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RYKHFLSQHYDGNPR GRNDRY
TAAQWFATQHVQPKPQG
TRAKWFEDQHVRSSPVS
TRFQWFAIQHVSPNPIAS RYKDFLTKHYDAKPGGRNDRY
TSAQWFETQHVQPTPQP
TRAQWFEDQHIHPTPLQ
SRYTHFLTQHYDAKPQQRDDRY
$E S Q E D K F K R Q H D D S G T K G N P G K K Y$
$R Y D K F L K Q H Y D A K P S G R D D R Y$
TSSQWFElQHVQPHPRA
QDRMYQQF LRQHVDPDETGGNDS Y
TPAQWFATQHVQPK LQA
TKAQWF Q QQHLLPSPSQ
DRRYRHFDDQHYDANPHGRNN
TKARWFEDQHDHPSPLQ
DSRYKRFLIQHYDAKPS GRNDRY ETFLRQHYDNPKSNVGN

RYCNTMMVRRGMTRPKC RPSRAQWFA Q H I SAGPVQ CNNAMSVVNDYNQRC WA QWF EQ EVVYPKSAPNDNQYCNAEMYRVNNHTNVC RYEKFLTQHYDAKPGGRDDKYC DSRYTKFLTQHYDAKPK DPRYRSFLTKHYDAKPKWGRDDRY D $\square R Y \square K F L D Q H Y D P K T K N G N D$
RETRSQWF GQHIRNSTT
RETRHEKFRRQHVDFPKTS I
RPS WFAlQQHIYNSSYPQ EDRYTHFLTQHYDAKPK GRDGRYC DPRYKKFLTQHYDANPR GRDDKY TPAQWFETQHVQPSPQG
QDHMYQRFGRQHVDSKVTNRNES Y
TSAQWFEIQHVQPSPQR
TSAQWFEIQHVHKSPVN

ERCNTAMESINKYTKHC
CNAAMRVVNSYRMVC
QETPAQRFMRQHIVGAVPPSTDTTYCDDMMLRRHINEYSC
RETQYEKFQRQHVDTSGSWEPDNRYCNDMMPRRNDTVFNC
TPFQWFKVQHI LPNSLDP DNRY
TSSQWFKIQQHVQPSPEA
TSAKWFETQHVQPHPQP
PRYEKFLDNQHRDDPRSSFHG RY $M Y Q P L Q Q Q H V D S T Q R G G T S L Y R N T M M G S R Q G M T K R E R C$
RYDKFLTQHYDAKPTGGWDHRYCYGMMKKRIQETLKC
ETSFQWFQVQHVQPKPRP
CNRMMYSRNMTHGFC $\square L C N Q G M R G V N$ N Y $\quad$ NQ H C C D K A M S GVNNYTRHC NDGYCNLMMQRWKMTTHQC NLGQCNRAMRGVNNYTQHC CKGAMSNINKHTNHC CTKAMS GVNNYTQHC ETMMRRRGMTSP C C EKAMSIVVNNTHKHC CNAAMHAINKYTRHC CDTMMRRRGLTSPBC
$C N N E M R Q D N N Y T H R C$ CDSAMRN NNYKKRC CNTDMQTRRMTRPTC CNTAMRGVNNYTRHC NTMMQRRGMTRPRC NTMMQRRGMTRPTC CNRAMSIVNKYTQHC $C N L M M Q R R G M T A D R C$
$C N T M M T R G M T R P R C$
CNTAMSGVNNYTRHC
CNSAMKNINKHTKRC CSQMMQRRGLASSTC

YCNQMMKRRGMTKGSC
YCNKMMKHRNDMVGDC CYLAMSNTSKYIEWC CNNEMRQINKHTHQC CNTAMRGVNNYTRHC CNRAMGGVNNYTQHC CNKAMGSINKHNKHC
KRCSAAMGNINKYSRRC CNRAMRGVNNYTQHC CNNAMRRVNNNNQRC CNKAMNGUNNYTHHC CNLLMPRRNDTAVAC CNSMMQKRKMTRPTC CKSAMRNDNKYKKHC CESMMVIRGLTTP CDTAMNNINKYTKRC CNTEMNGVNNYTQNC CNVAMRPINQHDPRC CD S MMKRRGLTAP
CNSAMSRINQYTKHC CNNAMRGVNNYTQHC CES $\square M R R$ RGDTSP DQMMAKRGMTKRKC NSAMGN ${ }^{\text {D }}$ NKH TKHC CNLMMQRRKMTSHQC CNAAMGHVNKHTERC $\square \mathrm{C}$ CNQAMRGVNNYTQHC KYCDTMMRRRGLTSP CNTAMRGVNNYTRHC CDSMMK R R G LT TP C


$K Y C E K M M R L L R N M D S P A C$
$\square R C N A A M L G V N N Y T G B C$ $N L L M Q Q R N D T V D D C$
$N A A M L R V N S Y T G R C$ ES DMKQRGLTRPRC SATMHK $\square$ NKFSKRC D Q A M Da VNRPNGVC
CNSAMDKI NKETKRC

$R Y R H F L D Q H Y D P R P Q G R N D R Y C N N R M R R Q G L T S P C$

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UniRef90 G3TPI9 UniRef90-HOWA49 UniRet90-G5B5R6 UniRef90-UPIOOO45D591A UniReffo-G1ST62 UniRef90-G1PQE2 UniRef90_UPIooo334319B UniRef90-UPIO0032B1B8A UniRef90-UPIO00388BCC8 UniRef90-UPI0003317B80 UniRef90_UPIO004444F7C UniRef90-G1Q649 UniRef90-UPIO004434EC6 UniRef90-Q8SPZ4 UniRef90-UPIO0046BDE32 UniRef90-UPIO0042AAODO UniRef90-UPIO004548F7C UniRef90-W0UVJ3
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## UniRef90-G7P9N2

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UniRef90-WOUV21
UniRef90 F1M5W9
UniRef90-G9KLA3
UniRef90-Q8SPZ66
UniRef90-G3VTX2
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K K F N T F V|HESK A DVVAVVCRERNVITCKNGMGNCHKSKYTMR K P L N T F L H D TFPNVA IACGGSPSMTCKNGQGNCHQSPGTVP



 K P E N T F L H D S F Q NVAA TCD DP N I TCKNGQKNCHQSPMPVN

 KNRNSFLHEPFSSVATACQTPNDVCKNGRENCHQSLNPVP

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KPGNTF
 KDVNTFLHDSFQNVAAVCNLTNQKCRNGRNNCHRSQNPVS


K KEVNT K P ONT KAFNSFLQDSYHNVAATCLLPNRUCRNGQNNCHQSANPDR KEVNTFVHGKKRSIRAICDDSNGSP YKENLRISKSSFQ
 K E $\square$ NTFI HGNKASIKAI CGNQNG EPHNGNQR KSKSAFQ K G K N T F

 K DFNTFVHGSKDSI K AVCC GKDGGEPYKNNLRDSTS QFQ

K NLNTE KYㄴNTF K DRNTF L
KESNSFV

 K QRNTFLHDALQNV 1 N NVCKQGTT KNLNTFLHKSFSNVAATCQNPVKTCKNKRKNCHKSRMPDVS K N H N T F L H Q S LT SVIA TCD TPNRTCKNGHGNCHESPEPV K EVNT ${ }^{\circ} \mathrm{F}$ KQFNTF KEANTF | $K$ | $A$ | $N T$ | $F$ |
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UniRef90-L5LPB6 UniRef90-L5K9C3

## UniRef90-G7P9N2

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| $T \mathrm{~T}$ D c <br> 1 TOCDLTSG <br>  <br> LTDCRLAG |
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TECPY可TESKEKR\|I IACAGHPPJVP|V|HF KYPNCRYSDACLDRAFVVACDPYQLVPVHL $K Y P K C T Y K N A A L Y K S F I V A C D P Y P L V P V H L$
$K Y P N C H Y Q E K H R N A R Y V V A C E R P Q L V P V H L$ KYPHCPYKDVPQDKFFIVACEPYPLVPVHL

 LTVCELQGGSDPPDCDYSGSSSTSRIVIACVDGELPVHF VTDCRHTSGKYPDCRYKEKQMDAYFIVACEPYELVPVHL VTTCKLRGGSTRPPCRYRATAGSRNDAIACNGPGLPVHF


 VTECSLTAS

ARFPNCRYQGRGSSRRVVIACEGNPTVPVHL VTDCRLT STSCDLTSG VTACRLTGGSRPPNCNYRGRLSTQQIRVACDNG DVPVHF
 VTTCKNHGGSPRPPCRYRATAESRY|VIACEHG V


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MTHCKLTMG

MTDCRLTSGKYPKCRYSATAQYKLFTIACNPYPLVPVHL TECRLAGGAQRPPCNYRGRTSTQRIRVACVGGMLPVHY 1
$\qquad$ FPVHF

MT TGT
VTCTHKG $\qquad$
$\checkmark \mathrm{T} D \mathrm{CRHOG}$
VTACRVVG
VTFCNLTTA
VTNCKHRG
LTECK
LTM
LIECKLTGSEKYPDCKYNEEERNASYIVACEPPELVPVHL ATDCRLIAGSKAPKCRYRAMTGTRQVVIARDGNPALPMHF TTNCKHTSGTYPNCNYKNEQKNAYYIIACDNKELLPVHL LTQCEHVSGTRYPDCKYKEKNGDAFFIVASDPNELVVPVHL VTKCNLRGGSRYPNCEYRNNGVRAHVVVCNDQPPLPVHL VTDCQTTGASRWPHCVYRGDVRSKRICVACKNGQPPVMY LTLCEHTSGKYPNCRYKEKHMKASYTVACDPPQLVPVHL VTMCQLVSGGSYPNCKYKEDHLTKSYIVACDPYKLVPVHL



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| UniRef90－G3VTX2 |  |
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| UniRet90＇M3 ${ }^{\text {¢ }}$ S 1 |  |
| iRef90－M3WX61 |  |
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| UniRef90－UPIOOO3F13， |  |
| UniRet90－G1SDS 1 |  |
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| UniRef90－UPIOOO42 |  |
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| UniRef90－UPIOOO3340A72 |  |
| UniRef90－WoUVK6 |  |
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| UniRef90－UPIOOO33171 |  |
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| UniRef90＿Q8WN61 |  |
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| niRef90－UP10003C |  |
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| UniRe990－L8162 |  |
| iRef90－P10003F |  |
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REKH
 D ARY $\quad$ KK LT QHYDANPT GRD DRYCDSMMRQRGLNSP C RESRHDKFLRQHVDFPKSELDARRYCNLMMQRRGMTATGC


YPQFLRQHVDNPKTRARNDRYCNMMMQRRGMASP C
TPAQWFQIQHLNM AHRRCDDAMRVVNGYRRAC
T R A Q WF A I Q HI H P S R S
QTPFKKFEVQHVQPNSLP
TKA QWF E I QHI QPS PLQ
TGAQWFAI QHINMT
PRYRDFLAKHYDATP QGRNDRYC

C N K A M H GVVN N T Q H C
HDRCD DAMRVVNWYRNRC TMRRR R HLT S P C $M M Q R R G M T S P K C$ MMQRRGMTSPKC
TYQRFLRQHVDSTWPGGNNW
$T S A L R F E I Q H V Q P$ G P Q G DRRYRHFLIQHYDRSPK GRDNKYC QPTASQWFATQHDTNK ANLQQ

T PAQWFEIQHVNMAGPK
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T P F Q WF K I Q H I Q P K T L R
 QTPSQWFAIQHUYKKVSPK

PRYTHFLDQHSDPNPH RRDDRY
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TWAQWFN I QHI QMANP L PS QWF TI QHI SNTTT
T WA Q WF RI Q H T Q M
EDYRYRHF LSQHYDARPK GRADRYC
TSSQWFKTQHVQPSPEA
C C N TAM G K V N K Y T K H C ESPYQ CYSAMSNISKYTEWC ESPYEKFLRQHVDPDMS VQKC
 T RA QWF E DQHIN M $P G G$ TDFY
PRYRAFLTKHYDDKP QGRNDRY
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TPFQMFQHKHVQPDPRP
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Q D
TSARWFETGQHVVQPR P Q R
F $L$ QRHVDQPKSPGGPRQYC
$R Y$ Y H F L T Q H YDAK PK GRNDEY
SVQTFQ V Q H L R E HRVQ
YGTFLRQHYDNPKSNVGN RYCNREMRRVNQLDQRC
$T R V Q W F E D Q H D R A G P V Q$ CKMEMSRVNNYTRHC
YRSFLLKHYDPTPQQGRDDRY
T R A QWFEVQHINMTHSR
CDNAMRVVRYRGYC
RYKEF DRKHYDPKPK GHDDSYCDAAMMENRRNMTK HC
TKAHWFEDQHDQP
K VT A A QWFKI QHVQPKPXA
T R A Q WF EI Q HI N M A H S Q
EKF LRQHVDYPRTEVPDAQY

RYKEF LRKHWDPNPT
TGFQKF DKH I
S N D Q Y C M M E M K WVN D Y N NAC

PRFMRFQRQHMDPN
$G V A P V Q C N N A M H A D V N L L N R \square C$


ETRRYEKF LRQH VVDSPRTSSLAAHRY
$\begin{array}{lll}T W A Q W F E D Q H I & N M T & S \\ S M S D Q F Y W Q H V D S S V T R G D D S\end{array}$
YKTFLRQHYDNPKSNVGKRY

TPARPFSTRHIDNPRSPGGHHRY

WS SF Q NKHID Y P E T S A S N P N Y
A Q WF T Q H M Q S S P Q R
TAVRWFITEHVRAGPVR
K NMTHRR
P N T G GRY
RTQWFEIQHI $\quad$ PNTGGRNCNNEMLRVNNYTKRC RY $\square H F L N Q H R D N S N P N T G G R Y C N D M M K K R G L T R P N C$
TPSQWFEIQHVIMTSPR
TWAQWFETQHHINMTSQQ

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SYQKF LREHV DYP VT QVP D $\square Q Y$ C S L M MKRRNMAKN Y C
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Y T QFKRQHI DYPKTAPDNQNYCNYMMKKRN N K P K C


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UniRef90-Q9JKı0
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70
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100
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120
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# 20 

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TRAQWFYIQHLSAMGPVQ
T WA QWF GTQHLNM
TRARWFQI QHL NMT
AHPRCDDAMRVVNGYTGRC HRRCDDAMRVVNRYTRVC $E T R Y$ EKF L RQ H V D H P R T G L T GHRYC QVMLLARRQVTARPC R E LLRYNKFKRQQHI DFPRTRAQDVNYCNQMMRRRGMASSSHC TP S QRFG $T$ QHI Y NRAYPR CDDAMRVVNNYTGVC TPSRWFII QH\|RNSTT $\square$ Q CNAAMLGVNRYTRRC S Y Q Q FVVTRHFDSPKTSAANDRYCNDLMQRRGLTRVFC K P P R Y M H F L N E HRDSNPSTGG RYCNDUMRKRGLTTSPNC K P P T K D T F L R R I I I DP GRPDTDSAYCTEEIMMKNVHNNSC YKTFLEHHYDGPKSNVGKNYCDTMMQRRGMTKPN REGEDFLMKHYDFPRS VGGSH YCNAMMQSRGMTKPKC RET P YEKFQRQH DDKSPEPSNT DCYCNKMMKKRYMTT GT C

 TPAQWFETQHVQPRPQGGCNTADHKNKSSHC
T WA QWFE $\square$ QHI NMAHPQCSDNRYRMGMVNRRRM DV KRFQERHILERHENPFN SLYCNKVMKQRNLTRN Y TKF L R Q H Y DNPKSKGGDH YCNKIMQSHGLSSPKC KESAYEKFQRQHVDEDSPSPYDDAYCTQRMQAKNMTQRTC MHGVSNYTQHC TPAQWFADQH $\quad$ K MANSIVCGSAMRVVNSYTGHC $E \square R Y$ QKF L R Q H Y H $\stackrel{R}{R}$
 E E VMAATLEQLHVDYPQSDVP VRYCNHMQIQRKEANNTC
 PRYEKF LRQHHDHPRTNAGRD YCGAMMQRRGMARP C ETRYEK F L RQHVDPRTSPLSAHRYCETMLARRQVTARPC $Q N R H M D \quad P G S G P F G P L Y C N R T M N R R N L L N R N$


 T S A QWFE T QHVVQLS P K R C N M M M P $\square$ N QDK K R C PDRYKHF L N QHYDPSPT GHNARYCNRKMRS DNGLRKPC KHFXDFKPKGRNDRYCES $\quad$ MGKRGLTMP C E D R VWLLT ME Y LTHVDYPK S DVHV RYCNSMILQRRTIRREPS

 GTAR R N A M A M K K R
 $R Y L H F L N Q H V \quad F G G M N E K Q C D S V I R K R G I T Q G N C$
T P A Q WF EVQ HI NMTNS Q
EHLHVVDYPQSD
Y ER R LLL LHVDANPS
$K A P T K K T F Q N Q V L A D P D R P$
$S \quad L V R Y$
$G D D K Y$ C N $\square A M Q P \square N K H L N S C$ QNGL DPDRPSDPHYCNDEVRMKNVHNRY Y CNTVMPRRGLTRPRC E D P E $\square$ A T L E Q L H V D Y P Q S A V A L R Y C N A M L L H R VI K E N T C
 E E H L N V
 E ETPYEKFRRQHVVDAKMTA

C NTEMRVINRF
TK A QWFA $\quad$ LQ H $\backslash$ N M N P P S
$\nabla R Y$ V ARECNDAMRVI NKYQRCC HVK H NHSC
K P P TK ETEKTR VI ID SEMP LT DREYCNDEMKMKRVHNRYC KPPTKEDFQKTVI I QPGRPLSDPEYCNDEDKMKNVHNRYC EDIVKS TLEHLDV DYPKE DLLR RYCNAMI F QRII RENS C QPPAFYRFQNRHIDVHHNPSNPLYCNRIMKKKNLNR
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TL E H M HVVD Y P R S H L L P
E ETMVSTMEHLHVDYPRSDFP
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ARY
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VR Y
$I$
$I R Y$

K E T P Y E K F I R Q HVVA K

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K Q
K KREHVF KLKNTF KKEHVF
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UniRef90_W5QEP3 UniRef90_UPI0002C6362E UniRef90_UPI0003345338 UniRef90_UPI000334332D UniRef90-F7G5R4 UniRef90-WOUVFO UniRef90-WOUTJ2 UniRef90_W5QEN9 UniRef90_UPI0003EC0B37 UniRef90_UPI00046B7AF1
UniRef90_I3KZH8



 1 S DCSITGG RNPDNYQTTNSRKYI II ACDPT GVVWPVMF LTMCEH $\quad$ GS G KYPD RGT



 LT NC HL V S G MYPDCNYK DK Q
$V T \square C R H A G G S P W P P C Y Y K A T A G S R D D V I A C E N G \quad L P V H F$
 IT T CR HVE GXP WP P C WY RAT QVFR D VV ACKND




 VIT C S L Q S G DRQPK CKYR GQRSTR HITTVGCA QTWPVVY






 -

## Y


 $M T V C K L T E G T R Y P A C N Y R V F A T E G F I V V T C D D M G P$ LT NCNLTAG KYPNCCYKDAA HCKF FII ARDPSHDVPVHV



UniRef90 UPI000441D968 UniRef90-W0UTJ5 UniRef90-G311R6 UniRef90_UPI00032912DA UniRef90 UPIO003344E17 UniRef90_UPIO0033187A0 UniRef90-A5HAKO UniRef90_UPI0003C2A09C UniRef90_-Q29606
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UniRef90_S7NUNN

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 GRD STSNYCNQMMKSRNLTQNRC
SPRDCNTMMAPKMKHNRSC
T L Le QLHVDYPQSYVS EHLHVDYPQNGHL
QWLETQHVQP EPTKCQGCSLVMSHVNKYRTCC EPTKEKFKRKMIVVPGRQDSNEEYCSHAILFKNDHNKRC TSYSDF $\square$ KRHDDNPKSRDCNAMMAHKMKTHNQC RAEALLFRSYRDY LRSDDLM ARECNAMMAHVKKHNHSC KPPMKKSFQKHVI IYPGRSLYDQNYCNDETREKNVQNRYC PRYQKFDWQHHDNPRTDVGRD YCGAMMQRRGMAQP C ETNYEKFRRQHVDAKMS VKKCDTEMKKKK Y YRNKC
QDVG $\square$ MT LEH $\square Y$ VDHPKSD $\square \mathrm{PV} R Y C N S M M K S R N D K$ RAESLIFRNNKDY LDRDQTD
EEARMPSFEQLNDDYPRTDVP
KRFQERHMDTGPGPF
KETRYEGF $\square$ RQHVDASMT
ARECNALMANVKEHNQSC

KETPDKKFKRQHVDANMTA ARECNAMMAPKMQHNQTC MRYCNYM LDQRVIKENTC ARECNAMMASKMKVDNNC DPPYCNKTMYQRNLLKRN VEKCDEEDKKKWIYNNSC EKCDAEMKKKRTYNNKC TLEHLHVDYPHSD $\square$ P YDRFLLQHFDAKPK GRDDRYCNNRMRYMMKEDRRC KRRFLEKYVDEVEDPGPPDVYCNDLVRNRNDMVSSC
PAETFFQRNRDYLRSDPT PRECNVMMKHKTKEHGSC DYLR LDDMN
 $K P$ VTKQKFEKNF D RPPTKEKFDRFTI I QPGRPLLDNYYCTDTI KDRNVHHRKC RPPSKEKVKRRVLVNPGMPLGDSGYCNYQUMRKNVYKHSC

PRHEKFWRQHHDFPRSNVAGQDYCGAMMLRRGMARP C RP $\quad$ YELIFKRQHI AKGMVATACTSEMKRRDINNKSC RPDTKEAFQRQMIDDPEKPDTDSKYGTDGMXDENVHDKCC

RYEKFEEEHDDYPKSNRLF
FETQHILNMTHHP

CDNAMQVVNRYTKRC
ARECNSMMAKVKEHNRSC
ENFRTLYDDYPKVKFSFARGCNGMMAYVRIDHWYC
T WAAFKNNHISYPKR】EKPNTYCYAMMDRRGMTRHRC SARDCNTMMAPKMKYNHSC PDSYRKFVSEHVDPKTRPPSGQSYCDHMMRRLSQKDHMC PTPKDVFKRRTI DDPERPDTDSNYCTDETKMKNVHNRRC

TYESFCRKHUDKDMTDMMVNNKCDSVIKKKNIYNNNC ETRAQAFSQSYPNYDRSDGMD RECNTLMAKKMKYNHTC RPPTKETFKSRVIVDRERPLYDPDYCTEEDKMKNVHKKLC TYQDFLYKHMDFPKTSPSNAAYCNVMMVRRGMTHQRC EENSYGKF R HSHKDY LRSDDMT RECNTLMAQKKEHNRTC

YERFLLQHVDSNPS GRDDRYCNNRMRRVNNRDGPC VRYCNAMILQKI DREPNC ENFRT L H $\square$ DYPRYAKGFRGYCNGLMAYVRQQTWHC NVRECNTLMAPKMKYNHSC

 REENFWQQHYNDQRSDEA QRQ $S G A Q C F A \square Q Y \square Q P$

SALQCP GAM
RECNADMAQKMKHNHTC KPSR EKADRKVIAYRGSSFSSMYCRDEMWYRNVYRDRC FWKYHVDYPKTKGLSHEYCNVMMRKRTMIRGRC EPSKENFKLRMIVDPERS FDDSFCSDADMFKNDHNKHC
 SSLSTFRRLHDSFSKSPGNDSRDCNTMMAEKAKENNRC SSLSTFRRLHDSFSKSPGNDKECYNDIVIWRKVANGSC S QAFHFWNYHVDYPKTQGTPDQYCNVI MQRRGMTRNHC SRECNNLMAHKMKTSNQC
TP VSWFQKQH LLEKPKS
FATEHMDPSSP号PPGANCLDS MRDC
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S WA AFKNKHI DSKNQYPPHNLYCENQMQKRHMTSHCC
K P P
RYERIKEMGLADPDRPLYG
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K N T N S F VV｜HAP H N Q｜L｜K D｜l｜CSWA GTHY
50
60
70
80 $\square A E Y T F I H E E L D T V R G V C D S P G F V C E L K G G K C H K S S R P F D$ KHFNTFI HEDUWNI RGI CSTSNVQCKNGRMNCHE $R L D N I V S M C N T$

## H E

KLSNNF
F Q I N A F
$L A Q Y T$
$K$
$K$
$K$
K QDN T F
TPMNT F
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KETHTHF

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UniRef90-I3N829
 $L T F C K L I D G Q Q V T P H C N Y L T F I L E K F V V M T C N D M K L Q P$
 M T L C K L SKA D QMP N C H Y L T F DM K K Y I I MT C
 $\begin{array}{llll} \\ \text { L } & \text { D C R ETG S S KYP N }\end{array}$
 $M$ TVVC E L I E G T R Y P A C K Y H I I S P K K K G F I L V


 GVYCNLT D G DMMSDCEYKSVYKK GDALVTCRW
VTTCELLKR TQGARC■YRSHAASRYVVI GCNHG MWPVQY


 LTVGCKLKPGQVTPHCNYLTMILEKFIVITTCNNMK

 I T E C S I DG $\quad$ G R N P DR Y R T K N S K K Y I V I A C D G



 LT F C K L S T S D QVVPNCNY LTTFI MKK F I VI TCND
L T F F C K L

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

 V T DCFNIGK D GQPPNCQYRTKFSYRKI RVICKND

 $V$ TVC S L GAK QP P T S C R Y N S T L T N K Y L Y L L C S GR $V$ V D C H L DP G G R P P H C R Y H G S L K S S R R RVVAC NA ER QP $\square$ HL
 GVYCNLDEGVVMTDCVYESSYRQGQVLMTCRW
LI NCKL KNNAKKPNC QYE G ILLLNRKLLVQCDNNNR P V V F F LT FCCKLSKPGQVPHCNYVTFLLEKHZLIDSCNDMKV
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## LTYCSTQSYARPPNCGYKAQAFSEKVLVVCVRG








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$1 \quad 10 \quad 20 \quad 30$
F $\square R K H V D Y P K T K A P N A N Y C N M M M K N R G \square Y ~ G ~$ REQKFWQEHHN QGSSNQEVQKQMRQUNSGKRRC KNFRNLHVDFPKYPESFQGYCNGLMSYVRMQHWHC KGTPYSDFDKRNLDNPKSDRNDETYCDQMMRRRNDNCQRD

FRKEHVDFPKTATNNNAYCNRMMWDRVMY W W
TPDSWFENQHILKKNLS K QPTKERDKEKDI AVYDRPDHDDDYCDSEMKTKSDHHRGC RAPTKELFKAHVI DDRKRPDHDDREYCNTDMANVKQPNQSC SSYEDFLRRHVDNPKTDLNNHNYCNRMMRRKGLLRKC
 $K D F H M L H V D Y P R Y P K G F Q G Y C N G L M R G R K Q K S W Y C$
$F R R L H$ RYQNFLTQHVYPTMTEAK CTSEIRQRKITTNNC RVEKFKKQHI IEPVTEES CDEGIGGRNITR

FQKEDIVYS RQLKNSRYFNDMMAQKPGSKSTC QTADKNFRTLHVDYPMYPKGFHGYCNGLMAYVKGQDWYC


RYEKFKRQHVDKKMTA
RYKNF $\square$ NQHVGPDMS RPPTKESFQKHVMLAPDYK $\square$ DEYQRCNSEGBPNNTDNGC

AKDFWTLHVDYPKTKGGKPPEYCNNEMLAARNGUNRYC EPTKERFEEKSMIEPDRF

RYKKF

QPPTK FRRQHVNNPKNA!NNKVYCNMMMWDRGV FW SKMABP QRPFYGDDYCDSEIKSKNIHHRLC
 ETAYQQF LRQHYN KCGMGTKDCPSVMSERCLSKP DRECNALMANLKSKDHPC E DAVQNFRTDNMDYPKAKFPDDGYCNGFMSYVRKEQWYC
 KNFRTLH』DYPKXAKRFRGYCSGLMSYVRQQSWYC
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FKKKHI
YPSMDERRCTDTINDRGINS GRC
SKARTFRLMHI DFPRSAPGFRGYCNGLMAYVRRESWQC
RETPNQKFRRQHVDPDTSPPGNQAYCNGLMGYVKKQSWFC
FRRLHYSFPKGNGNDKDYCNDMVVWRKVANGSC EATYETFCWQHVQPSPQG MGTGDCYNVMKN INQGRGRC
 TFETFRRQNI $R$ RDP GENECEEMIRRGRED NVRTC

 KFLLKHWNYPRSEDSNGTYCDTMMQHREMY
 ETPYEKFKRQHVDAKMTAKK CDAEDKNKQTYNNTC KFNKNHVDNTTSPAMPADYCEKMMRARKI Y WN EDRVEMFKDQHI DEPGTKES AGYDEDRKKNIKNGNN

FRTLHIDYPRYPEGFLGYCNGLMAYVRGRKQHC QDHMYQRFLRQHVDSKVTNRNESYCNLLMQRRKMTSRYC NYQECNAMMDHKKGDKHHC
FQGY CNGMMSYVKKQDWY C
FR L N KKFRLINVDYPKVRFSFGDYCNGLMAHVRKKSWFC K D F WTL HVDYPKTSGNPSQYCNVMMKQRGDNDSYH K NFEHLFI DFPRYEDSFQGYCNGIMAYVRMQKWNC A QVFWTHHVDYPRTKGSPSQYCDDMMDRRGLTNRYC
$A Q N F H N L H I D Y P K V A E G F Q G Y C N G F M A Y V R R Q N W F C$ PEAQNFHNLDMDFPKAEGFQGYCNGMMMRVGMFPGRC

FNKNHVNYPKTSAPDSTYCNLMMQNRGDYDNM
PPFEQFDWEHWDYPKTPASNQNYCDMMMWKRGLY
RPPSKRK EK V VLEENWRPLDDPQYCDE LMKDRNVYK LRC TFRRLHISKGNSSGGGKECCNDMWRKVSEANGSC

 DAQYDKF LKRHLDFPKSAENDHQYCTTMMGRRSI

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

PPFEQFLREHWDYPKTEVSNSTYCDMMMWNLGLYYG FIRHHVNNPRTPAPNPRYCSMMMRRRRUY G TFRRDHYSLPPNPGNNKHYCNDMWRKVSEANGSF RVKKFNNQH II DDPETEKS KRGYCDKDIEDREDKNGKH
 QPMYQRFQRQHVDPTVTGGNNS YCNKTMQTQGMTRHTC

MSKRFAKKHI MTESKSCDTAMVPDNQAMRKC
$M Y Q R F L R Q H V H P E E T G G N D \quad R Y C N M M M Q R R K M T L H H C$

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UniRef90-UPI0003B4C9B5 UniRef90-E7FH76 UniRef90-UP10003EBECA1 UniRef90-UPIO004434C3A UniRef90-WoUVK4 UniRef90-M4AYU5 UniRef90-UP100032B1DBE UniRef90-UP100046C19E9 UniRef90-UPI000359E45C UniRef90-G3VFD7
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UniRef90_UPIOOO2742B1A UniRef90-L8YHYO
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UniRef90 UPIOOOOF62D9E UniRe99_G3VE17 UniRef90 UPIIOOO3F1243A UniRef90-G5BFW2 UniRet90-G1NS85 UniRef90_UPIOOO3C46331 niRef90_M7CKE9 UniRef90 UPIO00333AE87 UniRef90 WouvC0 UniRef90-UPIO003C8AD26 UniRef90-UP100042ACE5D UniRef90_UPIOOO2A488E6
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UniRef90-O4RN1 UniRef90_Q4R7N1
 VPHYTFI HEDVETVKSVCNSPAVACELKGAKCHKSSRPFD KPHYTFIHEDVETVKSVCNSPAVACELKGAKCHKSSRPFD PRMHYVIHAAWEDIRKFCKHSDSFCENYNEYCTDTQESFA KYTNTFIHATAENTSKVCTTDGVASGPYR Y YESKSPFN KASNTFLHVSLLQSVDDVCALPTVPCKKDKGNCHRSRDLVP KPENAFLHGSFQNWANACDFPHVDCDSGQSKCLHQVQSLSK VSEYTFIHEHLGTVKAVCNSPVVPCEDKGAKCHKSPRAFD QWSNTFIHASRERLTAVCTSRGRKLDGN HTSKSLFS RNFNTFVHESFAKVQAVCQRTKTNCQPKWNNCYMSRSQMS PQ HYMVHAPWREVQKFCKYSESFCENYNEYCTFTEDSFP YQI HYMVHAPWREINRFCKYSDSFCE KEVNTFIKTNITKDIMPVC KPKNTFILSTFEKVKDICTEQHVPDEDGGNDYRSSKEMD KEKHTFIHEHYKTVRA YYDTPSIPCKKRENNCHQSRELLQ PKDHYVVHAPDEDIQKFCKYSESFCENYNEYCTDTQNSFP VKEHFFLQASYESIRHDCYNDFVPCRNNVRKCHRGREDIK KDTNTFLDNPTEVKNLCVEGKFDEKLQMT K K K K KFT KKMNTFILADAKEVKSVCSGEGV YNNARHYTESKKKFT KPVNTFLLANKRLIKTVCGRAGSP RPFHTFIHESNST DNDCANTNPHYASFASNSYESQNPLH VKEHYFLQEKYEDIRQMCYYSFVRCKNGDRKCHRSKKFMF KETNTFILARPKQVKPVCGRAGEPYGQ MMKSLQPFH MAEHYFILMPYNEAKKICYTRFVECKDGDKKCNRSRVPDE KYTNTFI HAP YPEHYFVKVDYQVLKDACHGRRVRCKNGPGVCRRSTDVIS PWTHYVLHAPWSQI SKNCKEPDSFCQDFSEYCSDSQDAFF KATNTFILDNPSEVKNDCVKGKFDENLQMT KSHKKFR KLKNSFIINTTKQI QDVCGKGGTP MMGDLRQSTSPFQ PKDHYVLHASWKDIQKYCNYTDYYCDVYNEYCTLTQTSFP PETHYVLHSPWKAIWKSCKNSESFCENYNEYCTLTTKPFP VDANT LSDDEQVKAICCNGGRCDP RSGMTERTAKFR VQYHYFLKTTYEMLQKTCYNTVVPCEDGTDGCKKSKEADE PKDHYVLHAPWTAIKKDCKYSESFCENYNEYCTVTQDSFP RKEHFFLYDPYEELQKTCYNMYVACKNGVRKCHKTKKLIE KKMNSFLLATESQVKAVCEKGGRP PQTHYMVHAPWREIQKFCRYSDSFCENYNEYCTLTEDSFP KDNNTFIHAYSPSI NRVCTEDGT Y KLSNFI HGSMEVIHRAPKAPRCKCGQNGDSGSESPEA E KGLHTFLHEAFSSVAATCHTPSTACKDGQESCHRSQKPVS KGปNTFIDSTKDRVKGTCENGSLNGE MRWSREAFP
 KEAHPFIVSTEIILRDICKGK GNLDMITSTRKFT RPTNTFI HVNEARMKYICRSG KRGSKDTREShRAYP KKLNTFIHAREEVIDATCTMGKVHVIKGQKHKKSISKFR PKIHYVMHAPWKAI QEVCKESESFCENYNEYCTLTEDAFP QEANTFIHAPDGSI NGICNDGGTP GKPNERHSVAPFD XDRNXFLLESFSSVATTCQ YRLQEWHGNCHQSHGPMC PKDHYMI HAPDKTVQKLCKYSESFCENYNKYCTLTQDSFP KDTNTF LSDYEKVKACCNGHGSPYE NTCLTESKAKFS KERNTFIFSTFEEVKDUCTEKGRVYKGNDNLYRSSEEME PVIHYVVHTPWHTIAKTCKHSESFCENYNEYCTDTQKAFP KYFNTFI HED DWKI INTCSTTNTQCRTGEMNCHES
 PRTHYVVHAPWNALRATCKHSDSFCENFNEYCSFTKDAFP PKINYMVHVP DQS:RKYCMHSENFCVSYNQYCTMTKDSFR PKVHYVLHAPWKDI QKFCNYTDYFCDVYNEYCTLTRDFFW
 K LK HDF: HEPVEKI DNVCRGEGDYGGGGW VGYOSKHFFS KLSSNFIHGSLEALHGDHKAPSKCKEGQSSCCESPELEN YSEYYLVSATYQDLQKACYGKQVKCKKGASFCRRSTELMK KDSNSFIVSSDYRVKQTCTGEGEPYGDK TLSKGTFR QGKNTFIHANETQLRAVCSGGTS M HGRDTRDSLGTFR
 KPKHTFTHEPTEKIINVCRGEGEYLGDGQKCYQSKGFFS KLINTFIHAPDRPINNVCFGGGTPFPSG CYGUSKYFFQ KLSNNF:HGSVEVVDGVPKAPSCKCQTSGDSCSETPEMR K




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UniRef90_G3VJ40
UniRef90 ${ }^{-}$WOUTE7
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RPPSKRK $\square E K M V V E E D W R P \square H D P Q Y F T E E T K Y K N V Y K M R C$ PPGYNRFVRTH TQTRMVTQDCSRVMRRDQLGNEPNC TFRRLHYNFPKSLGNGKQYCNAMVVWRSEANGSC FMEKHIVKEGVETN CNQTIKDRNDRKNNC
 QTA $\square K N F K H L F \square D F P R Y A S S F K G Y C N G \square M S Y V R M Q R W D C$ TFGRLHYTFAKSPGNDKEYCNDLVAWVKVANESC TFRRLRYSFGNSPGNDKEYRNDMWREVSEANGSR KPPTKER $\square \square E M \square T V G E R P \square Q D Y D Y C N S E L R A K Q \square H K G R C$
FYQKHVIGNMQP
SEAQDLLHHQTDRPRTKDSANHYCDLMMKARGLTDQSC
AENFRAVNVDGNMQPFSGDQCTTVIRERGINHNTC
YELDFAQHUDHRMT
DARYTKFRSLHYNDPKSSGNDKECCNDMWRKVSEANGSC
QDLLHH QLDANKTKGRNDRYCDSMMRQRGLTSPSC
TFQQKH
KEПADKNFRDKYTDYPKYPRGFHGYCNGLMGYVRRKSWYC
WATFREQHI
PSTSSDDCNTIMKDIYIVRGQC
WATFQEQHI
EEDGYGKFRRQHI NAKMTAMD
PNSFOFRDLINDYPRVKEEFHSYCNTLMSYVKKQSWFC
SVEKFKKEHVDPKTSTTNDHRYCTLLMPLLWNLTTPFC
WAKFQEKHI KPGPNTSNDNCNTVMKSDYIVGGQC
RFRKHHVDFPQSPANFPNYCEMMMLKRGIYRTF
TSQSVADFNCNRTMNDPAYTDGQC
$\begin{aligned} & T S Q S V A D F N C N R T M N D P A Y T D G Q C \\ & K S Q G N G K E H C N A M V V C R S E A N G S C\end{aligned}$
VREGANITNCDOTIKEREIGNNKC
PNSFQWFVREQVDPKTSATNDHRYCNVMMPRWNLTTPFC
TFRQFVSRHVNEPKTAAPNNNYCNRLMQQRGMTRPRC
HQ
WAKFKEKHT
TFEEFKKQHILPEGSSTSS KTCNDMMKKINKVENTC
PEFKTFLKNHVDY田RTSFSQHNYCRMRMRRVSLNK
SYNDFKRKHLAP AGMKEDDCTTLIERKIKEKNQC

PPFEHFLWDHWDYSKTSDPNNNYCDRMMWYRGLY
KNFRNDNVDYPRVKFNFLDYCNGDMTLVRGTRQSC
TFRRLHVLQENSPGRDKECCNDVLVWRKEANGSC
HVDEQSQTLYPSPYCNEMMENRDMTTGKC SSSMTFRRLHYDPKGNSSGDGKGCNDMWRKVSEANGSC TYNYFKRKHD TPFQWFKVQHIDPNSLP QPSYGQDPNHPYCTQLMWSQGMTTYQY TFGRपQYGFPKSPSNDKEYCNNTWRTVSEVNGSC
SS $\square M T F R S \square Q Y S F P K S P G G D R E C C N A M W R T V S E A N G S Y$ YGTLKKKHWDYPTTPPKGVSYCNYMMKSRREANGY TFESFKEDHVDYPKTAPNDNEYCKKVMGGRGQTKLKA TYDDFKRKHILKS CDDMMKTVNDDSQC SSLXTFRRDHYDXGKHSGNSREYGNTTVAWVPEANGSC YSRFLKRHLPSGTPDSVDHNEWEKFIKSLG GCD
AAQTF MMRHLPKGTPTSLDQNQWEKFIKSLG GCD YEAFKKKHI LPENVSHKCDDMMKNINEVNKC
 WETFQKKHLTDTR DVKCDAEMKNK KA DFDC RHHMDFRWLSCNRHNYCNMRMKKMT G G
RHHMDFRWLSCNRHNYNMRMKKMT
G RRPTKKKFDQMALPNGSSALADKECCSDMMAWSKVPEGPC SFEVFKKMRVDYPKTPPQGVNYCEYDMKSRGLTYLR TYNDFKRKHIDPKK GSHDCNNMMDNVNDDNC NQHIDFPRSAPNDQGDCKRLMQRRGLTCPAC
TFQKKHDTNTR DVDCDNDMSTNNLFHC
PSADKFKKDHYNFPK GSDKYYCDGMMTWRKVENRSC EDGAWQEFMKQHHLSDGLDFS QLSSCDGMGTVMEFLKG RRLQYSDPNSSN WETFOKKHLTDT
TFESFKELHVDYPKTAPNDNEYCKKVMGGRGQTKLKA


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UniRef90
UC1C475

## UniRef90-C1C425

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UniRef90-BOFFJ3
UniRef90_UPIOOO3F07BB1
UniRef90-M3z3V7
UniRef90-D212U3
UniRef90-UPIOOO3503111
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UniRef90-13KY26
UniRef90-WOUVF2
UniRef90-13KXK8
UniRef90-F7A280
UniRef90-UPI0003946CA5
UniRef90-Q8TAA1
UniRef90-UPIo0042AEEF1
UniRef90-s9XXT9
UniRef90-Q98SM1
UniRef90-UPIOOO3290615
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UniRef90- Q98SL8
UniRef90-UPIO003AF757D
UniRef90-UPIOOO3345E19
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UniRef90_W0UV48
UniRef90-UPIIO001DE70D0
UniRef90-UP1000388CDB6 UniRef90-UP100042C3B8A UniRef90_P14626
UniRef90-I31XEO

K
 MNHHYFLQTSYELLQQTCYNLIALCSDGTNMCKMSNKTVE KEKNSFVVSTTNQVQSVCGAGGTPLDAGNLRQSTKPFK KLRNNFTHGSTEMI HGIHKVPSCDYEPNEPKCYKSPERFS KFHNTFIHDTNGK KVKEMCSGIVKSTFMDSKEPLP
 KEKNTFILSDSETVKSI CNNRPDGDVRSKSQFG YPEHY AGVPYGELVKACDGEEVQCKNGVKSCRRSMNLIE KVKNTFIKANSNQVRADCTGGGTP MGNSLFESNNRFP NQVMAMCTGGGTPY PNVHYLVHVSYKSI QKYCKHSDNFCENYNOYCTVTNDS RLSYNFIHGSMEVIHGAPKASS CKYGQTSCSRNPD LD KLSYNFTHGSMGVIHGAPKASSCKCGQNGTNCSRSPE LD YPERYVVGMSYEELSKACYGQRVQCKNGVKFCRRSMDLTD GLVHPLCHSAPPNVTDTCSWPNRTCRPRGNNCHQSANPDN KEINTFLLDTGVRVRNTCAGHHGПRSVG KKNKTFVHSVSPGTRGLCEGPAVTCRKMSENCHD IIFK
 PNVHYVLHAPWEKVKDSCHKTDSFCEDFNEYCSGSQDVFP KWSNNF RSSTEVMRRVHRAPS CKGRTDGDVISESLEE KDRNTFIHGNKDSUKAVCGENGNPYK NNGRISISEFQ KKTKTFVHSVSPNTGGLCEGPAVRCVKMSDNCHL IIFK KKVNTFIDYSATTVKAL CTGVLNSNVL PRTHYVI HAPWTIIQHFCKYSENFCENYNEYCTVTQDTYP PK円HYVLHSPWKEVRQLCNYTDYYCDVYNAYCTLTQRALS KKVNTFIASSATTVKGI KDTNTF LDNPSDIKKICDEGDFDETGQMTKKKSHKRFK PKVHYWI HAPWKVIKGLCRHSDNFCESYNEFCTFTRESFP KSTHTFI HAPASHLQAICGHGGTCDRCYH CDSKAAFR KKRNTF:ISTFDKVKD:CKRRSTRHVSENLYRSSEKMD DNTFIHAPMRSIKRVCSVGGDHD STGDRKSDFHFR XEEHYFI RENYEDVRKICYGPIVECKNGTRICSKSSEEMR KPVNTFIHSTTGPVKEICRRATGRVNKS KLRNDFVHGSDEMI HGDHKFPNCKCNMVEPNRYESPEREE KQDHTFIHKNLTTUADFCRTPPVPCTNSPSSCHNRTHDVN KRHNTFIHDT DCRKVREMCTGDSKSTTVISKEVMP
 KKTKTFVHSVSPTTGGLCEGPAVRCVKMSENCHD IIFK
 KPDNTFLKEKLASIKALCEDK KNDTISHT CD KPINTFIHKPUEAKKSVCRNGDPFP PDDRKSKNTFK KKINTFILETEDKIKGVCNTPATDGKNHKG KSSNNF YGSTEVICGVSEAPS CKSGQNSCSESWEHGG KSSNNFIYGSTEVICGVSEAPS CKSGQNSCSESLEH G KPKHDFTYEPDDKTLNVCRGGGIHLGGGW YKSKDYFT PRTHYVMHVPWNLMQTFCRKSDSFCENYNEYCALTPDTLP YELNNFIHSPAEVTHRVHKA YSCKRGKNCCQSPELEN KQKHFFLQASYEDIQQICDNTFVQCSSGDRKCHRSWNVIA KLSNDFIPGSVEVVHR\|YKASGCKCERNGRSCCESPEDLD KKKNTF HSDTSKINAI CGREGNNAYGПH HYSSYYFN GSSNNFIPGSLEVIPGVHKAPSCKFEQNGLSCCGSPKLEN KRDNTFI NQKAEKVKALCK KQRNTFLHDALQNVIGNVCKQGTTPCNNVLLENKYTTSSTQS KPFNTF H DIGNVLNIYT NVQCNNGWMHCHEVMA N MLSNNFILGSMEVIRGVPKAHSYKCGENGMNCSDSPGPGE

NNFIHDSTEMMHGIPKFPSCR
KMSNUF HGSMEVL HGVHKSPSCTC
Y NTY KPVNTFIDANEEEVKALCK HLLRNSI HDSRERIHEIYKAPSCKCKDNRTITYK FD
 KK KNTF:KQTADSVKALCKNKKDE KQKNTFIVYGEKDVKALCKNIVS KGPSTFLHESFSRVATTCQTPTVACKVAQENCHOTADEFY K KWSNSFIHGPTEVIHRVSKASSCKCGQNRGIRRCESPL
K S I $\qquad$

## M

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| UniRef90 L81t |  |
| :---: | :---: |
| iRef90－G5B5R2 |  |
| UniRef90－UP10003EA7FCE | QKGGSNRPPCEYKGSSRSGKIVIGCNGN \P |
| UniRef90－C1BKN7 | SGTQHPDCVYDGTASTRRURVSCERRILWPTHY |
| 90－Wouv26 |  |
| UniRef90 F7EE66 | LTDCLLMGRTKPPNCAYNKTVTTGFINVTCENNR YPV |
| UniRef90 UPI0001DE70CF | LTDCLLMKDSPPPNCAYNQTGETGFINITCENN YPVHE |
| UniRef90－UP10003BD87B7 | I 1 DCELDSKTKTPPCRYNGKHQFKRIEVSCKGG YPVHY |
| UniRef90－P60154 | G |
| UniRef90＿B0FFJ3 | VVICKHKCKKKHPRCEYEGSSSTRKVVIACER EWPVHY |
| UniRef90 UPI0003F07BB1 | CQLMTNYSPTSCYYSTNTTNQKLYLLC |
| UniRef90－M3Z3 | LTMGKQFPRCQYQSDTSL |
|  | T T CQLAVGEQFPRCQYHSDTSLKK1 |
| UniRef90－UPIOOO3503111 | TACQLTTGKQFPRCQYHSVTSLKKLLTVLAGHPL |
| UniRet90－UPlooo3444271 | VTSHYHTRG RYPDCSYSTTPQNKFYVVAWDPHQLTPVGL |
| UniRef90－13KY26 | VVVCSHVHTSSYPNCRYTGQHLDNRTVIMCENG VPVH |
| UniRet90－WOUF2 | VTQCNLYPEAVPPHCYYEGVTFQMDVRIVCVGK |
| UniR | GRSKSPNCYAGQRYDRR1 |
| UniRet90－F7 | 1 TTCSRVKETPPTTCLYNETTSTQRY |
| UniRef90－UP10003946CA5 | 1 IDCELKSKTKKPPCKYNGKRQFKRIEVSCEGG YPVHY |
|  |  |
| UniRef90－S9XXT9 | K H P ${ }^{\text {Pr }}$ |
| UniRet90－Q98SM1 |  |
| UniRef90＿UPIO00329 | TICTLAHK |
| UniRef90＿UPIOOO38EA | LTVCVLASEQPSTSCFYNTYMSDQRL |
| UniRef90－Q98SL8 | LDCTRDF DTPRP CPYSSRTETNY D CVKCENQ YPVHF |
| UniRer90－UP003AF |  |
| UniRet90－UP10003345E19 | C |
| UniReego－UP100042BED9A | T |
| UniR | LNYCKLSATAPRP CPYNSVTETNVICVKCENR LPVHF |
| UniRef90－UPIO0046C2 |  |
| UniRef90－UP10003FOD9D8 | EA |
| UniRef90－UP100045DC8CB | MCQLTAGKEFPRCQYHSTSLTKMLTV CRDN |
| UniRe | VTACFASTGTRPLHC |
| UniRef90－UP10001DE70D0 |  |
| Uni |  |
| R |  |
| UniRef90－UP100042C3B8A | VTQCNLYPDAVLPRCYYEGVTFSRDVSVVCVG |
| UniRee90－P14626 | N |
| UniRef90 UPI00046BEEC9 | VTTCRYDKTHNKRHWYNGTFYRRHIIIRCNYQTFPIYY |
| UniRef90－A5HAK2 |  |
| UniRef90＿S9WD | TT TCQLTMGKQSPRCQYSVTSLKKMLVV |
|  | TTTCQLTMGKQS |
| UniRef90－UP100038C5FC3 | MTVCQLTDGTKYPACRYQAPPTEGFVLITCD ELLGPVNF |
| UniRet90－UPIOOOO3318611 | LTICSLSKKQSLSSCRYKSIITNQRVYLLCCNGFP |
| UniR | VCQLSPGKQFPRCQYHSITSLKK |
| UniRef90－UPI00038 | RVHC\LTSG ${ }^{\text {VMMSFCEYTSSYKEXWVFIT CQWRNDV }}$ |
| 硣 | TSMFHLTTGKQSPRCQYRSVTS |
| UniRef90－UP1000 | VIYCNLTRPANYTGCQYQQTRAWR【F |
| UniRef90 UPIOOO3C279D9 | K |
| UniRef90 Wouvo | TMCQLTSGKQFPRCPYHSVTSLKK |
| UniRef90－13KZK6 | VINCKRKSEKP CKYKSLVLKKKTK】KCENG LPVHL |
| UniRef90－UPIO00333E022 UniRef90－UPIO00332EF98 |  |
| UniRee90－WPiooou32EF98 | SGCRLTMSSGFPKCOYHSVT |
| $\begin{aligned} & \text { UniRef90_WOUVA\& } \\ & \text { UniRef90 D21820 } \end{aligned}$ |  |
| UniRef90－UPIO003FOF9DC | TVIRQLPTEKQFPRCQYNSVTAFKK |
| UniRef90－10B | $\square T$ T CTGHVD ${ }^{\text {U }}$ |
| UniRef90＿13MWV4 | RCQY S |
| UniRef90－E2E4J5 | TTLCT |
| UniRef90 UPIOO | PTSCHESPGKQLPRCQYNSVPLLKKKKUKCENSEPPHL |
| UniRef90－UPI0002A49D9C | FVTVRSTPGTCLCGTRKVRERHLILACEENVCVPVHF |
|  | FVTVRSDQGT CGIKSTQENKHLILACEENQCVPVHF |
| UniRef90－13KZK3 | LIDCERSSEKP CKYNDILPKNKLKI KCENG |
| UniRef9＿UPIOOO444 | VVVCTLTQGTYWGKIGYKGKKSSNTQ1 |
| UniRef90－UPI0001DECAB5 | VEDCQSTLIAADYPP |
| UniRef90－M7BUM5 |  |
| UniRef90－M7BU |  |
| UniRef90－UPIO0038ES | NSACQLT TGKQFPRCPHHN【T L LKK $\square$ L |
| UniRet90－UPI00027 |  |
| UniRef90＿UPIO00441AA06 <br> UniRef90 I3KYFO | VTSCYKFGGRYFPD |
| UniRef90－M7BPD2 |  |
| UniRef90－UPIO003AE | Q |
| UniF | CENQA PVHF |
| Uni | NVICKVTK |
| UniRet90－UP10003F090D2 | TLMPQLLTKSGQSLRCGYQ |
| UniRef90－UPI00046B48AB | C GLNGFPVくL |
| UniRet90＿Q6EUW9 | RKELP VHF |
| Ref90－E2E4J9 Ref90 Q9DFY6 | ECNVK PRKPCKYK■KKSSNRTC【RCE HEDPVHF |
| Ref90＿Q9DFY6 | LIAECNVK PRKPCKYKLIKKSSNRICURCE HELLPVUHF |


|  | 818 | D S |
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| UniR | UPI0003 | $\square$ |
| UniRet90 | C1BKN7 |  |
| UniRet90 | WOUV26 |  |
| UniRef90 | F7EE66 | A |
| UniRet90 | C1C4Z5 | VK |
| UniRef90 | UPI0001DE70CF |  |
| UniRef9 | UP10003BD87B7 |  |
| UniR | P60 |  |
| UniRef90 | B0FFJ3 |  |
| UniRet90 | U6D078 | DES |
| UniRef90- | UP10003F07BB1 |  |
| UniRef90 | M3Z3V7 |  |
| UniRe | D212U3 |  |
|  | UPI0003503111 |  |
| UniR | Q5QJ |  |
| UniRet90 | UP10003444271 | D |
| UniRef90 | -13KY26 |  |
| UniRef | WOUVF2 |  |
| UniRet90 UniRef90 | 13KXK8 <br> F7A280 | S |
| UniF | 3946 C |  |
|  |  |  |
| UniRef90 | UPIO0042AEEF |  |
| UniRef90 | S9XXT9 |  |
| UniRef90- | Q98SM1 | $\square$ |
| UniRef90- | UPI00032906 |  |
| UniRe | UP100038EA |  |
| UniRe | Q98SL | A G $\square$ |
| UniRef90 | UP10003AF757 |  |
| UniRet90 | UP10003345E19 |  |
| UniRef90 | UP100042BED9A |  |
| UniRefs | I3KG |  |
| UniRe | P18839 |  |
| UniRef | UP100046C2993 |  |
| UniRef | UP10003F0D9D8 |  |
| UniRef90 | P85072 | VK T |
| UniRef90 | UP100045DC8CB |  |
| UniRer9 | Wouva |  |
| UniRet9 | UPIO001DE70DO |  |
| UniRef9 UniRef9 | UP1000388 |  |
| UniRet9 | UP10003C2A8FD |  |
| UniRef | UP100042C3B8A |  |
| UniRe | 14 |  |
| UniRet90 | -131XE0 | Q E |
| UniRef90 | UP100046BEEC9 |  |
| UniRef | A5HAK2 | GRS |
| UniRef90 | S9WD87 |  |
| niRe | 9WD |  |
| UniRef9 | UP100038C5FC3 | Q G Y V |
|  | UP10003C44B39 |  |
| UniRee90 | UPI0003318611 |  |
| UniRet90 | WOUUZ4 |  |
| UniRet90 | UPI000383E7DD |  |
| UniRef90 | L8YA50 |  |
| UniRe | UP10003C00B09 |  |
| UniRe | 279D9 |  |
| UniRef90 | W0UVC1 |  |
| UniRef90 |  | ERG |
| UniRet90 | UP1000333E022 |  |
| UniRef90- | UP1000332EF98 |  |
| UniRef90 | WOUVA8 |  |
| UniRe | D21820 | D |
| UniRe | UP10003F0F9DC |  |
|  |  |  |
| UniRet90 | I3MWV4 |  |
| UniRef90 | E2E4J5 |  |
| UniRef90 | UPIIO0039433 | ER |
| UniRet90 | UP10003338 |  |
| UniRefg | UP10002A49D9C |  |
| UniRefg | M4AZ |  |
| UniRef90 | 13KZK3 |  |
| UniRef90 | UP10004447 |  |
| UniRet90 | Q9DFY8 |  |
| UniRet90 | UP10001DECAB5 |  |
| UniRef90 | M7BUM5 |  |
| UniRe | M7BUM5 |  |
| UniRe | UP100038 |  |
| UniRetg | UP1000274 |  |
| UniRet90 | UPIIOOO441AA06 |  |
| UniRet90 | I3KYFO |  |
| UniRet90 | M7 ${ }^{\text {PPPD2 }}$ |  |
| UniRet90 | UP10003AEA729 |  |
| UniRef9c | 22069 | VGV |
| UniRef90 | UP1000332F |  |
| UniRer90 | - |  |
| UniRei90 | -a3veor | EDT |
| UniRei90 | UP60046B48AB |  |
| UniRet90 | Q6EUW9 | AGV |
| niRef90 | Q9DFY6 | A GV |

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$s \square^{20}$

20 1 L L | D | N | C | D | V | E |
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| N | M | A |  |  |  |
| I | K | C | D | K | I | EANGC

KALGNC
K ${ }^{40}$ SSQXFNSQNMQPSPQASDAKGCCNEVMVWRKVSNGSC NGNCDSTMDPTNKHTKRL TFRRDCYSFPQRPVSNKKHYNDVWRKVSEANGSC PQNNEGWENLMQKKGLCCN WKTFQDKHLTKTR DVDCDNVL SKPLFNC WDTFQKKHLTDTKKVK FRTFMDRHVRNGTPTTDDP CDVEMK KALFDC

lupas 21
lupas_14
lupas_28
jnet conf sol25 sol5 solo jhmm
jpssm


UniRef90 G1TDF7 UniRef90 Q6EUW7 UniRef90-E1U696 UniRef90_UPI00032B1E78 UniRef90-UPI000359EF17
UniRef90-H2LPS5
UniRef90_UPI00018BD556
UniRef90-W5M017
UniRef90 B9TVQ3
UniRef90_Q9DFY5
UniRef90_UPI00022AFD19
UniRef90_E9QDT9
$R$ LSNDLTCGTMEGII RGIVQKMPSCKCGENPGSCCQRAEPEK ${ }^{50}$ KEMNTFIYADPGRVQALCKNDKDNTEEVPGSCCQRAEPEK KYRNTFIYSRPRGVENLCRGKINATNVS GLSDDFPHGAVEMTRGUQKVPRCSCRRGKHLC GSADLE K SLSVC LHGSFPNVTATCQTLK DACKNGVLN KDKNTF VDPSHSLHEDCDGKKDQEPAT $\quad$ C

 KKTNTFI FARPPRVQALCKNDKDNT





lupas_21
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jnet_
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UniRef90 G1TDF7 UniRef90-Q6EUW7 UniRef90-E1U696
UniRef90_UPI00032B1E78
UniRef90-UPI000359EF17 UniRef90-H2LPS5
UniRef90_UPI00018BD556
UniRef90-W5M017
UniRef90-B9TVQ3
UniRef90-Q9DFY5
UniRef90_UPIO0022AFD19 UniRef90_E9QDT9
lupas_21
lupas_14
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$A G V$

- $\mathrm{V} G \mathrm{~V}$

YAS
VGV
A GV
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