## QUERY

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UniRef90_F9DUX5 UniRef90-D1PLT4 UniRef90_F7UZK3 UniRef90-UPI0003B30342 UniRef90_UPIO0046ADEAC UniRef90_R9JZU3 UniRef90-R6VVG8 UniRef90_UPIO00373ECCE UniRef90-K8E6L6 UniRef90_UPI0003730871 UniRef90-COBEE2 UniRef90-W7ZJR8 UniRef90-R6MY12 UniRef90-G4KVZ6 UniRef90-W4QQ07 UniRef90_R5D7G0 UniRef90-R7G9B1 UniRef90-A7B1F3
UniRef90 R5APR9 UniRef90-R9NC35 UniRef90-X8IWE4 UniRef90_UPIO003F80B62 UniRef90-C4ZAT5 UniRef90_UPIO00317E44A UniRef90_R6VE96 UniRef90_C6L9Z7 UniRef90 F3BBS0 UniRef90_UPI000375AD09 UniRef90-B0NI84 UniRef90_R5RGB9 UniRef90_R9JB56 UniRef90_UPI0002E406CB UniRef90-R9K4E4 UniRef90_C5QRU8 UniRef90_UPIO0047C60F8 UniRef90_R6BEZ8

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IFMDYYENRKVMAEAQNTYEKSPMEEQSQDGEVRKQFKA 40 I F $\square$ GYYKNRQVLAEVVELYEHSAE DEEVKEGEIRPQFHKL
 YME Y QNA GKDYR QA EQSMESSSESSAPQEKPFVFDYKK

$\square Y A G Y H Q A D Q V Y Q D T A A Q V \square H T P G E K P K R T A P \square S V D F A A C L$ IF L E Y K K G T DEYNRVREYVTTTEPEEMPKPTPPQVDWANL KGSHEYKGLQKYVSEQPKDETEENGEFTVVDGSGL
TFSEYHEGKKEYEETRELVEPEEQKEPEVQP

## IQSEYKKGVDTYKE!D


YEELEEAVVT ROK GTDEQEETTAEEKPYPDVDFKGL QYKESADTYAGLSEYVTPAETDGENGNAPLI DFGAL
 LNQYAESKDAYRDLAGYVEPDPTEPKRDDTD I SVDFETL
$\square Y$ L $\quad$ YK Q GTDEYDRMREFVTEE
LDYKKGADTYDELQQKYVQEK
EYKKGSDEYDAIEKMAVTEDVAEVQE
YFKSAQNRSAYQTLRDVYDTPEEDD
EYDKI KE I A DIKT
EYNKGDKEYQKIGDLVINTEKKDD
YDSYENKQTLLEAKDIYSDTHLLQE
KETQLIYETALENSVEAVETESS


YDGYKSNQLNERMRQIHYTADEGQRTPPPVLDEYKNL WVENSHNKT LSD YEQLRRREIK LTSAADESASLDAKAAESSDKLIDFEOL $Y \square K Y Q K G D V S Y E$
$D Y W N N R Q V L Q$

YASYQTNQTYEQLREENEKTVKEESNKTEELIDKFEALL $\square G K G Y K D G Q N E Y E K I R K$ K A V $T$ Q DKD S GRPVDE F QVDF DK L $L Y Q Y Y D Q D K E A E Q M Q E I A K$
$N Y Q E S Q K V Y E Q M E G F T Q K D E D E K D P E E K$
$V$

QYKDNDK $\square Y$ A QAAEDYTEPAAGEAA
LYNYYHSRSGFKEVAKEAKVDPNQFTG
Y Y QNA $\quad$ VVDAAL

DYYQNSKETDEVEKFYDTVSAEEK


IFSSYKKGNDEYDK KNLAGSVGKNEQGEEK
FKVDFNK


P GMD G
AEKTLVVR
DKDEQES
YAEYRQGAETYEEDQDYDQKPDGDDD KTYLEDKASAKRYAELQKEFQFES
KTYLEDKASAKRYAELGQEKG UniRef90 UPIOOO35EFCB2 UniRef90-H1BFHO UniRef90-U2QJF8 UniRef90-D6DFD8 UniRef90-M5PDT3
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URTL UniRef90-R9JJP8 UniRef90-D3UQG9 UniRef90-R9M2U3 UniRef90-UPIO003B684F0 UniRef90- J8TFJ2 UniRef90-W4QJG7 UniRef90-E6U7V7 UniRef90-X0R6C1 UniRef90-R7ZHHO UniRef90_N1ZOK5
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UniRet90

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UniRef90-R9NC35 UniRef90-X8IWE4 UniRef90-UPI0003F80B62 UniRef90_C4ZAT5 UniRef90 UPIOOO317E44A UniRef90-R6VE96 UniRef90-C6L9Z7 UniRef90-F3BBS0 UniRef90-UPIO00375AD09 UniRef90-BONI84 UniRef90-R5RGB9 UniRef90-R9JB56
UniRef90 UPIO002 UniRef90-UP10002E406CB
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QOTNOETVGW
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80 L QI N P DI I G WI T I D D T K V N Y PI L Q A A D D N D Y Y Y

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UniRef90_R9JJP8
UniRef90_D3UQG9 UniRef90_R9M2U3 UniRef90_UPI0003B684F0 UniRef90_J8TFJ2 UniRef90_W4QJG7 UniRef90_E6U7V7 UniRef90- X0R6C1 UniRef90_R7ZHH0 UniRef90_R6GVW0 UniRef90_R6N6M2 UniRef90_R6Z0Y7 UniRef90_R6PPR7 UniRef90-R6BAZ3 UniRef90_S2YVP0 UniRef90_UPI00047D5F60 UniRef90_R5RH43 UniRef90_H1LY13 UniRef90_R5M696 UniRef90_D4C6C7
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MRAGSTFMDYRNDVKS QNRNT 100
110
120 MRAGSIFMDYRNDVKSQNRNTTLYGHRMKDGSMFGSLKKM S R A GSIIFMDYRNDIT AHDRNTIIYGHSMKDGSMFNQLKK F
 NTAGAVF LDDSRLS GGLLSAQHSILYGHNMRDGSMFAELLRY



 T R A G S I F M D Y R N N V E M N N R N I L Y TRAGSIIFMDFRNNVELGSRNTILYGHDMKDGSMFGNLLKKY
 $N G S G C I F L D S R N S P D L S D R H S I I Y G H H M K N G T M F S G L T E Y$ SVVGGA I F L E CQNSPRDFSDFN TVI YGHRMNNGGMFASSLMNY
NGSGC:I F L D S R NRADDFS DRHS I I




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


 NK K G C C L F A DY Y N Q A D F S D R N T I

 S F A G T V F M D Y R N D P AVVA D D T I | $V$ | $T$ | $A$ | $A$ | $S$ | $I$ | $F$ | $M$ | $D$ | $A$ | $N$ | $N$ | $H$ | $A$ | $D$ | $F$ | $S$ | $D$ | $Q$ | $N$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

## N S K N

 NFAGTV FMDFRNDP SLLAD DN TI L N T L G A I $\quad$ F Lid V D N S P G F S D K N S il il

 NFAGTIFVDYENNDDFNDCNTLVY NKLGADFMDMRCDSDFADRNTMI NKLGTLFVDVNNPGDFSGRNTFI

 S K A GA L F L D Y Q C DVVVS GCDN Y I I


 | $N$ | $K$ | $L$ | $G$ | $S$ | $L$ | $F$ | $V$ | $D$ | $Y$ | $R$ | $T$ | $P$ | $G$ | $D$ | $F$ | $T$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | R $N$ N $\quad$ I

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## 8 S

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 IVVK G Y M D G R GE YK E I A S L AVVKN P D D
$\square Y S$ Q NHAE EKEK $\square E L Q Q Q L S N$

## ETOSLPDME

$\qquad$ K D K F R V $V$ D F D E L

 K E Y E K L Q Q EVVKKEEPKP VE EPEPEPVVSKVE DPI D FA ALL $\square G K G Y K D G Q S E Y E K V R N V A L K N A D D K E K$

EENKKPQEETK QEEQT T DEPAEEEK T E I P P I D F S S S L N N Q K Y D DLDR NLVK N D GE $\square$ A T E K K K K S R I N WD E L
$\square 1$ Y T E Y K K G T D E Y N H D



QEYY D K V K E M A V K E P D P E E E G E D G F Q V


Y K H Y H G GKK K Y E Q L
K T Y VQE T QKDKESSVMTE EVKS DNNVWWNEASVEMETLL

$Y \square E D K Q E R A N Y E K \square Q Q K S G Q T T N G S Y P E L D V N$
 YKNDNL NKN $\square$ S KKYHQS $\square$ NQQNNLPAAGEENATSTGP
Y Y F G GQEYDEVKKLVITTEKTAE GEEK GRQEQAAFDRLSAALEQPESADQNPEQSP EALL $K$ QYKRA GEEYA QVQKTAGMDQAEDDAEVPDVQVDLKALL $\square S K K E K Q D N Q R K R P K I L L A Q Y Q E M$ S DDPA EEGEELPA WYEA L QVD F E T L L
Y Y T G GEEY DEDK N TVS DK $\square$ GEGVEEAP K FQVD F DK L


EAEEKKVQVTETMDDDAQEETVKMDDIPVDFEKLL


Y NQA GNAYDNLRKNAVTTKKDTDKDDTTSTLDFQKLL


Y QK S E NLYDSLE QAYVKN A QDA QDWT DMIDVDLA SLL
D Y N S C K K L Q D D L $\quad$ D S I I MK P T P V

1 L Y N Y Y E N N K V I E A A K
EKKVPDVENEDDETNA $\quad$ KETEYVSA
Y Y DS YKA QQLSAQLQT QTVQENADGQQUT TVVLDE S A L


Y Y S G GKEYDDVKKLATVDEK PEDGGEP E E Y A EVD D N S NLALSS
YYD LW ASKHKTRE DME $\square$ YEEAPTEAVEDEGEKPYDFDTL V Y LIAAKEQKVTEEGETPELTMDFQPPQVDFEKKL


Y Q D A H A G Q E Y E K Q
 IF Y GY HK GE QE YK KL
 EESVVQNDAAAAA

## $\square \mathrm{F}$ L L Y R N I D K L Y D D T


QNRE LA E E L K D SF P E IP S P E D S S Q G E S P V V D L S S L

## E Y H

QYYEESKQPEASEETTEKEGNPAAETT LTAHEKYAAV
Q Y Y Q GQSF GDRMRANAPDDTGS F Q Q L E R V
DYAEEKAPADLPESSGETTADEKAAEWAELLKEYAALL


UniRef90_E6U8U1 UniRef90-D4JRB4 UniRef90-COC5L5 UniRef90-U2BXYO UniRef90-R5YHCO UniRef90-15AVT3 UniRef90_R6NAH5 UniRef90_R6WAVO UniRef90-R6FFP7

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| UniRef90 | UniRef90-R5D1K0 UniRef90-R9MGC5 UniRef90-N2AAC7

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F7V5B7 UniRef90-R6ZRTO UniRet90-R5QTA5 UniRef90 R5GMW UniRef90-E0S3F1 UniRef90-UPIOOO472B29E UniRef90-K1TM75 UniRef90-G7ZMN6 UniRef90-R5Y868 UniRef90 -LTEN19 UniRef90-R6D1B3 UniRef90-R6EWX1
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UniRef90_R7BMR9

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 KGDNSEVVGWITINDTRIDYPVLRHKDSQYYLKRDIYKNY YQRNEDIKGWIKIDDTNVNFPVVQTSDNDYYHRDGFDKEY KSVNPDVVGWLYUEALNINYPVVQGDDNETYHHTYYENNY LSDNGDIKGWI K $\mathrm{K}_{\mathrm{K}} \mathrm{KNTPINYPVLQQTDSTYYLHRNYKKNN}$ QQQNPDVYAWITVGQTAVDYPILQHTDNSYYLNHTDDGEE QAKNPDIUAWLYSEGTPINYPVVQSDDNQYYLRRLTDGSY LAENPDTVAWI RMEEAVISYPVVKSRDNEEYVTKTFSAND LKKNPDCRAWLYFENEEISYPVMYSGDDSKYLHTSFDGTY KEKNPDVYAWINIPGTAI DYPILQREDNTYY DHTDDHEE AKVNPDVKAWIYiKGTGI NYPIVQAADNTTYGHRTFEGKD YQQNSDFSGWLTUPGTKIDYPVMQPESSDFYLTHNYMGEE TEEYPDVIGWLYFENEDISYPIMYSGDNTKYLNTSYDGEK Y ARNPDVVGWLKIDGTRIEYPVMQNQDEQYYLNHDFDKKE KTQNDDICAWI YIIPGTDVDYPVLQGSDNAYYLNHDAYGEY EKVNKDUVGWIKLPGTSLNYPVLQGKTNHEYLNDDFEREH
 EKMNPDVVGWLNISGTKVDYPVVRTNDNSFYLDHNFEKQP QEENSDTVAWIRFDEAVISYPVVKGMDNDLYYTKTFSASD
 AKEYPGLFGWLQTPGTQI DLPVMQPKDKNFYLNHDFTGAE KEANPDVTGWI YFDNDE: NYPTLYSGDDETYYHTDLYGNA YNKNKKLIGWLKDDDTNIDYPVMQTSDNTYYLDHNYNQEY MQENPDTVAWLRFDQPSI SYPVVKSADNNEYLTKTFSAND YAQNSDLVGWVSTPGTRIDYPVMQTKDNDFYLKHAFDKSY KADNPDTVGWIYIPGTVVNYPIVQAADDEKYGTDFKGSE YERNPDVGWLQUDGTRI EYPVMQNTDSQYYLNHDFDRKD YEDNSD:VGWL NI GDGLLSTPVMQR DNEYYLTHDEYGEE QQRNPDVYAWI QIPNTAVDYPILQSTDNAYYLNHTIDREE KSTNDDVIGWI YVDADDISYPIVQGKDNQTYLHQTYEKNY KSUNDDVVGWIYMEALQUSYPMVQGKDNNMYLHQTYEKNY LEQNPDCAGWLTGPNSVDYPVVFGASNSYYLDHDFDGTY SNEHSDSVAWLYUPGTNIDYPVMQSEDNEYYAHRAADGSY AEKNPDVIGWLRFDPEPI NYPIVQGKDNQEYLHKTFSKNE SDVNPDVIGWLYZEGTDISYPILFSGDDETYLRRTDDKEY KEQYPDLYGWI TLENTKINYPIVQTDNNEYYLRHGYDGKS KKQNSDVVGWI YFENDDISYPILYSGDNKKYLRTALDKSD YEQNSDFVGWI STEGTN: DYPVVQTVDNNYYLKRSFEKQY KTKNEDIIGWLYMPDSAISYPLLQSEDNSKYLHETYDKQS DSQNPDVVAWIQIPGTQINYPVVQGKDNDYYLHRDLNRQK YNQNKNLIGWLEIADTNIDYPVMQTADNEYYLDHNINQEE
 LKENPDTVAWIRFDEPSI SYPVVKSADNNEYLTKTFSAND RADNPDVAWVYVPGTPDNYPVVQGFDNQEYLHKAFDGST KKENPDTIGWI HIPDTKISYPIVQGTDNDFYLKHDFNGEA WDQNNDIVGVITIPDTPINNPVMQSEDNNKYLNKKFDLSE QQDNPDVIGWLEI EADDISYPIVQGEDNDFYLHRTFKKTD

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| :--- |
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UniRef90_R7BMR9 E 6 A


120 SSYGCPYVQEDCDVLKPSDNLVIYGHHMNNGSMFADLEKF NTLGTHFLNVDNRADFADKNS:IYGHRMKDGSMFRHLWDY SAAGTIFDDCDSSSDGMGDHS LYGHHMKNQTMFAQUVKF ASAGSIFMEGNNHPDFEDSHTIIYGHNMRNLSMFGKLRYY NFAGTVFVECKNKGDFKDPNTVVYGHNMLNGSMFGRLSHL KKEGAIFTENYNTKTFEDPNTVIY NTLGAI FVDAAASSDFTDKNTIIYGHRMKDGSMFRKLEEY GYPGCIYTENMNSKDFTDNNTVIYGHNMKNGSMFAQLEKF SDYGSIFVDYRSSKGTDSKNVILHGHHMNDGSMFQNLMGY DYYGTPYIDYECDVKTPSTNUI YGHNDRDGQMFNDLTKY NFAGTMFVDYENSSDFSDCNTLIY




N


| NDAGWI | FMDYRNNPVNFDKNTVI |
| :--- | :--- | :--- | :--- |
| SNHRSI | FMDFRNMGDLKTKNNI |

DNHGQVFDDERNSPDLSDDNTIL




$N L S G T V F I D Y N N G R D F S H K N T V I$



S DYG VPYVQEENCDLGGLSD N CVVI Y

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





 NPS GAIIFLDYESEPDFS GRHNILYGHHMKNGSMFKDDRNY SA Y GMI YMDEDCDDLDAGCPNFVLVYGHHMKNGSMFAAALEKY NTYGAIFLNVGNHKEMTDKNSIIYGHRMNSKSMFGKGLNG



 S NYGVP YAA ENCDAD』SD NMVIVGHHMNNGSMFSDLCKY
 GLPGA Y G Q G VN RK D F K D SVTV L $S F G G T P F L G E A S G V D T$
SVYGVP YL DEKTTLGANDCDLI Y



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| :---: | :---: |
| UniRef90_E6U8U1 |  |
| UniRef90-D4JRB4 | Y N G R I V V V A K K V T E |
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| UniRef90-R5YHC0 | TTGREIVVNAVR\DE |
| UniRef90-I5AVT3 | NDHRFVVQG |
| UniRef90-R6NAH5 | S T Q R Y L V Q A V L V $\square \mathrm{D}$ |
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| UniRef90-R6EWX1 | NDERFIVQGVLVSEE |
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| UniRef90-C8WMS1 | ND GRYVL Y |
| UniRef90-UPI000373E597 | $Y \mathrm{NGRRLA} \mathrm{L} V \mathrm{~V} R \mathrm{~K}$ |
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| UniRef90_R6SFL5 | STQRYLVQAVLVS $\mathrm{S}^{\text {L }}$ |
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| UniRef90_E7MQQ3 | Y D GRYVL V G K L V K |
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| UniRef90-R6T9X2 | N D GRLLAVHAVLVK D |
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| UniRef90-R7AHB8 | Y EARTILY ${ }^{\text {G }}$ |
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| UniRef90_U2F4R9 | Y NGRIVVVAKKV |
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30
E QLKE $\square Y$ EKSGNGETEGLSEEAANESGSK DDFAALL

## K QAEERYKNLQQNY

TQSANNEVRPQFTQL Q WQDSYDNRQNYRQVEE AFFPEKDTEEDGTGSNDFDYQA DGKGYLDGRSEYDKVRKLAVTDDKNSEDGDDTFSVDFQK L

LWD Y YRQSEESQEKYQQVEE DAFPSGEEETDDDVYDYS S L
HKEMKADRESKQAIDAASPGEGS
Y Y S G GKEYD K LIK NVQEQ T D D P G DVS GDT FKVV F DVL NEYDA DRQEVVAEPAAGETQEEDAEKNYPELQUDFAEL TGKDDTDNSVNPDNDPDTKKSNMVEVNGVS
I LLQ NYAEQQQMKELAELWNKESSTTKKHDTDMLPE DG
NRDSQSEGNVEQNSGKSDSDASEPI WQPDFAA
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$\square K$ D Y K K A D EVV E QAQA EDGNAPEVP LTT EEENILTTEYGE

Y E QLDE Q T $\begin{array}{lllll}D V Y & S & L & R & N T\end{array}$
 $\square G Y D Y$

EKNND TE EAGNEPMEGGEDESRSASSAVHPGLFAL
NQYE EA
E H I Y S E A E E TY Y $\square E$
LLRDYEEHRQMKEN
NAALY DE ALR Q TVY I T K D



STAEKPSEDTMNKMNAA
QRAYGDLEE YATVSDSENLALSSDLTVDWDAL
K QEDKEAEERY IQLQQNYTQMTNTNTVRPQFKQL


E Q E TVE K P Q GP $\underset{E}{P}$| $I$ | $L$ | $P$ |
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| $I$ | $D$ | $Y$ |

Y $\square$ Q N P DTTDEENESTTDEPEEET DPNME

$\square$ WY M N N Q N N K K $\square$ S D E $\square$ A EF VT VDET K E D DEEKYVVVDF E K L D NEAE E K QYEVVLQTEDYKK K GVVRPQF E A L


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K EAKEEYDSПREAVKYS
YKD DE EYAP K K K K GKQ
YK D $\square E Q Y$ A P QVVVENNDNNPKDKE DVKA Y V E ED Y N K L $\square V G G Y A K G R D E Y K K I Q S \square A \quad L N K E D S E P E K G F$


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UniRef90－R9LV83 UniRef90＿R5XJB6 UniRef90－RERL38 UniRef90－UPIO003B516D4 UniRef90＿U2MCA7 UniRef90－R6UOT2

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| :--- |
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UniRef90－D4MOB8 UniRet90＿R5EL65 UniRef90 UPIOOO466E70D UniRef90－UPIOOO3F64138
UniRef90－R6TKN3 UniRef90－R6TKN3 UniRef9O－G1VUY4 UniRef90＿F3AH90
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 SKPGSI FLDYRCSFDDNSDNLIIY



SANGCLFLAEECVPGDSDNNLI


| T |
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| T |
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GYGCPYVQENCDVDTPSDNLVI
GYOS D TEKVNAKDFSDFNTVI GSYDGVFLDGDDAPDFSTDQNLMY

 KMSGSIFMDYGNKKDFSDFNSII Y






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| :---: | :---: |
| UniRef90 D1PIP5 UniRef90－R9N828 | $\begin{aligned} & T S Q \\ & Y N G \end{aligned}$ |
| UniRef90－D4L702 | GDGRYLVQGVLKKDE |
| UniRef90－D3QF16 | DSGRTVV |
| UniRef90－U2Q0A1 | NDSRFVVSSKMV |
| UniRef90 D504F9 | YNGRLIV |
| UniRef90－D4LFI3 | DEARLIVM |
| UniRef90－R7FZS0 | DNHRFVVRG |
| UniRef90－R7EGF9 | Y NG |
| UniRef90－R5HMA8 | GRFVV［HAVRIGEH |
| UniRef90－G7W9 | YNGRFVVVARR |
| UniRef90－24MOT5 |  |
| 析 | G |
| Ref90－R5E1G |  |
| 俍俍90＿S99HM5 | YNGR |
| UniRef90 R7AEKO | Y EAR |
| UniRer90－${ }^{\text {UPINou0404425E }}$ | Y EEREVVVA |
| UniRef90－R7BXS0 | PHNRYLVQA |
| UniRef90－T4RV10 |  |
| UniRet90－UPIO0037AEC20 | Y |
| UniRef90－B0PG33 |  |
| UniRef90－G1VJK5 | YNGRLVVV |
| UniRet90 R5T6 | YEARTL |
| UniRef90－R7B0P1 1 | SNDRFLVQGV |
| UniRef90－R9JYC8 | PENRFIVGAVEVDE |
| UniRef90－UP10004706C1C | YDERFVVVA |
| UniRef90－UPI0003B3D117 | DDTRLIVCGVRTD |
| － |  |
| UniRet90＿UPIO | YEGR |
| UniRet90＿R91zZ1 | NDGRFVVVA |
| UniRef90－R9LV83 | NDERF |
| UniRef90－R5RL38 | SAGRNVVHAV |
| UniRef90－UPIO003B516D4 | DSHREVVCGV |
| UniRef90－U2MC |  |
|  | GDSRYLV |
| UniRef90－R9LK93 | DQRFV |
| UniRef90 R5FMA | dira |
| UniRe990－A0AO33UIQ3 | $\bigcirc$ |
| UniRef90－R7R7E8 | EDGRFVVIAKKİQK |
| UniRef90－UPIO0045EA864 | YEARYVVYGI |
|  |  |
| UniRef90－DLLVC1 | YNGRMVLVAK |
| UniRef90＿R7JUA5 | GDGRLV |
| 90－UPK603 ${ }^{\text {a }}$ | GMGRFVVV |
| UniRet90－R6XBU | NNNRVVLHAK |
| UniRet90－U7PD | SDKRVVVVG |
|  | YNGRMVVVAKKVAE |
| UniRef90－R6PWJ4 | PDKRFLVEEAV |
| UniRef90－DGDF71 UniRef90 H1HU80 |  |
| UniRei90 ${ }^{\text {UPIOOO2FCOFCE }}$ | S SGRIVVVAK |
| UniRef90－G5H | GNQRLILQA |
| UniRef90－E3EB | YNGRLAVVARKL |
| UniRef90－G51A45 | Y DGRMVVVAK |
| UniRef90－R7QZZ9 | DGDRLVVNCV |
| UniRef90－W KBP3 |  |
| UniRei90 UPIO00466B9B5 | NEERFI |
| UniRef90－B1CAS1 | YNGRFVV |
| UniRet90－N2AW96 | SDG |
| UniRet90－R5EKN8 | YNGRLVVAA |
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| UniReef90 R7 | SNERFVVQARW |
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| UniRef90－R6R0Y1 | YNGRFVVVAKLISE |
| UniRet90－UPIO004659EC0 | YEHRTIVHA |
| UniRef90－R7AZ73 | YEARTILYAYETEEE |
| UniRef90 R5EJC | YDGRFVVVA |
| UniRef90 C2KZK3 | TNGRMV |
| UniRef90 N9XUZ2 | YEARFVIJSKLSKN |
| UniRef90 D4MOB8 | YNGRLVVVAKRVD |
| UniRef90＇R5EL6 | YNGRFVVVARK |
| Uni | Y |
|  | Y |
| UniRet90＿R6TKN3 | RFVV |
| UniRef90＿D9R0D0 | ARTILYAYEV |
|  | YNGRMVVV |

UniRef90_D6E915 UniRef90-D4MT23 UniRef90-R7F126 UniRef90-G2T1E7 UniRef90-R9JGA1 UniRef90-R7ANC6 UniRef90-R7JQR4 UniRef90-C7MMK2 UniRef90-R6B2в3 UniRef90 REBLLL 3 UniRef90 R7H4E0 UniRef90_R5XXC2
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UniRef90_UPIO002E4132B UniRef90-R5P1F4 UniRef90_R5XZS7 UniRef90 R7NFI5 UniRef90-UPIO0047D355D UniRef90-U2VCD2 UniRef90_R5HW16 UniRet90_BONC39 UniRef90-U2C7Y5 UniRef90-KOYME1 UniRef90_R5JG67 UniRef90-UPIOOO3705B92 UniRef90-UPI0003B5231E UniRef90 R5Y964 UniRef90-UPIO003B3A8A7 UniRef90-R5NYC2 UniRef90 E1QXQ5 UniRet90-R7F1V2 UniRef90-R5GRN2 UniRef90-R5BEL3 UniRef90-R7NNU8 UniRef90-R5AOT5 UniRef90 R7C1L7

YEQMSQESVVVQAEVT EQ QEAQ MENAGATKDAADAQDPSERAADANDSEPGGAKVDFEQL DYQKGQESLERVYQVMEEVPEEEVKVRELRREQYAVL

Y Q D $\square$ A A QA LT S VS AQ D MP A D A D A TEELA DMTVD WD Y L EDNENTE VVNNE VIDDKNAPYWNF $\square K M N M D D A D F N E L$

T S D D ME Y $\square P$ LSEAEKVYH $\$ L P GA Q DL

$\square P S D T Q T E T E N V A Q E V Q T E D S E D E Q K G \square E \square P Q K N L N W K K L$
VI QAEPAPTETGPGSTPAPTALPPRDFTDL
Y E A G N Q S Y E T L L K E Q Q V E S G G E L P S S G S V P P


$\square Y M E Y H K G T V A Y$
$V Y$ V $L$ V
EESGDMQEQRDEYEK NGR

Y Y K KA D NVY EN I REMTKAT TGTP PDDE ETEVVDDK Y D K L



$\square Y G Y Y K S \quad Y K E A K D T Y E K I K K D N K K T N G D$
WDNWS ILDGSENALKTMVEYKPDEEEGLSYNFSQL ETEAGEDPVISESDTDPDNVRQSLIDDSVQAL Y $\square$ NLK N S D K I L G E I N KI E N K N I E I

K D Y K E S E KTAF Q T L E S S E Y VVV H P D GA G A WQQ D G T R I Q



WD N WS I L K EPDQQVREDLI RYKPANEEELSYSF QELL
Y A $\square$ W S E Q
E P E T I M A A G N
A A T T
EPETIATATTESAAE EAVPAP
QNRELVEELKTEDATETGETTEQPLIMLEDYVSLL
Y A E GDQNYK QLQQ T $\square$ R HPAGAN A
D Y $\square$ D NRE ET $\square$ T T TKK VGGSSYSNA

D N N QVY A A VDNVQGELLQFKPAAD GENGASFE ELL KEEEVQRENPYWDY IKMNLINVDFSKL
N QVY S QAS S S E Y E A Y R PVV I A Q T R A D L $Q R$ R

QYHENDRLASFANVSDATSASDDGSAKAPVDVDWAGL
Y Y N E $\square R N \square Q N N E Q \square H D Q V S P V E E \square P Y K K V L K D$

NENTEI LI D YKKAEKTYNKDQEI QANNDEDNP

Y Q QDKVNS DLAKIDDDAPSQGSEVEKCPVTVDWAA L L ENDEI DE QEEK_PKKNDYWDY $\square$ K L N ML NVD F S ELL
DNNRIVAAAEDVQADMKKLKPDADQD KASFEEEL

$\square$ WK QD HQ QK QENEA LQQ QQANEEDQT PEKEEYFTMMDWE G $V$ K K A $\square$ S D DP D DPKNNLAA ALKDE Y
NTEKMEEESQDSQEQEDSAVANIPQKQLDWNEL


Q DVQN QK LA A Y VQLP TEE QSSEAPVVQVDWA GL
NENTEI DE QEPKE ESNPYWDY IK MNLI NVD FQEL
EETAAPDAEPQPDAADAEPKKKFRSDNFGAL TLTT D DNK P N VKK T K E K N P I D F K V L
LY G Y Y R S Y K K AK D T Y S K I A K E NiV E K N N K N E R K I D F K K il


KQENPDIIYAWI
50 FMQNPDLIGWL

MEDNPEVSGWI | H |
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KAQNPD MAWL
NQENPDMQGWL
RSKNREMCAWL


| $K$ | $K$ | $N$ | $K$ | $D$ | $V$ | $G$ | $W$ |
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| $H$ | $K$ |  |  |  |  |  |  |


KDKNQDIVGWIKYPDTQUDYPLMHHDNDEYYLHRDDHQDY


 KE $\square N S$ DAA A WL
QE HNS D $\quad$ Y A WI KKRNKDVAGWI RKDNPDIVGWI
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UniRef90 R6CXF9 UniRef90-R6CXF9
UniRef90_R7C9T2 UniRef90_G2SZ87 UniRef90-R6AL76 UniRef90_FOHCG1 UniRef90_G5F272 UniRef90-UPIO002E4132B UniRef90_R5P1F4 UniRef90_R5XZS7 UniRef90-R7NFI5 UniRef90_UPIO0047D355D UniRef90-U2VCD2 UniRef90-R5HW16 UniRef90-B0NC39
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UniRef90_R7C1L7

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UniRef90-R7C1LT

90
100
110
120
A DEGAIIYTEMANNTDFSDPVTVLYGHNLQNGTMFSTLHYF SNNGLLFMDELLSSVDEFGGNVIIYGHNMKNGSMFADLLNY NTSGWVF SDYGTIFLDYRSPLDA KNLILHGHHMNDGRMFANLDYY GOMVIYSQPVNRRDFMDANTVLYGHNMKNGGMFSDLHEF SSYGMI FDDGDCQLEERSQNLLLYGHHMRNGDMFAACENY
 NYAGCI FLDYRCNEDENSDNLIIYGHNMRDGSMFGGLKYY NSAGWIFADYKNKLDGNDKNLVIYGHNRRDGTMFGSLQNVV SKHGLPFLDVHCQIDDGDIDLEVHGHYIKNGMMFADLMKY DLEGLPYADYECDVEKGDGHLILYGHNMGVGQRFSSLQNY
 SSAGTIF DVKNAPDFTDRNTFLYGHHMRDGSMFAALTDW SRKGSIF DSNNRDPFNSFDT VYGHRMDDDSMFNSLGNY AMAGSIFLDSRSDRGFGDTYSLLYGHHMANGNMFGDLDKF DGSGLPFMDLRSNYMLPTDNLLIYGHNMKSGTMFAGGLKY NSSGAVFMDSHGDKDFRAEHNI IYGHHMRNGSMFADLMEF SVGGQ|FLDYENDPGLVDQQTIVYGHHMKNGSMFKYVGKM SDLGVPYDQEDCDDTSDNLVIYGHHDKGGRMFGALEDY ERRGTPFVDYRNTITDGDTNTVIYGHNYLDSTMFSDVEKY DDAGSTFMDVYNSPDTNDDNSVIYGHHMENDSMFTPLEDYY
 SLTGA: FMDSENNPDFQDFNT:LYGHNMVPNVMFGS:KEF NSLGSLFLDVRCRK SSSNVIUYGHNASGGRMFGMLKRY TYNGWVFMDYRNSYNFEDNNTVYYGHNLLNKTAFGSLENV LQAGSVFLDCRCEGRFMNPDNILYSHNMRNGSMFADIPKY SQAGWIFMDYRNDAKSLDKNTI YGHNMLNNSMFSTLTKM DANGSLFLDWNCQVSGEPNLIIYGHNMNSGEMFGNLDKF
SRSGTVMMDYRNKVDGHSNNVLYGHNMAVGTFFAPLNEY LNTGTIFVDFNNSRKEENRNIVIYGHNMLNGSMFHDIARY HIAGCIFLEGMNQPDFSDYHSIVGHNMRNTTMFGDLKRY AVEGAVFSQMANATDFFDPVTVLYGHNDVNDAMFATLHAY NPAEAVFLDYECKEDFSGLHNLIYEHNMKDGTMFHDLVNY NDNGSIFMDCSNKADFSDQNSLIYGHNMTSGAMFSNLVKY SANGCLFEDSRMNSGLSSNHVYYYGHNMRNGAMFGKLKSY DDLGLPY DYECDIQQQSRHLDGYGHNMGDTVRFSSGQNY SLAGSIFLDYRNTPDFSDFNTIVFGHHMEKSAMFGDLERF NKNGCLILDTDSCLDPLSTNLIIHGHNMKSGAMFGNLTDY DLNGTLELDARNDYINRDTNLI:YGHNMKSGMMFGELKKY DUNGSLFLQADCSLGESKNLTIYGHNMNSGAMFGNLDRY HVNGTLF LDYSCPPDFSGRLSIIYGHNMKNQSMFQNLHLF DRFGTPFIKHEDSLEDRPDNLVVYGHNMPSEKMFGPPEGY DKNGCLGMDTDSDDHMAGANLIVHGHNMKSGDMFGTLQDY

 AATGAIFLEARNESKFEDFNTIIYGHHVENGVMFGDVAKF
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 NEYGSIFADMRNSSDFSDRHTVLY
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SKGGVM NQAGWVFMDYRNNTTDYDKNTIL SKSGSVFMDYRNKLGSDTNTVI
TVGGQLFMDYENKPGVDNQSLI NEAGW1FADYRNKLDGTDKHDL

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UniRef90_R7C1L7

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N L S DPTVRQEYFNF VIMHLVNTRSDTELLS DDDKUVQLLSTCM
180
180 R S D T ELLIS $\prod_{1}^{190}$
200 TTARDDGAEDVIENMESASLYDTGVDMAYGDDFLTLATCD
 SFTEPE EREAFLSSSLKENGVI REDIAVVADDSKLLTLSTCQ
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 DFSTKEGRVSYLESIVKKSKVKDKUQLSVDSHLLTLSTCV
 EFSNLSEVQRYLDDVGNEGIFQKEVNVSKEDKILTLSTCY

## 隹


QFAN


 NF
$\mathrm{H} F$

 D F T Y D G D K V P Y F N K L R S S S EVVK LIE T R PT EK D T I I TTL S T C Q


 G $\square S$

 SFS DMAAF QEYAETMLLEGGLYKEDRE S GDT KL WS FVVTC S
 NFADDAAE QEYLDEVAKRAFYTTGDYARADERLLTTLCTCT
 QADTQEEFDDFYNNIKQLSQYDTGVTAQFGDHFLTMLSTCV
 D FK D K K V F E K Y


 V N Q WD A NL NGLLD FAQENALLHLHSDTVDEGAQVLAMSTCS

 SL S A D Q GKLSKKQYETYVKNCKKLSITKDGATPAYGEQLLTLVTCA
 N F K N E K D K K E Y L N Y I K N R S L Y K K D I D L N A N D H I I T L F T C S K F D S DEELLRSYL NERLAKAVASRPDII SGLKHVMTMSTCN

 R F T S DE E Y Q N F L N K LLK N R S AVVE F D T S I N A N D K I L T T S T C Y


## N



N A A D E E E F N E F
D F G D Y Q N






T F A N D K Q K K A Y| K KiIE SMSEQT@K T S R NDSH|IYTGVT CS

UniRef90 D6E915 UniRef90-D4MT23
UniRef90-R7F126 UniRef90_R6QQW9 UniRef90-G2T1E7 UniRef90-R9JGA1
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UniRefo
U5BLL UniRef90-R7H4E0 UniRef90-R5XXC2
UniRet90

I4A7Q4
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UniRef90-X8K2F6 UniRef90-C6LC29 UniRef90-R5KCS4 UniRef90-R6QIN5
UniRef90 S 3 S UniRef90-D4W7U9 UniRef90-R9MX12
UniRet90 R5N1U2 UniRef90-R6CRC4 UniRef90-C2BEF7 UniRef90-R5Q7R5 UniRef90- D4MUS4 UniRet90-N2B2P7 UniRef90-R5M1V2
UniRef90 R6SH93 UniRef90_UPI0001C3747C UniRef90-R6U6C0
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UniRet90 R7NC72 UniRef90-K1SLR5 UniRef90-V8BRK6 UniRef90-R3TV44
UniRet90 R6EGD8 UniRef90-R6NU04 UniRet90-E5XHD4 UniRef90-UPIOOO40864F6 UniRef90 UPI00045EA71F
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UniRef90-R7NF15
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UniRef90-RFFR2
UniRef9-R5GRN2
UniRef90-R5BEL3
UniRef90-R7NNU8
UniRef90-RAOT5
UniRef90 R7C1L

SDSRYIVITGVLIDDQ
YDGRLVVMAKR
NDGRLVVMAKRVQ
Y
SEKRLLVEAVQVYE
YDGREFVVAKLTE
SSQRLAVHA
YNGRAVLFSSVVD
DNEKVVMHARLIKGQ
YENRTYVYA
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YEARTILYAR

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STARLVICARMVR
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YETRTVVGHKLTSIK
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YDGRYVVVAKKI
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YEGRTYVHAVM

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UniRef90-R6ENR5 UniRef90-N2AKA2 UniRef90 R5VYY2 UniRef90-A0A011A3R5 UniRef90-R7F8Q7 UniRef90-G1WT85 UniRef90-R5K9C2 UniRef90-C5ENM1 UniRef90-C0D7C4 UniRef90-R6K736 UniRef90-15ASF6 UniRef90-J1HAG4 UniRef90-R9JWC4 UniRef90 R5LOM2 UniRef90_UPI0003B76B34 UniRef90-U2V015 UniRef90 L1QLZ3 UniRef90'R5WGE1 UniRef90_UPIO0042A4B60 UniRef90_R6NVW5 UniRef90_R5TK62 UniRef90-R7B514 UniRef90-UPI000463E3F0 UniRef90 COEB25 UniRef90-R7NFA2 UniReffo-V8COX2 UniRef90-SOJ2W9 UniRef90 R5ZKZ2 UniRef90-F9MTA6 UniRef90-R6Y5L3 UniRef90-ROAZX1
UniRef90 R6BCC7 UniRef90-UPI00047DC572 UniRee90 UPI000464FOD8 UniRef90-A0A011 VYO1 Uniinefon N2AB54 UniRef90 ${ }^{-}$C2KXQ1 UniRef90_Z4WZ19 UniRef90-G5HCl1 UniRef90-C8W8N3 UniRef90-R6NIS5 UniRef90-D5HG65 UniRef90-R5SV45 UniRef90- QOTTU4 UniRef90_UPI0001C371F8 UniRef90-15ARD3 UniRef90-A5Z924 UniRef90-R6DVH2 UniRef90-R6K224 UniRef90 E6MDL5 UniRef90-R7KZP5 UniRef90_UPIooo3B438D3 UniRef90_C2CHC3 UniRef90-R9NB44 UniRef90-R6Y9т9 UniRef90-G9RWW1 UniRef90- D4M055 UniRef90-UPIO0047B56A2 UniRef90-B5LAAO UniRef90_FOYWD6 UniRef90-R6MCY2 UniRef90-V8C4V9 UniRef90-N1ZYY8 UniRef90-T4VD34 UniRef90-D4LUK7 UniRef90-U2AKA5 UniRef90-R5HQL2 UniRef90-RGGDH7 UniRet90-R6S710 UniRef90-COET75 UniRef90-R6LHI6 UniRef90-R5FE20 UniRe90_R5GWYO

TEMQKEGYQTAEQEPEEQDDDTAALLPGAADL EENREDAETLKDDFPGEHLDEETSGEPPLVDLAAL MQQQNSEKRQTDTQESKEQSKTKEKKKKLDDPVDFETL

SNALLNNVKDDEAK NQYANVPKNFKQL
YETGREEYRQLQEQFELAAGSTTDDAAAPQVNVKEM IVLDYYHTKQVYEDLMESYSGISEYEPQTEPDADEEYE KM FLEYNRGVQEYKELQEYVNNEPAQEKEEDDFAMGDFALL

## 

 NNTSTPSEETPEEPSDESP IKNKEDES DQVYRAAAASQYSVYKPDTAEGGLS F E
DYDKLDEEYVNDESEPDDGKQKKKDWWADVKVEFDKL K LIEVEQDNCTEETPVYTTVQEKKVYKKYASV
YREEKGFDEDRQAYHMPKEAKRNRDEAGGVDLDAL
QQDVLDEDSHTKVVIGEDEQEVEDPFTYNHQA L
KGFED $\square R \square T \square S E D V P S A A G E T S S P A V D P K T P G E R Y G Q L$
NGEQVVQDEQQVIVNLQAPTKEQEGSVNEEYAAY
YNTQDTVKKETEELEKLVVSSDDA NLLEPDWDQL
YHEAN VQNERLDAAYAVYDDASQA PQDDWEGL

DGKEYYDGQKEYKEGKAYKKEVRVEADANGKKMLKEKKKL


YKKGTD DYENDSS
YE SEK KKYGDQEAA

## K N L

LY TEEI KKEKNEENDEQAREEELDLNNDKPHLAS L

$\square Y E Y R K G E K E Y G E \square R Q Y T A K A S G Q E P E Q E P M L A V D F E A L$
QK QQAQVQDQEREEKTPNQSGDQKSREKULAAL
TRVEEERKRPKPTTTDE LVTEDTHASSPYAVL
NAESQKKES $W Y W S Y D K M N M D N V D F T E L$
ENRENADEVVNAEDGTSSATNAEDKDASVDVAGL
YMSSNKEYANLNQA
EYAETAGKAYDEAKEKNVKEADDPYDTKVDFEGL
LE Y HEQDVINEELATY ATVSEKKDEAPVIDWAGL DYYAQDVINQELKRTAAYTTVPEKKDEAPV VVDWAGL

 WDYHEQDKINEKLAAYAQ LGYYTDSRDYDNLRSLSPDSDSSVNKSPEEHKQDAESL

D LWHSKNVTKDIMDIYDDTTEDATQKYYELDDGARKL
FYTSYDEK QNFNNVEKLVESEYEDEK』QYNE\|LKKYKKV
NKTASETPSUDESD@QTTANKSKHVLAKYKEL
 $\square Y L N Y K K \square D D D Y G E L A K T Y T K E K E E K E E K E S Y L Q I N W D E L$ AASPVNAGSGGRTIGFAEL

EKTAKRYEDLKVEVTDDADDP L YRQ

NEEAKRKVEA DDT T DPEAKESDTETQNEDSVDDTGL
 FYDSHKAESGFDELKKVVEKTERADATDDNGMLECYYS L

F $\square$ QYNKADK VY DK $\square Y K \square$
KESQQNNNDNSVDLS
DTEDDASLEFL

YK $\square$ YDSHE $\quad$ YQRRADSDFA TYQSPG $\square$ KAKKKMVSLEDL WKNQKI LEDLRSDVK AEETGDEVPGIDWEKL YDDAKKLSTENVKPSKTNSDDGEQTKPE DPVDFTAL


UniRef90 R9LQK3 UniRef90_O2KYR7
UniRef90_R6GKS3 UniRef90-B1CA79 UniRef90-A4EBD3 UniRef90-R7FC20 UniRef90-R9JR18 UniRef90_UPI0003775C06 UniRef90-R6CEU8 UniRef90-U2BQD3
UniRef90 R7MG6 UniRef90- R7FA72 UniRef90-UPIO003B73B58 UniRef90 NoXAY7 UniRef90-R7MM15 UniRef90-F7KJD9 UniRef90-R6ENR5 5 UniRef90-R5VYY2 UniRef90-A0AO11A3R5 UniRef90-R7F8Q7 UniRef90_G1WT85 UniRef90-R5K9C2 UniRef90-C5ENM1 1 UniRef90-C0D7C4
UniRef90 R6K736 UniRef90 ${ }^{-15 A S F 6}$ UniRef90-J1HAG4 UniRef90-R9JWC4 UniRef90-R5LOM2 UniRef90_UPIOO03B76B34 UniRef90-U2VO15 UniRet90-L1QLZ3 UniRef90-R5WGE1 UniRef90-UPIO0042A4B60 UniRef90-R6NVW5 UniRef90_R5TK62 UniRef90_R7B5I4
UniRef90 YPIOOO UniRef90-C0EB25 UniRef90-R7NFA2 UniRef90-V8COX2 UniRef90-G5HPL6 UniRet90_R5ZKZ2 UniRet90-F9MTA6 UniRet90-R6Y5L3 UniRef90-ROAZX1

UniRef90-R6BCC UniRef90-UPIO0047DC572 UniRef90-UPIO00464FOD8 UniRef90-A0A011VY01 UniRef90_N2AB54 UniRef90-C2KXQ1 UniRef90-Z4WZ19 | UniRef90-G5HCII |
| :--- |
| UniRef90 C8W8 | UniRef90-R6NIS5 UniRef90-D5HG65 UniRef90-R5SV45 UniRef90-Q0TTU4 UniRet90_UPI0001C371F8 UniRef90-15ARD3 UniRef90_A5Z924 UniRef90-R6DVH2

UniRef90-R6K224 UniRef90-R5Q6F5 UniRef90-E6MDL5 UniRe90_-RTKZP5
UniRef90_UPIOOO3B438D3 UniRef90-C2CHC3 UniRef90-R9NB44 UniRef90-R6Y9T9 UniRef90-G9RWW1 UniRe990_D4M055
UniRef90_UPIO0047B56A2 UniRef90-R5LAAO UniRef90_FOYWD6 UniRef90-R6MCY2 UniRef90-V8C4V9 UniRef90 N1ZYY8 UniRef90-D4LUK7 UniRef90-U2AKA5 UniRef90-R5HQL2 UniRef90 R6GDH7 UniRef90 R6S710
UniRet90 CoET75 UniRef90-R6LH16 UniRef90-R5FE20
UniRe90_R5GWYo

dKTNSEVTGGWI NANYANAlGGI HDVNPEIYAWI KS】NPDVIGWL MAKNPDVVGWV




SKDYVDVVGWI

 EVPGTNI NYAVVQSADDDFYDDHGVDRSY ZKVNSDVVGVI KAKNEDFRYWL
YAQNKETVGWL
 YQKYPDLFGWL
LKKMSDGVGWL
KELNPEVFGWL

## KAENPDVIGWI



## L L A A K

RKSAPQAGGY
AQQNSDLAGWI
YEANKDFVGW
KADNPDVVGWL
YSRNKDTCGW1
RKDNEDLVAWI
QS QNDEI YSWI
QNDNADVCAWL
WNONSEGVGV1
$L S V N E D V V G E L$
QSKYLNN RGWL
AGEYPGLAAWL
KKLNPHIDAWI
EKTYPD RQAWL
KEENGNLEGWV
LKQNSDTKGWI
SEDNDMMMWL

QATNEDVVYW I
LK I N P DTRGW



K A I N K DVVGWI

LDVNGPDVKAWI
MKIKNNDLVGWI

LQRNKDVKAWI
QKRNPDVRGWI
YEMNNDVVGWL
KEENKDVVAVI
KAMNPDVYAWI KNKNSDVVGWI KAQNSDVCGWI
 QETNPDIYAWI


NKDYRGWL LADNPDVRGWL
KDKNQDFRYWL HEQNQDIYAW1 KKLNPDVAGWL KKINPDIVGWLEVVEGTNISYPVLKCSDNLKKYVNTDVKGKF KKKNPDVYAWIK VDGTYYVDYPVVQQNERWNEYLHKDYKGEY



|  |  |
| :---: | :---: |
| UniRef90-R9LQK3 |  |
| UniRet90-R6GKS3 | ADAEFFAKNQKIIVYTPDKVYEYT TEAAY |
| UniRef90-B1CA79 | KDPEYYNSHKTLELYTPNQNYE\EV |
| UniRef90-A4EBD3 | DRGFFDLHRTGTLYTKDGA |
| UniRef90-R7FC20 |  |
| UniRet90 R9JRI8 | KEKSFCDEAMTVRFDTLYEESEYRVVAMDEDVFRYYDA |
| UniRei90-R6CEU8 | EDKTFLK DHKDLLFTYTPDSIILKYRIFAAYLTDNSHLGMYYN |
| UniRef90-U2BQD3 | GSEEYYKEHPEI CLDTPDSSSVYEIVGVVRLPAEKFAAVL |
| UniRef90-R7MGV6 | DSGWYTNNQIITFNT LNKEMKWKI FSVYRSDAVTDYLK |
|  | EFYKQHPUVRFTTATEDAEYEI DSAFKSRVYYYYYFi |
| UniRef90-UPI0003B73B58 | YYDEHKFFQTFTKDKVYRYQIFACKLISDDHETYYA |
| UniRef90-N9XAY7 | SEAYFQNHRSTWI YRQGDWQQYVIFSCYTAREEEMIYQS |
| UniRef90 R7MM15 | KNYYYFYEHPIIEELNSNKRYKYK FSFFI |
| ef90-F7KJD9 | M ELE WYKKNPVM |
| iRe990_R6ENR5 | D DEWYKK |
| UniRef90 N2AKA2 | DPEFYKDHALLRYDTVYETGTYRIVAAVLLTEGFRYYR |
| Ref90-A0A011A3R5 | EGHEYGNLYYDGKDHGLEFFAFIKTDAYDGSIFT |
| UniRef90-R7F88 | FNENREDHLYTKAGDSUWQIFSVYHLPNTTDYLAT |
| UniRef90-G1WT85 |  |
| UniRet90-R5k9 |  |
| UniRet90_C5ENM1 | EHPVIRIFYQGK |
| ef90-C0D7C4 | YFEKHPIVRFDHENG |
| R6K | NNDVLYMYTGNVIKEYK |
| UniRef90_15ASF6 | EDREFFDSH |
| UniRef90 JTHAG4 |  |
| R9 | EAF |
| UniRef9- UPI0003B76 | NDSSFFNEHPVFY LLT PTQNYKCSIVYFAKTNTSGSVYYTV |
| UniRef90-U2V015 | DDQATFDGIGTIWYVTEQGACELEPLLLYYTRADNDV |
| UniRef90-L1QLZ3 | KDETYFNENPYITILKNGIS |
| UniRe90- पPJOOO42A4 | EKKVY |
| UniRef90-R6NVW5 | TNTDFFNNHEYFYIYRPQHKLTYRIVSVYSYDDRHDMNSF |
| UniRef90 R5TK62 | T DEAYFTAHETGTLYLPEETRSITIFACVEAEATDYGYIT |
| UniRef90-R7B514 | KNESFYRQNDVFYIYTGDEII |
| P10004 | WRDDYYGLLHPV |
|  | DLDFYKSHPI QFDSVYKDMKWKIVSVF |
|  |  |
| UniRee900-V8C0X | VSYDYWKA P ${ }^{\text {V }}$ |
| UniRer90-S032 |  |
| UniRer90_G5HPL6 |  |
| UniRet90_L5ZKZ2 | KDIEFYKQHPVITFDTLYKESKWKITGYMRVSGDFEYLQS |
| UniRet90_F9MTA6 | S |
|  | EEWYENNKY ALITENENCKYQVFSVYQTEAEEYYLQ\\| |
| UniRet90-ROAZX1 | A |
| UniRet90-R6BCC7 |  |
| UniRet90-UPIO0047DC572 | KDASYYDEHQYFQVFTKDGVYRYQIFAYEEVPDSHDVFWV |
| UniRef90 UP | IJKPEFYKAHSUVQLHYKGKWYQAVIYS QLRNETDLTYET |
| AOAO11 |  |
| N2AB54 |  |
| UniRet90_C2KX | DDKDYFDKHLTGNLFMPDGRRKMEVFAADECDAYDRMIMQ |
| UniRef90_Z4WZ19 | , |
| UniRet90_G5HCl1 |  |
| UniRet90_C8W8N3 | F |
|  | FKEEWLKKNHYINFSTLNNNMVWEVFSTYTDEKEEYYDQS |
| Ret90_D5HG65 | EDESFYKKHKNIKFDTLYETGTYEVIGAFRTEHYHYYEFF |
|  | LIS SKWYNNNHII RLSTEKENTMWQIFSVYKIJKAESYYITT |
|  |  |
|  | NANKYVTLYREGKKSTFEI FSVYQENAKDLEDKT |
| UniRef90-UPI0001C371F8 | QEHPLIY ${ }^{\text {L }}$ NSNYESYVYKI FAFFILDSDDKWNKL |
| UniRet90_15A | RKAKYFRDHKAGHLYLAEGSMD |
|  | EEGTYKVVYAF |
| R6DVH2 | E |
| R6K224 | WDNEYYREHSSFYLYTAEG EIFLCHITDRRRISAQT |
| UniRef90 R506F5 | S FADEHPYVYIYLIPDGT |
| UniRef90-E6MDL5 |  |
| UniRet90_R7KZ | K |
| UniRet90_UPIO003B | DNKEYGEAHSRI CFDSLYE |
| ef90_C2CHC3 | RKQEFAEKHRTLYVTTEEGLLREYQIFSAYGIIPSDYDYRTL |
| UniRef90_R9NB44 | KQFFESNPYVYI Y LPGGT |
|  | ENYIIR1 S |
|  |  |
|  | NI FTNGKDYGLELFAFLELDAYNTLYVT |
| UniRef90-UPI00047B56A2 | KDKNYYQDHQYFQIFTQGKVYRYQIFAYADVKDNDQIYYA |
| UniRef90 R5LAAO | EDAKFFKKNKFIYMYTEKRKLTYK1YSAYVYDDRHILNSF |
| UniRef90-FOYWD6 UniRef90 R6MCY2 |  |
| UniF | EEDTYFNDHKDLVIYTPDATLKYKIFAAYRTDDRH\LLYY |
|  | - |
| T4V | T |
|  | QTGRFYTDGSSVKDTLYACLQTDADSLVYRP |
| UniRef90-U2AKA5 | QEEGMADGNPWFYLYTEDKAVRYRIDSYYTTVSGSDTYQS |
| UniRef90 R5HQL2 | Y |
| UniRef90 R6GDH7 | N |
| UniRef90 R6s |  |
|  |  |
| R6 | LEEGYDEKYPNVII YTPDHVLTYRIFAAVIYDDRHLINSF |
| Ref90_R5FE20 | ENPVIQIFYRGKWVECPVFSCQIHQSDAGAYGT |
| UniRef90_R5GWY0 |  |



| UniRef90_R9LQK3 | GEQRWLVINAVEVEE |
| :---: | :---: |
| UniRef90-U2KYR7 | SSSRTVLVGKI MEDE |
| UniRef90 R6GKS3 | RQNRFLLO |
| UniRef90 B1C, | YEGRYVLI |
| UniRef90-A4EBD3 | DNGRRALI |
| UniRef90-R7FC20 | SSARLVIVA |
| UniRef90-R9JR18 | NDGRFVLVA |
| UniRef90-UPIO003775C06 | YEARN |
| UniRef90-R6CE | A AGRYLV |
| UniRef90-U2BQD3 |  |
| UniRef90-R7MG | GNNR |
| UniRet90_R7FA72 | YDGR |
| UniRef90-UPI0003B73B58 | YDDRLVICA |
| UniRef90-N9XAY7 | GKGRV |
| UniRef90-R7MM | SGGRFVVMA |
| UniRef90-F7KJL | GTGRFVVHGV |
| Ret90-R6EN | TRLVV1 |
| N2A | YNGRLVVVARKLK |
|  | dirlv |
| UniRef90 A0A011A3R5 | TDGRDVVAAR |
| UniRef90-G1WT | YSKRLAl HavCVDAQ |
| UniRef90-R5K | Y DGRFVVVAK |
| UniRet90_C5ENM1 | KKERLII QA |
| UniRet90_COD7C4 |  |
| UniRe990_R6K736 |  |
| UniRef90_15ASF6 | N |
| UniRe990-J1HAG4 | YDGRLL |
| UniRef90 R9JWC4 | PDSRYLVQGV |
| UniRef90-UPI0003B76B34 | SNQRLVLM |
| UniRef90-U2V015 |  |
| UniRet90_L1QLZ3 | FEART |
| UniRef90-R5WGE1 |  |
| UniRet90_UP100042A4 | SSSRLILRCKVTKLO |
| UniRef90 R6NVW5 | GDGRLVVLQGV |
| UniRef90-R7B514 | GDGRIIV䀎 |
| UniRef90-UPI000463E3F0 | tigrlil Marrv |
| UniRef90_COEB | YEARFVVVAR |
| UniRef90_R7NFA2 | NNGRLVI |
| UniRef90-V8C0 | YEARNI L |
| UniRef90 SoJ2 | ERR |
| UniRef90-R5ZKZ2 |  |
| UniRet90-F9MTA6 | PDRRLVIQA |
| UniRef90_R6Y5L3 | DNTRVV |
| UniRef90_R0AZX1 |  |
| UniRet90_R6BCC7 | GDEKVVLHAKLIKKE |
| UniRee90 UP1000047DC572 | SDRRLI VSAV |
|  | GSERMVQAA |
| UniRef90-N2AB54 | PDQRWLVNAVLVDEE |
| UniRef90_C2KXQ1 | T NGR |
| 俍et90_Z4WZ19 |  |
| 55 | E |
|  | G |
| UniRef90-R6NIS | NKGRTVLHA |
| UniRefo- ${ }^{\text {a }}$ |  |
| UniRef90 R5SV45 | D Y GRTVVHA |
| UniRef90 Q0TTU4 | YDARIVVVAKE |
| UniRee90 UPI0001C371F8 | DTGRFIVMARKVRD |
| UniRef90_I5ARD3 | TNGRCMI IGGR |
| UniRef90_A5Z | DNSRMVVV |
|  | YEsRFVMARRURD |
| UniRef90-R6K224 | NEERLAV |
| UniRef90 R506F5 | SAGRNVV |
| UniRef90-R7KZP5 | NESRFVIF |
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| UniRef90-C2C | YDQR |
| UiRe90-R9NB44 | PNQRW |
| UniRef90-R6Y949 | NNEKLV |
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|  | PDNRYLVGA |
| UniRef90_R6MCY2 | YNERFVVIURK |
| UniRet90_V8C4V9 | RAGRYVVQAYLVEK |
| UniRet90_N1ZYY8 | , |
| UniRef90-T4VD34 | Y |
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| UniRef90_U2AKA5 | GTGRFVVH |
| UniRef90 R5HQL2 | S |
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| UniRef90-R6LHI6 | SNHRLLVEAVLTNEE |
| R5 |  |
| Ref90 R5GWYO | VLVEE |

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FWEYKKGNDПYDTDQNQVLDTDTDDEEVEDPFVYDHKQL YYEQAQTNSKLIAAFATVPDQTNDQVNNDVREPQVDWQGL YYSGGEEYDK $\mathrm{K}_{\mathrm{K}} \mathrm{NI}$ A DTA

DEEGKGFTVDFDAL
EKGKESKKDATLSAAESVVCEQNDKTMLPNMQS $\square G Y K Y H K V N S D N K K \square Q E E V V T E V K Q D S P Q D \quad R K V D F N Q L$ GKA DRDKTAEKVYQQQLNDKQVK DKYSFDKVFPKL

EVAEVPLVEAEAGVPAPEEEPALVVDWNA L
DNNRVYSAARDVQADMVKDKPAVEEDGGASFEEL
SNVSVTDDTTSGSGTSASFSSP DDFESL
 DNSQVYAAADNVQAELLQRKPKAGADNGASFEEL SQKQQVENETK QLEKSVIVKKKDKGEKQVSDDDWSKLL
YSSQK YYKFDD YKKADKTYSKVRDERQEKQEK L
QDKKQMNEFENDAQVVDDNEQN
QAAETYSSLTQYVTVDSEGDGDPVVVDWDAL
EAVDSYSGLTKYAHDSEGDDDVPPKVDLQQL $K G Y Q E S K Q A Y E E V R K E V V V V D K \square T K K E K V R G D F K K L$

KNKSKDQNNEQTSEEYD DESNRNLQNE DAL Y GMWDTNQLLSSAQS $\square 1 K$ DYYGSYKAGKDLNS LKK TANSGEKEKNTEKVVNLE K LLREKAAVSVQEEPEVSAEAEETPVQ\|PVDFSVL
LYEYKKADNDYNDGRKEKNYTNENSSNKTNKNKENS自DF EFKPDGKDSLSFKEL EAVEETQPVETEPPLPTVEDPINFDYL NEYQSS ILQLGNHEPTAEE DAELPEKAI NTEYAPF YY LQQYKNET LYKGLQQTKVIQTKTKESFESSYLSDDFNEL NDDIKTDKIVNESQSDTAENDNPPENKSDVMSVNFNEL QVMTTASS DQYTVYKPNKEDNLSTDEL
E Y K E IVE NPVSVAETSEELPP GATYPPLHVDFAQL

DDNTELINSDKEEKTSDYWYYVNFPGINVDFN NLL
DPSP LLADASGSDAASDGAPTVDWEFW HQGTALYDD■TDVVDDSAFENPDESENLII DWEFLL YSSSKQVEDETAALQEYV

KEKDSLEEQAEKPKHKGLESM
AKDSYDKAKENNVKDADELFDV

YAANDASNEDTSDLVQNDNEATDSAEGGPKEGDSKF YKDNNKNNETAEQ IKGTVVVEEKSEDKEEYTDDFNKL KEAEAVS IVVNEP EVVQPEPEPVLETVPRKIDFQGL
 DNNEDPDNPDTNVPDNNEPPTPVVEEKNPVIMALL KGYYEDRDEADNDREDAESGTAAEEAADKGDSDDFASL NGEKKDSETKEIVDTII IGGEDGQNISQEAFDKF
 AEKVSPEEPPTTQESTAPPRHDLAALL AKDYQENPVNTPPAAGDIDAW
YDYWTNMKNNKH DA GLIEESKTEAKNGNDDNDYLLKKF


KNSKEYADSHNDNWKK L
EYKKGND $\quad$ YY DN $\square E N V L D D T P E D N Q D V T \square P F V Y N H Q A L L$ PDVSKELEQA
YKKAQN $\square Y$ N N $\square$ DNKVYSTEDNSGAVSPYAH $\square D$ FDK L


ENRTGQSRKKSNTEKAKNN $\square$ KAE $\square R E F G \square S W E K L$
MS DKVVVWETDGLTEKREGYQSPLPFHQL
K A GA A Y DELS QYVTVDDSSGDGVPVV|DWDA|L

## UniRef90 R7HHNO

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ZKKNPDTVGWIKIVEGTKVINYPVVVQSTDNXYLISHAFNTA LSMNSEGLGYLY|PSDDVRLPMVQSTDNDFYLTHTFNKTA KAUNSEVVGWLQVPNTPINYPVYQGKDNEHYLRHNAEGKW HGQNKDLI GWLSTEGTVIDYPVMQTLENDYYLYNDFYGNY QQQNDHII GWLTLENTRLNNPVMQRDNNEFYLKHNYDDEK YEKNNDVVGWIKEGTVIDYPVMYTPDDEFYLYKDFYKNK KSTNEDIVGWIYIPNTNIDYALLKGKTNDTYYHNYEKKH KKUNKETVGYLVVNGTNINYPLVQHSDNSYYLKRDFYKKK QNRNADVYAWIRIPGTKVDYPVVQGDEDGYYESHDDDKES DADNPDVVAWVRVPGTTVDYPVVQGDDPDFYLAHDMNGSR QASNEDIYAWISSPDTKVDYPIAQHTDDSYYLNHGADGDY QADNAEAYAWLELTGTDVSFPULQPAEDEYYLSHNDYGDE YSMYPDLVGWIKVDGTPIVYPVMQGTGGEYYLKHNFEGKD KVKNKDTVGWI NVNNTNI NYPFVQANDNYYYLNHSFDNSV LGINPDVCAWVTLDNTAIDYPVVQGEDNFTYVNTDVYGDF REQYPDVQGWLTIPDTGI DYPVLQQENGEFYLKRNYKKEY YAENKDTVGWLKGDGTDIDYVVMQAPDENKYARNDFYGKS KVENEDIVAWIYVPDCDI SFPVMQTKDNQFYGNHTVSKEY DSKNKDFKFWLKI DNTNI DYPVVQAKDNKYYLNKDFYNQE YSQNNDFIGGLKIDGTGI DYPVMQSRNNNYYKKHFNKEY QAQNPDUYAWITVYGTG| DYPVLQKSYDNYYLDHKADCSE LA PNPDTRGWI TIDGTH| DYPMVQGEDDMEYVNRDVTGDF NADNPEVVGWLYLPGTNVNYPVAQASDNEKYLTTLFDGKK RQLYPDTAAWI KMKNSAI NYPIAYGDSNEFYLHHDMDGRY RSQNPDTVAWLRTPDTDVNDSVLQGMDNVEYLRRTERKKE KEVSEDIYAWIYIPDTNIDYPVFQHTDNAYYLEHNVDGSE KNUNPDYRLWLFVENTNVNYPVVSYGNNDYYGYRDFLGED SRNPDYVFWLWIPGTNISYPVVKNTDPGYYLNHTFSGKE NATYPDAVAWLKIPDTSIDAPVFKGLTNEDYFAKDRDSEE KEITNDEVIAWLTVYGTKIDYPVTQADNDQKYVNTSVLGKY KKLNSDSIGWLEIPGTNIDEPLVQGKDNDYYLWRDFKKNY

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 REVNPETVGWLSIEGTNI DTPVVQTTDNDKYLYTSFNGES LSVNPDVVAWVSVPGTDIDYPVVQADDPTFYGDHDVYRGW

K GAVYP ETI A WI WFED DRLNYP I MQS EDNTKYMIK DFQGND

 K DKNSDTVGFLKVNGTNI EYTVVKGTNNSYYLKHNFNKES RELLNPDVKA WITI DNTHID YPVLQGKDDMEYVNKDPFGEG K DL N S D TVGGWL NVVPETTI DYPVIVQASNDDYY LKHNFNKAR IIEINS DTMGWLLQACD GEI D GPVVQQTTGNSFY L D HR F D G S S $V$ QRYT DTVGGWLYFE DERLLSYPI MR S S DND KYSVDD YA GN E
 QAENPDCVGWLTIIPDTTVDYPVVWPSDPEHYLRRDFYDSY




 $V$ K DN S DVI G WL QV P DTKI NEPVVVQTTDNEYYLRRDYKKNY KADNERIDAGWI DVPSVGI SYPVVQGDDNDYYLNHTVTGEE F K K N K E C $\quad$ G W WV C I K K P A I QQ IN PE AYA WL EIT GT DI SFPI LQQSEDETTYYLTHNDYGEE R AVN P E AVGGYVY A P G T ML D E P V V Q T T D N A T Y L D K T F E G H E




## UniRef90_R7HHNO

 UniRet90-R7HBN9 UniRefolo EELLL 1 UniRef90-R9KHF8 UniRef90-K1LSG5 UniRef90-R6HEE5 UniRef90-R7GKX4 UniRef90-R6B7U0 UniRef90-V8C4L8 UniRef90-U2M5C2UniRef90_E5 573 UniRef90-R5QZ32 UniRef90-UPIOOO3B56639 UniRef90-F7KAUO UniRef90-U2B9W7 UniRef90-R5UHZ7 UniRef90-R7M6H9 UniRef90-C7H9J6 UniRef90-D4J622 UniRef90-UP10003B40FCA UniRef90-R5CTYO UniRef90-G1WK99 UniRef90-B7C789 UniRef90-U3XE85 UniRef90-R5L056 UniRef90_SOJOK9 UniRef90-R67518 UniRef90-G9WKW8 UniRet90_F2N9B3 UniRef90-R6MMA9 UniRefofo-D2MLT7 UniRef90-R7BJ15 UniRef90-B6FYQ1 UniRef90-R6DA71 UniRef90-R5SY45 UniRef90-R6U3N3
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UniRef90
R5W9A7 UniRef90-UP100031BFC0C UniRef90_U2DLV8 UniRef90-O2DLV
niRef90-uPloooce

NQGGWIIFADYRVNFKDFGKNTII IYGHNMNNKTMFGSVIPNM NKNGCLFEDYRITGGLSATNVIUGHNMHNGSMFGKLSRY TKGGQLFMDCDNTPGLVDQQSVLYGHHLKDGSMFYHFFLL NANGCLIDTDSNGTPPSTNL SRGGSIIFADFRNEVMEDRHTIFYGHNMKSGEMFGDLDLY DGNGS:FADKHCHLEPRDTNLIFHGHNMNNGSMFGALITKY TSMGWI Y FRAGTVFMDCTDSPDQWSENTVLYGHNMADNTMFGSLRQY SAWGTPYDDAGCAEGVLSPLVVVYGHHMSDGTMFGPLERY
 DNKGNPFVSADASDDPMDQNIVI SKAGSUFLDVNCDKNFTDPYSLLY
 NGSGTVFMDCDDTPGGDDQQTTLY NDRGSIF FDANANGQFQ SRFGVPYMQEDCN GDPGATYTOPRNSRDFSDNIVI NNNGSHMMDCDTAPGMVDQQTTV NPSGSIFMDASCSPGMDDQQTSL $Y M C G A V F S Q S Y N G R N F D S P M T V L$
$Q N S G T L F D D V N G R H L N S K V L V V$ DVYGCYFADYTNSDGPRSPNTVI GKSGTLFMDYRNNFEFTDESTVI NKNGTVFLDYRCNSDFTSQNNLI NPCGSIF CGEGAENLI KKYGELFMDYRCNGNNMDNHF: PVTGTLFLDMYNKADFSDRDSYIF GLPGALMEMEYSNKSEESDAVTIVI $V G S G S M F M S T T N D E Y F T D P Y T L I V$
 NSAGWVFADYRNDMVNFDKNTVI
 SDAGGLFLDYRNERNFHDFYSLIY Y DERGVPF DDMYKWQPKSQNSLIY GSVGTMFEDKDNASDFSDKNNV:Y SERGALFF DYQANKDFQDFNSILY SYAGVPFVGTGDIKADYGDIFI GLDGSLYMEKYDASDFSDNLSUL NSAGWI FADYRNKDDNTDKNIVI ALPGSIYSRMVNAKDFTDPVTVIY STAGTLFVDYRCDVVNPTTNTI ALSGSIFISSTKNASDFSDTYNMTY DYSGWVFMNYANSSTVMDQNTVIF
$G S V G C F F A D A E M P D A F G A P L T V V Y$ GSVGCFFADAELPDAFGAPLTVVY
 ASGGTPFLDGRNKPQAEGQNLIL SRNGVIWADADTRFDSSSRNLVL

 | $T H Y G A V F T E S V N A K D F N D L A T I I$ |
| :--- |
| $E F A G A I Y S E M Q N A T D Y S D P T V L$ | NRNGCLFVDYRTKEGLNASHVI S WAGCYYLDYESVLFDEGQNALI NWSGADFLDYRNSPLIDDD DDNGCTYTEYYNNTDFADPNTVI PYMGAVFMDADNKADFSDQLTWL LASGSLFMDYRNNFENEDNSVIV

SDPGTPFIDENCRPDNTNVVLI SDPGTPFDDENCRPDNRTTNVLI
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NPAGAFF GYECEPDFTGHHND

UniRef90 R7HHNO UniRef90_R7HBN9
UniRef90_E1LOL1 UniRef90 R5R1F6 UniRef90_R9KHF8 UniRef90_K1LSG5 UniRef90_R6HEE5 UniRef90_R7GKX4 UniRef90_R6B7U0 UniRef90-V8C4L8 UniRef90_U2M5C2 UniRef90_R5QZ32 UniRef90_UPIO003B56639 UniRef90-F7KAU0 UniRef90 U2B9W7 UniRef90_R5UHZ7 UniRef90_R7M6H9 UniRef90_C7H9J6 UniRef90_D4J622 UniRef90_UPI0003B40FCA UniRef90_R5CTY0 UniRef90_G1WK99 UniRef90_B7C789 UniRef90-U3XE85 UniRef90-R5L056 UniRef90_S0J0K9 UniRef90-R6Z518 UniRef90_G9WKW
UniRef90-F2N9B3 UniRef90_R6MMA9 UniRef90-D2MLT7 UniRef90_R9L9A7 UniRef90_R7BJ15 UniRef90-B6FYQ1 UniRef90_R6DA71
UniRef90_R5SY45 UniRef90_R6U3N3 UniRef90_R2R4F5 UniRef90_F9PQG2 UniRef90-R5U0X0
UniRef90-T3GD26 UniRef90_R5XDK7 UniRef90_UPI000411B016 UniRef90 R5EJ05
UniRef90 D4JQP4 UniRef90_F2JL64 UniRef90_R5IWV0 UniRef90_R6PHA1 UniRef90-UPI00047088BC UniRef90_UPI0003B6B4D9 UniRef90_R5A6A9
UniRef90-F3BAM7 UniRef90_R7MDP3 UniRef90_E3GM73 UniRef90-C8WH88
UniRef90 C7N1F3 UniRef90_D4JG61 UniRef90_UPIO0045E936B UniRef90-UPI0003FC6E60 UniRef90_M4YY89 UniRef90_R9K8Y4 UniRef90_E0RXL9
UniRef90 R5Y4G1 UniRef90-N2AAB9 UniRef90_U3TSK1 UniRef90_D4J0E1 UniRef90_R7M747 UniRef90_UPI0003B31E2F UniRef90_R5MDQ4 UniRef90_UPI0003B40923 UniRef90_UPI000424B9DC UniRef90_F3BD74 UniRef90_G5ICS4 UniRef90_R6YOK7 UniRef90_B0PG32 UniRef90_A0A011QS37 UniRef90_C7N0P1 UniRef90_R2RFR1 UniRef90_R6FXX0 UniRef90_B0P9T3 UniRef90_R6QR40 UniRef90-R6FHG3 UniRef90_U2B9C8 UniRef90_UPIO00380C250 UniRef90_F0HGB0
UniRef90 R5W9A7 UniRef90_UPI00031BFC0C UniRefe90 U2DLV8


 A QE GYGKEHH I IDCFDS LYEHREYELVAVFYSNDFKYYKFF

 IDN S S F R K N N E EII S L LDTP T K S Y K K F K
 ADREFAE EHRT I LIVYTRERAVEDVVFA T DVVDADREGVRT K DQTFFDENTTGMLILPGNAYNGDI FACLLIDDAGEDAIFD



 TDETYYQEHPFAYLQTEDS $\quad$ QEYQ V VTVQKADRDLFPFQQ
 ANES K Y S C M

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NT GRVA|V|HAKM|INTE SDGRFIVQGAYVGE Y
NDERFLVQGVLT
YNGRFVVVGKRI
TSQRFVVVAKVVEDE
NNGRFVVVAKKLK
TPTRSVLFARLEKN
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RDNRFLVVAVMTQ
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Y NGRLVVIAKR!
SDKRTVI HAKLIKR
TEARTILLAWMIP
YEARNIVLAVPV DNDFFVMFAVKVDE YD GRF 1 VVAK Q I
GE
SNHRFVLTGLMVK
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YNGRFVVVAKLIE SENRLLIVQAVLTEE GDHRAV MVC T
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YEARTVLEAKLIDK
YDARYVLMGELI P
GKGRVIVQAVLL
Y DGRFVVQAKLVK
SEGRHLLI SEGRHLLDGKLLEDE GNHRFLICAVLTEEQ Y EARMVI HGRL!
YEARTVVICKEIDN
DNGRYILLCK
PAYRFVVQGVLVDE
YDMRTVVVARKVRD
SAKRLLIIAQK
DTTRLVI HAKLILK
SE $\square R \mathrm{MAV} \mathrm{HG}$
TNGRYIL 1 GRLTDQ
SGKRLVI HSAKVE
NKKKMVLHAK LLKKE
TNGRIIVFGRLL
NDKRYVVHAKLTKK
NDGRLAV 1 ARRV
YHERTIVYAR
VHGRVVLRGFVTEQ
SDRRLL

YRSRFVVVAG
TDERIIVVG
$D E Q R W L V N G V L V D E K$
RSDTFVMFAVEVVE
NNNRVVLHAKKI
PNNRRLIVAK LVNEK
TDGRIIVI GKVRSE
TDGRMFIVAKRVK
NNNRVVLHAKKI

NTQRFVVHAVL
YSGRMVIFGVKVK
DDGYFVMFAVKVDE PKKRYIVAGVEVE YDGRLLVVARK
NNSRVVVIAA LDMEE DNQRFVVMAKKV YDQR A AVHARRIR
 AEDRFVVHAKERKRQ NNTRYLVQGVLIKRE $D D Q R V I V G G T Y V G E$
$Y D Q R Y V V M G R V V R D$ NGSRHMVHGKLI EDGRLIVVAVKKK DDKRYLVQAVLVTE EDDETI YEARTIVHGKLISKE SDGRFVVVARKINEK SKVRMAVVG



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UniRef90_UPIO003FC9251 UniRef90-R6P2F0 UniRef90_R9KTZ3 UniRef90-E4KWM2 UniRef90-EORXP5 UniRef90-C7GZY2 UniRef90-V1CID7 UniRef90_UPI0003B6CDED UniRef90-R5L1U0 UniRef90-W6SEB1 UniRef90_R6S204 UniRef90_UPI0001C378D5 UniRef90_UPIO0047B479D

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 YNENKDFDGWLSI EGTNI NNPVMYTPDDEHYLRKNFNGDY R A V N $N$ P D V $\operatorname{C}$

 K Q I N P D D S D A W I I D G T K I D D DP I V K S Did N E F Y L H H N N DE K K D T KINNSDEFSAVI YI P A L L G I N Y P V V R S K K D N E D Y L H K T F E G K S QQGNDEDYA WI KI EDTDVDYPIVQSKDDDFYLRHSYDKS W
 F H Q N P DVVFA WL TV E G T RI D Y P V A Q H S D D T Y Y L S H DID G E E

 TAKNADTIGYIYAPGTQLDEPIVQTTDNETYLDKTFEGNE

 KEKNSDTAGWINVNNTNINYPYVQGKDNNYYLDHSFDKKY Y N RNQDFVGWI KI E GTDI DYPVVQADDNEYYLNHNFDRER
 A Q I N P D I V G WI Y V P G T VI N Y P V V Q T S N N NTTY L S R L F D A S G
 R A IN P D IV A W WV M P G T II N Y P V A H K D D S E Y Y L H H N F S G E G K K L N P E V I G WL E VK G T N I D Y P L V Q G K T N F D Y I N K S V E G D F
 AKMNDEVVAWI KV P ETAVNYPVVKHKNNSYYLTHSYDKS F
 QS Q NDEDY A WI QVD G T E V $\operatorname{D}$ N Y P I V Q S T D D E F Y L T H S Y D K S W Q


K

## 

 A A V I N K P RKKNPDTVA WLYI P GAEVVDDPVMQAE DNGHYGWLGEDGEY

 VKKNKDCIGYVEDPGTTI SYPVMQTKDNDFYLNHDFNRNY L E Y N S D I K G WL T I P GT NI D Y PVMM A S GS DFY L T R DFE G H K R S A N P D D D G WV SV D G T A I D Y A V A Q A P D D D Y Y L D H D A Y R S W




A

## Q

H
 $\begin{array}{llllllllll}\text { R E } & & \text { N } & P & D & V & C & A & W & L \\ R & P & D & V & V & A & W & V\end{array}$
 K E Q N P DI I A WI Y V P G C N I D S F P I V K G S D N D Y Y Li N H N Y K D E Y
 KKKNKDLVGRI K IKGTKI DYPVMQTPDPQYYLRRNFEKKY K EK N G DTFA WL K V LD T K I S Y P V MF P K S P E Y Y L R R N FE K K H YLINPETVGWI NVPNTNI DYPVVQGVDNEYY L NHNDYRKS

 Y E KN H D MA G WL K I E GTNVVY PVMMHYDKNMYY LTHDEDKE Y


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UniRef90 D3R1Y3 UniRef90_R6ZZL3 UniRef90_V6Z2D4 UniRef90-C0EZH1 UniRef90_D4JQP3 UniRef90_R7HIR6 UniRef90_R5L2P6 UniRef90-N9WAI2 UniRef90-R7D3C1 UniRef90_A9KIV5 UniRef90_C7HRV6 UniRef90_S6BXB0 UniRef90_F5U7W1 UniRef90-R7MNQ9 UniRef90_R7KAQ5
UniRef90 R5M1Z5 UniRef90_W7UH61 UniRef90_UPI0001C37592 UniRef90_R6IST8 UniRef90_UPI0003B628DD UniRef90_R9MCU4 UniRef90_R5E8V5 UniRef90_R5SVJ2 UniRef90_UPI0001C377CA UniRef90_E8K959 UniRef90_R5LPD2 UniRef90_UPI0003B40FF1 UniRef90_E0S4H9 UniRef90_UPI00034D0BD1 UniRef90_R5GFF0 UniRef90_R5EL17
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90
100
110
120

S S A GAlIF TESYNSTTMEDPVTVAYGHQMHAGTMFGKLLQEY


##  <br> 

SVVS G T F F M DYMN D S K F N D A N S V I Y


 NFAGAI FLDYNANGNYDQSNTFI F

 \begin{tabular}{ll|l}
$\mathrm{T} Y \mathrm{Y}$ Y G A \& F <br>
A L S G S \& F

 

$D$ \& $Y G G$ \& $P$ <br>
\hline$V$ \& $S$ <br>
\hline
\end{tabular}

 SKS GSVMMMDCNCSPD GNS GNMVL




 $\begin{array}{lllllllllllllllll}N & Y & A & G & W & I & T & D & Y & R & N & D & I & D & D & L & V \\ S & N & N & I & I \\ D & P & F & G & L & P & F & L & D & Y & R & C & K & G & D & F & S \\ G & Y & N & S & l \\ Y & R & Q & G & T & L & F & L & D & Y & R & C & N & R & D & L & T \\ S & G & T & N & I\end{array}$

## L <br> 









## S

## N


A WS GAI YLDYRNDRSLDEEQHFTI Y


 | $S$ | $L$ | $G$ | $S$ | $L$ | $F$ | $L$ | $D$ | $C$ | $R$ | $N$ | $H$ | $P$ | $D$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $D$ | $F$ | $N$ | $N$ |  |  |  |  |  |  |  |  |  |  |
| $A$ | $L$ | $S$ | $G$ | $S$ | $L$ | $F$ | $L$ | $D$ | $C$ | $M$ | $N$ | $A$ | $P$ | $D$ |
| $F$ | $S$ | $N$ | $F$ | $N$ | $N$ |  |  |  |  |  |  |  |  |  |
| $N$ | $K$ | $A$ | $G$ | $C$ | $F$ | $M$ | $D$ | $V$ | $D$ | $S$ | $D$ | $A$ | $D$ | $F$ |
| $C$ | $G$ | $L$ | $S$ | $D$ | $F$ |  |  |  |  |  |  |  |  |  |



## 



 $N \mathrm{~N}$ R G A I F L D H ET S G D F S E E N NLV





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130
140 150

160 S QENALED Y GEVVIVY LPEKEVLHYQVFAAVPYDNRHULYNY
 RKQDFA QKNRKDYITTNEG LDREYEI FSVYTTPADYDYRTM


 TKK S S F A M K S H K T G I L MI P G K K Y P L K I I F A V L V V R S T D S Y I F D K D E N F Y K N H E Y Gill Y T P D G A Y K A S S V V A C T


 R K K K F F D K N T T G T L I L P P D R S Y K LiEl FA A M Q V S A S E D S IG A
 D Q Q S Y M D E H P Y V Vil E TPr E R K Y Y Y E V A F L I I


 RKK S F F NK HK E F S I E T K T K K L K I N I F A C I Q T D A F D S L L F N




 RDR E Y F D SHS K GLL M T D K G S E EIIE FFA Y V S V P A D S P V Y N T

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DCTDSRRFNAFLLNS I IYEGAQFASDVTVVSTDDEVLELLSTCN K LSDKKKYFEYTTNPNSGSKNDRKVSLDDNSKI ITLSTCT


KF Y S K D DFNNFI IDVVMDRSWFFTDVDLTYGDQILTMS TCCS
 NA ETA Y D F E EYYL N N I K N L S L Y Y Y D E ENNPS F G D E I I T L L S T C D
 PS QYKNNRQQFLN YVKMKANWMQNDKI SANYSVLAALGTCS DFTNTYVFTEVMNDILSNAVVDKTVKVTPDDHIVIL STCN N F D K K E EYY Q N Y L D N ML A N S V I Q T D T P V T T D D D K L L A L V T C T

 E LG S R E GLL R Y Y L D T L Q DR T F Y R Q DA T D P Q K D R F L I L S T C D T GK WQA DTS GLVVDFVVRKNAEMMDNIDGKSEDS QILAMMS T S

 P QK WQKSTE GLLKYAEKSAKYDTMKK I GTSSSQILAMSTCS D F T S R D D F N H F I DD L M D R S D DF T D V D I E Y G D D I L T
 TF N S D D S F Y G Y DA GIVK Q Q A Y F WR DI P V K Y G D N I L T L S T C S










SFKNMK E Y
PGPT
NPT GSELTT



 DFSSPEEMRAWYEQRFSEC DVQLANNDKLGVVFVTCS DFTKPAAFAQY LQDVKK SFEDDAAFVNYVNE CKARSKYVFDQEDTAEDKDITTLSTCS LIDSDDE TKK S Y L N H MR Q K Q L Y E T G Y F A E P N D R L L T L Y T C Q



E Y

## 

 E V K E E D E K T A LLL K Y I E Q Y A L Q K R K C E V V T A S E HLL L V L S T C T RIA D Q S E K S K Y L S Y V R E Q AL Y Y R D L NISVED RI I A L S T C N DNKEKE


 NFDTSQDFKKYI ESI R S K S L F K S NV DVT D S DKIIITLSTCS $K F N D Y Q E F N N Y$ I D F V D S K S F Q D LiN Y F ED GK K N I I T
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|  | SQRRYLVLAV |
| :---: | :---: |
| UniRef90 R5KXW2 | NNTRYLVQGVLIKDE |
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| UniRef90-UPI00037059DB | SEARTV |
| UniRef90-X8GZ61 | TSDRFIVIS |
| UniRef90-R7C100 | TDQRTVVL |
| $\begin{aligned} & \text { UniRef90-R6VSC2 } \\ & \text { UniRef90_R6H2Q8 } \end{aligned}$ |  |
| UniRef90-G9WK86 | GQQRFIVQGA |
| UniRef90-R5KPU3 | KSNrylvcgV |
| UniRef90_D3R1T0 | TDGR |
| UniRef90 A4E | NT |
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| UniRefoto- $04 L L 51$ | SEARTVLL |
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| UniRef90-V6Z2D4 | EDDE |
| UniRef90-COEZH1 | S D |
| UniRef90-D4JOP3 | D N |
| UniRet90_R7 | ER |
| UniRef90-25L2 | REVRIVI |
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| UniRet90-J7M955 | GETRAAMVGTVVEAQ |
| UniRef90-R7D3C1 UniRef90 A9KIV5 | GETRAAMVCTVVEAQ |
| UniRef90 C7HRV6 | Y DQRLAVHALR |
| Re | GADRY |
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| UniRe990-R7MNQ9 | Q |
| UniRet90-R7KAQ5 | N |
| UniRef90-R5M1Z5 | OREKFVAKKK |
| UniRei90- UPIO001C37592 | SDARALEVG |
|  | RSSRYLVS |
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| UniRet90 R9MC | SGMR M |
| UniRef90- R5SVJJ | NGGRMVLHAKLV |
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|  |  |
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| UniRef90-R5GFF0 | DNGRAVLF |
| UniRe990_R5EL17 |  |
| R5B3N | YNGRFLVVARQV |
| UniRet90-R5ZKN1 | SDQRYVLVGAL |
| UniRet90-R7M8A1 | NDSR】VIHAKMUKAE |
| UniRef90-F15P3 | R |
| UniRef90 ASLIL6 | NKKR\\|VIG |
| UniRef90-R5LC93 | NERTV |
| UniRef90 W7C |  |
| UniRef90-R711 | dKRML |
| UniRef90-D4S2W0 | SDSRHMVH |
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| UniRef90 W3AKA | GNERFVVHGALIAEK |
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| UniRet90 U2VBG0 | YNER |
| UniRet90_R9K1Y0 | S |
| UniRet90_R6FUG8 | N NSRMVIV |
| UniRet90 FOHO3 | YDQRLAV ${ }^{\text {d }}$ |
| UniRef90-ETG | NDNRYVVYGR |
| UniRet90-1005 | NDERTVNAKLKDK |
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| UniRef90-R6P2F0 | NDGRVILYG |
| UniRef90_R9KTZ3 | GADRY |
| UniRef90-E4KWM2 | PDTRLVVQGlLVED |
| UniRef90 R91 | LidNRL |
| UniRef90-EORXP5 | Y G GRFV |
|  |  |
| UniRef90- R71HA3 | DENKYVVH |
| niRef90 UPI0003B6CDED | YSGRMVV |
| UniRef90-R5L1U | YNGRFVVQA |
|  | YEARTIVVATLVNE |
| UniRef90-R6S204 | FDTRYVLFARRVRE |
| UniRef90 UPI00010 | RGLLVG |



TNEPEVTQEASKPSYVVSAEEKEYLSNRFKGL
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ETEMDLLEALDYE
EK Q Q S DVK VT QK A EK E V V Y S VVA Q A T A E D A G D D F D A L


## $\square$ S A E Y Q R S N $\square$ A Y R Q $\square R E \square$

 HKNQQ】 KEFSDKSNKKYEPSTEE $\quad$ KNY LAANRFKE L TKA Y ET DENYTRK DD F D S L




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

D N M Y K Q A A A EDREQ P P Q Q Y E D

S S RLE E IT N S IS DNS D DA LDKE DK A GREFVE SL
 D MDADPKDEARRDTALEERPEV DWDYW
 K N A Q TPD DLLSNVTVT QSAEKAVENP EQEESQAEASADASESTTENEKA
Y L E Y Y R KEY R G GKNYSKVQULKPNDQQNVKEDSNE $\qquad$ S Q K K L L

K E Y Q VA S DE Y D H $\square$ R SVVA VD Y $\square P$ E DEA E YP V L N $\square N F D K$
QEVKYTPSQEEKDYLANRFAQF
NDTEDERNLQNEVIALL
LY D N Y S $\square$ N K S A F A S E R L L Q Y K P T D D H K E T
L E GL
Y DEATELLFGQDRPETDKAE DDAEAVNDDLLSNAEKV

Y $\square E D K Q E R A N Y E K \square Q Q K F Q M L$

ESPTAA DAEGVDWDYW
E S K N A Q N A $\square$ NEFDRVLTESETAEDDEKPY IT
K E D Y A E EK Q FVVD DQNEA Q TMN DNNUI VD K L

$\square W A D Y Y E A A E G Y Q K \square K Q Y \square A E G D D Q D E D E E G K D Q \square D F D G \square$ YDKRHLQE IVDGLGKYMNQD YEDERTESSQDSQSKYKVI SEETSDLAANDT DDWDYL
T DEAGESSET T P Y VS P I D F E S L
 NP $\square E K$ K A S S T G F E T K S L


EKNTKEPEDMKPETTEDDKEKEKPEETVTVDFAA L
EAAENNQGNAKDEDQDEQEFPQI NASVY



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K P D L K Q Y
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EDGDGFPAVD WDYW
$L F L N A E K T Y Q V L K E E T V Q V A A D N Q E N E E A V N P F D \mid I N F E A M$

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 SGVNADFTAVLHVPADSI TYPVVKSKDNEEYLHRTFEGKA KKVNEDVVGWI YI PGTNI NHVVAQGDTNDTYLRTLINGEY P A
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 SNR V V VGWI NI P D THID F PI A Q A D DNDFYLHNGLDGTY

 $R V V N P A D V A W V V D G T A I D Y A V V Q A P D P D Y Y L S H D D Y R S W$ RKRNKDVI GY L E I P D T T I S Y P V M M Q K K D N D F Y
 K E $\square$ N P DYNC WI RI P GT SI DYP AVVWGK D D K Y Y L D D GFN G E K

RT $\square$ NK D $\square V A W W E \square P G \square G V D Y P V V Q G E D N E H Y L H Y M F D G K E$
 K SVNKDVVA WVYMPGTEINYPIVKGADDDEYLWKNEDGGE K K Q N S DTVVA WI QVDATNI NYPVVERNDNNYYQNHDF LGHK QA $\square$ NP DII GWI Y MERPEI S LIPILDRSPDDDFY LYHNAERAY K T F N P D T I I G F I QH L N K DVC G WI S L D G T K V D Y P L L Q S Q D N V K Y L D R N A F G D Y

 RAKND DI VGWLKI D DLLKI DGAVVQAEDNHYYERKNENK QY

 QEDNSDVYAQLDVEGTSIHYPVAQHTEDSYYLTHDVDHNE Q E IN P D V VA WI RI P G V L E Y P V V QA YNPDDIVAWWVI P NTKVNYPVVVQSVVDDYY IMRNVDGSK RERNED YVIA YLYi P D TEEI E Y P V V Q R N N S Y Y L L N H NFYGEK SELLNSNFKFWI KVDK T NI D Y PVVVQTTNNDHYLKYDFYNKP


 ND DTI G WI RI P NTNVD Y PVVYKENYA YYESK GYDK QY
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| UniRef90 - $4 \times \mathrm{XHO}$ | UniRef90_R6SJo5 UniRef90 WOFNY3 UniRef90- $\mathrm{EOS4H4}$

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$H P F G A V F M D A R N S N D F S D N T I L Y M$ NFAGSIFFDDANKGSYDNKNTFIF
 NNAGWVFLDYRNNNDNNRNTII
SASGAVYTEVANSKDFDDFVTVI SASGTVFIDYKNNUNSDKNI:



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ARAGSVFKDYRNNEFLDKNTI

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Unepopght

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VIE E Q T V $V$ T|L A T C S MA RDKK DYD DFVD K VLGHS LWNDGERPKYGEQMMMLSTCD DFN K E E S $\square$ K Q WQ D T I Q K N V R T Q L D K P L G D N S K V V V L S T C I
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 D Y T TY A GCQA YL E QVY A K QL RE G WDDL T P Y HF LVVTLDRE T




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 DF S S A DEMRAWYA QRFEECDVR\SNDENAS QLFTFVTCS
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QANSEEEFNDFYTNDKRLS LTFDTGVTAEYRDEFDT LTSTCA
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T E E N S DII IF G W
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 NT IN K DTAGWIT ACGENID GPVVQTDNNDYYLEHRFDGSN Y A Q N T D L VG WL K I D K L K M D F P I L Q T D N D S Y Y L K R S F T H R Y
 LR R N K D Y I G WL K ID N T Y V D Y P V M M D P P N S F Y L D H S WD M S Y SK IN N E V V A Y V Y Y A P G T K L D E P V V Q T N N N E T Y L D K T F E G K ■




 K A I N E N N I V A W WL Y I P
 PA SVVA WVRVPGTTVDYPIVQPESPDFYLTHDANGER LK Y N D E S K G Y I K L D G T R I Q Y P I V Q H S D N D Y Y L V K G S D K Vi Q Q K D V Y A Y L K E I N Q E VIDA Y I Y AP GT QL D E P V L H T R D N Y K Y L E Q T IT G E Y
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 QAD GRDIA A WLTIPK TGUDYPVMHAQDRSYYLRHNMDAQV


 K QMNS DLVADMYI PNTDI Y LDPIVQTANNEYYLKHNFYKN Y





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 K K $\square$ N K D I VA ILLDI P D T HVYYYPI FK S E DN S Y Y MRRNIIYCN Y




 $M \vee Q G E D N N Y Y L K H S F E G E S$
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 P


 QTINPDI I G WLTI A D STI NYPVLQTDNNDYYLKHNYQGES

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 S E A N K D Y $V$ V $G$ G WL


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 TK S G S FVDADNSRVHSKNNTIFYGHCMTNGTMFRPIMMW

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[^1]G M G S I Y L D F R V D IDD T S R K L L I Y Y
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N S N G S $\quad$ F T
NSNGS $\square$ T T TNLFP FE S FS G CPY LDPRCGAD
$\qquad$ $S V S G V P F L D G \quad N Y I D G G G R K I I I$ NINGSIFLLDYRVDIDESNK LII FGHNMKNGTMFHTLL NY $N$ N G S I L D Y RDVDDESNKLLIFGHSSPSYFLP MMUI ENY Y E S G S I F A D S WS S K E R Q S D NITIIF GH HM GWGTS FTHL S E Y STAAGTL F LDERRCRLATPNANALIYGHNTAS GSMFS QLLNY


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| UniRef90_UPI0003B369A5 | $\text { T G K Q T } \left\lvert\, V \vee \square G \begin{gathered} 210 \\ \mathrm{C}\|\mathrm{~L}\| \end{gathered}\right.$ |
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 KEDKEGKETNLKEKYYNF TPAGEVIPSVDRQAELAEA LYMSSSKNQRDQHQYETLQQT YTFKDKNNKLRPQFEAL NNNYSY IENNNUSTKTESIISYDYSKDINDYKTK EEYNKT IIE I NDSKLSVGAIVKEDSVKEEIDSLKK ENVETY DENKNELVSENVQRLI N EQQEIKKDEGYKPDKAEKEYRQKKFKELC KKEEQQYEKMEKKY VNKNKKKNK $\square K G T S D F D$ KEKM
 KDKDNSSEKETDTADSEDKT $\square$ STTRTVQDWAKSY

## NEPPAGAAAGDDGSDPWQRL PKSDK LS VS E E LK SI <br> $\square A Q S \square E G A V S E E S E H E E P L G \square D W D S L$

EEEADTLTGESARDGKVDWND L KYDDVIK TT NDVEFAVKENNDTVFEEDENL $\square Q Y Y K D S K N Y S K V Q V F K P K V Q E N I K D N S N E \quad E K L$
 $\square S E Y K K A D E V Y T E L R E N T \square N N S$
 ADEVYTELDRNTSNNNSKH QEELL
 R QLQSKTPAAANAMPRSTSTATSASSKEIANL
 $\square Y Y D Y R Q N R E L V E E L K T C F P E D P E Q A G R E P E V S A \square D L R S L$

Q D A VREPDGS $\square \mathrm{N} \square \mathrm{G}$ R M KNNTKVVSESMN KT LINSNEKSSQDK $\square$ FELRKK L $K \square Y Q E Y S N T T P Y Y E \nabla E D R \square T Q D D E T T \square$ EDKTTEINKA D L E K K A K F K S A

VEVPTSKADNKPDYTQMSFDEL

## Y A K VEKYTNMASNEYKDDYT

 NQQKDVTFEFNEV

E TQENNEDPAEFNMEVIEPPSV口DTVTKEIRENYCEQ KNYLIAKNSQAITASSDTREQNQQKDVTFD TNEV VKNQKKKASYDFDSVQDLSLQSVAAA KNEKELKEVVAT IT TQ QQENKEENEP DD $\quad$ EEVK GY PSKERPAEKPI I PVFK

 VK QLQENKEKEAEFDFNSDQPPTDKEAINAGFDRDPKA E $\square$ KKK 1 DDARKYNETVPDAFSVRNGVKDKEYESL QQDWPSAEQAQKNNEKEA LFDFDAI KQPVKDDDSKGNFDFEKV

K Q T EQLISEFEQTDEDDYDEETDVEEEQTSDSEED


UniRef90_E6UBT0 UniRef90-R6BIF5 UniRef90-R6BIEO
UniRef90 K1TG92 UniRef90-K9B8N1 UniRef90-R7M301 UniRef90-R5A330 UniRef90-R9L248 UniRef90-R5ST17 UniRef90-E5V344 UniRef90-UPIO003B4BC55 UniRef90-K1TRT7 UniRef90-R7L6B7 UniRef90-B6GDP2 UniRef90-E9S9D9 UniRef90-A0A011UHW7 UniRef90_D4KLU8
UniRef90 R6DHZ2 UniRef90-R6DHZ2 UniRef90-R7ME46 UniRef90_C8WNB1 UniRef90-R5SVB5 UniRef90-E7MLC9 UniRef90-UPIO0047EE49F UniRef90-R5MVV1 UniRef90-UPI000288A2BA UniRef90-E6UJE1 UniRef90-C7GYIO UniRef90-A0A031WAl3 UniRef90-R7AMK3 UniRef90-F3A2T1 UniRef90-R5J9So UniRef90-T4UJL7 UniRef90-R91KG9 UniRef90-G5F569 UniRef90-B0S4K8
UniRef90 R7D878 UniRef90_UPI0003B4BF70 UniRef90-D2G8T5 UniRef90-UPI0003488FDB UniRet90-E9SE19 UniRef90-K1RDW6 UniRef90-F7K260 UniRef90-ToD5MO
UniRef90-K1UF81 UniRef90-C4FB08 UniRef90_U2TP43 UniRef90-F9HEB9 UniRef90-K1SQ30 UniRef90_BoS4B9 UniRef90-R5MOK9 UniRef90-R7KFV9 UniRef90-R5SUL5 UniRef90-R5MOT4 4 UniRef90 C5NVA3 UniRef90-R5B9X3 UniRef90-R6IC87
UniRef90 K K1U321 UniRef90-UPI000479AD9B UniRef90-D6E777 UniRef90-R5CN62 UniRef90-R6FMC1 UniRef90-UPIO0041D8FAF UniRef90-E7MQN3 UniRef90-R5MU37 UniRef90-R5VFU3 UniRef90-M4ZFX6
UniRef90 ${ }^{-}$W9EGG3 UniRef90-H3NIT7 UniRef90-E1OZR9 UniRef90-R5L3F9 UniRee90-UPI00037743FB UniRet90_K1LXV1 UniRef90-H3RN05 UniRef90-UPIO002196CC3 UniRef90-R6YAR6 UniRef90_-U5L710
UniRef9O_KONW13 UniRef90-A0A023CZ23 UniRef90_E4MZG0 UniRet90-Q65N13 UniRef90_UPIO002882313 UniRef90-H7CTM7 UniRef90-UPIO00415D5ED UniRet90-G2SRV2 UniRef90 $10 \mathrm{HZA4}$ UniRef90-D4JMP5 UniRef90-K8EUB3
UniRef90_R6RGJ1



TPDTNVSYPLQHKYDTYYLNHNDNGST AMVNPDATGWTDVPGTRIDHVVVASPYPDWYLSHDFQGRR KDKNDEDIALLNLDNYEYSUPIAKNKDNNYYLSHALDKSM SQ EIVAWVEAPNTSMSQPVAKKQNPNAYLEDDALDQ KKRNPDFWAWVYWQGETVSQPVVIDTGGKEYLYRNFDGEP RALNDDMEGWIYNSDGTVDAPGLQNEDDKFYMTHNSLGAP
 OTFGWISIPGTSIDYPVLYEGDNEYYLTHNYMEQY NCDKSKSCTWIKIPDTYIDYQVLRPKDNNYYLRRNASGKL YDKNNDYRFWLKI NNVNI NYPVVQGYNNDFYLTHDFYKNY NPAVVAWIDVDGTQUNYPVAQPTSDDYYLHHAIIDGTP KADNKEVIGYMYVPGDGKDSPMLQTTNNSKYLEYGLDNKP YYENDNIVGRLKI RNTSTDTLLVKGNDNEYYLNHSISNEY YDKNNDYRFWLKI NNTNI DYPVVQGYNNDFYLTHNFYKNY YLLADDLVGWLSISDTTIENPVMQCDDDEYYLHHDFYREY TKANKDYRAWLRIEGTPIDYPVAQADDPLFYLDHDPWGHP LDQNKDAAGWLVVENTVVSYPLVQPKNKDWYLHHNFWNQK LSUPALA\HEPVVWGLDNEFYLSHDAKGEP

## YAAWLTVEGTPTDपPVAAVSDADFYLSHDLWGNR

 YN NPE IVGY!R\|PDLVISNEVTQHDDNEYYLTHDCVDRF QSKYLNVRGWLTMPESGTDYPVLQSEDPEYYURRDYRGNY NADTVGYUKLEGTNUDAPVMFGPNFYYHYHDARGNSGWTTVSGTS $\prod D$ DPVALPSKNDWY LDHDAWGKR $P Q \square A P G A Q A W L T V D S A G M S L P V A Q Q G D P T Y Y L S H D \square N G K D$ ILVRGTE $\square \mathrm{DYS}$ GAQDRSDGFF पSHDPSGAP
NNEN VIGRTENKADNDDEDVKSKDDTYWDHDDNNKK NKNMPA GWI RVQGTNI DYPIVYSQTTDVFSEMTED GTQYP GWIRVQGTDIDYPLVYESDS DY KKYGDSVVGWLTVEGTNIDDPLIQVTDNDYNYAWDYAHPD RELNPDTVGWIYIPKTNINYPYMYHYDN YYLDYGFEGEK S

TLGWLKVQGTNUDYPV1YGSNDGDFDDGTDD YEANNDTVGY $\begin{aligned} & \text { EVVGTNVSYP } I \text { MFDMTGKWYYNHTPAKEK }\end{aligned}$

VMGWVRVQGTNTDYPVLYAQDSNYSLN DVDTS REENPDFYGLVSSDDANLDSMVMFCKERDEYLYRDFNGNE $\mathrm{KK} \square^{\mathrm{N}}$
 KK $\square$ N N D I IG S I NLG NK T NDIVGTISLLSK

 $R$ S $\square$ N P DVI G G I A I P D L N I N L P I N K GTSN E
 Y A RVPAT T G Y L S S M A C S Y G S F V V Q S T

 K A K Q S P A $\quad$ G R

 D RESKAVI GRI T I

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 UniRef90-R6BIF5 UniRef90-R6BIEO UniRef90-K1TG92
UniRef90-K9B8N1 UniRef90-R7M301 UniRef90-R5A330 UniRef90-R9L248 UniRef90_R5ST17 UniRef90_UPIO003B4BC55 UniRef90-K1TRT7 UniRef90-R7L6B7 UniRef90-B6GDP2 UniRef90 E9S9D9 UniRef90-A0A011UHW7 UniRef90_D4KLU8
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UniRef90 E7MLC9 UniRef90_UPIO0047EE49F UniRef90-R5MVV1 UniRef90-UPI000288A2BA UniRef90-E6UJE1 UniRef90_C7GYIO UniRef90-A0A031WAI3 UniRef90_R7AMK3 UniRef90-F3A2T1 UniRef90-R5J9S0 UniRef90-T4UJL7 UniRef90-R9IKG9 UniRef90-G5F569 UniRef90-R7D878 UniRef90_UPI0003B4BF70 UniRef90-D2G8T5 UniRef90_UPI0003488FDB UniRef90-E9SE19 UniRef90-K1RDW6 UniRef90-F7K260 UniRef90-TOD5M0
UniRef90-K1UF81 UniRef90-C4FB08 UniRef90_U2TP43
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UniRef90 R5MOT4 UniRef90-R5MOT4
UniRef90 C5NVA3 UniRef90-R5B9X3 UniRef90-R6IC87 UniRef90_K1U321
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YESGS $\square$ FADAWSVIGKESDNワT|I|F GHHMGWGTNFTHLLSEY SVIGSTFMDYRVSKD SKQI NI YGHNHSNKKYFKTLEGY SRIGGAVFMDYRNTKDEEDKQUNIGGHNNKNKKVAKKNGEGYY
 SHKGSLFFDYRNNVKQLSYNTIIYGHHVGDGTMFDTLPQY NYRGAVFADYRDDI DNSRKILIFAHNAKYDDANFKILDNY
 SGNGSVYVDSAYSFDMPSKNMTIHGVNNNNYVMFSELDNY N LIGAAVFMDYENNSSFAEKD IVWI FGHARGDTRVFNNINWF




 $G Y P G C \square F S K P Q S K K D F T$
$S F W G C P Y D D A A C G N S L S ~ D$


## D





DPYGCFFVKSDADVNT
PCKSLV

$Y G H H V G$
$Y G V D G E$

GHNMAKDMPF D GLE ENY Y GHN $\square$ N Y E S M F K P L V N Y
 MRMMNGSMFTGLMKY
SELGGCPY LDVRCKE RGAHLLVFGHRLRSRHMFTELAGT SPAGTPFIDWRCATTECPQHLLVYGHHLGTGGMFSPLYHC
RRSGCPF $\square$ DRRSSLDA

ESRNLI I



 AESGSVYAYYY GQQHNDVIDTGHNSRSGSMFHQLBHD FAWTNSSSTTLNDRVILHGHNDRNDSSFEHLPSF




UniRef90 E6UBT0 UniRef90-R6BIF5 UniRef90-R6BIEO
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UniRef90
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UniRef90-UPIO0047EE49F UniRef90-R5MVV1 UniRef90-UPI000288A2BA UniRef90-E6UJE1 UniRef90-CTGYIO UniRef90-A0А031 WAl3 UniRet90_R7AMK3 UniRef90-F3A2T1 UniRef90- R5J9so UniRef90-T4UJL7 UniRef90_R9IKG9 UniRef90-G5F569 UniRef90-BOS4K8
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UniRef90
U6AS61 UniRef90-TOD5MO
UniRef90 K1UF81 UniRef90-C4FBO8 UniRef90-U2TP43
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UniRef90-R5SUL5 UniRef90-R5MOT4 UniRef90-C5NVA3 UniRef90-R5B9X3
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UniRef90 ${ }^{-}$W9EGG3 UniRef90-H3NIT7 UniRef90-E1QZR9
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UniRef90- UPIO002196CC3 UniRef90-R6YAR6 UniRef90 U5L710 UniRef90-KONW13 UniRef90-A0A023CZ23 UniRet90-E4MZGO UniRef90-UPIO002882313 UniRef90_H7CTM7 UniRef90-UPI000415D5ED UniRef90-G2SRV2 UniRef90 $10 \mathrm{HZA4}$ UniRef90-D4JMP5 UniRef90 K8EUB3

QDEEF KNRLWT NDFGETHTWEVEAMYEEKPSSQYYNC KNENFFNENNKIRIDKDNKEYDYEIFSVYT DDGEYNYDTT RNKSFWEEHKAITFDTLTDRHQYEVMAVFKTDSFKYYEFT WRQGEFEASGADWYEPSARARHFMPLCALRVREDYAPIQF DKQEYFDQHKYVVIETPERKFYYEAMGLVIVPEETAFYRT AGEDYYNAHRFAYLQTEDG\|QEYKIVTVLKADRNLFPFQQ QNQKYSSNKDTFTITSTQGIERYK GITDKRIKKDDR MYTDFAKENKYIGYTVDGKDYLYKDFSVSVVEDYNLYHES TDYDFAKENQYVQLTLNGENVLYKIYAVGFVTEEGDTGYY VMPNFENKEDRUWYVSLYGTGKWEVFSMYETPVDEDKNTF TYGDFAKKNKYVQYTDDGKDYLYKVFSVSVVDNNDDSHTT EDKSNCEEKKYVYVY LYGEEARYEIFAMFETKAEYVWYPY QSDEFYKQHKYISFDTIYEKHTYEVVAADQTEEGFRYNEY SDKASUKDESUGKLDKDGESQEFKVITSFTEKGGSETARLD GKKEFYKEHKYVQFDTTKASGTYLVVYAFPNANEEYYNAE
 QDTNYFNNHKYIKISYFNHELLYEVVAITSNYEDY REKSFFKKHKKMILETKKKKLNDDIVACLETDAFDELLFN

AKKGQMVTITNLKHDYRYQI SQIKVVPETDV GEERAFKGGQTVYLTDLDK
 YH AKEGQLI YLT D DLDKMYVYQTYNVMTVHKTT
YH AQKGQMI YLLDMKRVYEYRIYQ
 KKGE QLIYLTDNKRVYQYRITVKKVVDEY VPGD TEKGKIVVETATSYYTYEVAGGIDETP

DEKGDTVKITDFKKDYDYAVTSKQF

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UniRef90 R7AMK3
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UniRef90-K1RDW6
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UniRef90_U5L710
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UniRef90-D4JMP5
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N

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 | $N C Y$ |
| :--- |
| $S F$ | S F G

NSESEKEYNN
S LRAP EDVA A LLLES LRRADASVVT EDALQRGARVLT LVTCS



 SFGDAEAV



NF LDDDNDF LDYGNTLLDNCDVKKDFELQADDNLLTLVTCS D ELLKKSFVNRGRVQGGVSKIKCYGDID GNK SIMLITCA HFNNNDEFKYSGNY!
SFTSDEDMKAWLTELAREASACTENWQTATSRVLSLITCT PTTSDKEFDKLFKEGAKNWLENS KDSGEDNMTVFCTCD NPSNDEA MHMMNLNSUYETGNVASTKDE【LVDQTCLD $\square H F N N D E F K D S L N Y$
DFGDDSSGPDF LRGDCRSSSAKSPVLCQAPTRAVTLVTCS NFKTSKDFVDWKLNI KNLSKYTDENFENNNGKILILSTCH EWPDADEMRSWLSLI AETKAQTAQEDAHKARQVLTLATCS DFVNADHFKAYLRYLGALSGQSF SAAEGKQVLLLSTCD


 NFDTSQDFKKYIENDRSKSLFKSNVDVTDSDKIITLSTCS DAENAAEFDAYVAKCKELSLYDTGVSAEYGDKLI SGSTCE EFDSASELDAWLTELLARSAAHTG
 GFSDEADLREWVCSIARESDADWHKTAGNARRVLTGVTCS
 VEYSKEDDKKY
 KDFTN TADKKDEFISLFKNGSRNWLENT DK KI SGEDNMTVFATCD DKDTDEKVQA WIADECKELSGLELNTNVNVKDDFLTVFTCC NMDSRTKKAY TKESDEDSYFNFDIDVNSSDKLITGVTCT EFDTALDHATWLASVTEGGMLKDGDKAKLGDCFLVLVTDM NGFDRDEYNQY NDIYGQRNMQAVLDPDLEQQIL TGQAEG NWSDKKKTLKY NFENEKDFEDWYSTYKNAST $T H S D L K S T S R N K F L V I V S C S$

P VMTVQRKQE IVSR DK QKALQYREIVLT DKTQLIALSTCS SVLDDHPNQKLLTLVTCA VGKDTGELQAWLIRLARDARADWEELIGGTRAAVSLVTCD QKMTP DS FNDYTDRLYHRFLYETEYKLDYDDQILTVV S $R$ V DVLD
R K F $\square$ K A
DNGNQKE T DVQVVNDTKIVVTLI T C D

TTVIKPTAPEEILTLSTCS TKKKIVTLITCD
PGKKLLTLVTCG
QVQ W $\square \mathrm{C} \mathrm{C}_{\mathrm{V}}^{\mathrm{V}}$
APGRYL
$\square \mathrm{KN} \square \mathrm{S}$
QK I P K GSPFTA
GRYLTMTCT
TLITCD
QTSELADKEGEDLATTLETCT
K VMSEMDAAVVFETKEKQITGITCD
EKYVSEQQRRENARY YDNS QPTPDD
SETDMSVLAD
FLYNTGASPI
E Q M E P S S A LEFYTMLHYRFLYNTGASPIRSDKMITIS

UniRef90 E6UBTO UniRef90-R6BIF5 UniRef90-RGBIIEO UniRef90-K1TG92 UniRef90_K9B8N1 UniRef90-R7M301
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YNERTV
GKSNILVIAKKV
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TSQRTLLV
EGVRWVIVAKKL
SDGRFAlVAKKVSE YEARFVLMGLLKE SKTRFFI DAQKQNE YNERTLVYAR

YNSRA】VYAV
SSKRVILLALKTRE PENQFMVIAMLDADTE THKDY

YHTRTVVICRQ■
SDKRTLVYAEK
EGNRTIVI
$\stackrel{V}{\mathrm{~V}} \mathrm{~N}^{\mathrm{V}} \mathrm{R}$ TLVLARQVPDN
SSGRTLVV
NAERTLIV
sNervLVFAV
DAKRIVVVAKIIK
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GDGRLLIIA
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YEARTVVHGKLI
YNGRLVVVAKRVD
S D
EEDETT
SARRTLIV
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DNGRQIVLLQKlSE
NAYSFVVDARKVRDN
VS LRTLVLARQDPDK
YNGRF $\ V I A K K V$
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$\square K N D L I E S Y K ~ I N S E E Q E H K N E D N Q U E Q N D D N N V Q V N K K S V$ FYDGYNAEKVQAVQKMEYEKHDTEFVDASK\NQPDLAEEV K D Y LVNTYQPQVTKS LVAKNEKKKASYDFSSV

NKYQVTK】SKET】EKNKEAKGTFDFASV
Y DE YKA GNKQTANA QAVQKMEYQKHETKEQPNLAEVANA EGPAADDGGKTDGRFDYDNL WKAAQEYNE QDKQESVPDAFSVRDGQTDSTYESL NKYQVSKISSQKEDENKSADSSFDFKKV
EQLKKNNEKEAAFEFDS $\square$ QPPD LMEA $\square K A G F D H D$
QTVQSNQKKKATYDFQSV
FYGNHKTNELIEQFEQNVEQEHKEDGKKEEEDSEEDAAL DAYSHVPRGTGAESEEGLSYWDQL

A QE $\square$ NNHTKNRKFENDVTK $\square E T P S A T S V L$ EDNNKKQATFDYDSVQLPSMKNVVEGARDYDKDA EEDTQAYMDDYANSLGDQPLEENNVTGDFNSL

KEVSSSLETDEEELNKEETQQSESGPEL TAEK $\square E K N Q K K K G M Y D F S K D$

NKYQVEHVSRKTDKKNQKTETTYDFDGV TADKVKANQKKKGQFDFNKV EYHEL

P VRKEDPEDP $\square$ Y Q D Y K QL

EKADAYNKT $\square$ T PGAAEEAYSQKS $\square R \square A A E D Y V$ SSDYMDTPEYKEY K K D $\square \mathrm{DKNKSAKTSYDFDKDES} \mathrm{\square STEK} \mathrm{\square LAAQMAAQ}$ DS SQEENRADNENNADPQGAENEEPEPR SYDEY

EA QERDK SKMNKESKSVRETKPS DDVSFKK EEAQDYNTSLLDDENRPDEEEQQQYEHL YNKTRK SK $\square$ AA ADPYGPDGQKDVTNS E D YYK Y K Y EQQD DA SAMKNLDASFDFQQVDDQNVKDVVKAQFNQ

 IQ N A VDEGQAEQREPNEETLFDFEQV
$\square$ M E K Y C D L
 EKAKEYNKQVQKSTQS LSDPFAEKSKENQKSYADV FYDGYMAEKKQKENVQAVQKMEYEKQDTQDASK DDQPDL

EK DEKNKKADVSFDFAAV


KKDDDTNKKAKRSFDFEAVKPDSTEQVIQAQWEAQ ULEEYQKNQELAEEWRKVKDPFKQAVKNEKGSQKNDYKE HAYNRKLAATPQVIGETSTEDGVIDGDFDKEYQNL YSNSSVKYS $\mathrm{V}^{\mathrm{V}} \mathrm{S}$ TPENTEKKED』KDTFTQPNNNK


## UniRef90 C7N3N6

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MGCGHTFGS ${ }^{9} \square \mathrm{DVGGDSSHAVITAHRGDPTAKMFTDL}$ KTAMPWDKKGNFAVAGHRNTHGEPFRYINK SSSMPVGGTNTHTVITGHSLPSNKLFTRL ■GAGHVEDSSMPVGGTNTHTVITGHSLPSNKLFTRLMH VVAKYRNSPSFENGNVI AAGHNNMKGSI FRSLHK SGAATVVTRENQVMGQGNYALAGHNMKKGVLFSDV AEGGTTAMPSASTGNFG $\quad$ AGHRNTHGEPFRYINR LAAGT MRADQEMGKGNYPLAAHNMANGSKILFSPLY FGA TTMRPEQKMGEGNYPLAGHHMRRESLFGPLVQI YGAGTLSPD WQQMGKSNYSLASHHSLHKNLLFAPLLRV SGNLLKSAMPWDKKGNF $\operatorname{GAGTM}$ KENQVMGGDNYALAGHRNTHGEPFRYVNK DKKP SGATTV HGAGTVEKEMGKGNYALAGHNMKKGVLFSDVSK KGAGHLFGS PVGGDGNNTVITGHR GLAEAEMF KAGHLFGSSDPVGGKSTHCILSAHRGLPSAKLFTDLN YGAGT MKENQVMGQKNYALASHHVFGMTGSSKML AGAATM RPDQKMGEGNYPLAGHHLKQKSLFGPLMN $\square A A G T$
 RPDMKMGEGNYALAGHNMAHGSKILFSPLY GHI SDTAADGSDGNCVLAGHR
STGGGT MKANEKMGKGNYALAGHYMTNGVLFSPLENV HLAGTSL PVGGLNTHSVITAHRLASAAMFTNLDKV QDTAMP VGATTLKETQVMGEGNYLLAGHMMKGMDEGA AGA TTMDPDQQMGKGNYPLAGHHMRNESMFGPLMN AMNTSVVQQYGPGPN QVGNTVIAGHNYRNGQFFS NNY
 GPQAA NETGNYTVAGHNNKDGTMFGKTK TDPVKAMLPM TGKNGNFTLAAHRDGHGAKFHNDDKV STGGGT MRDGEVMGQGNFALAGHYMTSGVLFSPLED ПGAATM RPDKMGQGNYALAGHYMLNNGAFGPNLF GPASGIKTAM PWDKTGNFAVAAHRNTHGEPFRYINRL MDHGVGHMPTTSPVGGESTHCVLAGHGLPSAKVEDNLDQL
MKPGQ
NTSLPV
AGTEAP

GGKDTHCVLSAHGLSDKKLFTDLV
GQEGNFAVAGHRNTHGEPFRYLNRD
LTYGAGTM KENQV KMGKNNYALAGHYMTNGALFSPLEN G $G$
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GELLETAMPWDKKGNFS RTGA TTMLPDQTMGKGNYPLAGHHMRNQSVFGPLMDV RGTGHLLGSSLPVGGESTHTVITGHSMASQKMFTDLEQ $Y G A G T$ GYHEGDFT
LPVGGP
AKGKL
RGAGHMY
HFSTTVF
GS S
KTAMPWDKKGNFALA
GSDAPDWKKGNALAGHRNTHG




210
NTDRLLVHARRVPYE PEYRLIVWGKMI E E
 SSMRVVVQAKLVDTK NKQRLILKGERV NSKRFVI TGD LV
 PEYRMIVWGKMVEE ATGRLLMRGKLVK TEGRLAVKGKLI NTHRLLVTGGERVP SDDRIVVKGSLVK

 NSKRFVVTGEFVKTK NTQRILVIGERVE NTHRLLVRGHRVP


 NS GRLIYHC NGGRRWAIQQSLVKTQ NTHRILVTAE RV
AAQRYVVHAK L
TDKRFVVKAKLVHTE TTKRKIVVGKLTHTE
DDARI I I WAKLAE
NTQRILVIGERV

NGNRLVTKARQIK
SEYRYIVWGKLVR
DGGRWAVRGNLI KTE
DGGRLAVQGKLI
TEGRLAVKGKLI D

DTARWMVRGKLI K
NSHRLLVRGHRVTEQ
PEYRLVVWGRLV
DAERTVVNAVLVEE
NTHRILVTGERV
NSHRLLVHAKRVP
DAGRTIVHG
ETGRLMVCGSFVKK NSDRLLVTAVR
PEYRLIVWGKMVEE
TSKRLIVVGKLVKTE
PTGRLLVQGSRIP
P T GRRLL V V
DAARTlVGG
PPDRYI I EAPLTD
N E Y RLL L V A A E R IID D
PEYRMIVWGKMVDE
NTDRLLVNAERVP YVGRYILNAKRIEA
 NSHRLLVTGYRV YDGRLII QGELVEDK FDARLIVKGHFVNQ
DANRWAI RGSLIK NSHRLLVRGHRVEN DGGRWAVRGNLI K TE NTYRLLVRGHRVP HDGRLII QGTLV YTARYVVQGEL

 SKYRYVVWGV $W$ GER ${ }^{\text {WE }}$ SEYRYIVWGELVRTQ PEYRLIVWGKMVEE NTHRLLVTGRRV SSNRVCVKACLVNAK NSQRVIVTGSRIV
NSKRFVVTG
PTHRLIVYGK LV DAHRIIVHGTFVDK PEYRLIVWGKMVE TKKQRLVI TAARP L E E
 DAARTVVKGNL NTHRLLVTAKRTQ NTYRLLVTGERV

 YDQKQKEQAFREAEEYNKTDPFKVKKSNGETLIYNNGL YNDRLTVGAALDPWANVPRGAGKEDGDGMAYKDQL

EYQKA $\square$ NYNEK LID P $\square$ I GDP FSEDAQDNAM DYAE TDEDNNKESEESSFDENSEYNKC QLQNVSKEKDEKNKKADVSFSVDFQSVV

NKYQVTKDSKKTDEKNKTAKSSFDFEAV PKKD $\square \mathrm{DGDPDYENY}$ TKDT $\square Q K N K E A D S S F D F S A V$

K D $\square E K N N Q K K A E F D Y D S V Q L P S M R N D A E G A M K F D K K A$ NHNQNKALAEAKSLLEESEQNEKETEATFPDDFDPA NQYQVMEVSKKELKKNNQKKDDFTFEKV
$\square$ T T DEENNTEDNNSQEN VLDSSNEVA $\square$ DDTSTNGSSSSG
KKDEKNNQKKGEFDFDQVESLDFESVARARL YAEVTQLLAEESVLDAQAPQPQETEKPEPEI NKETVKKNQKKKGMFDFSK K K

YE L L
EDSAASKDKEYQSL
FYDEYMAGKKQETNAQVVQKMEYQKQETKQ@KQPDLAEV VQNTTQTFSDPFREKDDEHKSSTVDM KEYDK LLT QAEDYNKRLTSMNWDMTDEQKKDYESQ KDREQLAKEDEK YNQSTLNQSVSDPYSSG QEV K QNDA LKKAQS $\square V Y$ AGNDERNQ $\square$ NVEDA LRT F

## ETQVDSPKTEGTKHTEDPPVPDETA

DFSDVKEVTDQDVAKERAHLKKNTSSM
KEYAQLEKVPQEVKDTQWEDAQAERTQGPLLDPWLDQ■ ENTETADPVKKDEKPSFVPTPDWTTGUDRKLGE TEDFKKTPEYK DYEKQ
YEKSEETQKQHQEEYQKMVTYNQT $\square Y R E Q Q K G L D N L$
$\square Y E T Y T K Q N E S M A E V K K V L E E P E E G \square T S A S D M T D E E$ $K$ QDLEKNKQKDAPFDFDQVKSLTSEAVVKS QLAGQ TKKQVEANQKKKGMYDFSKV
Y L H DKDKDEK $\square E Q Y D K N V K E Q A S K D N K Q Q A K P Q \square P K D K$

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| :---: |




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[^3]

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UniRef90-D7VOS1 UniRef90_UPI000401D55B UniRef90-I2N254 UniRef90_R7LR59
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DVENQS

200

V L D D T S $\square$ P T
QTQDDRD
D P
D P
DKNDKAK LTTEALQT
AESDKDQ
EVPKESGKHKAG



TDTLHAVAGEDLVTLVTCT

$A P S D S G V I A P V P$
EP
DVIND
YEPDKDK

D P
A VMDPTPYES

VWLVDNTKKN
VWLVDNTKEN
$D V L D E$
D V


D H GKEE

VIA P VP Y S GVVP E




SAVQSTKPNELTLLTH
D A
$S L Q Q R E$



R S NI
ST ILIDQEGRDLL
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T LGMKE V
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VPRGSGDVPGQRL
TSFYTRDTSGKAE

APVPKESGAKKAGRYITLTTCT
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TDTLLTVAGKD MVTVVTCT
Y RTVIDYSGDYEVLTLSTC
$V P K G S G F T A P G R Y I T L T M C T$
TKDMK TTEGEDFVTLVTCT
E S $\square$ R A Q S
N
KTEVDVVP
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VEVLDEQKGKDKQLT
lupas_14
lupas_28
jnet
conf
sol25
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jhmm
jpssm

## 210

D D S RII I F A K APDRYIVYAKPVEAE $D G G R W A L Q G S L V K S$ NSQR ILVVTGERV S RHRY V WGE LEERTE | F | $D$ | $E$ | $R$ | $L$ | $V$ | $K$ | $G$ | $K$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ | $D$ | $H$ | $R$ | $L$ | $L$ | $V$ | $R$ | $G$ | $V$ | ND HRLLV R G VRTK NTHRILVTAER S NYRYIVWGE LV RTE P E Y RMIV WGKMVEE N S HRRLV R GKRI K E N T H R L L V DAHRIIV HGTFVVDEK NSHRLLI HGERVQ P E YRLVV WGK L P T ERLI MI CKR $P$ E Y R M I V WGK L V E E DTERIIVKKGLVEE N S D R L L V TA ER I D A E R I I V K G L L L K E E GANRLSIRGR SKYRYIVWGELVRTE TDKRFVATGKLTKKE PPDRYI DTAHPVSKN D NGRTVVVGR

P E Y R MIVWGRMVEE NDQRTI I F A RQV DNQRIIVTAR L Q D G R L V V Q G T L DE E PTHRLIVMAKLTK S G D R Ti I Q A E L V S T K NTAR LLV TA E R V P Y E DGGRWAIRGNLI KTE NTHRLLVRGHRVP
D G GR WA I R GK LI A E E
 NSHRLLVRGHRVE SKYRY

N S K R Y V V S G
NTHRLLVRGHRVP DGGRWAI QASLV NTQRLLVRGHRI PN S E Y R Y VV V $\mid$ W G E R V V R T Q NSHRLLVTGTRVEEN NSHRLLVTGERV APERYYI Q A K P V T E NTADR L L V HAA QRVV
 NDHRWIVHGK P E YR LVVVWAR LRRA E E TS GRLCI Q GPLIATE NTHRLLVRGHRVE

P T E RYIV Q A K L V S T Q N S QRLLV T G Y R V P Y GR Y L V Y C S R V K D | A E E R | Y | $I$ | $I$ | $N$ | $A$ | $K$ | $R$ | $I$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :--- |
| $N$ | $S$ | $H$ | $R$ | $L$ | $L$ | $V$ | $T$ | $G$ | $Y$ |
| $R$ | $V$ |  |  |  |  |  |  |  |  |

 NTHRLLVRGHRI P P P D R Y I Y A K P V K D T N R L V V Q A E L I E
 DEKRKI F V A T E V K K
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm


```
        B B
```


[^0]:    K A E G A｜I F T E N Y N T K T F E D

[^1]:    ## 

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet conf
    sol 25 sol5
    sol0
    jpssm

[^3]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

