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 YASDPTWASVEPLPLNDGSEPLATLAYSD

A $\square \mathrm{K}$ L N
A $\square \mathrm{T} \square \mathrm{NP}$
All K FK
A LillKP $\xrightarrow[A]{I} D \mathrm{NP}$ A L E $\square \mathrm{KP}$

 | A | E | F | K | S |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| A | V | K | 1 | $R$ | P |

A K LQP
$A \| T$ LR P All KINP

VE $\square$ Q P ALEFKF A L NFKP A ELN P ELNP ALELDN ALEIDP ALEFNP


$\square$ N K G F

$A\|A\| D P$ ALKI NP A I R L S P
$A \| E L Q P$
ALA SRP
RYELKD $\square$ QGAMADYNQ ALE K
ALQLDP $A A_{Q} L Q P$ A 1 RLD

 ASQl QP | A | Q | N P |
| :--- | :--- | :--- |
| A | A | P | A $\begin{array}{lllll}1 & A & S & K & P \\ 1 & Q & L & S & P\end{array}$

ALEFNP

ATQLNP
A $\square \mathrm{K}$ LK K
$A \square A \mathrm{~N}_{\mathrm{N}}^{\mathrm{D}} \mathrm{P}$
$A \backslash A \prod K P$
AI RLNP
A $I K I N P$
$A \square E \square N^{N}$
A $I$ QAK P
$A \underset{\mathrm{P}}{\mathrm{A}} \underset{\mathrm{D}}{\mathrm{N}}$

ERKP
$\square$ T A LQYN P

A $\underset{\text { I }}{\text { K Lin }}$
ALLKMD

## OUERY

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 DYHEAWANRGVALSYLGGYEKAIISSCDQAAKFKPDLHEAW KMGKYTEAEADFRRVIELDPNLLADAY EYHQALSNWGVTDGNLGEYQKAVASFDKALEV KPDDHEAW QDAAAYYNRGLIYYEQKQWELALADFNEAIDINPTFADAY GNGAALLNWGNALAKRGQLIPAIASYTQALQVQPELS DDHQAWYGRGFALDDLGRFAEAIASYDKALELKPDYHQAW QHAFAFSNRGITKRNLGDTQGATADYNKAIEINPQNA！AY DS DEAWNNKGNVQTKLQKYSDAIASFDKAIELQPNYAPTW DYAEAWNGQGSTLSKLKEYKAALTAYDRAAQAOPDYLEAW RGNLLAAAKEYEEAIASYDAALKIQPDKHQAW DYAEVWQEKAKTLYKLKKKYQESQAAYDRA：ELKPEYLEAW EYALAYDNRGLLYNDRGKTELALADYNQAI KLAPESALTY QRALKLHQEGRDDEAEVIYQEILSI QP叫DEAL D DYKA WLHRGITLRRLKRNEDAIASFDKALEI NSDYHEAW DYPEAWNNRGGALTKLRQFEEAITSYDRAVQLKPDYVEAW NYHQAWYNRGПAYNHLEMHQEAVASCDKALELQPSKYEAW NYAPAYNNRGNAYCSAGDYDRAI ADCTRATALNPFAESY NYADAYSLRGVAKFQLDDYQGALEDFDYALEINPNDAETY KSPQVWNAKGEVLSNLKQYDEAI QAYGQAINLHKDNDEAW KEHIAWHGLGITLNALGRNSEAI AAFEKALEIDPKEHDAW DAATDWHNRGITLDLGCYEKAVTNFEKTIQLRPDAYWAW KFAAAYFGRGNIIRFSLGEPKEAI ADYTEVI RLNPNFAPAY KYTFAYRNRGDAFRSKGEYDRA】ADYDQALLLDPKYTFAY

KDERAFSNYGVILKS $\square G K \square K E A E \square S T R K A \square E \square K P D F A K A H$
信 NDDYAYNNRGNARVQLGDKQGAI ADFNTAIKINPNFAQTY EYADAWNNKGLSLKSQGKYDEAUQTFNETURLDPEHVAAW

D LAEAYGNRGLFRSELGDKKGATADLNKATELQPDLADAY GFYEAWYNRALGLEKLGQYEQAIGSYRKVIGLNPDFYDAW NYDKGYYNRGLARSASGDKKGALADYNQAIKFNPNYDKAY KQAVVYTNRGDVFRDKGEHDRAI ADYDQALRLDPKY而FAY DSYPVHSNLGNVYQDRGKVEEAI ACYQRSI QLQPNYHHAH TDADAWFNKGNSLNKQKKYDESI KAYDEAIGLNPVLAEPW NDIDSWNNKGLALYDLGRYEEAI VCYDRALELDSNYSDSQ HVYEYWFNQGLVLFYLQRFSEAI AAYDQTLALKPDFYQVW NYADAYSHRGLAYGDKGTDDRAVEDYTKALEENPNHADAY DEELLWAVHGEVLYYLGRYEEAVASYDRALELLNPNDATALL NNPNYYNEKWKVLYQLNRYDEALKADNQGIQLAPR ADWY YHQAGLTQQSQGKFQEAVNSYSKALEDPQYTEAY
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SNAFAFYNRG $\square$ SDRSGRYAGAVEDFSKA $\square Q$ MPTNADFY KHFDADQLLATVAAQKRNFSEAAADFEQAFAI NSDCPELL NRGVLFKQQGENEKALQDYNKA IILNPKSA IAY

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$\overline{L V} E W$ LRDPS S Q
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 ALUNGDF VLSSLKRYDEA

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 ALVNLKRYQALLAKRNS TLSWGEYTKA AA

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 VYEQQEKFDAA$\sim$

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LFGE QGEK DK
ALYALGRWEEAL
ALEKLHRYEE
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AKKRGGNILQE

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REEATAS WDKALEDKPDLHEVWYNRGYALDDLGFEEALT EKAISSYDQAI KFKPDYHEAWYNRGLALGNLGYEKAI S


 1 AS F DKA $\square Q Q P N F P M A \square Y N R A Q A L S Q L G$

VA S Y NKA DQLRKKFYQA QYNDGNFYKDKRYQDAFV FTA YDKAVQI NPTYYQAWLSRGNILISQRYPEAVE IA SWDNALSI QADFYLAWYNRGVALDNLGREEAI E IA SYDQALKIQPDDPDAWNNRGI ALGKLGYEDAI A FEAYEKAVRFQPNFYQGWYSKGUALLKMRHEEAVE E $\square E \square A A A D Y D R A I E \square N P N Y A D A H F N R G N L Y Q E Q G K V E A G A$ EANLLVI DHLLEKALRLDPSY

DEA S A F D RA TDDIA P TAPDVWYNKACCYSVGGFAPA 1 A
EEALESWEQTIEI EPNFHEAWTHRGSVLGHLGLEEAI T EVERA RDLDKAI NLNPYATAYNNRGAVYHDRDLNRAI A I ADYNKSLDI NPHFALAYNNRGLAKDELGNHQAI A
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DYDRAI SDDNTAI DL NPDYAYAYNNRGVAYEKQGYDRAUS
EEAVASYDRALFLNPNFAQAWGNRGNAAGNSRGC KPDDPNLYYQKACVYADEKQAGEVANSQELVATS DGLADE KFDFALADFTKAIELE PNNLLAYNSRGLLYKQEKFDLALA



SEEALASYERAI EIKPDRVAYWINLGTVLSDMGKDEALA


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EEAVAAYDKVLLI KPDYDQAWYNRSDALYPLGYQEVVA
A D Y D QVI R L S P N C H CA YY D R G F A R A Q S GL Q G A 1 A
WY K K A


 A LLQE HELLAQNAFFTD PNDQSAWFYHRWLL GRAERD QS I R R

I D D Y T Q S L N L N P K F A SA Y Y N R G I I R S D L G S NKAAD
L K A Y D K A L E I NP LIFPEVVWNNKGYTMGQKRYEEA LD
LASFNKAVGLQPSDPFVWMNRGLALRWGRFQEARD
I D D Y S Q A ll N I N P N Y D L A Y C N R G I A R S K L G D K Q A I N
VLE GEFEHVHNA I TDPDDQS GWFYHLWLIDDTVKTADP A QV A E A E E CYNT A L R L C P S HA DS LIN NLAN I KRE Q GYE EA T R

E EADIKCYNEAll SI NPNQEDVWNCKGNTLRNNQYE EADM


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R
E K
TQA $\square K \square N P N D A D A Y$
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LY K A R R F E A A LQ L IE Q

$\mathrm{A} \square \mathrm{A} \square \mathrm{N} \mathrm{S}$
A $\square E L D P$
E N P
E I K P

AVEIKP
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K I Q D P N

A L E $\square \mathrm{KP}$
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## LLGNVCKEQGLLEDATQCYQAGVTLCPGSAELW

 EFAEAHANLGSMFYRQSQLESAISCYERALELKPELVAVY

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 I DKAQGSAENI SSLNDVIRNNPKDPEAY LFSKRRYEDAIAA YNQAVKDQPDEPVAW DA价VLYNKGNVHDHIGDTEASVKTYDSILKLKPDEYEAW WEKLGDIAANAGYLDEATARYQTAMKIKSGNYLTY HFPQAYCNRGNARWLQGDEQGADADYNQA】AQNPDLVTAY
## YQRGEYQEAVNTVVE TTQQYPNDYQGW

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HNKGVCLAKLKR YEEADEAYEKADEDNPKDDKAWHNKGV SDLGNLLKALGRLEEAKRCYLKA ETGPNFAVAWSNLGC ITNRAAANLFLG HHKEVIADCDNALKLNTHHVIAYNSRAA RWRADAWVKRG DTDQALSDYTEAIRLDPGDAETFRNRAR SNRALIMRF G DQAAALADYNRSDRUNPDYDAAYDGRGN SNKGASLNDLGR YEEAMENFDVAIRYNSSYPEAYYNKGD CNRAFVYSQLGKYEEAIEECKKAI GLDGNNAAAYSCRAY YNRGULDRSG DYQGALTDFTRAIELLPTNADFYHNRGF NYRKLAVEDVKT LNEELIVVESALKQNFKSYGAWHHRKW NNDGLLMNQGRLMEAGEQF QQVLSDKPKHADAQTNSGI YFRRKI RNKTEFLREELRFVRGUCERAPKCYQSWWHMRV ELRGVVYTE QRRLDRALADYDQALRLKPDYAQAYADRGV VDLGVAYGKLQKHQDAFEAF DQAVKAKPEDSVAWWNRGM ANRALVERSQGNQAQAA SDYNTALQLISPNYDVAYUGRGN HNRAIALGNLGRHEEALNSFDRALEFNPYAANIWHNRGL $\square N L A A A L V A A G D M E G A V Q A Y V S A L Q Y N P D L Y C V R S D L G N$
 YNRGLIYANLG DLKEAUNDFNKSLVLQPKNFIAYYNRGU CNLANALKEKGQVKEAEDCYNTALRLSPTHADSLNNLAN FNDGVT DER DEQLEAAVEAFQRCADVYPEHPEVWYELGY NVRGSAYGKSGR YKEALRDFDQABALNPNFYQAYANRAL LQKGLILLDTGK LEPAA| DAFENAARLNPDNETCWMNMGF

## 

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$\qquad$ FALGTTLLEVARDPEAAEAHCMQLWHQDPENTSTLLLLSS SNLGKALQQLGR LDEAVACWRKAMELSAGSADFYLNMGS YERGQAHRHAG SYSEAVASYNKAMEVRPNDYWAWYQRGV MYRGRVHSLLN HYEEALKDFDFAI ELNPNDPWALANRGA NSKGIIFNKLGKYQEAIKNYDLSI KYNPHCAEAYNNKGN NVRGSAFGRAGRSNDADKDF NTALQLNPSFYQAYANRAL
 HKLGKALQE KKQLDEARAAYQGAI ELNPNFSWSYHF LGE YNRGLSRYALKKDFDGARAAYQGALLELNPNFSWSYHFLGE YYDGEDMGNLQGDFQGAIADYTEALQLKPNFAEAYYNRGN YFRGETMGTFQQSYQAIASYDKALQLKPDYHPAWDHRGI FFRGRTYIKMGNSDQARADFTGQANNIDPNLIAVLLKNQSS YNLGYA FHQQGNLPAALEHYQQAIALNPNQAEAHANLAH LSRGLALGGLER YEEELASYEQAIALNPERGLLWYNQGV
FNLGNACKDSYQ FEEALRAFDRALAVQPDFFEAQSNRGF DNKGVVLARLGR FEEALETYEKVLLRNPKYAEAWAGKGS TNRGVAYYYKGRFYRAVDDFSKTDSLLTPDDPFAYYGRGM
NNRAYAYAA QRNYEQVADASQAIRINGKYAAAYNVRSL

 YARGNCRQDMQE YAGSLADFTRIVIELSPKRTGAYGSRGL NALGUVYEDKQMFDEAIDCYDKAIQUNPNYVKAHYNLGV NNLGNIYKK KKQYPAAVKMYEKAIRCNPFDFRYHSNLGG। SYMGLLLQQiREKKFNEGUECYREALSUCDPNYAPSHYNLGU YNCGRALAKLKHYDRAIAYYDRAIELDPTHLKSWYQKGK | $N G R G L V Q F D T G$ |
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A
$A \square R D Q G K \square A E A$
 A
IAFWKGELDKAVQYYQEATK


 Kitutafit A LRKANRI QEAFNDFQKA LL R QHKLWS GELLQLIDNKML
 V L S Q H S S TG N ELLVL
I H MA Q G D L E K A A E F I RE L L G G D D
AF GN $N$ R R H K A AF GNL R RHKEAFKSFDRAV Q

A

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A

## L

 $\begin{array}{ll}L L V K L E R H E ~ E ~ \\ L & R \\ T & A \\ T\end{array}$ $\begin{array}{lll}V & Y & K L L V Q Y E K \\ A & K & K L G E M D K\end{array}$ TRYALEDYPGA $T$ LVEKGEKEKA A DYNRSL






 T WQA M E E H DE AA A A A Y R K A $\quad 1$ E L A Y Y A L Q D Y H K A I A D Y N Q A 1 I I N N S Q V A Q D WF N R G R S H F W L IVY S L R D Y R A A I A D F H K A | LCNLGGRFEEA I |
| :--- |
| $A Y Y H K G N Y D ~ D A R$ |
| S RY |





 A Y R S L L V F E K T I Q D F S T A I R R N N P E A A D A Y K E R GVVTY H S K G $\begin{array}{cc:l}A R F & K & \text { G D Y Q G A L E D G H R A }\end{array}$ AK LE L G DYQGASSDFTKALELSSPNEAWYHTNRGFCKNKL E

 VLAERGLVDEAI QEYKRAL AL A Y L G G Y Y A E A L
 $\begin{array}{ccccc}A & R & A & A & Q \\ G & D & V & S & G \\ V & L & A & K & L \\ G & K & Y & Q & E \\ A & K & A & N & L \\ K & D & H & R & G\end{array}$ EYKR A LECCPRYAEAHNN』GVLLKGRN AKANLK DHRGA\|D $L$

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 S Y R T A L K L K P D F P D A Y C N L A H C L Q I V C D W YYNKAA E L E P D HPDAYCNR AGTYNKKGE ADKA I A D Y TYEKTLDLKSNYPEAWY GLGCCFDTDERPEEALDEF DFNTAI TLDQN $\square$ AESWANQALVVEHNGDKAKAAY

 AFDHA A MPTHT DAYYN
ST L K S L E FNPD NPS A A L M NLGG I Y Q DLGK
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CFEKA Q Q P DF S EA LDCRKAE L LYS L GQLEDT@D

DYEAAL R L DPGNENA
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 AFGRA $I A L E P E H \quad S W L Y K K L G D A L R N Q G E$

E Y E Q A $\square$ A D H
DFT $\square$ A $\square$ N $\square$ D P NNVDAY THRGNAYNY DGDYDRA $\square$ T D F DFKKAASL
$C F Q Q A$ L I L N PEHPEVYQK LAALA
$\square A S$ Q N Q LE E A $\square$ T S F S Y DQALLA D P D Y G DALLN NRELV

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LY N Q A I K L D P S L E



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TEAL

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| $V$ | $Y$ |  |

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QK A Li HN S NFVEAY

N LS
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D DA $\backslash \mathrm{K}$
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UniRef90 A0DDK1
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$\mathrm{A} \square \mathrm{K} \square \mathrm{N} \stackrel{40}{\mathrm{~S}}$
$A L Q L S P$
PRKP $\square K$ AEDDAK $S$ A $A$ A


A VRLDP
】E $\square \mathrm{D}$ S
VK T T DQQEAEKK $\square$ KRDEKST
$\square A F H F N P$
$A$ FA L D P
AA\|QLDS
A Le Le P
$A \| G \square D P$ A KKNP

■E ■N P

I D L N P
ALEMNP
ALK LQ P
ENFDLAI KYEP EDASKAI ELNS AALNKH A RFQA ATRLAP
DSEVWHLLGDSERWSEAVAAYQN

| $A$ | $G L$ | G |
| :---: | :---: | :---: |
| A | N | P |
| Q |  |  |



A 1 QLD $P$
Al EKNP
VKKDPTSEQEKAAKRKEHAQ A V $\mathrm{R} \underset{\mathrm{Q}}{\mathrm{D}} \mathrm{F} \mathrm{N} P$

A $\square \mathrm{A} \square \mathrm{N} L$

KPDWAT LHNN
A Le Le P

A TE TEP
$A L K Y N W$
$K L Q P$
A LD I KP
SLAKN P
$\square K K R \stackrel{P}{P}$
A $\square \mathrm{K}$ VD P
DFDKA ${ }^{\text {D D Y GE }}$

All ELD P

ALE R D P
I E D NQ IE DNQ

E P T P
 AALKLD


D DAPAHLAADT $\square$ A P E NYDLAA QKNP


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UniRef90-14YTQ8 UniRef90-UPIO003652E04 UniRef90-Q23CJ4 UniRef90_K9ZQV2 UniRef90-A0EEL8 UniRef90_G8TH69 UniRef90_UPI00047B6921 UniRef90-UPI000378E287 UniRef90_B3CS96 UniRef90 E4T4I7 UniRef90_K9Q0A6 UniRef90_EOUJZ2 UniRef90-N6YIW4 UniRef90-K1X4G9 UniRef90-B8HY45 UniRef90-B0CAB0 UniRef90_G6FPY0 UniRef90-D8G5Y6 UniRef90-R5IE07 UniRef90-V7F4S4 UniRef90_UPIO003819658 UniRef90-UPI000474E178 UniRef90_K7IJX0 UniRef90-Q0YRV9 UniRef90_UPIO0032A658E UniRef90-U1IGQ5 UniRef90_Q8YX93 UniRef90-K9UJT7 UniRef90-T1GSK2 UniRef90-F5UEE1 UniRef90_UPI000317E2F5 UniRef90_UPI00037AC152 UniRef90-D6TRK7 UniRef90-C0QXW5 UniRef90_UPI0003452D85 UniRef90_FOTAI4 UniRef90-D8T9M4 UniRef90-A0YQ74 UniRef90_UPI0002EF46B1 UniRef90-I3IQV2 UniRef90-L8JUS1 UniRef90_UPI0004777DA2 UniRef90_D9SF04 UniRef90_D9PH87
UniRef90 F4BST3 UniRef90-Q89WQ2 UniRef90-K5ZHA6 UniRef90-W4VT35 UniRef90-Q22AU5 UniRef90_UPI00047BCB26 UniRef90-K9TEH2 UniRef90_L8LUL8 UniRef90-AOBHTO UniRef90_Q23WR6 UniRef90-Q23WR6 UniRef90_UPI00037B807D UniRef90-J31416 UniRef90-K9SK92 UniRef90_UPI00037B3E68 UniRef90_C0QZI9 UniRef90_F6D3F4 UniRef90_UPI000464A397 UniRef90-A0DDK1 UniRef90-K1ZRL9 UniRef90_HOT167


#### Abstract

50 60  80  K LIRSLQNQFLNYHRNQIFSREALEVSAELVKINPEDYTAW KNALLANKRGDTYYRLGDYEQAQADSSQAI LLNPQDGNAY DHADAHNQLGAVLHAQGHHEEAEKSYRQALALLRPEHAEAH 

QFHQGMVAVLENRGDKEKDDFVLRESEKLLLA HCAEACNNLGVIYKDRDNLDKAVECYQMALSIKPNFSQSL NHMEAHNNSGFILRELGRPKEAI KFFRRALEI NPAYADA H S QA WLYAERGEAQRLSGNDDEALEDLSRAI DLDPNYAWAD 


 E Y Y MA Y Y HRGE DYELQNKMDQASKDYVRASQLEPCLT DPY FSDDDQKDNKKREKREFDEEADDDTEQULGVNPDVSTLW NYAPAYTNRALADRQTSRNDQALSDFTRSIQADPNYGPAY NYGPAYGNRARVYRDRGDRPRALADFAKSIDDSPNNDRDF KYGACYYNDGN』YLMKDLLEEAIAQYQKCLTLDPNYEACF

NRGULLFNLNQFDEALKDFNEA TNLTQNDSTDY R Y VRA YAKRA GLVFDKNQMDGAMADDSKA D D D NARYGYPY RFLPTYSTLGLAKQLQGK $\square D E A K F W Y T K A L N L K P D W A E V H$

YNPDTYNNKGVCVDK\GQHQEADK\FNLADKYKPNCEEAY NNAYAYNDRARVFVKRGENEKAEVEFKKAI DLDPNYVNAY HYYKPHFYRGLVLSNDDQYLEAITSFTEALNWDPEYCDTW NFATVY LRLGKALQKNQQFQEALDAYDKAFLINPRLNAKD GDPEAHSNLAKTQMDLGELEAAEASYREAIRLRPEHVVAH


RDPVAYVNRGYSRYDGGNSQSADQDYNRATNLDPNYALAY DNVSTYFNQGNLFKQSGKWEEAAAAYRRCLELNPDFSWYH DLYEAYFFRGUAKYNLGDFGGAESDFDRALELNPDYTDAY YKSLERLVAEKVARKEYSVETLKEDSDLLTRNPEYYTVW
 YNAEAFYDRALAEASQGNYADAATDCRRAD ELDDPKRAGSC QF LIRVRDRIVAKRDKGEYDEEILSDTQQULEKNADIYTFW ANAHYWSDLGAAYGRAGQQTKKIEAYQQAVSQDPDLENSW


NDSDVYNNRGY DKSDLGDKKGA DQDFNRA DS DDATNARAY WYDQGLTALENENYEEAISNFLKAVEEDPQNEQAY YRAAMGRIQQKRISNEDDQEMMTLS GQVLARDPDVYTLW

 ASADGWY LLGCIS KKLGDYSRALEELSQAAKVRPTYTRAY
 KNIGAWYFKGRSLMMLGRADEALKSYEMVTLMDPENYEAF HYADAMYNDGVAYGEMLKFDMAVVMYELALEHFNPQCAEAC NFAEDYGNRGTMYAK LNQDDKAI ADYQQALEEQPNFAVVH DSADIGYNFVNTLLNLQRHEEALDICSRTLRLLPNAAPLL
 FYQQGTKKYEAQNYQAAITNFSEAI DDNPNYAAAY A HWVGWKMLGVIFQQQGKNSEALMPALTASKLSPNDAETH DEFIAYNNRGIIHVHQDKLDLALNDFDKADELGGRYDEAY
 QYANAFSNRCAVYVRKREFNRAIEDCDNALNLNANYTSAY

QYKTD $\square$ NTVFQKRKDKKWDDELLLVTKRMLLNNSD DYT T WW NYSEAYDKLGLVLKANRKYEEAI QSYKKAI EVNPKCFAAM D LQGAAGDLAMALQRLGRQQEAI PWFEKAVTADPLNADQL $N N S L L L T K R C S G A V E L S Q Y E E A I A S C D T A L R M D N N W E T Q W$ DHVI AYFNLGVIYEKQRDWSKALKCYHRAI QLNPNDARFH NSTQALAQ TGEAYQENKMFDEAIDCYQKITELEPFNVDVY NSTQALAQUGEAYQENKMFDEAIDCYQKITELEPFNVDVY
AYRGVWLNLGNLLVDQSRHGEAEAAYRRALEVDPDDPGLL EVVEKIQKAKNLRQ Q QPSAALQTYEEVIAADPNNDEAW NSYQAFANRALVERRRGNMPNAIADYDRALRINPAYDTAL TEVYAYNGDGDAKRSDGDYEEAI SYYNKVI EI SNSNSSYA $K N P K L L V F R A L S Y G Q Q K K F D \square A L A D \square N T V L D I N P K \square Y \square L Y$
DFAEAHNDRGVVLAASGRLPEAMPCFERALALNPAYAEAR ENS Y Y Y N GKA DTLLQKMNRFEEALENYDSAI QKNPENS DYY

UniRef90_AODW75 UniRef90-F8EFC9 UniRefefo-B4W422 UniRef90-U5CML1
UniRef90_B21WU9 UniRef90 UPIOOOO470D629 UniRef90-LOXORT UniRef90-J2WNJ7 UniRef90-Q46GI8 UniRef90-Q22AF66 Uniinefo-COR2C5 UniRef90-B5AY31 UniRef90-A8ZVN4 UniRef90 E1IF83 UniRef90-UPIOOO30C0686 UniRef90-K95936 UniRef90-B8FEF8
UniRef90-UPI00041E60E7
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UniRef90-A7SL75
UniRef90-I4YTQ8
UniRef90-UPIO003652E04
UniRef90-Q23CJ4
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UniRef90-K1X4G9
UniRef90-B8HY45
UniRef90-BоСАв0
UniRet90-G6FPYO
UniRef90-D8G5Y6
UniRef90-R5IEO7
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UniRef90-K1ZRL9
UniRef90 Нот 167
 NDAGRLLF KQSFREAQEDFEKGLQLAPKWSY LHLLYGM YNRGITHSHLG DYQGADADFNQAIQLNPDFAAAYYNRGL NYRK乌AVDKIKNVVDEELRVVENALKQNYKSYGAWHHRKW FDRGFAFSELGKYKEALADYTQAIKLNSDDAYAYYGRGL YNHGVVLQALRRDHEAEAAYRETLRRLCPAHAEAHNNLGN NYLGLSKQALG FFEEADNYYSKGADIDENYGELYYNRAN
SNRGESRFNKG DLDGAFADEDAAI RRDPNYATAYANRGL RSRAFADSKSNKSNDA hADYDRDIKDQPENSQLLAEKAS ASKADALHKKKSNDDEATADSKQABEVDPNFVQAYQKKAQ NTRNQ $N N L G V V Y T V Q G K M D A A A S M D E K A I V A N P T Y A E A Y N N L G V$ YNLGLAFFDLLKDMAQARTAF EQTLRVNPGYSKAHNNLGV ASRGAARRTMGQTDEALEDLSRAIDLDPGYDWALSQRAT YQRANLRFSNGDFNGALDDSSQAIRGSNYGDAYTRRCA
 ANMANTLSRQGRYGEAMTHY HKALELEPGNAMDHTNMGV NSRGNARASLGDNAGA DTVYNEAURLSPNYAEAYNNRGN NNRGDSLYLVGR YQEALEDFNESLA乌DNLNAEDWANRAR

A
PQFKKT PEKSSYETSYQHTSLATQDQPDNTLAYNNRGF NFRREIFLKWREDSRKELAFLQGCLKVNPKSYGVWFHRQW DGRANLYRAQNQ YQEALADLNMATRLLPESAEALHSRGL HARANMYFDTH DYTLALDDYDRSMRNASRADVFNSRCF
FNGGVIYKKKCMDEEAVNLEKCLSLNQKYYACYYNLGL LTNAAIILQAQNKN QEALEHYNLSTKLNTNDQRAYKSRAM Y LRGLIYHNQQQYDQAIAEYTKNLKCDANSGDAYFNRAV

## L

LNKGMCLY QLE

KQRGVFFTDL
LNRGGVFAMLDK





 N N R G WA WS Q KK DYGRAI A DYSRSI S L S P K ARTYTNRG S E H A A A A K L L L E R A EAARLA DLDDKAA N L D P ESAAEAYFS RA G Y S R G V T R L L N Q Q F REAA D D F D K F I R Q E N K V S DA Y L N R G V

















 N IRREFFENNKQ LLENEMSSTEQCLKDNPK SYS VWHQRCW








GNLARTLRSLGR LDAAVTHFERLVETVPGSAGPHFELAA NGKA DT L QKMN R FE EALENNYDSAI QKNPEDSRYY FNKA I



|  | 200 |
| :---: | :---: |
| UniRef90＿A0DW75 |  |
| UniRef90－F8EFC9 | KGSDAETAYKKA ELNPNDP |
| UniRef90－U5CML1 | KDEEEAKPSEEKINNDFSN |
| UniRef90＇${ }^{\text {B2IWL}}$ | LKQGAIEDFDTVIKTNPSDAKAY |
| UniRef90－UP1000470D629 | RLTEAELACRLALTMRPDYA |
| UniRef90－LOXOR7 | LYEDALKD ${ }^{\text {LIKKAI VLDSNNV }}$ |
| UniRef90－J2WNJ7 | QLDRAAADYGEAI RIAPTDARGWRNRGMI |
| UniRef90－Q46G18 | DFEGAVGCYDRILELDPGNVGAYNNKGFV |
| UniRef90－Q22AF6 | QПDEAYAWYKKILTIDPQF |
| UniRef90－COR2C5 | EEATKDYDKA ELNPDY |
|  | DDEDKFTTEK】TENFSN |
| UniRef90－B5A | EAHRDWGRRFMRDFPQY |
| UniRef90－A8ZVN4 | OAAS |
| UniRef90－E1IF83 | RYE |
| UniRet90－UPIOOO3C |  |
| UniRet90＿K9S936 | RDAEALAAFDRATELNPQLAEAWNNRGATLWNLGRY |
| UniRef90＿B8FEF8 | EYFSKAVEIKPDY |
| UniRef90－UPIO0041E60E7 | DHKGALQDYNRG｜DL PVD |
| UniRef90 Q8YWD6 | DRQGA SDY |
| UniRet90－U9W409 | YEEAEAAYRQAI晨LDPNNALAYTA |
| UniRef90－A0C682 | EKADEDYSQTILIDPNYAKAYCNRGTIYKQLEKFD |
| niRef90－A7SL75 |  |
| $4 \mathrm{YTQ8}$ | QFDKAIEDFNAALNVDNKDANSWAWRGVALERKGDRSQA |
| UniRef90＿UPIO003652E | NLDAAIADYDAALSIKPGLDGSLYGRGLAKRKKGDGEGAE |
| UniRef90 O23CJ4 | MLNDAIKQFQNCINLNSKLDYCFFE |
| UniRer9o－K9zQV2 | NKEGA ADYNQALRLNPNGETMNRGNARASLGDQQAA |
| Ref90－A0EEL8 | NALLQDFNS R NPKYQNAYDCRGCL |
| UniRef90 G8TH69 |  |
| UniRef90－UP1000378E287 | DKQSAI QDYNQAIRVKPDY |
|  | QYQEAVENF |
| UniRefoto－E4T417 | EIDKALKDYNKA EELDSNFANAYRNRG\｜LYFKIGNY |
| UniRer90－K9Q0A6 |  |
| UniRet90＿Louliz |  |
| UniRet90 ${ }^{\text {N6Y1W4 }}$ | VAAAHNGLGNAFKRAGDLERAE |
| UniRef90 K1X4G9 | A AVKAYKRAMELCPDLPCMY |
| B0 | DYEEAVSSYEQALHFSSVPSQDWYFYGTLLAQLDRY |
| G6 |  |
| UniRef90－D8G5Y6 | QLEEALGCLRQALELDAESALPYENLWEVLARLGQ |
| UniRet90＿R51507 |  |
| S7ZST2 | QTQKEYEYAKKMI GANLSNFSAWHYRTKLIVRLSDEERRK |
| UniRef90＿V7F4S4 |  |
| UniRef90＿UPIOOO3811 | ATQDTLAAKALEANDPRAL |
| UniRef90－UPIO00474E178 | RYKEAEADFDMAL RCDSNYLLLSYFNRADVYSSTNR |
| UniRef90 ${ }^{\text {QOY }}$ | QFAKALEAFKQALRINPENSDGWLKLGFSYRDMCQFTKA |
| UniRef90－UPIO0032A658E | KPTKALECLTHVLQIDGRFARAYHLRG |
| UniRefo－U1IGQ5 | QEALEDCNKALQSGAANAATYDSRGLVYLKTGEL |
| UniRet90＿Q8Yイ93 |  |
| 99 | NRAIALNPKNANNYSSRG\｜ARSKVADDKGA |
| UniRet90－Q2FQT6 | FNKAIELMPDGSR |
| UniRet90－T1GSK2 | F S Y S S |
| UniRet90－F5UEE1 | RTGKKSEGRHDTDFD |
| UniRef90 UPI00037AC152 | RYDDAVVDFDRAIELRPSDAWTVGSRGQTFLAMGRY |
| UniRef90－D6TRK7 | RFVSAHQQYSRALKFNPHNAFAYAMRADCNLEMKHYNSA |
| UniRef90－C00 |  |
| UniRef90－UP10003452D85 | AI ADFSRVIELNADNVAAYYHRACIV CLLQEK |
| UniRef90－FOTA | DHDASIKTFEAVLEMEPENPWAWHQ\G |
| UniRef90－D8T9M4 | AYERCLRDDSDSNAGQNR |
| UniRef90－AOYC | QNL |
| UniRef90－UP10002EF46B1 | EQVLQGKPDH |
|  |  |
| UniRet90－L8JUS1 | AYFDFSK |
| UniRef90 UPIO004777DA2 | DRQRAFEDINKAI |
| UniRef90＿DgS | EFQLAAAASFKRALH1 QPDNAQAHYNLSUVQKKMGAASDA |
| UniRef90－D9PH87 | MHEEAVRSYEEA M NPA |
| UniRet90－4BST3 | RHEEALESYEEAHM |
| $\begin{aligned} & \text { UniRef90-Q89WQ22 } \\ & \text { UniRef90- K5ZHA6 } \end{aligned}$ |  |
| UniRef90－W4VT35 | FSNYSSWHYRS |
| UniRee90－02 | MFDQALETYKK\｜LE\DPQKPVAYNNTGM |
| UniRef90－UP100047BCB26 | RMDEAI AELSKAGQMDPRLEDPPYTLG |
| ef90－K9TEH2 | RYDEALAAYDRALGLEPNDAASWTEQGI LGGLGRHPEAQ |
| UniRef90 L8LUL8 | QFDNA TCCQKA SLKPDYAEAHNNLA |
|  | KLEEALYNYDSALQKNPENSRYYHNKAVILGKMNR |
| UniRef90－Q23 | Q DKALECYNRVLQLNPD |
| UniRef90－UPI00037B807D | DFIRAIADYDQALLI HPDNVQGRVERGLALCRSRVYFARG |
| UniRef90－J314 | ALDEAI AACEHALLLKPDHAPAWTNLGIIFEKQERAEEAV |
|  | RYEEGLASAQKALDLEPNLADAWNNLGFAAEKLGQ |
| ef90＿UP10003783 | DPAAALADLS |
| ef90＿COQZI9 |  |
| iRef90－UPIOOO2 |  |
| UniRef90－F6D3F4 |  |
|  | RPLEALGYAEQALALRPDSAGAHNNMGNVLRALGRLQPA |
| UniRef90＿A0 | R |
|  |  |

UniRef90 A0DW75 UniRef90-F8EFC9 UniRefefo-B4W422 UniRef90-B2IWU9 UniRef90-UPIOO0470D629 UniRef90-LOXOR7 UniRef90-J2WNJ7 UniRef90-Q46G18 UniRef90-Q22AF66 UniRef90-T2M8G2 UniRef90-B5AY31 UniRef90-A8ZVN4 UniRef90_E1IF83 UniRef90_UPIOOO30C0686 UniRef90-K9S936 UniRef90-B8FEF8 UniRef90_UPIO0041E60E7 UniRef90-Q8YWD6 UniRef90-B3QU44 UniRef90_U9W409 UniRef90-A0C682 UniRef90_ATSL75
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UniRef90 G8TH69 UniRef90_UPIo0047B6921 UniRef90_UPIooo378E287 UniRef90-B3C596 UniRef90-E4T417 UniRef90-K9Q0A6 UniRef90-EOUJZZ2 UniRet90 K1 K14G9 UniRef90-B8HY45 UniRef90-BOCABO UniRet90-G6FPYO UniRefofo-D8G5Y6 UniRef90-R5IEO7
UniRef90
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UniRef90-K9UJT7
UniRef90-Q2FQT6 UniRef90-T1GSK2
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UniRef90 F4BST3 UniRef90-O89WQ2 UniRef90-K5ZHA UniRef90 W WVT35 UniRef90-Q22AU5
UniRef90 UPIOOO47BCB26 UniRef90-K9TEH2 UniRef90 -L8LUL8 UniRef90_AOBHTO UniRef90_Q23WR6 UniRef90-Q23WR6 UniRef90-UPI00037B807D UniRef90-J31416 UniRef90-K9SK92 UniRef90_UPI00037B3E68 UniRef90-C0QZI9 UniRef90-UPIO002EAE2B9 UniRef90-F6D3F4 UniRef90_UPI000464A397 UniRet90-AODDK1 UniRef90_K1ZRL9 UniRef90-H0T167

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220
E E ALLE C Y N Q S NK|I D $\square$ N D S D S F Y N K G E YKKA $\square E L Q P D N A Q V Y S N Y G \square V L A \square Q N R Q A E A E$
$\qquad$ K S EYY LA H N A LFCDPEDQA GWFNY LGGLLDLTVAPKAP L



GLA DYDKAL QYDSSDVFSWNNRGARLRLGDKQGAIA
 DIDH K E L E L V R N A V F T D P N D Q S A WF Y H R WL L G R K K Q E P Y YF THSVSYFIEAI YHDHVNYKVVVY

I Q DFNQA L R L D AKYAD AYSSKG $\square R Y K L Q E N Q G A I E$
E EAL A S V N R A L E I R P D Y S D A
$V$ QS YKK A L E QE P D NP K I L H N L G I V Y A Q G G L E T A VD
$L S D Y N K S L D L T P D N A L G Y S A R G V V K Q K L E D Y K S L E$ EDLQKAAD I F QRQNNNDLY QQAMNN IK
$\square E D V N V A D K L D P S N P E G Y Y Y R G L I L D S R G Y P Q A \square R$ A A YRQAI ELLNPEDANTYYNVGVALSYQGYVDAEA
 A LMNEFELAQNAFFTDPSDQSAWFYHRWLLGRDQPELDVD LE S Y Q R A L A LDDSSNSVA
$M L D E S V Q S Y L K C \square D L N Q S F Q N C S L K L G N \square Y Q Q K G L D E A \square K$ I A DYNEA I RLA PNYAEAFNNRGNARSAQGDKNAVA SDFSKSI ELNTRSSNSYNNLGNFFVS $\quad$ G Y Q E A L K


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

EEA $\square$

VDEG $\square E C L R Q A \square A L N P G S W E L Y M K L A E A L Q K N E L Q E A L A$ RLDEALQDLDKAIEIDTANTFAYFNRA IRYELKDIQGTLS $M L D D E L D L I D H A L I D P Y D Q S L W F Y H Q N L M R L S Y L R N E I A A$

D QA I A D GDKA I S L D PK S DLDSYASRGGWLLYKK DY D Q A I A $K Y$ D Q A I G A Y N H A I A L D P D N RFA Y F GR GA WA A KRA Y Q Q A I A KLDDSI QKVKNAFYMDADDQSAWTYTRWLLENGSGKEF

I D D Y S S A L R I D P R LAA S A L Y G R G
E E A I A S F D Q A L E L Q P N S P K I W D K R G Y S L V R $\quad$ L G R D E A
I E D F D R A A A L D A N Q A K A Y T N R G L L K A K L G D K K A A
PEEALT A YEKALELNPEFKDALYAKGLAESALGFDEAEA ILLK E E L E L V L T A A FTD P N D S S A WFY QR WLL GYS QP D LD DA A P CPMPNAQLP DAE DCDNLAE DY LHLGGNALTEYGHESAAA
$R S D L A N A V Q L A K E R Y K K D Y Q D W N N$
DEAIAD FTRA $\square E L D S G \square A W L F G G R G A H R F Q D H F E Q A L S$
LVDCRRASALDPEHY LPWQTRGNF LAD GGQDRAYQ
E E A L E Y EKA $\operatorname{LESFDNALDEDPKFLLALLLEKGDCLMNKQFKEALV}$
Q VK QA $\square E N Y E Q A \square K \prod K P D W A E \square Y C R \square A H \square Q K Q D Q P Q V A \square A$
EAAI PVYKKLLALAPDYDYAPGNLACQLYCCDWSDYEK
T DRAASYY IKATEANVSNADAQYRLGNY KKKKQYD DA DN
ID D Y NKA LS LDDDS DP D DY Y YRAA KFNDDQVE EAMK
K D F D Q A V A L Q LE N A ELYYYERGLNYYELNQK QAA K
MS DEAL L D F N Q A L L
E A A V V C F R K A 1 E
A DNALKK CDRAI ELVPTYVNPYDGRGRAHRLKNQTDALN DYDDAEKTFDVLMKAHPKYSMNYLTRGAMYTEKGDTKALA DYREE LDDVMNATFTDPNDT SAWFYQRWLLDCKCM MND E A L E Q F NKA LIEDNP KY ES L Y N N S GLVVYERKN QTD K A L E LDE AVV EMRKAVTL R P DNGNAWAI L GSTTLKQERLP EAKE L S F Q WAVKI NPQSSFTLLHQCANLNRLGYEPAKA QF D NA VICCQK A IVS K P DYA EA HRNGLG

LENYDLAI LKNP QEFRHYNNKA\| I LDKMSLDEALQ

 A A HRC
 VD T A I A A Y EK A K GLLKP GFKEA N Q N R

V R S Y N RA L G L D S N N DL A R E GLLGR
I K D Y D I VI ELD S NH I NA Y YNRADS Y YNS DYEEA IKK
K WD LALTEDFNKAIDIAP NARAYLERGIVYRQKKWDLALA CYKKA L K F Y G R D L V K N P H N S E L LY N K A Li L Y I F E K Y E E S L A



FFRKS IE L N P KDAQAHFNYG L L
$\square A T Q N R L A E A E \square A Y$
LTASW PSHGSNDTLSS IV
DYNTILQDDPKF TAAYIYKGAI EDYSEALKLDPNNTAAYN
 YYKKVI ELSN S S
DFRKALELKPGLQTA
CFNKTVQLK PDCIT AWYNK GY DH CYDNVLA DSPNSPSALY SYK
DYDKA IE L N TNNFMAYYNRGLAKLY LGHNEEAYNDLIKCY
QYQKALALQPGHGPS $\quad \square N A L G V L Y A A M G Q P A$
DLSKAI ELNPQDSWAY
D F TKAIEIK K D FADAYRNRGLVYA
YFEKALALQPNYHEA
DFSKAIELSPKRPSSYS GRAYSKMKMTDYKGADADY
NFDYA $L$ SQDPNYH $\square A Y H A R G V A H D S \square A Q Y Q M \quad S \square S D Y$ AYRQAI E LDN PNDDYAYNNLGLA AFTGA $I E L S P Q M T Q A Y Q Q R G\|A Y F\| L K Q Y E$
C $L$

QF QKYLSIDSEND
$D Y T E A 1 R D D Q N S V A Y N N R G \quad N T Y F A Q G D Q Q K A \square A D Y$ NYQQAI QL DAYNS ITYIIN LGQLHDKDNDFQ DFKRSVELDP HSSYGYLFMGFVHHN KQQYNDA DACY NYQKALELSPDFSWTY HQLGNALSE QERWEEATVAY $D Y D Q A S K I L L D D A G M Y F D R A G A D L Q K A A D L F Q R Q G N T G D Y$ NYD $\square$ A $\square K Y N P N Y V D A Y Y N K G L V E N F N L A \square K Y N P N D A E A Y Y$

AYQQALRLGPKKAVIYKN LCYARHTQRQY S LTREAI RLKPGLVEAH NNLGNVLKDLGQLKA AEAAF DAQMSLKLADAFRSQGQLDQAVTFYKNTLQLTPED



AYQEALRDNPEN NDALFNLGHDYDEHG HQ DYDAALDLELDSMDKFVLQCLAFYQKEDALYTASKFNSEF

S F NQALE $\square$ K P E Y ASAYYNKAACYAMQGDVNSSLENLQQA $\square$
TFNQVLT $\square E G D Y S E P F \square W D R K G R \square L F E V \quad R N N P D E A L T A F$ A F
YYQKA $\square Q \square Q P Q N A E \square Y R F S A A \square A \square Y R M A D T \square Q P A \square P Q V Y F$
DFSRATT IK DSY SGAVAQRAETYRDM DRHAEALTDF AFSQLIERNPDDAANWQTRATASYQA HNYAQAI ADC AVRDF DII DNVNSKHYNAYYYRGCSKKYDKNYDGA IKDF $D F S Q A D L N P Q D L Q S \square Y N Q \quad G K A Y Q K L K D \quad Y R N A L D S Y$ CFDDVLI K DPQN PDA

NLEKSTE L N P N Y DEA H
SRQAVVEMNRQGRKA
AF Q IA V M TNPDNAEDY
DYNKAI EMDTTDPDKYENRALAKSTDE DYEGALADY DFTKAI E DDPKY DKAY $\backslash A R \quad$ GNVYSDLAD PEKAYNDY AFRQALRCQPE

A AR $\square$ A R D
DYDRATALLDPKASAFFGRAYVHDQREEYKQAADDYTKAS
DYNKA IEMDPYYAPSYGNRA LLLYQTNDLK GALADL

CYNKVLEDNPTESRSLA
A LIE KA A L QPG QPGSLINLAGVLSEMAAKDGPEADAA ACEMALQEGDD LGPAYAWVQLANALTGL ENYEESLAAS
$\square \mathrm{Y} N \mathrm{Y} A \square \mathrm{KKNPQD}$
CLKKAI ELLDPNYFEAY DKLGLVYKE RKMFNEAVLNY
 VSHRAlALDPEQPLAQYN

NYDKVIELNPKSAEAYNNRGFAKYSTGLYE EALKDY DFNSSI EINPRFSDGYNV YTSRA@LYQUKQQYKLALLDY FFDKSIKEDPKYAHSWQY KGFALNSLERYVEALKCF HFARAFA L RPAALEAELADCMAEL YYESATQKNPENADCY
AYNQAISLKQDYAKAYLLVY LKNGHKDMARQEYDVLKNDD


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UniRef90-K9ZQV2
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UniRef90_EOUJZ2
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K K A $\square \mathrm{E}$ L

NRGNAYLEGGNKK
$N \square A L A Q L R R L P E A E S A Y R R$
NKALEIIYDEYTDAY
NKRFALYT L KK DD
RKA IEEIDPNFVQAYERDRKKY
$D \square A$

K A VE C F RK L S

GKALEDSPEDAESL
TKA DEL
HQALEL

NQA $\square$ RL
TKA|IEY
YQGI A L
QKVIKLDEKLK
NKGLCLYELLA $\square K Y D P$

EEALKLCRQ ARALDP
REAIRLAPDRAE
NRATALL
DKALSIDTKGSEVW
KQAAEL
NRSULF
SHLLGWLSEL KQLDPLRKNRWLDFEKTL
D HA ALL
DRAA
SKA
SKA $\square E L Y P D F A N A Y \quad L N R S R \square R Y L L K$
SKSLEVYSRLK CWFDIDGG DDP LIFKEYW

■ L N P K Y K E D A A T D $\square$ D
NKADEL
$E L A K L L$
DRA\ALDRDYA
TQALTLDEELAEAY
DKAI EY
NEVI HQPRLASVY

```
DKSTELFDEDPDTY SQALLLNDKYPDTY
\(\stackrel{Q}{N} E A \square R \square N T R E S G Y Y \quad \square N R G L V R Y Q M N D L R\)
```

NKA $\square G \square N P Q L A D A W$

TKTLELS

AKASSLYELL
GSRLERRSGGVRNDDPDRR

A\|D L $\|$ R $P$
$A \square R \square R P$
A I DLQP
A LGKPVWVLLAFDADWRWLQPRPRDWASETLRPALREP
A $\square$ QK S P
A $\square \mathrm{E} \square \mathrm{N}$ P
E Y S E
N P
AMGAPVWTLLPFNPDWRWL $\quad$ LNRDDSPYQSMS ALKD
 $\square F \frac{Y D}{}$

A LQ LD N
$\square E L D P K D A H L Y T W R A Y V R N L Q F R Y E D A \square A D C T K A \prod T \prod D A$ A K K L P A $V$ A VN D K DF L K A L H K A ${ }^{\circ}$ P

D Y WA WY K K GMT LEE L GRYEEAVVSYENAANDEPK A 1 SMRP AI EASP A IIA 1 Q P



E $\square$ T P S DVT L P P A LVA A $\begin{array}{llll}\text { A } & \mathrm{N} & \mathrm{S} & \mathrm{G} \\ \mathrm{N} & \mathrm{V}\end{array}$
 A L E YY P
E D CSAA R I D P


ENYDSAllQKN P


P S F S $I$ S Q T P
SE
AALGQN P
A
D K G R N A VA A
LA D K G N Q TA A $\square K Y$ N P

ALALK P


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

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NNAKYYYSKGNA $\square Y N S K K Y E E S \square E Y D K A \prod E D P N D A E Y Y$ KFHSQGNDKEAAKNYQYFINQGFSDHMVF SFVF WNTLGASAVQVGMFEKAVSAFKKVI SDNPNYAEAY KEPK WWYGUGILYYRYGSFEHAEEAFSSVLKVDPNFANED NDPETTYELGVAYDKTLRFHEAVKVLEKVLKTHHDKEKVL DFSSSWFNCGYAYYKTGKYKQAMTAYKKALKDDPDDETI Y EDGDWASVVDCVRVERERLPEARSHQSKASSPRTQDALLS
 KR】AALLKRGMFYYENENWNAA】HDFTALLNVDPQNSQAR KFYQAHFNLALLYDDKGMDEEAKQYYEQTLQANQEYYPAL DDTGAHMNVGRAYKNDERFQDSEEAYRKAMALMPSHDSVY KLPPAYSNRGYARRHEGDLLAGSLADLNAAELSPKTAAVY DYAQAMNNLGNLYKDEDAYDKAEELLSKAVELQNNFAAAW DFAEGGLGTVLAQQQNWEKALLAYQKALELQPTFAGAY


EMAQAYSNRAD DY DNRGDYPRALLQCNQA RRNPRLTAH KKAEAYLRRGDYHFENSNWSPAI QDFSALLNLDYKNDQAR SSDCLYHLGLCYMEEGNLQLALDSFTKAVKADPDFAEGF KYVHAMNNLGNILKERNELQEAEGLLSLDVQDQPDFAAAW NWAEVHANLGS HAQAQQWQQALECYQKAI T K PDFAGAY YLWQPWINKGKVLYKQQRYQEALDTYEQALKIDNNNAEAL
 NDTERYDSRGSARYELEDSEAKGOQLGLSDNAKSF QDAALQLNLGNALKALGQПDEATEQFRNALTLAPSFPMAH D VVGYYVRAKILRTMGKNDEALEYFDKALKUKPKYVLAN QKAEDFFNQGYHLLNSHRYEDAUAAFDKATADKPQLAEAW

FTNQGLEK LQQQDYSGADQAFSQALQLNSNHEMAY DNPAVNFKLGEAYEK LGQLGKAVEQYRLVLEKVPKADHVA YHYQAWNYRSYLLASVGRYEAAVESYRHTLSLKSTEHRVW YSVPALSADAGVHRTGDNFEKAVDYFQRVLNNVPENGDTW WYNKGVDEDDAGNYQAAI EAFTESIKLDETDADAY RGLQYSARGEYEAA I A SFDRAI TLNPDSANAY


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UniRet90 O31KR1 UniRef90-UPI000466A165 UniRef90-UPIO00349DCE2 UniRef90-K2DC02 UniRef90-Q3A2Y2 UniRe90_-B1WPR8
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UniRef90 B1WPF7 UniRef90-UP100034D9BCF UniRef90-UP1000476C87D
UniRef90_K2FFC2

130
LYASQHKYEDAll ADMDMAlI
140
150
160
LYASQHKY ALERDNRFEEALQYYDSAI QKNQENSQFYNSKANTLMQMK ALADDGQFAHADAAYQRALKKKPAFPQADFGLGNNLAKQG ALLKQGK DPGAIACFRKAIQQQPAFAEAYCQWSDTLAKQG ALVAAGDMEQAVQAYVTALQYNPDAYCVRSDLGNLLKALAA GAHQAGRLDTAESDYREILALAPTNSQALHYFGVLHYQRG ALCNQKKYEES\|IEYDKA!ELNP NYDDYYNRNVLWNGKK VLKDLGKSQDAELSYRKAIQUNPNYADAHYNGGILLKELG LYRNAGWLDDAVLLYQTAI KLQTSWIGALYYHLGEAFYQQG VYEQDRDFEAARDAYMRVLSHQPDHAKVLQQLGWLYHQPG CYDASGKFQLALLRDFKAL
LLFDLGRYAEALLESNVVE
 AYRKLQDYSVSGLIEMSPIQQALIYSFCENHLAKTQMKAK AYTAKGDYDKAILRDFDQSIALLKPTYAKAFNNRGVAYLRKG MYFSLGMLDDAQNYCEKALQUNNKSLDAHLNLAFAYDSKD VLMRLNRSKEAQQSYETALQLDQDNPDGHYNLGAVLKEQG VRNRQRRMEEADADFTHADTLDPHLAEAYADRGYAFVARN
 AYFLIGNLQSATSDGNKVI QLNPKNGFAYAMRCAGRLTEK VLIKLERWEEATAAYTQFIK KNNNFCWAYFGLGESFFNLN ALSALARYEDADASFDKAI ELMPDRADTWNDRGNALHKLG IDNQMGY LNCAMKDYQQAI SI NPGYADAYFNAANDYFHHR TMRMLGAMDEAEARLRDALAVDPRHSASHNNLGNVLKDQG YLHCLGNNREATTSLHSALKIQPNYLLA WDMRGLILIESG AYHHLSNYQKAVNCYSRYVEMIPDVGAAWNNRGYDLLRLK LMQESGEAKEANRRFLTYVVEEPDDANGYFNLGMLAMDAN VLKENGEFEEAKASYRKAIDLKPDFADAY LNLGHVFKDHG ALRENNQLEEAVIHYRYGIKLEPKLQEEYQKLIQVLKQLG
$\qquad$ ALYRQQKYQE
 LLRKLGRVEEA ICTLANSGFNEGEYVKLEI
 $A L Y E A G A L Q E A$
$A Y Y N K G M Y D Q A$
$A L I G G Y D E A$ 4 VYYMKGDADRAAADYTEAMQRNPAAAWPYELRSNIRLNKG CLRCLGNWQVELADVSKLLNVDPKNFHGWHLRGALVNVLK AYYKSGAYEKA TLQKMNSLDE ALGNLGRYEE MYEKKNDHLS LRVQLGDDNR AQAQLENYTAA $T Y T R L N N D S L$
$\square F T K G A K D K$ MFYRQGK CKVKLHK ALYNLGRLEEAL AYYHQGEYTQAQRDYETLLKLKPQSTLGYFRKGVVLYQLR

 MFRK SNPNKAMLDDESUSVLINDTNVLSSFUHRGVLYALMS LYADLNRHDDALNAWRNATVLKPEHSLA WNNMIILLDNTG ALDQQAQFEEAITCYRNAGSSDPNLSAAYQSLADALKKQG
 ITYDQNMKDQAIKQYQKALEDQPSYYTALLNLGNYFWDKN ARFMLKDYTGAVEDYNQCLRMNPKDAEAYISRGKTRYELE ALHALGRHEEAI ASFRRTLELRPGHAGALNNMGMSLNALG ILYKEGKLKKSLECFDNALKINPNDCQSLQYKGETLFKLG VSLQQKDTVAALNDFNKALELDKYDPDAWAARAGVKLDQQA LSTLQRYKQALT ALHDSGNLLQRA
ARVALGDYQSA AYGGKGLDKEEADYTQAIKLYPEDAFGYSDRGSVYLQUG NLHRRALYGEAIVSYDQAI QLLRPDFYKVWYYRGKAMLQGD TYARMGQLEKAQGAYQQALVLDPHDAGTTLNLAVLLNQAG LYDRYGSLEHAEEAFASVVRMDPNYEEDYFRLGIIVKQQN AYYQLKNYEQSDKDCSQALELEANYADFYDYLGNAKDDLK



UniRef90 R6TYI1 UniRef90-A0C1H1 UniRef90-B4D6E1 UniRef90-UPI000346149F UniRef90 K9S2M5 UniRef90-E2C614 UniRef90-A0CVT6 UniRef90-UPIOOO3795044 UniRef90_AOBP10 UniRef90-Q46JL2 UniRef90_UPIo0036A787A UniRef90-A0YYE9 UniRef90-E6RDD4 UniRef90_UPIOOO382A6E3 UniRef90-16Z5X1 UniRef90-G7D9U9 UniRef90-M4D5L1 UniRef90-K9U158 UniRef90 UPI0003C4BC23 UniRef90-O89121
UniRef90-I7MM20
UniRef90_Q7TTV2
UniRef90-C3Y713
UniRef90-B4D4T2
UniRef90_UPI00017E10D3
UniRef90-K9TST2
UniRef90-UPI00037AD8DB UniRef90_UPIO004085576 UniRef90_A4YV01
UniRef90-B301X9
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UniRef90-A31550
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UniRef90-W5kWQ1
UniRef90_Q7V4X5
UniRef90 K9XX58
UniRef90-UPI00030EF1AB UniRef90-R5VPB6 UniRef90-E4TM86 UniRef90-AоBQM5 UniRef90 D1CDJ9 UniRet90_Q4UB72 UniRef90-B3EG38
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UniRef90 UPIO00361475B UniRef90-A0A015LSA9 UniRef90 G3BFA5 UniRef90_B9XLLL5 UniRef90-A0D976
UniRef90
U9SB54 UniRef90-K9SLY7 UniRef90-L5KL68 UniRef90-B3RUB22 UniRef90-U7GKM3 UniRef90-UPIO003613F7F UniRef90-H1XSC4 UniRef90-Q10V65 UniRef90- HoXOZ6 UniRef90-UPI000377A715 UniRef90_UPIO0047E1FAO UniRef90 UPIooo3B435BD UniRef90-K9ULK8 UniRef90-UPIO004436451 UniRef90_UPI0004404A57 UniRef90-UPI0003C45DA9 UniRef90-AOYYFO UniRef90-UPI00047BA3A7 UniRef90 R5FS82 UniRef90-W7XDA3 UniRef90_UPIO003742E00 UniRef90_E1T6C1 UniRef90_D3S7B2 UniRef90_R6JH12 UniRef90-UPIO0047CA50A UniRet90 UPI00037F6CA9 UniRef90-K9XJI1 UniRef90-K1WW15 UniRef90 U9VZ88 UniRef90 UPIO0047C51FB UniRef90-V5ECX2 UniRef90-B1WPF7 UniRef90-UPIO0034D9BCF UniRef90-UPIO00476C87D UniRef90_K2FFC2


#### Abstract

210  240 LEYHDLAL QI NPENAEFFHKKAMTLYQMNLETALE MDEA AAYRRTDALQPDYAEVYSNLANALKDTGLDGAME

I ACFQKARE!NPDLAGA EFDRAIALYQQVLRADPDCVQAQF

H HFEKAVALDPNFLDAYVNDGNVLKE LKYFNLDAI QRNPDDSKYYFNKATTLIDQNFEEAWK HपDEATICYDQALQLQPDFADARNNFGTALQAQGLNEAVE L EESIIEFDKAIELLNHNSQYYCNKGQALYNKKYEESIKK KLVESTTAFNKALLLNPNYADAYRNMGDTLKYVIFKKF QVDQA $K$ KLKRVI NIDSNYTEAYNTLGCLLEKQQFLDAVE YEAYQQAVYRDGRNPTFWCS GGVYYQDQYRDALD NWLESLKAYKECIR YS $\mathbb{K} \| N F L L S H$ MEQGAFA QEDS TGDT DESSDEDRTVGRGSCHHGEYREAVK QTQAALNDYAAVIHDDKTNSTAYVYRGEILESTGLAAAFS NLQTAFESFTKAVKLNPNFAEGFHQRGLCKVKLHKDSSIL   LRPEAYRRLYEVLEQEPQNEKVYFNLGLSMDDKNFTAADQ  TA

TARQA:ALNADNSWSHNNLGDALKLQQWEEAVV QPENA:KSYSQAI QLNPNDDWFYEKLATFGLSKNQDENADQ QLDKALASYDRALSIGKRPVQAGLARAETLLFMNVKDAMA TLEEAKEDFEKALCLCPFSAAVYFNRANLYRTKQYELAEK


H SLKQALEVTPENYPDWKMLGDMLLDLGYEEADT EEALLFCDKGLA ICPNYAQAWYNRGDFLHHLNRHKEAV
PV LDELLWHHPEHVKGLILKGDTLMNHRKDTARA DVEEATASYRKALELKPDFVDAYLNLGTVLNDEGVEEARQ ALDLLIAKYRQKAQNNPNSAADYSNLGSLYQKQHWQEA YFEEALWSYNDLLKIRRNNPIIWTDRGTLLLKLNRQEALD DWVGAMADCAA KLNMSDAFGLRGYWYKQKDYAA E

DEALQDFLNA, RLCPDHPLYGANLGDQYYSDHQFELAN QPAKAITALQUALSMDPKDLNKRAILAETYCQSGLTTEADE FMVKELGRDFQRLLRRTDNEGLCSY

LDDYDTVI GLQSDNPELYYNRA LVKVKDSDYPG
I ADLQQAI ALDPD
VDAYDRALALDPGYASAYASRGAHHRDGHDDQADA
EEA $\triangle A D Y T K A L E M D K A Y H Q A R S N R G$ LAYYAMGAYEQ
QEGWAA LKKAEELDPEHPEDPCCRGLLLKSQGLTGALQ EEAI NCYQKALEAEPNDEYAWYYQGHCHAANNQDEALN DDKRALADLDEA $\backslash R L Q P G N L D A Y K D R A G V F R D M G H D R A L A$
LLQHETK LTNTGMYVDVDDTSVWLYTYWLLYQRTDEEQLE KFDRVI EDYREATKRKPTDSLSYNNLAWLQATCENEEAVK

EEALENYDSAIQKNPE
 MDEFRI

NFRKATLVERADTAQTGQPYYLNNKAYLLLMDKRPDEAL NFRKAIEYYRNAAELNPKNSEYHLRLGDCYYRSQDYSALN K LeEAI AVWQMA I RDLSTAIKMDKKSYAAFYNRALCY
DEALFCLNEALRGDPNSASVHHSRGAVLDNDGRHEEA VDEADASYRLALRLRPDFAEAHNNLGDALLRAGDEEAVT
$\square \mathrm{YE}$
FTEA $\square R \square D P \square C \square Q S Y \square C R A Q T Y Y K H K \square S Q A \square K$
A DF DKA KANPNAASYHGNDA पYHRWGNDD LAKK KWEAA DNTCQQALK FA FKQASEI RPQDYLVWFNQGULLTQRNHEEGLK SACLTKVIHLRPKVANNYDNRARLNUNNLSGAMD QFQEATQNYEKALSDPQDYEDFGCLAQVYHQUGQKADK EQAVASFEAFLLAFNPNDAKAYISRGNKDYSGAIDDYKR LEEYTKKALKLNPDDPLLYLYKGLILNKLGYKDA:K
ПADDTQA TK $\square R P N Y A D A F Y N R G A R T E S K D V N A \square A$ PRQATLQDYRTAIQLYTEEDPGHKNLAQAYSQMGKTK E E L RAFQYA| QLIEPDNAGLWSYHAATMKQGNGEDALA HPDEAAKMFQNAI DRRSTDPTPYFNLAILYQQSGHPDALA EFNAAKEAYERVLAENPNHAKVWLYHLSNAGFNNQERAIQ VEDYTKAl QFNPNFADAYHNRG
 NLDKALNAFRQSAEANPNYANAYFGAGUVFKDQQFPEATR
 UniRef90 A0C1H UniRef90-B4D6E1 UniRef90-UPI000346149F UniRef90 K9S2M5 UniRef90-E2C6I4 UniRef90_A0CVT6 UniRef90 UPIOOO3795044 UniRef90-A0BP10 UniRef90_Q46JL2 UniRef90_UPIO0036A787A UniRef90 AOYYE9 UniRef90-E6RDD4 UniRef90 UPIO00382A6E3 UniRef90 I6Z5X1 UniRef90-G7D9U9 UniRef90-M4D5L1 UniRef90_K9U158 UniRef90 UPI0003C4BC23 UniRef90 Q89121 UniRef90_-17MM20 UniRef90_Q7TTV2 UniRef90 C3Y713 UniRef90-B4D4T2 UniRef90-UPI00017E10D3 UniRef90 K9TST2 UniRef90-UPI00037AD8DB UniRef90_UPIO004085576 UniRef90_A4YV01 UniRef90-B3QIX9 UniRef90-UPI000388F875 UniRef90-F2LL65 UniRef90 B0CFU5 UniRef90-A3IS50 UniRef90-G5JAJ1 UniRef90-W5KWQ1 UniRef90 Q7V4X5 UniRef90-K9XX58 UniRef90_UPI00030EF1AB UniRef90 R5VPB6 UniRef90 E4TM86 UniRef90-A0BQM5 UniRef90-D1CDJ9 UniRef90 Q4UB72 UniRef90-B3EG38 UniRef90-Q31KR1 UniRef90 UPIO00466A165 UniRef90-UPI000349DCE2 UniRef90_K2DC02 UniRef90_Q3A2Y2 UniRef90 B1WPR8 UniRef90 UPIO00361475B UniRef90-A0A015LSA9 UniRef90_G3BFA5 UniRef90 B9XLL5 UniRef90-A0D976 UniRef90_K9SB54 UniRef90 K9SLY7 UniRef90-L5KL68 UniRef90-B3RUB2 UniRef90-F9D4W0 UniRef90 U7GKM3 UniRef90_UPI0003613F7F UniRef90-H1XSC4
UniRet90_Q10V65
UniRef90 H0XOZ6
UniRef90_UPI000377A715 UniRef90-UPI00047E1FA0 UniRef90 UPI0003B435BD UniRef90-K9ULK8 UniRef90-UPI0004436451 UniRef90_UPI0004404A57 UniRef90-UPI0003C45DA9 UniRef90-AOYYFO UniRef90_UPIO0047BA3A7 UniRef90 R5FS82 UniRef90-W7XDA3 UniRef90-UPI0003742E00 UniRef90-E1T6C1
UniRef90 D3S7B2
UniRef90_R6JH12
UniRef90_UPI00047CA50A UniRef90 UPI00037F6CA9 UniRef90-K9XJI1 UniRef90-K1WW15 UniRef90_U9VZ88
UniRef90_K2FFC2

D Y DKA\| DILYPDFAKAYMNRSYVENMLLGMKSASKKDYETAQ YFD $\square$ A I QKNPQNQLYYYNKA THRWARRLQPKNA

NFHYAlQKNPDDS
QYRLDAI ASNPALVDAHLNAEADACYRDALRVDPASAEAHF

$\square F Q K A \square N Q K P E \quad W A \square L Y N N L G Q A W L A D E K K G Q A \prod K A Y$ AYSRAI RLNPY DSEVWYN LGSLYYESCNNQMADALDAY SYE S AL K I D P N DP E I WW SIDRALELRPDFAAALANKAVV LLNLQSPDEAFATF D YDATVDVEDDAVEKFVLQCLAFYQKELALYTASKVSSEF EYDRAI ELCPDEH
DFNRAITLNPNHYETYKDA RGDHDKMGEF GAD
 WFRRSI QLKPDFRSAFNLALMLSQURRDLE YRHSLTILDPDESYLHLYIWLI RSQHGEADAANAELTAWL MYKKALILNP
AYRRAI ALNPEFSWSYYN LGDVLIKLQRW EESVSVY

 AFQKALEKLAPDDAP IHLLN


SFEHALD $\quad$ KPKDFE $\square \mathrm{WF} \square \mathrm{RG} \square \mathrm{A}$
FYNKALALEPENEDAQUNR
CFQRTLRTDPNNVQAKHNLCVVYFEERDLPQAEHCLEETL IVVALYNLNVIEESSLLV
CYQQA KLNPHLA GVY RNDARADEKADQSAEADTYWYH SYEEALKGDRDFYEALADSALGQAFRQASEVRPQDHMVWY DYNRALKANPKNKKILMSRAIVWY
DFNRAAEADPSNAS $\downarrow$ Y $L$ Y R Y AAEDYSKA $\square$ T $\square E P E N T D A Y Y$ Q Y
EYRWA $\square E L$ S GGMPQYLLNAA $\square V Q R K A G M L E \quad D A E E S L$
ACS $\square$ A $\square E R N K \square Y$ AEAFF $\square R G \square V R S E E G M \square A D \square R F S A D A G Y$
DLDRALELNPSYAWA
A L A D LE QLENAGGADVAT $\square G L M A D A V Y M L E D W T$ KAVNYY
AVEQCLGHFPDDRKALGQKGLI
CLLEAFDIIAPN
DYNEA $\square R L D P K S Q D A L A N R G L L \quad Y M L M S D A K H A R A D F$
$\square$ I REDNE LEKDDDNCWC LKTMILDKCLLANVHNNNSDLLT
NAKKACELA EWKKGYCVGTLSAAYAEAG NFDEALKYA

DLSTS I LLDDSYDNVLAYAHRGI DYASMKRWP EAVSDF
$P$ L $Q$ ES RRRDNQNAWAHRNLGLYH DAKNNPAEADPALL
ELNKSIELQPDNPYAYFDKGLTIYKQAVVEELISAFLELL NLKKA IIIQPNYATAH QHLCGILRDGNNYKVAREAG
$K A \square Q \square N R R H F A A Y V V R G L V H T H \square G D V A K A E E D F R F Y \square$ AGRRAVELRPDYAEGY GNLANALKALGRM DESLAQY
DMSRVIH LQPD G $\square$ Q $\square Y \square \square R$
HYEVSLK LDPAAPGTKENYSLLKRKDEQLQKKGD

 DYDRAIEFDPENFLAHYNRGLLRV
LLEKAI KQNPRNHQFHY
VWSKAI EQLPKLSN
YLERSVGLDPQ FA $\square$ A WLS $\square G T A H Q A L G A H A T A V R A F$ YFDKVLE INPNFPEAWN GKAVA LEKLGK $\square$ NEA AECY DFDFVIKMEPDNMMAVFNRGLLRA

Y A Q T G NKKSALQDL
A TP MYEK LIASKKPTAEVLNVLADAYM KEKLY
SLEHAVALDPDESRFWHLRGLVLLELDQLE
$L Y R K V L E L D H P D D P D T L A N$
$F L T K S L E S D P N D A Q S W Y L$
$\square G R A Y$ MAGQNYNKAYEAY


|  |  |
| :---: | :---: |
|  | $\square \mathrm{A} \square \mathrm{D} \square_{\mathrm{D}}^{\mathrm{D}} \mathrm{P}$ |
|  |  |
| WED LVK LTY | $\text { P P N P } \square \mathrm{A}$ <br> A $\square$ S M N P |



## UniRef90 K0B797

 UniRef90_U5DJH4 UniRef90-B2JTM6 UniRef90-UPI0004407E17 UniRef90 G3UYY4 UniRef90-DOUQR7UniRef90-D5EB63 UniRef90 G6GOC2 UniRef90-S9RAN1 UniRef90-GOEQD6 UniRef90-O8TNH6 UniRef90-F7H5E9 UniRef90_UPI00042CD016 UniRef90-A0BG.J8 UniRef90-A0A016U4E7 UniRef90-A6VJX9 UniRef90-UPIO002651CA3 UniRef90-UPIO003717615 UniRef90-R7NKM3 UniRef90-UPIO0036ADC37 UniRef90-V9KL22 UniRef90 F3KJP1 UniRef90-UPIO00412F8FC UniRef90_L8GWN4 UniRef90-AOEOL8 UniRef90-Q9VF81 UniRef90-HOTAL6 UniRef90-UPI000425D219 UniRef90-AODDM2 UniRef90-K9RXL6 UniRef90-UPIOOO30A2CE3 UniRef90 LOL2W1 UniRet90_D4ZXP5 UniRef90-R5MPT2 UniRef90-W0E414 UniRef90-K1XVW6 UniRef90-C1MJ81 UniRef90-UP1000255CCA2 UniRef90-K2EFA6 UniRef90-D8FXQ3 UniRef90-G7Q637
UniRef90 K9XPI7 UniRef90-ToSBTO UniRef90-K1WHB5 UniRef90-C7YPE4 UniRef90-F7DCTO UniRef90-EOUJ96 UniRee90-UPIo00367699F UniRet90 AOYK79 UniRef90-D5BUK0 UniRef90-Q2FNJ8 UniRef90-U5QFB6 UniRef90-S8F8U0 UniRef90-Q233T5 UniRef90_G7ZAM6 UniRef90-D4ZMQ8 UniRef90-A7S7.99 UniRet90-C7PP93 UniRef90-T1H4N7
UniRef90-F7QRD7 UniRef90-W5NFI8 UniRef90-UPIO0035074DE UniRef90-10X6R1 UniRef90-A0A026X3Q2 UniRef90-D6TTG2 UniRef90 S3KIE0 UniRef90-B2BOT9 UniRefofo-F4FOO33 UniRef90_U9URN3 UniRef90-UP100041A2AD5 UniRef90-UPIO0037E68CB UniRef90-B9TD10 UniRef90-D7DS66 UniRef90-F7QOO6 UniRef90-F7NGI2 UniRef90-A0A015LCH3 UniRef90-UP100037022BA UniRef90-Q20144 UniRef90-D7AHVO UniRef90-A6C057 UniRef90-UP10003ACA31D UniRef90-UP10003487CAF UniRef90-UPI00046B187E UniRet90-U6EA93 UniRef90-UPI00031DBDD4 UniRef90-Q23VA4 UniRef90_W6MG14 UniRef90_UPIO0034700CA

KDAQALLNNRGII SMAE\| GNV ${ }^{60}$ GAAEYYEKA $\|^{70}$ EADPKYASA $Y^{80}$ RDYWAWYGRGRVMSALGEPEEAVASFDNALAVRPTDYWAW GSAKVHNSLALVDERRGKMQEAAAEYRTASRLDPSDAEPH NNWVAL RLGIIYKQQGKYTDSLDCFDRDLRNPPSHADTW

PAPEY पW
AWLQTGHTAELYDDSDKALTAYEAALRQNPYS TPAM
YNLLG SYHALKQYDKA ECFNETLKDTPNSFKAY VKTWYLKG| TLLALTQNDKAIECFDEVLKLFSNSISDD QE LRCVVRSGQWRSEE RQLFRSALSVCPDNAKVH NSYDAFYNRALCYTKDNEDQMADTVGUVLLLNAGETNTF TFPQCLSNQATLLIETEKYSQALDLLKQALKTDQNNAEAH NYEHAMNNLANLLEAKGRSMDAEVLLRKALRSRPTFAVAW
 SQAEFYNNRGNVKAQFNQLKNALKDYNRAIELDSNYKTAY GLTDAMVNLGSALSALRCYEEAAMAYQDAAVASPNDVTKR $G L I D A M V N L G S A L S A L R C Y E E A A M A Y Q D A L A Q N P D L A E A H$
$N F Q D A Y G R A V I N L Q M N D T F A A F Q D U N A A L K G S ~ K S K L L$

AAKEYFQEALSSYDDDRFKSKNP TYW TCMEAWKRRGQSRAAMGQDAEAVLDLTRAAELAPKDADIY KGKFQESYFAATLQDMRRFEEALLNYDLATKLNPLKATNY NYESALMNGGNLYREHGQLSTAEEY $\square R L A L Q A Y A F P A A W$
NNATAYHNGGEVLVAQGQLEAA DDAYYQA $\square$ ELHPSFETYN QDSDAHNNGG पY LEMNRYQEALYHFDQALTVDPHHKAA

RNAG $L F \square N R A \square A R Y H Q N N \square R G A M Q D Y D \square A L D \square D R N N F \square G H$ HNAKVHYNYANFLKDQGRNKEATYHYRTALKLYPRHASAL HLSRGDHEGALAETECALQRDPDNPDYW AKEDFEGAVILYDKAIISDPGFNNAY EYAPAFYNLGVVLSETNRHAEAMACYELAADKKNPNHALGR
 NLADVHANLGSLYANLEQWPEAIAASYQQAGLTLQPKFAGVY FQGAWLRKAQADGNपKRYDEMDQTCQEGLERTNNVYFW F Q GA WLRKA QALGNLKRYDEMLQTCQEGLQ KTNNVYFW EQLLEAA LAADMDMACSUVPESPRYL NSGEAWGNLGNTCYLMTENLQKAYDAYQQALLRDPKDPMLW $K N Y L A Y E G R A V V C L Q M G N N F A A M Q D \square N A A V K \square N$ TTAEFL
DFSDAY LNKGDTLLK LGGRKDAYE ILTEA TA DDPTLVQAN NTAK $\triangle Y Y L L G Q A F S Q N E Q W T A A \square S N Y K Q A I K I N Q T A N H Y Y$ DSAEPYYLRGQQYAADKDNERALETLNHAIVTIEPENDFAL DNLQAQLERGMSMHEVGMYKEA
HAD $\square W F Q \square G H V F E Q Q R D H V H A R D A Y E R V V R D S P G H A K V L$ NNDCAHINL GNTYFKLQMRDEAKLSFEKALEDNPNSAFIM GLADAHLNLGAALQGLGRAEEALEAHAKAAELLPGDPRPW DFIKHYYSLAETLDEQECWDAALVIYETMIEHNPSFLESP


QA GRTHEAEKA LRRLLRRTSDHPLALD


 ALLNSPEEDEAA D Y $\square E A Y$ L $\quad$ NRGEMYYYVNEHEKALADFDRII ELSPQSDKAY WF Q $\square$ GHVHEQQKDFDNAKAAYHRVLERDPNHAKVL ENAPALSRRGVCLERLGKHEEADADFTHLLERVPAEQTIY
 KNSYAYCSRGELYYKKLRRYDDALLTD L N K KALKM K KATNVYVLI
 QAAELWFNYAVVQTQLGAMAAAEQAYRKAL ALLNPQFFEAH KNVKALINRRNI YVELREYDKALK KNNNYII NDQNNSKS NSAR LIALRAAAFASMHEPRLADRDYTESVRLDPGVMKTY DQTAVGMARAELLDEKGQLTEAIAELTGMLEQNPTPAVFL

 KGISLAEGGDFTAAEAMFRTCVERAPDDPEGY

 CFADA Y DGRGNSYMEYGHDEQAQKDFLKAMLHLNPSCIKAR

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

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 YSKGYVNLEELEDFPCAIACFDKALCARPDDYWALFRRGD NNKGLLNKDEGRGDEAMEHFRTALABAPTDGELHNSLGG FQLGHVYEQQKDYMRAKDAYERVVQENPAHAKVLQQLGW LLHGULYTQL KFWMLA DCDFETVVSGERNATLAYUNIGD YSRAMTMSAVN NTNKSLSSFEMATMMEPDYAAAWEGKGD LQVATLLRNREQFLDKALDKFNYLKELQPNSPEVWUNKGK NLLGISYFEKKDYTNAIENFNKAIEINPKYDKAFNNLALL WYNMGVYYEQASRYDEAANCYDKAI RIDPLNAKAWNNRGV YFRLGLTYKQQQKFNQSLECFKYDVTDPPREEDDWFQIGH YNDGKNLADKGNQTAA $\backslash R Y Y R E A V R \square N P K Y V H A M N N L G N$ INRGLIYAELEQFNFA
NNLGVLYYKQNKDELSQNEYMEADKLKVHNPEAHSNQGV MNLGITLMNQGK YEESLQAYRQSLRLRPGSADCLFNLGN KNLGQUCDLNEDYEKALYYFNTSLETVNSVGKTWFYKGV YQRGLTRTRLHQ AKGLLDFNRALALNPKLFQAYLSRAA YNKGNI ACMTKDFKTAVINFKHAIKIDSAYAPALQGLGL FARSLD FY VVDFDNAI EDLNQAVMCESKFFPAYFNRAL SNLGNVLWELGRGPAALAAYRRALQLKPDFAEASLNGGN MGKNQPKGADADFNKDLKQNPKNDEALYNKGL TDRGSDLLKLNRPQDALDSYEKALNDDNNFYEALIGKGN HQRGLI YFKL RNYGRAAEDFRRATAADAMSKLSWNHDGL HLKGKVQDYLMNNYEEALYNDDQATNLNPESSKYYSHKGR S RGEAY ALNGQLDLAMADFDWLIEREPDHVAARLRRAS SLGKVL GLQGRWQEVIACYRQGMEDNPRLLMAMQTLTQ
 WNQKGN
YNRGLLRAQVGDDNRA DEDFDFVLQDEPDNMMAVERGGL NNDG TLTRDTAEAKMYYQRALQLHPQHNRALFNDGN REKTRCLALLERPLDEQLACWERVSALDPEDHHGWNEQDV DFRGNAKLKLRK WGTAIEDFNKVLELKPNDDPCLINRGT GNDSDALSEHAGDVALAARGYERALTEDPNAAEATYNLGV
 RNLARLFEQDGKPEEGADFWYDALMLEPDFTGETFLHVAS NCQGLALLEGLKRGYDQALALYNAEATKLKPDFFVPFNNRGE FGKAMVMHLKRHPQQTQHFDDMALQLDPAHVASKYHTGLD KGI TVEQLQGEFDQAEASYKKALE: EPNFAEVYANLGS YGIG GYDRYGSYDYAEEAFS QVMH QPDFEKIYFRLGI LVRSEAALDGGNYTGADADFTQAlALAPNDPDAYYNRAY NSLSEAALDLGR LNDAKQDLAQUEKQYKDSTRFHLVKGN MRLGVINYNAGNVEQAEYH LDEALSIINSNSKWALLWKGV MYRGACYLALGK FREALTDLDMAIV DGAEQAEVWVLKGY WIRRGGELAAQGKRQEALESYAQALARDPRSAPAYLNRGN QQLGWLYHQDGSSFQNQLQYLTKSLEADPTDAQSWYLLGR TNRAVSLRHDGRMAEAADALRMAAALGSANDPATLSALAA NNRGKILVNQNRYEQATYQYQULVNQ NPDSQWFYGSLAD
 RYRGNLYTYVNKPALAA IIADVSKAMDLAPKEAESYAVRGL STLGA LVGSGKHDEAE RFLRAAVKLNPNAQAALYNHGL YYRGCILREI DPKRALQDFSVSVLINDENFSSFLHRGII


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UniRef9-G6DGY6 UniRef90_U5QFB6 UniRef90-S8F8U0 UniRef90-0233T5 UniRef90-D4ZMQ8 UniRef90-A7S7J9 UniRef90 C7PP93 UniRet90 T1H4N7 UniRef90-F7QRD7 UniRef90-W5NFI8 UniRef90-UPI00035074DE UniRef90-10X6R1 UniRef90-A0A026X3Q2 UniRef90-D6TTG2 UniRef90_s3KIE0 UniRef90-B2BOT9 UniRef90-F4FOQ3 UniRef90-U9URN3 UniRef90-UP100041A2AD5 UniRef90-UPIO0037E68CB UniRef90_B9TD10 UniRef90-D7DS66 UniRef9-DFOIO6 UniRef90_F7NGI2 UniRe990-A0A015LCH3 UniRef90-UP100037022BA UniRef90-Q20144 UniRet90_D7AHVO UniRet90-A6C057 UniRef90-UPI0003ACA31D UniRef90-UP10003487CAF UniRef90-UP100046B187E UniRet90-U6EA93 UniRef90-UPI00031DBDD4 UniRef90-Q23VA4 UniRef90-W6MG14
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KYPKAYEAYQQAVYRDGRNPTFWCS GGVYYQDNYRDADD LINAWRNATVLKPEHSLAWNNMIILLDNTGLDAQAEA FQDDNAADKINATAEFLTNRGVIHEFMGQQQNAMR RR LNALEQAYKLAPEMALLYVEKGTMYRKGKVIEEADK
 QRDYGUVLMLG
CKD
IVDYDKAlEDDSKFAEAYYNRGLTHDYLGNNRQTQ
EEALNFFSRALEGKPDDALIYKLRADVRGKLGNEDALS VALDKAKDLQPKDPDDWDDRGEILKAGGKQQEAN LSDFTAALRVDDKHKDSRLMRGVVLHGLGFREAVA LDRAGADYKRVI ELEPHNTLYHTNLGDYHRWDKTQEALE QYLPCI LQCEQLAASQPQEASVYLLWGKALMAVGREEAQQ WAEYEWRAAQQPATGRAFAEPAWNKANVLNKMNLQEALK SFEG TEDFKQALRTHPNDDDAYNNRGTRTQLGDNKEATE EGAIVALDKAI ELDSQNETLWDTKTWVLTELGYEEA: E KAEAALSSNYRKALVADNDAAYLWDNRGYALFSLGYQEALA HA YHKTLELAPHRMEAWSNLGGWLQEQGRYRLI H KYEEAHDLYSKILKLDGTNATAYMKR
NAGAALEALQRA乌AADPSYAVAHNNDGVLLRDTGVPEADA
Q DEA KGFSKA LLNEAVTTYRFGLDLNPDYFWSYYNLGNALKKEKWEEALA QVQAALECHARALALAPANVEAHNYANAKELGHDEAAVA LVAYNKAI EVNSDSYEAWFGKGLEEALQQYREAI K HFDAAVADLSLALTFGASGPGBYNARGLAHRGLGLYEA:A KFPQAI A IYAKAMA DYPNVAEDSYNDGETFVNCQWESAIN DRAUQYLEKSVNADNQDAQSWYLLGRCYMQQKYPKAYE

LSDYNKALSLKPNDALVYNFRAKVRCKIGLLEEAMA DWPKAI AYFDQVLSLNPAEPYSLNNKGYALLETGKEEARA
 DDPQATSAYEHVLKLEPWDGDTRYSY SILKAELSDDKA LRHDARQRLLKLLDKDATNERVHFNLGMVCMDEGDECAER Q SDAIDAYARAAELDPSN
NKDEAYKLFKQVLNINPQNTTAHYFTGKDCKELGQQQEAL ALHR QALGHRPDFAGAWNNLGN KWEEADKVCFESLKNDPNHYQAYTQUK VNDKHDGRHEDAH D F SVSLLLDDSEENVMAFMHRGULYTDKRWEDADP
$\square Q C Y T R A \square Q \square N P A F A D A H S N D S T H K D S G \square P E A \square Q$ AAYRRALALT PNFLESWTGAGLLLHKKRHDESVA EAAMESFQKALMLNQNHIQSLQLRGMMLYHHGLQEAIR NLSNAVKD NRALHLYPDKSELRILRGQYLTESKKYELAS ${ }_{M}^{\mathrm{R}} \frac{1}{\mathrm{Y}}$

ПDDYNVATR DDSTRATLYNNRGПSYNSQQYNKA $\mathrm{D}_{\mathrm{D}}$
 QUADA DAYQRAAELDPNPHV
■ ECFQYYTAALRLEPGNAKFYYRRGYVYRLSGMAESES
SMEDYNHVIELEPSNLLARFNRALLRAQVGNNKA पYDDA पQRFKDA乌RLDPDHUDAHFQLSQVYDETGLKESLR PHFE
YNESKNDKYKKNMSRYDNNYY KKN TKNDK TTNELIEST TS HRPRALADFTTA
LDEAA NDYNKAl SLAPADADSYFNKARALEKQGHMEAVE DSALVELNEALRLNKTNYYGLTYRGMHFKLGDYQNSLK Le DQKL EQVDAALAQQDRSQ DA CSQVI DUSYQALSSVPNESRVHMOGSCHKHSNFTAAEN REKAIDAFRKGIELDPTDAAAHFNLGELYYDLLGTEEAEK
 DYFSKALKFDPENEYLMNRA TANTLLKKYEE LKYDEQALKDEPNEWDVINYQGLILMDMGREEADQ LEDANQAI RLDPKVLPAYSLRALQLABGDRDRALK MLKQSKECFQKALEEUYPNYVSAYUNLGNFYQQNLLTEAKQ

UniRef90 K0B797
 AYARASELDPGN STYALLAKAQMKAKRTK

ESVRDF CYSRAI Q $\square$ NPAFADAH SNLASVHKDSG NDPEAIQSY A INTVINDQPSNQDALYYKSAIVVYDEILESDPQNQDALF SYEQALKLDNNFYEALALNLLGKAFRQASKVRPQDYLVWF AYERVLAETPNHAK VLQQLGWLCHQQSSTNQDGA $\square Q Y$ YFDKAKK吅 $\square \mathrm{N}$

AYSRATRLNPY $\square$ SEVWYD $\quad$ GTTY ESCNNQTNDADDAY VGREALGLDPNHS DMFSLANVLGK SQKYKESEADF DYQEAISLNPTYSLAYFNAGNDDYFSKALKFDPENECATM NYDLAI QLQPNCAEAYYN KGGALIENQGKIDESNKNY SY它TALALDD
CFETALELNNSNPYCHFYKA
DFSAVEVSPRDPK $\square R H T \square G \square C C H K \square N R E D A \square A \square$
DLSKAGEL
 DYKKAIDVQNA RR
A LicFENVYKKHPTH $\square D A \square F H \square G \square E \square A E N Q H K$
S
CYSSII QENSDTEKLEAMEEALKYYDFA $\square Q \square G P E N S E C Y H$ AYRTAI ST


DFNQVLR $\square$ NPNYAQAYKNRG $\square A R \square Q \square G D K Q R \quad A \square S D L$ SCDKVID NPENADAWNMK GSLLHELGR TEEAQICK

VA HKAE $\square L S P \square Y Y N T G R Y E E A \square Q \square Y Q E A A A \square Q P S Q R E L R L$ MCERLAALMPDEAEVQTHLSIARYGLGDLEGADESGTRALL

SYAECERCSPDHRNA
SFEKYAKF $\operatorname{SSSAEEKES\square KA~IIEK\square R\square ~}$
A YRFSLELLNSDFASSYYY
A YGRAL A L D P ERLEARTNLLLLEAFSNRLTPQAFLAEA
AYEKAIVLKPNW
DLSSCVELNKREPSFRDHRAT CY DECCEYQ
AYKQALEDDPDLLY YVYSRLGDVFTE QKNYQDATAAY A YQQAVYRDGKNPT FWCS $\square G V L Y Y Q \square$ NQYRDALDAY DYNQALHLEDHNS
 LIEKSLEKLPENG YALRNLGTYYQQKGD PAEALNAF LYKKAVQVNPDLL YELCLKLALVLKQQKNWYDAIDTL
 WFRAAVHLKPDFRS
DYSQA IA IIDENYAAAY LNRGNARSK $\quad \square G D K A G A N D D W$
$\square S F Q N T \square K F F \square P K K A \square D Y R D \square G L I Y$ YE $\square G \quad N \square D E A Q K Y \square$
RCNHL

S N Y
S Y R T A $\square K \square K$ PDFPDAYCN $\square A H C \square Q \square V C D W T D Y E A$
A YDAARKI NPDYP
NFKRCLQLEPYNEVCQYMKGLSHV
LC
TFKQANAVKAND $\quad$ VR $\square$ LTA $\square$ ASAYEKA DESDKA $\square$ DT $\square$
DYNTA TS LIEPNYAPAYYNRAYSY LYTNDVEKAKQDF DTAV DCNAS IGISPHNAS $\square$ YN $\square$ RGTAYLEVEEYKKA DEDFDMA

D Y K A A TA ПE P D
AYEKVLQUNPHHAK VLQQLGCLYSQAESNPPTPAQQDL
DFDFV $\square K N E P E N Y \square A Y M N R A M \square R$
$E F D K V T Q \square Q P R N L E G H Y R K \quad G D \square Y Q R \square G D N K T A A K \quad S F$
LA EKVNDFKN
AYKLFLRFAPAND
$D \square N L \operatorname{L}$ DRYPNNS
H TKSATDLNP TSVLFHANLGULYQRMSRHKEAESQYRT


AKEDFAYVIESCP FWAAAYFNRAYFYCCDKQYEDAEEDL
CFDR IIELHPDYFPAWYNKGVV LIKELGR TEEALE HLL DADYALNTALNSDSSSSLKTMI
QFEKALQLDPLDYK CLYNLGN $\square Y \square D M \quad Q M \square E D A K Q Y F$
AYRHAARLDPN P

NTA $\square$ R L
KKALELYT
RTALKLKPDFPDAY
NKGLA
NQAI LLT QT L R NHEEA $\square$ KA
TKSLEADDTDAQSW

RRAAEL

EKAFQ】KPTLVEK

S S A L E A NPFF $\square \mathrm{DAY}$

K A $\square \mathrm{E} \square \mathrm{F}$ K $\square$ L A N H K D N $V \mathrm{~N} \backslash \mathrm{I}$ Y A K S R S K S A $\square \mathrm{E}$ E Y

C K A $\square$ T L F K MK K F D
D Q A
QKALTI
Q K
QKAADLYQQQGKSKD
DKAKKL
QRA $\square E L G R E V A K D F D S L R Q N$
A LA QVL
E
$\begin{array}{llll}Q \\ S & R & C \\ L & K \\ R\end{array}$
E $\square$ AAR LIFTDAKK

NRALQL
QKALRLFSD
EKA $\square$ QL

QKA $\square R Q Y T S \quad A \square R \square D P$

LN A $\square \mathrm{D}$ L
EKDLNDLK
K $\square \mathrm{A} L \mathrm{~L}$

T $\square \mathrm{A} \square \mathrm{K} Y \square \mathrm{~K}$ Q $\mathrm{S} \square \mathrm{LEVDQS} \mathrm{DAHSWYYGGR}$

VLALDSKNTVAKQ


NKALSL
D QA I KL
$\square K$ A LDE $\square$

| UniRef90 Q1PWB4 <br> UniRef90-R5KMN2 <br> UniRef90-UPI0003940E9C <br> UniRef90-UPIO003F668AA <br> UniRef90_W0J2P9 <br> UniRef90-G0EKM9 UniRef90 GOJ3L7 |
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DYSKAHDNपGFAYTKKG $\square$ FEEA ${ }^{50}$ AEHQRALLK $\square$ NPQDMEAK RGAYQVQTKAYNDALETY


RGLSKYNDNLLEEADEDFTDADDYCPDESYDY DKAEVFYLLGNFYRTENKNREAGECLKEAVKLKDNHEDAL

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UniRef90_UPiooo

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| UniRef90_UPI00039 | NVRKELILS GTLNPLK DLHLLGKLALTKFPKSPETWDHRRW |
| UniRef90_UPI0003F668AA | YQRGLAYYDSGE\\|LLAVSDYT A |
| UniRef90-W0J2P9 |  |
| UniRef90-G0E | YERALVYSNDN MFKNA\DDYTKA |
| UniRef90-G0J3L7 | FQLA MLT DEEGSFDEILNFYQEFIDQDPYNANAW |
| UniRef90-B7K7D6 |  |
| UniRef90-LOD | HRLGRVLQ L L Q G F DEAKRSYRKALETDPEYVGALIG |
| UniRef90-UPI0003463F4F | FNLGKVQSAVALS EDAlR S F K Lailalin |
| UniRef90-D5U5N4 | YDRALSYSKLNMFDKSIRDYTKAIEINKNEDDAYYNRAS |
| UniRef90-HOTCN6 | AKLGAALVDAARFAEAASTY QAA |
| UniRef90-G3WZ57 | TLLGH EFVLTEELDKALACFRNAIRVNPRHYNAWYGLGM |
| UniRef90-K2BKJ4 | Y NLGLALD VKQNAFEEAVGVYQALLEERSPEHFAARFHLGC |
| UniRef90-UPIO003955 | NNLGG |
| UniRef90-B6BWB5 | FNLGAVKFNLN DFDGALDNYDQALSIKPDFVEVYFNKGI |
| UniRef90-M1Z250 | LKLGSAYWHL RQYQMALKAYHQSVQ |
| UniRef90-UPIO0039: |  |
| UniRef90_U210Y3 | FNKGNALVNLDKYSEA\\|LVY KQTFEYEPPNADTYCAIGE |
| UniRef90-J4TTR9 | F QLGG V L ESMGE WQGAKEAYEHVLAQNQHHAKVLQQ |
| UniRef90-W4QT45 | YGAGTVYYK QDQFEEAVKMFKQALVKKLDETDVHFMLGM |
| UniRef90_Q7Q8R7 | YNLGVVFLEQGKASQA L A Y LD K ALEFDPEHEQALLNSAl |
| UniRef90-S3KK86 | L L RGEMYYYVDENEEKALAD |
| UniRef90-UPIO0036E | S WS N |
| UniRef90_J9GTV1 | YYRAYAKFTLE DYMGAAADC |
| UniRef90-W9V6P4 |  |
| UniRef90-U5HFW5 | DIWFFQI VYEQQKDLNAAKESYERVLAENPSHAKVLQQLGG |
| UniRef90-U5QN31 | Y NLA GVLLSLAEDLHAEAACMRRAI A LRPNDARAHTGLGS |
| UniRef90-G1NHT2 | EQRAEILSPLGR1 |
| UniRef90-K5WLG3 |  |
| UniRef90-R5JDY9 |  |
| UniRef90-UPI000479 | Y SIG TLLFFS RDLFNEAKNMFETAMKKGLQS SDNYFMLGL |
| UniRef90-F4P214 | GALGHCYLMLDDLQKAYNAYQSALYHLD |
| UniRef90-D5A142 | RGLLCQEQKDYGKAVDWYRRALEVYFQWPEVHYNLGF |
| UniRef90_A6UNX4 | NKGNSLNALQR YDEAI FCFDKA |
| UniRef90-Q11Z69 | Y HMGVIYQDMG NFEESINHLKEAI MLNSQHEDAI Y E L S Y |
| UniRef90-UPI00046C16EE | SSLASLLLAE QEQFKEAQEVYQAGI ENCPESSDLHNNYGV |
| UniRef90-F4BWA8 | LFKSMALTSLGTKFDKAlEAHERAI EIIAPENATVWTYKAN |
| UniRef90-U5DTW8 | Q $\square \mathrm{KAAAQLESG} \mathrm{D}$ ( R A GI A TFERALSIAP K N |
| UniRef90-D5BTF3 |  |
| UniRef90_UPI0003462AED | NLG AVFLKQQQYQEAAKYFQQAILIKPEHDKSYNN |
| UniRef90-G2DXG9 | CNLGG LWQLKGDSTRALAAYRHAI ALQPDLYLGHYNL |
| UniRef90-D6THY8 | FQRGTTYLRLNEAHKA LQDFNYVLAHEPNLARAYAQRAE |

YCYGVALDRGNQ YEAADEQYSAYVALHPDDVECWFSLGS HNGGEVLKAGKRPKQADLSY QKALKVNPQSTMTYRSLEK TSRGF L RTDQKAWTEALADFDQAIALRQDFVQAYVGRGR NADSLILRSREDFPKA EYGQTDLKLDQNNGEVWGSLGH
 YFNGLAYHFLGKNIDEALTMIEKSDDLYPD Y YNGEALHKMSR YKDAVSSLESAAGKD
 N NYGVFLVDTGSSPETAVSHYQKAI ELSPSHHVAMVNLGR

 $\frac{1}{I N R A V C Y H M T G D Y Q K A Q R D Y G Q V L M L G D E N S L K V L I N R A L L}$ YNRGQLRVQVGDDNRAVEDF DFIIRLEPGNVMAI YNRAL Y $\square R G L 1 H N E T N Q \quad L G L A K N D L N T A I K R D A N D S R A L E S L A Q$ HNKALTLDKMNR LEEALQSYELAUQKNPEDSNYYKSNSE TSKGIVYAKMGLPEKALETFDNKAPIMRPDNAETWYWKGN FARAYCFE LNNELQKALNDYNKCLKLEEKQF AYHNRGS SNLSNLLNDLGQ, PDEALAMARRAD DANPRLSDAYDNAAA
 YHRGQVNF ILGE FDSA: KDYEKSTSLLDDTFDFSQVQYAV D Y NA L GVA YL LK F NLAASLKRLGR DLDEALAELQKGLLLPDYKVRTHCKIGA FHRGNTLRECGE LDASI EDLTKAADLDPKNAAVHNNLGL YKRANNKRKVD DLEGAL QDCLKSDELDNENAMAYLILGH
 $\begin{array}{ll}L L N A N L L I & Q Q Q V D A A D E N Y Q K S L Q L N P N Y P D I V N N L G L \\ W F Q D G H V H E Q Q K D Y A S A K D A Y M R V L D S D P N H A K V L Q Q L G W\end{array}$ YGLGTIYYRQEKFEFAEYHF KRALEDNPRSSGLHCFGGM EARAIVFAS ERDYTHADADDRKAIDIDPDSTRAYNNLAN TLLGHEL VLTEELDKAADYFHAAVARDPRHYNAWFGMGT $F$ GVGTIYSKQERYSLAE WNYS RALSDNPKSSVILDCDGM
 NNLGLSYFENQLYEQALAKFQNAIDLDDSK ATYYNNKALL A GLA DCWAPDDVPDERLLAMSAKALEDDPDLAEAHASRGL RERGNLLFKGG DPEAALSDFRRAAKI SPDNMKVQARDGA
 KELA YVTVKL K DTENADKYYKQSLKLDRNDENTHRELLEE FNRGMANYQQAKLIEAGSDFSEADN ID NTYVMADTQRAD



TYTMK GMVVND A|I NTLY K NLL|AKDPSNTI|ARLDNLADTYMENG A YEE QGDYD S AVEIVYEKLI Q DMPNMPDVHSNLANILLYVKG $V L Q Q Q R L V Q E E M N V C S S E A A G R Y P S N Y N A W S H R D W V L D Q H V K$ A RLLA L K NL P G A I A D A D Q A I R F DR S Y A K A Y H L R GVVVYRKL G ELAAKGNHADAI A AYDRALKLLPEEADVWYARGESHLDAV T Y F K L E E Y N K A I E D Y N K V L E L N P D D T E A V Y NK GLLCK Q NL G


 SYCE I E EYYK A DE DYNKVI E LIN PD D DEA YYNRALTYSK CLAA DGRLAEAEQAYRTVVARDPAHKAAWLRLGNLLADRY IVYK QE K F S L A E M H F Q K AL D DN P Q S SVVLL CH I GVV Q H A L K
 $L L K S Q G K K E E A V I L L D R D S I K Y G P E F A D A Y S S L A S L L A E Q E$






 A LKA L G RVDA A VYHRSRNPEVSVQQLLKKSLESDPNDPFSWYLLGGAYMTVN



## 4795DFA

## $\rightarrow$


46C16EE

## 3462AED

XG9 | Y8 |
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## 441FDF6

## 3440994

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DY DEAl| DEY 170
170
LYDEAI LEYENIIRTTPNNITHA
Q WT S
190
CK L G E A Y A EK G NQTLGFVYOETKN DUENALSHFQTAVTLNPKMKOWTSITNQQLGFVYQETKN $R 1$ QDA A NFKLAAADLYLQQKDKENCRLCLI QQLQPKPTPA KPDAALGDFSHVITLLRPAMAEAWAARGQAYLAM

KLDDA I VTYKKSLAADAKASRTH FNLAGALRNQG $R Y P D A L T S L D G A L R V D A E N P S A H F S R G W V L L Q L K R Y R E A V$ $K \square T D E L A S T K Y W V S M H V S D H S G F H Y R Q F L L N S L D G R T$ $R Y F E S L H F Y K K A L E L E D D N P D Y W F A D A D A R Y K L G Q$ DYTAAYDAFQQAVNRDSRNPDFWCSIGVLYYQISQYRDA
 TYDKALDNDNAAI KLNPKSAKLYNLRGRLHEHFKRTDDA AFDEAA DVYRQVI PLLPARADLWNNF GLLI LT T Q GR
EYP QANA DLDDYMLQRWPKYY RTYMDKA QVALEEKDTVG
RFEESLAHYGRALDLKPACPLAKSQYAHCLDKRLSFTQDR NFSK A YE A Y Q Q A V Y RD GK NPAFWCS $\square$ GVLYYNI T QY H D A
 RFQDAVEKFEKA I EDIEPMNVLAALVNKGLALFQWKNDDRAA
 K F D L S L D CF K Y I L K CP P S P LT E IDDI WF Q IGHLL YEQQK


 RYE EALDRY ID R ALE I DP QTA GALENKA GI L S E LGGRQNES D A IP E A I A D F D R A L E FA P E N L G G LI D R A L DCF RQA V K L D P QDH
 NFEKALKYFLQATHVQPDD DGAHMNVGRTYKNLNRSREAE DEAESSIRLLEVVAVAKNPDYWKA WVKLGF LLSRSKR
 DVVRADDDFSRAAIA QAPQTERAAYYARAELGTAKGBYARA



 RYE DA L K DYREAAS L QPSNKETARLALDAQVLDAMMGQTKEAE
 R NK E AV RMFKKA L D IF SHSDK GPNSA DCLY NLGLCYMME G
 KFS EA LKK MNNTLS DEPKNVAA DE LRGT IMRKLSNY
RFEEALLENYDLAALQNNPEDSDFYKNKADTLNNMNR

 DMQQAFASSFKNAYN LDDKNPNYA LI KAGGIVSNNDGNFKAQS
 K $\square$ DEA $\square$ ACFQSAI ELA P D W $\square E A H Q Y L G Q I L A R$
ESKEARDFFVRAMQLDPRNFEAFNNMGSLLAAAGQDKEAA RYDEALDDACNEAI RRDSDYVNAY DHRGNVYCETGRYA EA AFEKA I E DFSCAL NLDPDDGNDYFNRGNTLLAMKRY D Y E Q A L K Y Y D K T i E L Y E E Y A QA Y DN R GNT KI N L M M IE EA $\square$
 KYPK AYEAYQQAVYRDGRNPTFWCSI GVLYYQINQYRDA RFEEA LTELLK IVRNFAPRESSVHFMMGKVAKKLG
 KKE QAL QT LDNTAAMLDPKNPLARFHRGSIYFSGGKHQEAG
 NARAAVDAFCRAI ALVPDNGQAYNNLGNALLDLDE
NKEEATRKMRNLVRKYPMFPDMRAALTAVLWEQGKQGEAE Q NK Q A HEDFDSAIRLSPNNPKFYHSKGLAYQDVGDY DNA
 RMSEAAADFEAAVEQAPE WAQGRLLHADFLRMNGR
 RE Q D A V R H Y R DA I K F N P N D Q K A H K A L A N L H T Q S G KL A S A SYDEALNAFNKAI QFSPDNAEDY $\square$ NSATVVYYRND

ETEEKA I D CYRRAVI QLMMPNFDDAYNNLGGVVFAKSQRHVV
E P Q K A I D M F D A A I K I Q P D H V L S H N G K K Q I E A Q L E K K

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UniRef90_UPIO0034D4B55

QPEKA\| LIYNKATASNPAFSKAYKEDGSVYMQTGDDDA\|IS DLNAAISSYQSAYLLTPKD $\square D \square Y$ VNLGAFYDKEDI DNALQ DLVQKQVVNEQNPSPQKEEESAGTEAACAEEQSRLDEEME
 RYEEADDYFDVFGIKFNSCYADAYYYRGNAKFDEHYEEAAU A Q $\square D M A F K Y F K K S A K \square D S E Y D D A W F G L G C M D K K K K Y F E A G H$ A LT R

KDFNAI GHY I NYDN $\square F$ VYYN LGILCYLEERYEESVN
 H $\square \mathrm{DNA} \square \mathrm{QNYQQVVRIHPDFFAAHNNLGAFLAKQHAGFALCH}$ SPERAMSHYRQAI LLSPAHHVAMVNLGRLHRSLGQNKEAE N LK L A DTEYTNA INI ENDNPEFFTDIGDALWHDGNVDEKK WA FQQAARYDPSNADAHFNLGAFAAAHRRGEARS
 LDAYTRA RLNPYDSEVWYDLGTLYCNNQLSDALD

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

EYTLAKEAYEKVLSENPKHAKVLQQLGWLFHQCSQERATS LE ELGTALKKWPQTASLHNNLGRSLLKQDWDRAIA I T YFDKALNVDPNFEFA
EYEKALEYFFQTMDMEDKTADVFYNDGFCYEHDGMHKADE EEALQVYREAAALDPSNKEIRLALAQVLAMMGQTKEAE
 $D W S E A V N D C D Q A L K D N E D D P E L L N D R G L A H W R L G G E N A A K$
$N$


 WDKATEAYERVVQLRPDLSDGHYNLGLCYLTDDKTRADK QAD
L ECFKY VNSPPPP DTEED DWFQ GGHHEQQKDFDNAKG REKFYKVLELSPDYSWAYFNLADDYEEGNFDSADN IIECFDKIIKLHPDYFPAWYNKGVALKQLGREEALD
 TELDQFK CCDQA ELAPKETPLYYLMGKIYKKLGLDMALN 1 A CCDQA LQHDPQDHQAFY
QMTSHI KYDKALEYYTKGLSVSDNVTFGYFYDDGVMEKT KKYDD IT DLDT TAI NMDKNSY DAFYNRALCCYTK 1 N NDQMAFDCFTKAVKANPDFAEGFYQRGLCKVKLHKDSSVL TVLLARRDYQRSIILEPECLVGRVNLAYNMQUSGSYKA WN $F D K Y N Q L V V D D K A E V D H E Y E N S ~ Y R G K V Q N R H L D V E Y M P ~$
D SEEALEYQDTAIQUNPLSAELYNDKANTLDKLNRFDEALD

MFKESLADSSKALLANPSDVKLLINRGYAYAKQQFEDADQ K Q Y Q Q S L K LT PNDADAHNNLGNVLRDLGLDEAIA AAFDRAAA

EEYLANFNANAKKPNEDAVYNLSGAKFENNKLEESLE

$D \square T$ A AEE L CR KALD KDEDCDVAVAT $\square A Q S \square Q Q G K \square Q D A \square E$
 LS SYEAAERLSSDDDLILFNKATALMLDERFSQASE EEALQDFNDADNKVDTEENYFHCKGDAYQEMNDPQADQ
$\square D A Y S R A \square R \square N P Y \square S E V W Y D \square G T \square Y E S C N N Q D A \square D$ HVDDAMKFFTTALYFHPKDNHLIKAADDKDNDPEDDDDEQ AD F DRVLT T D D PMNNAAI T N K
R
E L E ELK EVVPKESVVFYLIGK $\square H K T N D D S A L M$
$\square P$ A A $\square E A Y Q H A V A \square R P E \square P E P R S N L L F A Y H Y S D A Y D V R A$
$\square$ QFFKKA V VQEDHVPS $\square Y H \square G L M Q H K N G L N E A D E$ S WARD ERAERALNQNPENSGPA MARGALADAHLGDAAR

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TMSEA $\square$ KCNPDTAELYY
A YKQAARGDVNN
CYKR\LQLDP TNDQG历HNLCVVYVERGKLLQAQDCDSHAH AFE\|VNKMIKMKPSWIGULYGIRGLLFSFRGQYKEAVEDC NYRHAVALDQNHAAAF
$C L T Q A L L L Q P K D F E L Y V S R A Q A \quad L H A L G R F G Q A \square A D Y$
A Y Q R T LQ LD P G N T
NFK VCLD L K P
D Y D L A LD DD P N N F $\square G H Y N R G L L R A$
$C L K Q S Q D S D P A D A Q T W Y \square$
$A F L K A V Q L Q P D$
$S$ AFLKAVQLQPD SA\|IQHNLGKALQQQGSH $\square$ A A $\quad$ QDCF FYRKASKADAYFHEAYY G KMTNHDVTEEAECLECYRLLSAIYSK QERYSKALEAD A LGNATDADPMNGLAWKVKGVL LWRELKE YDDAVNAF DFSDA 1 A LDAPSHDEPWLNRAQLYWQQRQLTEAQQDLAAQAH SYNKAI L HK P DYFEAQHN LI D D L L I Y EQALLASTPEN
$\square Y R Q A \square S M R P D F K Q A Y \square S R G E L E A Y L K A D E L D R N N A D \square W Y$ AF QEALF LDAEDADAHFY VGLAHMDLKQMREAYEAFNSAL

 HFDQAI KLLLDKK LANKAI ELD
CLTTMALDMDNKNNSNY $\quad$ RS $\quad 1$ ID
A $\square \mathrm{DKALQLKPKDPK} \square$ SE $\square F F T K G N Q \square R E Q N H \square D K A F E S Y$ AVR $\square Y$ TDL $\square K$ QHPKRL $\square Y \operatorname{NGRAEYYAKL}$ KNYKKA $\square A D Y$
DFNRA $\square$ T LNPKHYQAY $\square$ SRDAFYGLKGRYSKA $\square L N C$ LFTTCLKLNPNYRA MYQSFIQYNNGVKSYVASDE VVDRFNKEMAEKSDAT DHNA G $\square D D \square E K L L L S N V E V Q U L R T R G K \square Y R G L C R Y K E A L A D$ KYYDLA $\backslash$ QKEYEES IGYYN

DYSKVLKDDPQNQ HALHNRGDS DDKDGKQQ DA DEDF CYQQALA I NPQLH HALAHLIHQKQHICDWQGLDAE
AFDQVLAQFPRSASAWFN LADLHR
$T \square N K A \square D L N P E K S E Y \square Y G K A S \square N L K K E N Y Q N A \square S \square Y S L V I$
YFERSAK DEPELINALTYENASRAQLKFDQQYPE

CYERLKKKFPDNAE Y K K S ALGVL SYKKA KGKG DF T TA A A L QPPDHASAY LERG $\square A H A$
A Y Q R A A E $\square \mathrm{D}$ P T N Q H $\square K$ A R $\square S L L R$
HFS WATDLDPKGAN
Y LD E A
SFTKVLQADGNDRLVYESRGLV YQEMKNHEY ADQDF ACDRASADDPDD\|VAQYNLACVH VYADATEKHP

ITYESIVKAHPEDLKTH ERLAMAYEK SVEEAI NLDKDHSYYYNNRGLYKLYYLD VFQHVISIDEQHADSYFN $\square$ GVY KPDDALED AFARAVKLNEDDKDVYYYDEA $\square K A Y G R A L D E K M E E A T A M F$


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UniRef90-F2U2I9
UniRef90_S8BJE9
UniRef90_G8TPF5
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UniRef90 K9YYE9
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F $\square$ A $\square T$ FTSFNFYAQDAKTAEFKKADYKCAEEQYSKLAQSE VAPQKYTATEAEMAALATTP N 1 ND | $A$ |  |
| :---: | :---: |
| $S$ | $L$ |
| $R$ | $L$ |
| $F$ | $N P$ |

$\square \mathrm{NR} \mathrm{H}_{\mathrm{P}}^{\mathrm{P}}$


K P T D L E N P K N R Q Q A $\square K ~ \square N ~ P ~$
$A \square E$ E N $\underset{P}{P}$
$P$
$\square K$ A D A

QA A AEAFYQALSVDP $\begin{array}{lllll}A & V & A & A & D \\ A & Q & \square & N & G\end{array}$

A AVESMP A I QKMP ALLR $\square \mathrm{NK}$ E NFLKASELD P $A \square R L D P$

E L E P $A \square R L D S$

N P
 A L K L N P A I D I E P

Y V H NK L L L Y R Q R K Q WLD R LVDDTTCTLLLLDPDFTTAW

A D T F GNLGG $\square$ A Y A SK GEY DKAI A YYEKALEKHPSTANTY Y LAFA HNMRGTFKYLKGDSADALADVTKSIDIDPTMTQSY A Q S VY L E N IA S S Y A LM G NK DEAENYYRKA I AVVPNSHKP W YYY K R G K Y K A V I H E WK S A L S D L D K S I E F N P NVVMIS Y

 S YEQALNNLGNLL M N GQLE EAKSILSSVI ENNEKDLIA Y

RHASALNNLGTLTR DTAEAKMYY QRALQLNPQHNRAL $N V A V L Y N N L G I T Y S G K G E Y D R A D G Y Y E K A E E K H P S T A Q T Y$ $N$ YAF ALVVNRAF DYMMRSRFDSADEDDNRADDLAP GLAAARA D QLAAARDNLGSSLKQVGQFEEAEEDYRGTVARNPFBVRAR KNYDLLFKKFMILLGLLKRFEEADQCLDGII NYYGEUPI IMM RFELLLSAVLRNHQQRCYTKEALEENARLVELNPEVYTAW
 QNSSTLNNLGYTYAYEDRHEEAIAYYEKALAANPEDATAH



 NA A EA Y LLLAR L Q S GPDAGDKA LA DL E K A V E K R P D Y L PA W


 F Y NRGLAKARQKDYAGAIVEEFNQALQLTPYFPEAY
VYFR LGV I Y K Q Q H K H D Q S LE CF QR DAE DP PQP LDR P S $N Y G L A F A G K G W T Q T Y E R K Y E E A Q Q F F D L A L E R N Q R D P N A L$ $D \square A L L Y D K L G Y K D L S E E K Y R E A D L L I E E K$ NNRGLI F I E RNAGDEAL KYFNKAD KEDENFKEAY
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$V M \square K G R S A L Y F E E Y$ L L A $D$ Q Y F N Q VI NAK P Y L H L P Y

 K D S L I L C Y Y G E I L K N L G K Y G E A V I Y F T K A I N I D P E N I H NL
 A WD NVIE CYRSLGQLEKAERLVRELVAKDDHNP
A LA Y NWRGTMRT LL GNHADAMKDF DK STE LDDPAMDQA Y
 DNAEVVQSFLGKAYLEKDKSVDALLKVYEKLVKINPENAENQ

GT T LIQQGNVEAA I QA QFQQA\A LDS QLWEAH $K Q A K D Q A E L G R L L E A A G E L Q Q A Q K W L E S A L G L Q P E L V V E A R$ ANALDKRGSMSMQFQKPENAEADFVLAAKVDPENSDVF
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 R S A Q A WR R L L E E ALLL L A G G R P S E A All
 $N$ L G GL Y E D RGNDK KALVVYYKRALEQDPKDVDN Y TA L R A R S Y E ELGELKK A E A DYRK L L A L D P E YA Y A Y
 NFA YA HTLLS GHE YVGNEDF DQAKKCY QKAL TVVDERHYNA W

QLFRSSLEATPASPTLW
LD S P L VDVM
 $R Q Q S L Y N M L G E A Y M R L N K L P E A E H W Y R E S L R A K P D H D P A A$



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GNDK L H N N Y A MELKK SAGRFKEAEKYY K DA MEDEPDYAEVY SYTKAYSRRGAARFALQKDEEAKKDYERVLELLENNNEAT


 S NVMARHHLGLVY LVKA GRTQDA IESLEKALALDP QSVE SLL

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 FNRGDALYEQQDKDAISKFNHSLIYTDNKYDALYYDAL LQRGLVYYDSGAYQGAVSDYTQALNFLEYSGLGFQYRRGL LlaRGLVYYDSGALLQAVSDYTEALGRLNPECVEAYYSRALL DTLFQIVYEQKGDYDRARSAYERVLDDVPNHAKVLQELGW NGRALTNWWLGRDYAAATRDYEAAI AEAPSWLSVYVDLGY YYGLGVLYDEDGFLEDAIEYYKTAI NLDNNYDRAYFYLAN LNKAALCLAMNK VDDAVSCYDKLI LKYPNEGKAYFGKGN 1-PLE SLLAKAEGKPEAPPMPVKTADADSGKDYDFWQKRAL DAASALYTRALEFDPTDPDALHLLGA $\square P \square A R L L L R G R$ LDQALRYADRAI ALAPNSAPAHAIKAM FFRSLAKLELDDFTGVEEDSNQLLAMNPFFVAGYQVRGL ANLGSIHGQKGNKQAALDYLNKGLQUPENADMYDTRSK TNRGLVLFSLKR FDEAQADFEQALTLNAHDWQAMRGMAY LNMLEIY IUSDDFDKALVFCDKLISQNKANYMVYYKKAY NNYGVFLVDTGDSEGAAVHYQHAV RGKKSHYVAMVNGAR TKRASVNGELGKPDKADAEFLKKALEHSQDDPDVYYHRAQ NNRANYYAACGE $L$
YNLGLARSQGG DLRGAAEAFSRTDADQPDFAVAYANLGG GNLA MLCAKKGDLDSAEKLLRQALEDDPNYKEGHLDLLGL HHRGQ L NLLDKVDLALADFDKCIELNQDFAMAHAQRCY RQTKLYLEEKNMPMFEQAWAKLKKI QPSNADICSDQGC ATKGTALYKLSK YDDADEACDKAVKLGRYEALGWADKGN YYKLGIIRFKLKKYEHSIGSFDQTIRLDPKHKKAHNNKGI YKRGIALFKNKEYFQCIKDLDKSYEQKPDSNYTAHYHLGV YSYGNLYFNQEKYPEAAGMF ERALADGPETNDLHYMLGM NNDGVVHDKDGEYDKAMEYYLEKLGHDHPDVADSYKNVGN AG|GKVYWKLENYRQAENHLLIDAAKKHDKDFEILFLLGR LLRLGRAYAAAGYRKHA LAAAYQAVKMSPADPTAWFALGV YNYSDLLIDEADD\|AQGEALLQEAIAIEPYFSKGHATYAD TGIAKLAWDKGRFVEAENNLLKAAM LLAPEDYDVLLFLLSR YNLGLVQKEKGKLDRADNHFRNARKYRPQAPEVPYHLGLL ARLAELLGRLGRNKAEALEHARRAVKVAPRHPEALCTLGT WGLGN CLKQEK FDQAAQLFTSAVQINQRSSILFTYLGM FNLGFTLREANQDSDAAEAYQNAARLRPSYERAFASLGE FNKAVQLYEQG DYEAADLAYQEVI ERDPNRIEAWFNLGM NNLGKALAGDPGRGGEAVGDYQAALRINPNLAEAHVNLGD LTYGKLLAITGQKTEAERYFLKADQLDPTKGNCYMHYGQ VKGGLMYQAEQDPL CBEYFITASQARPNNGEVLYNLAY YLLAAARTRTGNGYRNAVTEESEALRLAPRHYWSVMQRGIG
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$\qquad$
130
140
150
160
V WG NVVALYSHGLAAVTEENGRMHQMLLAVALWERK $V L Q R L Q K L Q Q E M K V C T E A A G R Y P S N Y N A W S H R I W V L Q H M K$
$I V H S L L G E D E E R D A C Y R R A L E L N P S N A T L W Y G R G L I L H Q W G$
 AYHSKGDYDRADAFYEKAL EKHPSTADSYLGQGNAYYSKG

 HFAEIAKFKEAADMYRKAIKLRPDDFE DMFNGANAHRQAG AYQSWSKHHNAVAAFKQAIEENMNNENALYEDANS DDEDG
 $C S L S L G K Y E E A S E Y F E K D L A Q Y N R D V R V L L N S A Y S F Q L D D$
$C L Y R T N R N L L A M S A W R N A T I V N P S H S Q A W T N L F V V L D H L G$ LYQRTNRNLLAMSAWRNATIVNPSHSQAWTNLFVVLDHLGG
SLWHLQREVELSALAQDLINQDKRNP TVWCVSGNCFSLHK LLAEQERFKEAEEIYQAGIVNCPESSDLHNNYGVFGVDTG $\begin{array}{ll}A & Y A D K G D \| D K A D H Y Y E K D L A D H P S T A T S Y S N L G N A Y A D K G \\ V E Q L Q Q H Y D A A L R D F D E F S K H A P R D P R G L I G R A A D L E A T G\end{array}$ GLMEKGKDDEAADLFRQALAVNPGMATAWLMLAAQVKRQK VYYKLGEYDKVI KLCDLVLEI SKDFYMAHVIKGQMYYLLG V $\square A L L S S D D D E L D L L A Q L F K V D A R N F N A W S Y R R Y I V G L M G$


 1 ARDAGQFVAAEASYRNAVASNPSYAEAWHGLGVALQRQN
$L Y Y K M K R F N E S L D D L N Y S L Q Q L P N N G F C L G G F L G A T L V K L G$ V $L Q Q L R L V K E E M D V C C E A A G R Y P S N Y N A W S H R D W V L Q N T K$ LLA LLAHKWDA AAQRYDRAKTDEPGNAGYWLEYARCLQALS
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 IVIDSQNWPQAEAY ILAOONRKPAKKELGKAVALAPKDPTLSTAGKAOLNMG VLO OIGRAYEADSEYMOAERTESEVADENYAVEGMEWHD

 A L M M L

 T L L I IN E R R Y Q S A E E F F Q $\operatorname{L}$

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 CYVKVGKLFNAKEDYEKILIQQGNVSFEDYYEFAHICVKTN

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RPEEAAALLDRALELKPD DAPLYRTRALWKLESKDRDA KPAEAEKALERAAELRPDRADALSDLAATAMALQKFNEAS FNDDALSKFNKALEINPDDDFILNKRAKLYHSLCLDN ILDDELSSTKHWVSMHVSDHSGFHYRQFLLKSLCCRTGTD VPLKGARHLETAAEGLPDNPVVQYHLGVAYARLGEKKKA DYTEMAANYDKAAETLGS APGKNQWPVFFQRGIAYERLK NHYGAVQDYTKALQLDSEDAHAYYNRGLAYTHDEEMQQA QEQKCLDIFNMAEKNAQTNTQFYTNWGLALQKYN
RGDFDVTLTKENDA VPRSASDYFGRGNARYYLKDYKG D KYNKAYEAYQQAVYRDGRNPTFWCSDGVLYYQ $\begin{aligned} & \text { UQQFRDA }\end{aligned}$ YYDEALKLYEQTI NLQPDYATAYLGKANILYNNKDY EYFKALKYMNNALE EPNNFRVLFNMGVLLKDLGREEEAK ELDDATKWLNRALI NDQNIITLNKKAAVLIKI KKFYEA KHNDAI FYFTKAANIDPESVHNLNRRAGAYFVLQKY RSEDALASFDQALEHQPDLYQAWNNRASILIQLGNFKDAD
 DYDQANATLDELSRVAPKYTAAYLMKGDVALRQKDTLQA D
 MHDEALSTYSKALT DDNDNCEAYGGKALVYLDMGDYKSA HWQDAACAYHRCVQLEPEHFEAWNNLSASY!RLGQKPRAK SDASSMATFRRC| KNFPKVPDVYNYYGELLLDQSNFAEAD DWNCAUADYQRAIATVNGDTGNQRSQCSNSSLRLQVET

 KVSEGVALLRQVVVLAP $N$ N
 NYEKALENFNDSI DTNPGDSDTYDERGMTFFNYGKDSHA DNLLALHAYDKAIEFDKLDSDAWNQRGMAMFDLGCKSLNS DMQQAFTSFKNAYNDDKKLIYALKAGGVSNNNGNFKKSEE EYEMAEKDFNKVVEMQPNNSHAYFGRGFARKGKKLYEQAA EYSKALEYYDKSLKDHPNVATLYNNLTFVYYDKQEY DKA DILGAAGSFNMSLRYDPDNLTAKYNRGLLLMLLIG HFPEATRAYQKSLELEPGNVEAWNNLGVAYEKLGRPHEA ETAKA AADWQTAASKFVLKAD WQNYQKTLASLQKFN LDPKALASFKAGПAANPEKPRAYYYLAQYYKSALTYNKND DGLIGLIVSLNEYINLLEPNNISAYYNRGFGLMTFGHYSWA NAPQALKAFEKASKYNPDFASAYYADGVILFQQEK QYERAVAVLSGAAELRRDHAGTRANLAAALRGMGR RNDEALQVLLELLKNCPREAPDHVVI GRLYRKMGN
 RMADAAAEYEAALRANPDFAEAHYDLGLALSSMDRPAEA LNEAAEKYYGQAASLRPNYPAALMNLGAILHLNGKLQEAE DIDSAVFFYNKTLQKEPRYVEAWHNLGMINEMKGEKYKA MKAEAINDYTAALERDPQFVAALTNRGLAHLDELQCAPAA
 DYEEAVKLYNKAGYINPNYHKAYF QDFAALAQLEAAVRLKAMDARSW QYDQAENAFKHALALINPRNFETYNNL
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DEAVQKपQRSIIU\|NQYAPAYFTपGRПWESRGपDKARE
LECFDRATRDDAGNDPVW
DKA AFYEKALEKHPSTASTYNNTGSAYYSKGYDKADA EKFNTADDMEKAVRPMGMNVLPLINLAVFQSKQDYDEAEK QL

DKA $\square F Y T T E A \square L!F P N Y V K A \square K T R V G A K \square A K G D T D F C E$ YTRALKLKPDDQMTKDNLR
EAYEFAVAI QDDFSSAYFNLGNAYMNSNWAKAEE FAEESMVTMKK乌I EIDD KDASALNYLGYSYADRGDDEALL KNTEALAEYNAYITHFPNDARVYKNLGLVYKQKNYNMTIV KKELSSYSTAFKAYELYPQDFSITFYKACMLDEYGYEEAUS KH $\square T$ TADDLNPTSALFHTNLGVLFQRTNRDKDAE DKAMDYFRSAVVRDPRHYNAWCGUGTIYSKQEKYEDAE EHDKA $\square$ QYYEKSLEKHPSTAQAYTNGG $\square V F K R K G Y D R A \square E$
DYDRAFDYFAEA $\quad$ RRKG $\square D Y D P$
DKA LKY Y $\square$ NK C I K S CPYD $\square R S$ S $\quad$ K K $L V N \square Y \square L F G Y K K A L E$

A LHD LDEALRREPPRSPEAAGDHALRGHLLCTAGHQEALN ALLLDKAVATMDNSA $\quad$ DAF GNLGA KL R DGHMVAA GN
】A A YK K F L E LD K T N
R S A L E K A L K L A K D F P GA
$K W D Q A E P N F R K A L E L N P Q Q P Q V L N Y L G Y S W V D M N L Q E G L E$ $\square N D Y Q K A A S I D C E Q E D W K N Y Q K$


 DALDAYSRAI R $\square$ N P Y IS EVWFDLGCLYCNNQDSDA DD D A A I D Q Y S T A L D Y N P S L K N A Y I G K A Y CY Q A K GI D E A R Q E Y Y K K S I E K N L Y Y P Y S Y L N L A V L Y R K N D F Y K A DE LECYNRVVLKDEVDNE EVYHFKAMLL GEM G
DEAL LDDLNKVI QLLDYSNS LAAYCCK GLTYYAMDVDKS DM HYEQAL RWTDKQLWQA WDD
$V$
$V$
$I$
I A N I D K A LS I D KY DS NIWGARGQLNLMQQNYAQAE

 Y I M K S $\underset{F}{ }$ P $\operatorname{N} L A K$ K K A Y KL
 EKFDTAMEMEKQTKPMT $\square$ NVLP LI DNLAMFQWKQDFKEAEK WLDKLI N
$F$ CERATNLS P QS L K $\square \quad M N R \square A W L Y A K K R \square K$
QLD K A DA Y S RLDS L E KA P N DA V F Y Y H L G L Y L K R Q G L E R G I E $P L D E Q$ L R R S D G DLAA TH YLQGRLR QGDLD GALLQ $N L A A A L E Q T D E A V R L A P Q S A V A H F Y R G R V L Y D L G R S K E A A Q$



EDLEHAKQLD

 $L Q A Y S K A F L L Q P N N P T I L Q N$
K QEQS LA LL L N LVVR DD DEAPDSYNLLGNTYYS QGNE EA $\square N$ I E D F D KVLELLAPKHYDALARRADCMMKKNPRQACF
LDEARLHAERATK TNSRDMAGWLELGLVRKALGMPEAAA I E E ALKY FTKALDLDPKD
H D DEAELMF DQAI RHNATDPTPYSNDALLYRQSGHPAALS $S T$ T S SELLLEHYPRFESAY LGRARERLEAPGTDACLK
 $A V Y C Q A L Q R Q L S H F G L Y L N D A N A L M Q N R L D E A D Y$
$\square A Q F E A A$
$L$ ANY L $\square A L Q L K P D D T \square T Q S N L R K L W N \square M$
DQYYRKALKYNPDF
$V I \operatorname{HARGGDLEA} L$ EADAEFREAWTY GFAVADRDPEAAMA LFDYAEDEFNMALKAAPNDYS LIFEYANYLHSTKFKEADE


 QDFE
QVNEA I S LQR VLE LE P N QVMAHKS LGAF QK QN DLVQA Q S E YAKMRIE Y
EFDEGAKWFKEALKSKPDH $\square$ PAHLLTMGKLLRKNKMAEAE Q $R Y$
$D \quad 1$


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$\square Y$ EATLLQHA ${ }^{250}$ GFDSAWYN $\square^{260}$ GLIDDKA

# FYEKALADEKHPSTADTYGNDGПAYHSKGDYDRA $\square$ HFHEK 

 $\square C K T A L \frac{1}{I} L D P C D \quad \square A \square A T L A Q L L \square Q Q G R V A E A \square E Y F$$D \square K K L V K$
CYRYCDEHEDQSPEVYC CLGASDER QERFDEADHYY LLKRAYELDRPDDGGY NYEKALKLSPDDASCYHLETAMKYYDEILLAVSSPDDYDVKLL Y Y DKALA LK KPDD A TQYK 1 A L MMDSRSE $\square A R E N L V K \square$
$\square Y$ YKALK K N P Q N S
MTSHVVSEEPGCLLECYRLLSADYSKQED $\quad$ HDKALDAD CYQKSLD IEKHPSTADLYNNLGIVFKRKGE YDKAUECY
$\square L K R \square I E G T P D D P L V Y V K Y G \square I \quad \square N K M K K Y D E A \square K Y F$
AFREAVEHDPHRAYARLL
$L L Q R L V A \square A P H N D K A R V L D T A D Q Q F D S A D E R E P D \square S K A L Y$
ACDAA $\square E D D P E D A E A W R V A A L L E L K R D D V L H S C D G Y L A N G$ ATARAMELAPNEQR WVSNLGVIRKDLSQFA GSESLG L $\square$ NKSLEMVPNNVNALGK RARFYHEM DRNEEALNDL LCTDLINTFPGHET LWCHRRHVFWLQHHLKNK
$M \square K K A V E \square K P D D G \quad Y \square V D S G G W A Y Y R \square G R \quad Y D E A V E E L$
FFNKVLEDNPSH P L LALLFNLAA $\square$
TLTKEI SLNPKDARAYFLRGWIHAYQEALKDYNQADLNDP DLNWVLQADPKDAQAYCCRGVVRCKM GNYREAIADF $M$ YKKAI KMQPGFRSADFNLALLYVLEELLRYYPDHTKGLI AYKRALELDTEN
VLQDGLE

 A Y LT A A DCDPDNDTVHYNVGLLLI GVGCRDDALIHL AFNQAHAVDPED ALVLDELGRSY LDAVVGDVNQAI AYL KDLDEATHLGGHEASHYI RALARFHQNNLRGAMSDYDLAL
 Y L K
ALDKALQQEPADPAVKAELFFSMGNQLREMNEDDRAFENY ALHRLIDDDGKHQDD EVI A IVTSQLLELRNKNHDTSD $L C Q K A L I I D P E C D \quad \square A V A T M A Q L L \quad L Q Q N N V T E A L K Y F$
$\square I Q E V M Q A K P N K A K \quad Y \square D T F A E L L F A K G D T A V K N \square$ CCQKA $\operatorname{COLDPNDAQAHH\square LGQQCAKKKQWKQSYEAY~}$ AFRTSSERDPTYANAYFAAAQV LMATGRGEAAAPLL AFETACRDDARDPEPRYFDALIEKQDGKYEVAASHLDEETV HFEVSIDYAKSEAHDFALQAAAHAQCNDAKKY
CFRNAI RVNPRHYNAWYGLGMDYYKQEKF S NLNKA EELKSNDADAYFNR A YA Y LH L KYYQQA LNDY


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CYEK K A LS \Y
DLQQQAL
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AYQRSL DVDSTYAKGFANLAYSLLQSKRYKAAVAAY D L E T A

AFERAVTAAPD SVVAHYCLAEA RLVLGEKNRAAKS F
 LF E E A VRLLK P DYF DA QF N LG VA LA QEPGKQHDALAHLEAA

AFDEVLRHEPRHPQALYGRAML AMRGGQLASALADF
 A DA E F RDI LE RE P NALLQVR F LATAFE E K E E Y
 A Y
A L N R A VT LA P S Y A EA WS NLG VV $L$ R GQGKMNEAE QA Y SLHKA K DLGYS TNN S T G $\square S Y$ Y V $V Q \square L Q Q M$

Y Y Q K A TELLKPDFKGVYRL $\quad$ GGDVL LK QNRESEALNA Y WFKKALK $\square$ KKGDVS VLHHYAQYLSEC NRDKESADMY

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QRA LLETNPRHASAH
D $\square$ A $\square$ TV EADGEKHPSVATSYFN

QDA DKDDQ■WDDGY EKAAQL
NYA K DEYMAHAY
DKA历HL
QKSLDiVETLGEKH
DKA LS $\square$ NPTLVEA
YKA $\square T \square Q Q Q$
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GKALLNL

QYh ${ }^{\text {Mayfer }}$
NQALQL
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SRLLE पND $\square$ SFAYLLQKYSGFWSY■CNH■
RRADED DPDR
EQAAQL
EAAPKD $\square$ RNYE $\square R \square D \quad \square H K G$
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DYALALYNQEGQT
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QKA DDT
NKSANLYKQQDKDSD
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EKA $\square \mathrm{K} \square \mathrm{RPN} \square \mathrm{AG} \square \mathrm{Y} \quad \square \mathrm{NRAY} \square \mathrm{KY}$
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NRALETDPRLARLNDERANR
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RQA $\square$
RQA IL
K L V K N E K Q R LT A E K D LDe R

A L A H K E AKAP D NFNK VLD $\square$ S $\square \mathrm{K}$ ㅇ

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A AVDADP
AI ELS P
 $\square D R N P D N P A L L A A R A Q W W D V Y T Y T E Q A R A D \square E A A \square A D D P$


■D K T P | D K T |  |
| :--- | :--- | :--- |
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D P
S VE L N P


A $\mathrm{S}_{\mathrm{H}}^{\mathrm{E}} \mathrm{H}_{\mathrm{L}}^{\mathrm{K}} \mathrm{K}_{\mathrm{G}}^{\mathrm{G}}$
HLD P


A $\square \mathrm{K}$ IK P

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 ANDKLYN IIRGRILSAAQNKWEEGEKAFNKAI ELNPESFANY TNTQAYKFLASAYQAQGKTDEADKTYKNSLAQDPTQDSDH KKDKAFNLRSSAYSGLGQQDLDALADDSEALNGDPKDVDYL EHAPAHLELGRALLVLGRADAALGELARAAELAPSDPEAR
 AEAWCVAGNCFSVQKQHDTADECFERADSLVNRFAYAY
 KEPKLWYGDGULYDRYGSLEHAEEAFSQVMRMEPTFANEIL

TFRTAWMHSGLLHF $\square Q G E S F A A \square D C F T R A D E D G A D D D L V H$ EEERHCYEKALELRADYPEAH QKALDALKEKGNRYFKQGKYDEAVDCYTKGMDADPYNPVLP NYMWAYANVACDLEENNENDDALNY IN KADLEDEEKNYKIL RNALLFSNLGTVLKRQGKDDEADESYTMALNGTPYATAGL YYT GGMAFYQKKDYARATSELKRAISMDPTNTQAY DVASSGNNLALLYWSMGRYDDAEP LYKQADEKYPDVATS L KKLNAWYIRGEIHLRQGNYDDAVRLITSITSINYNAKMNF QFALGFASLGECYRKQKWVDQALANLQHAMQLNDRVAAPH A Y A YMKRAALF
TLEDWDY
Y $\llcorner$ Y 1 E
TTLEDWDY L N QLLNQSLTA $\square$ GYSRQV
YNPAALTNKGNTVFANGDYEKAAEFYKEALRNDSSFADSY HEANAYNMRGTFRYLRGENDAALEDLNKSIELD ESLVQS ENQYAFTLIGGYYENIGKFTEAKQYYLQALQUNPDNFID A WDYNNRGLALYNVGLLDEADWVYRKALKLEPMDAMVH

 MASESGTEADNAYDKALQMDSQNESIL | $A$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | TEA VHNNLANSYKADGQTER NDAEIYDFLSSCHEQSGYVYRALLMSRKAVENARKEEEKL RNVNAF LIGLGTVLARQGNLSQALAAYQQAIVRNSRNVDAQ PQKQAQRQLGNDAYKQKKFEDALEHYNKAVELDDTEII YLL

 ENVKGLLS LIAS DCYMQEDYESMDDACQKA K LDDETNALAAY EHPESHFAAGFCRAK $\square G Q Y A K A D E H Y Q R A V K L R P G F A A A W$ NQLALLYYSQGRYEQAEPLYKQALKELRPGFAAAW NNWK LWKNLGDKAYLCKAYYEA LFCYNKALEEVSEDLEVLI AF AYCRRGADYRKLGK LQSAMNDDQRCIFYDPKRTDAL D DPGLYDMLARAYARNGDYQYAVNCYDTVISLAPENPEHR DSAYLITSRAQSLYLHQELDEAAETFQHALELQPYRLEGD LGTALA RDGS QQLGVGFLQLANYLDPEAAIIS NYPEALFNLGGTYLA EHNLHAFLSTLTVDSQFIPAH GHPPTLHHLGLTAYKCNDGVRAVEYIRQSLDSDPRYHQAW $D D L N L V Q T K A G L D M A G E T N K A M A L Y S Q L E N V N P W A G T D A$
 MEQLSTLLWHLTDLPALSHLSQSLISISRSSPQAW NMADVHYNLGLLMHEQGRYDEALESYQTAVRYRPTLALAH ENVEAWQGRALIGYGKGENDKAVEDLKKLVEKNGDNPTAIC QYVEALT N LGYVY LVQYRDKEAEVVLDKALADQPDFVYAL ESI RAWEMLA QAYLKTGDTQQGFSSLDRLEQUDPNNLDTV KFTHALARF YASQGKFDPALAALQRTITMAP AKAYARDGNSYFKEEKYKDAIHFYNKSLA EHRTPD QHAPAYVARAELIADDQSHRQALQDDDRAIELDPNLMAAY F LIPF LHSF $\square$ GQTYVALEDFENAI KCYQSALRVDARHYNAW QRSN TKASAWYTVGCYYLLIQKYEAAQRYFHKATSGEPSYAPAW SYWAVK VVLGA $\square A L E E N N D S D A D E N F K Y V T E N A N W N V D A$ YDPYVCSKLGA VY $Q Q Q G Q \square K Q G U K F L K Q G L K S N P V L Y E L Y$ RDKDALHLLGSVAAAQGRFAEAALAWQQALRLLPPDSEEA

DAPEAHNNLANTYRRLDRLGQAEQHYRRALALNPHYAEAH $R$ VP NAHATERGALHRLEKYEEAADAFQAALALNPNA YDVL


F A Q S YF GLGN I YL NEWDFEKALD HYELLALEKNPTLPRAH K A QRYGEVI ELLGKYL QNQPDSVEAR


 AGA Y Q CLS L LA HQVVGKAA QAAELMAKAVVQAPE VSCR $N L L N V N L Q L G G L Y M N E K N E K E A E S F L K K A Y N \square D P N N F D T N$


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ECDG VYYCK LS YFDLAVESFTRCDH LHPENPVFYFRRGV NNLGVI LKAAGDRTAAEARYDDAVRRLWPHYPEAHYNDAL TNRASAYFRMRKFAVAE SDCNLAIDALNRSYTKAYARRGA FNKAVILNKDNK VEESKEYYYRSI KENPNYPYSFLNLSVV KNKATLYNEKNKTEEAYKEDYCNVIDLLLNPNDKEARLERAY FYLGWLYNKKGNYEKTIEAYREVIRINPDYTYIYYNLGW NNLALLYYSMGRYYQKVLELYKQLGQDHPDVARSLNNLAL LYYMISYCNSNDNEDALKYFDNVLQNDPNNHLCLLRYCAY VSLAWLQSALGQH DLALQEYQKALADNPRDPEAVKGLSR IHFGNLLLQLETDRAKRFFEKAIELDEHAATAYYALGN HQRAQILLLLE HDEPALAEFDKAVSLAPDHAGALVQRCY
 YVKRASMHLEQSARDAAANDFELAQKYNPDDPDUYYHRAQ NNMGVAYDARGQVDAATGEYREALRLDPGLADAHNNLGT YNRGIAYQRLGNFQRAIGDFEKALEANPNYEDARYQKAV LRKTVV LDIITGTATEALGIVEKKLENNPQDALAWQARGV AMMKWLLEGDGNTLKDALAHGHRALKLEPKQAWSHTAVGH KKLA ACEKDAKRIPEAATCYQQVFLYQAHCADAWHLWGV KNLGLLLQSTG DLSNADTFLQRAVDLSTQKAPMLTALGN
 LNDAAVYFE QKEYDKCISQCEKADEVGRENAKAFTRIGH YYLGLAY LAAQEPELALMELVNQI GTFGPGLSEVAFRKRI YLAAKAARGMKNDLQALVMLTKALAQ NEEYAAAYLLRAE
 CKKGYTLLRDSLNDNQSGKYFEKVLEKDENNYKALFGLGE
 THRADALIRAN NPSGALEDVECYLQQNQSSSLAYEEIRGR DSGGELLASAGRYYDEADAQFESVPNDSPDRGNALIRLAE WNGA ALYWKTENYSKIHPHYQQLLQQDPDSVELHNNYGV
 YVLGKDYAD NKNYPAAEEQFQKALKLNPRSAETLYELGK IAVGNCFS LQKDHDEAMRCFRRATQVDEGCAYAWTLCGY LNIGLILVILGRKQEAETVFDDGTGLKDPKLHEVLYNLGK LIKKGSLHMQNGLQAEALEEFAAAVKVDPKNSDIYHHRGQ SSLGDVHRAQGQ IDNALALYKKALSLDGDTLSALNNMAN NNRA VLYGRKREFEKGLELLHKAEKKDPQALFVLNNLVL TQVASFYL LAQQTQEAETRVNRVLAEQPDHIIPALYLKAG VDRGDLYLA KNQLEQAAAAYRAGAKAVKNPANAYFKLGT V LKKCQQAEKILKEQERLAY YGLGMI YLLRQEKFEFSEHHFRMALG DNPQSSVIMSYLGT DYKRGIAFFNNKDYKSCDKDLFKSYEKRPYEADLHYHLGD LF WGFGNSFAAQDESDQAMSSYRTALSLFPGSHLPPLYYGM A WI GRCYCADNQ DDESEYWSSQSLKMNPNNDISYFNLGN YSLGNAYLKQGNFAKAQEQYQKALSQULPKKIGGYVNLAG SNLAFLLTYQSGRUADALHAAQTLLDRHPDHAELLNLAGV TNYGLTLVRLGRHDQAALACYNLALLEKQPSSPDTLYNRGV EYRGRAHSQVAQ SNMGYDLQSLGKQYEDSDEYYKRADRLKSDDADILFNIAN RYRVQALARLGYPEEALTEVNQGLKQRPNEDSLLLLKGG EKLGKAYYTQGEFDKAGRDYRKAIEFDPYNTMLYFSLGV LMRAN LNFMAEKYEAADADCNRVIADDATNASAYYLAAK HNSAAVLMMAG NVSWSI SDWRKVLSLNPTHSEAMAGLAR TNRAAVYLELLMDFDACINDCKKAVEVGRENRADYALIAK $K N F A Q T L I L I G R P P G V A L A Q L A K L A D R T P A D W K V W Y L K A Q$
$R N L C E M L R R L G R P E E A V V Q Q R A A T E L A P K D A L A W Y N L G I T$



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| UiReto-4C6 |  |
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160
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 SLA
 FEKGDYRKAEGIYREILKTAPDNLSVLSNLGVVLFRQK $\left.\begin{array}{rl}A L L E Y G D L D G A Y Y D L H A V H K H N F H D D Q Q T L\end{array}\right)$ ARFALQKLEDAKKDYEKVLEGEPNNFEATNELRNGFFKEG
 VYMKRRQYKEARDDYNVILGVDAKHKAARLGLAMLDQKEG AYGELEKYQESDDAFKEAVKQNPEDADFHYGLGWAYSQLK LYWSMGRYDLAEPLGQQALEKHPLVADSLNNLGLLYKSMG IVEKQGKFSDTLKMLDKLLKINEKDSLILCYYGETVSKMK



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 ALLSKGDSTAALTAFNRAVRDDPNNSKDHDQDGKULREVG AYKKMENWKQAKVYYEKSMSI DPVKAEEEKELGNEKYKEG LFERFNQEEEALKEYLLLIKLEPQSANHYYKAGSLFEARQ VLWDMRQAKDAMGDLEKVLSUAPEEEDALLDKGKI HAADG
 AYYNQNNEENAEKYFEKGLKLNPNDVEALEYLGDIYYE
 AREALNDLDNAI EDYSESLRLESKSISARVSRAYLYKRMG FYNQRSEHFRAVESFKQALRLDHECVAAWULLGHEYLELGK NDDLRGDRDAAUSRLQNUAVSNPDSQEVHGULGDTLRYAE LWLRENQPDKAAHCFQQALERDPKHSEARNNLAADFLKS G $L R R V A Q N D A E A M E A Y D T S L R L Q P E Q P R V L A R L A E M M L Q S G$
$I K E A Q G D D D G A A K V L D Q A A G V S P D N L E V L I T K G E M F Q R A G$ $V$ QYMMGKFNDARLSFTRCVDLKPTWVNAHYNLALDTHERLGG IYDETDEDEKADYHYEKTLELDPNYFYAY DNLGCDYEAQN EAVEMEEYERAMAFYRTAI RTDARHYNAWYGMGLVYLKTD LYTDAGKHHLADKVFEKAVTTMPRSYQPYNMDGETYARME TLTLLGRGAAEAEPLLERACKLAPKSAVALFNYSNVLLRTG


 E CF Q K G D Y P Q A MK H Y T EA I ALHALKKNEEALEVMELAIVADKKNPLPMYQKANILVSTE SFSNLEKFLDHSLEPLDCEAI KLDMNYAHYDHERAKSYL LVGG
 S LAA Q Q S K N DEA E I Y L K K A V S L N P N D L N TLLSAMAA T L
 AL Q G MKN DP QALLALLE EALQQRDP GQADTWHRKAALHERAR CYMALGGDDKAA EAALRRGSQAAPESADDSNNLGALYRKMG
 ELLRRRSHHAEALLDDFDAVLLHSANDVDAQDRRDY TLLCGLG

 IL LGELSRRKEAI EVFSQQVLRADPQNGEALLKERGANLANEG
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190
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 QUKLALAPYLLRATELSNKDETALEQYGLALAQLG SNE NLENAEQYFLKVLQAQVQEQNVFFYLGQVYLNQNKMKQAE
 DKSQAFHYYCESYRYFPSNDEVYNYGEVLEWLGAYYDTQ RNEEAKKSYFKAFKMYPESEQA ELGDAMGEYREALRLKPAFVEARTNLGLALA\|SG
EYGQALINAFEMAI ERTPENVDLWVNRATIRYYQGDYGKA RYSEAEPLYKQAI ENHPSLATNLNNLAELYRAQGRYSEAE RFEEALIAYEKVIELHPRKVDALSTKGGILMQYGR RHEEALSDLDVCI ARDPLNYWFWDLRGQVLLVLGRYPEAV KFTEALNCYQKSLQLQPSFQQAHDNLAYVLDQGNALADQG QQEFMERDLKRFHEIDPGNPIAYNYLGYYLSEKG NNAAALAAFQRSVNLDPNSVEA RGALAET ALEQK DYPAAIKHYSEAIKRNPDDPKYYSNRAACYTKL RSEKALNYYRKAI ELDPRHSDAHYSLGYALFRGKKVVEAK ETQEAYTCFDQVLEUNPFNEKAYNARGIVLDKGEMLAEQK RDEARFESAEAFLERLAANAEMENARGIVLARHSASGEQM
 NYDRALQDFGSAVRLNPANTTALNNRGWMLATCPDDQYRS QFSKALEDY DQLVNNNPDNTDFLFMRAETYHKVGDHENAQ

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 KDEQAIYYLNQALALDPNDVNV YNMGRGTLALIJYNALK MEAQAQQMYLRAI EIQPEKQFLYYNMGRSFYLQSNYEEAK QYPEADKAYQKAI ELEPNNADAYQNLGVV YYG QWDAARQCDHQALRLDDQRAQYW LAAGLVEHAQG RQDEAERWFRRAVATAPGHGQALLNLGLQLRSARRLDEAR RLDAALDCAQQAMTLAPRSAEAHHALAQVLQAQGKTDEAL RHQDAWTASENAVARGMVSPGIDQARGYVLMGMGEPAGAA ELEQAQKAYLQELTLSPQNPIAMYNLGSTDIDLGDYAG EYKKSDNYFKKCLSI NPNNSGALSSLDNDYAEICEWTQVK QHSKAESVLVEATLIVPQATQIHYTLAILYLKKNQLEKAQ KIGAAMRDLNRAVKLLPNDPWAFNHRGMAWLCQNKYQTA RLDEAVAAHKKALELNPNDGNAHNYLGVVYLLKGMSKEAE DYKDGLQDDEKVIGLMPEEENAFLIRGRLHEALGDDQAAE RWRESHSLFKKALDMEPDNTDILCSYAQVSNSLEEKEQKL E DKKIKLLHQKLKKAKELAYIDVEKGLLAKNEGNEFFKG DEDSALNAYLQAARIDPRHAEAQNNAAADL MKKEAEFYLMKAYQI NPNSLEYVENLEKAEQYLLKASQAQ


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UniRef90_K0NM81

DFKRASTLDPDYATARYN LGGANSREES $\square$

FFNKSFD IEPSYSDADNLKMALDFADRA $\square$ QMDSTDTDGLY A YEKARAVDPADPRVKAVMDELDA $\square E R R G$

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HYE DSLRMDPTASGTKENYGLLRRKLEQMQ
 IHRKFPD
EFETA $\square A \mathrm{~A}$ LD P Y ADADYN $\quad$ DAVLLATKSSPDMEKARQYY $D G L Q A A T L Q P D N D K A D Y S F A L G E A Y L H S G R$ NYDAAEVAF HYRAALKLSPGYAEAH
DFETVLLLEPGNKQA
A Y EKA V S $L$
$L I Q Q A L E L Y K Q H E H P H V L N N L A L L Y W S M G S \quad Y G E A E Q L Y$
$\square$ TRKALSMNDQNYEVWANLTVMDQWMHDDVGAAD
YFDQALE $\square$ QPDH
YY Y QKA L




A A
AARQCLAARPG ATVNT\|LIDPYRD
SYEDALKERPQD
 AFERAKTL
AYQKALELDPSNSEA $\square E G Y R S C A V S V S S N P E E V R$ A LLLNFEKAQRDPE $\square K \square A L V E R G S C Y M H M$ NSFDKAVTEL DMKKADELLNPNE
AHQRSVYLDSTHPGAQYNLALSQLRAGDYENGWRNYEARW L Y K QALELDNHPDVATSLNNLAALYDS QGRYEEAEPLY YFEKLKE I NPYHDEDYEVDAL

CFRRHLTCLT QLESVEATTRLDELYEREGD

VYS RAALDADPASADALLNMALALTSLGRGKEEALASY LNLAMAAFVSSSSDPRVIVNMGGAVVLLRNNRAAEAQRVL AFKEALSTEEGSNDPVSAYNLA LVLI E E EDKAQEAGSYA




QFASALKKDPEN $\square$ NAHML MADLYVR QSR DDDATAY $\square$
$A$
$D V K K A L E D D K N F Y N A$
$V$

KAEQKПKE $\square$ AHQKSK
SYHAALAYAPEDT
 YFHKSLKVSPNENTYFSL

S Y R RALRTDD K DADAHLNLALSLLVLGRLEQAWPLYEWRW AHRRALALDPHNASYRLNLGNLLLYR
AFDRALSMYPG
A MS S Q G D $\square$ NGEVGKRSYYE $\square$ AR R $\square Y$ RKM HKPEDA
SFKNALQVKPNWSEAH SNLGKVYEL LVDF
$\square F D E A \square E \square K P E F A R A Y S E R G R A K \quad \square M K G D K G S V E D \square$

DCEKAlIELDPKYVKAY
HYNA LLDMQPDHA
F L E E
A Y N N A $\square$ N $\square$ N P D Y A E A Y

SKAMAYFK
ARRWEDADRALS

EKAAEDMAGDPT TNDH LGDAYWR VGRK DEA KKVEKMKE IDREQRVKSGREN

QQA L E LYY K L G D D H
S R A

EKNPENLQA】I

ERAAEL

K Q A $\square \mathrm{E} \square \mathrm{H}$ K

E K S LLK L F K K
K R A
ERA $\square$ K L

K Q A L E L S K RL

EDAVNLLPADPE $\square$ NDH $\square$ G DVY W
EY IQHLFDGYAGHFD
QAGLAI DPDRAEAYADVGNLLR
DRALA
QKAVDL
Q LS P S L LE
TNARELEPKL
RKAVVL
D QAIKL
K S ATPLPAELIDRPDR LR $\square G Y$
EKAL
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UniRef90-B7RKM4
UniRef90_V4IV92
UniRef90 UPI00006CD1FA
UniRef90-K7VUH0
UniRef90_KONM81


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UniRef90_UPI00047EDBDB UniRef90-M2CYJ6 UniRef90-UPI00037DB3D7 UniRef90 UPI000366D218
UniRef90-I2INX4
UniRef90-A0LEC5 UniRef90_UPI0003B7A730 UniRef90-H3GQ54 UniRef90-A0A023BMS1 UniRef90-U9VMZ8 UniRef90_K9YFZ6 UniRef90-Q7NK30 UniRef90_UPIO0036A4CC6 UniRef90-D4W7D3 UniRef90_D3PBH9 UniRef90-G2RB17 UniRef90-B7P6D4 UniRef90-B0SKW1 UniRef90-X1RW68 UniRef90-A0A024UIIIO UniRef90_UPIO004088544 UniRef90 UPI00037509DF UniRef90-B5YG58 UniRef90-R7LFF9 UniRef90_H8Z5B9 UniRef90 UPI0003B6DBE1 UniRef90_F4BT87 UniRef90_UPI00041EB2DB UniRef90 YOKGQ3 UniRef90-UPI0002B4AD9E UniRef90-F5YN09 UniRef90_A0A026WU11
 N WATAYDEFLNQVASKERSDASTGVYVFS DMNPYVGHPN NWATAYDEFLNQVASKERSDASTGVYVFS DMNPYVGHPN

 YNNLGYVYENKGQFDKALECHESALKWHSNVADTY

 DSASLHDALGTLLAKMEQYAKAEPHFQRAIAAGNPSFADAH
 SNGKRCKAIEQMEMLVKQRTDF IIDAF HQSGLPHEAEQAY LQQVAEDPRHADAL




PSAK $\square Y N S Y G D N \square R S E D K \square A E A \square \square A Y E E A \square K \square D S K S E V A R$ N LA D A YVKKDECYDAAREAYEEVLKGDPENALVC
 DFDAARHQRGTVLLKQGNDDEAHDDFEWVLRRLDPNPDAH



NRYQES TKEAEAY!QMYPDDSDGF ENDDADQVLASVYVKEKKVKEAI EVYEKDLQQSPNKDEMLD DATEARALYLSAQAEKGDYLTAGVHLTQCTTQRPDFHSAR SAD HRAYGLLLEETNRTDDASLAYQRALSLDPTNHSSA

 NFALAHTSLGTAALSAQDDMTAI QHFEKALQDNQENGRAW NNGDALVGRAGVYRSQRKPKESESGLNKAVTRYPRWSVPF MANHYYSQKQYKKALVGYNEVIELCCPNVSRYY
lupas_21
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UniRef90 D6Z490 UniRef90_UPI00042B1A34 UniRef90-G2PRX9 UniRef90-A4VDM8 UniRef90_UPIO00255BCA7 UniRef90-H7ENG5 UniRef90-UPI000469DECF UniRef90_X6LV65 UniRef90_A8TX90
UniRef90_B3S5H3 UniRef90-A0L546 UniRef90 UPI00047EDBDB UniRef90-M2CYJ6 UniRef90_UPI00037DB3D7 UniRef90_UPI000366D218 UniRef90-I2INX4
UniRef90-A0LEC5 UniRef90_UPI0003B7A730 UniRef90-H3GQ54 UniRef90-A0A023BMS1 UniRef90-U9VMZ8 UniRef90-K9YFZ6 UniRef90-Q7NK30 UniRef90-UPIO0036A4CC6 UniRef90-D4W7D3 UniRef90-D3PBH9 UniRef90-G2RB17 UniRef90-B7P6D4 UniRef90_B0SKW1 UniRef90-X1RW68 UniRef90-A0A024UIIIO UniRef90_UPIO004088544 UniRef90_UPIO0037509DF UniRef90-B5YG58 UniRef90_R7LFF9 UniRef90_H8Z5B9 UniRef90_UPI0003B6DBE1 UniRef90-F4BT87 UniRef90_UPI00041EB2DB UniRef90-YOKGQ3 UniRef90-UPI0002B4AD9E UniRef90_F5YN09 UniRef90_A0A026WU11

130
140
150
IJKQQQGDAAAA DAAYEEAVRHDPK LTNAWVNMASCR DMAG THAENDDDQQAIAAMMRAQEADPTNLEVLLALGVSHTNEL LLCKVHNYSRAKEKFEKAYKTDPSNINPQIGGAYCFNRTN AHSEKGEWDKA ITKEFS LDH $\square K A D S E K H E C Y Y N M G N A C Y E K R$


## T

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S
A $\stackrel{\circ}{v}$






 YSLDLHEPKKGVEVLVKALQYDNDESLTME




 A $\stackrel{L}{L}$


 CCLILGDIVEAETKLKQLLEFDPNNESVAAEQKDLTYVQR
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lupas_14
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D FEQADQAAKEAI K DAPDFGMAYNNQAVAHYYLEQY E Q A A A L KY L Y GWL RHHPKYYYADVARLFVLYNLSREYDKA EGPKA




 E LPGALQAFTTALALNPDDAKAKVDYAMALLAMGDYANGW


 RRNEAEAAFRRALDHDADFVPALDNLASLLIGAERFPEAE KYDEAMEAFDHLKALLPDNPVALYYKARVFLDMKDYKQAE DYGSADEDFDKTVSLKPDFARAYYNRALVKVSLGKRS RYSQAVTVFDGAAQVCTGSSQVKLLRGEALI GCERY



200 DREGALADLDGAIAARADFAAAYGNRGALHAGAGR K $\begin{aligned} & \text { N DA } \\ & \text { DYESA } \\ & \text { D }\end{aligned}$ DYESAI TYYKKVLEI NPNNLLALNAALSYLNVEVLKNYDAA
 EAEESLNVIRECLKLDPDHKDCFSHYKKVLRSIQDLIDGQS DFA LYYEEAKRWFKRTLA K P EFESALIDLGFDYRKAGEDQK
 QYQKAQQPFQQAI QKGLEESDAYY

 $\begin{array}{ll}R W C A A \\ D & \text { WEA A E D }\end{array}$

 QDQDPL GHTETQI ALRDDKTSAGNYARALIAQKNGNSAEA $A D P E G L K D A E K C I E L D P T F V K G Y T R K G A V Q F F M K E Y$
 F LTKDAEAAYEAYCMDRCCDVST SGTCFKLTKAECLALLGG

[^10]

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UniRef90-B3S5H3
UniRef90 A0L546
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UniRef90_M2CYJ6
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UniRef90 UPI000366D218
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$\square A S F K T A L K L Q P N D Y S \square W N K L G A T Q A N S V Q S D A D L$
 HPVYEQLA CYKKDKQFHKAlE

KQFLTVIEADAAHADAYYNLGDAACRDQDTKARH KEDKAFECYKQVVLKNPGYYYAYESUGMHAWRTGFEFARK LEATNQFAEQAVVKNPGNPDAWFYKGNLLRQGKVDLALA QYDKAVEYHEKALEDHADVAFSYGNDGVTYSNNQHDKAI E RCFRHAAFAK PSYGAAWAGRAIAA DDGD DDAAVR STYEKSLKVQLS $\square Y$ NNHSDTSATYNNDGYFHQGMYEEAUA RYRFQFSHVFNDMQRDPANVEAWN DLDDHADEQFQAGLVIDQANPQLHYDGGLAYKKDNDNAADH
 TCLKALEDFSKTLEDEPKHDSALNGRAMAFRDMNDRMAVE


DEAFADLT QLMRTDSSNPELLF LRAKCDYYQGFPSADK $\square Q N L H Q A D E F Y P D N A E L Q Y R L A G L Y Y E Q D Y Q K G E Y$

LEAALADYDRA TRLSPKRAEFWSNRAAAHSACARQQA $\square A$ PMNEVPLQADGYI YKQNQNESAAAYRQADKVKPSAENYSS K Y LLKVIGI I P RNASALNFLGYMYAEKGLDDA YK

QYAECVDKCRAADRTEPDVPQLVQHVRGRMCHCHVREALE
DKALECFNKILASGDDYFALLGKAAALRLIGDLEKAEE KNDCA IENYRKLLKFYPNRDDIRMRVGRIFLRE KKYDE KDYTTMGYCDN
HFK $\square A \square P Y \square Q R A T E D D K E D A E K K F Q Y G \square C \square A Q V E D D M A M E$ VMER QALESDPEHPLIFLYLAWAADQRGVENALL EKKDFKSARESFKT ILLKHEKLALLYGQ $\mathrm{K}_{\mathrm{K}} \mathrm{K}$ QYDKATEELEY

HLEQAFEMDQQAVALQPYS GY VVDSLGWAYYRLGYEQAVT PLFRQAEDRRKSLGEDHPDYSSLNNLAGLYYSMGYSDAEP QTYLLAADHSPDPEMLCCLGAAYEKDQQYSPA $\square R$
N R
EKAMETYQEGDKHDPKNQE LLDGDRRCVEQVN
LWAEARDAFMEAYKQTPETSYALLASLCWMRAGRVTDPKQ RYQEAQD【ANDADH DDKQNADAIVIDRGMCLYQDDIDRAFT

[^11]

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UniRef90_A0A026WU11

 L LHKALELSPG
AFLEAAKYNAENVSYPDMVTACLYKQNKVKDARDYSESVY A YDQVIKLKPDSPTAYLDKALLEUGARKFDVAKDNIDAAR
 YANRAVEAEPGNPQLQFRRGIHRLAAGDLKGGWADHDAMW MYEKSLK $\square D \square S \square D \square A R A Y N N I G A A Y R Q Q G Q H$ EKA $\square S M Y$
 Y YDKS 1 SLK PNYSRAYADRGTVKL DWKKVI KIDPSYARAY I Y VFRRVLELEPEHARCEACNGLAVALMKDYRYEEAESFV TYLQQLSSANPANVNA

KCMKE $\square$ KRRS $\square E S S K E D A N N A F$
HLQQALRSDPDNS

RSSFIIFAYPRTGSSTLVKLL
DASFAVRCDPRFAPARYNRGEAR
LGEVLVEQNKLEEAAAAYRQT $\square \mathrm{K}$ K $\square Y R Y G A \square A E V L I K Q N K L$ YYNKAHQL
L DKKALE IEP D N P
TCSEALK LDPND DRALCDRAEA Y LNDGQYDNAMHDF IY $\backslash G L L S K S P N D P R P A L A E L S D L W D \square M G K K P$ WQK Y
 FLENAVRMDPDNPQ
LLS K

Y LEHAVEDSSNDPT LNDHLGDAYWRVGRRDEARFQWRH LYRKAI ELGEDHPAAQSLNNLAELYRSMGR YSDAEPLY YYNQALQLDPTYADAWF GVGACLFYQE

F L E QA LRKVERESLEWYMLR LYYH
$H F Q Q V L R L A P D H A K A L I Y K R A K C L K K K K E E G N A A Y K R E Q Y$


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UniRef90-UPI00037DB3D7 UniRef90 UPI000366D218 UniRef90-I2INX4
UniRef90-A0LEC5
UniRef90 UPI0003B7A730
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UniRef90_A0A026WU11

VRALAM
N P K A D N A WQ Y L R $\square$ S L S
AEA I K T Y G LY $\square D K Y$
RK
K V A
ENS $\square \mathrm{K}\|\mathrm{L} \mathrm{N}\| \mathrm{L} \mathrm{GNNHD}$
R K
EK S LIE $\square$

$R R A \square N L$

KEAVEMYSE C【KIDPQNK

NES LTSCQDLYKDKDTSY $\square \mathrm{NY}$ Y

Q Q A
QA IKLLEDLAKK DRA LEEF L S L LRK DP $\square$
DKA ${ }^{\text {D }} \mathrm{L}$

A $\square$ A
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