

| QUER |  |
| :---: | :---: |
|  | QLVARQEMDWNLPARPAEVEAELSARFTAAPGQLRVFG |
| UniRef90-W4DJE7 | WRVFKEELGYIASDR EGFLNERFKGYPGSLLYHP |
| UniRef90-UP100036BDF07 | QVLAFETGLQLDVDPALCAKQFLLHYGA VGHLQNYR |
| UniRef90-G21YH6 | AQVVARQEMQLSLPSRPAELRDWLAERSGAAAGQLEAFG |
| UniRef90-UP1000375DC54 | AAQUVAREELGVTWPGRAEALGELLIREQFQVDAARLKVWG |
| UniRef90-C6CUC3 | AGWRVLKEELGWDTSRRQAALEQRFGEAAVTAGRLVFHP |
| UniRef90-U4 | AGALTIKEECDTHLPAKPEVLQQRLTELTGATAQQLLCYG |
| UniRef90-E4PP |  |
| UniRef90_IOB181 | AGWRVLKEELGWDVSRRKETLEEQF A A GQTTGRLEYVP |
|  | AARVVVKTEQQQDWPGSPRDLSAYLCRQYGAKEGQVVAG |
| UniRef90 UP1000369B | PGQVVLGMETDLGVPGRPAETARFFSERYAAEPGQIQCYG |
| UniRef90-UP1000 | AGWRVLKEEMDFDASSREAELERRFSDR AGRLTYHP |
| UniRef90-UP1000377ACE2 | AAQVVMKQELELALPARPRDAQDWLCRRFETDASRLQVYG |
| UniRef90-F8GL | VAQUVAQQEMNLALPSSAKEAEAFFNRQYNAPDGQLRVFG |
| 8N | M M WQSETVAMP SNLRSQEQFWRDRSEADGGRLCHQ |
|  |  |
| UniRef90 F9UBM4 UniRef90-UPIO0047B3E3B |  |
| UniRef90-F6BE90 | SAK |
| Uni | VAQ VARQEMDVVLPPNPQQAAREDSARFNAAPGQLEVFG |
| UniRef90-UPIO | PGQLVINMETDLQVPGRAKEAEVYFTELYKAQPGQIRVFE |
| UniRef90-\3BXX | PAQVVINMETEHRLPGRASEDQHYFSQLHGAQPGQLQVFE |
|  |  |
|  | A A M Lld SN K S GNEQKASEQLSTLFNAQPEQ K F |
| G4CP | MGLSLPANTVCREM |
| UniRef90 F5SZY6 | AGRIVVAADELDWKLPARASDVQTKLVQEFNCHPEQLLVYG |
| UniRef90-UPI | AAKVVLATEENLKVPAKADNAAEFFAQHVGCDKEQS SVYG |
| UniRef90 UPIO0038F7EBA | SGWRVLKEELGWNASKRTEALELJAFGD ALDSEGRLRLYP |
| UniRet90 -12JGT7 | AALLVVATETEETLPAKPAALSRYLCERFQCTPEQLKVAG |
| UniRef90' S2KSN5 | AAHLVIDTETETRLPAQPRRLTEALIERCGAHAGQVRCFA |
| 2H9 | AQQEDNWHLPANAKQCNAALCAEYGVDLDSMLTVFG |
|  | WRVLKEELGWDAARRKESL YRGLGLEEGDPRLTYHP |
| UniRef90 UPIO0034C603B | ASYMVWLEEDGMKVPQEPETQEKFWRSYLQUPTGKLICHR |
|  | A A WRV |
| UniRef90-FOLIM3 | TGLAVIRHEVGINFE |
| UniRef90-E8QYV4 | QVLREEMGIAVALNRFDPSVF GD\GAAR【HYHH |
|  |  |
|  | AAQVVINTETDLQLPGDDDILQGFLADRFAAKEGQLTLFG |
| UniRef90- | SAKITS SMETNYRLNDVEALADYVLMEMFSTNSELLTVYE |
| UniRef90-UP1000476 | AGWRVLKEELDWTASGR EEMLSGHFGSLPGKLVYHS |
| UniRef90-A7BZ | PAQ\\|VIGMETDLKLPSRPSEMQA\|LTERYHIAPGQLQVFG |
| UniRet90_A1S3 |  |
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|  | ELSAAELSKLLAD K K M ${ }^{\text {S }}$ |
| UniRef90-A30HR | G |
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| $\begin{aligned} & =6 \text { E652 } \\ & \text { IDION } \end{aligned}$ | A |
| UniRef90-D5VC | A A M W We |
|  | AAEMTLGYETDVSTKDFRARAD ${ }^{\text {a }}$ |
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| UniRet90-UPIO0047705B4 | WRQQAGVTAGKLRCHS |
|  |  |
| UniRef90-N21W48 | D |
| UniRef90 UPIO0046D213B | EALASKV YD |
| UniRef90_LOLXP6 | SLKLKDVALUA DLKQWTREDNQPTVKLE E |
| UniRef90-R9V |  |
| UniRef90-UPIO002DC | ALA VTYS |
| UniRef90-Q3AE99 | LY Y |
| UniRef90_O46C19 |  |
| UniRef90-UPI000370CBD7 | SAELTLS FESDLKLADVQALADEVV |
| UniRef90-G9E | QN RMPADPVKQEQFWRQQADEWGGK【TCHA |
| Unil | S |
| UniRef90-UP1000, | EKV AYETGREPG |
| iRef90-B11156 | AARYIIRQETGLDPDLVAGYT PFSYT |
| P10003 |  |
| UniRef90-A0 |  |
| V3L | EKTCDET |
|  |  |
| UniRef90-E3GX79 | LGLSVNDLKEKSDYY FE |
| UniRef90-UPI0004 | GCAQVWRDEQGLVLPRSPDAQEAFWRRQCDRQGGQLRCHP |
| ef90-I3TIU4 | AAEMTVAYETALR\AEVKALAHTV HD |
| Q12W50 | AAKK\LKVETDYTTEDLEDMATAV YD |
| UniRef90-P: | S |
| UniRee90-R4KRQ5 | ( WN |
| ef90-E3ED36 | TGYTVKEVEAMADAV YS |
| 89 | ASLTLHQELGLL |
| A1WYL0 | ETDTPLPRRSGELHRELVAALGDDPARLYVYS |
| UniRef90 AivSP0 |  |

## QUERY <br> UniRef90_C4ZIT7 UniRef90_W4DJE7 UniRef90-G2IYH6

 UniRef90_UPI000375DC54 UniRef90_C6CUC3 UniRef90_U4TJN4 UniRef90_E4PP69 UniRef90_I0BI81 UniRef90_A4SJ54 UniRef90_UPI0003668733 UniRef90_UPI000369B679UniRef90_UPI00037D4698 UniRef90_UPI000377ACE2 UniRef90_F8GLM7 UniRef90-L8N1S8 UniRef90_Q1Z4N0 UniRef90_UPI00047B3E3B UniRef90_F6BE90 UniRef90_UPI000378C0ED UniRef90_UPI0003B4FFBA UniRef90_I3BX43 UniRef90_S6BH80 UniRef90_U1KQP2 UniRef90_G4CPU2 UniRef90_F5SZY6 UniRef90_UPI000381C54D UniRef90_UPI00040C86F6 UniRef90_UPI000
UniRef90 I2JGT7 UniRef90_UPI00028895B6 UniRef90_S2KSN5 UniRef90_X2H9W6 UniRef90_UPI0003673F68 UniRef90-UPI00034C603B UniRef90_-I1DT88 UniRef90_F5LDF9 UniRef90_F0LIM3 UniRef90_E8QYV4
UniRef90 C9RFM8 UniRef90_UPI00035E7418 UniRef90 R4KQ97 UniRef90_UPI00047C38AA UniRef90_UPIO00476EB56 UniRef90_A7BZK6 UniRef90_A1S3M1
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UniRef90_J6UGB4 UniRef90_UPI000429AC8F UniRef90_B1I1S6 UniRef90_UPIO0036D22B9 UniRef90-A0A038H3M1 UniRef90_Q5NWG7 UniRef90_V3LWR8 UniRef90_UPI00037660AE UniRef90_E3GX79

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REEWFAPPASGSNPPDAMVVCPCTVATLASIAGGLSQNLI


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$N R D V G A S$ | NRDVGAS |  |
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| EQQ WTAP | A |
| ADDVGAS |  |
| A |  |

## QUERY <br> UniRef90_C4ZIT7

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UniRef90 C9RFM8 UniRef90_UPI00035E7418 UniRef90-R4KQ97 UniRef90_UPIO0047C38AA UniRef90_UPIO00476EB56 UniRef90-A7BZK6 UniRef90_A1S3M1 UniRef90_C1D976 UniRef90_Q5JD89 UniRef90_D3HM91 UniRef90_A3QHR1
UniRef90_B9LZ56
UniRef90_F0XL97 UniRef90-G9NTN1
UniRef90-F6E652 UniRef90_UPIO00347766E UniRef90_D5VQ18 UniRef90-Q0ALI7 UniRef90_E9F3A4 UniRef90_UPIO0047705B4 UniRef90_H8K766 UniRef90_N21W48 UniRef90_UPI00046D213B UniRef90_LOLXP6 UniRef90_R9VJ07 UniRef90_UPIO002DCEBB3 UniRef90_Q3AE99 UniRef90-Q46C19
UniRef90 UPI0003 UniRef90_G9ETT0 UniRef90_BOCBC2 UniRef90-J6UGB4 UniRef90_UPI000429AC8F UniRef90_B1I1S6 UniRef90_UPIO0036D22B9 UniRef90_Q5NWG7 UniRef90_V3LWR8 UniRef90-E3GX79 UniRef90_I3TIU4


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## E



 UniRef90-A0A038H3M1 UniRef90_UPIO0037660AE UniRef90-UPI000471CB0E UniRef90_Q12W50 UniRef90-R4KRQ5 UniRef90_R4KRQ5
UniRef90_UPIO003634EE1 UniRef90-E3ED36 UniRef90-K9DG89 UniRet90_A1VYL0
UniRef90_A1VSP0

ERAADVALKERRPLVLVPREA
STELKLSNGAV








K R A A D V $\operatorname{Cl}$ K R A A D V M L K E G R K L
 E R A A DVVVMK E R GQLL MV VRR


 ERAADVVCLK E R K QLI LVVRETPFSDIHLENMLKLLSRMGAV E R A V $\operatorname{V}$ D $V$ V $A$


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TRAADVVLKERRRLVLMVRE
TRAADVMLKERRKLVLMVRETPLNLIHLRNMTTATEAGAI



 TRAA DVVVLK E R R R LV L M V R E T P L H L GH L R A MTA A A EA GA I A R A A D $V$ V $\operatorname{C} L \operatorname{L}$ TRAADVSIKENRKLLLVT R
 T R S A DVVI L K E R K K L L L T R A A D $V$ V I L L


| QUERY | GEQHLVS |
| :---: | :---: |
| UniRef90_C4ZIT7 | GED R |
| UniRef90-W4DJE7 | G D |
| UniRef90_UPI00036BDF07 | G D |
| UniRef90_G2IYH6 | G E Q |
| UniRef90-UPI000375DC54 | G E |
| UniRef90-C6CUC3 | G D D |
| UniRef90-U4TJN4 |  |
| UniRef90-E4PP69 | G E |
| UniRef90_10BI81 | G |
| UniRef90_A4SJ54 | G |
| UniRef90-UPIO003668733 | GEDS |
| UniRef90-UPI000369B679 | GT G H R Q |
| UniRef90-UPI00037D4698 | G E |
| UniRef90-UPI000377ACE2 | G |
| UniRef90-F8GLM7 | G T E |
| UniRef90-L8N1S8 | Q G K |
| UniRef90_Q1Z4N0 | G Y D Q R K K |
| UniRef90-F9UBM4 | G |
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| UniRef90-U1KQP2 | GY GE |
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| UniRef90-F5SZY6 |  |
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| UniRef90-UPI00038F7EBA | G D D |
| UniRef90-I2JGT7 | G E |
| UniRef90_UPI00028895B6 |  |
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| UniRef90-X2H9W6 | G E K N |
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| UniRef90-C9RFM8 | G |
| UniRef90_UPI00035E7418 | G E |
| UniRef90-R4KQ97 | E G |
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| UniRef90-A7BZK6 | G E K |
| UniRef90-A1S3M1 |  |
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| UniRef90-Q0ALI7 | GED |
| UniRef90-E9F3A4 | D G |
| UniRef90-UPI00047705B4 | E G H |
| UniRef90-H8K766 |  |
| UniRef90-N2IW48 | R E Q |
| UniRef90-UPI00046D213B | K G |
| UniRef90-LOLXP6 | K E |
| UniRef90-D4W6R7 | E D T N |
| UniRef90-R9VJ07 | Q GS DVAK |
| UniRef90_UPI0002DCEBB3 | N G M K V |
| UniRef90-Q3AE99 | G E |
| UniRef90-Q46C19 | K |
| UniRef90_UPI000370CBD7 | G E |
| UniRef90_G9ETT0 |  |
| UniRef90-B0CBC2 | Q G E |
| UniRef90-J6UGB4 |  |
| UniRef90-UPI000429AC8F | K E |
| UniRef90-B111S6 | G D R Y R L |
| UniRef90_UPI00036D22B9 | GEDDALK |
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| UniRef90-Q5NWG7 | E G |
| UniRef90_V3LWR8 | GEAEL |
| UniRef90-UPI00037660AE | REHE |
| UniRef90-E3GX79 | E G |
| UniRef90-UPI000471CB0E | Q G |
| UniRef90-I3TIU4 | G E |
| UniRef90-Q12W50 |  |
| UniRef90-P33751 | E G |
| UniRef90-R4KRQ5 |  |
| UniRef90-UPI0003634EE1 | D D E |
| UniRef90-E3ED36 | D G |
| UniRef90-K9DG89 | G G |
| UniRef90-A1WYL0 | GKE |
| UniRef90-A1VSP0 | Q D T E |



| UniRef90 A1WAS？ |  |
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| Alwas2 |  |
| UniRet90－U2SRW8 | SGWQVLSYECGVTRADFARRVDVL |
| UniRef90－UPIO004682480 | WAKKNLQLETEMSLADTKELADYF |
| UniRef90－Q46KX5 | GSYEVAKSERGDNIPVEPNTQEKFWRKKDEVQSGKDTCYR |
| UniRef90－TOEWN1 | AADRVFQEEYETKVSSSKEDLDFDEECWKPTVRHNFKDRN |
| UniRef90－K8XGU | AARRTLAEETNFEVGDLEALADVV HP |
| UniRet90－T01661 |  |
| UniRef90－UPY000418A61E | GARTTIPYETDYSITEEVIELAAKVVRERTGVTGQLRCYD |
| UniRef90－C7LRV2 | ARQVFRHEDN SDPLDLESCFHFL HD |
| UniRef90－C4XKA7 | AAVTLALETDKTPADLAALAGVL NHD |
| UniRef90－Q39TU0 | AAGKNLEIETSYSLDEVRALADVV |
| UniRef90－A2QSX4 | WAEATIKYETDYTIANVRALAD HVYN |
| UniRef90－19BRV1 | AGVMNLQHELDRDRADVEALADVV |
| UniRef90 UPIO004279 |  |
| UniRef90－UP100047EB56A | AGWRNLQHEGDMDRASVEALADQV HD |
| UniRef90－COW4M5 | SGQLTRSLETDWSKEEVESLAADVV |
| UniRef90－C00 | GGFRVLA EMGFTPEKDLQQFLVNQGVVCHSQS A DEDFC |
| UniRef90－J2VMG0 | AGVLNLHQELDLGRKDVEALADVV |
| $\begin{aligned} & \text { UniRef90_UPIO0036E5EFB } \\ & \text { UniRefon_J3DPI2 } \end{aligned}$ |  |
| UniRef90－UPIOOO45E9 | RTIIAETDFTPDAVRALAH HVHN |
| UniRef90－C6AY87 | 俍TALAEGTGTADERGLAD RVYS |
| iRef90＿R9S | ELDDVNLEDIVS |
| UniRef90 UPIO0031 | HVETTYTTKEVEAL |
| UniRef90 B8F33 | GAELLTRQYETNLSEEQLLSLADVV SP |
| UniRet90＿L1KUB8 | 俍 |
| UniRef90－UPIO004632C6A |  |
| UniRef90－－131031 |  |
| UniRef90－UPIOOO： | A T P P |
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| UniRef90 F3Z2J4 | 俍 |
| UniRef90－AOK434 | WLNIQHELKLPKADVESRADVVVGSSWSSRUHYS |
| UniRef90－UP1000225F6D7 | AALLTMVHETGCKLSDVEARADFLL |
| UniRef90－B9KIM5 | AAKVTMAHECG HLLTVEQLCTDYC |
| UniRef90＿NOBIE3 |  |
| UniRef90 B8KTP1 |  |
| UniF | WMTVADETGFDRAALRDAADVY |
| UniRef90－UP10003613E2A | AAKTVLELESGLGLDDLTSYANFVY |
| UniRef90－F4HBU5 | WAKENLR ESKMQLSELYQLMD |
| UniRe990 UPIOOO3A |  |
| 俍et90－W888 | ， |
| UniRef90 F8A910 | AGKKVLPL |
| UniRef90－Q9X696 | WARTTIEMETGLSVAEVSALADV THH |
| UniRef90 F7V8U6 | GAVRTLETESEYTAESFQALADQ |
| UniRef90－D7BEB7 | GAKRVLVEA |
| UniRef90－UPI00036A | WAKTTLQQECGMSYRDLCAMADVV |
| UniRef90－UPIOOO329s | WAKATLELETAYSVRDVAALADVV CHS |
| UniRef90－E6R |  |
| UniRef90－A0A059KID5 | SGVLNVHHECGLDRRALESLAAVV AHA |
| UniRet90－Q7VLR2 |  |
| UniRef90－UPIO003B7AOA2 UniRef90－UP1000475BCE7 |  |
| UniRef90－F2B9P5 | GAETTAMETPHRKDEIHALADTV HA H |
| UniRef90－W9HB40 | VSETD HGDDQVRa四A RVYN |
| UniRef90－F4CCl9 | EMVRTYETGYKHEHVVSLAH |
| Ref90－D3DF71 | SLVMKEELGL GREDLLKRFPR LHLIPHS |
| UniRef90－M2T418 | WA |
| UniRef90－Q975R1 | EAKKVAKDECDDDLDSFFKAQDS |
| UniRef90－Dgun | ARLTLLDETGISFRDAHWREDLGAWLARGADGDDVRHWA |
|  | SAKEILHHETGGEKCVFDALLKTCPKEYAG KDEKISFFD |
| UniRef90－V711 8 | T WELLETEMPLSRLTE ELDV |
| UniRee90－UP100032998BE | AGHVNREHETMGMSDDVAAMADVV DRHEDYAMADHCY |
| UniRef90－K8RHU3 | SALLTMQQETE HKLLADVNPMASFTYR |
| UniRef90－H2CJ90 | AA |
| UniRef90－M1MHW1 | KKTLEAETNYTMEEVE |
| UniRef90－UP10003775572 | AARVTLRQETDYAVGDLLELGDAV HD |
| UniRef90＿UPIO0037042BF | WARAT ELLETGYDVREFTALADEVGREWTEADTA DVRYWA |
| UniRef90－B4DB52 | RQVINEELG |
| UniRef90－C1DWA9 | A AYTVMEKEEGDTKSDFLKSLNQ NVEVIS |
| UniRef90－X2H5F7 | QLTHSYEDPNMS可ELKSLAD |
| UniRef90 E1RI | WAKKIAEYEDA APNNTPQYDESTAS GVDLSGFNGVYVG |
| UniRef90－171HS8 | AGK\TINHEVTEKLED\TS LADFY |
| UniRet90－D7CHZ4 | ASRLTLLDETGISF RDAHWRQDLGRWLARGADDVRHWA |
| UniRef90 D4LPSO0 | SAELTLRQETELEPEDVKRLLADHVC |
| UniRef90 W6EFD | （ LLY |
| ef90－E8UG54 |  |
| Refoo A |  |
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Unepolvas

| UniRef90_A1WAS2 <br> UniRef90_U2D518 <br> UniRef90_UPI0004682480 <br> UniRef90_-Q46KX5 <br> UniRef90-TOEWN <br> UniRef90-K8XGU8 UniRef90-T0IW61 |
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SRAADVTLKEQRKLI MVPRETPLNTI HLEN MTKLSKMGVQ
ERCADVHLKENRRLI I SPRESPLSLI HI ENMKRLA $\square$ A GAS
ERAADVSLKERRKLILVPRETPYNRIHLQNMDDLHDAGAD







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




 Q R K R I I V $A \operatorname{A} V \operatorname{T}$ G A T G A P L A A V

 $M N T \quad R T \square L L A V T G A S G M P Y A V R L A R A L A A V S R S L H V I V S N$ MSRRKR VIG MSRRKRLVIGISGASGAA $\downarrow$ ALEILRLCKALKLDTFTIVVA R R L I V A I T GA TGAA YGAGVL RALLRELGVESHLVVSS
 $K \prod A L I V S G A S G V E L A D A F L R Y L \quad P D G \square E T H V V L S D$ $M S G R \square R \| V V G I S G A S G A A L G V R V V E L L A E T G C D \square H L V V$ MS MSRPSSVS $M A V G G S G V R V A L R L L E A L K G E V E D R G D I L T R$


 $M L K G K H I I L G I S G S D A A Y K A A T L I R L L V K E G A E V K V V M T P$ RVVLGVSGASGAALALAVARHLRQVGAAVDLVVSR
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 K G K H I L L G I S G S I A A Y K A C T L I R LLL I K A GA E V Q VV V I T P $M L K N K N V L L G V T G G I A A Y K A P S I V S N L R K Q G A N V K V V M T K$



 $M L K D K T V V L G V S G G B A D V K A C D L V S K K K A G \| N V M V M T K$
 $M L K D K N I I V G V T A G I A A Y K A V D L V S R L K K Q N A N V E V I M T E$ $L A G R R I L L G I T G S I A A Y K A A V L C R L L K C A G A E V R V V M T P$
 $M L S G K T V I L G V T G S I A A Y K M A N L A S M L V K Q H A E V L V V M T K$ L Q GK HIVVVGITGSIAAYKAATLIRCLIKEGAEVQVVITP
 MLK GTNIVLGVSGGIAAYKACDIVSKLRKLDANVNVIMTV

 MLK GKNILLGVVTGGI A AYKAADICSRLVKVHANVDVIMTE
 $M L K G K K I L L G V T G G I A S Y K S P G I C S L L D R K L G A E V K V V M T K$



NKNIIVAVSGGIAAYKSAILVRRLKDAGFDVRVVMTE
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Y A R G M A S A A S CA G A $\quad \mathrm{GL} \mathrm{L}$ K D L L




D

## D <br> N N E E S H H V P P



DGTMWN S HVDDGLW
$H V D D G L$
$H V D L G L$ $\begin{array}{lll}A D D A L L & A P C \\ S A D A L L & V P A\end{array}$

LSN M DVEHTS LAK WA D A M I A P C T A S S L A K M A H GVVA D N M L

EP K


## $D \square G V$



PKTWDVEHISLAKKADLFVLAPATANVIGKVANGISDDML
S HVS L GE WA DALVVAPATANTIA KMATGVADNDL

 NS SFFSPLASSGSGVPDGLVVLPASMGYCARVCQGLSGTLAB
 NFDVK HV S L A K K A DI MLI A PATANVI G K I A N GI C D D M L
 A A E L A M G H I E L A K WA D AV LI VP A S A D F I A R L T V G M A N D L L
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 F EVVEHDALAA DKA D CVI I A P A T A N I I G K L A N GI A D D M L

N M D V E H I S S L A K W A D I I V I A P T S A N L I G K F A N G I A D D M L
 I A HI S L A D WA D L V L V A P A TAANI G K M A A G I A D D ML AEAGMGHIELARWADLVLVAPATCDTLAKFAAGLADDLL $\mathrm{HVD} \mathrm{L} G \mathrm{~L}$

WA D A ML I A PA TAA A T I






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 S G G M $\stackrel{L}{\mathrm{~L}} \mathrm{R}$
 $M L E G K K V L E G V S G G$ L K GK K I LL GV S G S MSQ GK H V L GI T G S I A $M L S N K K L V F G I T G G I A$

 | $L$ | $S$ | $G$ | $K$ | $K$ | $I$ | $L$ | $G$ | $V$ | $S$ | $G$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $E$ | $G$ | $R$ | $H$ | $L$ | $L$ | $L$ | $G$ | $V$ | $T$ | $G$ | L Q GKHVVLGVTGGV GK P S V V L G V S G GI A



 K K TVV I G V C G | $L$ | $S$ | $G$ | $K$ | $H$ | $I$ | $V$ | $L$ | $G$ | $L$ |
| ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $G$ | $G$ | $I$ |  |  |  |  |  |  |
| $M$ | $D$ | $S$ | $K$ | $N$ | $V$ | $V$ | $I$ | $G$ | $V$ |
|  | $G$ | $G$ | $I$ |  |  |  |  |  |  |


 MFS GRKI LVVGVTGGI A A YKAA EVVVSRLRKLDAEVRVVATK
 M L A

 $\square R G$ | $R$ | $T$ | $V$ | $V$ | $G$ | $V$ | $T$ | $G$ | $G$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $K$ | $K$ | $L$ | $L$ | $A$ | $V$ | $T$ | $G$ | $G$ |
| $R$ | 1 | $L$ | $L$ | $G$ | $V$ | $S$ | $G$ | $G$ |

 $L K N K K V L L G I S G G I A A Y K G A D L D R R L Q D Q G A E V R V V M S K$ GKHIVLGLS G GVACYKSAELTRLLVKAGATVQVVMTE


$K N I V L G V T G G I$
K K I V L G I T T G I

$M L N$ | $G$ | $K$ | $H$ | $I$ | $I$ | $V$ | $G$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ | $T$ | $G$ | $G$ |  |  |  |  |
| $N$ | $H$ | $L$ | $V$ | $L$ | $G$ | $L$ | $T$ |




$\begin{array}{lllllllll}K & K & L & L & L & C & V & S & G \\ G & I\end{array}$ $M L K G K T V V L G V T G C$



 $A C Y K$ S A QL T RLLLS QA GA K V Q V V M T D A A Y K G A A L T S KL T Q K G A T V H V I M T A $\begin{array}{lllllllllllllllllll}A & V & Y & K & S & L & N & V & R & E & L & I & K & N & Q & A & E & V & Q \\ A & V & V & M & T & K \\ A & F & K & T & A & A & L & V & R & L & F & V & K & A & G & A & D & V & K \\ V & V & M & T & P\end{array}$

 | A | $A$ | $Y$ | $K$ | $A$ | $A$ | $A$ | $L$ | $C$ | $S$ | $K$ | $L$ | $V$ | $Q$ | $A$ | $G$ | $A$ | $N$ | $V$ | $H$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $I$ | $M$ | $T$ | $E$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $A$ | $Y$ | $K$ | $A$ | $A$ | $A$ | $L$ | $T$ | $S$ | $K$ | $L$ | $V$ | $Q$ | $A$ | $G$ | $Y$ | $D$ | $V$ | $K$ | $V$ | $M$ | A AYKA CEIVS SLKKKGATV 1 V 1 MM T A A YK S VF LVRLLVIA GAEVKVIMMS A V Y K A A E L V S S L V K A G A D V H V A M T A A

A A
A A MLK GK
 $M L E N K K V V L G V S G G I A A B Y K A E L V R R L V E Q G A Q V Q V V D T A$
 LA D K R I L L G I S G Gil A A Y K S A D L V R R L T E R G A D V R V I L T S
 LA GKRIVLGVCGSIAAYKVAQLARDLTLAGALVDVILTE
 $M L K G K T V L L G V T G S I A A Y K \square A Y L A S A L K K D H A Q V H V L M T Q$
 $L$ T G K K I V L G L T G GVVAC Y K A A E L C R A A L K K A G A S V Q V V M T D
 $M L Y G K N V V L G V S G G I A D V Y$ K C E I V V S R L KK L G A NVVVI MT D




 $P R V V L G V G G G I A A Y K V C E L L R R L T E S G H H V R V V P T R$

 $L A G K H L V L G M T G G I A C Y K \square A E L T R L L D T A G A T V Q V A M T E$ NKKCVVLGVTGGIAASYKALDIVSKLKKDNYDVNVIMTK LS N K R I L L G I T G GI A A Y K S A E L L V R A L K G L G A Q V R V V M T D $M L S G K T V V L G V T G G V A A Y K M A N M A S M L I V R G C E V H V I M T E$ MSQ GKRII L GVVGSIAA YK SAHLTRLLVKE GAEVQII MST






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## Q

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 A A Y K A A E L V R L L V K E G A GVV QV V M S A

 | $A$ | $A$ | $Y$ | $K$ | $S$ | $C$ | $E$ | $L$ | $V$ | $R$ | $R$ | $L$ | $R$ | $A$ | $R$ | $E$ | $V$ | $E$ | $V$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $V$ | $L$ | $T$ | $A$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $A$ | $A$ | $Y$ | $K$ | $S$ | $A$ | $F$ | $L$ | $V$ | $S$ | $S$ | $L$ | $S$ | $K$ | $Q$ | $G$ | $Y$ | $E$ | $V$ | $Q$ |
| $V$ | $L$ | $M$ | $T$ | $K$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |




 A A Y K MP N V A S AL R K A G A E V HVVVMT Q
 $A A A Y K A D L E L V R R D R R D A G A D V Q V A M T A$ $M L T N R N I L L C V G G G$ A G N N L L L N Q K K $K$ S VLG $M L S N$


 K N K H I L L V VVV T G Gl $M$| $L$ | $E$ | $G$ | $K$ | $K$ | $L$ | $L$ | $G$ | $I$ | $T$ | $A$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $T$ | $G$ | $K$ | $R$ | $L$ | $L$ | $L$ | $I$ | $V$ | $T$ | $G$ |

[^1]

















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 NKKDILIAVSGSIAAFKSALLARLTKAGFEVRVMTO KQKHVLLGVSGSISAYKAADLTNELTKKGYAVDVLMTQ NPPRILLGVSGSIAAYKAAELTRRLRERGAEVQVVMTA LDGRRIVVGVIGGG|AAYKAVSVIRSLVLLGHHVDVIATK SQPRNLVVVVGGGAAAYKAMDLIRRLKERGAEVRVVLTR SQPRNLVIGVCGGI AAYKSCQLIARDTEAGDQVRVIPTE KR VLGi GG AAYKAAELARLLVKQGIIAVQVAMTE GKKIVLAllPGSI
GPKVLLI SGG| KRVLLVGGGAYKCELVRLIRKAGGDVTCVLTE VVGVCGGI AAFKACQLVREFTEDGDQVRVIPTN SGKRIAVYLTGG

MTDAP
 R LVGV KHITLAVTGSI NVL RKRLIGMSGSUAYKTCELTRLFIKNKDNVRIVMTD KR M S RGRKLLLGVAGGIAAYKSCDLLRRLQDEGFIVDVVPTA MSARKRILLIVGGGIAAYKTPELVRQLVKEGADVQCLLSK NTHNNVLLI SGGVASYKSDEIRGIKKTKDNLDINTK LEQKNVLLGISGGIIAAYKTPDLVRKFIAQGANVRVVMTD


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EATIPH：ELEAKTALAAVVPASANFLAKMANGMADD VPhVRLGQEADLVLIAPATADLMARAASGADDLL DVaEVrhValgTk adLVIVAPATANTLAKMAAG川SDNLL LARWADAVLI APATSNLIAKLAHGI ADDLL AAEAGMSHTELARWADWLLIAPATADLMARLAAGI ADDLL HETQHISLAQKTNLVLVAPASADIIGKAAGGI ADDML AEHDVGHI RLSREADLVVVAPATANIMAKMAHGLADDLA AEAGMGHリELARWADVLVVAPATADFLARLHSGMANDLL AKKADVVII APASANVIGKVASGIADDML
AEAGMGHDEDARWADLVLIAPATADFLATMVHGRANSLL HVKLGQEADLVVVAPATANLLAKAAHGLADDLL KAEAGMGH1ELARWADLILVAPCTANTMALLAQGQAPDLL GVQHVRLGQEADLIVVAPATADLMARLRMGRADDLL AEAGMGHVELGKAADLIVAPATANLIVAKLATGQASDFL GVDEVRHVAVG KAADLVVVAPATANTIAKIATGQASDFL HEVPHVR】GKGADLVVVAPATANLTAKAAHGLADDLL KDHD \(\square\) SH \(\square R \square A R N A D L I L A P A T A D R I A K M A V G I A D D L A\) GVGHTELGKWADLVILAPATADLIARVAAGMANDLV KVEHVELLG KVEHVELLGENGIADLLLIAPATANTVSKIANGIDDTPV
 HVDKVQHVMVGQ QADLVVVVPATADFLARLRAGMADDQL DVDEVAHVRLGQGADLVVIAPATADLMARAAQGRADDLL

\section*{HEVPHVRLSR} AAEQGMGHIELARWADAYLIAPASANTLGKLAHGUADSAV LVEKVNHVHLGQ TADLIVVAPATADLLAKAAAGRADDLL \(\square D W K P P H I D L A D R A D L L A I V P A T A N I G K L A N G T A N D A L\)

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 AEAGMGHIELAKWADLIVIAPASANTLARLAMGMADDLL
 NVATVQHIVAIGQA ADVIAVVPATANTI AKLSVGLADDLL DEHEDGH1TLARDCDLVVVAPATANLLAKMAHGLADDLA EVDEVAHVRLGQEADGIIIAPATADFLARVAHGRADDLD F TEHVELAGEHENKADLILVCCATANT GKLACGUADDTP DEVEMGH DQLSRQADLVVVCPATADILAKMAAGIADDLA

VAHVRYGQEADGUVIAPATADFLARVAAGRADDLL WS ELA
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VNHDEUAKTTDDFLVAPATANT：AKLANGLADNMV NYNDGAGPASGSYRTMGMIVIPCSMKTLAG\｜VSGYSDN亩V DEAEMGHTELSREADLVVVCPGTANLIARMANGDCDDLA VPHI SMAKESDLIVIAPTTADLLAKLASGRADDLL
ETEMG HI QLSRNADLVLVAPATADLIAKMAQGFANDL


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 SATCLVGATCPVVVAPAMHTEMWNNPENVAVLRERGMA TAS LLTVMARCVLFVPAMHTEMWEHQANVATLRAHGSV S SAILACTKPIVVAPAMNVHMYENQANLNTLRLRDWH ASTVLLATDRPVLLAPAMNPHMWSNKRNVTALHGDGVH A ATLLVATCPVVYVPAMHTQMWQHQDNVATLRARGAH
\(\stackrel{T}{T}\)

\section*{S}

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\section*{S}
tntot the sila

\section*{TNTALLEV} AATVVGAC A DLLSTLCAARNCPLPAMHTEMWENPATQANVATLRERGIV ARCPVLMAPAMNVRMWENQKNVGTLNEMGVK TLAALSFDGAKKPVMVVPAMHDQLYQVQQAINKLKEYGVS T TLYLATSARVYIAPAMNCHMFAHQANLATLAARPNH TV \(\qquad\) SVHCP
\(\qquad\) TATA SAVA LISTDAPIVAPAMNQAMWRDQNNISTLAEKNFT CQALATDKPL SCQALAFPGGGV PKIVAPAMNPRMWATQRNWA
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ATDKPIIVVPMNKMWHNQRNDKQLDDDGMQ SAL APAPLLAPAMHRMWEHPATRANHTTLRERGVR SQAALANENDSKVYIAPAMNVNMWQNQMNLSKLQNLGFN LSQ ALALYKATKAPTLFAPSANTNMYLHQKNFKKLN
 TNVVASTAPK LVVPAMHSEMWLNPATVANVKRLRAERGFF ASTTLLATDKPVMDAPAMNWLHDATQRNLETLKNDGMT TMA GIARKCPLVLVPAMNDVMWSNQDNVKRLLAQDVI


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\hline UniRef90－C9 & AMNSPRNLETLRSFENT \\
\hline UniRef90－E6P \({ }^{\text {a }}\) & N ATLKARGYE \\
\hline UniRef90－E33U88 & NLA QLAVDGVR \\
\hline 㖪90－K9WTX & DMYLNPIVQKNLETLKENGFV \\
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\hline & NRERIIPSANTNMLFNPVTEA \\
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\hline x0C & QRLSLLLLPIISRCAHPAV \\
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\hline UniRef90－D1A） & SVC DPRKVM｜FPAMNTNMYLNQGNLEKLSMNNYN \\
\hline UniRef90－A5CW16 & － \\
\hline UniRee90－101005 & \\
\hline UniRef90－B4SF｜\％ & AK \\
\hline UniRet90－TOIZ86 & D \\
\hline UniRef90－W8RNV & \\
\hline UniRet90－F1T696 & \\
\hline UniRef90＿K2L81 & TNKPVMVVPAMNVEMWNHQANLATLEGRGVM \\
\hline UniRet90－Q2CEC & \\
\hline UniRe990 B6WVH2 & SAQA MAF \\
\hline UniRef90＿M5SOL8 &  \\
\hline UniRet90＿UPI000299 & M \\
\hline UniRet90＿E8RGZ0 & ML \\
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\hline & DKMFNMRDK1 \\
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\hline UniRet90－UP10000421B6A8 & 俍 \\
\hline 20 & \\
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\hline UniRef90－H9UH60 & \\
\hline UniRef90－UP10004697C0B &  \\
\hline UniRef90－10EP &  \\
\hline UniRef90－O1N & TMYAHPDNL \\
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\hline D7E8N & \\
\hline UniRef90＿UPIO0036BA0F4 & RAPVLFAPAMHTEMWLNQANVAQLRAHG \\
\hline UniRef90－C6XRV3 & T DKPVFMVPAMNVRMWDHQRNVRQLRLL \\
\hline UniRef90－07M7V6 & SFLAFDGPKMLAPAANTKMLENPLTQESL \\
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\hline UniRet90＿MOBC48 & MYDHPEA \\
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\hline UniRef90－X0QXJ9 & QVVPPASGGMACGDTGTGAMVDETVSQVLRHL \\
\hline UniRet90－X1KGZ5 & IIEPGEGYLARLADVKD\IDDSVA \\
\hline UniRet90＿V7EDV1 & FVGPDAG \\
\hline UniRef90 U4V1H7 & VVGNPGDMACपE！TDA乌AAHFAPRPपD \\
\hline UniRef90－IOAFL8
UniRef90
B5Y & PTDSGYLACDASTNKDFESVV \\
\hline UniRef90＿UPIO00344CABC &  \\
\hline UniRef90－Q0FD33 & FSGPDEG \\
\hline UniReef90－UPI0001C395B6 & \\
\hline UniRef90－EOMM41
UniRef90－UPI00047744C1 & FTGPADGEMARMSEVMD\｜VTE AERVLD \\
\hline UniRei90－O8D2F2 & FWGPDYG \\
\hline UniRef90－E8QS43 & 1 LDTQNALLAC \\
\hline UniRet90－D1AY29 & \｜VQPATGSLACGDGLGKLVD\｜IVDK■ MFN【E \\
\hline UniRef90 A5CW16 & \\
\hline UniRef90＿101DD5
UniRef90 B4SFT8 & TVGPESGWQARMAEPEA】RDAVLGRL \\
\hline UniRef90－Tolz86 & LLEPDDG \\
\hline UniRef90－W8RNW3 & VVGPNEGAMARMAEMPE \(\backslash\) VA \(\square\) ERA \(\square\) \\
\hline UniRef90－F1T696 & VVDPASG \\
\hline UniRef90－K2L845 & RVGPAAGDLACGET \\
\hline UniRef90－O2CE07
UniRet90 \({ }^{\text {B6WVH2 }}\) & QVGPNEGGMARLLAEPLEIVDA】AA \\
\hline UniRef90－M5S0L8 & FVGPESGWLCRIVRGEGRMADT\VAAADQQL \\
\hline UniRef90－UPIO00299FCAC & VMPPASGRLTG ADTGAGRLPDPSD■ \\
\hline UniRef90－E8RGZ0
UniRef90 G6EZ92 & VQPGSGALACG \\
\hline UniRef90－G6EZ22
UniRef90 UPIO003636184 &  \\
\hline UniRef90－UPIO00381AL & VIEPREEGKAK \\
\hline UniRef90－UP1000421B6A8 & \(\checkmark V G P N Q G\) \\
\hline UniRef90 D2QWI4 & MIGPESGWLSCRQS \\
\hline UniRet90－E8N996 & FVPPVSEGKAKMPSPETVVAMV RTLLAFGGRQPL \\
\hline UniRef90－UPI0004697C0B & VVGPNDG \\
\hline UniRef90－U1KS87 & I WGPGKGEQACG DVGAGRMDEP配岛 \\
\hline UniRet90＿10EP43 & 1 LETQNALL \\
\hline UniRef90－Q1NU16 & VVEPETGSLAC \\
\hline UniRee90－UP10001744DF2 &  \\
\hline UniRef90－E4UBT4 & FVGPENGAMARMSESCDIIKHVAG \\
\hline UniRef90－M0MIL2 &  \\
\hline UniRef90－Q1YFJ6 & GVGPNAG \({ }_{\text {Gl }}\) \\
\hline UniRef90－G2MGW1 & VDPRLEEGKAKDATEAADV TSVARA \\
\hline UniRef90－M1GD19 & \(V\) DEPEQGRVACG DEGQGRLADLRD【 \\
\hline UniRet90－H6Q4R3 & CWGPEYG \\
\hline UniRef90－D7E8N5 & VVGPADGRDT \\
\hline UniRef90＿UPIO0036BA0F4
UniRef90 C6XRV3 &  \\
\hline UniRef90－Q7M7V6 & V \EPSTKELACLEEPQEIVEQVTRHLL \\
\hline UniRef90－K7Z517 & I VWPNKGYMACGE HGFGRMAEADD■ \\
\hline UniRef90＿UP10002D4E98B & V EPASGRLTGQDS \\
\hline UniRet90－K2H2888 & VMEP \\
\hline UniRef90－KAUMA2 & VAGAGVGLLARMAEPEED \\
\hline UniRef90－17LQX0 & VISPELGFLA \\
\hline UniRef90－S9SE76 & FVGPNEG \\
\hline UniRef90－M4B6W6 & MVPPVEKKLAGLDATVDSIV \\
\hline UniRef90－TOS1V5
UniRef90－Q9UTIT & FIPPAAGKLAKAPSUDKVIN \\
\hline UniRef90－16Z2L5 & \(V \mathrm{LEPASGRLTGADT}\) \\
\hline UniRef90－UPI00047B4FCC & FIGPAEG \\
\hline UniRet90－V7Z3P0 & VLTPATGMLA \\
\hline UniRef90－F4G1M3 & VIEPDVGDLAHYPDLDLI VIDFEV \\
\hline UniRef90－UP1000380A5B9 & FVGPEEG \\
\hline UniRet90－D5EA41 & LVGPREE \\
\hline UniRef90－MOBC48 & FVDPREEGKAKI ATEEAIV \\
\hline UniRet90＿C7NSU3 & DPREESKAKIASEESUVL \\
\hline UniRef90 UPIo00441B23A & \\
\hline UniRef90K＿KYV99
UniRef90－O27284 & VIPPVSKLLAGLLAAMD \\
\hline UniRef90－D5AMT2 & 比 \\
\hline
\end{tabular}

UniRef90_UP1000225FD22 UniRef90-E0TF82
UniRef90-K0IE45 UniRef90-C6XFE2 UniRef90-TODIY3 UniRef90-H2UGD9 UniRef90-UPIO00288F3D4 UniRef90-W1EAN5 UniRef90_B5IPY9 UniRef90_G213Q3
UniRef90 W5YE60 UniRef90-W6KEE3 UniRef90-G4VHC6 UniRef90-Q5DHV8 UniRef90-U1QNC5 UniRef90-MOTWR9 UniRef90-UPI00038402F9 UniRef90 E9IWF7 UniRef90-UPIO0047148AD UniRef90-EOXYA5 UniRef90-V4RGG0 UniRef90_Q46HE2 UniRef90-F3SDU4 UniRef90-X1QH46
UniRef90-G7L1E4 UniRef90-F0T8L4 UniRef90-D3E0B5 UniRef90_A5DIZ7
UniRef90_G8ZQH5 UniRef90-U6HUW8 UniRef90_UPIO0035FAFA2 UniRef90_UPI0003679A8F UniRef90_C9ZQW5 UniRef90-AORNZ4
UniRef90 M4EOH5 UniRef90_G3AJ13 UniRef90_U1LNX3
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UniRef90_UPI0003AB993E UniRef90-TOMOH9 UniRef90_T2JGG6 UniRef90_M3K0X7
UniRef90 C1BIY1 UniRef90_Q69K55 UniRef90-KOKN66 UniRef90-E5GBX2
UniRef90-EOUH48 UniRef90-UPIO0037555E6 UniRef90-K7MU20 UniRef90-B7PZI2 UniRef90_R9XD94 UniRef90-V5V6R5 UniRef90-UPI000381B6E4 UniRef90_X8IZ77
UniRef90-L1JCB1
UniRef90 J7SBJ8 UniRef90_K5WUW3 UniRef90_Q5WC20 UniRef90-W1P866 UniRef90-B6AAE1 UniRef90_UPI00037F23FC UniRef90_C8PLE4 UniRef90_A0A044UKV4 UniRef90_Q3SA87 UniRef90_R5T3LO UniRef90-M2R6E9
UniRef90 B0R3N8 UniRef90-H2AM63 UniRef90-A3MU80 UniRef90_UPI0003739FF0 UniRef90-T1YTW2 UniRef90_U1SL28 UniRef90_17KIY2
UniRef90-H1V107 UniRef90_A4WHF1 UniRef90-R6NBP8 UniRef90-UPIO003615833 UniRef90_XORKI3 UniRef90_UPIO003B43D52
UniRef90_K4F5D4 UniRef90-K4E5D4 UniRef90-V4JI78 UniRef90-TOZOM3
UniRef90_E6ZUQ2
UniRef90_R4UGD7

1
Q G R 10 10 30 30
VGVVTK K LGGKKiVLCIGGGVAAYRAIDLARLLMRHGAAVVHAVLTQ LSGKKI ALIMCGSVAVYKSLDLIRRLRERGAVVIPVMTK KI LVGVCGSVSAYKSIEFVRGLVKKGHEVKVIDTG

 LA GRRILVGISGSI AAVKLPLLVSALVQQGAEVRCVLTP
 MFDGKQILLVVAGGI AAYKSLELVRGLKAGGARVRCLLTR MNEDKKLILGVTGSVAAlKIPCLVEKLLEITGFEVRLVVTD
 MLDGVHVALGVCGSiAAVKTVELAHELRRQGAEVRAVMTS KPRILLAVSGSVAAI KFEILCRSFLE WAEVRAVVTK
 SSRKRILVGCTGSVATIKLPQLVEMLRQNNLEVRVVVTE A A YKSLEL I RLLRKRDLAVECVLTE
 LS GKKILVAVTGSTAAVKAPILVSRLDKAGAEVKCVITA RSVLLVVCGGi A A YKALELARRLREHGMRVRPVLTA MLADKTIVLGITGSIAAYKAADIASRLTKEGAKVEVVMTE RKPRIVLGACGSVAAMKFGLVLRALSE WAEVKAVVTK I VLCVTGSIAA TECVKLARELKRQGFDVKCFMSE GKDHILLAVCGSVVATVETVKLAREFKRQGHSVKAFMTG KKFHILI GATGSVATI KVPLI I DKLYK \(\square Y G R I Q L I V T K\) NGSNVLLGVTGSVAA K K AVELVSCLMQSNFNVKVVATT \(R I L L I I G G G I A A Y K A L E T I R R L K D R G Y A V T P V D T R\) NVLL GVTGSVAAVKVPELANLI RAAGHDLKVVTTA MEKEKKILLLVTGSIAAVKVGLLLDQLVDEACSVRI AATK KNKDILLAVCGSVSFYKAYEV L S LLKKEGANVRVMLSD GKFHILLACTGSVATIKMPQIIDKLFQNKDSI QLVLTK GKYHLLVGISGSVACIKLKELI VELHKRCPPI RVVTTE LARRRILLVI GGGI AAYKALDLIRRLRERGASVCPVLTA GKTIVVCLTGSVSVYKAVDIARYLDRYGANVDPVMSN \(M L Q G V N V A L G V S G S I A A V K V V E I A H E L R R H G A S V R G V M S S\) KPRVLLAAS GS VAAMVKESLCRSFSE WAEVRAVVTK SSSQRILLVVGGGIAAVKLLLEVRALIRRRGAGVRVVMTP \(K 11\) Y GV RKFHVLVGVT GSVA A LKKLPDLVSKLLDP GLDEVAVVTTE MLS GKKVIVASSASIS I YRIPDLI RDLKREGASVISAMSP GKFHILLACTGSVATDKVPLIIDDKLFQSKMSIVQVVTK GKYHVLVGVTGSVAALKLPVLVSQLFEPEVDVRVVTTE KPRVLLAASGSVAAI KFESLCRSFSE WAEVRAVATK NK DHILI GATGSVATIKVPLIDDKDCKSKDSIQQVVTK LQGPR LLAASGSVASIKFGNLYHSFAE WADVRAVATR \(M\) S GGKRIALLI TGGI AA AKTPFIARALRREGADVVAFTSS TRKPRILLGACGSVGAVKFGKVCRKLLTE WY WETVVVFSTD \(R P D N V L I G C T G S V A S V K V P L L C K L L T E A D D Q L K L V A T K\) K PYRVLI GCTGSVASVKI PKLVDELIAKCLEI QILSTE MTSPRTVLVGVGGGI AAYKICDVISTQVKAGWQVSAILSE MSE HVLLIATGSVATBKVPLIVQKLLTYDKKVEVVATD RILLGLS GSVAAIKAKELVEGLGGAERRVRVVVTG KKFHILI GATGSVATI K DPMI I DKLIFKEKVSI QLIVTK HVVLITTGSVASI KAPLIVRELLTENVKVEVVATK
KNILVGIS GSI SVI NMPSYLAFFKHTYGHVKVI DTE \(\square R K P R I L L A A S G S V V A B C L K F C H R L C E W A E V R A V A T K\) NLLVGlS GSVAAIKTED\|IKLL M L NP TVLVIVGGSMAAVKAPSVLRRLRERGAQVQVIATR MS KKKVLLAVCGSISFYKAFEILSALKKSNFDVYVALSD GKFHLLI GIVGSVAS KKLPELITELYKNSPEIVVVATD \(\square G G K K I A L A V T G S D A A V E A V K V A R E L I R Y G A E V Y P Y M T H\) MNETISIGFAITGSFCTFKTLTLLSELVKQGYEVQPIFSN \(H V V L I T T G S V A S D K A P L I V E L L S Y E N V A V Q V V A T K\) \(M \square S G V N V A V G V T G S I A A V K V V E F V H E L R R R G A C V R A V M T E\)

KKFHI LLGATGSVATIKIPLIIDKLFKEK \(\mathbb{C}\) SI QLIVTK LLKGRRVVLLVSSGVSLYKSIDLARLLIRHGADVHVFMTP
 \(N \square T L A \square T\) GS \(\square\) SAYK A ASDVREAMRAGHDVARVAATP GKKHLLI ACSGSVATDKLQNIILALARHDDSIRVILTA

 GRPRVLVIVGGSVAAVKAPAVLRRLRERGADVQVIATR TPVNVLILVTGSIAAVKVGLLLDQLFNESYQVRIAATK K LLLGUS GGIAAYKTPDLI RRLRERNAEVEVVMTR
\(R P L H V V L A S T G S V A S V K M P L I V E E L L K A N V R V Q V I A T D\) K II L ILLT S S|l A A P K G L A L Y Q K L
\begin{tabular}{|c|c|}
\hline & \[
80
\] \\
\hline UniRef90_UPI000225FD22 & A G A E F V T P L T L S Al| A E A P C H T E|L|F D|LTTR E S E M G H \\
\hline UniRef90-E0TF82 & GGEAFVTPLSVGGLTGK】CYTDLF DLLTAEAEMGH \\
\hline UniRef90-KOIE45 & STASTLL L L L EMMKWAT GNDVVTKLT G \\
\hline UniRef90_C6XFE2 &  \\
\hline UniRef90-T0DIY3 &  \\
\hline UniRef90-H2UGD9 &  \\
\hline UniRef90_UPI000288F3D4 & E GLR Y VAREALE WCS Q P PV \(\square\) VEGFTS D \\
\hline UniRef90_W1EAN & A A K A FIT P L S L Q AVS GYPVS DS L L D P P \\
\hline UniRef90_B5IPY9 & S A A RLV SPQSLACLSRTPCHLEADQWSHREPRPLHDA \\
\hline UniRef90_G2I3Q3 & A GARFVTPMALQALCGERVS S D L F S LTEESEM GH\|A \\
\hline UniRef90-W5YE60 & A G GRFVTPMSIQALS GERVFS DLFS L L D \\
\hline UniRef90-W6KEE3 & GGEQFVTPLDSLAALS GEKVYQDLFS LT \\
\hline UniRef90-G4VHC6 & NSLNFFSVDTVV SVIPVYKDIDEWTSWKKRGDPV \\
\hline UniRef90_Q5DHV8 & NSLLNFFS \\
\hline UniRef90-D5UAN0 & N A Q NMVGLLKSLETMS GNKVIT D L W \\
\hline UniRef90_U1QNC5 &  \\
\hline UniRef90_M0TWR9 & SSLHFL D \(\quad\) L ASFPRDVILY T D D DEWSSWKKIGGD \\
\hline UniRef90_UPI00038402F9 & RAKHF YSPRDVPVTLYS \\
\hline UniRef90_E9IWF7 & RAKHFLLK DVKLPP EVVQILSDTVEWAAWQDRGDPVLDH \\
\hline UniRef90-UPI00047148AD & S A T HFVTPLSVQGLS GAPVHTALLSLAEDSQMD \\
\hline UniRef90-E0XYA5 &  \\
\hline UniRef90_V4RGG0 &  \\
\hline UniRef90-Q46HE2 & SATNLVSPLSLSTLLSRNKCYQDKDQWADSQTKP \\
\hline UniRef90-F3SDU4 & A GARFVT \({ }^{\text {P }}\) \\
\hline UniRef90-X1QH46 & A A T WFI A P LT LG S \(\square\) T GRAVVT D M F D P \\
\hline UniRef90_G7L1E4 & TALLQFLANEKAESM, FEVIFCDDHDWKNRK \\
\hline UniRef90_F0T8L4 & DACNIIHP NAMEFATGQKVVTELT G \\
\hline UniRef90_D3E0B5 & EATKIIHP NALLEFATGQEVVLELT G \\
\hline UniRef90-A5DIZ7 &  \\
\hline UniRef90-G8ZQH5 & PAEHFLLR GLKM STDVKDWREEDEWYGFKKMGDPVLH \\
\hline UniRef90_U6HUW8 & SACRFFEK S QVGVPVYTDADE Y A CWKNRGDPVFHVQ \\
\hline UniRef90_UPI00035FAFA2 & A GAEFVTPGSVSALAGQKVFTDLI D \\
\hline UniRef90-UPI0003679A8F & S G L Y F FDPELDDPSRVR NPELVTTDADEWPGKDEGERYRRG \\
\hline UniRef90 \({ }^{-}\)C9ZQW5 & SAFHF\| TRAQHSRKG\|QLNR\|LTDEDEWKEWQGM \\
\hline UniRef90-A0RNZ4 & GALK F TNLISSFEALCDKKVLSS V S ENWQS GLD HITS Y S K \\
\hline UniRef90-M4E0H5 & S SLPFLL D RLLS LP REVTLYYTDEDEWSS WN \\
\hline UniRef90_G3AJ13 &  \\
\hline UniRef90_U1LNX3 & A A H FVNENTL GQPLYM D D D E W M WNNRGDPV \\
\hline UniRef90_19LG72 & GA QEFVTPLAAAALAGERAHTDLFDR \\
\hline UniRef90_UPI0004773268 & DASRLI SPYLMEFATGNKVV KK T G K \\
\hline UniRef90_V4XSV2 & A ATGIVHP WAVDFATDEPVITEITG \\
\hline UniRef90-11H018 & S SLHFID R S SLPS DVVLY T D D D E W S WKK IG DEVLH \\
\hline UniRef90_UPI0002003124 & SAA QLVS PVVALASLSRERCYLDADQWCHTA \\
\hline UniRef90_B2IKJ8 & A ARQFVTPLSFASLSG \\
\hline UniRef90_14B0J7 & TAA GWINPVVFGALS ENRVVVDDDYRSSLSQDAMQ \\
\hline UniRef90_UPI0003AB993E &  \\
\hline UniRef90-T0M0H9 &  \\
\hline UniRef90-T2JGG6 & T A QRFITPLTVATLS R H Q A Y T DQ \\
\hline UniRef90-M3K0X7 & CAS HFWRDEDEWANFSDNYFPSTTVCSTDPTTDSGLNVIN \\
\hline UniRef90-C1BIY1 & HARHFYNPE EVAVTVYS DKDEWELDWTQRSDPV \\
\hline UniRef90_Q69K55 & A S LHFI D R T S LP SNi I L Y T D D D W S Wh \(\square\) G DEV \\
\hline UniRef90_K0KN66 &  \\
\hline UniRef90-E5GBX2 & A SLHFI DRASLP K D AVLY T DEDEWT G WN \\
\hline UniRef90-E0UH48 & E A L R Y V T \(\square\) D S L E WS T T H P V V T K LT S \\
\hline UniRef90_UPI00037555E6 & E GLK Y I S EE FHTKNEDFHSWD \\
\hline UniRef90-K7MU20 & S S L C Fid E Q T F P K VVVFCDKHEWLT WK K L G P VM \\
\hline UniRef90-B7PZI2 &  \\
\hline UniRef90-T1IWE8 & HSLHFFDPSTL P VRLYRDKDEWDTWKTMKDPVL \\
\hline UniRef90_R9XD94 & RAEHFLKK GLKTSKDVKLWRDEDEWFGFKRDGDPVLH \\
\hline UniRef90-V5V6R5 & T A S QFIT PLTLLSTLCRRSVLT DA D F WHPQAPRPL \\
\hline UniRef90-UPI0003811 & FS TNEGLKKV S Q F Q NE NTIYS \\
\hline UniRef90-X8IZ77 & A A L K F \(\square\) SPD Q I E A VGS RVWT D S G D WS T W \\
\hline UniRef90-L1JCB1 & RATSFFDVDEVCTATGVKVYT DEDEWGAWKQRGDPVR \\
\hline UniRef90-J7SBJ8 & P A EHF L N GLR M S SEVVK \\
\hline UniRef90-K5WUW3 & P S LT F F NREDIESSCGVHVWTDEDEWSDSYR\GDPIL \\
\hline UniRef90_Q5WC20 &  \\
\hline UniRef90-W1P866 &  \\
\hline UniRef90_B6AAE1 & SAKK L N IEITT K I VVTK S S THFFNSTYMNSDEEELNWKS \\
\hline UniRef90_UPI00037F23FC & A A LEF F T PLSLLSTAADTAVAT DET WFESRPDAQHLTL \\
\hline UniRef90-C8PLE4 & GVQEFVSYKAFEALCDHPVLCKA NENWQAGDNHIAY \\
\hline UniRef90_A0A044UKV &  \\
\hline UniRef90_Q3SA87 & SAGKFIGKKDALLFATG \\
\hline UniRef90_R5T3L0 &  \\
\hline UniRef90-M2R6E9 & AS LSFFDAHAVEQAGATLWRDEDEWAEDGGYRRGDP L L H \\
\hline UniRef90-B0R3N8 & SAQG IIHP WAVEFATENPVVTEIT G \\
\hline UniRef90-H2AM63 & P A E HFL N G L K \(\square\) S S K VK \(\square\) WREED S \(\square\) S D C N GEL ML \\
\hline UniRef90-A3MU80 & KAARLVVSSLFF HWATGNKPVVELT G \\
\hline UniRef90_UPI0003739FF0 & R A L E FVTP L L SLAVA A GSEVATEEA WF R P E G \\
\hline UniRef90_T1YTW2 & S AFYFL Q H A Q P S K G \(\square\) PF Q S L S DEAEWS GSSE FFAS G \\
\hline UniRef90_U1SL28 & A S L N FVGPSTWA GLT GAPAVVDVFGA \\
\hline UniRef90-17KIY2 & A A Q F I TP LT LQVLSKHPVHTNVMAEDKADS \\
\hline UniRef90-H1V107 & SASEFLNGSTLLEQPSLLAAVRALPNVEALLHLDADEWVQPWR \\
\hline UniRef90-A4WHF1 & KAARLVSPHMFQ \\
\hline UniRef90-R6NBP8 &  \\
\hline UniRef90_UPI0003615833 & QA Q D LVTPRMDETVTGHRPVTG \\
\hline UniRef90-X0RKI3 & A AKRFVAPLTFRALSSGRPVHS DLVW \\
\hline UniRef90-UPI0003B43D52 & A ALAFII TELSSLATAAGTAATTDATWFA A GPDAQHLTL \\
\hline UniRef90-K4E5D4 & SAFHFLNRAQKPARELPDLHH ILTTDEDEWREWQGMND \\
\hline UniRef90_V4JI78 & A A ESFVTP LS LQ A VCGRSVR S A L L D P Q \\
\hline UniRef90_T0Z0M3 & V Q F A T GRPP \(\mathrm{D}^{\text {T R L L T G }}\) \\
\hline UniRef90-E6ZUQ2 & NS L H F V \(\quad\) A QLNQTYSPAGAAHDEYTVAACTSVPRAHLWT N \\
\hline & \\
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\end{tabular}


UniRef90_UP1000225FD22 UniRef90-EOTF82
UniRef90-K0IE45 UniRef90-K0IE45
UniRef90 C6XFE2 UniRef90-TODIY3 UniRef90-H2UGD9 UniRef90_UPI000288F3D4 UniRef90-W1EAN5 UniRef90_B5IPY9 UniRef90-G213Q3 UniRef90-W5YE60 UniRef90-G4VHC6 UniRef90-Q5DHV8 UniRef90-D5UANO UniRef90-U1QNC5 UniRef90-MOTWR9 UniRef90-UPI00038402F9 UniRef90-E9IWF7 UniRef90-UPIO0047148AD UniRef90-EOXYA5 UniRef90-V4RGG0 UniRef90_Q46HE2 UniRef90-F3SDU4 UniRef90-X1QH46 UniRef90-G7L1E4 UniRef90-FOT8L4 UniRef90_D3E0B5 UniRef90_A5DIZ7 UniRef90_G8ZQH5 UniRef90-U6HUW8 UniRef90_UPI00035FAFA2 UniRef90-UPI0003679A8F UniRef90-C9ZQW5 UniRef90-A0RNZ4 UniRef90-M4EOH5 UniRef90_G3AJ13 UniRef90_U1LNX3 UniRef90_I9LG72 UniRef90-UPIO004773268 UniRef90-V4XSV2 UniRef90-11H018 UniRef90-UPIO002003124 UniRef90-B2IKJ8 UniRef90_-14B0J7 UniRef90_UPI0003AB993E UniRef90-TOMOH9 UniRef90-T2JGG6 UniRef90-M3K0X7 UniRef90_C1BIY1 UniRef90-K0KN66 UniRef90-E5GBX2 UniRef90-EOUH48 UniRef90_UPIO0037555E6 UniRef90-K7MU20 UniRef90-B7PZI2 UniRef90_T1IWE8 UniRef90_V5V6R5 UniRef90_UPI000381B6E4 UniRef90-X8IZ77
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UniRef90_UPIO003739FF0 UniRef90-T1YTW2 UniRef90-U1SL28 UniRef90-17KIY2 UniRef90-H1V107 UniRef90_A4WHF1 UniRef90-R6NBP8 UniRef90-UPIOOO3615833 UniRef90-X0RKI3 UniRef90-UPIO003B43D52 UniRef90-K4E5D4 UniRef90-V4JI78 UniRef90-TOZOM3 UniRef90-E6ZUQ22
UniRef90-R4UGD7

ASTLLLATDKPLAAPAMNVRMWQQRNLETLENDGITR


 S

ASTLMACEAPVLAAAAMNTSMWGVQRNWEVLARF
T T LLLLATDTPVLVAPAMNVRMWQHPANDATLRARGVT TVLLATDTPVLVAPAMNVRMWTHQANVATLRARGVN ACAVLLATDKPVLLAPAMNVRMWENMENLSVLEARGFH TTGVRAWWIVNKPVYFAPAMNTLMWQHHEQUERLVDRLHW TTLVRAWWLNNKPVYFAPAMNTKMWQHPFTHEQI ERLTNK STIACAYTKDK YFAPAMNPHMWDNQKNTKYLEELNYN TTCATTAFGAGMPVVVVPAMHQPMYNHPDADDRIESWGVT
 T VAT LLLAATDKPVMIAAPAMNVRMWQHQENGRTLRERGCH
 STLLLAATDKRVLLAPAMNVRMWHHAATQRNLETLKGDGVL
 ALIVLATRAPILVAP
TS SVRAWDYE KPMFVAPSMMWRNPFTEQNFMSDEELGVT STLLIT GFGYQTPTVFVPSMHESMYRVSQNDDGLKEEGIL NTLLITAYGHDTPTVVFVPSMHDSMYDVSENVAKLKEEGUV TSIVRSWGSPKKPILVAPAMNTFMYTHPVTAKQLQ
TSVM RDWAPSTPVLVAPAMNTFMYINPMTKTH
TCI ARAWHNHQRKVIFAPAMNTSMW
TCVWRAW DSAKPAPVLANARMWEHPATQRNLATMKGDEIL TCVMRAWEVRKKPVVLCPAMNTAMWTHPVTAQQLR
 TSIVRSWQAVKKPI IVAPAMNTFMYTHQDNIITCPDFGIE T CVVRAW DPRKPLFFAPAMNSAMW
TTILLATTLP LLIAPAMNVQMWAHPATRRNRADLEGDGVR \(T L V A S I A L G K N I P V L I V P A M H E P M Y F N K E N D E R L K K Q N V E\)
 TTLLLA TDK RVLVAPAMNVRMWLHHPAMQRNMATLLADGUL AATLLAFTGKVALAPAMNPSMYAHPATQNSLKSFGYH

 TCVVRAW D DSRPLLEFCAVNTAMWQHPKQVASLKDFGYV


 TSVLRVWNPSTPPVLVAPAMNTFMYTHPKHLLMLQEDAVQQ V STVLA SQMPILVAPAMNTTMWEQP
LSTLLMFDKE DY \(\square\) APAMHEEMFMDEK DQENTLK LSDK VT VCCVLRADAPSTPTFVFPAMNTHMYEHPRHLDTVRD \(\square G Y T\) TS AARAW DFRKPMIAAPAMNTAMWHHPDTSGQI QSM
TSV \(\operatorname{SRRDTGKT} P \mathrm{~V}\) V VAPAMNTFMY DNPMTRKHLT TSLL LRALAPTTPTFVFPAMNTLMYEHPEHLRIVRDVGYT
 TNIARAW DFSKPIIVFPTMNTMMWSHPDTINRLKTFGFI SATLLSVRGPVLWVPAMNERMWLHPAVQANAETLRGWGHQ LEVLNAAFA HAKVVIAPAANPA
LSIVRAWDDRKPLYYAPAMNVAMWENP
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 TSVI RDWNDYSPI LVAPAMNTFMYMTRKHLNTLKEN TCAVAASGAKKVVVPAMNLAMWNSPQVQEAVEKLRKYAT SATLLA GARRVAWAPAMNEAMWLAPQTQAHVERLKALGHA TCIMRA WQVREKPVLLCPAMNTAMWEHPVTDTQLQQL SAVVL A VLASTAPVVIAPAMHSAMWTNPANVAELRRRGYT S A VALALP
TSVVRAWDPEKKK I LVATAMNSAMHVHPITAKQVR
LT CALAA ASRAKMVI VPAMNLDSMWEAPAVREALERLGAL
 S TFLLAIDAPLIVAPAMNVRMWRHPANCEALRSRGVR ALDATLSVRSPVLWVPAMNERMWTHQANAARVRAWGHT T CVMRSWEVKKKPVILCPSMNTAMWTHPVTAMQLK
TTLALATTAPVWLAPAMNHQMWLHPATQANVQLLSARGCV TSCASVALGGGVPILVAPAMHAQMAENPENLDRLRRWGUV TSFMRA LGRDTPTVLFPAMNTLMWLHP

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FIVGPEPGRMAEPEATLEADRAALGR
FVGPEEGDMARMAEPEDIAAAIEG
VEPTMEEGKAKVAEPRQVLDAAVA
FIGPESG
\(\square\) YP PAS GELDAC
E！\({ }^{1}\)
LI P P H

FVGPESGLMACNES
CVGPES GLMAGPGRDAQME T \(\quad\) LLAA \(\square L H A L S P D R P L A G R\)
\(R \vee G P G T G\)
\(1 \mathrm{DPDVQKTLICGMAEVSD!VNHL}\)
I YPI QK TLI CGDTGI GAMADDIVNSLKDELN
IIEPESGMACHDTGVGRLADFIIKKI
FV D PR
LI P P
EIPCVCGDQA \(\square\) PAAKEP HLVMRLLEVLGHEH
FAGPDEG
II GPATGRLARMAEPAVIVQHV
FTGPNEG
LLEPSAGLLAC
FVGPEHGLMACNET
LIPPVQHMQTNMREMAD
FLEPREEGKAKFPD \(\quad\) NDDVLQ
FLNPRDEGKAKFPAI GDIVD

TVGPNEG
HVP
\(\square \mathrm{CEPDSGA} \square A D P K \| I V E M A K R V L G K\)
LIP P
VekvLVCGD】GMGGMREW
LVGPNAGKMARMAEPKEDADAL ERMLEEAGAEAPG
FINPREEGKAK】AT EKE \(\square\) YFKVSE』L
FADPR
LIPP
LLGPAEGLLACD RQGSGRMADLLVLALESLASW
RVGPEEG
DFDAADG
EIP
VVDPEYDDKAK】ADNDR\｜IDYL
SI GPGS GLL \(\square\) A
IQAPDFG \(\quad \square E \quad V L K P V E K V L V C G D \square G M G G M R E W\) EIP DF
LVPP \(\square\) TKR \(\square\) A C
1 LK P
11 P P
IMPPRDAY
FCGPRYGNL D \(L\) DGDKGLGRLDEMFD \(\square\)


\begin{tabular}{|c|c|}
\hline & \\
\hline \[
V \mathrm{VGP}
\] & \[
V G K A L J^{E}
\] \\
\hline
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MLNDNFPFLE VLKPVEKVLDCGD TGMGGMREW
IVVGP \(\square\) GKNLACGDS \(\square G A M T E W \square V Q \| V V D H F K L\)
I I PP
｜V I MPDS
IVEPDYELACGEEGLGALVNY VVDYLL
FLGPEVGGLGRMAEPEDIAAAVLA

V VE P
YFVP F
\(V\) VGP

 \(V\) F GPGYG

VIDPEEG

VAPPVKAKYPPPEEVTEVIDATAPR
YF VP F
LVEPQEG
FVGPVEGRLARMAEPEETLETLA
FLGPETGGVGRMSEPDDIADAV
LLGPGSGS QQACGE \(\quad\) GPGRMLEP \(\square D \square E R L L A P R\)
1 SGAVVEGEAKDAGPEE\｜AAAVLHRL

\section*{UniRef90 X1B8R2} UniRef90-A0A023BBY6 UniRef90-G4UDK4 UniRef90-D5GD54 UniRef90-A88ZXM3
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1
LIEGKSGll LCLITGSV|AAFEGVRLARELTKLLGVTVQTVLTT KLLVITTGSVATTKVPQVVQKLC ADYEIHLVLTE KNLLAASGSVATDKIPEIVKALARHGDR:RIILTH KKHLLLATTGSVATIKLPQLLSALSKTFSPIHLILSP RPLHVVIACTGSVASVKIPLMVERLMNANVHVFVVASA


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 GKKHLLLAASGSVATIK PVI QQALAKYAGSI RVVLTK GKLHVLLGVCGALSVIKLIKLLEVYTPERISIQLILTK
 LKDKRLGLAVVCGSHCAVKALAQVDIFIGEGATVVPI SK MLTGKK GFGITGSFCTIKEDEPMRTLVELNAKVYPIVTD KKTUGロAUTGSFCTFKMTGVIKTLTASGMRVIPIFSE
पKGDKVGLAVTGSFCTFDKDETVKVLTEDGADVYPI FS MSLKETIGVAFTGSFCTYKKAFLLQKLSNCCGSVQTVFST GKHHLLLAATGSVATMKDPNIVSALSKYDNSIRILLSD RKLRIAWGDTGAGHFIKSYSVMRQLKEEGHSI TTFMSR NGLKI GMAFTGSHCTVKSIGTVLRSLAAEGNDVLPGMS LKGKHVGLAVTGSFCTFAKIEQIRHLKETGAILHPVFSG RRHRVLVAVTGSVAALKLPELVRELRGL
NKKRHLLIGITGCISTHKNVFLIEKLFELYGETQVVLTK RGKRLLIGTGSVSVNTLPSWLQWLSHPDGEVRCVLTA GKNI GIIAMTGSYCTYKTFEAIRQLKDTGANL IPIFSF ■KGKTI GFAVTG SHCTYAEVFPEVVRLVSMDVNVIP MNKKRKIAWGITG SG EKLVETVEIMQQQQFDIRVFISK LLEGTNVLIGTSGSVAALKLPLIVEQLLTLDDEVKFVSTH GKHHVLLSASGSVAAVKVPLIARSLSHPNVSVRVVLTE GKRHLLLAASGSVATIKIPNILSALSHPNLSICVVLTK RIIVGVTGATGAPLALRLLRQLADPHIETHLILSR G \(\square\) KLLEGUTGSHCTVNEVKVMK
 KRIAWGITGSG DLIRETCDIMLDIKK MKKNVHVLVGVTGSVAALKLPLLVAGLLEDPG KLTLGLGUTGSFCTFKILRTEALVQKGDKVIPVYSR KPRIGATGSVDIVLLPRYLSAIKAADCTLTVLMTN
 GKTHLLLAASGSVATVKLPSUINALKDPNLSIVRILTK KILWADTGAGHLLKSIKTLEKLSENNQITIVTSK RI AWGITG SGDKLTVTFMEQLAKYNLDVHVYLSK MSARPHLLLSATGSVATVKLPLILSYLSTHHPNVRLILSP LK GKRIGFGLTGSHCTYEAVPQIESLVKEGAEVRPVVSY NNKI GFAVTGSFCTHSKIKIISQMCTNGYDITPIVSF KKLAWGITGGDKDPEVVEIMKKLKKYNLDVDVYLSK
LANKTVGFATTGSFCTFAKTKTLDHLTREGVNV RVI LTS Y LKGKKI GFGLTGSHCTYEAVMQI EKLVELGAEVLPVVSH HLLLAASGSVAT DKLPLIIQALHHPNLSIRVLLTP VKRLVALGVDVVPI FSN GKTHILEGATGSMAVFKTKPMVKKLVKDRISIQVVLTK KI HVLLCASGSVATILI PNMINALAKHENRIRLVETA GKLHVLFGACGSLAVFKIKSMIKKLEKDKDSIQVILTY MLKGKHI GF GLTGSHCTYEAVYQIEKLVQLGAKVSPFLTY MSKGKRIGFGLTGSHCTYDAVPEIERLVLAGAEVLPVVT MS KDTVGFALCGSFCTFRAVEQMRLLKGGGAEEVPVMSF NIGYGITGSFCTFKTRKQUVRLKEMGANVIPIFS RLLLIGTGAFGVTQLPQWVALRRWGVDVRTCVTH


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ESCR F
\(50-60\)

A AKRFI SGKEAPFACQLAGEANDYEDEDEQRWQR FAKHFL GGQSKEQPVYSSLLDYPHVEADYDDADEWG SSKNFLSPADLCEDGANPLVSRLWSDADEWAFPSGVYT AALDFFQRDQIEAMDLSSQHFSVADLAEMNRTGDHAKWTD K A AR
AAERAFAQ TG DA LLDDAAAVRKHFYATEAQLSGF
SAEHFLS GQSDEQPSVAEVRRLPNVDGIYTDSAEWTRPWT GAVQLIPAET
S S L S FVKKP S LPQNK
PSLAFYSTED TTKAGSRVWTDADEWRGGYT】GDP【L
SALQFVGAATFEALSGEPARTGVFDDVPE
NASK TDSRFGNHKEFLN DAKELSNKEPDTTDT
HAMRFD DRAR DPSHVALYTDDEEWKEWNKLGDK
A ALQFVTPLSLATAADSDVATB
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SSENFTSPE
SATHFLQQSAEQPTVSITHLETVKKIRIWRDADEWT TWK QPTVSSLLHMPNVDAVYRDRDEWGPQPWR ASEHFISQE A \(\quad\) A NHVENVKKIR DWRDDDEWSTWK
 MAQRFVTKQSDAARADYEVVT MV MVNSSSRFHDRDEFDGEDKS DT GNDVIYDD \(K\) GLDF \(\square P Q P L \quad R P L V R K D S Q E W A A W K Q R G D P V\)
AAA STDSRFGSAESFYRRAEEDTGNKPMMTID
SAANFLQQAAEQPHLED VVAMKNVDA IYFDNDEWRKPWVR
AGEEV

 R QVWKKKSDP
SAEWFLTEQLGVKVWFHNDGDKQYLTSDDYSKSGKMNPAA SAERFVSRYTVSAVVGQAVAVD
NAA STDSRFGTHDDFDQLARDLTGKEPILTD
 A GDQVLKYYNLSNTLETK DRQQVDKTWTEDNSNAPFLAG HSLHFF DTRFGRAEDLRLKLDGDTGNKVI

AA LDHFFRARTFGVHELAALNCAAGESADSVVAPRAKVWRD
SATNFLQQSTEQPHDDTFHRYANVQGVFLDEEEWVHPW
WGKVTLEHETNCSLNE LKQLADVFH
TA YTTDTRFGDAVDIQNRLIADTGNSDIHTDAQ
SVE SNAFEKF SMDTRFGKAEDWKLQFRQDTQKEDIDTD YVATNVAFEKFLNNFKEKVLLDKDEWLWKDRGDD【L TARRFVSSEALAALLGAAVEVDSWDGAPEDGS
 LWK CRSDPVL
H A
A \(\quad \square \mathrm{P}\)
\(F\) L P

A V D

A A KEVLKK L Y G YTKNDEEIIEKNKENQLITD

\begin{tabular}{ll|llllllllllllll} 
T & A & L & T & \(F\) & \(L\) & \(S\) & \(Q\) & \(S\) & \(A\) & \(E\) & \(Q\) & \(P\) & \(T\) & \(P\) & \(A\) \\
\(S\) & \(T\) & \(L\) & \(L\) \\
\(A\) & \(A\) & \(F\) & \(I\) & \(D\) & \(T\) & \(D\) & \(A\) & \(L\) & \(E\) & \(K\) & \(Q\) & \(T\) & \(G\) & \(R\) & \(S\) \\
\(V\)
\end{tabular}
\(T V Q N \quad T N T R F G E G A D W \square E R \square E K L T G F Q A \square D S \square V K\)
NTA
NAK K VVK WY

NA
SARRRVGAEADVADLGREVEDLDDW
NA \(\quad Y\) T T D C R F GK S S D F V K F V VE T T T N K S VVT \(\square A E\)
TVEHT T T RFGKGEDWVKRIEEDTGNKAINSII
SARRFLAGQSAEQPTVSSLYDHSCVDAVYFDEDEWKEPWK
 S A E K F L N K K VVVK K V K P H P E S N E D P L D V V T N I P G G T D N WR D
 FTVKS TETRFGKGEDWVQRDEDLDTGNKVI



QATQFIPAETLRLLWADRVIADENPADWPTDKPSKIVADH S V D S T
N S
S V D



SAEYILSEKLFLLTSPFQKYYTQAVTTGNLPAFKKQFHSQN


TVMNVDTKFGKAK DHIAAR ES DT GK KVI STM



UniRef90 X1B8R2 UniRef90-A0A023BBY6 UniRef90_G4UDK4 UniRef90-D5GD54 UniRef90-A8QDC0 UniRef90_Q8ZXM3 UniRef90_C4GGM8 UniRef90-E9F718 UniRef90_D5E4G2 UniRef90-V4JYS7 UniRef90-D8PXU8
UniRef90- \(\mathrm{X} 7 \times \mathrm{Gl7}\) UniRef90-R5YMQ7 UniRef90-W1P789 UniRef90-E8UC74 UniRef90-A2QHK1 UniRef90-R5JJ67 UniRef90-A3LPZ1
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UniRef90-R5QCY3
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TNSAAQAMKADVPVYIFPVD
LSVARAWIDEERPI ILCPAMNTAMWNHPSHMAKL



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TSVVRAWDAR
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VI K P V S
FLGPVEG


\(\mathrm{Y} M \mathrm{~V} P \mathrm{~F}\)
VIEPAEGF
YF VP F

\(Y F V P F\)

VA PPTTGF
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F LVPF GQDAPHVKS \(\square\) MRLIPETCEAALEKRQLQPVLIERW


YFVPFGMDYMKPKSM
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YFVPMDNFNKKPKSMDKVCDT I
I

VIEPHENF DAS \(\square\) QKMVGH
\(\mathrm{F} F \mathrm{~V}\)
F LV P
P

LIGPEGF
F FI P F GQDFKKPTSMMDLLTKTVEEADEHRQ】Q
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\(Y\) & \(F\) \\
\(V\) & \(P F\)
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\(1 V V C A A G A\) APDVGTLVSLAQEEGWTVQI ATP GVAGGVG KLISAAQERNWDVGVVATP
GKTVGFALTGSHCTFEEVMQUQRFVDLGAKVIPIASN
EFHI RVVVTE
SGSSSEPRRPPCLRLLVAANGSRDVAFAE LS GAPAPEGASELVRAFQNQDWRVTVLSTP
KR TA WG TT GS GDLIKYETMVDIKNKTDLETMVFLSK KPRLA WAI TGSGHYIK ECLD FLLRLDH VDLYISQ KPPRWAWALT G SGHYFS \(\square E \| I\) RELQ LI VVVCAAGASGVSK LI TAAQERGWAVGVFATP M \(\square E A R T L Y L F C S A A P P V F D V A R V I E D A Q A R G W D V C L G L T P\) GTAAPPVRELAELLHEAGWEVCVVVLS P


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QGLGFLDVEAVENQDGRPIRSA IFSEHAANDDTRFGKAADHDAAWEQ LCGNPA DCSDAD A GEEVLKM Y G L Y DRVKKFTGGYYKELVREK SFEMVPILSENTARYDTRFGLADDLIARVERAAGRPADRT \(T V Q N V D S R F G T A E H L Q V L E D K T G H T P V S S V V E A E K F G\) CVAETDTRFGKAHDLMREMERDCDCRVISTDQ TDMTTDTRFGTSEEWQRQLKGUT GNEIIST I AAEEVLRMYGLLERVKRLSGGYYRELITEEDQEGYSFPDTG VVDGT

DTKYGPAQKWKDLLGK \(\square\) TGRAP \(\square\) NS \(\square T\) TATRFDPPHTVALFADRVVTGESADTWPRDN SAREFLKGQSDEQPSQQISRLQNVDGQYFDSDEWATPWTR VA DEGADLYPDISASVDESDTRFGASASWKERDME AATA WVDDPA L QQTTGHPVRSEPRGPQEPKSLP \(\square A L R F I D A E A V E A Q T G Y P I R S A\) T \(\square \mathrm{MT}\) TDTRFGTSAEWQKQ DKE \(\square \mathrm{T}\) GNEMDST \(\square\)
SAVTFDDSSALEKQTGRPVRST
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\(E G E T V M K W Y H M W N D Q R ~\) AGEEVLRMYGYDLKNDRELMPDYRDKAASAPPVGLFYAG AADEVLRM YK Y K K K EPLPAQTQVFRDNSASSASVGRFY VA L TAASWVEVDVLADRTGHPVRVRPRLPSERDPDP


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