGLKAHGGCNN |
|  | SGVV ACKSACEA |
| UniRet90_K3ZA62 |  |
| Ref90-M0Z |  |
| UniRe990_UP100037E | GC |
| UniRef90-UPI0033 | SVTCNMDFGNVCPPSLISYNSNCKSACD |
| UniRef90 M7ZIL9 |  |
| UniRef90-M4DH96 | FGQFGSNLPKPSDVVAMYKQY NTR |
| UniRef90-G0: | NTTWLPSRLTNCACIASPGYLSDPPTSPPLPSFNTSSSPT |
| UniRef90-A0A014P3G3 | GGGGCGTQGCTQNLLPFC |
| UniRef90_G1XJ54 | PEKPRSFNNHRWCPRQNLLFTSQK |
| iRef90_UP10003 | SGSCIT TNCNLSQCLSPCKRWNYPSPFGCCPYDDVE RCR |
| UniRef90_D8QT50 | CS WA GCKSDANSGCPKELAVRVIDAKSPCLGLNEDQYCCC |
| UniRet90-UPIO002C30D08 | CPALGCTVDLNCDCPPDNRAAEGTA |
| UniRef90-A3AQX2 | FGASSYDV |
| UniRef90-M0ZYQ1 | ECRIRCTADIIGQCPNELRTPGGCNNPCTV |
| UniRef90 ROHWC2 | CSYAGCVSDLNQMCPVGLQVMSCNCKSACSV |
| UniRet90_A9RSU4 | G |
| UniRef90_K4AK76 | C |
| UniRef90-111J49 | CPTLGCAADLEAVCPEDAKAPGGGCRAEDEGV |
| UniRef90-K3ZNS | GCAVDLAAECPVGAR |
| UniRef90-34FF | ASASASASGAGGAVACRSACEAFGSPQYCCSGAYGN |
| UniRef90-084U57 | CHP■QCVAN |
|  |  |
| UniRet90 P27357 |  |
| UniRef90 W9YB3 | STTPSFVQDWCPWPLQLLAPPEKPGDGVYPYPDDNTWN |
|  | PQQGGCCTPTLSTCPDYGQULGCNSACYAGVGDTNDQCCK |
| UniRef90-D8SJM8 | CLSGGCSCDLNSRCPWNSRGTPVACNSPCLAFGADEFCCE |
| Ref90_S2JVQ1 | GSPQCSCPKEYAVTDATCMSACSKTGSSQ |
| UniRef90 I1BH28 | YECGSPACSSLPECPEDLQDKDSNCKSACSAYGTDEYCCT |

UniRef90_R0KB39 UniRef90_A5BG46 UniRef90-M8AJD9 UniRef90_UPIO0046D9746 UniRef90- UPI0004449873 UniRef90_Q6PP01 UniRef90-S3CKW7 UniRef90-E3MR71 UniRef90-M2PK89 UniRef90-L2FWJ9 UniRef90-JOWRS9 UniRef90-B9H1A6 UniRef90_B6TA80 UniRef90-B9F9J3 UniRef90-F4FCW9 UniRef90-UPIO003512F21 UniRef90_R4XFA3 UniRef90 V4V9L4 UniRef90_-Q9FF05 UniRef90_M5W5S4 UniRef90-A0A022PQH1 UniRef90-D8HMN1 UniRef90-M7XDA6 UniRef90-K4DFW8 UniRef90-B9SLM3 UniRef90-MOSS22 UniRef90-J3NF76 UniRef90-K4QXP5 UniRef90-M8AS69 UniRef90_UPIO004417738 UniRef90-V2XHH0 UniRef90-W9T0P7 UniRef90-I1IJ26 UniRef90_C5YSV2 UniRef90_S8E178
UniRef90_UPIO004417D22
UniRef90-F7VQB9
UniRef90 E3MR72
UniRef90-UPI00046DD1B7
UniRef90-X8J2G4
UniRef90-B9SOC6
UniRef90-U5GLC0
UniRef90-E7ELZ5
UniRef90_UPI00032A76CE
UniRef90_G5EHT9
UniRef90-K4AKK0
UniRef90_l3SCW7
UniRef90_UPI00042B5F22
UniRef90-K5W679
UniRef90-V6K3U7
UniRef90-Q2QLT3
UniRef90_I1HYP3
UniRef90_R7YJP6
UniRef90-M8C4V8
UniRef90-M7YH65
UniRef90-I1C7W7
UniRef90_A8XX33
UniRef90-A0A059CI25
UniRef90_Q9SK51
UniRef90-K3ZA62
UniRef90-MOZYP8
UniRef90_UPI00037E7D03
UniRef90-UPI00032A96D2
UniRef90-M7ZIL9
UniRef90-M4DH96
UniRef90_J3PE19
UniRef90_G0S1V8
UniRef90_A0A014P3G3
UniRef90_G1XJ54
UniRef90-UPI00034B634C
UniRef90-D8QT50
UniRef90_UPI0002C30D08
UniRef90-F2DTG3
UniRef90-A3AQX2
UniRef90-MOZYQ1
UniRef90-ROHWC2
UniRef90-A9RSU4
UniRef90-K4AK76
UniRef90_11IJ49
UniRef90-K3ZNS8
UniRef90-B4FF40
UniRef90_Q84U57
UniRef90-B7FMG4
UniRef90-P27357
UniRef90-W9YB34
UniRef90-B9SLL4
UniRef90-M7XL03
UniRef90-D8SJM8
UniRef90_S2JVQ1
UniRef90_I1BH28

PSTCGPTDYSRFFKGHCPDAYSYAYDDSSTFTCPVGSDYQ GRCSGPTSYSRFFKARCPDAYSYPHDDETAFFCPGGTNYR GDHDTAVLHYDYFKGSCPDAYAYAYDESSGTTCPSATDYT SGSC
HGVCMPNMYSQQSNKVCPDAYGFPFDDGSTF I DPTGGGFE GSFATPSHVAQTFKDACPTAFSYRFDDATSFACQTNAEYL ANCCSGSFFYSFFKGNCPNTYAYAFDESSGTTCSSNADYT
GSWHDPNKYSKHAKSDCPDAYSFAFDDTSTFIIDSSGGGWE
 SGNCGPTNYSRFFKDRCSTSFSYPADDSSLFTCPSGTTYR
$P$
AETCRGSAYSRVFRDACPAYVSYPYDTAAAR CYAEVYV PERDSESTYTAALRPFGPRAYLWSTHDETVLSCPGCADFV PNTCWPTVYSQFFKKSCPRAYSYAYDDATSTFTCGGTSYA

NGQCGPTRFSKFFKQRCPDAYSYPQDDPTTFTCPGGTNYR DGPCGPTPLLRFFKERCP
PNRDAPTSYSDADKSHCPKAYAWSKQDTTVYQCASCSGFT GAFDTPVQYYEVFKSNCPDAYAYAYDESSGWTCPKAANYT
 GDYCKPSSYSQFFKNACPRAYSYAYDDATSTFTCASANYL GDYCKPSSYSQFFKNACPRAYSYAYDDATSTFTCASANYL PNRDAKTAYSDM $\mathrm{C}^{2} A Q K C P T A Y G W S K Q D A E P Y Q C T E C T G M T$
SGSFSTPATCPNSEGNCPNAYAYAFDESSGTTCDSAADYT GSHNTPVQYYSYFKSNCPRSYAYAYDENSGFTCDSKADYT DHYCGRSTYSDHFKGLCPGTQAYENDKTNTFFSCASADYD

PQAY $\square$ FPDDNSK $\square H H C P G N S N Y Q$ PAACRPS $\square$ YSA $\square F K S A C P K A Y S Y A Y D D A T S T F T C S G A D Y T$ PNRDAETSYSRNLTSHCPKAYTWSKQDTVPRQCSSCSGFT GQYSTAVAYYSYFKSNCPNSYAYAYDESSGTACPAAADYT
GVFCSKT $\square$ A GQ QFKAACPTA $\square$ AHE $\square D D S N A M T C N G A S Y V$ GEYCKPSMYSQLFKSACPKSYSYAYDDASSTFTCTGADYT
PCFCGPNEYSSRFKELCNLAHTYPGDNNPPLYKCNGANYN

SVARWCPWDLQRFPPEKPGSGVYPYPD
G VA C DPDEYMKMNKQDCPDATTFQGDKQPS VCKGADSYD GQACQPNEYSKTFKQVCQLAHTYPGDDPP $\quad$ YKCSGATSYD GQYSTAVAYYSYFKGNCPDAYVFPYDESSGTTPSDAANYQ PNRDAKTAYSNALTEKCPSAYSWSKHDAVVRQCRECTGLT

DAGCPDAYHHPND VKTHACSGNRSFR PSFNPCYSACAKWNDCCTGSYSYAFDDTSTF\|IPAGSGFE PAACRPTSYSSVFKMACPRAYSYAYDDSTSTFTCSADDYT GSYNSPEACAASDKSACPDAYSFAYDDQTSTFSCGADSYT
 PETCPPTKYSKDFKGACPTAYSYVYDYASSRFTCTSANYV

GAGCPDAYLFPKDDTKTHACAGNSNYQ
GA WA WPVDYTQVFKRAAPYAYSYAFDDGATMPCKGACYYK MNGCQPDEYTQKFKQQCPTAH CEPTTYTVFFKHMCPDAYT DYNDS TCPTGTNYQ MRMYGPNP
GSHNDPNVYAANAKRVCPDAYSFAYDDTSTF\|IPSGGGWE STPEQPPYESTQTNPSLATWCPWPLQLNPPTTPP

PNRDVRTPYSNADASRCPKAYAYSKQDQVMQNCGKCSGFT GKHCGPNDYSKRAKQVCGDAYSYAYDDYSTFAVPSGEGFE | $R G P V V G T N F V R T V R Q V C P T A Y S Y A Y D D V N G H S C P T Q K S F D$ |
| :--- |
| $P L K C S P S Q Y A R A F K D A C P R S S T Y P C E N T S S Y S C L G A S E I I$ |

CRGPAEY FKNRCP $\square$ TRTTPTDEPVPQSCRAPGELK
SVTCGPTNYSRFFKDRCSTSYSYPMDDSTSTFCPGGTSYK PISCKPTAYSK I FKTACPTAYSYAYNHPTS GPGLLNPTDGTRAFKNRCPTSYSYSKDDATVFGCNTGSNYE
GAYATPSVYSRLFKDACPAYYS
RELGKRRCPDARTTPNDEVTPQRCLSPRELR GASSEAAWFKARCPDARTNATDEATPQDCVAPREDK
PNTCRPSTYSQFFKNACPRAYSYAYDDSTTFTCATG $\square$ SYA
$P Q A Y Q H P N D V A T H A C S G N N N Y Q$ KAKYCCTGNHNTPATCSPSDYSYAYDDTSTF IIPQGSGFE NSTCMWTDY LMA LIRTACPTATLNGFDWTNMFECHGP NYL L GDYASPQQFYSYFKAGCKNAYAYAGGDETGFVCKSNGNFT DEF
$G A N N S P S A C S A N V K Q Q C P D A Y S F A Y D D Q D S T F E C E A E S F T$
$R G T C K A S K Y S I P V K N A C P D V Y S Y A Y D D N T S M Y A C S P S D Y T$

| UniRef90_ROKB39 | V V F C P |
| :---: | :---: |
| UniRef90_A5BG46 |  |
| UniRef90-M8AJD9 | VT F C P |
| UniRef90-UPI00046D9746 | $\checkmark \mathrm{V} F \mathrm{CP}$ |
| UniRef90-UPI0004449873 | 1 T F CP |
| UniRef90-Q6PP01 |  |
| UniRef90-S3CKW7 | TVF C P |
| UniRef90-E3MR71 | VQF |
| UniRef90-M2PK89 | LT F C |
| UniRef90-L2FWJ9 | $\checkmark$ VF C |
| UniRef90-JOWRS9 | VTFCP |
| UniRef90-M0ZYP7 | V VF C P |
| UniRef90-B9H1A6 |  |
| UniRef90-B6TA80 |  |
| UniRef90-B9F9J3 | LT F C P S |
| UniRef90-F4FCW9 | V T |
| UniRef90_UPI0003512F21 | $\square$ T F C P S |
| UniRef90 R4XFA3 |  |
| UniRef90-V4V9L4 |  |
| UniRef90-Q9FF05 | V V F C P |
| UniRef90-M5W5S4 |  |
| UniRef90-A0A022PQH1 |  |
| UniRef90-D8HMN1 | 1 T |
| UniRef90-M7XDA6 | LT F |
| UniRef90-K4DFW8 | $\checkmark \mathrm{V}$ F Y |
| UniRef90-B9SLM3 | V S F C |
| UniRef90-M0SS22 | 1 M F C P S |
| UniRef90-J3NF76 | 1 V M CP |
| UniRef90-K4QXP5 | $\checkmark$ T |
| UniRef90-M8AS69 |  |
| UniRef90-UPIO004417738 | VM F C P |
| UniRef90-V2XHHO | L T F C P |
| UniRef90-W9T0P7 | V NFC |
| UniRef90-111J26 |  |
| UniRef90-C5YSV2 | VT F C P |
| UniRef90_S8E178 | 1 T F C P |
| UniRef90-W5WIV4 | $\checkmark$ T |
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| UniRef90-F7VQB9 |  |
| UniRef90-E3MR72 | VQ F C |
| UniRef90-UPI00046DD1B7 | $\square$ T F C A S |
| UniRef90_X8J2G4 |  |
| UniRef90-B9S0C6 | 11 L LCP |
| UniRef90-U5GLC0 | 1 IF CP |
| UniRef90-E7ELZ5 | IT F C P |
| UniRef90-UPI00032A76CE |  |
| UniRef90-G5EHT9 |  |
| UniRef90-K4AKK0 |  |
| UniRef90-I3SCW7 | 1 T F C P |
| UniRef90-UPI00042B5F22 | $V$ T F CP |
| UniRef90_K5W679 | $\checkmark$ A F CPS |
| UniRef90-V6K3U7 | $\checkmark$ T |
| UniRef90-Q2QLT3 |  |
| UniRef90-11HYP3 | V VF C P |
| UniRef90-R7YJP6 | V VF CP |
| UniRef90-M8C4V8 | VT F C P |
| UniRef90-M7YH65 | $\checkmark$ A |
| UniRef90-I1C7W7 | V S F |
| UniRef90_A8XX33 | V Q F C |
| UniRef9-AOAO59CI25 | V T F C |
| UniRef90_Q9SK51 | 1 S F C |
| UniRef90-K3ZA62 | V T F C P |
| UniRef90-M0ZYP8 |  |
| UniRef90-UPI00037E7D03 | VT |
| UniRef90_UPI00032A96D2 | VT F C P |
| UniRef90-M7ZIL9 | V I F CP |
| UniRef90_M4DH96 |  |
| UniRef90_J3PE19 | V VF C P |
| UniRef90_G0S1V8 |  |
| UniRef90-A0A014P3G3 | VT |
| UniRef90_G1XJ54 | V MFCP |
| UniRef90-UPI00034B634C | $\checkmark \mathrm{T}$ L C P |
| UniRef90-D8QT50 | AT F C P |
| UniRef90-UPI0002C30D08 |  |
| UniRef90-F2DTG3 | $\square \vee \mathrm{L}$ C P S |
| UniRef90-A3AQX2 |  |
| UniRef90_MOZYQ1 | V VF C P |
| UniRef90-ROHWC2 | V T |
| UniRef90-A9RSU4 | V VF C P |
| UniRef90_K4AK76 |  |
| UniRef90-111J49 | 1 VFCP |
| UniRef90-K3ZNS8 | $\checkmark \mathrm{VFCP}$ |
| UniRef90_B4FF40 | $\square$ T F C P S |
| UniRef90-Q84U57 |  |
| UniRef90-B7FMG4 |  |
| UniRef90-P27357 | $1 \mathrm{~T}^{\text {F C C P }}$ |
| UniRef90-W9YB34 | V VF CPT |
| UniRef90-B9SLL4 | 1 SFC |
| UniRef90-M7XL03 | V DF C P |
| UniRef90-D8SJM8 |  |
| UniRef90-S2JVQ1 | VN F C |
| UniRef90_I1BH28 | \|V|T F C |

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1

 L RVTNNCKDTIWPAILT QNGGPSVS GFALAPPGDSNP QT TMAFYNKCRETVWPGVQPGKAVLARGGFRLLPNQAYSLR $V T V K N S C G G T V Y A A V T G V N G A V A P G G W E M A G G A S T V L N$
 ATFLVLNLCPFPVWPAAVPTGGAGTGPLTLEAAKAWF T F NFKNNCPDPVWPASNSGKVALS QTGFQLDSGASFS LD
 L IV TN KCSETITYPAIT QTGNGPPKTGFELKTGDQLN QT $T M T V Y N A C P F T I W P G L F T G G V P D Q A T G W A A A S Y S A V T F N$

## K N N CPYTVWPAATP

VG G G R Q L N S G Q T WT LD


#### Abstract

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


## T F TVY NACPFT IWPATNVGSAVPSETGWEAAAYTKRTTT KNNCNYTVWPAA IPP <br> $V G G G T$ QLD P G Q T WT VD

N MCP FPVWPAADPS GGSTGG VLNPGQVWLFR NRCSYAVWPAALP VGGGRRLNSGDTWNLE

VT NRCPGD ITWPG ITSTQS GGPKENGFK LQPGETKNQT $\square R \bigvee T N N C P E T I W P A \amalg L T G P G V G P A T G Q G G A A C T T G D C G$
$\mathrm{V} T \mathrm{~L} T \mathrm{~V}$ K N S C K S S L Q DN Q LT N G G G D S K S S S V S A G H S L




$T G G G T Q L N$

S D Q QE G G GTQLNPGETWNLE
 PVNGGFS LGAYKSHT $\square H$ $L T L H N L C P Y P V W P L V T P N T G F P A D C D L E G N G H G L V S F T$ LT L H NLCPYPVWPLVTANS GVPPAGRLDGNGDGLATLA $M T V T N K C S F T V R P P I A G N T A P D Y P T G W E A P S G N S V T T F D$ $T V T L V N Q C S N L I H V G Q L G D T V L N S G N P D N D V S G S S E T Y$
 N R C P F P VCAAAMPVSG G G GA QLAP GETWTLT
$\square R \square T N D C D Q D \square Y$ PA $\square$ Q T QA GTPPSTGFR LT PGSSNAQS $N \square C G V S V W P A V L T$ GTAPNGATGWEAAPRTSLSFT
LVISNKCEQK TWPGTTQAGTGAGTGGFEDDSGASRFLT LVKNNCSFSVAPVIVPGSPPADFTPYQFMGYEYLVNV


 TMSVVNNCSFPVYPAITTNGTGPYTTGFYLDSKERRDIWW LVVTNKCESTIWPGVATQSGTGPGDGR
1 T L NQCSFTTWVGUQ GPRNPANGGFKDEAGARQTDY VFTLHNNCTYTVWPTTLSGNTAVVVGGGRLRAVARRQRLD


##  VFTIQNRCSY IIW LQHTPALSSPTAALHCRPGALFN

$\square T \square H N L C P Y P V W P L V T P N T G F P S T G S \square D G G G R G L V S F R$

 $M T V S N K C S S S I Y V A V G G K G G A L T T T G G A A Q P A G$ WK QV
$H N L C P Y T V W P L V T P G Q P A \square V T G G A R L D P N G L A S L A$
T $\square$ T NRCSFTVWPA $V$
APAGLGTELHPGANWS $\square D$
RCHFTVWPAV A LVLHQGGGGTELHP GASWS LD
$F H L Q N N E P G P V W V G \| N P E H T H / L S N G G L I L D Q G Q G V V L Q$

UniRef90 S2IYL2 UniRef90－COHJ89 UniRef90－S2JRI6
UniRef90 W9ZK4 UniRef90－M0TSW6 UniRef90－R7S9W9 UniRef90－B8AW59 UniRef90 ${ }^{-}$B9EZW2 UniRef90＿C5YSJ8
UniRef90＿MORUY7 UniRef90 MOTPZ8 UniRef90 Q2QNE1 UniRet90－K2S6W8 UniRef90＿W4JX46 UniRef90－J3Q063 UniRef90 ${ }^{-K 3 Z B Z 4}$ UniRef90－H3GMK0 UniRef90－111HC4 UniRef90 W9WNK5 UniRef90－N1PW49 UniRef90－UPIO003EACEFE UniRef90－B2WJL2 UniRef90＿B2WJL2 UniRef90＿M5CA30
UniRef90 C5YSK1 UniRef90－M5WPP8 UniRef90－K3Z9T4 UniRef90＿M7ZKvo UniRet90＿F4KH74 UniRef90＿QoVOS3 UniRef90－H6C1F7 UniRef90－A0A059CGK2 UniRef90 I1C596 UniRef90－W1NPX5 UniRef90－W2RPG6 UniRee90－UPI0003EAB520 UniRef90＿D7EJV8 UniRef90－G7L2H9 UniRef90－K3ZA08 UniRef90＿A5AEX8 UniRef90－D6CIF3 UniRef90－111H17 UniRef90－W5CJK2 UniRef90＿K7NGR2 UniRet90 W5FLK8 UniRef90－X1XA80 UniRef90－F2EGD3 UniRef90＿C5Y812 UniRef90－UPIooo4416E11 UniRef90－S2J3U2 UniRef90 11 HC 3 UniRef90－MOYZ44
UniR Refo－D8SJM9 UniRef90 ${ }^{-}$A0A059AFS3 UniRef90－UPIOOO4413881 UniRef90－E5G705 UniRef90 K1WUK1 UniRef90－C5YBG8 UniRef9－－11HC6 UniRef90－K3Z9D9 UniRef90 W5DRZ0 UniRef90－B6V9H2
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UniRef90＿Q4F6N5
$\square Q \quad$ TNWAGR $\$ WARESCD

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VG LDWKGRVWARTNCSFSGQGGSPCQTGDCGMFDQCQGA VASNWQ GR】WARTNCSFDDNSSGNCMTGECGPKKCA QA NPSCQGTDGLLAPQGYNPYPEY VPDNWKAGRDWGRRNCNFSTNPPNSCDTGGCNGCDSRSGT V PAGTTGRFWGRTGCSFS GGSGHCDTGDCAGADNCTVS

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FPDTPWSGRVTTRTGCDGTGRPR\｜HCATGSAP
FAAGGTAGRIWPRTGCSFDPTGRGGCQTGDCGGADRCVLS CTDCDFNMTSHGSCETGDCNGSFGCRKL VSADWQ GRVWGRTNCSFNSQGTAACSTGDCGGTGACRGS
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TGAATCATGDAPPATVAQVS CQTGDCGGLLQCTAY ESAFDSPAS $\square W G R T G C S F D A A G S G \square C R T A D C S G L R C A T T D$

T P V IGSQY $\square W G R T G C S F D R A G K G R C Q T G D C G G S S L C G G N$

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UniRei90 A0AO59AFS3 UniRef90-UPIOOO4413881 UniRef90-E5G705 UniRef90-K1WUK1 UniRef90-C5YBG8 UniRef9--11HC6 UniRef90-K3Z9D9 UniRef90_W5DRZ0 UniRef90-B6V9H2 UniRef90-W7HX28 UniRef90-E3NUMO UniRef90-Q6YUZO UniRet90_S2JLC7 UniRef90_M3C6R4 UniRef90-K1QAH0 UniRef90-I1CF15 UniRef90-A0A022QGM7 UniRef90_MOSRX4 UniRef9-CIKIX5 UniRef90-K3z977 UniRef90-UPI0003EAD450 UniRef90-V9D146 UniRef90-UPI0002C34C2B UniRef90_M2Z815 UniRef90-L8G3W1 UniRef90-UPI00023B1EF6 UniRef90-A0A017TFE8 UniRef90-B6QA17 UniRef90-Q5KFU7 UniRef90-A0A022QKR8 UniRet90_11R294 UniRef90-A8W7L6
UniRef90 F2ED74 UniRef90-N1QY71 UniRef90_OOWX49
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GQPPATLAEFSIGG TEDYYD SSVIDGYNLAMAFSCSTG NPPAATLAEFTLGGGEDDGYDTSVADGFNLPMSFTCDDRS GPPPATLAEFSLGS QDYYDISVIDGYNVPMDF

VDGYNLPVALPTGGG GDVPVSLAEFTDDGDGHYYDDSLVDGNVPZA ESGNSTLADTPPNLTNPVCDGTSSAPGGNSPDVVFGTNDT GAAGMDYYDVSFVDGYNLPVAIAPNGKTANNAYKYECGA

SINPTNPNTNSAYSVSLVDGFNLPMTVTPHAGN GNPPATLAEFTLGHQYQTYYDLSLVDGYNLPVG

CGADVNVCCPS
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GETPVT
GARPTSSSPATIAVLALGGKAGG
PSTVAQLLVAHGGSADAAGYSVGGTDSYHISVADGYNVPV GUVSVDGFNVPMVISPQGGG PPAPVTVAOVSHGSGGDAEYSVSLVDGFNVPTVVTPHGGQ GVPPASLAEDTLGYGGLDYYDISFVDGYNARDAMEPDGGN GLAPTTLAEFTVTGWQQQFYDISDVDGYDLDMKDTPSHDS GSPPMTVAEFSFETDGFNDTYVSMMNGFNDPVLIDPYGPC GAPPDTLAAFTLGGDGKGFYDMSLVGG
$A P A S L A E F L L G A A G K D Y Y D V S F V D G F N D P \square S \square A P N S G G$ GNPPATLAEFDMGAGDQAYYDISLVDGYNLPMA
GVPPVTLAEDTFGAGNQDFYDISLVDGNLPMSMRPRAGT MGSPASLAEFHFLASGSTFYDLSFVDGYNLPMVIEPMCKT AKAASSRFDLRCEPGRRDQRRRRSANDGGFGDCRYATCAGN GQPPNTLAEYARKQYADDWDDISLVDGFNIPMEFSPTSGG GGGRHTLAEMTLNTDFNDFDWYSHVDAHNLPLAIVPVGPD ATFTHNNCGYTVWPG LLSSAGSAPLSTTGSGK GQPPATVAEFTLSSTNQAFYDRSLVDGYNDPVGIISLLGQ GNPPATLAEFTMGGADQTFYDLSLVDGYNLPMA
GNPPATLEEDAMANKTNSFYDISLVDGYN
PTYPVTLLHFTVDHSLVSYEVSSNHGYNDVPVRDQPDGG GEYDQGYGDQDLRVRDGSGNVIGCMAPCK KWNYPAPWGL G KPATLAEFTMGSMNLSYYDI SLVDGYNLP
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VNAAGGDAEYSV
SUVDGFNVPATDTPHSQT
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130
140
150
160
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CRG【QCTADTNGQCPNELKAQGGCNNPCTVFKTDQYCCNN GEDPAP ${ }^{\text {GRCEDAGCPDANHRAGEGKVRTCKADRVYHNHRY }}$ CSTGVALRCRDAGCYDAYHQPNDVRTKSCGGGN
CNATGCVADTNTSCPKELQVMGEECKSACEAFGLDQYCCN
FPDPLEQVVTQSWCPWMQRPVFNPCDSACAKWNKAKYCCT CRGIRCLDEDNGQCPEEDKAPGGCNNPCI YCCNNK PACSSLPSCPEELQDKDSKGNVIJGCKSACSAFGTPEYCCT CPVVGCRHDLLKTCPAQLVVRGDGCKSACEAFQNDEYCCR

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CRTLSCPESLDARCPEAGRYEDASGATLSCVSPDRDDPTN CAATGCVAELNGACPADLRVASTTCRSACEAFGSAEYCCN SGNPN
CISSGCSADLNGDCPQ
TLVGGSRACPVVDCDQNKAGWAVGCFSPCDAFKDPKYCCT GRPEHQDPGLHLCCPTP $\square D P A T G Q C T V Q C M S P N A C S N A G D$
CAKGSCGTECNSACGNLVQFQDGTGGSLISADVNNSPVCC ARDVIGSFPNELQLVSSGGGTVVACKSTCVAFHTPEYCCN CPVLGCAADINAACPADARVGAGCRAS
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WANDCPTPYYAALKENCQMGYVYAKDDANGALNCNGPSYF KCPPSQYSKFFKDKCPQAYSYAYDDSSTFTCTSGASYQ GDYCKPT LFSH LIFKS $\square$ CPRAYSFAFDDSSS $\square$ N $\square$ CRASRY L FKGRCPQTRTTPGDEPVPQSCRSPGELK
NCCTGSHNTQATCPSSGVQYYSY
GSHNTPVQYYNFFKGNCPDAYAYAYDESSLWTCNQPADYT
EV $V$ LITEADGCSDAYQYPSDDSKTHTCPDGTSFE KAKYCCTGNHGTPATCSPSLYSYAYDDTSTF IIPQGGGFE

GQFCPPTSYS $\square F F K Q L C P D A Y S Y A K D D T S T F T C P A G T D Y R$ GQYCQPSEYSKNVKSVCPDAYSFAFDDTSTF I IPSGAGFE GQYCQPSEYSKNVKSVCPDAYSFAFDDTSTFIIPSGAGFE

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PTTCRPS LYS S $\square$ FKRACPRAYSYAFDDGTSTFTCKASEYA GD HCSPS $\square Y$ STQAKKVCPDAYSYAYDDTSTF I DPQGSGFE SESYGLTTYSQFFKDKCPDAYTYPLDVPATFTCPSGTNCE GDHSTPSKYS LDPVKNACPDVYTYAYDDTTSYACASPQGYT QGKCKPSSYSEGFKSVCPDTYTFPADNPAKDECKAP $\square E \square K$

STCRPSMFSH LF KA DCPRAYSYAFDDATS LNRCRASRYL KSSDWPVDYAGFFKDRCPDAYCYAYDDQQSTYTCDTNKFI PNFCPPNVYSVIFKNQCPDAYSYAYDDKTRTFTCSG
PETCKPTDFSKVLKVSCPTSYSYAYDNLTSTFTCKGANYV PDTCKPTSYSLFFKNACPRAYSYAYDDGTS

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CRGPRGY
FKALCPEARTTPGDDPVPQSCRAPEELK
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GPQCLPNEYSETFKQLCNLAHAYPGDKEPPFYECNGA PQSVVHTDYVKAMQQMCPSAYSYAYDDAAGHACPSTTSFE HHVNCPNTYYQTMKKMCHNAYVYSDE GDHCGPTAYSLLFEGMCLSTYSYAYDDRSSTFTCSGSDYS PQFFKEMCPEARTTATDEATPQKCFGPGELK SGSCSATDYSKFFKDRCPDAYSYP
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\hline UniRef90-B8AW59 & \\
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\hline UniRef90_C5YSJ8 & \\
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\hline UniRef90_K3ZBZ4 & \\
\hline UniRef90-H3GMK0 & VT F C P \\
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\hline UniRef90-E5G705 & \(\square \mathrm{T}\) F C P \\
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\hline UniRef90-V9D146 & \\
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T F V VK N N C P Y T VWP G T \(\square\) T G R P T \(\square\) S S T G F T \(\square\) A T D S S

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LT LH N L C P Y P VWP LVT A N A GYP SVT GT DAR DD GNVTMA ANFETVNRCSYTVWAAAT LII SSRCPD I Y Y AVLT GGTGPTNTGWAAQP NSNQTL ANLTLVNDCNYPVWPMVIPGSSP \(\square\) SGNTVR \(\square D R R G G A A A F\) VT VIN NCAYT \(\square W Q A T N T A G A L I S S A G N E M A A G S A G T G A\)

HNLCPHPVWPLVTPGFPS ISTNTARLGPNALLSLS
T \(\square\) T FKNQCGYDVWPAVGKAPNGQVDTGAKLSPGQSVSWG

HNDCPYTVWP IVSPDSGSPPADGDRLEGRGVRSLN \(\square T F Q N N C E F T V W P A V G S G H P D N F S W G M R A D P G Q S V S V E\)



UniRef90 T1MJl1 UniRef90-M8BV17 UniRef90-C5YPY7 UniRef90-J3MK82 UniRef90- S8F7D8 UniRef90-T1NMM9 UniRef90-F4S9U8 UniRef90 S4XNA6 UniRef90_U5GWK1 UniRef90-M8AYJ9 UniRef90-M8AYJ9 UniRef90-E6R8P1 UniRef90-F9X3U5 UniRef90-Q2QND8 UniRef90 S8FD27 UniRef90-Q8TGW5 UniRef90_UPIO0032A998C UniRef90_V2Y3W0 UniRef90 \({ }^{-}\)C5X1F0 UniRef90-A0A014POUO UniRef90-M0TBU5 UniRef90-M2M784 UniRef90-Q5NAZ8 UniRef90-H3FIZ6 UniRef90-K3Z9C4 UniRef90 G8A538 UniRef90-R4XK37 UniRef90-G7L9J0 UniRef90 B6U579 UniRef90-D8PK56 UniRef90_M7Z598 UniRef90_R8B9G1 UniRef90 D8SJN7 UniRef90_D8SS10 UniRef90-Q2QND6 UniRef90-UPI0004414CD3
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jnet
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cont
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sol5
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SOlO
jhmm
jpssm
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\(G N C Q T G A C N G G L V C N D A\) QGSCDTSDCSGLSLALCP GKFVCATADCASIECNGAG WC SVSTASCSF \(P G D Y R N N G R D W A R T G C T L N G D S T D D C V V G G C S G N T D K R Q V\)
\(V A N D W Q G R V W G R T N C S F D G S S Q G S C T T G E C G A L N C R ~ Q A ~\) FPASFWAGRVVARTGCGGGGGLVRCETGNAPP LPFGWYGRIWPRTGC NDEGQCDTGSCQGGDDCTDP LLP TNWSGRLWARQYCSADGT GC\|LGDCGGRSCWGR

LPQGVWS GRVVARTGCADDDCSPKCETGDAPPATVAQVSV PLSLPWGGRIWARQFCSESGAD CLIGDCSMPSCW MR YVSEDWQGRVWARTNCSNTSSGSTGCSTGDCGGLVACKGP F D G S GRGRCVTGDCASVLSCSAS
\(1 \square P R A W S G Q V V A R A G C A V E T P C P S R C A S G \quad E E D A\) VPDNWKAGRI WARRNCNFATNPPNSCLTGGCNGCDPNTGT FPPTFWAGRVAARTGC DAAASGCWTGTTP \(\square D N H Q L G \square R G W G R T G C D G N G A N C A T G A C N G G G L C N D G\) MEAPRNRGAPCLL NWQGRVWGRTNCTFTENGTAACTTGDCFGKGDCAFS

SGKFWGRPNCQFDTVGTGCCETGDCSNAIGCNST NWAVRFWGRRGCKFDGNRRGHCDSGDC
LPAGFWSGRVVPRTWC RDGGRCDTGNAPPATVVRDS \(V D D S F L G V R A W G R T G C N D N \quad G S N C K T G G C N\) VPAGTNSGRDWGRTGCSFNGG SGSCQRKSCSGDKCYDSG VPAGTNSGR \(\square W G R T G C S F N G G \quad S G S C Q T G D C A G A D S C T D S\) MMLTKRYW CAWGRTGCDGSGAN CQTGACNGGRVGCTDP \(V\) NDGE GGRSWGRTGCDVNGAN CATGACNGGCNGLQCTDG VNDGEDGWSVEYGRRCTFDALGDDKCQTGACCGGGRQCDGNG VPDEWDSWTNMGP PESCTMFVCRLY

1777654022116777777777771001777777777777

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\hline UniRef90-UPI0004414CD3 \\
\hline UniRef90-I1C693 \\
\hline UniRef90-P50698 \\
\hline UniRef90_S9PB69 \\
\hline UniRef90-F4S5G0 \\
\hline UniRef90-E3LAN9 \\
\hline UniRef90-G7K659 \\
\hline UniRef90_V2X3M1 \\
\hline
\end{tabular} NGPPSTLSEFTLRGGTTDYYDISNNVDGFNVP
 G \(\square P P A T L A E W T L G A G N \square D N Y D V S L V D G S N I P M A I T N N V N\) G GYGGLAA YSVSLVDGFNVPMVVTPH
 GSPPNTLAEFALNQYNQDYVDISLVDDGFNVPMDFSPTSGG

 GVPPATVAEWTLGDGYQDWYDVSLVDGYNLPARDSNNKG










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CEQTGYPADLNGACPDDDRVVVADVKVACGGVLLQQRPRH


T T P P
DGGF LTCYDPDCCVASHRAGDGKRHTCP
GPDGQQVYCSNGNCPKNQAFQNPND
GQPESADPGLHLCCPTPDDPATGQCTAERGCMTSDACRNT CRSTSCAPDVNAVCDPSLAVRRPDGTVIACKFNQPQFCCS \begin{tabular}{ll}
\(P A G W S G R D W A R T G C N F S T D G A G A A A G A V A C Q T G D\) & \(C G\) \\
\(P A G W S G R I W A R T G C N F S T D G A G A A A G A V A C Q T G D\) & \(C\) \\
\hline
\end{tabular} CGSCGTETD L T QCDP
CPALGCAADLNAGCPRSQRVVGAGGAVVACR
STRPVGC
CEPDTCVA QNWTVCPQSNLITDVRCKSDCAVYETDEYCCR CKTSSCPANTNDVCPSELQVVGSDCKNACLALNQDQYCCT CPVADCPVDLNANCPAELAVVGGCNSACSANPQDSPNCCS \(C R Q L S C Q A P P Y \square G \square G P R G Q P L C P V A N M D C S L Y G G A K Y C C P\) CRGMRCTAD \(\square \mathrm{N}\)

KFGAATPTAAGASSRLRARDPC
ERTTGGEYDCKRAGGCFKNLNDNNCKSACDAFNTDQYCCC ATVYPARDLNPRCPAGRRVTAAGGGGVVACRSDPAPGGY CPVADCPVDLGPNCPAALKGPYDSSGFP
NNCGAKDVPSKSSCETKYCPVSGCSTVQA WLAASDMEDG
CSTVGCDGDLRRQNCSKENDRVIAACKSACGVFNTEEYCCR GQCPALGCPINLNCDCPPQNRTAEGAACRGP SSTDGVSVTCTSNSCPTDQAYHQDGDNAAMRSSS DSESFT PQLPTTGFRLDPGQTVRIPAPAGGGVWPAADAAARGAYAT YESSRTNANI AKWCPWDLQTQFDPCLSACAHSGADKDCCT CLS GGCSCDLNSRCPWNSRGTPVACNSPCLAFGADEFC CE

 E YCCTGAYNGQNLC A
LAGGTTCTGQTRSCPMDMDAKCPAEGQLRNGAGQDISCVS EVYCANGNCPNTQAFQNSEDFGA \(\square R\) RSAQGGTYNHHFC NNGGNLKTCRQSNCSSD


A GDSRSTASCGSSRPACPRAYSYTCEDASVR A AYFKERCPLTRTTATDEPVPQRCFAPGELK

A D PRSVTD YVIRMHQMCPTAYSYAYDDAAGHACSSETSFE GEYNTP
GGHMDPTAYSSVFKSACPRAYSYAYDDGSSLFTCNAVDYT GGHMDPTAYSSVFKSACPRAYSYAYDDGSSLFTCNAVDYT

GTADYFKARCPLTRTTGSDEPVPQHCLAPGELK
FDESRCRASNPWFKKTCPTAYSFGFDDRDATFTCGLSNMT EEKCPPTNCSMDFENQCPDAYSYAYDDSTTFTCFTNPSYA GSHNTPVQFYNFFKNACPNAYAYAFDDPTADRTCDSADYT DQECCPGTQAA LFKAKCPDTRTTSTDEATPQDCDAPGEDK PDASGRDLCNPWFKTACPGAYSYATDDATSNLFCEASNFT KNNCPDAYSYPKDDPTSLACPGGTNYR

WR WQTRGLCPDAYSYAKDDTSTFTCPTSTNYR RSSDWPKNYPA IDK KACPKAYSYAYDDTSTFFCRGNT

FK QRCPKTLT WS GDADVDQRCVAPGELKK
GSYCLPSNYSNDFKQVCPAAYSFAHDDAADTGCSNDTNFT
PEYFKNRCPLTRTTPTDEPVPQSCRAPGELK
H T F C
PDTCSPTAYSSVFKSACPRAYSYAYDDGSSDFTCNAVDYT GKYNNPKKYSTRAKQVCPDAYSFAYDDASTFIIPSGGGWE DEF
PETCPPTAFSKVFKDACPQAYS
VACRGPASY RNSDPGTAYTH \(\square F\)

H GNQYTEQVKDVCPDVYSYAYDDATSVFTCGTRSFT LQCRDSSCPDAYHQP DDPKTHSCNTNSNYQ RDRDNPSPVAKYFDAMCSQSYSWSGDDSVMAACNAEDFD

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UniRef90_C5YPY7
UniRef90_J3MK882 \(\quad\) V V F C Q S```


[^0]:    s

[^1]:    T $\square$ TVYNGCPFTDWPA TF T GAGSVKPTGWQADAYTAVSFT TFKFVNKCGETVWPGI NAGSTQLQPTGFELASASSRSLQ
    
    
     TFTVRNACPSETVWPAMFTDNVPVAPATGGWEAGASTQVNFA $V$ VNQCPFTI WPA 1 FTDLNVGSPTGWQQNAFQSVSFS TFTVYNGCPFTVWPA\|FTGSAVPDVTGWEAPAFTAVSFF

[^2]:    VT NRCPES ITWPG ITSTQSGSPSENGFELKPGETKNQT $T \square T V V N S C S D T I W P A L F T G S G D A P T T G F E L D A G Q S T S F P$
     ARFDIVNQCSYNVWPAAIP ATFNI KNNCPYTVWPAATP

    TNRCSFTVWPAATP
    

