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C ID G DFERADEQLMQS $\square$ K LIF PE Y LP GAS QLR HLVKAA QAR

 AL MGQWERAQNQLNVSGELDPGNTLMVNAYTQALQGELTR


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 A V M G Q WS R A Q N QL K V A G ELDD A A CLLP MVVQTY S TAAL N C E A L R
 C L S GNWQRAKMQLK SWQA L K P DA QPT TLLLLMQSVEA ELQR
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 C L N G D WERARTTQL K S WLAALAP QAAPTVVTLLDQCI A GE DS R


 CI EGLWWE KALMQI QTIDELIDEHSQQEAELCKNLVFSELVR
 $A V L G Q W S R A A D Q L R T C G E L D P T T R P D V H T V L V V L Q A E Q T R$ ALTGEWDKAKAQLGSLAQMSPEAQMLSVVYGQAIDAERQR


 CINGDDLESADNQLDMIIRQHPDFLLGAVNLRQLI RADQAR C Y A G DLVVRAEKQLDVI RTKSTEYIINGLVRVYQGLLNAERAR S F A G N L ERA D L QL DTI GTQQEPQVAVTMAL FRQLVVRAEQAR


 CVEGEWEKAARAQLRA LGELLSPEA QMLAAA YGRTI E GE QTR
 I LA GDYEKADS QCELAVRFQPQDAVGFSMLRQQIRGMAAR LFSGNLERADVILDATGQDEPSVAVVVSEFRQLLRAETAR



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$L A D H \| D$
 GTLNGQPFFSFADADPR IGA R P A B $Y$
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D A A P S P V V G T L N G E P F S S IIE D A D P R I G A R L E V M A A A A A Q T G QVVR GK L N GR E F T S I A D A D T R L G S R L E V F A


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 AFGLIPSRYPGSEDAVLRLARKTEWREPAAAGYFGLGQR
 AFGLI PTRYPGSEDSAI RLARKTQWQEQAE ETFIGLGQR $A V G F I P C R Y P D S E D S D V V L A R K T D W L S D A D \quad D F Y V G S G Q R$


 $T V G L I P T R Y P G A E D Q L I R L A R K T D W L E P A P G$ R $L$ Y $D G Q G Q R$ | $G V G V$ | $P T R Y G S E S H A L R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

 TVGLI PARYPASENSAVQLGRKTEW LAGEGHALGLGQR MVGFVPARYPDTEDNDLQMARKTEWNDVGE ETFLGUGQR SVALI PTRYPGSEDSSI RLAAHTDWLEQGEDGFY GLGQR
 AVGFI PTRYVNSEDAAI QLARKTEWQEPHDGGLFDGLGQR H GAWLFTRYSGSESDALRLCRETAWQDGPGETTVRALGQK
 DLALI PTRYPGSADPRHRLSAATGWQMEGDR VLGGLGQR


 $N V A L L P T R Y P G T E D D R L K M A R A T D W K D L G H O D T W V G L G G Q R$
 QDGLIPARYPAPADDASNLSRRTDWQQDS QDUYFGTGQK
$L Q G F M P A R Y P L A D D D A V R M S R R T Q W S P L E S S G H V A G H G Q R ~$ VVGMVPNRYPGSDDDKFNLGHRTEWVPVLEESEYYKGVGQK LVGYVPTRYPGSEHAADQLARETRWQDVGETNVVALGGQK EVGFVPARYPGDTSAAQQFARETAWAPLGD DTWAGIGQR

 VHGFMPARYPGSESDAVRLGRETRWHDISRTGVVAGLGQK
 QVCQI PVRYPFAEDDRYRLATLTEWQPLGDDQQFSGHGQK Q ICQUPVRYP LQQGTDERYLRATEWQTL GEGGQF DGNGQK
 QVCQUPARYPLLAASDERFLRATEWQPLGDDDQFIGQGQK L SEAHMPMDYGGGETDAQKKLGRETDWHERAETNVVAGVGQR QVCQI PARYPFAADDAVKLARTTEWDPLDDGTLYEGMGQK WFGYVPARYP LAANNDTKLGLKTEWEQLTET LYDGSGRK QVCQI PVRYPNQTSDAERRGQMTEWQ TEDEQLWTGRGQK GEVAIPSTYPATPSDAVRDGRETDWTEVADPDCVRGSGDR VRGFMPARFPSVADDALRLGNMTDWTDAGDT GVVLA EGRK
 GQAHLPVTYVHHDSEMQNLAKETDWHELAE DVYQGRGMK YYGYI PARYPLSADQKIKLGLDTEWQQQSE DFSTGMGRK

 SRGVVPCRYPGSDDGADRLGKRDTWQAGEDLSACGLGQR GEAHMP LTYDDSESNAQKLGRETDWKPFGEK VFDGQGQK GEVY VPA $V$ AASQPDPDRL GRATDWV GGDGAPTRGLGQR
 GEAFLP LTYVSSEDESSRLGKDTDWLQKGE FVATGTGDK GEVYLPS




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 LAAMMPVTYAASMARYPG GMVFMPS ITYALSDDAALKLGRRTDWATGQGAGPISGRGQR ATVLLPA YYGADSSALQLGHETEWMDAVDG VVTGLGQR GDVYVPALYAGEMDDAHRLGRATSWVE ENGIVRGUGQR GEAHFPMTYVDSESGNQKLGRETDWKNVLGTDHCDGQGQK HSA
$\square Q C T S P A R Y P D A E S D L L L Q C A Q T D W V E V A D Q Q F T G \square G Q K$ GELLDPVLTPLSADDAVRLGRMTDWENTEDGEPAPAGQK GEVVLLPALSPGVSDDELRLGGAADWEEDPSGDGFAPDGQK LN GLVVPVRYPGADDDETTLGGRRTDWWPGAGEDQYAGVGQR GEVLIPADYPLSPDQELWLGRLTEWFA DEQGREVPAGQK QRGFTPVLYVDSESNALQLGHGTEFHD GGTGVFRGTGRK



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30 ПDS LIDSUKRNPGNQDLLRLELLTQY ${ }^{40}$

KQA $\square M A G D Q D R A G G F E Q A K Q S P D A E \square R A T L E A A$ MQGRNQDA ALMREVVRRHPAHAPGLNTLATLL DFQAQLEQGQHKEALVRYEEAMNARPGDPERRLQYFRLL MQQRDLDAADERVTAQDEKAPNQADYRLLLGELH RQALMAGEQDRALSLFEQAARQSPDNAEDRATLMRQLL AKLLHARGEDDAADDTLQQATRRDPADAARHRLLAQWL $R K L D D A G Q P E A G A R L R T A L A E E P D N D K G K A Y Y S E L L$ SRAKEYQDKGEDRAAATELKNALQKTPDNQEARWLLAQVY ESLFKNSQLAEAEEWFKKSLAAKPDHVPAHLTYAKLLM


HoA ATGRGQEA QSGDVQHA

A LDA QLQ
NALRRQG
NQLQRSG NNFGNMLRAGRLDA
(ASYRRAVALKPDYAEAHSNLGNAL
TNANHLLQVGNYDVAI AYIETAIKLNPRNPDFYGNLGEAY
TNVYQLMFWKKYKEALDETEKLLRDDPHSPDPYALYAQUC QLESLLRDGRLLKEASLMKEALLHQSQRAELHLRLGEVY ADAEKF

AATFYE AGRPDR
ARQDDD
QRMDM
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LTQQEKLDEA AAYRRALEDDPQFAQAHLEAGA
LLARGRVEDAFIEYEQAVRRQPSDLDSDEGYARAL
TRA $\square \mathrm{D}$ DAGNPAA
 RMGRGAEAEAAFRKAI GFAPQDADNWHNLAGLL
AAMAMNAGRLDEGEAVLAAELRQTPDNPAATRLLAEIH AAAAQAWHENRREDAVRAYQEVLRLSPEDPRALNALGNRV LADAGRYPEARAAAAQWLKRHPRDVDARLALSYVH AQAAELLEAGDVRMAGGLYTQVLQADPSRTEALAGLSQVY

LLDCGELEESASQLETARQLQPGNADHHFNLGNTR GQAOQAGNLDEAEALLDEALLHDPMNPELLANHADIL QGQAQLDQGDWRAGLATLQQAANARPTDAEARMVFMRLL
SILDALRRGAADQALLSAEQALAADPQDATAHRLHAAAL NLLKDGKLKEAELSYपKAl GПKPDYAKAHSNLGNLL AARLLQQGHLAQA DAAYRRDLQAQPRCADAWYNLGYLL
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| :---: | :---: |
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| UniRef90-UPI00036AB18A | L LRQI EEARPALGDMFQKTVT LEFRDTSMR NVFEAlA |
| UniRef90-UPI000349F55B | SYRQVLAERPWAGMAWWGMAESD $\square$ R DL |
| UniRef90-B1Y7J0 | DRALLEQERPVLKSRLQKPVTLEFRDAPLKL VLEALA |
| UniRef90-J3CMD5 | LF DRTLRMRPDHPEAHSNRALARLLTG D |
| UniRef90_D6Z4K0 | AYREILARAPNFAPAANNL |
| UniRef90_F5R9B9 | LLRQI EETRPVLGDMFQKTVTLEFRDTSMR NVFEAIA |
| UniRef90-B2JJ61 | K AVSLEPHSAVPHVNLGDV LSVLGDADGATASYRRGIALL |
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| UniRef90_D5C048 | LY D S AL SLLQP NVAEANLGKA |
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| UniRef90-C6XC13 | LIF D Q $\square$ EQKR |
| UniRef90_K9WIU6 | HYQQAIA IK P DVPE |
| UniRef90-UPI00047B4D97 | CYNKALELSPDSDVVNSHLA |
| UniRef90_C7QP60 | A Y QKALSLLPEDTSVTPTT |
| UniRef90-K9S511 | CYQQAL QAQPTALDPWLNLGAA W |
| UniRef90-K9TBP0 | CYQKALTLLEPSQAGDHWN |
| UniRef90-G8P0A3 | LLEKAASAAPGVAEQAQT |
| UniRef90-K5DL28 | LYEQA IEVDPESPQYRE |
| UniRef90-UPI00034DD1B8 | QYQKAI ELEP |
| UniRef90-A0A031GJ77 | H Y Q Q A Q T A P D SVWWM G L G $\square$ A L Q A D |
| UniRef90-K9XT64 |  |
| UniRef90-K7WC06 | A YRKAI ELLPATAYNNLGNALSDQKKLDEAVAAYQEAI |
| UniRef90_A0YTV4 | A R GSTLETAPATTSAMLQRSQEK】R |
| UniRef90_UPIO0016A6296 | CYRRAVELQPDLLHQAH |
| UniRef90-K9SUE8 | A YRQALA ${ }^{\text {a }}$ N P |
| UniRef90_C6D238 | Q $\square$ G $\square$ AL ELEPENPQY $\square$ S $\square \mathrm{L}$ S Y T E |
| UniRef90-H0T2B2 | A SHQAVALAPDDAQTRYNHAHALLLTGD |
| UniRef90_B3N195 | LRLRAAALAP H |
| UniRef90_A8ZZY2 | YFARALAAHPTSL A A Y G L A H T QVLGKTAEA $\square$ T |
| UniRef90_Q2STP5 | R DR RAVEDDPTDSVTHSAMLFALVHD |
| UniRef90_UPI00034BC36D | QFEQVLHTNPQ |
| UniRef90-14CAS6 | HFRSAL R A K P G P L A A N T A L R Q LR D G S S |
| UniRef90-F9RJ76 | S Y QQLVTIIEPENGRWWLGYAI QQER |
| UniRef90-S6ADX6 |  |
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| UniRef90-UPI00041D8AA3 | LRAAIEANPRNARTYLRGGETELLR |
| UniRef90-B3EB77 | AFRLLAIEHEPDNTFAWN |
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| UniRef90-A0L852 | A Y R K ALAL N EN $\square$ P EA W |
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| UniRef90-I3TQD3 | DQLLEIVRRDREWNENAARTQLFEDFDALGP |
| UniRef90-B4D5Q9 | A Y Q A AVELAPQSFVTLIN L A |
| UniRef90-A8U3W0 | A A D R A VVKLSGKPSAAEVLA |
| UniRef90-H5WSF8 | LQEREEQQAPLIKSKLQNPVSLEFRDAPLRM VLEAL |
| UniRef90-A0A021VYC3 | LGRTAARリAPEHPQVST\EGVLALRRRGD |
| UniRef90_Q46J82 | S Y RKAl E 1 KP DYAEAFWNLSLVELLQGD |
| UniRef90_UPI000467DFBC | A Y R RLLASPPVDVQTRQLQATARLLHLDP |
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| UniRef90_Q2G3V3 | LLARLERQADDAPA L R L L G $\square$ A WRR GDMT T A |
| UniRef90-J1PZM5 | L F D S L V |
| UniRef90-X5XJS2 |  |
| UniRef90-FOSRK2 | MLRQAEEAQAH A Q LiFPDGPPE |
| UniRef90_HOTEY6 | SYQAALAHAPRDTKTFNHLLA |
| UniRef90-S6AAG0 | VYETILKRRGETVGILNNLA |
| UniRef90_H8Z5A9 | LLE QAVALDPECGDAWHQLGLTQAR |
| UniRef90-B1YQS3 | SCAQALALRPAPAFNNLGNALQDKGELDAAARAYEKA $\square$ A $L$ |
| UniRef90_U6NNI6 | ARERALEDPEVQAILRDPG |
| UniRef90-Q2WBE7 |  |
| UniRef90-T1BKA7 | A H Y L A L A L H GA |
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| UniRef90_W9BQV9 | $V L G Q L I R S G E N T A K V R Q N L A F A Y A L D G$ |
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| UniRef90_UPI0003762CF9 | SVT $\square$ A Q S $\square$ S QQS |
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| UniRef90-Q1H1N3 | LIFEQlEQKRMDKVVNPPH\R |
| UniRef90_A9AEM3 | AFRRALELRPGHAGAHNNLA |
| UniRef90-W8X9U9 | A Y QRVL G Q HPDDPGALDAGMA QVARASGDVR |
| UniRef90_E6T3K5 | A YRQLLQQEPQQAKWWMGLA Y A |
| UniRef90-K9SM63 | CYRQVVEIKPDA ${ }^{\text {CHAHQDLA }}$ |
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| UniRef90_A5UR51 | HYGRAFERDPQNAGNCW |
| UniRef90_UPI0002889407 | LR D S L |
| UniRef90-B6BC00 | ACGRLAGAP LT LDQASAGFPYT |
| UniRef90-D3P8E4 | VFQKGLGVHPTHADMHSNLAFA |
| UniRef90-R4KKQ6 |  |
| UniRef90-U3A674 | SYHLLVQRQPANARWWLGLADQQERE |
| UniRef90-UPI00034F82F2 | L EEAFQSYERVAELNPTQAQA WM |
| UniRef90-A0A022GV04 | A LEDAMAADPT |
| UniRef90-N6YIW4 | S YREAVRVSPKVAAAHNGLGNAFKRAGD |
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| UniRef90-L8M497 | Y Y Q Q AVQLAPN |
|  | Q Q Q K L G L D P H |

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UniRef90_K7WC06
UniRef90_A0YTV4
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EAAGRLPDAERALQKALSLRPDEQERHMALAALARCGRGA VVKGDFATAVRQYKLILEVTPDDAVVLNNLA WASGELKDP AELDRPDDALLSLRHALQLSPEYVDAANLC GLLLCRRNR AQNGDLLRAAELLKRALEELDRPRHLNALNNLGYVLRGQLGR AQQGDLPAAVAALRESVRLDPDAANLDLFERMLAWPVIE AEAGNLTKAEEAFDRCVELAPMWGPGLALYRA RRDQFD VDSGFPEKAVAHYQQALQLSPSHHVAVVNLGRLYRGENSK
 LLQQNDFAAAEKYLQAALKLELKVQEMAQLLQQVNEPEDT YAQGYHEDAEASYRRALVLRPDHAEAHYNHGVVLHA DQR YQTGEPQKALDAHEQA AI DPNNARAWHGKGALIGLQRYD RAQGREKTAERLLLREALVILDPAEMMLHYALGLSLVRQQQR AAAGREGGGTDALRAALRMDPDLADARQLLRHGLDSPDRG RRSGQPVAALKAYDQALARHDSGPEEVWLNKGVIQADDLL MRSNNLGKAITSLERAVSLAPTAPDAAQSYLNSRQAEKAR DFTGRLPEASRALDRALALNPAYPAGVRRVSNLLRARRLS ETKGRMDLLALREYREATQLNPEFASAHTALGWLLM EQSR AQRQRLAEALESANRAVELAPEDSSAAGLLRLLVEAEQDA LRAGRDEEAVTAGRRAVELRPDYAEGYGNLANADKADGRM IAAGQPENARQ\|LGNLPEAVAADPAVAAVLKKLDQ\|EEAR FQQGQLHAALRAAEAGLQVDPTHVDCLGLRARCDARLGR NRDGDQGKAEQEMRRAIDLTPNNGS\|LNAY GTYACSRGQ YGKGDGRKAFDLMQAG1 ERNPDG EVLRLALAKLLVK HLDGQAENADDVLQRALDQDHNHVPADNALGYLVDGQLE
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 LARGNFTEAETHANSSTDLD DLDTKAEALLAYLDDMAAA ARLKRFKDAUKSYHQAIKMKPDYHQLQUCDMAQALSKSGDR SDAGNYQQAEILLSRAVAVDPRSAEAHMSLGVALNG LLKR ARAQRTERARGVLQEGLERAPEHERMARLYAHLSEERGQP EANGNPADALPALRRAVDLQPRFAPGRFSLGHALRLGRHD LLDQDRDKLDKALRELLQLEPNSPTYLNAYAYTL ALQN QLKGDSTRALAAYRHAIALQPDLYGGYNDAKILTAEDR ASQGQLQAAAASFEQALRLQPDFAQLAVAYARLGAPGRAA LQAGELDQAEAALQRCTQLDEQDPATEQRQRALTQDYLMQ LAEEQPDAARRHLLAALQHDPADLEAAYLLFQLLEADTLT LKAFGAEAEKELRQAERLIGVGRATLEPLLGEALLLMGEY RDAREPTAAMESCARA!EDRPGYAEAYNNLGNALQDLGE MSLGRYAEAERVFDAVLDADPGDATTLAN RGYVRAMQGR RRNGDVQKCNQELKLVLDADPK KRVLSGYGTMLKTEEVN LALDRGAEALLSYQHALSLDPAHKEAAFQSGQLLHAQQQR QRLGDYPRAFDDFNAALQLNPKLAD VYAYRAAMRGDQSN YRQGSLEDADVQYRRAMALAPDNAPALRLLGLVLH EAGH

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 EHVARGE YDLAKQRLNALLTETPSNEPARQL AA A ASYNKADQL KPNDADTYNNLAGNALKEQGDDTAABDD DDASAAFRQV A DDPNHAEANCAMGK AIDQQGMDEARA LDEAEAAYRETLVRDPAHAEAHNNLGNVLMDLGRVAQADA EAVSAFEQAKTIRPSAPSVWQS KALALEYQGKMAEAAQ EAALDEHLQRAWMLQPDEPRTGYVLA VAVEPSAPEEALTT
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 DESLDAQYERALAINP DYI EARSGRDFGHNYLSNR K LGDPAA LEQALALDPDDHAARLKLAKIRNVEGDRQAAAD HDEASADLDEALRHSPSDAGTHADMGWVADERGRAKEAA G ATHFAEAGKVIVQVEPEDYMAYYWQGLCYYHRGQMQKSAGE
 A E H T Q A I ALLK P D N E I G Y E DA I A A HTQAIQLEPNPSHLSS RANNIVLLRQQYENAIA HQTLLNSAEQAYAEQDLDTARA LLRAGLAE DTTHEQART ERVLADTARDILNENPDEIVAQRVLLAQLLDTEQLTEADE VDLLAT V VPPDSEKDNRPLVSGLLAAVALVYQGDVKAARK RGAETATETADADAPNDAQV LASSAAAIFRAQGKNAKAGE QEAFAAFDKA TQVKPDDAVVWLNRGLALIEGEEYEEADA HAEARDSYRKALALRPSYALALSNLGNASAALDRHQEALE
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