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1 ARRKEF ${ }^{1} \mathrm{MAF}^{10}$ LTETEAY $\mathrm{V}^{20}$ 20 LRECMDTY 30 WEMT
SMMK
SMMK
 RGRMFVVNEMVQSEKDYVKDLGVIVEGFMSRL ARKKEYI MAELLQTERVYVRDLQECI ETYLWEM RHR RHRTFVLNELIQTEKDYVKDLGUVVEGFMK RDEEKGV
 ARKREFI MAELLDTERAYVRDLKCCI KSYDFEMRTS PEA ARKKEFIVAEELLQTERTYVKDLETCIVNFVSELKSGVN V QKRSFVLKELVDTEQQYVTDL GYUVEGYIAVMQKGEVPM KRRFVMQELLETENDYVKDLGLVVDGYMEYMKE $\qquad$
40 RRHVMNELLETERAYVEELLCVLQGYASEMDNMSHLI
 $F \vee L G E L V E T E R T Y E D D L G Q I V E G Y M A T M M A T Q G V$

K S M Y V L K E L I E T E K Y Y V A D D GLLIV E G Y M G T M $\quad$ S S R S I
 ARKKDF I GKVLLESPH IGFVNIYLNCMRTYLWEMTS GVEEI


 | $K$ | $L$ | $R$ | $H$ | $I$ | $D$ | $D$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $R$ | $L$ | $C$ | $V$ | $L$ | $N$ | $E$ |


K R S Y V L M E L V E
NFVI AELVN
KRGHVLAELVE $D R \vee \vee Q$
RKMKEPMQELLETERTYVQDKSIVEDYDDC\|RDQTKLL K S ERDYI E DL R K CI QVVYI NEYDESNSTLL
 QHKRHVLKELVETERVYVEELLSVLLGGRAEMDNPADSL

 RLLHHI MAEMVSTEREYVKSLGYVVENYFPEMERM $R K R Q G Y I H E E L I$ RTE ET Y V E D L E L L V L E V F Y K P M S E S

 $D R V V M E I M E T E S A Y V R D L Q L$
DRVVMEIMETERMYVK DL RSIVVEDYLAAHI I DIGN D

 I M R E L M I Q T E
A R K R Q GYI H

RENCAK E I Q TERD Y V K S L E YI DE NY IP ELLVR

 A EKRKNVVAEIVKTEEDYVSKLAKVVTGYVIPMRQRIGQL
 $D K \square R K V L L E$

$R K R W L$
I MREMIG
$R$
$R$
$L$
$R$

| $V$ | $L$ | $Q$ | $E$ | $L$ | $V$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $V$ | $L$ | $S$ | $E$ | $L$ | $V$ |
| $L$ | $V$ |  |  |  |  |  |

QMRSNVVQEI MNTER M
 TERTHVRNLK LMRLFHQPLRLQQE

RLLERVAR E IVVETERA Y V R D L R R SI V E D YL GP L LDD G G S L G RRRQEAIIFEFI STEADYVRDLQLMVEDFYSRLM

 R K R Q RKRQGY F E K N O

RQGY HEL QTEERYMDDQLVLEVFQKRMA






90
100
110
GHCFVT WADKF QMYVTYCKNKPDSTQLILEHAGSYFDEIQ GP L L L K QERRLN MYVVYCQNK PK SEHIVSEYMDTYEEDLK
 GHCFV T WA DKFHMYVTYCRNKPDSSLLI QQHGVGFFEEVQQ


G R C F LE R M T D L L



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 GYCFI FSVEDLNSLYTEYCVNMEQNNYPEAVQFFSEDREK PHCFLRHQEQFDLYALYSKNKPKSDALLASHGTEFFRKKM PHCFLVRMEQFDLYALYSKNKPKSDALLASHGTEFFRKKQ SHYFLMHESQFYLYALYNKNKPKSDMLMAEYGKDFFKDKQ GRCFLRHKESFGLYALYSKNKPHSDNLLIHHGKEFFKQKQ GECFLNHRAGFRMYSEYCNSHPMATYQHNRYSKFFEACRQ
 GRCFLRHRESFALYALYSKNKPQSDSLLDNHGQAFFKQKQ
 CHCFVSHRNRFYHPYCQNKPLSEALRREHVDGCKFFAECQ A LCFVQRREMFFRLYSYYCQNDERLREQDQSEPQFDAACQ
 ARCFLRHSESFGLYALYSKNKPQSDALILHRRHDDGKKKQ UniRef90_UPI00029D7F2B UniRef90_UPI000440ED13 UniRef90-E9ILZ2 UniRef90_UPIO003297A65 UniRef90_G9NQW5 UniRef90-UPIO003F0E029 UniRef90 G3PBC3 UniRef90-UPIOO0441750A UniRef90-T1E1Q1 UniRef90-UPIO004449B26 UniRef90-UPI0003941813 UniRef90-L8HEZ6 UniRef90-I3KKC9 UniRef90-UPI0003F098BB UniRef90-W3VM55 UniRef90-W5MI77 UniRef90-UPI0003DF727C UniRef90-D2VHP8 UniRef90-K1RGX4 UniRef90-D3BF42 UniRef90 F2UOY0 UniRef90_C8VV43 UniRef90_UPI00034F44C2 UniRef90_F1R0Z9 UniRef90_17GNT3 UniRef90-Q7KU89 UniRef90-S4AAJ3 UniRef90_F6US26 UniRef90-UPIOO03443240 UniRef90-H2LXQ6 UniRef90-V5HJ49 UniRef90-W5U5D1 UniRef90-D3BRKO UniRef90_UPI0003F13A42 UniRef90_UPI000455EB52 UniRef90-H9GT37 UniRef90-UPI0004626109 UniRef90-M5GAJ2 UniRef90-K7FFB2 UniRef90-FOZX36 UniRef90_UPIO0044417EA UniRef90_UPI0004547840 UniRef90_D6W697
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 GCCFLKHEEQFSMYALYTKNKPRSDALLSSHGNAFFKAKQ GDLLASEDAHMQPY DRFCSCQDNATHHQPDFKDFDRKDAT GDLLKEHMSHMEVYMEYCVNQGTATKKPEDAAHLQRLRES GNSFLLYADQFKLYSSFCASHSKAQKVLHPGEGNFLQSRN GDDLYQHMHNMGVYGEYCVNQGTAAKVLKSGRDRKPEDEA
 GD LAA ELSHMQPY I RFCSCQFNGTDSDSDFKDFMRK $\square A T$ A Y AFL LTHRVQFEMYALYSKNKPRSDTLLMTSYGHAFFKDKQ GDILTAQQLDHMQPY ITRFCSCQLNGATLIQQQKTDEVPABHG GQCFLRHEKKFYDYALYNKNKPNSDSLMAEYGTAFFKQKQ SDDFLQDAPFFKTYSRYCNNFDKANEVLRECKKREEFKEQ
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 $H F E F S N Q F K V H V P L C Y Y V D C Y S E F P V F F Y D C F Q E F D S A R N$
$G D G L T S E G S N M Q A Y D R F C S C Q Q Q R T D Q E P D F K T F L K K D A T$
 GDVFLRFAPF LKMYTSY DRNFDGA DSAVDEWTKKSTAFAN GNCFLRFKERFA $\quad$ Y DEYCSNHEKA Q IRTVRTFLLNCMLLG A QLFIKHERRDHMYVVYCQNKPKSEHVVSEFGDSYFEELR SEIGGCFGEGFSDYSDYCNTHPAACAELQRDMKLGKYKHF GRCFLHFRARFQ $\square Y$ DEYCGNHEKAQRRSVRTCLLNCMLLG GRDF
GD
L AECFVQRSEDFDDYTGYCMNYPSSELALSPPAALWLQERQ

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V6Q9
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| UniRef90-Q8R4H2 | VKKAADHCRQI L N YVNQAVR |
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| UniRef90-Q6CTG1 | E $\square$ AL Gllat S IA R NIN E N Q R R T E |
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| UniRef90-I1GFY3 | REDALS I I S SVATHVNETIR Q |
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UniRef9O-B4GVD UniRef90-UPIO003837842 UniRef90_UPIOOO4420E7B UniRef90-L8GYQ6 UniRef90-W5M5F5 UniRef90-K7FIX2 UniRef90-TTJJ57 UniRef90-V3ZV22 UniRef90-A0A034V4P7 UniRef90_K1VLJ5 UniRef90-UPIO003F198A3 UniRef90-UPIOOO387D480 UniRef90-M3ZWB1 UniRef90-L5JQ01 UniRef90-UPI0002C3DFB7 UniRef90_J9B1Z5 UniRet90_SgxC15 UniRef90-H2MQ45 UniRef90-Q7Q5K7 UniRef90-H9K896 UniRef90-UPIIOOO3BBA805 UniRef90-13KLW0 UniRef90_UPIO002B8E90F UniRef90_I3JYX2 UniRef90-UPI000388D88C UniRef90-UPI0004622647 UniRef90-A0A058ZC53 UniRef90-L8H154 UniRef90-Q4SEN6 UniRef90-UPIO00441BE7A UniRef90_W5L391

## UniRef90-G2XOJ5

 UniRef90_UPIO00333E1B4 UniRet90-E1B9G8 UniRef90_UPIo00383272E UniRef90 D6WZ80 UniRef90_FAODJUniRef90_S9VWI

KRRYII ADIVQSENNYVATLQRLVNDYKKNLEESSP RRHIMNSIVHSERSYVDSLKRI MQEYKKPLLETEPRL QQEAIWELLHTEATYIRNLKVITDLFLSCLVNDQESG RNKLVKEVISSERNYLNHLNTVDQUYLDPLRNNRPAV QMRTNVIQEI MDTERVYIKHLRDICEGYIRQCRKHTAMF KKIVQELLETEQAYVARLHLLLQVFFQELLRTARSS ${ }^{R}$
$\qquad$ R RKR K K R K
QK
RKRQEADF
RTYVV
AK
$\begin{array}{ll}\text { RRVKVI } \\ \text { RRSKVI } \\ \text { KRSS } & \text { R }\end{array}$
R

RQEVINELFTTERAHLRKLRVLDGVFCQRLSRHGVLP Q E

ROTL K K
 EAIYVEHLRQVIQGYL IFWRNDSA REHILKEMLETERDYVHHLQNL DLFMALKKEQEST RQEVINELFVTEASHLRTLRVLDTLFYQRLKRENLLS RKGQHVVSEVIVTT

S KKRQEVIMEAI YTERDFVKDLEYLRDFWMKPLZSTNPAN KRANTIKETISTEESYIEQLNTVIKFVLNPIKKESILDS

KRAKVIEELLQTEQDYIRDLEMCVQKVLVPLQEAQVPH
 RRHILGSIVQS
K K RLQVVMELLQT
KRONAWE KRQRAI WELLQGEMEYVADLEAI ETVFINPLREAEQPI R QK
$K R A K V V E E L H O$
$R L K V I N E M V T$
RREHCIKELYD QQEALWELLTTELIYVRKLKIMTDLLASGLLNDQRVG KKVVHILAEI MSSEKVFVDVLKLLHIDFRDAVAKATRQN RRRAAEEILTTEVAYVEQLSMLINAYKKPIDAA KENTIKELLETEINYVKLLNSLCLGFDKPLREREDVF SRKRHQVFLELVQTESNYVGILSTIMTLFKFPLEDLIDTT KRRAKVIQELVQTEKDFLTDLELCTREVVQPLRN RKHVVRNLLETEESYVNSLRI LYETYFKPLKQPENHV AVKRQDVIYELMQTEDHHLQTLHI MAEDFRRGMRQEVQL KRQDVIYELIQTEMHHVRTLKMMNMFRKGMLEDLQMD QLAARELB RRALVVEETLM
RKRQEAI FEITTSEYSYI RTMKAVLDSVFHQ RDYIVKELVDTERKYVQDLENLHDFLCGLLNLQESG KRQDVIFELMQTEMHHLQTLLSMSEDFRRGMK EE KRNKVIEELLQTEKDYIKDLNMCVEEIIEPLQEKQVKN KRQDVLYELMQTEAHHVRTLKDMLKVYSRALREELQFS KKLQEAKFEMITSEASYLNSLNVLCNHFVK
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UniRef90-U4LK66 UniRef90_K2H5J8 UniRef90-B4GVD5 UniRef90_UPI0003837842 UniRef90_UPIO004420E7B UniRef90-L8GYQ6 UniRef90-W5M5F5 UniRef90_K7FIX2 UniRef90-T1J575 UniRef90-V3ZV22 UniRef90-A0A034V4P7 UniRef90_K1VLJ5 UniRef90-UPI0003F198A3 UniRef90_UPI000387D480 UniRef90-M3ZWB1 UniRef90_L5JQ01
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UniRef90_L8GYK4 UniRef90_Q7Q5K7 UniRef90-H9K896 UniRef90-UPI0003BBA805 UniRef90_I3KLWO UniRef90_UPI0002B8E90F UniRef90-I3JYX2 UniRef90_UP1000388D88C UniRef90_A0A058ZC53 UniRef90-L8H1S4 UniRef90-Q4SEN6 UniRef90_UPI000441BE7A UniRef90-W5L391

## UniRef90_G2X0J5

 UniRef90_UPIO00333E1B4 UniRef90-H2LIW8 UniRef90_UPIO00383272E UniRef90-D6WZ80 UniRef90_F7AOJ5UniRef90_S9VWI6

LMPREELDA $\stackrel{5}{R}$
60
70
K प $\square$ REEGPVI ${ }^{80}$ GLIDSTEDKIMFGNIEDIYRLHTNFLADLEYPVKDVPKTI
 ETMTKT
EARRQD EARRQD ENHAL $L$
$P E T V A S Q K S$
$P E G L M T$
$D P L V D E D$
$S$ QDELQN PPAVAN QKEVI




## K <br> K D E S Q T $P$

 KVVR S FMDQTQQLL
## DTFPVDVVK

 PAEVVNK PAETSRK KTMAPTEHHHLF $\stackrel{K}{\mathrm{~K}} \mathrm{~V}_{\mathrm{P}}$
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$\begin{array}{lllllll}L L Q & L & D & S & T & V & D \\ M & K & L \\ P & K A & V & N & G & L \\ L\end{array}$

| $P$ | $G$ | $A$ | $V$ | $A$ | $S$ | $Q$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $D$ | $I$ | $L$ | $S$ | $K$ | $D$ | $E$ | $L$ |



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UniRef90_F2U8R2
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UniRef90_U6HFQ4 UniRef90_B8PB65 UniRef90_UPI000333F28F UniRef90_A0A026W9M3 UniRef90_C4JS26 UniRef90_UPIO004419807 UniRef90_H2S1E2 UniRef90_UPI0002C3D04C UniRef90_UPI0004625F18 UniRef90-H9GPM7 UniRef90_GOT0J6 UniRef90_U4LK66 UniRef90_K2H5J8
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## UniRef90_G2X0J5

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UniRef90_S9VWI6

E IIS DLMLARFDGAAREELQQVAA QFCSSQRFQLFMQEAES


 AMCFI KNEEDF DKY DQY LVGRDQAESVVLSKA QQEFYKRY

 EEI GDEGTWFQKISSRFCSRQSFAQRKDPRFCAFVQDAES C F I K N E E A F E K Y L E F L V G R V Q A E A QE F Y K K Y V A E ETMLP T G E


 GRPFLSRRTRYQDY DQYGKNH GDA DNEKK P SF V S F L Q Q V R GSCFLEHQEGFADYSEYCNNHPGACAELAGLMKQGRYRHF

 SKQNYT IVNK GGDI Y GVVFCSCHTDAMNYYKDLLQNNKKFQN ANTFDKHKSGFKVYTEYCTNYPSTVSMSQEKTACAFQERQ





 A R C F L G VNF DPL YTRPCCYH DRQLS ILLA HRQESSDS QH T C Q $K$ I Y C Y H H D D A H TMLE Y Y E K DEE L K Q HL R D CVQ S L K K R Y E E
 Y QVV DK Y K E R F LVV Y G R Y C S QVES A S K H LD R VA A A REDVVQM

 Q GVGD $\quad \square F L E A A T E F R V A Y P I Q V Q H L P$ A C CF L N R K E D L Q MYFKY HK NLPR AR AVWQECQDCA YF GV C GHGFETFEQTFAPYTRYCAEQSRCQQYCRDRLDNNQLFTA GE LI $\$ N Y QE GF R QYE P F $\square$ A N Q L R CRE WDK $\square H A A P R S P D Q Q$





 A E L E A V Y K V Y C Q N H DEA I A L L E A Y EK D E R V QR I L R S L Y T E





 GKVLLQHAPFLRMYADYIRNFDRADELVRTWTERSSAFRN
 GQLQNGF LMMSQRFQPYVLYCLRVKQTMAYAREQQDNNPQ




 G H R N Y L I Q Q R M K Q Q $V$ Y G E F C S R H N E A V
 S PVLLA HFP Y L S L Y T P F VS S F S DA L A S YPA FAVGDA QQEA
 GQQTI TH H HVQD GKEEK VKSAVGAFCSNQRFSLDMQAA ER DISSDIVEAHASRHFNPYVIYCSNEVYQQRTFKETLKHDER







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UniRef9O-B4GVD UniRef90-UPIO003837842 UniRef90_UPIO004420E7B UniRef90-L8GYQ6 UniRef90-W5M5F5 UniRef90-K7FIX2 UniRef90-T1J575 UniRef90-V3ZV22 UniRef90-A0A034V4P7 UniRef90_K1VLJ5 UniRef90-UPIO003F198A3 UniRef90-UPIOOO387D480 UniRef90-M3ZWB1 UniRef90-L5JQ01 UniRef90-UPI0002C3DFB7 UniRef9_-J9B1Z5 UniRef90_S9XC15 UniRef90-H2MQ45 UniRef90-Q7Q5K7 UniRef90-H9K896 UniRef90-UPIIOOO3BBA805 UniRet90_l3KLW0 UniRet90-UPIOO02B8E90F UniRef90_13JYX2 UniRef90-UP1000388D88C UniRef90-A0A058ZC53 UniRef90-L8H1S4 UniRef90-Q4SEN6 UniRef90 UPIO00441BE7A UniRef90-W5L391 UniRef90-UPIOOO333E1B4 UniRef90 H2LIW8 UniRet90-E1B9G8 UniRef90-UPIOOO383272E UniRef90 D6WZ80
UniRef90_FAOJJ
UniRef90_STVWI

NPQCRR|LIQ|LKD LIVISEMQR|LITKYP|LLLIEN|II|KYTDGGSSE REAQCKFGLNDLLCVPFQRITKYPLLLRELLKKTDVNSPD NRLCRRLQLKDGPVEMQRVTKYPLLLDNLAKYTEEERKK HPDCRNLPMDSFLILPMQRVTRDPLLMDTICQKTAKDHES FVDEAERLPNAYLTKPTTRLARYPLLLEVVLKYTPEDHDD FMRVQSMPLSSYFLKPMQRITKYKLI EKLVNHTPPDHPD PSQPPIPPPLQHYLERIHRIHQYQI KELIRNKARNSQN VYKEFELQKVCYLPKPI QRLMHYKLILERLCKHYSPEHRD RENKEKQALGDLMIKPVQRIPRYELLVKDLLKHTSEDHPD SLIDDPGFELQSYILKPGQRLCKYPLLLKELIKHSPESSNE PSQPLPLPLQHYLEQPVERVQRYQALLQSEGQNKAENRQN FNTNQNLDLRDYLDMPVQRLPRYSLLLTDLLKHTPTNHCD FVEETERLKNGYLTKPTTRLARYPLLLEQVVKNTADDNPD FLKRKQASSSDRMVKPIQRFPQFIGLLQDMLKNTPKGHAD KQEQCSRKLSDMLVKPHQRLTKYPLLLKSILKKT K ODPR D TN SKKLDLPSYLIMPVQRMPR円KLLLQDULEQTEQEHVD FEACRLLQQMIDDIADDGFLLPPVQKICN VLTRIQSSEQHHMLEPVQRIPRYELLLKEYVQKLPPDRAD LLNCLGSGSFLGRGVPVQRATRYVLLEKQLLKYTPEDHVD AALKHALPLGSFLLTPVQRILKYHLLLENLSKNKTEGSKA KAECGGLPMFSFLILPMQRVTRDPLLMDTICQKMDKEYGE FVDETERKPNGYLTKPTTRLGRYPLLGEAVLKYTPDDHQD NRLCR RLQLKDIIPVEMLRFTKYPLLLDNIAKYTEEEKEK QEVCGNLTLQHHMLEPVQRVPRYEMLLKDYLKKLPPEHMD QKVCGNLTLQHHMLEPVQRIPRYEMLLKDYLRKLPQDSDD FKECGGLPMFSFLI LPMQRVTRLPLLLDTICQKTPENTAE REHKGKLTLDNLLIKPVQKFPNYELLFQRLIKHTDHDHPD ESDGHRLPLKDYLLTPVQRTMRYHLLDDEQVKRTETGKAL EGKPNLMDLGSLLIKPVQRLMKYPLLLHKLLNSTPASHPD WGKTNYDNLGSFLIKPVQRVMRYPLLLMELLNTTPESHDD PSQPPPPSLQHFLEQPVERVQQYQALLKELIRNKAQNCAL ASPHCRRQLKDLLVSEMQRLTKYPLLLDKIIKYTEAGSSD NRLCRRLQLKDIVPVEMQRMTKYPLLEDDNGAQYTEEEKEK THKQCNRKLADMVAKPHQRLTKYPLLLKSLLKKTDETRDV VAENKVKEESERNAEFRRFLEKYPVILEATCNETAEGNTD QRQLDHSLLPLEKYLKPSQRLRKYQTLLKGLLDLLESPEDVE QMVGQLSTLNGFFVKPFQRLTKYPLMLQELKKQTPELSAN FMQEAESNPQCRRLQEMQRLTKYPLLLDSVDKHTSGEHRK AFGKDNQAKPDCGRRPVQRLPSVALLLND KKHTSDDNPD FPADQMSHAPLLALRKPVQRLPRYKLMLVDLLKHYRLDHHD
 HVLDPVSELAPLLIVPVQRICKYPLLTSQLLKNTPDTFPE FVEETERLKNGYLTKPTTRLARYPLLLEALLKPTTEDNPD WYQYKKFKISAFLTTPVQRLPRYKLLLADLLKYTPPDHEN LVQKCEREYNVGKLQPMQR LKYHLLLDKLVKETAPQHED SPVVRRLSMPCTLLVTQRITKYPVLLQRILQHTEEDHAD
 ASSADRITLYGLMVKPIQRFPQF LLLQDMLKNTSKGHPD CGSRPLSA TLLISAMPGQRFPQFVLLLQDMLKNTPKGHPD AFLKVCQNKPECGRRPVQRLPSVVLLLNDILKRTNADHGK K MLQ H K LP L G S Y L L K P V Q R L K Y H L L L D N L RK H C PANTGRHGLKHFVNRPTARLLRYDLLLKAILKETTPDHPD
 IIHDDQSQEQHHMLEPVQRVPRYEMLLKDYLKKLPDDDPD LQCTNYDNLGSFLIKPVQRVMRYPLLLMELLNSTPESHPD KGKGNDKMSSYLIMPVQRLPRYVLGLNELKKHT WEGHPD
 GGFVGRLGLDSLRVVPIQRURYVLKLKALLKYTPEDHPD LAFLVCQTKPECGRKPVQRLPSDSLLLNDILKHTNPDHSA LQKMTD RENRDKQGLSDLMI KPVQRIPRYELIIKDLGKHTPEDHAD F RQQGNNIPECLLLVTRITKYVLLERILHYTQEEHAD FIRRRRHGVQECLLEVQRUTKYPVLIDRILQNSEVDQQD VPTCRQLGLEAFLMTPVQRTCKYPLLIREMLKCTEEDHAR EKMTQGLYLRDFLVKPIQRUCKYPLLEREVTKLTAEGSQD KPECGGLPRIDSFLILPMQRFTRLPPLLMDTVCQKTQMNTAT FRTYVTWAETHKQCKPHQRLTKYPLLLKSVLKKTPAAREA PVAVDFNTLDGFQLKPMQRLVKYPLLLKDLKKKTEDETAE NLLARRRG| PECLLVTQRITKYPVLVERILQYTKEEHRD
 PSQPLIPPLQHYLEKPGTRAQQYQTLIKELIRNKARNSQN CLLGDKMDLASY LLKPDQRALLLKDLIKECEEAQEQELAY

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| UniRef90_UPI0004436418 |  |
| UniRef90-A8XNX6 | LK EAVDVMEDVCAYIN |
| UniRef90-UPI0003940D70 | V K R A G D C CKKIL NHV H NQA V |
| UniRef90-W5M23 | CKKAFLAVSKLVRLCNEGARR |
| UniRef90_J3Q9M6 | IP K V V K M I R D L L A K V N |
| UniRef90_U6IF10 | L EQSLLELVSTVLSVCNEA |
| UniRef90_UPI00046C2AE8 | LE Q A Y A l V S A L T QRAENNLH $\square$ S L I |
| UniRef90_UPI0003EA83A4 | YKDCKEALK K V A EMA |
| UniRef90_Q4SEL7 | H S Y L L A |
| UniRef90_C5MGV9 |  |
| UniRef90_G3TXL4 | VERAAECCRE I L H HVNQAV |
| UniRef90-UPI00034F6325 | LE Q A Y A V V S A L PR R A E N K L HVS LM |
| UniRef90_C4LXW5 | Y Q K A L E A MKEVTT K V N E S |
| UniRef90_C1GZU9 | K K D A I A I I D FiLS RVN |
| UniRef90_UPI0002247788 | LQLAL T QL E S L A E M L N E |
| UniRef90-UPI0004575A3D | LQLALT T ELLEMLA D K L N E Q K R V ${ }^{\text {a }}$ |
| UniRef90_UPI0003954FB4 | ARDAI TTM S SVEERFIND |
| UniRef90_D3BH04 | YK D ALLE M $\square$ S S T T K I L N E E $\square \mathrm{R}$ |
| UniRef90_UPI000441E670 | $\square K$ A A YEA MK NVA CLI NERKR |
| UniRef90_UPI000273D1F5 | A QKA LD M $\square$ FSAA Q HSN |
| UniRef90_L8GHA4 | FEDS YD K M Y A LAAEY ${ }^{\text {L }}$ NEKKR |
| UniRef90_UPI000440F6F4 | LT LA LTK CLK E TIDS LV DE QVH |
| UniRef90_UPI0003DF6574 | 1 E A A L A A M T D I AK HIN A MKR R |
| UniRef90-F6URE8 | TTHALKAJLSKLVKQCNEGAR |
| UniRef90-UPI0003F48F96 | K K DLA EVI K L I L N K V N |
| UniRef90_H2TY31 | VKKAAECCKKIL Y HVVNQAV |
| UniRef90_Q1L9G3 | RRDALLEII G MAATHSNTAI R K T E |
| UniRef90_G1KMM8 | WK DALEI I STAASHSNSAIRR |
| UniRef90_UPI0002C3E43B | Y K DLL S L I S QVA 1 S VN D |
| UniRef90_UPI0002A495BF | YFAALH AMSKLVTS CNDGARR |
| UniRef90_B4JUG4 | LQ DVLK L V H DI L V H |
| UniRef90-F2U8R2 | L LEAHASMKDVARSLND |
| UniRef90-U3K0P9 | LQDALFAMKNINVNINELKRRKDL |
| UniRef90-UPI0003C14780 | L MEAVLLAVKDINTNI NEFKRRKDL |
| UniRef90-UPI0004402C4B | $L E Q A Y A V V S A L P Q R A E N Q L H V S L M$ |
| UniRef90-UPI0001D54B2D | L R L A LD A M R D A Q CVNEVKR |
| UniRef90_UPI0003944A23 | LQRVVHTCCRGILLQ SVNEDVRESE |
| UniRef90-UPI000444611D | $V \mathrm{~K}$ K A GE T CKKILL N HVN Q A V |
| UniRef90_UPI000298F463 | L N S MVA V V E GFin S V D S Q M R LR |
| UniRef90-U6HFQ4 | LVTALD GMRELAQTINEVKR |
| UniRef90-B8PB65 | L K E AVEA】K K L |
| UniRef90-UPI000333F28F | $V$ D P E ES P TEDMPKKTE |
| UniRef90-A0A026W9M3 | L THMDK SVD F FVA SVNA A LRRNE |
| UniRef90_C4JS26 | I A T A I D I Q LVL D R A S S A |
| UniRef90_UPI0004419807 | L CRARD HCREVLRYVNEAVK Q A E |
| UniRef90-H2S1E2 | LEKADES LKEVMTHINEDKRKTE |
| UniRef90-UPI0002C3D04C |  |
| UniRef90-UPI0004625F18 | EQNAMKALASVSKII E E C |
| UniRef90_H9GPM7 | YE Q ALKKAI SKLVK QCNEGA |
| UniRef90-G0T0J6 | LK A GLE SIIMRVTDKVNEEKRR |
| UniRef90-U4LK66 | AT D IVA MV R D F L S K V N Q A |
| UniRef90-K2H5J8 | VK Q A L K L I TEVTT T V N N N T K K R E M |
| UniRef90-B4GVD5 | LERAKEAMIDVSSYI NEVKR |
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| UniRef90-UPI0004420E7B |  |
| UniRef90-L8GYQ6 | L S EACDSLRELTAYVQD |
| UniRef90-W5M5F5 | L Q L A L T ELL E T L A E K L N E Q K R V A |
| UniRef90-K7FIX2 | $\mathrm{L} Q \mathrm{~L} A \mathrm{~L} T \mathrm{E}$ L ET L A E K L N EQKRV A |
| UniRef90-T1J575 | YEDAL NIVTIVVANHANQVMKQG |
| UniRef90-V3ZV22 | LEQAI NVLKEVM |
| UniRef90-A0A034V4P7 | $V \mathrm{~L}$ Q A Y V I MR QVARNI D Q VKR |
| UniRef90-K1VLJ5 | I S Q ILDLLVA TLAKKA I D K A T A $\square$ N |
| UniRef90_UPI0003F198A3 | LQQALA MMEDLDKSCELAVDLA A |
| UniRef90_UPI000387D480 | L E Q A Y AVVS A L P QRAENKL HVVSLM |
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| UniRef90-L5JQ01 | LT S AVLLAVK E I NVNTN E Y K R R K D L |
| UniRef90_UPI0002C3DFB7 | L DEMMVLVKKRVTTEINESKNKA |
| UniRef90-J9B1Z5 | L E EAK EAMQDINSYVNEMKR |
| UniRef90-S9XC15 | L N A M I A AVESFLR HI N K Q VR Q G E |
| UniRef90-H2MQ45 | YKDALS IVKEVANHANDIMKQG |
| UniRef90_L8GYK4 | LEEALLHKMSELATSTNEAESRNRL |
| UniRef90_Q7Q5K7 | FELAL S A M R R V T E M V N E G K R H S E |
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| UniRef90_UPI0003BBA805 | $V E A A L H A M K D V A Q L I N$ |
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| UniRef90_UPI000388D88C | L S T A L T LVVK DL I S A I D Q EVVHQSE |
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| UniRef90_A0A058ZC53 | MTEAFAAVNAIVDEVNLQKRKAE |
| UniRef90_L8H1S4 | LE DLQQ T FEEI AGRVN |
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| UniRef90_G2X0J5 | L A A Gl E A AERVLTK ANEEVNRDLL |
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| UniRef90-H2LIW8 | L T K AV QVVKEI NVNI NEYKRRKDL |
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S E

 QKA WYAA K E L V D S E Q R Y V D K L R R R Q E V I WQVVK K E E Q Y V Q DL D TIVVE $\quad$ F I R P L R E A R S S I
 Q K R Q S
 F I A K E I L T T E RTY L K D L E VVVVVWFRK A T T N
 R R L V L K D FL A S E E M Y I N QL E A L L L P P M K P L R R A TAAT T S Q QRDFVI K ELL DTEKNYLEALNALKYIFMQPLE QQEAL WELLTTVEVIVYVGKLKVMTDDLAAAGLLNLQRVG
 $S K R \square S N I \quad$ K E L L E N E E N Y V Q T L E K G I E N Y V G V M

REI AYELLSTERTYVSILTTLLDQVFHFRVDQENRAA
K R Q DV 1 Y E L M Q
 $R \mathrm{R}$ K W W V L
K K L Q EAFFEVI




 K R Q E N I Y E L I DT E K H H C M T L K I M Q K V F A Q G M L K E L Q DT

 K R D KI L E E $\square$ Y T T EVS Y L R S L Q T C Q A I Y Y D D M T S R IP
 $R K R Q E A M F$
$\begin{array}{rl}R & L \\ R & R \\ R & I \\ V & 1\end{array}$
 R H Q V
K K R QEVI NELEHTERTHVRNLKILLRRVFYKMLVNNVVS
QRLAVQELIDTEVSYLHMLQLCASDIRSHLQQLPQ

$R K R K Y Y$ I A R E

K Q Q DVI Y ELI QTEFHHVRTLRIVMEGVYRRGMQEEV


HI I D ELVVKTERTYVQHLELLL QEFKKLVEEK
QRD FVI K E L V DTE T NY L D A L I A L K Y K K M Q P L E R
 RKRSRTARELVQTEQRYCQQLELVTTYGVEGLKAKGTGK




K R QEVINELFLTEHAHVRMLTVLQNVFARPMERE H K V A H E L M V T E Q K Y V N R L Y L L D QV F F F K I D I E N R A H $K$ LIQQEAIVYELLTTEVSYI RQILTTMIDVVMTSVVILKSSE
 R K E I I T E I VE TE E K Y G R DL Q I LIE E F C H P ML VA R S C CL A E I KQ TE EKYTE TLL E SI EKK Y FMA P L K R R KRDYVI QELVETERNYTEVLSNLLRQFVRPL
$R K$ LIRLI QDLITGESEF DKDID FFTFHHLKHADS PO





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UniRef90-S4S047
UniRef90-E3MQG7 UniRef90-UPIOO0440C4F1 UniRef90-A7SR18 UniRef90-F1A076 UniRef90-W4XY59 UniRef90-J4G1P6 UniRef90-UPI00044214DA UniRef90- Q7PLZ7 UniRef90_UPIO00333F12A UniRef90-UP10003838D3A UniRef90-Q17KZ1 UniRef90_UPI000265972E UniRef90_UPIOO0393EF5D UniRef90-H3CIDO UniRef90-F8P7Z0 UniRef90-UPIo004439F4C UniRef90-W5LAG3 UniRef90_UPIO00359EBF1 UniRef90-U1NEIO UniRef90-W5MJRO UniRef90-A8WZE6 UniRef90-F2UKL5 UniRef90 T2MA91 UniRef90-H2LQD6
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100
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 K AVIEEVYK IV CYHHDEANAS LK SYEA QED DQQQFRRCDS QAPFLKMYSEYTNNYDRASKLFEELKKKKKFADLVKEVEK

 A A DF DAA LN WREAYMEYVTNYP DAEYRDVDEMNNNPTAK A
 G D I F I K F S N F LG DY S Q Y S R S Y S E A M GV L N E CKK Q S K F K S Y GK GMF QRYTGYI GKLEEVLTDLEATLRKNKKFESFYRDFE GVPFTENEEAFAVYEPY CANY TTAS D TMMLQEMNNLGA


 G D L M REL A P F L K M Y T E YVVKN Y D T A M H L I GTWY QKQPR F HS GDI LVVSQFSMKRVYGRFCSRHNEAVNFHKRFKAFDKKKMS


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 ADVVMYFRQFNCDAYATFCSGQQRALKLLYQQMKGNQAFAD






 SDRNYRGERMRDKYGTFCSRHNEATNYYKEQFQSNKKEQN
 SV L
G D L GEL MEKMFDFMQVTSTFCQHQQHALE LLRTRCKKDKEDAL


 STNNFVDQRMRRAYTEFCSRHTKAVK LYKELFTRDKREQQQ
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 G DVV L E F TH H Y ITN F P S VL K VLE S A S K R P S YV L F DQ E C K H


 Q I I A G E VF L Q DK TP LDE Y C Y H H D E A I S L L E S Y E K DE D I K Q H ALCFVQRRDTFYRLYSFYCQNIERLRETLVDTHLFLQECQ
 GTVMNPSDFKNGFDQKTSAEYFKQCFVRDELGQYLDNWDE GPYLKLYTTYDRDFEKATSALDEACRRLDKFAATVVEF QM
 A QV F L D WREKFLLI Y G DYCANLT LAA QY TLQEACSRNE IV NQ GFEKYMQYLVGQSPAESAVGDRTVHRFFKEYTDKDQAGKA


 $H K L \widehat{A P F} F Y S Q Y A Y D Y T Q V L N L L Q \square N Q E T N P A F K K F \square C D Q E$

## UniRef90 J9MPT4 UniRef90_J7S626

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UniRef90-F2UKL5
UniRef90 T2MA91 UniRef90-H2LQD6
UniRef90 $\cup P 100034$ UniRet90-UPIIOOO34F75EB UniRef90-Q5SY18 UniRef90-UPIO003837AAO UniRef90-UPIooo3592A2A UniRef90-UPI0002С3Е346 UniRef90-UPIIOOO2026FDC UniRet90-M3Y7V5 UniRef90-V5IRC7 UniRef90_O5VV41
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DA59C


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 FIMNCEASPLCRRLKSYQRATKYPLLLEGUGKNTPPDSRD

 DSTHSFVTMEALLYKPINRVTRSTNVLHDLLKHTPSDHPD FVQWCEKHKRSGRQKPHQRITKYPLLLQAVLKRSPEAREA
 HQVGDKLGLNSFLLQPIGRGLPRYKLLLAEENKEAKDEDGV SSUVRRLGUPECLLLVTQRITKYPVLIQRLLQHTDEDYFD TSENLKVRSPKDCYKPVDRVTRSTLVLHDLLKHTPSSHPD PSQPPPPPLQHFLEQPVERVQQYQALLKELI RNKARNRQM KDQTAKYSLETLLYKPVDRVTRSTLVLHDLLKHTPSSHPD FHKLCMQHLSGYLLKPMQRITRYPLLIEKILSNTPTEHAD FMSCIQRLESDRQCQPMQRVTRYPLLVDAILDRTPTESEQ KDQTSKNSLETLLYKPVDRVTRSTLVLHDLLKHTPSGHPD RDHPNKDDLDALLDSPIQRVPRYELIVKQMLKHTPVEHED CDRQDEQTFRDFVAKPMQRLTKYPLLIEGTLKGTVDDRED

$\stackrel{1}{1}$ <br> \section*{ <br> \section*{ <br>  <br> $R$
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LRGNTDVPLEGYLVTPIQRI
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| UniRef90_J9MPT4 | $\text { LT S G CE A A E R }{ }^{170} \mathrm{~V} \text { K K A N E A } V^{180} \text { R D L L }$ |
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| UniRef90_H3DDJ7 |  |
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| UniRef90_C4MAC2 | V E K A Y N M K DVA S Q V N |
| UniRef90_G3VZ60 | LEEATINIIQ GIV VAEI N |
| UniRef90-T1G0C8 | LQDSIV V L E AVMMHI NEDK |
| UniRef90-F1Q7X1 | LQ EALTTVVKIIN】NINEFKRRKDI |
| UniRef90-G0PJ18 | F EDALELVLLQAAAHANEMM |
| UniRef90-L8X2Z3 | AEYLSEAMAS |
| UniRef90_S4S047 | LEE F A K S K L E ELSR I I H D E V |
| UniRef90-E3MQG7 | YK TATDALTSVVRDCNEGARR |
| UniRef90-UPI000440C4 | IP QVI EVI K S L L K E |
| UniRef90-A7SRI8 | IERAIQCAK DL L A F V V Q S V |
| UniRef90-F1A076 | YEQAFDK IN LVAENMNEM |
| UniRef90_W4XY59 | YK D CKA ALG DV |
| UniRef90-J4G1P6 | LK S GVA A A K RIT DK\NEAQRRAE |
| UniRef90-UPI00044214DA | L Q D AL R D S Q F FLS S I N E D D D |
| UniRef90-Q7PLZ7 | L ERAKEAMVDVAQYSNEVKR |
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| UniRef90-UPI0003838D3A | L T Q A F Q L K DII A SVD S K V N |
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| UniRef90-H3CID0 | LQ D A L R I SQNFL S S I N Q |
| UniRef90-F8P7Z0 | YRR L E EVV H L L V S Kil T T S L T S L |
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| UniRef90-W5LAG3 | L Q D ALRI S Q N FLLS S $\square \mathrm{N}$ |
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| UniRef90_T2MA91 | LK T AL NLS K E FLVAVDESVN |
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| UniRef90_UPI0002C3D143 | YK Q AL TEMKKLTDS ANRA |
| UniRef90_V9KJP3 | LT LIA L C R D K E T L A C V D T M V N |
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| UniRef90-UPI00045DB186 | L Q R AVS ALLQ DVNTNTN E |
| UniRef90- W5KVZ6 | FQQ AVRAVSEVAQRIQDNAR |
| UniRef90- G3N5H3 | EQNAI K ALEQIVKECNEGVR |
| UniRef90_L7LUJ9 | YRDALA IVVSQVAEHANETMK L G |
| UniRef90-V9KCE4 |  |
| UniRef90-F7BWF4 | HKD L K A TA AFKT LVVTQCQD LR K |
| UniRef90-M4ATV0 | LQEALVLL KELIGSVDQEV |
| UniRef90_UPI00045DA59C | LQ D AL RI SQ NFL S S I N E D I D |
| UniRef90-H3D2Y5 | LAESVVRLVKEVISSVVEHEKRRRL |
| UniRef90_F1A1K8 |  |
| UniRef90_K2QTJ5 | $\square S T G \square E A A S S V L K R T N E A V D L$ |
| UniRef90-Q16LZ9 | L ERAKEAMVDVAQYSNEVKR |
| UniRef90-B8MCJ0 | LVQA L E A V TKI S VR $\square$ N D L K K R A |
| UniRef90-F8P2V3 | RDEILLDLI K S L GKE |
| UniRef90-G3Q6F0 |  |
| UniRef90_U3JX62 | RKDALELI STAANHSNAA 1 R |
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| UniRef90-Q54P81 | FKNALQGMETI ADLI NRQMKEEEI |
| UniRef90_L8GMV7 | Y T NAAER\I T I L S L L N |
| UniRef90-UPI0004431400 | LE Q A Y AVVSALSSQRAENKLHVSLM |
| UniRef90-W5KKL2 | LEE E ALA TMLLDI DK S VN D S M H Qlill |
| UniRef90_L5JSI3 | YAEALQAMKAVCSNINEAKRQ |
| UniRef90-H3AQU8 | YKEAMAAVKETNTAIINEFKRRKDL |
| UniRef90-B4MJ05 | LQK A LD C ML I V L K CVND S M H Q Val |
| UniRef90 W5MAC9 |  |
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| UniRef90_B6S338 | LQE MI EKV GMFVNQVNSKLD |
| UniRef90-C3YAH7 | YKDALS IV SEVADHANEGMKQG |
| UniRef90-Q8WQM0 | LK QA QE KI E L HLL NHIN Q |
| UniRef90-F7H012 | L K L A LD A M K L A Q Y V N EVKR |
| UniRef90-W4WXB0 | L A K A REVMVDVA QYINEVKR |
| UniRef90-H3CSU5 | L E EAY A MVS ALP QRSENSHHVSMI |
| UniRef90_UPI0002A47DFA | FEDLLNESI R AVVNKVNEHEK R Q RLL |
| UniRef90-UPI0002B48BC2 | $\square \mathrm{I}$ KV $\square \mathrm{AQV}$ E Q FVVGKI N A A M R L |
| UniRef90_I1BMD0 | L S IA ERII H NVAT R I N D S K A RLLEL |
| UniRef90_UPI0003F174B0 UniRef90_E2C4W5 |  |

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R 10
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 KKRQEVINEIYQTERNHVRTLRLLEGIVMRPLQESGALP FI AKEI LATERTYGKDLEVLABVWFRSAVVKEDAM
 RRQ Q

Q ALFEVS ATYLRSLGVASHF KKRKK AYEIIFTTEKNYMEALAHLHKIVKADKDKVIWQDQ KKRLYLVQDLI ISEEEYVRDMQFFVKHHVKHTETSPDV QNQRLAVVEELKTEASYVHTDQLCVSDIRAHLQQKQLPD

 KRQRDLDEIVNTEVSYLNELKMCQTVYFEDMVSHVPLI
 QKLLFI ANELLHTEEAYVKRLHLLDQVFCTKLNEAGDQ
KAYYIAKEVSTTERTYLKDLEVIASWFQSTVSKEDSMP
 AEKRTRVVRELLQSERKYVQMLEIVRDVYFAPLKAALSSN ADRRTRI ARELLTSEKNYVHMLETVRDVYVTPLKAALASN QLI QGLI DGEEEFVKAMKMFITHQLNHLDCSHH I
 ARYRKCVIQELVDSEFTYLKDLELIVKFFDPLQT KAYFI AKELLTTERTYLKDLEVVIVSF QNAVGKDEAT AVKRRKVYEELI QTETTYLADMKIV DEKVVKNVKEM QRLHQLASELLQTERAYVARLHLLDQVFFARLTEERGSF QKLQEAKFELIISEASYLRSLHVAVDUF
$K R Q E H D Y E F I M T E K H H V Q T L L V M Q K V F V E S L$
$A \vee K R Q$
VKAF L ETE A YVQGLLLDAR Y KPGQKHFSHL
 AAYRESVAREIEKTEQDYVDNLRLLSEVFLEPLRKELESK
$K \square Q N$

## $R Y R K N V I A$

KRQDVI YEL NTERHYVRDLACE
A

A KKAYFI AKEI LMTERTYLKDLEVI KKRANLI QELVTTEANYLNDLIAI QQCYGLRVHECNALN QQEAVWELLHTEASYI RKLRVI TNVRRRCLLEEPGPGQ

KRQEH Y RRRHVVAAIIHS
HSENSYVATLQRLINDYKKPLEESSPAD
 AEKRARVVGELVQSERKYVQTLGTVRDVYVTPLRAALSSN
 KRQEIVFWEMCETERGFVDSMKMVMKLFASPLKTPHGKW A D QLS MAKYEILSSQSSYMRSLQQLADCFEDDEVLMS LGG DSLNEVVKELVSTERSYVKRLRILKTDYADPLRSFARNK KRQKVI LELI HTEKLHLKSLKVLRKDFYKPFIRSR
KRRRILQSLVQSEKAYINSLGILEHDYRQQLLRQ
RKRQEAI FEILTSEFSYQHSLGILVAEFLQQ SREDR AYRREAVVRELVETEEEFAKDLQQVVDNYLKYDDNKNNKV F I A K E I L A T E R T Y L K D L EVV TVVWFRS AVVK E DA M
 RQHVLHEIVNS ENAVDELI QNEQKYI DSLLMNGRLNFRDLII YNTMN
RHHDLQNLLETE
ARHREKIARELYDTEKEYAQNLQUVDVYGGKMHAWE K LDA MALHELLDTEKKYVADLKEMNDVFGCMMQVRDIMH RRREIITE IVETEEKYGRDLRIILEEFYRPMKVAGLLS
 RQNNLHETVTTEDSFISQLDVVRTLYRDRLSDSQPSI
QSRAHVI QELLSSEKAYVEMLQHLHLDFHGAVVRALDEM

QMRTNVIREVVSTERVYUKHLRDICEGY RGQCRKHTAMF


A A
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F L AKELLMTERTYKKDLDVLNTTFRQVLILGGDEQ


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UniRef90-UPIO0029D6966
UniRef90-X1YBA8
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UniRef90-L8HAX8
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UniRef90-T1HCN7
UniRef90-W6UJE2
UniRef90-H2RSP1
UniRef90-C4JN566
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UniRefofo-B413U7
UniRef90_L8GKC4
 GMRQLKQFTGYFQRHDEVLTELEKATKRFKKLETVYKEFE
 GDILVQQFKMKKDYGEFCSHHKEAVSLFKELQQNKKFQNF GDILQKLAPFLKMYGEYVKNFDRAMELVNTWMERSAQFKVV GDVLLSHFRKQSMVDTYMAFVDNFKFSKQSDKQARERPAF GDLEDMLLPMGSVYQEYVRNHHYSLQVLTECKSNTNFATV

 QHGFLTFGQRFQPYVRYCLRVKQTMAYAREQQDTNPLFNT
$G Q C F R F E K R F N Y V M Y S R N K R A T R L V F E H K O Q F Q E R Q$ GQCFRRFEKRFNMYVMYSRNNKRATRLVFEHK QFFQERQ GLGAVVLRHCPAFRRVYIPYVTNQMYQEQLMQKLMRENGR FAVYVPYIIHYNEALEALQELTKANKRFQQFS ALCFLKNNDGFDKYLQYLVGRVQAESHATNPAVQDFYNKY ALFQEFKEKMESVYKVYCASYEQALLLVESYRKDPRLQQM SDRNY IIQRMKEKYGVFCSGHNEAVSHYKLLLQQNKKFQN GHLFQRMASQLGVYKAFVDNYKVALETALKCSQNNNQFQK AKVF RKMHKGFLCYSTYCNAYPRALDELETYDRDKDARTD GNIF KMQSYLKGYNLYVANNAYALNIADRLIKKEKYARY TVCDIIIKHCPRFRAVYVPY LTNQSYQDKTYQRLMNENEH GDILQKLAPFLKKMYGEYVKNFDRAMDLVNSCTQRSSQFQK GDVMLKNLQGMKHLAAHLWKHSEAS KGSRRLEHFCRDFE GDTFKTLGHCLVLYTDFVKNFDNSVSTLNYWLKKSPKFQM GSQLNTYTNFFNNYPVILKTDEKCREMIPAFRTFLKRHDK GEPFTQFGWQLQTYTNFFNNYTVILKT DMCRETMPGFRA MYLTKHPEHFEKYLHYMVAEACISDKTVQQYFKDITAPEK AQCFVGYAADFEMYLQFITGLDQAEACISDKNTQHFFKQY
 GDVMLKNMQGLK QLTPQLQKHSEVLMELEKACRSMCRDFE GQI FLKYDPFFKMYFQYLQEFNDDQISILRNQYQDFDNFD GGVLLQHGPFLRMYADYVRNFDQAVELVRVWNERSSVFRN HVCDVVLNHAPHFRRVYLPYVTNQTYQERTFQSLLNGNSH S $\triangle$ ADILLDFFSSMYGEFCSNHRSALDTFKCYMTGDNVFAE MAPFLKVYSDYAESFEGSMEKDNQNARKNKRFRQFDMQTS QHVIHSYSHFCSHQSEALSFFKEQMQVNRKLHELVKRIDQQ
GDIFLQVAFKKAYTQYVKYNKAMAHTSLKFTCCVQEC GIGQIVLAAAVEWGPAYLHFTTNFPMADFLFKEEKMDFHK DVCDIVYHYAASHFSVYITYVSNQTYQKAAFRELIAQLELD NQMPRPYQSVFYCYYEYCSKFTKSNKHFEHDKANDQKFKE TDGFLDHRDGDLLVSQFSDSNAESMKRDYGKFCSRHNEAV
GGSFLYYADHEKLYSGFCANHDKVQKKTDKAFRTFLDARN
SERNN
 AKVFLKMHKGFLCYSNYCNAYPRALI ELLES YDRVKDARTI GDVMFRNMCTLKEFTSYCQKHDEKATKHLKKDEMVYKEFE
 GDLFSVYKQYYVNLSRCRSYTQEAVRQSTNFCTFLEWADQ QFSGENSYNMKNAYGEFCSRHRDAVDVYKQQQQMDERFAR KAVVLDVYSDFDNNFSVAMELAKMESKRKSALADFLKVKQ DVSDI DYEHSENHFSVYIDYVRNQQYQEKTYSKDMESNTD AKVFIEYAPKLLEKYPSYVNSLDSGREIIEKSRKDERFFA
 INDVRAWVDQLSIDHESFLLGFESVTHLIEKNVKFVRMQMK


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UniRef90-W6UJE2
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UniRef90_B4I3U7
UniRef90_L8GKC4

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SPSCCGLNLL ${ }^{130}$ SFILIMLPMQR|I ${ }^{140}$
R $\square$ P LL LID A|V|F S H NQEEYE $\stackrel{1}{160}$




## 1

## Q A A F R

 FVQWCEKHKNSGRQKPLQRII TKYPLMLQAVMMKSPEARTD FELGDRLDLSSYLLEPVQRLPRYKLELADLVK

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## -

TIQCENNGLLQHHMLEPP I QRRI
F V K KMLS L PELLLYPSRRFEEY LNLLYAVRLHTPAEHGD

S

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## 



##  <br>  <br> A

 EP C C R G N N L N S F L V M P MQ H V T R L P L L L E A V L K H A K S G S D D


 YC
LQKVCYLP NTFRLPDQRLVHRLLSRLCGHYVPGHRD $\frac{L}{N P M C Q R L P L R S F L I L P F Q R I T R L K L L V Q N I G K R T P H N S A E ~}$ MTFRDFLRWQHFLKTPTRLQRYSLLLETVEKKSDEEKAN MLGSNQHELNSFLLQPMQRLPRYKLFLEKFLKETLKFGDD KEHKEKLTLQDLMIMPVQRUPRYVLVLKELLKYTPLSHHD FLDAPWSVIQSFLI QPVQRVPRYLLLLNALLKRTDPDHKD
 VHVGDKEDVVSLLMQPVQRUMRYQLPISEDVKWTEPSLPLD
 SQQGGGQNVKHRLLRVVQRLFQYQVLLTDYLNNLSPDSAE पTNPKKKGपPECILFVTQRDTKYPLLDEPGRRGDMRDYNN HCQTNP LLKKKGDPECDQRDTKYPLLIEEPLKTARDESED VEEETKSDLYLFFFHDVQRLPEYLLHLQNLLKYTEQEHPD NTVLRRMNLNSFLMVPVQRVTKYPLLLARLLKATPSVRPD


| UniRef90 Q29DU1 |  |
| :---: | :---: |
| UniRef90-S7MDQ8 | YTDCCDALLQVITE |
| UniRef90-UPI00042AB225 | EAEATKAHHALEKLINNVQRMRR |
| UniRef90-UPI00033149E8 | LCNALSLIDKDMIA AVDLKVN |
| UniRef90_UPI00006CB721 | YQKCLQQF T QVNQQINSQIQ |
| UniRef90-UPI0004545120 | S K D A |
| UniRef90-UPI000161EA56 | Y D S L L |
| UniRef90_Q7PX66 | R K |
| UniRef90-Q4SSS2 |  |
| UniRef90-A0EDH1 | YQNCLETIEKINDKNNSEMDV |
| UniRef90-W5JW08 | $\square \mathrm{RKSL} \square \mathrm{SAKRILD}$ |
| UniRef90-UPIO003C8D7F | QADCLDA LAA |
| UniRef90_UPI00032B20E4 | QEALGAMVS F $\square$ R H $\square \mathrm{N}$ |
| UniRef90-UPIO0034FBAEF | $\square E S A \square N A \square H S N \square V L \square D S \square O V C Q$ |
| UniRef90-UPI0003D0A8CF | EEAALKAVGEIVSECNESV |
| UniRef90-L8GT64 | Y D A L D LM S I A T D D N QV |
| UniRef90-UPI000457474F | LEEA YAVVSALPRRADNS 1 HVS M $\square$ |
| UniRef90-UPI0003D0FB63 | L Q S A T N AMLEVSANTNEYKRR |
| UniRef90-F6SCY6 | L T QALLNLIK DIIIS QVDAKV |
| UniRef90-UPI000462E342 | L QDAL RVSQTFLS SI NEDID |
| UniRef90-A0A034VIOO | I D LAL E AMRGITEAVNEGKRHSE |
| UniRef90-B0E6H2 | L VTALEQIKGLGISINESI |
| UniRef90-W5MYV0 | LIRALSLIREVIAAVD |
| UniRef90_UPIO004410402 | EAQAIKAMKLLEKMIQDS |
| UniRef90_V9KBJ0 | RKDALELISTAANHSNVATR |
| UniRef90-F8VPU2 |  |
| UniRef90_G1PKR6 | LQ D ALRISQNFLLS S I N |
| UniRef90-T2MES9 | SLTIISKAAENAN |
| UniRef90-UPI0003AB9990 | LT T A I D Q $\quad$ K K Y K S Y I D Q MKQ |
| UniRef90-UPI000388BA5B |  |
| UniRef90-M4AVL4 | LEDAFSVVSCLP WRSDNLHRVS |
| UniRef90-UPIO003836444 | LEDAFAMVSSLPWRAENLHHLSML |
| UniRef90-B3NE39 | I EAIDVMMHSVES |
| UniRef90_A0C114 | YESLQVSVNKF |
| UniRef90-W5M732 | FRDSRAALAEDSEMA |
| UniRef90_A0D0E6 | YQDLQK TL N S F |
| UniRef90_UPI000298FFE2 | YELAHKSLQTVATHSNSAIQKA |
| UniRef90_UPI00045D65D0 | EAEATKALEEL $\square$ RDCNSNVQRMR |
| UniRef90-Q7QJX4 | QEKLQKAMSLV |
| UniRef90-F2U7Y4 | YK DVVEQVS QVNCHVNTALRR |
| UniRef90_UPI0002A4A852 | LQK GLGLI K D Al S QVD T NV |
| UniRef90-L8GN17 | YEKAAEKIREVAKRCEEAENDTK |
| UniRef90_M7X3V4 | REYLSSAVQVI RQQGA |
| UniRef90-13N7M5 | EGTALEALEMVVKACNEGVR |
| UniRef90-UPI000440F423 | YS D ILKATIAFKSLVT QS QELDRK |
| UniRef90-A0E7D3 | LP N I K El HKYFKEVNE |
| UniRef90-F1RB67 | LT QAF QLL K D I I A SVID S V ${ }^{\text {d }}$ |
| UniRef90_UPI000333664E | S |
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| UniRef90-UPI000443AD6A | A EKALT HLERII 1 Q E S N D S $\square$ |
| UniRef90-W5LRG0 |  |
| UniRef90-A0A034V4R0 | 1 E AVDS MIIH S VENFV |
| UniRef90-H2U9K2 | L S C ALA QI R DI IT A V D L TVN |
| UniRef90_UPI0003314B60 | VA Q S S LVKDVIGAVDSKV |
| UniRef90-T1GQX0 | WKMTLAML NKFAQQCNDA |
| UniRef90-S2JSJ4 | Y N K A H Q V V S L A S A M N |
| UniRef90_UPI00042C8CBE |  |
| UniRef90_C4LT95 | YK TLFEA |
| UniRef90-F7EQ30 | LKEALEAMQDLA MYIN E |
| UniRef90_UPI0003D070C1 | LQLALLT ELLETLA E K L N E Q K R L A |
| UniRef90-UPI00044217F8 |  |
| UniRef90_H2YLC1 |  |
| UniRef90_UPIO003445883 | QENAQKALSAVSK |
| UniRef90-W5MRZ9 | EANAVKALAKIVRDCNEGVR |
| UniRef90_UPI0003C125BE |  |
| UniRef90_UPI00038913D2 | EATATKALQKLVKECNASVQ |
| UniRef90-A7T185 |  |
| UniRef90-V8P0Q2 | L |
| UniRef90_UPI0003C36F67 | V D K A Y EMl E RIV VK E T D S F K AVD Gll |
| UniRef90_S4RK73 | L ERAVEVMCVVPKRCNDMMTVGRL |
| UniRef90_UPI0003EC6624 | LEDAFSLVSCLPWRSDNLHKVSLI |
| UniRef90_J9JXV0 | Y N NCLEALLKVTKRLP S ALRR S E |
| UniRef90-A0A017RZY8 | LA QAMEEI K QVALECDNKV |
| UniRef90-U616R6 | YEDVVAKLNTLLEK\N |
| UniRef90-F6QVE2 | FRDSRAALAEI TELV A Q Li G M M |
| UniRef90-E7EYG1 | LEQA Y A MVS SLS QRSENTHHVSLI |
| UniRef90-UPI00046BEEFA | EVQATQA |
| UniRef90-UPI000388F49C | HKDLLCKAHCLIKDMI |
| UniRef90_UPI0003D098D0 | LREAKCRIES HLE HI |
| UniRef90-L8H2D4 | LKKLLAS |
| UniRef90_A0A023F2V0 |  |
| UniRef90-F0XK56 |  |
| UniRef90-UPIO004403881 | LA Q S LGLVK D V I G A Vid S K V |
| UniRef90_UPI00046B82DB |  |
| UniRef90_Q7QGJ0 |  |
| UniRef90-D6RLF0 | LKQGAEAAHRITAKI NEAHRRA |
| UniRef90-UPI0003C3864A | CQAVYQLLS R T NKHIRDLM |
| UniRef90_UPI0002C3E755 | Y L S L VK A |
| UniRef90-I1CB67 | Y EKVMEK\KS F L N K VN E |
| UniRef90_H9FGY2 | RKDALELI STAANHSNAA $\square$ R |
| UniRef90-D2V5E8 | \E N ALSLL K E I A S ELLN N |
| UniRef90-UPI0002B411E8 | YQAALFIVSEIT DQANDSM |
| UniRef90_Q0CD50 | LAQAIE EI KLVALECDNKV |
| UniRef90-T2MB34 | RA@LYRSIK QUE GIIIKEA |
| UniRef90-Q4S2D1 |  |
| UniRef90-M1EC58 |  |
| UniRef90-G5ECK4 | LT E A $\square$ K Q M S N $\square$ G Q K M N E S K R R K $\quad$ L |
| UniRef90-V8NPR4 | M R K |
| UniRef90-F2SPK8 | K S NLLQA LE E $^{\text {L }}$ |
| UniRef90-UPIO0045730F7 | RKSLEYAK S K L E E L S R $\square$ M H |
| UniRef90-U5HFR0 | LQQALDTLIDICSSLDTSKH |
| UniRef90-UPI0003DE8241 | RQRSI AVYREIA DQC |
| UniRef90_D5G973 | LQKAI EEIK AVTLECDA RVDEM |
| UniRef90_UPI00046BF0EE | L HKALALI K E I LVEVDA QV |
| UniRef90-V4C3U6 | RENAQTKMEEFLSRIN |
| UniRef90-V9KAD0 |  |
| UniRef90_UPI00034FAECF | Y E D A LLMMVSEVADRANDSMRQGE |
| UniRef90-W5UCZ5 | FRDCRAALADV SELESVLHS S M L |
| UniRef90_S2J118 |  |


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| :---: | :---: |
|  | UniRef90-UPI0003D0A81 |
|  | UniRef90 R1GM75 |
|  | UniRef90-M7BNG6 |
|  | UniRef90 B3RYA2 |
|  | UniRef90-M3ZQQ2 |
|  | UniRef90-UPI0002651821 |
|  | UniRef90-M4AQH2 |
|  | UniRef90_A9VB40 |
|  | UniRef90-UPI0002B8D54C |
|  | UniRef90-UPI00046CF557 |
|  | UniRef90-I1F4A7 |
|  | UniRef90-N6SV91 |
|  | UniRef90-U4ULY5 |
|  | UniRef90-UPI000388B6C9 |
|  | UniRef90-UPI0003EAACDB |
|  | UniRef90-H2N8X7 |
|  | UniRef90-U3IUX1 |
|  | UniRef90-UPI0002233DB1 |
|  | UniRef90-B4KML9 |
|  | UniRef90-UPI0004574DDC |
|  | UniRef90-B4N5S6 |
|  | UniRef90-I1FPV5 |
|  | UniRef90-H2LUW4 |
|  | UniRef90-Q28XD9 |
|  | UniRef90-H2V5C8 |
|  | UniRef90-G5BL01 |
|  | UniRef90-H3FD96 |
|  | UniRef90-UPI000350716F |
|  | UniRef90-Q29ES6 |
|  | UniRef90-Q4SA62 |
|  | UniRef90 L8Y7G3 |
|  | UniRef90-I3KD95 |
|  | UniRef90-UPI000329DBE5 |
|  | UniRef90-UPI0004571D9B |
|  | UniRef90-H3FD97 |
|  | UniRef90-W4WNW |

VVIRDLLLDSE $\square$ DYVSALLR|LVVQDFMPEM ARVD $\square^{40}$
RQNTLHE VVQTEDNFMDNLNVLRHDYRDGLMQMQPPV KRRNSVLWEMLD VNMKETLSTKEIKRQEAYHDPMLKL RLKKCVNNLLESEELY LEESLK DTIDNYADPLWKWGLSE VLQNI LEAESEYSRELQSLLGTYLRPLHPTDRLS A QKAFMVAKEIKDSEKVFVNVLK LLNVDLRQVIDEGSKKN RERFFIIQELVQGEEAACTNMFHVYQDY DKSSTAF RK $\square$ Q QQA DWELIVTEHSFLKQLEII INDYMRSLEFI RRQG KREKALDEIVNSEDKYVKQLETIIEFFMVPVQDKVLLK RTSVVRELVMTERDFVKVGRDVAEGYLAECQKRKDMF $R \square R V C V L N E L L K T E R D Y V G T L E F L V S A F L Q R M F Q F A A S K$ QESMYEVVIDTEES YL D SLLNVAVDHFME


$V L Q N I L E A E T E F S R E L Q S V L G S Y L R S L H P T D R I S$
 KRHQVCMEMLETEQSY LRALDDLVTKFKDALEADLEKG


RKWVLS GI LASEEAYISQLEALLIPMKPLRAAATTSQ QK L HK I AS ELLLDT ERAYVNRLDALDQVFYCKLDEEANSF



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[^4]

TERADKEVSKVVEDCN EDMATKAFNALKELV YY YLLVCVQRL HQQLLTRAARLL

पQMCMAAFKSDTAQCQEM HQQLAEQVITSVLKKAN
$\square Q D A \square R \square S Q N F \square S \square N E E \square$
RADLQASMTAF
RQR SVAVYKD YKDALAIVVEVANHAND $\square M K Q G$ LK DAEQVITGVLEKAN
WEKVLSTLSNVVAECN
lupas_21
lupas_14
lupas_14
lupas_28
jnet
conf
conf
sol25
sol5
sol0
jhmm
jpssm


[^0]:    14

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^3]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^4]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    ssm

