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 GQRLLFSQNCSQCHGSDARGQRGPNLTNDDWLYTPA KI T VT GE QVY T QVCQA CHMADAK GGTGPALASNPRLAAAA YP I GGATFKVNCVQCHGSGAQGSKGPNLNDDDWLWKAD QUQ GK A L F K T H CVVSCHALE Q D G $\square$ G P K L G G $\square$ TRRLLS E S E L 1 GA Q I F G D NCAA CH GP Q GK G G GAPN L S D A I WL R GSE R L Q NGMALFRTNCAMCHNAVGAGGAGGKFAPNLWETTXTMHLY
 NGKQVFKANCTQCHGDNADKHLGKDALEKYNMDSMEAI A A HQLF GDNCAGCHGRLADGGPGPS LVDGAWLWDTES I M GKQQY DKVCVACHGVDATGNGAPNLTDDDWLSSHQTIV
FKGREITNANCASCHGGNNKTLEKEALAKYLKNYDTEPII GEKI F Q G N C L LACHA $\square$ NGKG G SMGPVL QY L SA WPE EALV GEDLYMTACSGCHGHHVEGKLGPALGDAYWTYPAKGFF $G Q Q F F G G S C A G C H G A E G Q G G V G P A L N Q A$ ATWSDAEFT FNGFRLHRNFCARCHGTFSEGMVGPNLAESLNRDTKDEFV GAAVFKANCAGCHAKGGNVRRGKNLKLRALHKNKEAIAA E GK QL Y Q Q Y CASCH G $\square$ D GEGQQLAPPHTGHTWKHSDAMLY
 FADNCASCHGEAGTGQGAPDLTDAVWLYTPDRI R GHKLRMD RCAGCHGTNAS GRHAPDLLTHLNSRRSPE H L M MNGKALVQSTCKTCH KESEKS DGPA YTDVAKKYS ED Y L L GQVLFNTHCTACHATDTQRAAAPVLKDIGQRMDRSQI A GGRL FASNCSVCHGSDAKGAYGPNLTEKEWRWDAAS IK

EGRQI Y EQYCAACHGWQGEGAADHDETGHTWRHSDAMLE
 GQRIFASACASCHGLDGSGRQNAALRGARSDPSGTNVV GEGI F QNMCASCHGADGKGQAGMA ADLTHYGTQEFL K
 GGELFKTNCSACHNFEGTGGADPNGKYAPTKTSDKHDY GETVVYKAQCLMCHQANGQGGAFPALAGSPLATEPAKHI G GE L L F R L N C A N C H S F T G R G G A A P E L R G V VD
 GEK FK SKCAACHADDTK MVGPAYSDVADKYAAT LV
 VQGEQV YGADCASCHQPDGSGMTFPALAGNQALMDDAHHI VQGE QVYAKACLACHGANGEGGVGKAMAGPDATGDDAAHL GEKVYMTSSCIAACHQATGA GLAAFP S L V A S P II K G P S D H L
 GRQL F LGNCASCHGANAQGNAGPSLLHV GAA SVD QTVFASNCAGCHGANAQGGIGPSLADGPKSWTDTQFS
 GAALFSANCAVCHGAGGEGGGGAPKLDTDADWLYDRAS L T GQE Y QQRCAACHGMDAKGGNVPAMTTPHQSAKP GEL F GSSAFKVNCAQCHGS GAAGSAGPNLNDDDWVWTDDQI Y
 GAAVFSANCVVCHGAS GEGAVGPKLVNADWLYSREAATT TLY A N N C SVVCHQPTRAGMVFPSLVGVVDRVGEKRVR GENVYSANCTACHNSDGKGD PNLIGLMADDSASIIT

 KI F SANCTACHAGGGNVVMNKTLKKKYKMNSAAAII






 GAALVANNCA SCH GAE GK GVVPGPPDAGDPVVNAANP TA
 E KVFA GNCA GCHGQGAS G GDGPALKKNPGNWTVEQFT

 GKARFGSTCAACHGREGEGGKTPPFKG RTDLTPETAF



|  | $5060 \quad 70$ |
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| UniRef90_K2JDM5 | E IVVHGKS GMQAFQLS L R ELAA |
| UniRef90-Q01TG0 |  |
| UniRef90-T1C9 | WKI TNGKS PMPSFQLSRKQRWQVID Y L |
| UniRef90-J4QY84 |  |
| UniRef90-F4ARE5 | $E T L T L G R A A M P A Q L M G E Q G I E E V V A$ |
| UniRef90_D5 | $M V V T S G K G A M P G F T L S N A Q M A E A$ |
| UniRef90_Q988R5 |  |
| UniRef90-UPI00047559C2 |  |
| UniRef90_UPI0001DD0D2F |  |
| UniRef90-K2F532 | VFI K Y G S G G M P S GVLND DEVDMMARY I |
| UniRef90_UPI0002F0F0D0 | E A MLT GP QSMPVFIITPDEKRDI I A F I D Q Q |
| UniRef90-D3NRE7 | E TVTNGRGVMPA WRLD D A T I K S L AVYVHNL |
| UniRef90_K9YEF7 | H QVRNGKNAMPAYRLSEEQI R DVAA A Y V L S Q |
| UniRef90-UPI0004699A0F |  |
| UniRef90_UPI0003737173 | K TIMEGRTNMPPQKLTPEQIDVLTAYV |
| UniRef90_K9ZDR5 | H QI Q NGKGAMPSFKL S D Q EMIE TAA YVFR K |
| UniRef90_G2HTW0 |  |
| UniRef90-I1XG62 | E II Y D GARAMMGPQL S $\$ D E I LKV M \\ \hline UniRef90_UPI0003479F08 & $T$ A L REGRPVMPRFQLSAQQVADVHAYVK S L |
| UniRef90-M7PU53 | ETVTNGK G M M P A WS HVPP E GMD E |
| UniRef90_UPI00034BBEB0 |  |
| UniRef90_UPI000377E523 | RII A E GRLLTMPAFVLSPMQI R L V VD Y L K L |
| UniRef90-C6M4X6 | ETIT NGRSQMPA WFLDK K K L HI M T A Y V |
| UniRef90-14EDZ9 | D Y I K K S M P G S T D D QVY SVVA Y L L K |
| UniRef90_S9S6D9 | ETITAGRGVMPAWSLSEAE!LDAVAAYV |
| UniRef90_UPI00046A |  |
| UniRef90_UPI00047EBFF2 | NKI K N G G S GMP A NPLK P A D A N A L V S Y V L S L |
| UniRef90_UPI000373AF92 | A LLE T GRGRMPSFQI T K E DRAA MI D F L L K |
| UniRef90-U2ZJJ5 | QTIA G GRT GMMPPQ |
| UniRef90_T0MJ39 |  |
| UniRef90-A4BCM2 | TSLDQGRGQMPAWKLGS T GVVA AVTEYVLEL |
| UniRef90_G6YUL1 |  |
| UniRef90_UPI0003B5B8CE | HTVVYSRGAMPNWRLSEADIRAVATYVH G L |
| UniRef90_A5E9X0 | A ILRNPLTVMPPF\LTEQEI SAIVDFLQTL |
| UniRef90_UPI00034A | $R T V L Q G T G S M P A F A Y S D S E I A A V A N Y V L E H$ |
| UniRef90_F8KSQ9 | E ILEK G K G E M P S F A F N D $\square$ QVR ALM S Y I Q S LQ |
| UniRef90_UPI0004768A82 | GIVVEGNRGMP P HP L K G EKI D ALY S |
| UniRef90_D3PF |  |
| UniRef90_UPI0003B4710D | EALRTGP QQMPK GTL K D Q DVKEEII G Y L N T L |
| UniRef90-A0P809 | LQ I DY G K G $\square$ M P A Y QLS DVE |
| UniRef90_UPI00037A4F88 | DRIKH GK G A M P AFA |
| UniRef90_W5W4E3 | TA MLTT GPENMPVFQLTPAEK |
| UniRef90_K6XK57 | K $\square \mathrm{K} V \mathrm{~V}$ G T GVVMP A M R L S D Q D $\square$ A NVI T |
| UniRef90_UPI000378D | DSVLNGSKGMPPNAVTEEEAKTLAEWILEQ |
| UniRef90_A0A023NZI2 | K T L A E GRGVMP A WQL G D T R T RLLVGA YVWT |
| UniRef90-Q1IJF1 | QWL R N G S N GMP SWS L P EQQRWQIVVT Y L R ELQ |
| UniRef90_E7AAJ7 | EVIDQGSGEMPPDGLPADDAKAVASFVMA K |
| UniRef90-W1NC63 | DTVIN G G T PMPAFTLNPVELAAVIT Y |
| UniRef90-F3LDM9 | DIVIN GSKVNPAMTL S EVVDTAAVLTY |
| UniRef90_H5Y9X7 | LSI Y Q GRP GMPA GVLPD SVI WDLVT Y |
| UniRef90-A8H9S2 | EMV 1 N GKP GMQAFQLTP Q E |
| UniRef90_19W9P9 | K TV G S Y R S M P P Q S L S NEDV |
| UniRef90-K9TWC1 | NIVTNGQGNMSAYRLTAEEI Q AVSAYVLQQ |
| UniRef90_UPI0003B3AB94 | F QVA T GRMPLPAP QFS DEEI T A L A V Y I D S L |
| UniRef90_Q1IWI8 | A ALRQGHAPMPRFQ I S D A QI A DLQAYLK T L |
| UniRef90-J3CV72 | E GI S T G H A DMP T F EL NPDQI H DLL |
| UniRef90_K6YJR7 | RKVKEPQSAMPQMPI T DEELEALAEFLSS K |
| UniRef90-N9W3X8 | ATIN QPRNGMPGERLDPVTIKMLA A Y V Y S L |
| UniRef90-UPI0003B71083 | WY I T K GANGMPSWT L E Q Q W WVVS YV |
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| UniRef90_D0L1X6 | GVI A N G Q H Q MPKFRLSPEQI RLL A V Y V R Q L |
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| UniRef90_UPI00047 | K QVTN GKNAMPAFRLNAK Q I E DVAA Y V L D Q |
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| UniRef90-UPI00047C9FEB | D I I T G Glda T M P A Q |
| UniRef90-U3HNH1 | A TVTTYGRPAMPA WNLSEREDAWLVDRLDEGK |
| UniRef90_UPI0004658 |  |
| UniRef90_UPI00035E6AAD | RFI R N GQREMPAF RLS SEEIKILTTAYV H S L |
| UniRef90-UPI0004 | EAMQTGPQNMPVFNLTPQDKADIIT A I S |
| UniRef90-A3YHN3 | QF $\quad$ R NPRSRMAGPNLSDQD\DNAID Y L V Y MK |
| UniRef90_C7M193 | FWIT TGR MPPPRLTNQQAEAlIAS Y I V S L |
| UniRef90-F2K9F2 | QTIRHGRGHMPAQNLGNDKVQLLAAYV |
| UniRef90-UPI00047CD6EB | E TVLDGRG】MPPGMGGDVAI T Q T A A Y V R A L R |
| UniRef90_C0N5T7 | E TI Y G GAR SMMGP QLS K DEI LQ |
| UniRef90_A0Z1D9 | S A T TQGVG A M P A GQL S T D EVVEALAA Y V F E |
| UniRef90-I2QVC1 | H IV $\square \mathrm{NGQAPMPAFQLSDQEIADDI} \mathrm{IN}$ |
| UniRef90-W6K673 | $A Q L N K P T G V M P A G R L S N V A I M E L A D Y V S T L$ |
| UniRef90-H8 | T T L REGRAPMPRFQVS D Q Di A NLHAYFK SL |
| UniRef90_UPI00047911D5 | MAVLEGRQGMPGFELTTDREVAELTNYVM |
| UniRef90-F2F736 | NWI YKPGNTMPDKLVTEEEAQAI A D Y L M T L |
| UniRef90-UPI00047E7013 | PY I K A G GK GMPSFSMREDELRDI A EF L |
| UniRef90-14EHE1 | DFVSNG】Q GMPAFRGS E E ERWNVL |
| UniRef90_UPI0003B6CD78 | KTISEGRRGMPPWAFSQEEDWELVAYIQALL |
| UniRef90_UPI00040A1DC7 | ELVKWGQAAMPPQQLS DEQLT IL AEWULS QK |
| UniRef90_Q87IS0 | GVVVD GRA GMQSFQLSDQEIA AV I T Y |
|  |  |

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.<br>$\qquad$<br> GT4


 GAA A Y S R R C A GCHSNDGSDK GGP TF K GLLYGSEVPDPS A D GK A L Y Q D N C GSCH GA K GQ GANGP R L V G DAS Q WPVRR LE E D

 G Q K L F Q A NCATCHEGSAEGTSAPSSLDGVGAAAVDFAV

 GARLLFANYCADCHGSDAKGSLABNLLADQHWRWDATSSIK D GYKI A Q Q TCTSCHGGELAAGGAAPSLLD SKMSAEEIA E G K R L V V G Q N C 1 G C H A V R G E G T TA P E
 GR R L F DQ S C A HC H G D D A R G G D G P D L A D A A L R D S N A R A
 $D V S E L Y A N N C A A C H G A N L E G G Q A S S L V D D T W D H T D S D L A$ GQKI Y S R WCEACHGEGMPGTNAPALLEDRTDDLSVDDLVM E GRQLFAVGCSSCHGLNGEGQDGPSLIGVGAASVDFQV D M D GAR GKR YR GACVACHELDGSGA $\square Y P$ P L P GNANLQSPAS TL GETVFENNCAVCHGTNGGGRAQDPNGRWIFPALWGD DAF GS KVVFA E NCVACHGDNAKGNGAPDLT DAIDWLYGETADIA



 V | V |  |
| :--- | :--- |
| 1 | D |

## Q <br> $D$ N E Q

 \begin{tabular}{ll|l} E GE S \& L \& F <br>
Q G K \& Y <br>
L \& Y <br>
\hline
\end{tabular} S

A
Q
K
S QCGFCHGKDAA GGTGPDL
E

E G

E EG RLVVRQDC
 E GKELYDNSCVSCHGPKAEGGRGPSLDGVGG
 GAAVFAE QCVACHGEKGEGMGAPRLNDNIWWLYDKK TVV GYTIFSTACSGCHGHLAEGKLGPALA
 GEKVYVDRCAVCHEVSGA GGAFPAMTGSVATGSDDE H I NGKELYGDYCALCHGEKGDGKGVPNYKN
 E GQE IF NKSC CGCHAVTPSNKMA PNLSDRGNRHNKE E L K



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UniRef90-D3A311 UniRef90-M7MWG4 UniRef90 14 W 128 UniRef90-E4N9X7 UniRef90-E8TTJO UniRef90-R8B010 UniRef90-A8TSZ9 UniRef90_Q46V44 UniRef90 E8PR14 UniRef90-Q124U1 UniRef90-E2XTW1
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TAMDTGPENMPKFQLTTPEEKKDVVIAYV A QVVKGPPAMPSGQLSDDETNALIEYIKTLK PVILNGRPGMPKFSLAPSQISDIADFL ETVLHGRGPMPAAVLSHQEI ADI HAWLAT Q VRGYPKAMPSFRLSDRDIDDLDAYIRSDQ RAVLSGKAAMPHWQPTQAEIKAIQHYLKQIK HVITYGKNNMSASQLNETDRWKVAEYIMILK QAI RNGVGVMPAFTLSDDDVQRLARYVA NT:TNGTGAMPAGAPSAEDLEAVSNYVLALD Q L LHGNGAMPAFKFDDAEIAALLSYI AIVTKGNPRMPPFQLSDSDVAAVVTYI TTVKNGKNNMPPWILSDDEIGNLWAFVSS EAMQTGGGQMPAFNLTDEELSATLAYYKSQ GTGRMPMPQFTDKETKQLAAYVASL DHTTGGMPMPAASLDDDVEDVLAYLHE ATILFGVERMPGFELSDTEVATLANYVLKQ GFI RNPQARMPAFTLSDADLDAVLDYL
 TSILNGRAAMPAQAIGEEGVKNVAAFV DVAKNGKGSMPAFKGTDEELQTLAEFI
 AFISSGRRSMPQFNLSDEELTAUAEFL ETLRIGMNQMPAF
A VIRTGIPEMPSFAKKAADTADLTAYDRTDR RMVLNGGYGMPPFALSNQEVAAVVSYIRS EAI YTGHPRMPEFELDPDEINDLLSYLKTL R\|VREGUPTMVPWTLSKQKIRSLVIF:REK GTGRMPPVSYSQEQUDAMAEYVASL HTILYGRTGMPPWKPLLTEQEAL WISQQ MAILEGGQGMDGFTLNDEEDAAVTNYLMQ R】I LDGSGSMPAPKLSDQEVADVATYI HAIVHGDEGMPAMQLSDDELANVMTYLLN NWINTAAGNMPGGSLTDQQAWDVAAYI NS

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 $G T V V N S K N T M P A F I L S A Q Q V E D V V A Y I L T L K$ RLVLDGGPAMPPWRLDDAQVAAVVTYI FQVSTGRMPMAANKFDADEVDAI GAYV QSMTKGINGMPSTADNDADVAAVATYIMN NMILNPGSPMANQNLTEDEARAVLEYFRTLK HSIGGGRGAMPPWRLTNDQ EAMQTGPQNMPSFPMPEEQKREIVAFVRS A TTKQGRTAMPGGVLSDDE\|VAVLSWIKAQ RIVLNGGYGMPPFALNDDDAAAVVTYI DIVVNGGTAMQAFQLSEVDLAAVITY DVI KFGKNDMPGFRLSDADLWALLAF VKS EEITNPQARMPKIALTDDEIGALMAYIRSQ RVVLYGNGVMPPFQLKDQEVADLLNHLLT RVILSGDGFMPAFRLDDTQIEALAAYMRS ALITYGSPGMPSNALTKAQI SSMATF! DQTLKPGNRMPNKQFTAEELNALADYLAGLK KALTRFRENDPAAQLSAADVEALAAYLSQLK HVVLEGSATMPPFRLSDQEVADVSNFV NTI KYGREAMPANTLTTAEIEWL VAELK A VVVAKTVMPAFILTAQQVEDVVAYLATLK ASIRDGRPGMPAFKMTDDQUWQLAGYV ATVLRGRNMMPAGTDDQQELDDLLAYLHTL RWI RDPPGAMMPGHLSDDDLSALAAYLEGL QTVAHGGREMPAFRLEPTQVREVAAYVWSL EAI RVGPFEMPEFTLTDEDAADUAAYVQEL ATI FHGRPGTPMPPWRAMLDEGEARWIAE KDVVNGKRPMPPQQLSDLEIAELATYI RWIVKPENKMPPFQFGEEELTALAAYLDSL
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 K QNCMSCHSVTRQ FMGPSLHDVAAKYAVHYLT SAACERCHGPAQEGMVGPSLIE SLKKLSKDEVR
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$\square R$
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D DREFYRERCVACHGADGSGRGGGSLDDPPGRQEEAALV QGEQDF LSACSGCHGHDGEGKDGPGLNDSYWTYTDEGLIF



UniRef90_R0EBE0








## UniRef90 Hotw51

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 SWLKRPST $\square M P S F R L S D R E A N D I T A Y L L E$ D 1 KEGKAMMPMVQLSDED DRNVAAFYAKQ RWLMDPGTAMPPMPLTQDQARDVAAYLYTL RQMTNFKQGMMSTTVSDQELLEDILLFFISEQ KHADEGLRAMPAPDLDDVEVARAVVYMANQ $\mathrm{H} \mid \mathrm{V}$


