



## QUERY

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A A WE WVRKGARLTITS SWARFPANVMPGKAKVGGNYVNSAL 160 AAFPWGAYGMDAMVSSWHRFAPNTIPAAAKAGGNYLSSLL AWEWGAYKGDKVRTSSYTRHHVNDSMRAKANGHYISSML AWYWGAYMGDRIRTSSFTRHHVNUTMTRAKSSGAYMNSML AAFPWNAYGVDVCVSSWNRLAANTMPTAAKAGGNYLSSQL A WHWGAYLGDDGITSSYTRHHVNDTMCKAKATGNYMNSML A WE WGAYMGEENLT S SYTRHHPNITMTKAKANGAYMNSML A WK WGAYMGQRVKTSSFSRHHVNITMCKAKANGNYMNSIL AAFPWGSYGVDAMISSWNRAAPNTIPTAAKAGGNYLSSLL $M Q W G A Y A E G V D V C I S S W N R L A P N T M P T A A K A G G N Y L S S Q L$
$G I V K W M K G V S V G V S S W R R A P D T D P T G A K A G N Y L S S L L$ GIVKWMKRGVSVGVSSWRRLAPDTUPTGAKAAGNYLSSSLL GKYVAGDHGADVCDS SWSRLAPNTMPSDAKAGANYMNSQL WA WGAYTHGDRCKISSFTRHHPNDTMDKAKANGNYMNSTM ALNWGSYQGVDAAVTSWNRLAPNTMPTGAKAGGNYLSSIL MALDWGEHGANVCVSSWNRPAPNTIPSWAKAGGNYLNSQL TWAWGAYKGDRIKTSTFTRHHVNVMMTKAKVCGNYVNSVL AWTWGAY LGADNVTSSYTRHHVNSMLCRAKANGNYINSML AA WE WGAYGПRVKTSSLTRNSIKSLFGKAKAAGNYLNSQM AA WE WGAYGI RVKVSSITRNPVKSTFGKAKAVANYLNSQM
AAFSWLPYGI DVMVSSWNRVPANTLPSTAKAGGNYLSSML
FGKYLSPKGURAAIVSWRRAHNTMLPVMAKDGGDYVNSVL
LGQEALEHGURVKVSSYSRHHVNVHLCKAKATGNYMNSML
A WE WGA Y R G I R V K T S S Y S R H HVVNVTMMCKA KA NGMYMNSMM VWEWGKYQGVDVEVASWNRLAPNTLPSMAKAGGNYLNASL A WEWGAYMG|l|VTSSYTRHHVNIAMTRAKANGNYDNSML AWPWGAYRG| RVKTSSYTRHHVNVTMCNAKAVSNYTNSSL
AVWPWGQNGIRVRVSSFTRHHVNVMMTKAKIVGNYANSQL A WE WNMKNGIR IRTSSYVRHPAHPSLSGAKTNGNYVNSMM LGDEGMQKGI RVKTSSFTRHHVNVNMCRAKSVTTYANSIL
 DAQPWYEKGUKAVTVTVRRNA DDS SPPNDKSM NYLNNDL AAWEWGAYGIKVCTSSITRNPNRSTFGKAKAAANYLNSQM AWEWGTYKGIRAKISSFSRFGVNTFLNRAKVSAHYVNSQLL MADEWGSMGVDVCVSSWTRAAPNTYPTGAKAGGNYLSSQL
 AAWEWGAYGIKVKISSFARNSVKSCMGKAKASANY LNSQ CWPWGTYNGVDVMVSSWRKHASSQQPTNAKTTGLYVNSML A WP WGAYNGI KVKISSWRKHASSQI PTNAKTTGLYVNSML YFGDKLSQGVKCRVSSWRRDNSDULPVQAKASGNYLNSML AATPWGAYGVDVQVSSWRRNGPGAASTMAK $G G G Q Y U N G Q A$ AWRWGTYQGIRTKISSWSRHHDHVGRPRAKMMGQYTNSTL AWEWGAYKGIKLKMASMNRPSNTSNMGKAKATANYLNSQM AAWEWGAYGVRMKITSVTRTPNTSGMGKAKAVANYLNSQM IIVKEWKSLYGEETSRHTRARSPDSLSQNTKSLNYLSNTM CWPWGAYNGVDACVSTWNRVAPNTIPSMAKVAGNYLSGQL
PCWPWGAYGVDACVSSWQRVQPNTIPAMAKIAGNYLSGQL WGRYLMYTKGMPIVSVQRRNKATIVDPQNKLNY NND WG $\quad$ PMPPDGCRASTVSVRRPDPNVFPRSVKATGLYYNNALL AAWEWGAYGIKVKISSFAKLNVGGQMSRAKSSSNYLCSQM AVGFGQYLAGSAIISSWRRIDDNIIPSRAKACGAYLNSAL AATSWYEKGLTAVSVSVRRNPAEALPPNVKS GNYLNNAL

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QUERY
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A VT GRRPEYEGWLTY/VN


V VYGRNEKYKHY LTT F
VVHGHVKDHSEWRYPV
VMNKNQDYSHWLTEV
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LVERRTDDHDEWFT
LVNGKTNDQWGWDEP L L


AVKGSDDAHPEWLT
IV
IVFGRNEKYAHYDTYVD
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130
140
150
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YTLPLGDYGLKAKTSSFHRINDTMIPARCKVAGAYVNSAF
SPA GAYFPGGVKPVSVWYVRAVKGGTGAAKTGGNYAASVLV


SE E L
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$T P V G P Y Y K G G F Y A I D R E Y D R S A P L G T G V Y K V G G N Y A A S L R$
T PVGPYFKGNPYVI I R DY DRAAPLGGTGYKVGGNYAASLGK
WSPEARMRGDRQNI SEWRRPHPQTAPTASKAAGLYMDCTM
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Y DKKF Y DNGMSAVFSSFTARVSPSMMDPACKS LNYLLLN L L L L


GS GGD A M K P V S I Y V E NE F VR S VR G GVGFTKTA GNYAA S L K
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I QRGTVEDTHGWMT
QLGTVEDPFGWTVEL
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Q QYGTDEDKHGWTTVVN
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I QYGT DEDKHNWTMVI
LVR
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I QYGRAADRHGWMRRL
QEGTRPDPHGWMHKLS QRGTFADTHGWMARLS L
I QYGRADDKHGWLTRLD
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LTR
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AVRGQПPEYRHWLTPV
LVR
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$Q M G D I D E A P E G W I V K V$

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UniRef90_D6B024
$R G P F Q L$
$Y G E F Q F$

$L E T V T L$ | $D$ | $P$ | $A$ | $A$ | $V$ |
| :--- | :--- | :--- | :--- | :--- |
| $V$ | $A$ | 1 |  |  |
| $V$ | $I$ | $F$ |  |  |

 RWT R DA GWHGREV RPY GPLTLDPAAAVLHYGQEDFEGI KA


 E WT EK D G WA E P E L K P Y G P L S L D P A T A V F F H Y G Q E I F E GM K A Y NVRMYYRNGKWGELESLDI PMAATCLHYGQEAF
 DYDEG $\square$ GWHDAT I RPYGPIGMNPATVVLHYAQETFEGLKA D Y D P E N $L Y$
$G$ $E D K K G$
$Y R D G K$ YKDGQ
 KWQNG AWNDGELTEDNVLHI SESSPALHYGQQCFEGLKA MSENYVFYQGELVKED DVKI SVVRSKAFNYGLDGVFEGI R W Y NQAEGWHGARVAARASFPLDPATAVLHYAQEIFEGLKA RYQEGRGWHDARVQPFAPDALNPACAVLHYAQEIFEGMKA D Y DVA R G WH N A QV TP Y G P IVA L D P S A MV L H Y G Q E V F E G L K A

MEKS

| $Y$ |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $Y$ | $F$ | $F$ | $G$ | $K$ | $I$ | $M$ |
| $L$ | $D$ |  |  |  |  |  |
|  | $V$ | $N$ | $G$ | $F$ | $F$ | $K$ | RWTSAEGWHD GAVVP Y G P L


 R WT A DRGWHAPR LRPFEQLS ISPAMVGLHYGQVAFEGLKA WS G GEL LP Y GPLNLLPAA QVLNYGQSIFE GMKA WSDPRVVPY GPLVLDDPAAAVL HYGQEEIGEGLKA

## WR N G

$D G V A F$ $D Y K D G K$
$R Y V E G Q G$ F F
RYTV
GRWHSPRIEEPYHSLELDDAALVFHYAQBCF WT A D T GWHDRRVTALDAPSSLHPAA GVLHYA QE IF E GLLKA
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D Y NVVRRYYHNGKWGEMETMNL HMAA E CVLHY GQEAFE GLLKA WHKEGGWSDRRIIEPYAPLQLDPGASVLHYAQEIFEGLKA WDKDHGWHDAQVRAYGPLLLDPAAAVLHYGQEIFEGI KA WS NARI EPYGPI AMDPAASVLHYGQEIFEGLKA


 WT A GRGWHAPGLRRLANLSVMPGTLGLHYGQVIFEGLKA



 CSK GQKFSQQGTLTRFGKTEMNPSS GILNYGQGLDEGLKA
 $D \square L I S V N G E L K K R D E A V V S V F D S G Y D L G D G V W E G L R V$

YENG AWSTP CS D GNDIFS Q GH KP Y GP DEITP A M N S L H Y GQAI FE GMK F E GQSFGEGQL SRY GNIEELSPSAGVLNYGQGLVE GTKA

 D GK QWTNLRI QPYEYL RLSPANSALHYGQSVFEGMKA



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UniRef90_A0A023X0G9 UniRef90_A6C8A1 UniRef90_B8FU94 UniRef90_G7JT00 UniRef90_UPI00041CAE89 UniRef90_K6VN33 UniRef90-H5Y2Z1 UniRef90_F4KN33 UniRef90_UPI000471DEE9 UniRef90_C6CCY1 UniRef90_A0Q235
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UniRef90 R6G9W6 UniRef90_I8SG44 UniRef90_E3F131 UniRef90-A3WAZ1 UniRef90_R5CAL1 UniRef90-C8NGK9 UniRef90_V6J4U7 UniRef90_Q3SPL8 UniRef90_G2I0G1 UniRef90_M7AAM1 UniRef90_UPI0003796564 UniRef90_A0Q0F1 UniRef90_J2AUQ7 UniRef90_K6W489 UniRef90_GOIUE0 UniRef90-A0A024F6P9 UniRef90-W4T3T0 UniRef90_W5WE72 UniRef90_D8U4P1 UniRef90_E0SM47 UniRef90_UPI00036D8343 UniRef90_G8QR98 UniRef90_F8I8V5 UniRef90-J4WNT6 UniRef90_UPI00036F1B29 UniRef90 G9RTL2 UniRef90_UPI000369C1FA UniRef90_UPI000368865C UniRef90_F2NWA8 UniRef90_H3NUC4
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UniRef90_W0EA02 UniRef90-I7D2T1
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UniRef90_D6B024









 ATPDQTTKPQPAKA VTAED $\quad$ TR
 MPVGNYFK GPVNFTTTSQYDRAAHKGTGQSKVGGNYAAS L V




 TPVGPYFK GNPYVI IREYDRSAPDGTGDYKVGGNYAAS LR $M P V G A Y F K G P T N F I V S E Y D R A A H V G T G A A K V G G N Y A A S L L$ MPV GP Y F K GP T N FIVVS DY DRA A P NGT GAAKVGG G Y A A S L L



## N

$M V N P \quad L Q P T G Q A A V T M P D T R W A R$
C M P M GS Y T GKK VA V S S WS R IE D N M IP

 S P V G S Y Y K P ll K I
 $\mathrm{V} P \mathrm{~V}$ G S R A K G GRR F LI H D S L H R A A P R G V G S T K A A G N Y S P C L R QDRRP IIN HP K A ETGGLSVVGTCP D DR WHR R D DK T V S L L A A C L








## A



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UniRef90 UPI00047D12DA UniRef90_16X379 UniRef90-S3Z1I8 UniRef90_C4Z4L2 UniRef90_A0A023X0G9 UniRef90_A6C8A1
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 P TV L A H E K GY S A CL
 A K E WA HE K GA D D A WLV V N GLVVTEGSSSNCYVVDAN N HVIT A QKEAETHGCGQVAFLDARENKWDGGMNLFFVYSDGRLVT $A K V E A K A A C A D Q A L M L D V H G R L C E A P G F N D F V V T A D V E L T T$
 SKHAAEAKGCSDAMMFD YRGYVA EA T GANMFFVKDGEVHT A QKAAA KE GCDQVVWDDERKWVEEMGGMNDYFVKDA TVIT A GVLA HEKGYSAVI F L D HKEYI DECGBANFFGI KNNTYIT AK QQA A EQGAYEALFVRDGFVIEGSSSNVFAVID GAIVTY A QR DA K Q K G Y S DVL Y L D H K K Y L E EVVS S C NI FIVVK NVI S T GQVKAEKYGCS QVLWLDRKYVEEVGAMNDMFKIDGE YTA A QEEAKKE GFA QVLWL DERKYIE EVGTMNDFFKDNGELDT
 ANKMAHDLGYACEFYLDEKKYMDECGAANFFG1GKNTYVT P GKEAKERHFS DCDY L D P LTTHTKIGAANFFGITKDNEGI T P GEEAHKKNFS DCI Y L D P ETHTKIGGSANFFGITTKDNEFI T

 AQQEAKGHGCAQVLFLDRRWDEEMGGMNVFFVFDDGSLAT
 A S L E VL RKGYDEAI FLT RNGHVCEGPGENIFMVRKGKLVT $A L Q Q A L G A D E A L M L D P Y G F V A S C N S T N F F V V R G E E L D T$


 A QA DAREA GCQDCI Y L D S DTYLIE EGS GCNI FT TH GS LVVT T AKEYAHAHQADDALLVVEGFVTEGTSCNCYLVLEN GTVVT
 A SEQAHRDGYDEADMLADDGHVSEASSSNLEVRQGTVVT
 $G Q M K A H D D G Y S Q V L W L D E R K Y V E E V G S M N C F F K D D G V I$ RT A QQEAR EHGCDDQVLYYLDAADREESSGTMNDGLVTTSDR K V T
 GCIQAA KA GYDEAAMMLDPH GHVATCNSTHFFIVRADGEVWT $A N Q \| A H E A G F A G E F Y$ L D EKKKYIDECGAANFFGIKNNTYIT

 A IAARAKNRGFS DVLVYLDNRKYVE EVVSSCNDFIVK GK LI ST ARQSAYARGGAEAWLVDDDGLITE GAASNAWIVGGSRIDT
 ARAEANAA GVDEA LLLNQF GQVAECSAENVVVVKA G S L L T
 A QRAAADAGCQQVVWLDEHRWVEEMGGMNLTFVRGTVI TS
 A GEMAHSKGYSAVLYLDPRRYLDECGPANFFAVKDNTYIT A Q A QA A EKG A D QVVWLLDRKY I E EM G GMNMMFVYGNREEVT A QK Q A A K E GC D Q V V Y 1
 AQSQAREEGADEALLVRDGLANEGTASNLFMVKE GLVI TP
 ACIQAD KAGADEALMLDPLGFVATCNSTHFFIVCGGEVWT P Y NLLA HS Q GY T E LLL F L D P K T RI DEF G S S NFIGI K G D T YV T A K T E A V V S G F D E S llll N S Q G K V $P$ QQEAASRGYDQVCYLDVIGNNRFLGGMNVFAVRND GS IL T A H LQ A R R D GY D L PI F L GADRKVAEGAGACLRMVRS GELI T P A REAQEAGYT QVLWLDERKYI E EVGTMNIMFLDDDVVIT A Q K Q A R A K G F S D D I L Y Y $\quad$ L D T G K K C $\quad$ I
 A GIHAQKAGADEALMLDPHGFVNTTNGCNFFIVKKGEVWT P SLLLAK KE GFADCLY L DPA QHKYFGGANFYGI TK D GQFQ T $P$ QQQA Y DKGFE QVVFFLDAAT GTYVLGGMNVVVVVRSDGTVAT P A R K A Q Q A G Y H QLV V WT D A R S H Q Y I G T M N V M F L P GEKAKKAGYGDVVYLDPATHTKIGSANFYGIEKDTNKFT




|  | V10 290 |
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| Ref90- ${ }^{\text {a }}$ | 1 QYGR |
| UniRef90-CCZ4L2 | IQQMGKIEAPKGWIYTV. |
| UniRef90-A0A023X0G9 | AARGEWDKYSSWTVPVQ |
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| UniRe90 ${ }^{\text {b8FO94 }}$ |  |
| UniRef90-GPIO0041CAE89 | Q QYGLREDKFGWIEEKVD |
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| Ref90_E3F |  |
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| D8U4 |  |
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| M7N | , |
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| Ref90 -G2K |  |
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| UniRet90-UP100038464899 |  |
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|  | VQRGRSADPDGW |
| UniRef90-UPIIO00369B7C0 | QRGTFADTHGWMTKL |
| Ret90_Q11R99 | LKNGIGEDKYNWVH |
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| UniReego- Jploou476113F | Q |
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$\square Q M G R \square E A P K G W \square Y E \square$
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$V A S G A D G R Y P D W R T A V N$ MQYGRVEDPYGWDHPV TQTARLEDKKGWTLEV I QTGTIEDKKGWMIEVD V VR
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QYGRAQDRHGWLYRL I KTGRAEDKWNWVYKL LQYGDDEAPEGW』VEV
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AWQNPRIEPLEF DP THPAAMALHYGQA IFEGMKA
 D QRDGH $\square$ WF D GA L LP WRDAKL HVLS HGLHYGSSVFEGERA D WD QE H GWHNA QVTA H H N L E L P P A T S V L H Y G Q A IF E G
$R$
DWRD G H
SAE RGW
$R D G S G W$
REGK W W
DYE
$R$ E Y R D GQ D Y NVRCYYQNMR IVPYG
GWHDP$R Y$ GWHDPKIVVPY H DI SVVSANTTVHYGQAIIFEGMKA
F! 1 Y $\operatorname{NGQQVKKEEARI}$
D Y D Y K D G ..... D Y
A WQ
N 1
N 1LV V G GKLMS R DEAKV SVVY D S GFMM G D GVVWE GI R AK A F L N G G K F $V$ V
$R \square A Y V N G A Y V P H A D A A D H D E D R G Y Q F A D G V Y E V C E 』$DYRDGAA WDA GT LTT DHSLHLSECA G DFHYCQEVGEGLKAR S GKIDWY N S E L L L D WA D A K
Q Y P N GVAFMDGTERLIWFKEL P D VLVWVLVWV G D
R F A K G
R F A K G
DYNVRCL N G
YPEGVAFS RIA YVN GQY L
WT E
A Y N G D F P L TRDIL
$R \quad L A$  HV
MDNRLA YSRF A
VSDIIAYVNGAAYNPYGNDEI- $\begin{aligned} & A \\ & A \\ & A \\ & L \\ & N\end{aligned}$
SRIAYVNGQYVRHADARI
E WS

YRHAD GSVWFRPEANAARFNRSAQRLALPPLEEADFLED
 Y NGK MF T A DE HLLERLLES GRK KELD I P Y S TVGKDNPLLFRPEENAKRFNHSAARMGMPSVPE P Q NPNQ LLLFRLDRHCQRLSQSARLLHFDLP
 YRDNDEDWLFRPDQNFDRFNKSATRLAMPEVPEEKHLIND Y T T E K G Q I I F R P D L N GE R LIE Q S A A R L E M P DYP K D K FVVEA N
 Y
 YRQANGVILFRPDANAARFTRSAERMAMPELPEEELLVSQ Y S G

 LEGK
Y S G Q
Y N G
Y K N E E G E
Y R CK
C G S
H H N
Y K G K
V N G K
Y D G Q
Y S GEVLL
FRGKDGEVLIRA
Y S G H P
V N N S
H K G K
Y A GH
Y G GEP


 LNGK LVDDGHMRRLRR K D D N N D $\quad$ WWL
Y H GK P
TRTEDGR】L
FRKENGLLLFRPDENALMRMKM YAHHADNTVFRLDDH\|NRLI QS
ARGK
YK T P D GK L L F RPDENAKRLNK
 Y R H A D G S V WF RPD R NAA R I N K S A E R L A L P Q L P E E D F I E Q W YT GW IF GLERHLGRLLKK GAD QI GIDFFGGDVDTWRKV Y K NDAGEAIFRPYDNFKRFNFSAARMEMPEVPEEDF IEEM


 GK WAFFDEHMDRFFASCKAVSLDVGMDRAGILDA Y RNE Q GE DLFRGDANQKRLNESAKRMCI PEIPKE DFMEGM
 VD GK\| I
K D G H
R H G F
 Y D GKGGD V FRPDQNARRMHDSAKRLIMMPPRPEDRFVVAA AIFKLE EHTSRLFYSAKRMGMT\|PYSEKE\|NEA
 Y WN K E QLY AF KL TE HI NRLINNSAK IMDFDLKYDFNFLKNS Y G G H
R N G YNGK VLFRGFLHYQRFLE WD G
F R G $K$ G $K$
Y WKG RFFRLDLHLDRFFG

## WQ G N

 YRHSD GSWL FRPDANAERFQN F

 $R D G R Q V E A$ R HWQRLD H S L G A L S I

| L N E HLL R L |  |  |  |
| :---: | :---: | :---: | :---: |
|  |  |  |  |



HR2
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## L



DWVP DSTSGESSLYLRPFMFASESFWGVRPAQEVTYSVIAA D S EWDK P GF G N A L Y L R P F M DA T T A GVVQAA PAK N Y L F M I I


 QR WV P A A G G E A A L Y L R P F M DA T Q P T L G V S P S T T Y T Y A VIA
 K L A V V E A N NI V D G Y V R A F C WR G S E M M A DHV A DA A WE WP S Y






 D MV L HL L N K D GA S L Y I R P L M I G L GK QV GV SPA S E YMF L MF V

 TLLQVVAAEA GIDTE GY I RVVNAWRGSTSVVHTSVAAWEQAPA GA
 DEAWI KKGLGNSLYI RPFMIATGFGVVANPSNEYKFMIIL


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 FHELTS QNQGEY QGVVLQVTRGASAVRNHPADCQPTVFAY




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SPAGSYFTG\|SLWISEHFSRAGKGGTGDAKCGGNYAASLA A PVQAYYKGDVKVI A DYYSRAANGGFGFAKAA GNYA GQFF









## F <br> S

 SPAKSYYSGEKVVIAEHYSRAANGGDGAAKAAGNYSAQFY



 S P VGTYYK P P R V K I E T R Y IVRA A EGGVVGGT K CA GN Y G G S L Y






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## A



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 I PDREDNPENWKRGAAVFSFPDDRHKLCEHKTINLLPNVM VTAKRTDAAVIARKISADTVPENRWDRVDVKSVGLLPNVL TWEWGSYFGDKLNISNWRRPAPNTDPWDTKASGLYMDCTL MVSPGRPGSETVRDQGVAAVTAPDQRWAHCDITGLLANVL FALPFGSVANKHIADSETVRIPPTSDDPADKNCHWLDLLVQ MKDPGTPVPAAFLRDGVAAGADQRWQRCDUKAMTLLANVL KPPVYDNSEGITLVTATTRRNSPNNLDSKMHHNNLLNNAL MEPAMQHTGGTALIARTVRRTPPGAFDPTVKNLQWGDLTR
SPVGPYFKPTNGCIMREFDRVAPRGTGRWKVGGNYAASLE YTSEMERPDEKMRKGVKAVLAEDDRWLRCDIKSLNLLGNV FAVPFQLQRGLRVAISDKVRIPPASIDPTIKNYHWLDLVR PTNPAASDKQAETGIAVVSHPENRWPRVDIKTVGLLPNVL
PYFPQGVKPVNIWVEDTYFRTGPGGTGFAKCGGNYSASLV

 SPARAYYRGEVRVVIATYSRAADGGVGYAKAAGNYAASFY CPVGNYYKPVSVKVESKYTRADEGGTGYAKAAGNYAGSGY KRTKPFDPMQAERGVAVRLVPDQRWTRRDIKSIGLLPNVL
IWKEGAPSLDRQRAVAVCTYPDERWHNCYUKSUCLLPNVI MVITPEHKGLRLATVPVRRGYSDVQDPKLNSHS KLNCIL MGDYLSPDGISCRISSWYRQEDRSFPGRGKDSAAYUTSAG NLSYEKNQAAAKSGDAVITTPENRWPRVDDKSVSLLPNVL YMKPLSAPSFTKGKVGIILKARRNTPEGTERSHHYLLNNI SPVGNYFKPLNLYVETEYDRASSGGAGGVKSTTNYAPVLK TFNVNAPCNGDPATATCYRVADRRWKRCDIKSVALLGNVL TSRSADRDAMAEAGVKVITVPENRWPRVDIKSVGLLPNVL CPVGPYFNPVSLWANPKYVRAWKGGTGDCKMGGNYGSSIF

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A Q IVEASENGCDQSVV|LDSVEQKYVGGMNVF|LVYQDGR|IV|T| PTQEAANEGYQQVMWTDDATHQFAGTMNLWFRFGDTEVTC GKAEAA EHGADEVMFDDSETHTCDDEDSGMNVFAD GRLLT AK QKAA QS GCFEAIQHRGDTVTEGSSSNDAIVKDGTMYTH P TEKAKAKGYDQVLWLD

 A IVTA HKE GYDENLY LDPATRTKTGGANFDFVTMDNTVVV ANKMAHDAGYSCENY L DEKKY DDEGGAANFFGIKGNTVVTT
 A QA QAAEKGCDQVVWLDAHEHKYM GGMNLMFVYAGTNGAA AKTEAVESGFDEAI LMNAQGKVCEAS GMNIVVVRNGKLFA ATRQAVGNGCDQVVWLDAAEHTWMGGMNLFFVYRPRIVTP S K H A A EKKK GF Q D SL MLD Y R GY DA E A T GANVF F I D G E TII H T
 $-$ GA WEAA DRGYA E GMMLD GEGHI A E GTVVSNLF FAERERLWT

 A LMQA IEAGADEALMLDPHGFVATCNATNFFIIMNGEVWT
 AK KY A H T QHAD DAFLV ENGF TEGSSCNCYIVLHD KTVV
 S GVLA H DK GYSAVI Y LDAKE Y I D E C GPANFFGI R GK S Y I T GK WE LG HR P H A E GI F L N S DGAVAEG V V N $\square F W V K D G \| V Y T$

 SKNEA LRRAGYDDALLLDDNGNFVEVTGAHLFFTRNGVLHT
 $P T S L A N K E G F Q Q 1 I W T D D A T H T K A G T M N V F F R F N D T L V T A$ $M A Q Y A A D H E V Q E T I Q F R D G N Q T E A S S S N V W V V K G G E M F A P$ A QKEARAKGFS DVLGFDTGKNDE EDISTANIFIILKGNVVST
 A MEAAHRGGYDD A $I M L N H H G Y V A E A T T S N V F I V K N R T L I T$

 A Q YEA A A Q GCQQQVLFTDGKY DVELGGMNDMLVTMD GRLVT
 GKQEVGHHSNVEGIFDTKEGFVAEGUVSNVFWVKDGUVYT ACDQATQAGADEALMLDPHGFVATCNSTHFFVVRNGEVWT $P T Q L A D Q A G Y D Q Q I W T D H Q F V E E A G T M N L M F V I D N V L V T A$ ACLQAEAAGADEGLMLDPHGFVNTTNACNFFIVRRGAVWT ACLQAAEAGADEGLMLDPHGFVNTTNACNFFVVRKGEVWT
 ALI QADHA GADEALLMLDPS GFVSSCNSTNFFIVRNGALWT A K N F A Y E R G GYEALMYRENKYI TEGGSSNYFLVVKNCTVDT A RQR A K E E G A H E A I F VID P D GTVVK E G A A T NV WI R D GVLRTTR S K HE A E K Q GY T D S L M L D H E G NVA EA T G A Ni F F DK N G D L H T

 ARQEAI EAGAVEAI LVRDDVATEGAASNDFMVVDNAVLTP A K R T A ELLKGF D D A V L L D T Q D R I A E A S S S NIIF FVVK D G KL LT A K I E GNLAKAGDAIMLDKDGYVSETNATNIFMVKKGHVST

 AKQYAREQGAK EVWYV DQDGYVTEGGSTNAWVKDGAMVTR
 A CVVQAEAA GAE EA L ML DP Q GFVVNTTNACNFFVVRRGEVVT A K QEA LD A GA QDA L H R D GTVVTECSASNDMVVKDGAVVTH
 PALLA QKE GYDQLLWTDNHQHI E ES GTMNVMFMIDD TIVT AK QEAMAEGAF DAWMVDGEGNITEGTASNAWVVTGEGITR
 AKTEAVESGFDEAVLMNSQGKVCEATGMNVFMVRNGQLDT
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 A QREA LD Y GCQQQVLWL D DE QUTEEVGTMNLDLDFWVNEDGET



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 A AFGAGTAVVISPFASIAYEGVDYSLPAEVTEKVKNVITD EAGACGTAAVISPILRVDYVISKDGNPGPICTALYERLRA EAFDTNSVQEIVPLCRI GHCVYQGKNGPVVRALQHHYRR

E

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 EAFSS KNFGS ATGFVSPVVR ELLITTSATAVVS KGAYKEEYFELPDSVALQLKEKLTN EAFCTGTAVTVVAPI GAVSYRVEFRTGKEALSQKLYETLSG

 KNFGSGTAAVI SPVGLLQDMVINEGKQGSFSQKMFDHITG EAFACGTAAVVTPI GRVNDFTI DHGEPGAKTMEFRKTLLD

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 EAFGTGTAATVAFIVRI NDYELKEVAPTAFSVRIRAEALDN EAF ITTGTLGSLVSVKSIDGRLI ENKNNYSMTEKLLK LYE K

## E



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 E $I W L T S S T K D A L P V C S L N N N T I G S G K P G P D W R K M Q A Y F E Q$ EAFLT GTFGAQTAVASIDGNPI GDGTR PVVTERIRALYRD $E A F L T G T T V E V T P V V A V D G Q A V D N G S P G P V T R R L Q R E F$
$E M F G S G T A A V I V P I K G Y K H L E F V H E L P H S Y A E R F K K E L N D$ EAFGTGTAATIAHIARDNDYTLPEDPGNAFSNQVLRKLDA





 EAFNTAATADVTPVIAI DGAPVGDGKPGPVALGLRRRFHE



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TQ T GRAEDTRGWLTR｜L
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I QY GIEADEHGWVTVL
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I TENRDPTYRAWVHTDT
I QHGHRPDPFSWAHKV
L VRGR
I QYK KS E D T F G WTVK
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I RTGKVDDTFGWVYKV
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I QYGDYPDNHGWVR
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】Q H K L A E D T F G WTVK
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LM
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M H Y

KHDDPA WSSPVN
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I K Y G L E E D THGW $\square$ QK V
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UniRef90 F5Z8H3 UniRef90_U4LV31 UniRef90_UPI00036FDF6C UniRef90-A0A023D2T6 UniRef90-E3FY52 UniRef90_UPIO004249748 UniRef90-W0PBC6
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 EWTAEKGWGTPEEKPYQNLSLDDSAVVFHYAFELFEGMKA D WDSERGWFGDRLVPAAEATLGVATSAVLYGLSVYTVFPV D WELGKGWGNPVI HPYGPMALDPASAVLHYALECFEGMKA $M E N K T V Y G N G R Y L P D N E A R V S V L D R G F L F G D G V Y E V I P S$


EFARG $\square$ A WVEGEYVP $\square$ HRAR $\square P L L D Q G F M H S D L T Y D V P S V$ VFDHGLLYGDGVFEGLRS


E WTS $\square G G W Q K P H \square K P F G N \square S L H P A C S A M H Y A V Q L F E G M K A$




## Y R D A D D K VLFRPMLNMNRMAKSAERACLPAFDRAELVECD VGGK LLDFA GHEARLARSLNEDEDENPFAE GELLABI   Y Y N G H C


 Y H GKAVVGMTGHDSRMRDGGAADS ITNPYNAQQWQQNL NGL YRTES GER LR R P R K N M D R L S L S S S A R $\quad$ I A L P S F D P D A M V E C I I E G K
 ID G R M
$Y$ G G H IGGK
Y N R K P YN RK K
$\mathrm{L} D \mathrm{GK}$ LD G
WK G

 R Y R G D D R L
Y K G R P 1
$Y \mathrm{~K}$ G
$\mathrm{Y} N \mathrm{G}$
Y K G
YRT $\square$ DDK

R GVV GK
Y D G
$Y \mathrm{NGG}$
Y E
F7128C
$Y \mathrm{E}$
I R

FRDVDNKL
Y N GK
$K N G K$
$L D G K$



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 Q A K T V LIA N P LiA E T G A R V SPVVGSYFSPVGVWANPKFVRSWKGGTGDFKMGCNYGS SGLL






 TVK P S R K V D P E LR K A S V L L H P DE R WM N C H I K S L NL L P NV L



 F T Q A K D LITN NA A I R D G V R V V D VA PR WAR R D


S P A K A Y Y A GEVVKVI A E HF S RAA A G G $\quad$ G A A A K A A G N Y A A Q F Y

 APSKKLPK S S E Y T K G V A V I SRRPDi R WGRRRDI K T V S L L G N I $F$ CK P L S S R N T GA EK QA V L L K DP RNTP E GA ER S H H Y L N N L P V G P Y F S R GN F N P V S L WF V R A WK G GTGGD C K M G G N Y G S S L F






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 AYMTAHAKGFDENMYGDPATRTYTGGANF LFVTKD GTVVT $P Q L Q A A S R G Y Q Q N L W L F G P N N T E V G T M N A F F V F K D S K T T A$ AKQGA DDAGYDDAIF LDGA GHVCELSAANDFLVRGGTDIT P QELLARDRGCNQVMFVDNAEHRWLGGMNVCVVTRAGELLTT


 P A YEA QQKGFD QVVWMGNKT QDQEVGTMNIFFVDDGEVVT | $P$ | $T$ |
| :--- | :--- |
| $P$ | $L$ |
| $P$ | $Q$ |

 AKNRAARAGAMEAILHRDGEVTECSASNVYMIKDGEVFTH
 LAK QKA HVEGSGEAILHRGNTVTEGSSSNAFIVKNGQLDT AKREAKARGFDEALFVVRDGFVVECTGANVFLVKHGEVTA GDMARSESEADE TLMLDDVDGNLTE GATSNLIFFCDD GVVLKT
 A QCEA A E N GCHCVLWLLNRDTEVGTMNLD LIYWI NKD GEETP
 ARQAAVEKGATEAIMIAPDGMVTEGASTTVWIQQGRLRTR

 LRQMA I DEGALLETVLFRD GFMTE GAASNDFVVRNGILLLAP RQEADDQGGA EABLIK D GYVTE GAASNVFAVDNGVLVT AK QA AVDAGCFEAVLIVREDGYITEGSSSNMYLVKDGAIVT
 GKMMAKKA GADDA WMVVMD GYVTE GTSSNNAYYI K GNTIV T PARKAAEEGFDQLIDWTDAKDHKFMGAANAMFLLDGKLI TA A K Q H A LDD Q GA D DVV L H R S G LVV T E C S A S N V M VV K Q G A I T H AKREVGNDISKEGIVGLTKERFLAEGUVSNLFFVKDNTVFT

 P T QLA $\square$ Q E GYQQQI I WT D DTS HEYA GTMNL F FRII D DTILITC
 AK QAASEAKVKEA WLVGTD GMVTEGSTSNAFIRAGKIIT H

 AKQKAKEAGAQEAWFVDVDGTVKE GGSSNAWVITGBDGVTR
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GK M M A K A E G K D D A W M V
 R A ELLA A D S $\quad$ D E A L L C D L E G RV TAE GA T S N L C F F V R D G A I H T A L K E A L D H G F D E A L MLLD DD GY V S E G S G E N DF V I K D DVI I T
 AKM A S D R A A Y F L A QREA V E LTGCQQQVWWLYG D D H QI T E V VG T M N L F L Y W D E L A T P


 A R Q E L D R D GMVVE GVQ L A VA GHVVVS G L V S N I F AV S G R R L L T AKMEAMRRGADDAWLVQDGLVTEGSAATAH\|VKADGTLVT

 GLLYAAYAQGAETAILLDATGNIAEGPGFNVFAVKNGKISS GNFDAKARGADWPVFINDRGEVTESSGACLAMVKNGVLCT
 A QYEA GDYGCQQVWLYGQDHQITEAGTMNDFLHWDNQDTP AKEKAHHEGGFEALLVASDGTVTECASSNAWIIRDGVLVT
 $P Q L Q A S E R G Y Q Q N L W L G P E K Y I T E V G T M N V F F V K K E L V T A$
 P Y T LA H K $\square$ G Y A E L L F LDD PAT KVDEF GTSNF I GIM GNTY VT
 AKEFAVKYNASEAI QHRGETVTEGASSNVYAIVDGKVYTH AVRWAKEKGFENAVMSDPDGNVAEFATSNIMMVKDGVVMT
 A QCEAVENGCQQVLWLHEDNQUTEVGTMNLFWYWDNEDGT AKHEAHKKGGDEAI LHRDGVVTECSSSNVWMIKDDTDYTH



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280

 EVFAT GTSAGVAPVVEVDGRTVGEGVPGPVCEVLRKRHAA EMFACGTAAVI TPI GTLGRHEVPVPADGGRTDALRTMLLD E IFGGS GTAAVVSPVSTMINYMDGTD GKAGK LA ERVWKELSSD
 K NF GA GTAAVVSPVKAFGYKGEHYEQENSYASYFKKALMD EMF GAGTAAVVVSHVA E LQ Y G DVEDRKDGPM







 EAFDTSASSFVK PI LDADDGVKVGDGTPGPITRRLEDDFAR



E I WV TS STREVVAVIELDGAVVGNGTVGPVWHTMNDDLQA



 EAFLTTSASSFVVTVVIGGIKACTIADGRPGPVTRRLQQEVYLK E IFMTNS DQEI FAI HKI GEKEFKTGEQ T LTYTLQRQYEK

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



 EAFFT GTAAEVVTPI RELDDGRMI GCGSRGPDTEVLQKKYFD EMFGSGTACVVSPVGRI LYQHI PCQEGFPLASRLMKELTD





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## E

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IQ Y NKAEDTFSWRYKV LRTGTVEDKFNWLVKV I K K GTVADPHGWIVKV LRTGRIADTRGWM $\square P$ V

QHNLSDDKHGWRHEV EV
VI R GAEPAYSHWDTVV RVESEYDD

A A R
 1 QTGKVEAPQGWLKKV HVS G
I QY GRRADERNWMVRV
IVGGKQAKFQHWLTEV
MHFND
LA R MK S P

FKR
$\square K Y$ G L A P D T H G WN Y LVS
$\square A R S T A$
LHLGWTADSHGWSRLIS I QNKLTEDTFGWTVKV I QYNKTDDPFGWRIKI $\stackrel{\mathrm{V}}{\mathrm{Y}} \mathrm{I} \mathrm{R}$

TQYGREES DWT I IS V
$V$ VHGRSEDHLDWLSYV I QYGRTQS DWSVLV
$\square$ QKGVHEDTHNWC $\square \mathrm{F} \square \mathrm{D}$
MVKADV
$\mathrm{R} V$
ATKNKSD
CVHGRNSDFNHWIV
LIAADVAA
L H Y
AAR
$\square$ QYGREDS DWT $\square V \mathrm{~V}$ S
$\square$ QYGD $\square \quad$ K S D WS Y P V
AVLGTDD

EMR
L VR G D VT T H E S WLT T VT
$\square$ QHGRT PSDWT FEV

A

Y ${ }^{1}$
WA E G
$\square$ QYGREES DWT I LS A VEAE

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 EWD\E T GWG\PE I KPYGNLSLDPSCCVFHYAFEDFEGMKA

 S R F A Y VNGQFVRHGEAAVVIVERGYQLAD GVYEVWAV K WR A GKGWGMPK LVAATSVSLHPFSHVFHYADECYEGMKY ES QVYLN GEFLRVDEAKVSVLDRGFIFGDGlYEVVPV

T T T WTYVVEGEWLS GNPPLI GPTSHAMWLGSTVFDGARW GTGWETPRDVPYHD IVLDPAASVFHYGTACFEGMKA $\square A$ Y VN GHFLAASEASVS DFDRGF LFADADYEVSSV YA D GCA WIE GAYVPDHEARIPILDDTGFTHSDVTYDVVAV WNAEDGWQAP QVGPYQNLSLDPATCVFHYAFECFEGMKA Y I F L N NKL VQK QEAMI S PY DHGF LY G L G VF E T L R L




GVQKA H AAKVLHYAVELFEGLKA
K NLGYYNGAFGPLE EMTVPMNDRAGYFGDGVYEATLA WT A E NGWGAP K I S G Y H N L S I P P S A S V F H Y A L E C F E GMKA D Y A D G A WQ S A EIVRGF ES L S L S P L S M C L H Y G Q T V F E G L K A

SERVY HVVGDLVPADEAVVSVEDRGFAYGDAAFETMRA E WN K E Q GWL E P K I TP Y Q N L S L D P S S C V L H Y A F E C F E GMK A

$V Y L N G Q F M P M S E A K I S P M D R G F L F G D G: Y E V I P V$
AFHEDRPLPGDAI PFGSNSLLQHGTAVFEGIRG
D Y R D G
E
VR $Y$ V $H$

TAT T WT Y V E GQQWLE GN P PLL GPT S HAMWLGGSTVVFD GAR W LA Y F Q NQ F I S $\square E K A Q V$ S $\square A$ T H A L H Y G T A A L G G L R N WT P P K F VA DSF LRRI HGMAPGLLNYGMQCYEGLKA

Y R D G $\square$ C Y L $\quad \mathrm{N}$ G S Y V P L L R E A C L L


WNNMTGWGVPELKPYGNLSLAPTASVLHYATECFEGMKM WS PLK F VA DPY $\square R \| H$ GMAPALNYGQQAYEGLKA Y ID GRWVE GNPPDMGPMSQGYQ FASMVF DGAR S EWNKTDGWLAPHITPYQNLSLDPATCVFHYAFECFEGMKA NKMLYN QTIMMDRSRLIDDEDRGYQFGDGVYEVIGV KLWW NGGLK DAA EARV SALD H GLLTVGDGVF ETLK T D T L C Y L NGEYGP LDRDAKI SVLDRGFIVGDGI YEVVPA MT T ALA WLD GEY LQYDQMNLS PVVTHSLSYASSVVEGMRS




|  |  |
| :---: | :---: |
| UniRef90_T1PBX0 |  |
| UniRet90 J2 | ARDN |
| UniRef90_N6VY58 | Y RMPD Q ${ }_{\text {RKL }}$ |
| niRef90 E8S | YDNK QRKFTAKEHFE |
| UniRef90-UPI |  |
| - | YTTKNGDIVFRPDLNAARMRSSAERLV |
| UniRef90-S75 | YRDEKGKVLFRPDMNMKRMNSSAQRVA |
| UniRef90 GOJ51 | FRTVDGKIIFRLESHEKR |
| UniRef90-UPIO00312 | - |
| UniRef90-Q2L | YRGKA FRDTEHLNRL |
| UniRet90-F4KWH0 | REGHP LFLDDYL |
| UniRef90-E6MYR2 | FRQADGK LFRPTANDARMRQSA |
| UniRef90-UPIOO036ED | QNG |
| UniRei90-G8BQ | YRTKDNKILFRPDMNMKRM |
| UniRef90-Z5XAJ1 |  |
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| UniRet90-UPIOOO2F | YWNRDRYYIHKIDAHLERFRDGSQKMD |
|  | FDGK LVDAEGHFARL |
| UniRef90-UPIO00366E | YNRKP |
|  | VDREGNTRLFRPEMNMKR |
| UniRef90-G7LU95 | VNG RLVALDAHLDRLFEGAAAI |
| UniRef90-LOLI94 |  |
| UniRef90_D8M5S |  |
| 1 EDC | LEGG LVDNAPHLLARLQRSMGEI GLSLPLELEELPGL |
|  | d |
| UniRef90-UP10003067E02 | YDGHP FLLDDHLERLENGLKEL |
| UniRef90-V4PJ | FDG RLADLDGHMNRLE |
| UniRef90-D6T | F HLD E H |
| UniRef90 Q1NEY1 |  |
|  | D D |
|  | R P M R R |
| UniRef90-D6DIB2 |  |
| UniRet90-F0ZA94 | YKDEK |
| UniRef90 M1E8S3 | FMHEDGEIYFRISKNAKRL |
|  | GD - ${ }^{\text {W W }}$ |
| UniRet90-J5JG13 | Y |
| UniRef90 R1F5 | YDTPKGTC FRLQE |
| UniRet90_A0A013V | GKP RVDA |
| UniRef90 A4 | YSGKSVG QLGPHLARMQAGLDALELKLHCDHEEWRG |
| niRet90-UPI |  |
|  | , |
| UniRef90-D5D. | YKGDDGEVPGSERHLDRLERSAKALFEC |
| UniRef90-UPIO |  |
| UniRef90-UPIO003716CDF | FRHADGS\\|IFRMDR |
|  | FDGLDS |
| $\begin{aligned} & \text { UPI } \\ & \text { M2 } \end{aligned}$ | SRNPDDKTIFRPQQNAERLS |
| UniRef90-UPIO002DC12BD | YDGTP LFDDEHDRLE |
| er90-L9PIL3 | Y |
|  | DII |
| UniRef90_R9TSK9 | YEGEP FLLLDWHMDRLNNA |
| UniRef90-A3Y | FHGRLLGEV LEMQRLMNS |
| UniRef90_13M425 |  |
|  |  |
| UniRef90 R4WD | YRGFDDKII FRPELNMSRMNLSAARSGLPVFPPEELLQCM |
| Q2RGN8 | EDG RALFLTEHLDRLTSSSRRLGWPVPDS SGLPAA |
| UniRef90-H6BL66 | FRQPDGS 1 IFRPDRNAKRM |
| UniRef90-B4JLQ2 | YRGDDGK |
|  |  |
| UP | Y |
|  |  |
| Ref90-F3JW | Q |
| 588 |  |
|  |  |
|  | AHMERLQRALSUQH HLNYPESUL |
| J2D159 | IDG RLVDSASHLARLERSCTE\GUALPLTLDEUEA |

YRGFDGKRLFRPDCNCQRMLTSATRTSLPGFDPKEALVSV FRNDSGDAI FRPDRNAERMQRSAEFVSIPPVPTDLELDAN LPQKDGSIIFRPDQNARRFKRSMEGLLMPGFPEEAFVKAV
 YDGD FFLLDDHLRRLKRSAEAGQMMLPCPDDTLKDN $04161 B 54$
A3

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| :--- |
| UniRef90 | UniRef90-R9PSD2 2

UniRef90 V5SFL3 UniRef90-J2KZD8
UniRef90 Х5MMK4


## UniRef90 T1PBX0

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UniRef90_R9PSD2 UniRef90_V5SFL3 UniRef90_J2KZD8

130
140
150
160
SPVGSYFKSDSTGAVISLYTRAWPGGAGNRKMGSNYAPTTN RTSPEASAARAAKGI K I DTVPENRWERVD VK SVGLLPNVL










 FGP R DV E K PLDS CHI S P Y E R V S S L A DP VT WK I C G S Y V N S Y L IT A K S I D R A A T N A KA S VI SVVPENRWGRCD I K S I G L L P N A L
 $G M I S A W A P P$ GAAVRASADS\|PDERWLHCEIKSVSLLGNVL
 E A PLGGGNGGGTMTVSPPFRRPSPETAMTDAKAGSSLYNSGR

 Y M K D L P K N P L L V K E GV I L E T R R NTP E GN Y R L K SH HY L N NV

 IT C Y P I K P P T N Y L S S T L I S Q Q D R R WR N C H L K T T S L L G NV L




 SP VGPYYPTGFKAVSDYAVRAWPGGVGDKKLGANYAPCLVI A A L P WGA Y G V D V C V T S S WN R L A P N T I P P T G A K A G G N Y $\operatorname{L}$ LS S Q L



 SPSGAYYADGFDK TIERFHRAVSGGTGASKAAGNYAAS LR Y M K P LP A A GTEP VALWWLQLRRNSPEGRERMKSHHYMNNWL GDYFA G GDKALRLLVDDQGMRCPPHMGMVKS GGNYA GA LR EAPMHAAKPSSSLTVSP YRRPNPEVAMTAAKT GSSYPNSSGR $\square A D D D Y P E G G S C R F S S W Y R Q E D R S C P L K G K T S A S Y \square T S A D$

 FESPPGGAGFSACVSTARRPAPDQAPTDAKAACLYANAGR $M M N P F H P E S V P V E K E$ GVILQQVRRNTPEGPFRSHHF LNNLR QVVEAAF GLDYQGCHGHFHEDMRWQKCDDKSTS LM GN LAA C PVGGSYFPGD SVTPVSTEDRAWMGGVGDYKVGGNYGPTVL
 Y T P E D YRE GYRAVIVT DCRN QHS PLAGLKTMNYLENL L
 FKT GSGD GAV SLLLADPSYTRAWPGGVGNRKMGSNYAPTIN
 RPAPEHNPGSKNAVVLNRRRNTPEGDTRGKSHMHYLNNLL


 FRKELQQDTPRGTEEKFAQWLTDPRNTPEQAFRVHHYGNNVL VQ NKAF LDVPA AT T G DAVASMP DLR WARRDVIS VGLLA QA
 TFMPSMPNGMKLLAS QEGVRAWPGGFGFAKVGANYGPTLM
 FAIDPFSNEMGSFSTSPYRRPGPDMAPT DAKAA C LIYPMT GR SPVGPYYPTGFKA DSDYAVRAWPGGVGDKKLGANYAPCDV T KVVE E T M K E E A K N G A K A DI T E D $\square$ R WL R C D I K T L GAMPARPRVGSVITVPWTRNER GALAA GLKS TSYAENV 1 MCSPMKPATAEQRHQGVAC

 C L A R S LLD GA V R E A RA S VA TMMPDTARWARCDDIKTVVMLLAPAVL Y A LP Y V W $\square$ A SRE K Q

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UniRef90_S7S4R1
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VQKEASRKGI $\frac{170}{L^{1}}$
180
190
WLYGENHQLEVGTMNTFMEKELRTP ARQQAKEQGAQEAWFVDPD GTVVKE GAATNAWMKDGVLVTR $H V I D G R N E Q G V D Q V L F C P N G D V Q E T G A S N F F L V N D R Q L L T$ AAQNAAENDAVESI QFRDGFLTEASSSNVWDVKDGEVMGP AKEYATKYNATEAI QHRDGTVTEGASSNVYAIKDGVVYTH

 P QRKAKENGFDQDI WLDAKERKFDGTMNDMFILNGKTLLT HYQHGAAAGNNETILYNRLDELTEASSSNVFIVVKCII ST ARQQAVEADADEVI QYRDGYLTEGSSSNDWUVRDGKLLAP $W V L K A K A E Y G A N Q V L F C P N G D V Q E T G A S N F I L I D N G D E I I$ H Y Q Q GVT Q GK QETTILLNQHDEVVTEAASCNVFAVID GQIVIT H T DK A RTQGYHVTLDLDA QTRTCDEEFSTSGFIDDQVVVV P QRQAASRGYQQNLWLGPEKYVTEVGTMNVFFVKKELVTA

 A K QAARERGAVVEA WFVVDDMGVVTEGASSNAWIVD GT LRTR

 A L L Q AL EA GA DEALMMLDPHGFVASCNSTNFFIVRRRGEL WT $M$ L L E A R S R G F N N A L V R D M N G NVVE T A S S N V F TVV K D G I V Y T AKQA A LDDA GA D DT WMVND R DTEGSSNNA WIVGA Q GNLITAR GLF E A YD R G GTTA VLMMDA D GY LTE GP GF N LVA Y Y E G CL LT

 A L K E A QRR GAS D AL YVVNAVGHVLEGTRSNFFVFRGDTDIT AKQAARDAGAQEAWMVEDGFVTEGASSTAFILTEE GIVTR H Y Q N S Q N Q Q VDE CLL Y N EQK QVTEASACNVFIVKNNHIYT
 AAEKAHEAGCDECVFHRGD】VTECAHSNVSILKDGVFITH $P$ Q $D E A A K K G Y S Q V L W L L N D Y V T E V G T M N M F V L W K N N D G I T$


 ISREAKRNGYAEGLALDVNGYLSEGAGENLFLVKN LAKQAARDAGAQEAWMVEDGFVTEGASSTAFUVTDEGVVT EGYPA HPGGPAE GLMLDTAGGDVAE GDVSNVFFVKE GHLYT
 A Q A A A KVVNGF S DVL Y L D D H N K Y L E E D
 A GKA A A E Y GAA Q V L Y L D N K Q i E E V G A M N H F H V L ARQE $\square$ K DQPEAE GI FI NDKGFA A E G V V S N I FWRRGNT L Y T

 H S GK A K K E GF G DT L H L D S K T R S E V D E F S T S G FI D G V T I V V

 A L K EAA DKGFDNAVVLDPDGNVAEFATANLFYAKDGVVHT

 ARDEDRGTAADEALMCDTEGAVAEGATSNVFFVEEGTVKT $V$ Q T A SMKGFQQQVLWY GEDRQQITEAGTMNMFVVFKN HNTA AM A E A R E K G A R E A L L L N N L D G Y L A E G S R S N L
 ATEKAKKAGCQEAVFYRAGGRVTECAHSNVHIIKD GKLVI P T L L A Q Q Q GY D QLI WT DE HK Y I E E S GT M N I L F V I D G K L V T GK R E L G A S L D D L E GI F LDT E E D Y V A E G L V S N IVFWIVK G D T V Y T
 A LLREAE KA GMD D ALLLTNNN GNV T E A S G S N V V F WI K D G S L F T $M A K T K A A K V G A E E A L D R D G L V T E C S A S T L L I V K D G V V K T$ GRFEMPS LA QQE GFFLTESGYVAEGVTSNIVWIKSDULYT MAKMAAKQAGCQEAWMIEDGFITTEGASSTAFVVTDEGILLT
 WSEK A HKE GF G DT L H L D S K K HE EVVDEFS TS GF DE DVTMVV AKHEANQAGFMECVFLDAREQKYLEEGSSCNDFKS GELVT A L N E GARRG GDNPVMLDPEGNVAEFASANLFMVK DGVVHT P QREAMSRGFQQNLWLFGPEEYVTEVGTMNMFAADRNKET AKQKAVENNAVEA ILGHREGDITEASASNVFIVKDNCVMT A LARATARGASEALFANTAGQLCEGTASNVFVVLDGELHT ARQMSADKDALLETIMFRNGF LTEAAASNVWVVHEGAVLGP LS F R DK DEAF D DVL F L S T S D TVVE S S GSNIF FVVK S QLVT


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 PANNLI LKGITRQVIKWI CDDEQI TFKDEAFSLAFLKDAD PADHFILHGITRHHVISLAKALHLEVEEREFSLQEVYKAD PATNSULPSITRRSLVTVAADMGMTVEERPVAFAEVLDFV PGI RYGLMAELAQEGGVVFEARPISRAEVETAD

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B3
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33161854
46E8EF4F4


EAF $\square A S A S T L C Q S V V R D D G Q T D G D G P G P V A M R D R A \square Y \square A$ ERFTGGSVEIVPVTTLVGIVIGQAAGPVTRALQSAYR EVWLTSSSKEVAPVVAI EGRPVGNGEVGDVWLEAETLFSQ EVFCSENALCVLPVGSITYMDVDYEESGVVSQQLYSALTN EVF LTGTASELVRVGRVDGAEYPRAGPVFDALAEAFRR
 EMFVTNSDQEIAAVRALGDYCFPSHSA EAALSGTAAVLAPVGTLKEYAVGDGGDGATTVKLRQALND ETFTSGNYSKIVPVTKLDDRDLQE GPVARKALDLYMD EVFVCGTALKITTSVNRIENYRLPDNKT ITNQLKKQFTA E UAAAGTAAGLVP KSUTMRSKNDDEPGPVFVKL
 ELEGCGTGSVVASVEALGDETGMNLPPAVVAPTLRKHLLD ETFSSGNHGKVQPVNRFEGRNL GNOGPVAAKAKEMYWA EAWMTNSVQEVVPFRRDGSTQFPGKDGNLSKRLQEAYTN EVFGSGTACQVCPVHRIVYKDIPTMENGPLLLRFQKELKA EVFGSGTACVVTPVSSIHYQGDEDKDPNPDYKKI LHTLTD EAFLTNSLMEILPLTWVDGRPDGNGRPGPMTTLLRSRYQD EDFLTGSVAELVPVTTLRDQDFSNGHDGPVTAVLLGMYRQ EVMAAGTAASLVPIKSIDKFEYPVNEPGPVCSQLLTTLKG LNFGTGTACVVSPINRINYMDQDMEQEKPVHELIRDTLTD EVLVTSSSNLCLHACEI DGKPVGGKNPELLEKIRAALLG EAFGAGTAVGSSPYSLIEGKDYMLPEFAPVAVRVRHYLSD $E V F G T N S T Q E I D R M A E L D D T D F P A V N S S W L T C$
$E A G G F G T A A V V S P V G S Y D G R T V G D G K V G E R I S H I Y K V Y T E$

## 


E

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MK D

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EDLAYYNGK $\square$ TRLSEMMVPFNDRSHFFGDGVYDASVT
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MS QRYHY L N GAVLPAETASLY LNDLGGLRGYAMIFDYART
H N G ML H E T S EP LVVSPGQ T GFMN G WGV F S T l R V
WRASS GWASPELLKP Y GPDLSLMPTASCLDHATE CF E GLLKA
TK T WTYVDGDWHE GNVAVI GPRSHAMWLGSTVFDGGRW
W $\square A G A G F G R G A V V D D A D A R V D V T A D G D T V G B G V F E T V V A$


Y A R G $\square A$ Y T R G D

WD A T K G Y W G T P T $\quad$ IVE P Y G P F H L

WT FFRGQWHEGNVP $\square M G P R T H G L W L A S T \square F D G A R A$ WTP LRRFVADPFMRIHGMSPALNYGQQAYEGLKA E WS AKK G WS R P L I CP L L H D L IV H P A A K V F H Y A V E L F E GMK A IS Y WN GRYLDPLDEVVHVSPDDRGF LFADGL Y EVTAA KY YGFNNRVADAQDAVI SALDHGVLYGMGLFETFRT

 D YK D GQ W WA PR IVVPYQALQLAPGAMALHYGQSVFEGAKA



 DYDHG A WGKPR IEPFKPFSMPPQSSVLHYGLSCFEGMKA $\begin{array}{ll}\text { WF D G R WH R D D V } & \text { M } \\ \text { Y F } & \text { M G S W }\end{array}$ R WTAAGGWENPEVKPY GNLSIPPTASCLHYATECFEGMKV EHRVGLVCTDPKL WS TP A F VE S P L L S V H GL A P GLLN Y G Q H l F E G L K A

VSPFDRGF $\quad$ RAHAAYE $\square T A V$
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100
110
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CDW






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160


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 Y I Q P M R K T D E M T H GV R AI LITM DVR WE Y C Y I K S L N L L P N V L







 T F MP RMD G GMRRLHTS P D D MVRRA WVG GF GYAKVGGNY GP S L M ESPMEPPSGFSMTVSPFRRPTDETMPTNAKAGCLYPNNAR


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 A Q TKAEKKFAYTAALLFRDGDCTEGATSNVFAVVDGDLYTH AK A ALARARQQASTEALFANTHGRLCEGTGSNVFVVLDGELHT QQHAAAVQHKAEGMMLTADGFLAEGMVSNLFFVRNDTLYT
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 A L L A RNRGFDNALVLDDMLGNVAETASSNVVIVVD GVVMT ASQRALEKGCDETVFHRGDLVTECAHSNVSII KDGKFI TH R E L V R L N S S A Q E G L M L D Q N GHIDS E G I V S NVVF F V Q D G R L Y T A LA WA K E R G G IDEAVVFANTRGEVLCECTGGSNIVGVRDGQVLT $P$ QMQAASRGFHQNLWLFKEDYVTEVGTMNLFAADKELMTA VGKEAASKNCQQVLWLYGENETEVGTMNDFLFWKDMELITT
 A LARAHASDASEALFANTLGQLCEGTGSNVFVVLDGTLCT
 ALARAREHGASEALFANTAGQLCEGTGSNVVVVLDGQI HT $M L G Y A A E R G A S E A L F A N T A G N L C E G T G S N V F A V L D G R V V T$ AKEYAVKYNAQEAIQHRGETVTEGSSSNVYAVKDGVIMTH
 RSKGASDVLYQQNGV VTEFPRCNFFIVAQDGTVV K K EMS Q Y P WAREGLMLTEEGYIAEGLVNNDFFILDGTCHT $P$ QTEAAKKGHQQNLWLGEEEYVTEVGTMNLVVRQNEDITA
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 A QKEAQT K GYD Q IL WWL F GKEA YVT EA GA SNFF CVD K S KT T $P Q L S A A K N G H Q Q N L W L F G E E K F I T E V G T M N V F F V F K N A D T$ $K E L P A R Q A \quad Q D L L Y H H Q G L L S E C S R S N F F A V V E G K D I T$ $M N E E A H E K G F D E A D L L N E R G H V S E C T S A N D F A V Q G R Q V L T$ ATQDARRRGFHQ L WL YGQQQGETEAGASNFFVVWQRPGP

 A L F QA L D D GY DT TVVLLD QN DH DTE GP GFNDFAVVNGKVVT
 $G L L G A D D V G A D T V V L G D G A G N V V E G P G F N V F A V G A D G T I V$
 QKFAATKGYA QN LWLFGEENY LTEVGTMNLVVVLKKPDGT A QRRAKEKGHSDVLYLDPVHFVEEVSSCNILMVKDNVIST A L R E A A S R GF QNCLMLDMLGNVTEFGNSNVFMAKDGVVFT
 P K T A A S K N CQQQVL WL YGE EQWWT EV GA MNDFMYWD NELV T $A Q Q A A T D A G V V D A L Q L R D G L V T E G A A T N I V V V K D G V I A T$ $L A G Y A S S A S G A E G L M L T A G G E I A E G \| V S N V F F I I R N V L Y T$ HAEKAKQGTY DEEFSTSGF $\square G M D H A N E S T G Q K A K 』 V I$ VGKEAAARNCQQVLWLHENEEVTEVGTMNDFVYWKNDEDT

A QK QAASFSADQVLY LDASNTY LEEVGAMNHFHDGHLVIP
 AKQAAHDAGADEALLVRDGKMIESASSNLWFVRDGELI TA $G L Q R A R E N G Y D D V I W L D T R R E L A E A G T M N V F V Q D G D E V L T$

 VQEQAHQRGYDQVLWLGAGQEVQEGAMNFCCVWRTPEGKT $M L N E V R R R G F G N A L V A D A M G N V A E S A T A N V F M V K D C E V G T$ $M L R E A R S K G F S N A L V L D A M G N V A E T A T T N V F M V R D G E V F T$ A H GKAQS $\square$ GF D QVLWL GPERNVTEAGASNFFVVWKNKTPT MKHEAEEKGYDFPFCFDHNGFLAEGATENVCIVDDGGSDI

 LA Y RAAREAGADTALMVEEGRVTEAASSNAWIVDGQLVTR A GK WAK GQGADEALI MNPDNTVSETNTANULII KDKAVIR E HNKARARGYD QVLWLY GPDRRIITEAGSTNFFVLDWKTPT P QVQAASD GYQQILWLF GDDHELTEVGTMNLFGKLEVIT P


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

 TPA Q GILEEGITR
PADRYILAGITRRFVLEMARDLGVQVREEKLPRERLPE DR P L D T G L L D G V T R R F V I E K M E K L $P$ L D S L I L P G V T R Q SIL L E IT R K WG E F V S ER Y LTMMDEQQQR V K
 P E GT G CL A G V T R A L T TL E W


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F

## F

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## A

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 P $P$ AD GlL
 PLDHWILPGIARKYLLLASSSSGFGISEKP FTIEEMLAAD

 P


 P , PADESFL $\begin{array}{llll}L & D & K & T \\ P & D & R & G \\ V & L\end{array}$ TPA Q GVL $P$ LD GMLL $P L \operatorname{LT} G T I P G I T R R S I I X E A Q N L G I Q V E E R L I A D D E L E D A D$ P P N G T F L N GI T R Q R V I E L L R G D GI TVVLE A T L R Y S D FVV A D

 $P$ P L E L I L P

TT

## RL



KS GEF GTAAVTASVGHYEHYTVGNGEDGK LTLALHQFYSD
 A $I \mathrm{~F} \| \mathrm{T}$ GT L S E I FA I D T V L S H P $M A F G V G T A A R L V K V S E I G D R A \square R F T D T G \quad L P A R V Y D A L K Q$



 E V F L S G N M S K V T P V TA A F D S R Q Y Q S ES F V S G T A Y F I T T P V A L I IR D G D V D M E M K G A S A S K I R T WL E S

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$\square \mathrm{M}$
$\square \mathrm{Q}$

TQ H GRVADTFGWCAPL IQRGKSEDPYGWCELV

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1 QYGEEEHPW
I QYGRП $\square$ KDGWMRD $\square$
HVEKYVARH
$\square Q T N T S E D P F$ GWRYKV
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$\qquad$

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QTG
TQYGD EKHSW
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A

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TMYGNAA HEWGVVV
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$\frac{L}{V} \mathbf{Q}$
$\square M Y G R E Q \quad H E W G V V V$
$\square$ QWG $\square A E D K H N W L V D$
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${ }_{W}^{M H W}$ HADPR WCRRVD
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$Y \prod L M N G Q L D G E E G H D S P S E A D F Y G Y G L F E L K Y$ GWGSPK】KPYAPLELDPASHCLHYSTNLFEGMKA TDTKTYFNGAWHDGDLPTIKAADHGAWLGTTVFDGARL LGYYNGKYDELDKMTIPFNDRVCFFGDGVYDAGPS MNEPI $\qquad$ DEEYADVDVDNGGFSQG WISGAGYGSGRVVDAREARLADHGTVGDGVEGMKA WNASTGWAAPELKPYGPDSLMPTASVLHYATECFETVA WS STGWAAPELHEGN SMMTASVLMATECFEGLKA WSQTWT WLDGKWHEGNVQIMGVRTHSSWMASSVFDGARY
 MILVNGQAGD MILINGEYRD
MKD
WVNGQ PDEA SRTAYVNGAYVRQSEAVVSIRDRGYQFADAVYEVWSV ERLGYYNGTFGPLEEVTVPFLDRVSFYGDGVYDATMG WVFYNQQQLCPDDS TPGGRPDSGLLYGRGLFETMKVV MILTNGE

S K L
WVDGELLDEADAKVSAFDHGLTVGDGVF YCFAKDEIIPSEEASLOPLDIGLIRGGAMF LVYHREQLVPAQAATLPVGSIAARYGDSVFDFFRT MILINGH $\qquad$ PENRIE MVNYNGDLLGKNT

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 EWS Lef GWEKPH $\square K P \square Q N L S H P G S S A L H Y A V E V F D$

DKDDRLALFGYG| FETRRV

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YFEGRWHD GDVP $\square$ MRAADHGSWLGSTVFDGARW MQS GF LCYNGKF $\square$ GSSEPILTADNRSFRYGDGCFETMRV WTFYHGAWHEGDVRVLGANSHATWLGSLVFDGARA
S SPDWLNGQPC
S P SNA I SVMDRGFAYGDGVFRTIKV


WLN GQPCD G
GWS D P E $\quad \begin{aligned} & \text { K P Y E E P } \\ & \text { K D P R }\end{aligned}$
 WS PLKFVSDPYLRMHGMAPALNYGQQAYEGLKA $\square D G \square T$ T D P A A MVIPMD DHMVMRGHGVFDTAT $\square$ Y F E GKWHE GDVPVMRASDHGIWQGSSIF DGARQQ R WT L E T G WD A P E LLK P Y G P L A I I M P S A S V

WS A P R F V
YFE GTWHE GDVAVMKAA DHGMWQGS SVIFDGARF MS WVD GR P A D G





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 FTPKSEEAYAKGVTAFRTSIPAKQSYMAT KSTDYAPNML LGSA NPRPETTAVVTVPWRRNEHSAVAGLKTTSYAENVV YMKPLPKKPLHKEAVVLHTVRNTPEGGVRLKSHHYLNNVL RTTPWMPDGVQLDSSPLLRN NFSPGSGVKSLGYADAVL YNKKFNDPNKKFKGEKA TYKDLRWKRRDIKTVSLLANVL CTSSWDRISDNAIPPRAKISGSYVNAALL NVYTNKDYEQGFKLCFTEVKRNPYSILTYIKSNNYLENLL SPTGPFFKTSGPTVAYDFVRSWPGGTGEVKGGGNYAPCFM ETLNDCQKPDKCVTAEDKR RFYYCNCKTLNLLPSVL QWHEKYATGESLVVTDVMQVPGACWPTELKCRSRMHYFLA AVGPFAQPAPTTDVVVVPWTRNENGAGSGLKTTSYAENVR TFMPKMDAPPGHTSPEDMVRAWVGGFGYAKVGANYGPSLL
$A P G P S M D E G Y A V T T T Q Y R R P L P E T A L V N A K T G C L Y P N N G R$ WGPY LDVDKARCGISSWRRPDYNVAPPQAKIGTGLYANNAL ASPARPAAPARVAVVPWPRNER GALAGGKTGSYAENVV EAPMPKPTGLSITLSPFRKPGADCAVVDAKAGCLYPNNSR
 HPCPDYPGRYREQGVAVRDCQTRNPALAGGKHLNRLLEQV PRYPSENAEQGIRLFPCQTRLACQPLLAGLKHLNRLEQVL
TARPVDRLAAANIGLKAKSMPDITWGRCDIKTVGLLPNVL DVMEDLYDRQQLI SVEDTR FQMCNTKTLNLLPNVL PQWPDAHRENG QLYNCRLRLAEQPVLAGLK HLNRLEQVL PDYPEDYREQGIVARLCATRLGLNPTLAGTKHLNRIDEQVM AMAAAAPMPPVTTVAVVPWPRNERGALAGLKTTSYAENVV DSPEGRSKGIKVLPYEYVRDLPTVKTTNYVHMILMAEEMK PSEEKFEKGVHLLTADYIRPVAEIKTTNYALPV PSGRKRWEGLRLLTVSSWQRPSSAVFPSAAKNIISAYAGPRL
 EVAPGKEAFYVVDESPYEDFYVNRDMLSTLKTNNKIDNVV QDLSPSSPNFRGVKVVTSSDPIKHPKFADTKSVNYLPNVL SWPLEKTSKELNTTDTYTEARKTSDSFSMVKSNNYLGYAM ATKKQNNLSDEALGVKATTLNDNRWARPDIKTTQLLPNVL AAAAAPPAGPTRLIVATVTRRNEHSPGSRLKSLNYLDNLL DHSQQDDSKGVKVVTSSVPIKPPKMEFATMKSVNYLPNVL ADYDQCRDGVRAVTTSVPMKPP LFATVKNVNYLPNVL PAYPPQHAETGURLFPCETRLAEQPRLAGLKHLNRLEQVL LEETPMAPPEAATTLTTTRFRRPVMEDAVVNGCLYPNNAR MLVPDVMEDLYDR QDLISVEDLRFQMCNTKTLNLLPNVL TPVGPYFKGPIKIRITDFDRAAPHGTGHDKAGLNYAMSLY $C L F E A P M P P N S L T L S P F R R P T M E S M P V N A K A G C L Y P N N A R$
$E S F F R D C P R L R C R I S S W R M D D A M A Q A K A T A N Y Y N A R L$ PHYPKAHAEQGVHLFPCTTRLAEQPILAGLKHLNRLEQVL YFSSGTFNPVSLWANPKYVRAWKGGTGDCKMGGNYGSSLF LPYTERDYDEGYPATILSHPCNEYSPGVQLKSTNYMENYL DTYAYTPKPESFVTAAKVSTPAKQGWFARUKSTDYMPNAL CPVGPYFKGPTNFIDSEYDRAAPNGTGASKVGGNYAASAY CLEEETPMAPPDTATTLTRTRFRRPVLEDNLTNCLYPNNAR
SWELNRQVLELNATGLVLDITPDVRKTSDKYSNCLPYVM SWELNRQVLELNATGLVLDDFPDVRKTSDKYSSNCLPYVM SPLPAYPPQNGURLFPCETRLAEQPRLAGMKHLNRLEQVL CCFAPMGDMNGGIKLDDMCRAWPGGFGYAKVGANYGPSLV
 MPERPEELWELGVVASDTVRAWPGGTGGQKLGLNYAPGFL SELKKKEYLVNTARYEVDLFKDFYVTKQSIKSTNKAVQIV I PTGVYHHPVKALILEEFDRAAPNGTGSAKVGGNYAPVLR MALDEEVAMPDPEAATTLTRTRFEDNVCNAKAGCLYPNNAR QPHVHGHTPDRALVAEEFDRAATRGTGNCKVGGNYGPVLK PSYPAANAEQGVRVFACMTRLAEQPLLAGLKHLNRLDEVL DPMAAPDAAQTLGKTSFRRPVLADSVCNAKAGCLYPNNGR

## s

## H

 TAGPNASYESHYEVDLYKDFYVSRQLLASHK TTNKMDN| STSPFTHNDSPYEVELFKDHYULSGMDSSIKSNNKLVNGLPYFPEGFKGIDNLEVSKKYDRAAPGGTGSAKTCCNYAGTML

## UniRef90 K9UKW2

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UniRet90
U0DS11 UniRef90-SODS11
UniRef9O-UPIOOO469B645 UniRef90_l1AYH1 UniRef90-W8R909 UniRef90-A0A023NOZ1 UniRef90-A0A058ZH15 UniRet90-J3C8C3 UniRef90-L8JO90 UniRef90-UP100036B638D UniRef90 XOUHN6
UniRef90_F7G1Y1

A ARQVAGADYDD L LF THRDGY\|TEATRSNFFCVIDDVLVT AQKEAEKYGCS QVAF LDAAENKWDGGMNLFFVYKD GR V T

 AMKEAKRSGFDEA
 $M$ K I N A K E E G F DVVP F CF D D L S F L A E GA T E N C IVVAQ D G K L Y T A QES A GTRGFQQVLWWLGDPQVPE GTMNLFVDWDNPETQT

 A RYESKKLS GAD DALIVNVNHKMTGASSSNIV LVMMAGKLVT


 MMVEARSKGFGNALVADAMGNVAESASANVFMVKDGEVFT YAEKAYKA GK DETILYRKDGRIITECAHCNCHIIKD GUVYT D K R A REDEPGARALMLDETGHVTEASTANVVI YRAS EGVV
 ALAYARQRGAGEAIFANTVGNLCEGTGSNIFVVLDGRLVT ATNEARARGFGQ IVWLYGPQGYCTEAGASNFFVVWKDVTAP $A \square M E A K A K G F D N A V L L D L L G N V S E L A T A N L F I V K D G V V K T$

 $N I E A A Q A G D N N W A L L L G T D G F I T E G T G D N F F I V K D G V V I T$

 A A QRTKEAGCYEAVEVRDGYVTECAHSNVHMLKDGKFVTH A R A E WS DPVVY E GLLLLD R H QRVVVDGVFS N I F F V V V K N QQL M T ARAE WNDPA DQE GLLMLDDVNDHVDE GTMTNLIFYI KNNSLYT


 ARNE WQDDS IVE GLLMLD YQD QLIE GTMSNVVGVQNNQLST RQQAAD LLFHKE GEVSELTRSNIIFIFQGDKLIT GSIF AEENGYQNCLLLNNDKQIVESLNANVFLVKDGKVKT SKVEAE EA GAFVGIWLD GEGFV AEGNMNVAFVTKDKE LDM $M$ L R EVR GRGFGNALVADALGNVAESATANVVMVRDGAVGT

 SKMEAEENGAFAAI WLDNDGFI AEGNMNVAFVTKEKDLIM

 A GLYYKK K F DY D DVLILDNQEGFLVEALTSSNIVVYFEKA LYT MLMEARAKGFGNALAADALGNVAEAATANVFMARDGEVLT A A QRTKEADCYEAVFVRDGYVTECAHSNVQMLKDGCFI TH




 AKQEAE EKGARE GL WL NTKGY L VEGTLSNLFFVRNGLLYT MK R E A K A L G A D F A I C F D E H G Y L A E G T E N I C MVV R H G K L V I P G K
S S K K D R E F S D C MLAEARAKGFGNALVADAMGNVAESATSNLFIVRDGVVLT
 $M L R E A Q A K G F Q N A L V Q D F A G N V A E L A T A N V F L V R G G E Y F T$ ARAE WH DPAYAE GL MRDMSGRVVEGVFSNL FMVVD GE LDT A R M E WQ D A D DS E G V M L D Q Q G L V I E GVVMSN L L R S G K I L S T
 $P$ QKAAAARGYE QVL WLLGDERRVVTEAGAMNLVVVVQREDTA MKREAVLKGYDYPLCFDEQGFLAEGATENCLVNASGEVIV GS DF A DENDLQNCL LLN DSKNV DEALN GNLFMLK DGK LT T WS DK A R K E G Y D DT L $\quad$ H L D S A R H E E V D E F S T S G F I $M L V E A K S K G F G N A L V A D A M G N V A E T A T A N V F M V R D G V A F T$ A Q GEARSRGFD QVLVWLFGKECWVTEAGASNF FVVMREKET WSKDAKKPENGGWSAL LHVDDSKTQSYVDEFSAAALIDGVKS ARGE WH DAEHAE GLMRDTS GRVIE GVYSNLR LAKD GRLLT
 A RAE WQDPAFA E GLLMRDTS GRVVVEAVSSNLVIVES GVLLT E QVMARSEWDHEGLLLDLEGRVVCATMANLVVVIDGALVT
 GS DFASEN GFENCI LLNDAKNVVEALQGNLFMVIGKK IT
 A GVYAKENGFDNCFLINEKKSVLEVTNGNVFIVKGNEIKT


UniRef90_K9UKw2 UniRef90-UPIOOO288EE05 UniRef90-E7C372 UniRef90 C7YHQ8 UniRef90-T1BTA4 UniRef90_UPI000422E2FF UniRef90_C6BWS8 UniRef90-B8MBA9 UniRef90_S7U025 UniRef90-E4N7W1 UniRef90_UPIO00381DF51 UniRef90_UPIOOO3785289 UniRef90-F1YWR5 UniRef90-XOYBA7 UniRef90-A6TQ50 UniRef90-G4TBC5 UniRef90-A9DQN2 UniRef90-UPIO0041403A5 UniRef90-D2QXN4 UniRef90-M4DPM3 UniRef90_Q47N24 UniRef90-R8BTT8 UniRef90-UPI00047CC4DF UniRef90_X1XV2 UniRef90-C5C5P1 UniRef90_UPIO003495E2E UniRef90-UPI000472646A UniRef90-B8GSK8 UniRef90_UPI00036A6445 UniRef90-N2J012 UniRef90-V4PQM8 UniRef90-R5G0R9 UniRef90_UPI0003B71CCB UniRef90_UPI00036518C1 UniRef90-G3IX94 UniRef90_UPI00047D06DF UniRef90_UPI000472C7F4 UniRef90_UPI00035FEBCB UniRef90_Q0RGT3 UniRef90-11XKA9
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P

P LT DTVLEGVTRDSVLTLGRDEGLTPEER


PPTDGVLNGIIRRKQE ILKK T DDYELEEASTSPFELQKAD PKFTNSLAGTT $\square A R A L Q L \square E D E \square E V D F R A I S E E D I L L A R$ P LDGT ILPG TTRDS ILDLAQPQGWHVAERRVYMTELKKAS PAFDNCLAGTTMRRAMELDSGERKVDF GKI RESEIYEAR
 PSLETGGLGVTRSFVIKQLQRAGHEVRVGLFKAEALHEAD




 PTDELILPGIARAHLVRMCKKLGGIGVSETPYYLKDLWEAD
 PAPSAGPLAGITRELVLEWALDGVGGAEEDIPMAAMSRVS
 PASYNNILGGI TRDTVI K K
PPSSGALAGVTRALVLEWAADAGDPAREETDPDDADRTSR PAANGTFNGVTRQRVIALLRSDGVDVVEAALRYEDFATAD PEGRDILRGVSREYVMELCTNLGI SVLEKNI EPYDVYTAD TPDQCGVAGI TRARVLDAARALGVSCQEARLSVADLFKAR PATQCGVDGI DRRILMDLLSKRRITVRETAPTVDELSAAD PADDSCVAGVMRSYLLRCADGLGVMTEDRPVTLSEFMAAD TRDANVLA GVVR RLTLLDMVSDTGLEVREEAFTLEAAKAAS

 SALLQS GVAGIMRGIIMKLSAEHGLPVDEHAFTKDALDSAD



 PPDDGCLNGIVRKMI EILSKLENFDFEEASI SPFELQKAD PHFDK ILLSGCTAKRVLTLREGKLKGVRVK TVVTVEEGKQAD PANGTFLA GITRARHMTNLRAAGIEVHECVLGFEDFQAAD PAAEGCINGVARAYLIECCKKDDIAIMETTISAQDVLNAS
 PYFDKILSGCTARRVLALKEGKLHGVKVGNLTIEEGKQAD

 $P A L Q G C I A G V M R R V V M D \square A E A E G I P V I E A Q I S P E D M K K A D$
 PNDNS CI E GVMRERILALACTLDIP HELVTLTLDDLYQAD PKSDS LLPSITRRSLMYVAEHYLGMTVE
PYWNGTFNGITRQRITKLLSSAGYNVHETTLTYKDFYEAD $P$ D S GVLP GVVRDSVLELLRGDARFRVEERLHPMDLYAAD $P$ SLR S GVA GVVRAEVLERARQA GVSTQLA DLSLEQLYRAD


P
P
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 P LD DT IL P GVTRNS CLA LAAADARFYVVEEA YTMRDLVSWA $P E L D R N A L P G T T L L L R G L D L D R P E L P V E H \quad R L V K E D E L V Q A K$


$\stackrel{P}{\mathrm{G}}$ G $G \vee M$

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GV GVV

UniRef90 Kgukwz UniRefi90-UPIOOO288EE05 UniRefolo- ETC372 UniRef90 С С7Y UniRe 190 -TIBTA 4 UniRefi90-UPlooo422E2FF Uniref90-C6BWS8 UniRef90-B8MBA9 UniRef90_S7U025 UniRef90-E4N7W1
UniRef90 Q5WLV0 UniReifo-UPIo OO381DF51 UniRefio-UPIoooz375289 UniRef90-F1YWR5 UniRef90-XOYBA7 UniRef90-A6TQ50 UniRef90-G4TBC5 UniRef90-A9DQN2 UniRefoo-UPio0041 103A5 Uniref90-D20XN4 Unirefio-M4DPM3 Uniref90-Q47N24 Unirete9-R8BTT8
UniRef90-UPIO0047CC4DF UniRefi90-X1XV2 UniRefo ${ }^{-}$- $\mathrm{C} 5 \mathrm{CPP}_{1}$
UniRet90-UPIOOO3495E2E UniRef90-UPI000472646A UniRef90-B8GSK8 UniRefi90-UPIooo36A6445 UniRef90-N2JO12 UniRef90-V4PQM8 UniRef90-R5G0R9 UniRef90_UPI0003B71CCB UniRef90_UPI00036518C1 UniRef90_G3IX94 UniRef90_UPI00047D06DF UniRef90_UPI000472C7F4 UniRef90_UPI00035FEBCB UniRef90_Q0RGT3 UniRef90-11XKA9
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,

ECFDTSATREVMPVVSDGERDEFPVGGGEVTRQTRQDFSD

$E \square F \square T N V A V G \square Q P V S K Y R K K Q Y N S E V A K N L L S K L$
EVIICGTSIDAVGVVRYNKKPIHDVRPGPI CKRMRELLQK
 EVFLTSTLRDVQAVTRVDDRELPAGVGRVTREAMEVFAE A L F LTNS Q GVVPI TKLDGRELEDGSLVPVVDAA EVVGLNVVTGIVPVVSID GVTVMSGSAGTMTNKDFGQYWD EVFI TSTTSLVTPITTKI DSKIINKGKDGNDSLQLAQLY
 ELFFCGTGAQ API GSVDKRVVGNGEMGPITRMGQELYFK
 EVFGSGNMMKVTPVSAFDDTKYGTGANNPVTRQVREMYWD EVIVTSSSNVCMYVDEDDGKPVGGKDRETLFRLRDAYQE
 EAFCTSSTGRGVQPI RADDDRVVLPAADGDVTAQEAMKVFAE



E ITFT GNYGKVVPVHK DDDRTMDH GPVAAKARELYWE EVVLTNTAQLVRQVSEVDGRQLATG PGTFAADLRAELVE EVFLCNSLYGI WPVRQLDARV WPVGALTRKLQRLVAD EMF GSGTACVVCPVSDI LYKHIPTMENGPLASRILSKLTD EVVGTNALMGIMPVNQVDKRPLKNSVEESLRMRIGEFYQE EVFLTNALMGILPVSRVDGRRIEVADAAERSGRLR
ELLVVGTTWDAIGIVRYNDKPVHDVRPGPITRRMRELLRQ EAGACGTAAVISPI GGDDFHVFYSEEVGPVTKQLYDELCG




 EAFAAGTAWFVAPISSQDHFRPMAKGNSGAYAEKFKSSSLKG
 $R \vee F C V G T A A V V C A V N R L D G T D I Y E G G L G P V A R A L R T K I D R$ ELILLGTSLDADSVVRFNGRPIHDVRPGPVSRRLRQLLRE ELFVTNVIAGIQPITKYRKKDFDTAFSTSLIQELNEKF
EVMAAGTAAALVPVRSDTRRPDNQEDAGDLCLKLLSQDKG $E M M L I G S T L P I V P V V K W D G Q V I G N G E A G P A T I A L R N L L V V D$
$E V G L S G N F A K V T P V K A F D D T Q Y$
$V$ TMFAAGTAFFIIAPVGLIHFRGYDDGQSGDYARGI KTWWVD EVFAVGTAATI RPCSLI TGKHFTF EVFLCNSLYGVWPVRALHGR

 AVFMTNSLRLI APITSLNGRALALNT PLLAELAQALYD




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UniRef90 F7G1Y1
$K$ V $Q$
Y VD A H $\square$ S E H
LH Y

IQ YGEVE HS WSVVI
LQENGIDPY
$S \square R$

VVDDEVEEYSHWCKKV
YIVGKT RSEWSVRCD
LV
IQNGS $\square$ QD T K G WVLE $\square \mathrm{D}$
$\square \mathrm{MYGGEQHPWG}$

RQAEQ $\square \mathrm{D}$
$\square$ I GQDE GW
LT EFKNEAVHD
$\frac{\mathrm{V}}{\mathrm{M}}$
QVR G T A A
$\qquad$
1 A R

F A HVKVPA
TVF RAERRPDW
l Q Q G REES DWT VVLS
$\square$ Q F G D $\square$ E APE G W $\square$ Y K V MQTGRLEAPLNWTTRLI
$\square$
IM WGDGMESHEWGRVID L DQEGR ETHEWGVV


TM Y GNEQHPWG
I QKGEDED IT QWC

L
L G Y
RVDSRTDDFAAWPT
LERAYVRQYK
TQY LDDTEDEFGWITK IQYGTRA HEWMLPD


|  |  |
| :---: | :---: |
| UniRef90_V4UL79 UniRef90-K5TJV5 | LNGY LYELDVHVDRFLLRSAVSAR\\|SSPFPRSTLISSM |
| UniRef90-UPIO00393FA63 | IDGQVQHWLY |
| UniRef90-V2V6N7 | A |
| UniRef90-M5X7F7 |  |
| UniRef90-G7DX97 | YKDSQGRVIFRPDKNMERMNRSASRLAFPNFTGDTLI ELLI |
| UniRef90-X1S742 | YNG |
| UniRef90 A0A010RKI3 UniRef90 |  |
| UniRef90-F1L | YRGKDNKILFRPELNMQRMNRTAERAS |
|  | RNNK ELIERHLKRLNTADERLSLQANLDYISES |
| UniRe | YKDEDKLRLFRPMKNFDRLKRSAARLGLPYDWDNEELVAL |
| UniRef90_J3ICS5 |  |
| UniRet90-G2TEY4 | RDGRP DRLAA HLARLGR |
| UniRef90-c9SB46 | YRGEDGRRLFRPSLNAARMLM |
| UniRef90-FOLQRO | KQGELQHWPYHMERMDACLNL |
| UniRef90-E6QRZ2 | HNQKVQQWPL DRYAKLVADCAGLG |
| UniRef90 - xop3cio | GPALFRDDDHLLRMLNSARLLGLKHDY |
| UniRef90-N8TKA6 | HQDVMELELL |
| UniRef90-B2VD | QQGF |
| UniRef90-UPI000376 | N GRYIEGKSEHLRLLARSMDVLQFPACDLDALEAAL |
| iRet90_UP |  |
|  | FGGRPALLGAHLDR |
| UniRef90-UP10004726A8B | GNHKPVYLLDDHLDRFYSSAKALG\| R PMDKK |
| UniRef90-M50WBO |  |
| UniRet90 UPIO002558349 |  |
| UniRef90-F9C | S |
|  |  |
| A9DIZ |  |
| 288 |  |
| UniRef90_138NL7 | ECTVL |
| UniRef90 UPIO0036146 | VNGK LTYQLDA HTERLKSSVKGLHLSPPCTWDKLAEL |
| UniRee90-UPIO0038262 |  |
| UniRet90-K68N13 |  |
| UniRef90-E3EQQ4 |  |
| UniRef90-J2MKR7 | L |
| iRef90-V9R2N4 |  |
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|  |  |
| UniRef90-UP1000363D6BB | 号 |
| UniRef90_10W8L3 | VNG RLLFWEPHYLRLMASMRIMRMEDPMNFEFLCEE |
| 隹ef90-UPIO004768 | YDHSDDSRLTHWQAHCDRLKSSLKSFGWKLPS |
| iRef90-GOSJ17 | KHGQVQYWSL |
|  |  |
|  |  |
|  | KQGK VFWSEHIUARLEACLHALHIPIPDWQQVLDWI |
| UniRef90 Q7VR22 |  |
| UniRef90 | VGGQDDNUDAHLSRMQMAC |
| UniR |  |
| UniRef90 UP10004709DB6 | SRG RIRRLIEAHLARLAEGATLLQIPLPPV D |
|  |  |
| 0336F5A79 |  |
| UP1000479 | VDGRPRE |
| UniRef90-D5 | RDGRPCLV ESHLQRLTQSARLMDLPEPDLPSWRSAI |
| UniRef90-B0SYF7 |  |
| UniRef90_UP100036 |  |
|  |  |
| UniRee90 UP10004788816 |  |
| 30DFD89 | R |
|  | K |
| UniRef90-F8A4 | YDGQA FALLTRHLLRRLARSAAGLGLPAPDEGAVRDGV1 |
| UniRet90_K4BUG1 | Y |
| iRef90_B5 |  |
| UniRef90 FORV13 |  |
| Uni | GIL |
| UniRef90-A0A024K512 <br> - KOCGW7 | GSACLV GPHLLQRLTQSAKFMDLPEPDLPKWRRA I |
| ef90 UPIO0022DB9319 |  |
| UniRef90-G7GRE4 | HHGLPQA MDPHLDRFARSAAMMDLPVPERELWRRAV |
| iRef90-G0166 | HLSRWDDSSDLLGMAPPPK |
| UniRet90-R9H635 | DIISKGMQ |
|  |  |
| UniRef90-M7F | SA |
| niRet90-Q4 | ER |
| Ref90-D8MQT2 | $\frac{L}{\text { A }}$ |
| UniRet90- R5X5W5 |  |
| iRef90-H8L5T0 |  |
|  |  |
|  | QVAFEAAHVDR LLAAAEALGFALARERIVEA |
| UniRet90-N8NXJ5 |  |
| OS9UDX7 | - |
| UniRef90-G4HSE6 | RDGRACLV EEHLYRLVQSARMMDL |

## UniRef90 V4UL79

 UniRef90-K5TJV5 UniRet90-UPIOOO393FA63 UniRef90-V2V6N7 UniRef90-M5X7F7 UniRef90-G7DX97 UniRef90-X1S742 UniRef90-A0A010RKI3 UniRef90 UPIOOO2558F89 UniRef90-F1LCS2 UniRef90-A0A031LQP1 UniRef90_J6ESQ2 UniRef90-J3ICS5 Uniinefoo G2TEY4 UniRef90-C9SB46 UniRef90-FOLQROUniRef90 E6QRZ2 UniRef90-J7JOS4 UniRet90-XOP3GO UniRef90-N8TKA6 UniRef90-B2VDL5 UniRee90-UPI000376E98A UniRef90-UP10002485999 UniRef90-UPIOOO3623B15
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UniRef90_M7PGB0 UniRef90-Q4KFR4 UniRef90-D8MOT2 UniRef90_D9V835
UniRef90_R5K5W5 UniRef90-H8L5T0 UniRef90-V4TMT3
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RLAVPPFEGGCSMYVRPVVFASSPTMNMYTAEEYTFAVLV
 EKNWVPSADMSSLYY RPTYDGTEPNLGISNVNAAKLYVIL
 ATLAANDLSEGVLRLTLTRGPGPRGLLPPPAPKPTIMITA HKWLPRDRPGSYLYIRPTMIGTQSQLGVQAPSEAMLYIIV DQADETKAGLKLHISRGEGGRGYSPTQVTQSNVTVSHFAF

 TLSAAADSGFADAYVRPGLFATDPMVWPDEAPPSAAGAGR LQCLRQKNGULNGTLKVIISRGDGDRGYAMPEHEADLYVV $1 \frac{1}{K}$ AASNGYEGVLKVILTRGSGGRGYSAQGCEKPTRII IEVLQQQFLVLNGTLKIMLSRGEGNRGYAMPEHADVYVLY VLTLAEQAGESDCVIRLTVTRGAGARGLALPEQATPTVIAA ATVCAGWPVETEGALLRVCTRGPEGGGSPSVYATLIAEVPA LLAYAQAMGEGVLKLLLTRGDSDRGYSANPEAQPRRDLQA ILKTDNANKGDENRVRFTVYRDSEGMYA PTTNKMSYI DD DAKRWLPEPGSFRYIRPALIGTGRQLGVQVPKEALLMVTM ARLKNRKSGLKLHITRGKGHFGYNSQGIESPNDTISHFLV | V | $L$ | $D$ |
| :--- | :--- | :--- |
| $R H$ | $L$ | $M$ | SEMMTAR S A A GE E S N GIVV K V M I T IAEHLDAAELPDGRSFAVKLMVSSANVIVTHRPNPYADWA LIQENRKAGFKDDLLIDI FSGGLEDHTMAQSGSSAYDYD

 MLLPQEKAGLKDHISRGLGGRGYSPTQVSESVVTLSAFAF CHTLLEACTLHEGSIRFTLSRGPGPRGLTPPQTPQPTQLL TQKVLDANELADQPARVRLTVFRNEGGLYRPLTNEVSYLI LRQGALSIDAPDFPVLRI TVFPDGREW UQAMALPNEKAGLKIHISRGVGGRGYSPTQVSESSVTIGA DAVINNWSGGKDMALKLILTRGNEYGDGTPTAFAMGLPIA NQLVLSDGGGLKIHISRGEGGRGYSPAGLNHPMVTVTSFN FQSULNYNADGIIKI IISSRIDKNKKYGYKSDNYSDLYRID DQSWIPDAENSSLYIRPTMISTESTGGVRPPASAMLFVIT LADATAGVALGCAKVMITRGSGGRGYSPAGCHDTRWIVTL
 LDALAGSUGDGALRLTLTRGGGARGLR IVDAPKPVLFGAA EAVLGAWREPGEMALRLVCTRGVEGGDGTPTAWAMGTAVS WAAPAEAVDGDRAAVRLTLTAGSGGRGLDRPAAPAPRLAA LSRLSSERQVVKDHISRGCGGRGYACGEDEGPDDRDSFNN LNKTVSANSLENASARAK円QVHRNTGGLYLPTNKEVSFMI KQVVKANEDGATLYLRPLLDGVGDVIGVHPATEYGFTVFA DELLRYASQGGDGVAKLILTRGDSQRGYAPVAGAAPRRIL AQVLAAAPDAGRVRVTYTGGPGPLGHRDAPDTQRPVLVVL NKRWIDPPSGKGSLYIRPLLIGTGPILGLAPAPEYTFLVYA
AYRLFEAEGCRSGVFKIVISDTGENRQLAMFVRSAGLSEM AYRLFEAEGCRSGVFKVVISDTGENRQLAMFVRSAGLSEM
$V Y D L D E D A D Q E A S L R I Q L Y G G T Q P Q L F V L A S ~$ QQLFTEQTTENSVAVVKITITRGEGERGYAPPATTSPLRA EIATREWVGGSAAEGALRLIYSRGRESGSQPTAYVMPVPE LAAQLRDHDAEAGVVKLVLTRGSGGRGYLPPETPEPTLFG EVTAAEMAPHAPFAAVKFVMTRGVETEEDPTGFAYGFVPD AQEADQRLGLEHGEGALRLNWSRRGDGLDHNSADPSRHRF ALRNNIKNNARVRFTVFRDGEGLYSPLGNTMGYAMEIGKT AAMRAMAEGQTRAALRTTATRGSGPRGLRPPGEPHPRLLA LQAYAAALGEGVLKLILTRGNSQRGYAADPATAARRILQG DEMRFAAATRTDGVLKVILSRGVGGRGYSAAGCQQPSRMI QAVVDAWQGGPETALKLVYTRGVDGDPEGKPTAFAMGLEV
 AL AASARPGHAIVRVTVTRGVGERGLKPSPGGRATVFG LVLLQQQYLAVNGTLKIVISRGDGQRGYSLPDHPADVWVF


UniRef90 V4UL79 UniRef90-K5TJV5 UniRet90-UPIOOO393FA63 UniRef90-V2V6N7 UniRef90-M5X7F7 UniRef90-G7DX97
UniRef90

- 15742 UniRef90- 1 1S742
UniRef90 AOA010RKI3 UniRef90_UPIOO02558F89 UniRef90-F1LCS2 UniRef90-A0A031LQP1 UniRet90_J6ESQ2 UniRef90-J3ICS5 Uniinefoo G2TEY4 UniRef90-C9SB46 UniRef90-FOLQRO UniRef90-E6QRZ2 UniRef90-J7JOS4 UniRef90-XOP3G0 UniRef90-NBTKA6 UniRef90-B2VDL5 UniRef90_UPIO00376E98A UniRef90_UP10002485999 UniRef90OUPIOOO3623B15
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UniRef90_UPIOOO28898E2 UniRef90_I3BNL7 UniRef90-U4KG66 UniRef90_UPIOOO361464F UniRef90_UPIOOO382628B UniRef90-K6BN13 UniRef90-E3EQQ4 UniRef90-I4C827 UniRef90-J2MKR7 UniRef90-V9R2N4 UniRef90-Q9KQIO UniRef90-UPIOO04213E2D UniRef90-UPIO00363D6BB UniRef90_10W8L3 UniRei90 UPIIOOO37FE711 UniRef90_UPIOOO4768B15 UniRef90-GOSJ17 UniRef90-W7SWI4 UniRef90-V4JPK3 UniRef90-U3AK15 UniRet90 Q7VR22 UniRef90-UPIO002B48AAB UniRef90-G9Y7S4 UniRef90-N9V9Y4 UniRef90-UP10004709DB6 UniRef90-UPIOOO344AOF8 UniRef90_UPIO0036F5A79 UniRet90_A9SPS3
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UniRef90 UniRef90-FORV13 UniRef90-UPI00036358A3 UniRef90-A0A024K512 UniRef90-K0CGW7 UniRef90-UPIOOO2DB9319
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UniRef90 SgUDX7 UniRef90-FIYN58 UniRef90_G4HSE6

D DF S Q CKE ${ }^{130}$
140
150
GVKVITSSSI PMKPRLFATVKNVNYLPNVL PSHYSS WQENGVVPLVCEDRLGDQPLLAGHKHNNRIERVL







 PAHYT QWQQHGLQLGVCHLRMGINPLLAGHKHNNRLLEQVL
 Y T P E Q Y S S G l

 FKLLE HARPFEPLKVFTSAIVRNETSPLVKI KA GCYGDHLBA YPNSTADFQPEYIQSGVLDQADGLMMPNLVKTLNRLEQVM





F Y
 PAHYNKWVRE GDELGECKTQLGHEPRLAAGQRHNNRMLENRLL
 HS A LDP VYAPEDYTTYTAQTRLDASQP LLAAGIMKHLNRLLENVL


 PA H Y Q A WR D K G L A A V G G C C Q Q R M G L N P L L A G H K H N N R R L
 E S P F Y T L S Q N S Y EVVDLIFK D F Y VN A D L L S SFTLQSHLA H WHAGGDFDLNEVKNU $T L P E G L I E K Q N H G I I G F L S Q P E F S R C L$








 TAAAAPVVTTPADLALAKTRRNEGSPAARLVTVSYVDNVL
 SVKKKLEAD F Y H Y EVVDL F K D F Y V A PG L L S T L K S N N KA I N V V EFLENAMYSFENQPYEVEDFKD FY ITTAQTLKSNNRLVQIT MPVGNYFKGTNF LIQDEYDRAAPH
Q GS P L P S Y P V D N A E Q GV R L F P C Q T R L G E Q P K H L N R L E QV L HYKKLCYSGVRLKISSIRLSRNPILSGGDKHLNRLEQVLI,A A GPASRAATSRVVRVPWVRNERSA VA GLKTTSYAENVV CPVGNY F K V E E RLI I EA D E L I S A D E
 LI KT DVVPTYPNSYFSEGVNLQDCKTPDAAQPHMNRLLENVL

 DPTRA RGLDGDDVVLLDRGYRHDVSETSPWLLQQAYADNKA WMTQQTHT PTFESVVRTWWSRHE YRQLMMSRCKTESSYGQA IQ DLDD Y S S N Y K G L I A K V Y E E DT K P $\square$ N I L S N L K S C N S L L F V M

 D E K V L R A R T E GV R R T GVVTLRLGRNP L LA G I K H L N RLE QVL

 $F Y P$ K A V D D F QVVEK K S G L L Q QVL G L T M P S L V GL K S L N R L E SPVGBPYYHPVKLLVVENVVRAWPGGTGGCKLGANYAGPMLD


UniRef90 V4UL79 UniRef90-K5TJV5 UniRet90-UPIOOO393FA63 UniRef90-V2V6N7 UniRef90_M5X7F7 UniRef90-G7DX97
UniRef90 - $\times 1 \mathrm{S7} 742$ UniRef90-×1S742
UniRef90 A0A010RKI3 UniRef90OUPIOOO2558F89 UniRef90-F1LCS2 UniRef90-A0A031LQP1 UniRef90_J6ESQ2 UniRef90-J3ICS5 UniRet90-G2TEY4 UniRef90-C9SB46 UniRet90-FOLQRO UniRef90-E6QRZ2 UniRef90-J7JOS4 UniRet90-XOP3GO UniRef90-NBTKA6 UniRef90-B2VDL5 UniRef90-UPI000376E98A UniRef90-UPIOOO2485999 UniRef90_UPIO003623B15 UniRef90_UPIOO04726A8B UniRef90_C4RCY2 UniRef90_M5QWB0 UniRef90-UPIO002558349 UniRet90-F9GA99 UniRef90-S3DGP8 UniRef90-A9DIZ9 UniRef90-UPIOO028898E2 UniRef90-13BNL7 UniRef90_U4KG66 UniRef90_UPIOO0361464F UniRef90-UPIO00382628B UniRef90-K6BN13 UniRef90-E3EQQ4 UniRef90-I4C827 UniRef90-J2MKR7 UniRef90-V9R2N4 UniRef90-Q9KQlo UniRef90_UPIO004213E2D UniRef90-UPI000363D6BB UniRef90-10W8L3 UniRef90_UPIO0037FE711 UniRef90-UPI0004768B15 UniRet90-GOSJ17 UniRef90-W7SWI4 UniRef90-V4JPK3 UniRef90 U3AK15 UniRet90_Q7VR22 UniRef90-UPIO002B48AAB UniRef90-G9Y7S4 UniRef90-N9V9Y4 UniRef90-UPIO004709DB6 UniRef90-UPIOOO344AOF8 UniRef90-UPI00036F5A79 UniRef90-A9SPS3
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UniRef90-M7PGB0 UniRef90-Q4KFR4 UniRef90-D8MQT2 UniRef90-D9V835
UniRef90-R5x5W5 UniRef90-H8L5T0 UniRef90-V4TMT3
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AKMEAEDKGASASTWTDEDGYVVAEGPNNVAF\|THDKELVL AKAEDEGTEFTDAVTLNVQNHVDETTMANLFWVKDKKVYT LLKAEAETSGY LKQEVDKQGWLEALVSDVQGYVVEGVSSNCFWRDNDRWIT PQAQAAALGYQQIL WLGDDDQVTEVGTMNLFMAFDKGNTP ALNRAHQKRAAEALWFTTDNRLAEGSTSNVFLVKDSVLYT AMGRARKQGYGLTLHDDAETQLHEFSASGFIGIKAESTET AREEWRHTSCREGLVSDTRGFVTEGTMSNLFFVSEGCLHT QKQEADEKGFQEALVTDVQGYVEGDSSNCFDRLNDTWIC AKKPGFQMSLW LHSDGKQHYI SEACAMNVWI IKKFTTMG ARAEWQDSEHAEGLMLDQAGRVIEGVFSNVFLLRDGVLIT ARQEAAERGADDALLLNQGGRVAETTVATLFIVQGGRLLT LKGEMDRAGFADGVCLDTQGHVVETMMANLFWVKDKTLYT ARAEWQDASIAEGLMLDQHGLLVCGTMTNVFALSGQKLMT AKEEAVSNGCDEGVWLNTQGYLAEGTMSNLFFIKDKTLYT AKTAALAAGFDDALQLDCVTRVAEATVSNVFLVRQGRLCT QKKEAQAKGWDEALVTDVQGSVVEGVSSNCFIRINNRWIT QRTELEQTDADEALVLDSDGMLVECCAANLFWRVDKQVFT ALRAAAEVGGNEALMLNTQGKVAGLAMGNVF RGGGGEWVT ALKEARRLGADDALMLNTDGRVASTAMANLFALVGDDLVT ASQEASEKGADETVFHRDGTVTECAHSNVSILKDGVFISH ARRWAAEHGVDDVLWVSTDGYALEGPTASVVWLAGHTVCT ARSEWQDPAYAEGLMRDTSGRIIEGVFSNLFLVRDGALLT SGITYAQENDLENGVLLNANKNVVEFTNGNIFLIKGTTVTT SHCDAQQAGYDQVWLLGEEGQVTEAGASNFFAVVRDEKTS LK DEПNRLGLFDAIVLDTKKNLTETTDANLFWVKNN\|YT SKSESLPAGYQDWLVLDGLDNLVESSMANLFFVSGKHIVT EQVLARAEFFQEGLVRDYVGNVVEGTMSNLFVTQGDVCTP AKSEVEKNGWKDAIVCDVDGNVVETSVANLFWLDDGFRCT
MKREADERGYDVPFSFDADDFI AEGATENVVNQQGTVII
 ARSEWQDSEHAEGLMCDTSGRLIEGVYSNVFLVSKGRLLT PLCNAYDVIF TYPP DGVTVLEGSTFTVFFVNAEGTVVT ARAEWQDAEHAEGLMLDRSGRVIEGVFSNLFLVCNGLLLT LKREMDNAGWDDGVCLDDNGKVIETTAANIFWCRDGTMFT ARLEAQEQGADDALMLNHHGSVTEASAATFLAHDGTQLIT GSIFAHENELDNCLLLNNHKNVVEALDNGLFLVNGSVIKT QTRLAEKNGYTDSLLLNKDGTVLEGPTFCVSWITDNKI YV AKSIAQQSNAQEAILVDGKGNWLETSTGNLWGWLDGSWWT QILLKREMDFDDGVCLDINGKVVETTSANLFWFKEGLLYT AGRYAAREGADDVI FTAADGSVLEGPTSTLVLVRDRTLVT ARSEWQRPE TDGLMTDYQGHLI CGTMTNVFLVFDDGIVT AKAELEGSGLADAVMINDNHHLI ETTMANLEWLRDNQVYT SYDINNDDKADEALVLDTDSNVIECCSANIFWRQKNQVFT PQRUAESKGCAQCLWLYNDEVTEVGTMNVFMHWDNEQGIT LRQELNESNAVEGVVLSTRNVLVAGVSANLFWRRDKTVFT SRLEADQAGYDDALLLDGVRIAEASAASLVVLSQGRLVTP AKDTAQKLINAQEALLVDAGGNWLETTTGNLWGWRDGCWWT AQLEAEEKGLYAGI WLDNEGFI AEGPNMNVAIGSDGVLLI ALREAARRDADEVVFVATDGSVLEGPTSTVVLAEGRHLRT ALRHAARRGAGDVIFVSSDGYILEGPRSTVVIATDHEDTP ARAEARAAGADEAVMRNNHGDLACAGAANLFWDAGGRLFT
 GNUFAEENGYQNCLVMNEVKNUAEALNGNLFMLGGKKLKT
ARAEWQDSEHAEGLMRDGQGRVIEGVYSNLfLVRDGALft SEDYRNKKNDDDVLVLDTENNIVECCSANIFWRKKNKVFT ALAEAHRRGADEAVLIANTVGELCEGTASNVLVERAGELLT
 ALEEARSQGCFEALLVDRHQKVLEGTRSNFFAFKEKNLYT ARMEWT DAN LLDGI MLDSDQQVIECTSANDFICNGNTLTT A LLRYAA QRGAGDVI FVVSSDGYILE GPRSTVVI A T E C L L T T P ARAEA GRHGWREGLLLDRHRCPLEATSMNLVAVFGNLLWT MKDEMDQAGEVDGVVLDDSGNVIETTMANLFWRKGQTVHT A LDREAARRGAHDVI, FVS SDGYVLDGPNSTMLARDDSTYVT $V R R E A Q Q R G A E D G L M L S T N G Y L C C G S S A N L V M E R H G Q W L T$

 ARSEWQDEQFAE GLMFDDEGRRVEGTMSNVVLVDNGVLKT ARAEWRDAEHAE GLLMRDTS GRVVIE GVFSNLVLVVSQGRLLT

 ARAEWSDPGMSEGLMLDMDGRVVSATAANLFAVIDGRCLT A L Q E A LAA A A D D ALIL STTGNVACTSAGNVFAVVA GE LLT AARAAQAQGFDEALFLNTRGRVACAGTGNVFAVFGGTLVT




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 $P$ LLYAGVNGVMRQLI I RLLPKLGYS $\square Q E V M V G I E R L K S V D$ PALNGILPGVTRKSLLELAREW
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 $P$ PLTEPI PGDMRTQI I K WLLTNQQQAVKEEPWTQELVKGLE $P P S D G V L A G T V R A F V L A Q A K A S G L Q P A E E S D P L T E W L K A D$ PPFDNVLAGGTRRMI ELVSRRIDNNKS DQQMISVEEARSAS


 P P S D GCLLNGUMRK QILAIRKMENGEVAEQSUSPFDLQKAD
ADSRCGVAGVMRGALLEQAVLQG\PVQVCDLPFDALEQAD P Y L H H GVNGV $\square R Q V I L K \square L P D L G Y V V Q E V M V G \square E H L K E M E$ PPSSGCLAGITRELLLEWGAAAGLPVREAAPGELAYRGTA
$P E L C G L L D G \| V R S K V I G L A R A G G T Q V E E G R F T E A D L L A A D$ A A DEQVLLGI TRDRVI KAARQLGFSVDFDAPAKEDI AGY D


 $P L T Q S G V A G V M R K Q V L T A L N Q T E L S V T I S D Y C L S Q L M Q A D$ $P$ TS L G V L P GTT Q G DVVFAALDLVGAQTRVGELFPADLLSRAA P P S D G CL PGVMRG
PS LDEGCI A GVMRSVVIDSLAQENNDPVIEAQDNPDULNEAE P P L D GVLA GIVRGWI LAEAPGLGLSVAERSI GPADLAEAAD
 A DSRC GVA GVMRA EI L F QA ES L Gll P A QVGDIS LD QL Q Q A D $P D L R H S V N G I Q R Q R V I Q R L R E L G T A V Q E V S Q P L E T L A D A D$

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 YWYA G A WY E GT E L T L L P V S D P S F L F G A T L F T T L R A


 $M F L I N G T$ E Q S T
$F D L^{T} D R^{\prime} L L L L L G$
QVE E T F Y F $\square$ N N QK $\square P$ T E Q N T DDELDD

$$
\square \mathrm{G}
$$ $P \vee R$

 $V \vee D P S Q P I L L A D D L G P V R G D G L$




 $L D G V V R D A D E P L L F A D D D G V L R G D G V F E T V V L V$ NRAFLYGDAVFETVVI


 $M F\lfloor\mathrm{~L}$ I G E QAS L A ANDRATQF GDGCFTTAR I

G G Gll I T D A A A MVV I P V $M W L I N G G A E A T A L A A D D R A D Q F G D G C F$

PRVHPA GEP LLLAAD DLAAVRGDGC F


A Y P A G R $\square$ A D A S QP QL K VT D T GVTRGD G $\square F E T M L A$





M N D N Y $\qquad$

N G E S S S S L NP F
$\square A$ WT E GRFIDP H S P LVVGASDPGLMTGQGMFDTMAA


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36934F1

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R

$R A G R P L L L D L H D E R$
$H Q N S T T D P R S L W S H H G D R L R H G C E R L S D D T R S L F S E L Q N D$
$R$ HQNSLTDPRSLWSHHGDRLRHSDKTLQWPAPDWE YTGGDGQUIFRGDASMSRMLASAKRAADPEFCPTQLEEMQ VDGSPIL WNEHLAARLRLGCELLRIPYDVDGDSLLER
 RKGQVEQR DKHLARLRHTCEALLI PFSAWRALDDEM VDGH VVLRDRHI GRLLEACEDFGLDV SDASDEAL
 TAAGKAP $\quad$ WPRHLARLQAGLQALGDPAPD VGGHPALWPDHRARLARGCTRLG RGGAPCQWSRHLARLEFGCRR $\quad$ LRIP Y FAAPLERV
 NWDSEQRLFR QDHYKRMLEGCRLLK NLPYSVDDLCQL IDGK $\quad$ LELP WHLERLQQAAQRLMLPATDWLA FERE



 VNG RIVWLDRHIR

 $\begin{array}{llll}L \\ L & R & S & A \\ R & Q & A \\ M & A & S & M\end{array} \operatorname{R}$ VI | Q |
| :--- |
| V |
| I |
| V |
| I |
| V |
| $E$ |
| $E$ |
| E |
| Q |
| $R$ |

$\qquad$ KDGRMILR YQQSLEHPLTQWNAHCHRLEKSLDQFGWCLPNWQQIWQGA YKDKDGQVLFRPEKNFERINKSAKRDAMPEVTEEMFLVDI EKN RVVWFWPDHYDRLRQGMAAQLNVPTQFDSDTLHEQ WR GEPRLWARHRRRRLDDSAQRLGLPLDPADLPSAADLDQL


 $\vee$ GGRPAK
NAN

| 1 |  |
| :--- | :--- |
| $V$ | D G Q T P P R K |

$A 1$
$\square A F$
$\square$ PER HLLA $V$ N Q Q A R

$\qquad$

HK GTAP L L HLLHLQQRLQK SLLQ



VD GHAQEVV
$\vee D G A P$

RDGAPETVLDPQHMQRLAEGCRRLGIPMP AA G
 SNTKIELLERHLT RLQDGCNRL

 $A E D \quad T \square R Y L L P$ RAGAPVLWRYHTDRLAARMQRAADVL LH GTPQHWVY


F R $L_{L}^{L}$ | Q | $H$ | $L$ |
| :--- | :--- | :--- |
| $R$ | $A$ |  |

L EHF E
HHKA

QH I NGGRNDGRVVALERHME RMQHACERL | Y | $H$ | $L$ |
| :--- | :--- | :--- |
| $R$ | $A$ |  |
| $R$ | $R$ |  |
| $L$ | $Q$ | $R$ |

 A H I R RLQ T A CETLMMPF QHWDTLRTEM A HLG GRMA A S A A SMMDLA EPDRAA WRVVK
 A ogrpoá

 R $\frac{1}{A}$ NG QCQRLQ】A HVE WRALRREM
 ERHLARLARSASAL GL R GPTADQWEAGM



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6
 LERITSLCELQDFGVLKIVITRGAGGRGYLPQTRILLLSA
 LLELLAGNKEMSARYIILTRGSGGRGYALPEPHRPVEIMG QTLQQGAELILASFPVLRMMVFPDGKELIAGRN VLAAGQQKEAVVKAVRGQGGRGYSVAGCSAPTRDVSASDY VRLAAAQQEGVLKVILRGSGGRGYSAAACGTPTRLLSTSP
E

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 A M A V Q R WG D R R E GA L R L V Y S R G R E N A G S A I T A Y V L V S P L N VA V D S W L R T G G D E GV L R L L V Y S R G R E H G S D P T A Y A P A R V A D $V$ R
V E A A NHTEEGV LK VII SRGS G G
 DEMQQAAEGRVDGVVKAII SRGNGGRGYSPAGCDKPVRIV
QTAAKEWGSEREGMMREVLTMRGRDTELGAPSSPVVPERVAK



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## S


 DAVPEDAT GALRLTVTRGPGGRGLAETSASNPTLMAS FTP NH
D R N W I P Q GE GMS LY
DR VMALIHQNELAADGSARVKLQVWRQTGGGLYTPTYTAANWLL VHACRSPQVSPQADAALRVNVSGGGDRPGSCLVWAT LRQW MA MLAK E H DE GVIVAVI T R GVGGRGYSPANCSAPTRIVS F
 $V P P Y Q P N A S G G A L Y I R P L L L A T G P R L L L D S P D E F T F V I V W V$
 VLLE L R K WM S EH D YRDRSGHMRRCALDK DMLT QENVVVFSMP








 E EVVGKRAA EL S Y GVLLKV LIS R GE G GRGYAPDETETP EVVWI $\begin{array}{ll}L L Q P F A E G S T E W Q R L & L \\ V & L \\ V & L\end{array}$















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140
150
PVVGPYFASGTFNPVVPKYVVRAWKGGTGDCKMGGNYGAS $\prod_{\mathrm{F}}^{160}$ $M P E Y P D Q P A Q A G V T V R W C D M T L A D N P R A G \square K H L N R L E Q V L$ QQGDQGW SPVGSY LTS GA LK L YYPAHSRVAPDSAGAFKMGCNYAPT TA







 YPMHYQNWQQQGIELGLAQHKLGLNPLAGHKHNNRLEQVL QRVHQARSSGVTVITLERGYASDLKEFAPWKTLSYAVNMA

 SETHKEEREGDDVLCLSRSFADAPWLLGGVKTLSYAVNVA MQAAYPQHYVQWRQDGIRMADSPVSWLAGUKHLNRLEQVF ARAEGVSVVTLARGDSIDLAQAAPWQLLGAKTLSYATNMA
 ATLLDPPEPDAEGVMADFSRVPLSVVPMFAGIKSLNRLDQV DQTPARTEGISVVTLDRGYRHDVERTSPWLLQGSYAVNMA ESNYPDEDMYLKGVSVFLYNGERENPNAKVIQKHLRNKMN


 YFGKPPCYANERVNGVKLGVSSIPTSINPSVAGLKHLNKLI HYESWRKDGVTLTLSPIRLGRNP MLAGIKHLNRLEQVL RSLTARRRDGVSVI TLDRGLMAPPAEPLAWLLS GSYAINMS
 MPLMYPSPPLCLGVSTDQRN MPTAPSALYKTGSYGDAVM PAKSYYTEPVSVKISDHYSRAANGGVGSAKAAGNYAASFY TAQPTSPFTVTAKAHLGFFTAVRSSPVSRFKTLNALPYVL PHDQDAWMTRPGLILDDISAVSLGRVDPLARFKTLNYWTRR
 SPVGS LYG SAKA V L LDTF DRTAPMGTGHTKGGGNYAPVFK






 LCLGGDTYYMDRMEAWPAMLVSQPVTPTSNVPGNQHLLTSV


K A YARYY EVGA HA I TP WV R R I S PQ C
D F D H K R L I ES QK GVLVESSVHFP DEKN I ISELLKHLNR ILNV

 LS A A WPDFSSSVSVVMVSRRLERRNAA SQL SSCKTAF YGAASVL















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A QCEAMDNGCQQ|VL|WYGEDNQ|I|TEVGTMN|L|F|LYWDNEDGT ARSEWNDPA $\square R E G I L C D A E G F V V E G T M S N L L W V R G G \square L Y A$
 QVMAA $\square$ E G QSFEGLMF ARNRAKNFHAQEALI LIDRQGNWLETSTGNLWWWRDGCWYT I R M H L D Q T D A N E A L V V D T S G C L V E C C A A N L F WR K G N Q V F T
 $K Q Q$
$A H E V L L V D Q T$
A I R Y A Q S K GYD D AL WTS A SCFKEANELGECLLINEKNKII EANSSNLFWVKNNTIYT $P Q V Q A R R Y G W D E G L L L S P R Q Q P L E A T S M N L V V R F E D H W W T$ A R R E WD D P G I A E G L MAAD T R G N V V A G T M S N V F A R F D D I L C T AKTEA
I R A H L D Q T A A DEA LVLDTA GMLVECCCAANLFWRKGKAVFT
 AI R Y AL R N GAD DAVFVVS DGYVLEGPRSTVMILRGRELLT ALRHAAERHGAGDVI FI STEGHILEGPRSTVVI GRTCLLTP
 ALR HAKSQGADDVI FTSTEGYLLEGATSGLVVEAAD GL WT



 A LLREAGRRGADDALFVSTDGYVLEGTRANLVMSVGGRLVT EQ LLKKEKCYEALLVNSNGEI TEGSRSNLFFIKDDIVFT

 MAARELLSGDCFEVLMADAAGHVVEGTRTNLVVLTDEGWIT



 $A L Q Q A K T L D F Q E A I L V D S Q G N W L E T S T G N L W G W K Q G K W Y T$



 SKMEAE EKE GMVR
DRAQLLE TNADEALVLDTAGWLTECCAANLFWRKGNQVFT EKRRSGKAGMDERIVLNTKGQICE GTVSNIFVVRDGRI YT







K T GS Y E V L LVVD QE G N L T E G S R S N L F V VK G D K L Y T

 $D N G V Y E V L L V N K D G L I$ TEGSRSNIYFDKDDSFFT

 VKQASVGSDCQEHVVCCEQGFMLECSASNLDWRTKGVWYT
 ATKNFSAELNCEALLLDDEDCVVATPHHND FCLRGHRLMT DRTGLE QTSADEASVLDDSEGWLVVECAANDFWRQGS KVVGT
 MAVEARQKGMDVAVTFDENGFMGEAADANLGIVDARGRRS ALREAKRRGADDAI FLSSDGFVLEAPTASLILRFGDRFT T EHRWA IE NGYGSALFLLNERDEVVETSSAANIFFVRDNKIIT
 A L R Y A R A Q GVVD E V V F V S H D G IV L E G P T S N I V I R R G D H L L
 I K K A MQT Q N CDDVLVLD YNNQVI EASAANIFADKH GKVF T

 A ASERNQRGLDELI LLNTKGYVTECVSSNI FWVKDDQLFT A ARERTQRRLDELLLLDAAGHVAESVAAAVVWISKNQLYT
 ALRHAQKQGADDVI F DSTDGRVLEGPTSTVLMAHKRLITP ALHWAYAQGADEGLWHGPNGGLCEGSVSNLLTVVDGQLAT

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UniRef90_L8JZ72
PDSQAGVAGMMRRRVIALLAGSEYRLHCVSEPRETRADAD PSDECGVAGVARRWILEDAAQRDDPVVIKSMTVAQLLDAD PPDYGVLPGTTQQAVFAMAEEYGFTAAYAALTVVDLLNAD

 T PTTGILSSITVNTVFEAADDDGVETSTRLMKRDEVLRSQ PDSLAGVDGVARRHLMALLSASAYELGVVTEPLETLADAD



 PLTRCGVDGLMRQRICRVLAHSEYHLAEVDAALPALLAAD $P P G N S V V A G V M R Q L V I E R L Q Q A G E P F Q E A P I T R E Q P E V C R$
$P S L K L C$ PSVDSGVQGTMRSFI PSLEQAGVGTMRQFCLQQLAHSGFRVVEVNEREEALLTAD


 PLDTGCIDGILRRQL
TATDRPIPGVMRGLVLEVGRDWKDEECAGDDPTTELACVD $P$ LDQAGVDGIMRQYCLRQLASSAFNVVEVNAGLDALALAD



 PKSCGLLPGMIGGWVAEVARSNFEVVEKEIVKEELDSD $P L D Q A G V N G U M R Q H C M A M L A R S S F D V V E V S M R P D V L R D A D$
$P Q L E G G L P G T S Q G A L E A A A R S A G W E L G Y G P L V P P D L F A S D$ PLSHSGVNGLMRQKLDAQLNNSQYHLAEVERFPADLTQCD APTCMVLNGMTRDNVNNICNLGFNLFEEAVHVDNAAKAD PPNAHVTPS|TLERLLEM|PAERREVQQRKLHLSELQAAK SPAKNVLLGUVRSKVVADCQQQQUDIIEQNVPVTELNGGDD PDDRCGVAGTLRASLE LDGGVIREADTSPEALATAE
PSNQSGLVGVSRELLVDYLTRNNTAYDFKSTHYDKVNRYQ APDHMVLNGVTRINVNKIIRNLGFNLFENAVHVDDIDKFD PASAGVLPGTSVKSLEWLQEQEGRTVREELMTLADVGGSD PPLSGCLPGVMRA
PDLSNGVNGIMRDVLLARFANHGAIVSHTQAKPEALTEAE PASTGCVAGVMRAHLMQQLLQKGEPAYEVHALPEELEKVD PHDKSGVAGVMRELILGLGKKDDGVGDQVCSLPFEQLASD

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UniRef90-C4UQF8
UniRet90_M9VFZ6
UniRef90-EOSHP7
UniRef90-Q5Z2B2
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UniRef90-UPIOOOO6CC483 UniRef90-S4XEY2 UniRef90 L8JZ72 UniRef90-UPI0003B65CE2 UniRef90-G4F3C3 UniRef90-AоP6Ү3 UniRef90-F0M7L3 UniRef90-C7R412 UniRef90-UPIOOO2E11322
 $E V M L C N S L I D I W P V V A L G A Q \quad H W S V G P V T R Q L Q S L L$ AI A YSNSVVGVIPFQAIQG EVFCSGTASVVMPCDRDVYKQKPYEDPDEMSKKLHEADTG GMALVNSVMGVIPVNQLDGKLLNDDC VIGELQEK G IS YSNCVVEVI PMKKI
EILICNALMPVLPVNQVDDKYY
$\square$ SRRLCDFL EVII CNALLPVAAVSAFDEVRY
 GA WMTGTNNLIMSKTMTEYAN

ALFLCNSVVGVLPVRKL
ELLWLSNSLVGVWPVARLERRA
GLFLTNALI GCWPVRQLIGQDY
$E V L V S N A L M P L D P V N$
EVFMCNSLLGVAPI DK TTHKCF P $\square$ G $\square$ MTRDFQER $\square$ GAWLVSSVALGARITSLNG
GVWLVSSI TLAARVHTLDGNPL SAFLTNS I MGIMKLRALNGRQYDES P I IDREDQETYKK


 $E M L L F T S S T L C V G V T H F D G K P V G C G E P G P V A R W L K D A L L$

 AVFVCNS LMGAVPVKRIEQQVFNTDDSHALLTKLLAK
EVVI TNALMPVLPVYQIE
EVVVCNALMPLLPVRR
$G L Y L T N S V L G V V R V R N L A G Q D L P A E R C L A T D C R L S T T L$
AVFMCNSLMGLVPVKSI DKQVFNLQTALDLKSKIEATL
EVEVCNSLMGI SGVVSIE
EVIVCNALMPVLPVRAYGQQ
DVWMLASLT LAARVHTLDGVA RPAGPDAPRDPELVDK
 MI A Y S N SVVEVI PFRII DCHGU
$R N W G V G T A V V T T V F Q A L G Y N N E K L A L P K S Y A V L L K N D L V N$
$E \square F \square T$ NAAR G L M P VAA $\square R W R A P Q G E R P G P V A S A L A Q A \square R E$ EAL CNA LMPVVPVRQWADRQ
GMFI S GTSPKVLPIRKVND DNDNPNNDDIRKDMKEYDD FFLAAGTAAGVTPVRSMSYNTFGDGKAGEGAKVLGDQLDTS
 AVWL $L S S V T L A A R V R R I D D V M L D G A D P G$ EIFLTNSLGGIIGVSKLDDIKFD G S YSRE DREKYED
 EVVII CS SAVM GUWLA S SLRGLAEVVTLDG TKRAASEWTPRLLALL ACFLTSTSSNVLPINKIND LLISSSE
 GAFI SGTGNDVLPI AS $\square D S D T D E S \square K K$ PVDSS DMREYDC GllWLISSITLAARVHTLDGTRLRTSASAP
AVCLANSVQGLWPVTRLDGRRLARWD $\square G D R H R A D R A E$
EMY LMNSVYGVIPVKKYDEFTF
ACFLTST S SNVLSI NR 1 ND DQ INSSE
 CCFVTNSLMEMR LVKQUDE GLFKNNLFCEISKKLR
VVF DCNALMDMVPVRQFQDADVCTEYNLATFETLRSTML KVVCTN VGGLYPLQQYGERHYNTD
AVFLCNALRGIVPVAGCDRVAFGD
EVIICNALMPVVPVRQWAEQ
GLFISSTSPKVLPICKVDN DEFDAKNEMTQNTRCEYNK AAF STGTSPKVLPVNEVDGHCFDVDMNKVLRSLMDEYDK A A WLVSSVRLATAITAMDGTPV
ECFISNSLMGVRNVTSUDDVKFCGTEK TRTDQEKपK
EVFITN
AVWLGNSVQGLWPVVRLDGTPLYRWSLSSVQRDLQRE GAWLVSSVRTAVTLRELDGRELNRDEA LTREFQR\|I EDFVTSS:MGMPVSKIEDKVFKE EAFVSNSLMKLTNVKEFK
AVFVCNSLMHAVPVNRTEQQCFNVAHSNALLTNLDAK QEF LFGGDKIIPVLQLNDKQNDGQKGPICQMIQDWFKN GVWLLSSVRRYARVTALDGTPL
AVF TSNSQGLQAI QGI D
$M V F T A N V A G 1$ RVVQQLGADTLASEHA LLMQLRQW RLWVANSVQGVWPVSTL
EIVITNAINGAVPVRQI QKKEWNSTK



| UniRef90_UPI00045DD096 | 290 |  |
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| UniRef90-UPI00036E1FE7 |  |  |
| UniRef90-B1XNL2 |  |  |
| UniRef90_H3G3V0 | $\square \mathrm{Q}$ Y GK $\square \mathrm{DR}$ P | EWTR】V |
| UniRef90-Q2SK48 |  |  |
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| UniRef90_16YZG9 | A $\square$ |  |
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| UniRef90-J2JK81UniRef90-10K7M3 |  |  |
| UniRef90-E8R1J2 |  |  |
| UniRef90-V5AXE7 | K ${ }^{\square} \mathrm{H}$ |  |
| UniRef90-G7M9Z0 |  |  |
| UniRef90-UP10004561880 Y Q C G D Q D V F G W |  |  |
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| UniRef90_UPI000372DEEF |  |  |
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| UniRef90-X5E459 I I Q E D $\square \mathrm{KK}$ K |  |  |
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| UniRef90_UPI00046A2935 |  |  |
| UniRef90-UPI0002FC6378 |  |  |
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| UniRef90-A0P6Y3 |  |  |
| UniRef90-FOM7L3 $\quad \square \mathrm{Q}$ |  |  |
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90
110
I DVA A HCPP EGEGVTKLILSRGVEHGPAPTAWVTAAGAP 1 DI A S QVQTKSVIKII ISRGYGGRGYSSNGFDTPTVIMSL
 AAALASRHPTVESMLKMVLERGREDHDGGPVGYDTVTPLPM
 LDA WF SHPHAGEASCTWTLSRGRASTGLASGWLVVQPISA

 UniRef90 E4QCR7 UniRef90-KONPPO UniRef90-H2FVQ3 UniRef90-M1V054
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sols
jhmm
jpssm
180
200

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170
190
 I KYHLEKTEFDDVLVCDNEGYLVEANAANLFWRKG $P L L D A K K L G F D D N L Y L E L D T Y Q S S L H D N D F L V L K S G E V V T$ AKREAQSRGAADALFVSTDGYADEAPTAALIVRLGDELVT EEKRANKKGFDSCLFLNQDGFICEAAFANIFFRKDKVIYT VKAVRESSNAYEALLVNESGHI TEGSRSNVFFMKDNKLYT LKAERESSNGAEALVVLNEQGRVMEAVTANLVFRQGETVFT ALLRYANANGFDDVIVTDGERVLEGATSTVVSFKGDKLRTP


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lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm



UniRef90-C0B100
UniRef90-B8BQU5
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## lupas_21 <br> lupas_14

lupas_28
jnet conf sol25 sol5 sol0 jhmm
jpssm

VMAEKREATKDWDCDV
$\underset{\|}{K} \square$ A G Y V S K R

