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IT K ESTEALI AETLSVYPEKARKKRAPHIGANDQGSGS
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 IDKK】DKILQKYPPKVKKNRDKHMLTKDSEVGQ

DKVLDKYSSKIYKNRKEHVI EIIEAGE
T DKKLEDLLATYPD\｜VRKNRKKHULIXNSGEA C C TEEDKKELIAKMPTKVARKRAKAM IPGSETGEAI MSSLSATVQEVLNEPG

CAKNANKTQEQ
】PERKKHVY K K K E D P E E D
E EFKTEEVLEKYSSKVAKKRSKQUIVNKVENKEDVV SKVDSVGLDKYSAKVYKNRKKHMLDNE ETEQET PDEVRQELI KKYPPKVARKRAKQQQVNTGAEESTP MTPAE VKEE GLKRYPTKVARKRDKQFLVMEGPEAMQT TEEQLEEMDSRYPDKVKKNRKKHLILKNSAEA DTVMEKYPPKVLKKRKKQFUVREADPEQS MSNDSEKVQAVFQEPCAKNRAK KNAAKSEKE MSEVSATIQNVFNEPACP KNAAKSEKE
 ETKDK】QQMLDAYPAKTMKNRRKH DFIGRSGUGEQH LNETACEHNH
HNQNKSAKE

TKAK $\quad$ NELLT Q
P E
CEHNDNKGGQG EPGCSHNG MTGERTEDVKKETLAKYPPKVARKRGKQDTPVSSEEDKGS D LS SAKEELIEDYPKKVAKKRSKA IVVADP

CDTHDA
$S K \square D S V L D K Y S A K V Y K N R K K H V L \quad E \quad$ EVEHET



LDEPACEHNK
PGKVAE
CAKNVAKGKKE

E E E $\frac{R}{1} \mathrm{I}$ VLPERAQS $\square$ RYSECSGDG
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LE ERKNQI GRVGNTH EK ILDKYSAKVFKNRKDHVVQFDNA GMP

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E E E
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## QUERY

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UniRef90_M1X2A2
UniRef90-E4T4C8
ESVSKVK 170 KT 180
180
GFRGVSQS ${ }^{190} \mathrm{~L}_{\mathrm{G}}^{\mathrm{G}} \mathrm{H} / \mathrm{T}$ A NDAV $\mathrm{R}^{200}$

 EAVARAKSAEUGKPVIPVRCEGFRGVSQSLGHHIANDAI R QAVAKVHKKETGHQTVAVSCEGFRGVSQSLGHHIANDMIR



 E SVVSKKMSKELDLPIVPVRCEGFRGIVSQSLGHHIANDAVR
 NSVAKTSAKELDLPI I PCNCEGFRGVSQSLGHHI SNDTI R EAVAREASSEI NKPVVPVRCEGFRGVSQSLGHHIANDTIR NAVAKKVAKDLDKLVVPCNCEGFRGVSQSLGHHISNDSIR ESVAREAEKEHGIKVI PARCEGYRGVSQSAGHHI ASNALMM QAVAKAAQEKHGIPILAFNCEGYKGVSQSAGHHIANNGLM
 QSIAKAAEDKYGDPIMAFNCEGYKGVSQSAGHHIANNGLM QAVARAARAKHSLNITAYSCEGYKGVSQSAGHHIANNGLM
 HAVARDAQAEFGI QVMAFDCEGYKGVSQSAGHHI ANNVLM K GVCKRAEDEDGI RVVPFNCEGFRGCSQSDGHHI ANDTLIF HAVAAEAEKMYGI KVLAFSCEGYKGVSQSGGHHI ANNGLM GAVAKAAQERHGI QVVAFNCEGYKGVSQSAGHHIANNNLM


 NAVCKAAAEKI GTPVVPV $\square A P G F \prod G \quad S K N L G N R F G G E A D$ HAVARAMEEKYDINIVGFSCEGYKGVSQSAGHHVANNKVF PAVANESKELYGIDVISFPCEGYKGVSQSAGHHI ANNKLI

 NAVAKAAEERHGDQVLSFNCEGYKGVSQSAGHHIANNNLMM


 K SVVCREATE DTGSRVIPVQSEGFRSVNKSGGHQLACDAMLD
 EAVCKKASEKFGKPVIPVNSPGFVGPKNLGNKLGAEALL HAVAKKMKEQFGCNVFAFSCEGYKGVSQSAGHHIANNQVF

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 NAVCKSAQERWGVPVVPIDSAGFYG TKNLGNRDAGDAMV EAVCKHAAQKLN: PVI PVVSPGF G TKNLGNKLAGETLE
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UniRef90-O2J4F9
UniRef90-E4TG46
UniRet90
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$\qquad$

VVTD DVVGIANDTETK TPYDINLIG


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NKLVGTKEPP
EHVIGKGTAE KNP KHVVGTSEEGRT DHVIGTEEP KHMVGL
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 EGDT

R
T L
PEGGTAVPGQVNLLPG
NYVIGTREPAYT
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## QUERY UniRef90_C6C8T2 UniRef90-W6M4Z3 UniRef90- UPI000476B62C UniRef90-D3NSM9 UniRef90-D5V3K6 UniRef90_UPI000400C4F7 UniRef90_U9VRG9

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 EMGLRVRNVWTGDSTIEMLQTAHQVKLNLI HCYRSMNYIC EMGLRVDA QWSGDGTINEMASTHDSKLNLI HCYRSMNY: C ECGFNVKAVWTGDGELEKIAATHTVKLNVIHCYRSMNYMC $D M G L R V V A Q N T G D A S M S E L$ KI GYRIVSSSLTGDGSFEKI SATAHQAKGLSILVCHRSMNYTN EIGYTVIAVMTGDGSYEELKNAHVAELNLVQCHRSINYIA KCGMKIAATFSGDGKYDSMTSSHMASLNLIMCYRSINYGA
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 $R \square G Y N V V S V M T G D G S Y A D L K N A H T A D L N L V Q C H R S D N Y I A$ E IGYTVNCVLTGDSSYVDIRGLHLADLNLVQCHRSINYIA
 DMG R V
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 K IGGYEV
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K GKNT
$\square$ SEKVP P VREDRDKACNAFGGSCCERK $\square K$ S K T P PVREDRGGACNSFGGCCSSEK AFEAPCSPE EVTSTMEYTKTTE

Q Q MLA NK QKMFENRRDPAEVER
VREWAKTPEY

## EVYPEKIRE <br> VF D WT T S EEY $1 \mathrm{~K} V \mathrm{PQV}$ V R R A R L G S T T GF K G T A D E L V $L N L S Q A T I R E K R L K S I V G Y Q G T \square K D E Q$ KESTYAYGGCD $\square$ D G VREWAKTEEY

MENRVYNY $\square$ NEKAPPVREDR LKACSAFGGSCCVLS
ERKKKEFENHVAVKDWAKTKEY TKEEVQKVLDTKTEEYQEKNFER KHLVIN

KVYPEKTAKRRAKPLIVHQAG K S D KESAYARSEGCGSAC GKEVEEQ MS Q TVDK $\square$ K PCYPEN $L$ AKKREDK $\square E E T F A W T T T K E$

EAPTRENR LGA $\square$ TGYRGS $\square K D L V$ GSRAERD
LK A A SVPVRETRDGSTTGFTGTAEEVV




| UniRef90 E1QE24 A AVICRKTEAEAG\\|PVTPVMSEGFKGNKRAG ${ }^{180}$ |  |
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| U4Q425 RAVCKHAAEKFGLPVVPINAPGFVG SKNLGNKLAGEALL |  |
|  | EFACRQAQAQVPVPVIPVNAPGFLGDKNGGNRVSGEVLF |
|  |  |
| UniRet90_D9S |  |
|  |  |
|  |  |
| UniRef90-Q6KCQ4 EAVSKAKSKEYGKTIVPVRCEGFRGVSQSLGHHDANDAVR |  |
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|  |  |
| UniRef90 F5IU64 |  |
| UniRet90 EOSI10 EAVCRAASTAVGVPVIA DAAGFYG SKNFGNRLAGEVMV |  |
|  |  |
| Ref90-UPI0003B737EC EAVCRNAEKKHGTRVI AVKAPGFSG TKSTGYRMACNALV |  |
|  |  |
| UniRef90-C1DI40 EAVARDASQRWGVPVIPVDGAGFYGTKSLGNRIAGETLY |  |
|  |  |
|  | QAICKAAEQKHGIVCIPVQSPGFSG SKSTGYKLACNAIL |
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| UnRef90-Q0RAV7 GAVCAAAAEQTGVPVIPVDAPGFVGNKNLGNKIAGQTLL |  |
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| EAVCRSAERRWGTPVVPVDCAGFYG SKNLGNRDAGEAVV |  |
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| Q3 |  |
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| iRef90-UPIoo0463BAB3 DSVCKTKSEKFNTPIVPVHAPGFVG SKNLGSRLAGEDVL |  |
|  |  |
| UnRef90-D4H6W0 A OVCKDVSSEVRLPVIPVDSPGFAG SKNLGNKFAGNSIV |  |
|  |  |
| iRef90-D3S6T2 ESTCRKAEK L L GVPVISIFCPGFCGYHQSKGHE\AMKALF |  |
|  |  |
|  |  |
| E90-B5YH15 EAVITP DRDET FKVPHIPITPDYEGSLEYG YAKAVEGI |  |
|  |  |
| UniRe90 WoE3x ${ }^{\text {a }}$ ( DAVCRQGSERHGTPCVPVHAPGFVGAKNLGS R AGEAVL |  |
| UniRet90_UP10003B56 |  |
|  |  |
| UniRef90-E4Q7K1 K WVVERVKEKVQKP: P PVEVPGFGGFSQSDGHH1AQRA |  |
|  |  |
| MDVVKKAQDIVK PVVIPVDSPGFIGNKNYGNOKKAGEALF |  |
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| k9W |  |
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| UniRefo-G7VWHO SAFLANARQEEDMPVPFANTPSFSG SHMTGYDAMLRSVL |  |
|  |  |
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| -07643 GAFLGNARQDDDLPVPFAHTPSFVGSHTGYSNMMKSMVN |  |
|  |  |
|  | DAFIKTAKQKGSVPVPFAHTPAFVGSHITGYDNALKGLLQ |
| UniRefo-E6QRM7 GSFIRTAKQKGSVDVPYAHTPAFVGSHITGYDNALKGVLT |  |
|  |  |
| UniRef9010HX89 NAFIKTAKEKGSIPVPFAHTPAFVGSHVTGYDNALLGVLQ |  |
|  | CKSMGARYGRPVLSVDAPGFAGGKDFGSEFAGKVLI |
| UiRef90-G80174 DGFIKNAKQKGSIPVPFAHTPSFVGSHDTGYDNMLKGVLT |  |
|  |  |
| N NAFINNAKKDGRVPTPFAHTPSFVG SHLTGWDNMFEGU A |  |
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| U40 |  |
| Ref90-060C79 NAFIKTSKEKGSIPVPFAHTPAFVGSHITGYDNVMKGILQ |  |
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| UniRef90 UPIooo3B5C521 NNFIKGARKKEALPVTYAHTPAFVG SHVVGYDNMMQGIL |  |
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| NAFI GNAKKEGHIPTPFAHTPSFVG SHTTGWDNMFEGFQ |  |
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|  |  |
| P10004097A11 DA VKELQKDTQALVIPIHCEGFQSKICASGFDAAFDSIN |  |
| UniRef90-F5YEL4 ET TANEAEDELGMPVVAVFCEGFRSKIWTSG |  |
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UniRef90_E1QE24 UniRef90-D6SLD7
UniRef90 E6U4T9 UniRef90-F2NEQ7 UniRef90_U4Q425 UniRef90_B0TAP6
UniRef90_AOL6W3 UniRef90-D9SS80 UniRef90-E4T465 UniRef90_UPI00030A2ADE UniRef90-B8GEW2 UniRef90-Q6KCQ4 UniRef90_UPI00041D7C11 UniRef90_UPI0003B6C468 UniRef90-F5IU64 UniRef90-EOSIIO UniRef90-A5N1T8 UniRef90_A4WRY6 UniRef90_UPI0003B737EC UniRef90-A6LUZ4 UniRef90-C1DI40 UniRef90-E6U879 UniRef90-T2GAI5
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UniRef90 W0E3X5 UniRef90-UPIO003B5657F UniRef90_P52337 UniRef90-A3PLS6 UniRef90-E4Q7K1 UniRef90_F8ALI8 UniRef90_E4TG39
UniRef90 Q55030 UniRef90_G8LYB9 UniRef90-K9WBJ1 UniRef90-K0B225 UniRef90-G7VWHO UniRef90_-Q56JU2 UniRef90-E310V1 UniRef90_F6DLL1 UniRef90-O07643 UniRef90-A8HQ17 UniRef90-HOPVQ8 UniRef90-E6QRM7 UniRef90-D2CNA3 UniRef90_IOHX89 UniRef90_UPI00036A64C5 UniRef90-G8QIZ4 UniRef90-S7VDI4 UniRef90-I3CFW6 UniRef90-K0AZD5
UniRef90- X4ZMW1 UniRef90-U4Q3W9 UniRef90-LOII80 UniRef90-Q60C79 UniRef90-D3NSM8 UniRef90_W4V200
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290
300
310
RMMQRDYGTPF LRRSYLGVDDMAQALYDVAAFFGDPLMAR RMMQEKYGDPYKQVSYFGMEDMARALYETADFFQDKDPAR NELKKKYGI PR RLDVDTWGFNYVAESSLRKVGAFFG KMMQQKYGI PF IVVSYFGVEDMAESLYNVARFFKEPI MTR RKMEERWQI PFFEGSFYGI TATSEALRRIAELLVKQILDR

 DELRVRYGI PRMDIDGFGFEATADSLRKI GYFFG GIEDK
 RHMEEKYGDPWVEYNFFGPTKDEESLRKIASHFDDKI KDG KEMEEVYGI PYI RVSYFGIEDTASALYDVASFFSPAIMEK
 RQLEQRYAI PWFEGSFYGVRAMSDALRQLAAMTDADLMTR
 HRMEDEMGVPWMRASFFGVEDTSTALRQVAERLNDDAKRK KRMEAEMDIPFVKDSFVGLEDTKNSLLRIASGFDEEMLAK
 $K \square M E E K Y G Q P Y I R V S Y F G I V E M A Q A L Y D V A E F F D P A I V D R$ TMMKEDYGDPVIKVSYFGVEDMAAALYAVAEFFQEQAPER
 RKMEEKYDI P FMEGSFYGIHDTSETLINI AKALGDDLLKR
 K $\square$ MQDKYGVPFMRVSYFGI EDMAQALYDI AKVFDPDILRR RKMQERWDI PFFEGSFYGISGTSEALRRIADLLVKKGADR KQMESKYGI PYFEGSFYGAKETTYYSLRMAFLLNREMERR RGLEERYGUPWFEGSFYGVSAMGDTLRGFARLKDDDLSRR GNMQDVYGI PSLQVSFLGMDDTASSLRADAQELGEAIATN
 RKLKKEKYGUPFDSVSFYGKRDTSASILAIAEGLDADLDAR EMMKTKYGMDWLKVNF GGVGATCKSLREIAKYFNNELTAR RKMQERWGDPFFEGSFYGI EDTSDVLRTMSRLLDPGLIDR REMEERFGII P WRKVSFFGLAETAAALQADAAFFNRPGEA

 RKMKERYGI PFVSVSFYGQRDTTNAI MAIAEGUGDPELDER
 RKMQERYNI PYVSVSFYGKRDTSNAIRSIVNAFDAELDTK $R G L E D R Y G I P W F E G S F Y G V R A D E R Q L R E L R L L G G A E L A Q R$
 RHMEE
$R K L E D R Y G I P W F E G S F Y G \ S D T S D A L R T M C R M L V E D L L T R$






 VQMERKYG GPYF EGSFYGAKETSYSGRQI A Y L T DREVVERK D Y I K T WGQET VALN HP IGGVA GT DK F LMEVSRLLTGKPI P DA



 K Y L REKGHEVVVLNAPVGVGGTDELLMAISRLTGKPVPAE G H L E D R F G L P G I S G C L Y G I A NT S R T L DNV A A L L A R Q S G K Q
 K Y V E NT WQ HD IP KL N P M GLLE WT DE F L M K I S EVTGGMPIP
 $N G L E Q N F G V P Y T A L Q P H G I S G F D D W L T K L G E T V G K \quad E K E$ E Y CREVVE QAT TS F HYP LGGVEATDEFLMKVSEISGKEDPE A A LE Q E F G VP P





A A LE QEF GVPVK APMPYGFAGTDAWLREDARDTHR EEQ K TLLWEDYELP YH TVMP $\square G \square R N T E K W Y R G I A K V L G K \quad E E E$


 K T L K E D Y D I P Y H TVVMP DGVVRNTDDWFRGIA G IVGG E K E



CEA LIAEEEARTWAADEP DRPAVAGRRVLLYTGGHKTWSV VEMVISEEYEK DKDKLEKYKKKIFGKKAVILLGGSRIGFM I NETKN YY L K K NE E K L K F Y K K E L R GK K V F L CHGA QRVVN Y I ECFVQKKEKEVEQALKFFKRFFKNKRVFIYSGGVKSWSM L E EVERGRAVDAMTDSHA WLHGKKAAIYGDPDLVMGM $A N K L I E V E T K E L K E A$ ESENKALKKALEPFRKSLSGRTALLAGGEIRVLAT VDKLAAREELRLQRELEPYRRLLKGKRVVLYTGGVKNWCII LKKERGRLVDAIADSHNHIHGKKFAI YGDPDLCLGV $\stackrel{\square}{F E} \quad \square A$ | MT |
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AEAYDAREHARVKPQ\EALREKLKGDKGFVSTGSAYAHGM VEEVI AKERERIMPLVQKLRDRLQGKRVFICGGTGRSFAA S L A K ERGRLVDMMTDSHTWLHGKKFALYGDADFVLGLD



UniRef90_P52337
UniRef90_A3PLS6
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UniRef90 E4TG39
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UniRef90_R4K296


M A P K E MY R MLRDARA DVLMS G G




G QPF E Q A N L L N R L L K P D L Y







 Q Q NHEVINNLSKVKPDI FI GRHPGMVWATKMGIPAIMVSD



 K D D M WH F R S L L


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| UniRef90_E1QE24 | GM |
| UniRef90-D6SLD7 | ERKLALEGFEGMVNFAREVHSTVMSPVWNF |
| UniRei90-F2NEQ7 | ERKEPLEGFIGMLYFAREVYNTVMSPVWRF |
| UniRef90-U4Q425 | RH HPYAGYDGMLELVRQIDDAIHNPIWSEVRAPWE |
| UniRef90-807 | GRNLPYAGYNGMI TFAKAVARTVFSPVWEKMQKPF |
| UniRef90-AOLE |  |
| UniRet90 Do | RKHALAGFVGAVNFAKE |
| UniRef90-UPI00030A2ADE |  |
| UniRef90-B8GE | R |
| UniRef90- UP1000411 | HERK |
|  | KIALEGFVGMLNFAREIHASAMSPV |
| UniRef90-F51U64 | RKLALAGYEGMLNFAKEVYETVSSPVWQFVK |
| UniRef90-EOSI10 | EHAFAGYRGLVALIAQQLCLTLDSPIWROTRAPW |
| UniRef90-A5N1 | HERKHILAGFEGAVNFAKEI DLTI NSPVWNY |
| A4 |  |
| UP100 |  |
| A6L | GAVNFAKEN |
| UniRef90-C1D | GF VELARQLALAVHSPVWQRVR |
| UniRef90-E6U879 | HERKHALAGYDGAVNFVQELNLSMNSPVWS |
| UniRefor 21 NW53 | RKECLAGFAGMLNFAREVHASVTSPVW |
| UniRet90-F5Y9Q1 | RKEALAGFEGMLNFAREVHNSVTSPVWKYSPA |
| UniRef90-B8FZN8 | HGRKLPYAGYEGMVTFAGSLARTVNSPVWE |
| UniRef90-UPIO003 | HERKHALGGYEGVINFTQEVNDTMNSPVW |
| UniRe990 UPIOO | HERKIPLAGFEGVYNFTMEINKSNSSVW |
| UniReego-F3Y | ERHKHAYAGYEGMVQHARQUDRA HNPVWP |
| UniRef90-X5A4B0 | YagyegLLRLAKELVDSMVNPI WKLASAPWD |
| UniRet90-Q0RAV7 | ERHD PYAGYTGMVEFARRLDMA A SPVWEQVRAPWD |
| UniRet90_UPIOOO36 | HDRKHPLISGYVGALNFAKEVYSSICSPVWRHLEAPW |
| UniRef90_A1W | E |
| UniRet90 A4SFV | V Y SVMSPVWQ ${ }^{\text {a }}$ |
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| UniRef90-K9HK58 | RHY AYAGYVGMVELVRQLDKAVNNPMWAQKDAPWD |
| UniRet90-F6CNC9 | SPYAGFNGFVN |
| UniRet90_G7VWH1 | VE |
| UniRef90_UP100 | E |
| UniRef90-W0NL UniRef90 D4 - |  |
|  | KSYGAYNGLIAEDVNALENPVRCVRKPWE |
| UniRef90-D3S6T2 | FLNFAREVYKAI Y HPVWKMIGFKYE |
| UniRet90-W6EPP9 | YGAYGGLENLASDVCSALANPVFKLVAAPWE |
| UniRef90_B5YH15 |  |
|  | RGAVELARRLD ALLSNPVWEQVRQPW |
|  | GGLLVLAEDLK |
| UniRef90-UPIOOO3B56 | GMANFARDIYRHLKAPVWN |
|  |  |
| UniRef90 E4Q7K1 |  |
| UniRef90-E4Q ${ }^{\text {U }}$ |  |
| UniRef90 F8ALI8 |  |
|  | TDGYNGAINLLNW1 VNG |
| UniRef90-G8LYB9 | SSIVMGYQGAYEIVRKI ARVLRNPSFNRS |
| UniRef90-K9WBJ1 | T MGYQGT INLLNW1 V |
| KOB |  |
|  | FDRHEPYMGYGGAL |
| UniRef90-Q56JU2 | FDRHHPVWGYQGALNVARWILCKVFSEMDALKSAPWE |
|  | G A M |
| UniRef90-O07643 | FDRHHSTIGYEGADNLLNWI ANGLMDEDDRKTDT |
| Unil | HHHRRPVWGYQGGMNV |
| UniRef90 HoPVQ8 |  |
| UniRet90-E6QRM7 |  |
| PH | RHHPTWGYEGGMRLLTMLLDEYFEKLDANTNIP |
| UniRef90-UP10003 | HHRTTSLTGYDGLIRLAEEI DLVCHNPVFARVRRP |
| UniRef90_G80123 | HHRFPIWGYQGGLN |
| UniRef90-S7VDI4 | HRM TTMG |
| UniRef90 K0AZDS | G FGYQGVLNYAERII E |
| UniRef90-×4ZMW1 | GYQGTIEFGHRIIDA |
| U4Q3W | RFPLMGYQGGLRV |
|  |  |
| UniRef90-O60C79 | FDRHHPVWGYQGGLNV |
| ef90_D3NSM8 |  |
| UniRef90 W4V200 | AVNYMGYSGAFEVARRLNRALKNNSFRYTRL |
| UniRef90- UPIOOO1D2D316 | FDRHHPVWGYQGGLNVLVWLLDKVFEETDRNT\VP |
| UniRef90-UPI0003B5 | DHRYSTIGY宜GGLNLLNWIVNTILDEDDRKT |
| Unit |  |
| UniRef90-R5SG15 |  |
| Ref90-D3RUE4 | G |
| UniRet90 UPIOO04153178 | YVHYMPIVGYKGA RLLAELILNALMD |
|  |  |
| UP10004097A11 | RPT |
| F 5 | EHFG MGYQGLVQYKRILDMENDEFEHSKDPY |
| R4K296 | EHFA $\quad$ IGGYQGLLINYGEVILDT\\|SNPMFEHSK[P |

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UniRef90_K9RMB2

EPEYRENMKNK QDKYEE RESMEKLEETFQWTTSAE
FDNKVAPKREHRLNFDGSAFGGST
EYQELLANKRSHFEEAVEANKVKE VFEWTTTKEY K S P E K $\square$ RENR $\square$ GS TT GF S G S CEMS K EQLIAEVVAQYPDKAAKRRKKHLSVADEPKALSE

APKREDR $\square$ KSC $\square$ T F G GT $\square \mathrm{CS} \triangle \mathrm{B}$

MSS I IA
K N R E D R P Y A LT D G G G T S K E S N
$\square K E K T P \quad P \vee R E D R \square R V C N A Y G G S C P V K \stackrel{M}{Q}$ MSQTVDK $\square K P G Y P E \square F A K K R G E H E D G F D E A K T T E E$ TRENRLGS $\square$ TGYHGD LDRDHQ

EPYVKQREGKKAFEAPCSEQET


VRESKKGRVNDYGGTKAEES KTFENRADQVARGQEWTKTWE

M
$\square K \square S A D P T R E N R \square G S \nabla T G Y N G D \square H D \square V$


MSKLTENLLGAEAAPTREERDEACNAFGGSCRS $L^{M}$ $L N \square S E V A \square R E N R L G G S V T G Y Q G S \square K E L K$

KASELSEQSSYERRGCEGRGK VF E WT T T E E Y

ESKM
KPNRVNDGYGSGKDGAEKF

M

PEVS $\square$ RER $\square G S \square T G Y Q G S A K G L V$
$\square E H P E D Q K R E E R L N S \square S G F A G T C D K S N$
TREERLGSVYVGD $\square$ K D L A R Q

TRENR $\square$ GS $\square$ T $\square$ K D $\square$ AE K S E C
$\square K R \square E A D N R E S R \square G A \square T G Y T G T V K D L V$

SSLVKE SDYQVRALRREKKCSGKNGSGCRLCE $\square S \square P E V Q \square R E \square R \square N S \square T$ GYQGAKE LVE

E $\square$ A T A K $V$ P
 UniRef90_R4KG98 UniRef90_Q2JP76
UniRef90-H2IKR3 UniRef90 ${ }^{-}$C4LAS7 UniRef90-W6NFE2
UniRef90-Q53011
UniRef90-P16267
UniRef90-Q3B2P2 UniRef90-F5YEN0
UniRef90-P11347
UniRef90-I3YET4
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UniRef90 A3PLS7 UniRef90_W0ISZ1 UniRef90_UPIO0047B9069 UniRef90-R4K6V5 UniRef90-U7FUV8 UniRef90-UPIO00377844D UniRef90-W6RT95
UniRef90 B3QXW7 UniRef90-W7YQY0 UniRef90-K6T0D9 UniRef90-FOSXV5 UniRef90-I9BZ09 UniRef90-G2FXR2 UniRef90-E4TZQ2
UniRef90 K9T9M1 UniRef90-D6SLD6 UniRef90-E1Y8D2 UniRef90-G2E4N5 UniRef90-C6C8T3 UniRef90-W6SOF8
UniRef90 UniRef90-I3VXJ7 UniRef90-UPI00041D5307 UniRef90-A7HES9 UniRef90-A5N1T9 UniRef90_UPI000367F427 UniRef90_E6U880 UniRef90_Q39XW8 UniRef90_UPI0003B65B14 UniRef90-W6ED72 UniRef90-W6RSC1 UniRef90-H6LJT9 UniRef90-UPI000372152F UniRef90_W9DPW4
UniRef90-I2Q3U7 UniRef90_IOX943
UniRef90_C9RH91 UniRef90-UPI0002893657 UniRef90 H1ZT19 UniRef90-UPIO0046D3D99 UniRef90-FOTA88 UniRef90-W6N8C3 UniRef90_A3DFR2 UniRef90-15B6E6 UniRef90-W9V8C7 UniRef90_F5YPA7
UniRef90_E4T4C9 UniRef90_A5N6Z5 UniRef90_B9M073 UniRef90_S9SFK1
UniRef90_UPI00040C50AD UniRef90_U6BP04 UniRef90-F6D760 UniRef90_UPIO003B57137 UniRef90_K9RMB2

REKNFAREAAVINPAKACQPDGAVFAAAGF EKTLSFV ${ }^{50}{ }^{80}$ YKE LDN FQREAVTI NPAKACQPLGAVLCSLGF KGTLPYVH KQKNFARDS L SVNPAKACQPGGAVVFVANGFAKGTLSFVH
 CRKNFQREALT
 GKRDCDRK HSFSQCLGCS SGQALCQLVMDQDAVVINH
 INPAKTCQPIGAMYAALGIHG


KREADTINPAKACQPLGAVLCALGF EKTLPYVH FKKRCLKNADRTFAQATQCQETNSISALLGSMQDSAFVVH FKKRCLKNADRTFAQATQCQETNSISALLGSMQDSAFVVH


 KSLAQQNQQD CAFDGAMMALV P $\square$ TDAAHLVH

 SRDDF RNRERSFTQCGSCGADQVMN LLTQQQDAAVVEH QRAQAGKECTRSFSQCMNCG SGNALCQLSMIRDAAIVNH RCAGKLKDSSRSFSQCMGCS SGQAFCQLSMIK KAAMVNH ECDPTRKHTAGK DNPAKTCQPDGAMYAALGDHG CLDPHSH FRKGCLKKADRSFAQGLQCQQINSMAAALMSLEDAVFDAH YREKNFAREALSVNPDKACQPLGBRDFARGFDG QCEVKNKERAGV

REKNDARSCVTI CELDKPKERAGVI
NKSKCLKNRDRCF FSQSS
FNPAK
REKNFSREALTINPAKAC AQSAYERRGSGCKGRGSGC NPAKTCQPIGALYAALGMHG
SCSLQEKERKG
KGMGCTKFNSRK AQASSCKNKERCF REKKNDAREAGT $V \mathrm{NPAK}$ TVNPAKAC
RNALSVNPAKTCQPLGAMYAALGl HG
0
 SREALTDDPAKACQPLGAVLCSLGFEKTLPYVH I NAAKTCQPI GAMYASLGIHG N A AK
$N$
$N$ NP $\square \mathrm{F}$
 GTRPFVMH
CMP HSH

DRIGTINP@FTCQPAGAQYASIGGIKECGGVH
 KELNF KREALDTMDPAKACQPGGAVLCALGGMANTLPYVH
 KG GCLKRADRS I NPAHAC

QPL GA ELCAHGF E GTLPFVH
KESYERKADRINPAKTCQPI GAMYAADG DHNCMPHSH REKNLAREAITI NAAKACQPLGAVMVALGF ENTMPYVH GCSVEERNRTGUI NPVFTCQPAGAQYVGI G DK DCDSVVH

VNPAK $\square$ CQP $\square$ GATYAA $\square$ G $\square R N C M P H S H$



RSA $\square T T N P A K T C Q P V G A \square Y A A L G V H R C L P H S H$ DKKKKERSGTDNPMETCQPAGAQYVS G VENC GIVH LIKMPFNQQTM CSQSIVACQ VGNIPDAILIEH AREFGLKDKERSFSQCLGCATSKAA CMTVLI QDAAVISH KEDKERK A L A VN PAKTCQPDGAMYAGLGGIYGCLPHSH E IKVIAPKERGGII NPMYDCQPTGGQYAGIG IKDSIPGVH
 GCEDTVKERAGVYN PAYYDCQPAGAQFAGUG 1
 RERNVIINPLKGCSYCGAKLXVGGXLK

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| :---: | :---: |
| UniRef90-AOL6W | c |
| UniRef90-A1VPS2 | GSQGCVAYYRSHFSRHFKEPTS CVSSSN |
| UniRef90-UPI0001E2BDB0 | GSQGCCAYHRKLLTRNFRDP VMASTSSFTEGAA |
| UniRef90-R4KG98 | GPVGCGSQDHSSDFQVRSGTRGGVPKPLIWLSTNLNEKDV |
| iRef90-O2 | GSQGCVAYFRTHDTRHFKE |
| UniRef90-H21KR3 | GSQGCVAYFRTYFNRHFKEPVA CVSDSM |
| UniRef90-C4LAS7 | GSQGCVAYFRTYFNRHFREPVA CVISDSMTEDA |
| UniRet90-W6NFE2 | APLGCSADFSDFNFTNRVGQRKRNFKPKRLLSTNLDEKDT |
| UniRef90-Q53011 | GPVGCGHYSWSQRRNYYVGDTGDDTFVTLQFTSDFQEKDI |
| UniRef90-P16267 | GGQGCVMFVRLIFSQHYKESFE LASSSLHEDGA |
| UniRet90-O3B2P2 | GSQGCCAYHRSTLTRHYKEP VMAATSSFTEGAS |
| UniRef90-F5YENO | GAVGCGVCSHSQNANTRSGNAARFGADK |
| UniRet90-P11347 | GSQGCCSYHRTVLSRHFKEPA MASTSSFTEGAS |
| UniRef90 I3YET4 | GSQGCVAYFRSYFNRHFKEPUA |
| UniRef90 J1L1F8 |  |
| UniRef90-UP10003B3E977 | GSQGCCAYHRSALTRHYKEPVSA ATSSFTEGAS |
| UniRet90-C0GKD 4 | GSQGCCSYHRMHLTRHFRDP VMASTSSFT |
| UniRef90 UP10004011C2D | GGQGCVMFVRLIFSQHFKESFE L |
| UniRet90-7NPZ |  |
| UniRef90-UP1000422A073 | GSQGCVAYFRTYFNRHFKEPVA |
| UniRef90 FoSYF2 | APSGCTATAAGTVQNAQLAAKRGVTNSTVFI GTDM |
| UniRet90_UPIo0037872 | GSQGCCAYHRS |
| UniRet90_W4D | GSQGCTAYFRSHLSRHFKEPT |
|  | AGCAGDISFRNGTFRTGNKRMGYAVHNVN |
| UniRef90 UPIO003789113 | APVGCAGDFFNYNYVYRVGQMSRDLPPSRYFNTNVDEN |
| UniRef90-R4 | APVGCAGDFFGFNFVYRVGQMQRDLPSTRYFNTNDEEKDT |
| Qow439 |  |
| UniRef90-UP1000416 | VDMYRVGQAHRGVKYUKNP |
| UniRet90_P15052 | NRRHEKPSS CVSSSMTEDPA |
| UniRet90 Woilw 8 | HRSHLTRHFKE |
| UniRef90-99M1X4 | GGQGCVMFVRLLFSQHFKESFE VI LSSSLLHEGA |
|  | VAYYRSHAR |
| UniRef90-W0ISZ1 | GGQGCVMFV |
| UniRef90-UPI00047B9069 | GSQGCCAFHRMQLTRMFKEP ${ }_{\text {a }}$ |
| UniRet90_L4K6V5 |  |
| UniRet90_U7FUV8 | GSQGCVAYFRTYFNRHFKEPTA CVSDSMTEDAA |
| UniRef90-UP1000377844D | GSQGCVAYFRTHLTRNYKEPFQA VSS |
| UniRe990 W6RT95 | APDGCAAGQVPYNS\\|YRNGLLKLRNHDVIRII |
| UniRee90 B30xW7 | GSQGCCAYHRSMLTRHFKEP VMAATSSFTEGAS |
| UniRef90_WTYQY0 | GSQGCCSYHRSALTRHYKEP VMAATSSFTEGSS |
| UniRef90_K6T0. ${ }^{\text {a }}$ | GGQGCCMFVRLLFAQHFNENFD |
| 俍et90_FosXV5 | APLGCGSTSLSFAGTRMRGQKQKPKTDNIWLHTNLDENDV |
| UniRet90_19BZ09 | APIGCAADSVYSNTQNKWGEKVRNWKHRNIINTNMVEEDT |
|  | GGQGCVMFVRLLFAQHFKDNFD I ASSSVHEDSA |
| UniRet90-E4TZQ2 | GSHGCVAYFRSYFTKHFKEPT PCVSDSMTEDAA |
| UniRet90_K9т9M1 | GSQGCCAYHRSHLTRHYK |
| Ref90 D6SLD6 | GSQGCCSYHRSHLTRHFKEP VMASTSSFTEGAS |
| iRef90_E1Y8D2 |  |
| UniRet90_G2E4N5 |  |
| UniRef90-A6LR38 |  |
| UniRet90_C6C873 | A A |
| UniRet90_W6S0F8 | GSQG |
| UniRet90_13VXJ7 | Q G |
| UniRef90_UPI00041 | APQGCTGCVSMMADGYKVGQUHRHVDHPRIFVTNLDQKSV |
| UniRet90_A7HES9 | ASYYRSTLNRHEREP |
| UniRet90_A5N1T9 | K |
|  | RHFKEPT PCVSDSMTEDAA |
| UniRef90_UP1000367F427 | GGQGCCMFVRLLFAQHFKENFDЏGS SSVHEDAA |
| UniReto-Eu80 | GSQGCC |
| et90_Q39xW | C A |
|  |  |
| RiRef90_W6ED72 |  |
| UniRet90_W6RSC1 | GDFADFNRVNRG |
| UniRef90_H6LJT9 | - |
|  | GCAALLASASVTMHTQLIADKRGEYHSVILGTDMNESDT |
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## UniRef90_J9DD39 UniRef90-AOL6W8 UniRef90-A1VPS2 UniRef90-UP10001E2BDB0

 UniRef90-R4KG98 UniRef90-Q2JP76UniRef90-H2IKR3 UniRef90-C4LAS7 UniRef90-W6NFE2 UniRef90-O53011 UniRef90-P16267 UniRef90-G3B2P2 UniRef90-P11347 UniRef90-I3YET4 UniRef90-UPIO0047C41C5 UniRef90-J1L1F8 UniRef90_UPI0003B3E977 UniRef90-COGKD4 UniRef9O-UPIOOO4011C2D UniRef90-F7NPZ7 UniRef90_UPIO0030569B0 UniRef90-UPI000422A073 UniRef90-FOSYF2
UniRef90-UPI0003787D6A
UniRet90 W4D8N8 UniRef90-FOT2L6 UniRef90-UPIooo37B9113 UniRef90-R4KIFO UniRef90-Q0W439 UniRef90-UPIO00041616E7
UniRef90-P15052 UniRef90-WoIWP8 UniRef90-19MIX4 UniRef90-Q3Z7D1 1 -
UniRef90 A3PLS7 UniRef90-W0ISZ1 UniRef90-UPIOO047B9069 UniRef90-R4K6V5 UniRef90-U7FUV8 UniRef90-UPIOOO377844D UniRef90 ${ }^{-}$W6RT95
UniRef90
B3OXW7 UniRef90-W7YQYO UniRef90-K6TOD9 UniReffo-FOSXV5 UniRef90_19BZ09 UniRef90-G2FXR2
UniRef90-E4TZQ2 UniRef90-K9T9M1 UniRef90-D6SLD6 UniRef90-G2E4N UniRef90-A6LR38 UniRef90-C6C8T3
UniRef90-W6SOF UniRef90-I3VXJ7 UniRef90-UPIO0041D5307 UniRef90_A7HES9 UniRef90-A5N1999 UniRef90_UPIOOO367F427 UniRet90-E6U880 UniRef90-Q39xW8

QSFTNNAKLKGSIVP|VIPFAHTPAFVGSHVDGYDVSTKGTLIE HSF:TNAKVKGHVPVPSAHTPSFVGSHTTGWDGMLEGMLR PAFVDDAQVPEGKYVDHANTPSYVGSHITGFSNMVKGMVK

DEVVRSTETVNAKIMPMHCEGIKSQVVANAYDTYY GVV GAFITTARNEGDFPVPYAHTPSFVGSHITGYDNMLKALLS GAF TTARNEGDFPVPYAHTPSFVGSHLTGYDNMLKALLS NAFIGNAKEPASVPTPFAHTPSFVGSHTNGWDGMLEGVL DT TAQEAEKKDKDPIVYVPCEGFKSKDWTTGFDAAYHG I DGVIKKLNEDREVHLIAMHTPSFVG SMISGYDVAVRDVV QQITRKALDDGKIPVIYASTPSFIGSHVTGYANMVAGMAS | $D G I T D N V Q S V V Q A R V I P V H C E G F K T K D W A T A Y D A V Y H G L A$ |  |
| :--- | :--- |
| $P T Y I$ | $Q$ | NAFIGNSRKEGHIPVPFAHTPSFVG SHTTGWDNMFEGIQ DAVASTVQKEVNAVVVPAHCEGFKSKVPATGFDTVFRAVQ NQURDKAQKEGKDPVIGASTPSYVGSHVTGFSNMVKSAVA

 DGVVKEKYADREVHLIPBHTPSFVGSMISGYD AVAKDFV NGATHDAAEKLGGPVIPVDSPGFTGNKNSGGRGAGDULL
NAFIGNAKAEGDFPTPFAHTPSFVGNHTGWDGMFEGFM NAFIGNAKAEGDFPTPFAHTPSFVGSHTTGWDGMFEGFM NQLITKARKDGKIPMLGASTPSYVG SHVTGFSNMVKSMA QAFISNARQKNE:PVVYANTPSFSGSHWTGYDSMLKSULS PGDCDDLEEELGIP PVVATLCEGFRTNDWATGFDSANHSIL ETETEELSKELGLPVVACFCE DA CADDQKDEKALIVPAHCEGFKSKDCASGFDAAF DA! E NAFIKTAKEKGNVPVPFAHTPSFVGSHITGYDNMMKGILT DGVVKEKYAGREVHLIPTHSPSFKGSMVSGYDVAVKDVI NSFIVKSKEKESVPVPFAHTPAFVG SHVDGYDNMQKGL PTYISTSEVPEGKVIIHANTPSYVG SHVTGFSNMVKGMV DSVVEESKKEDPVPUAAVHCEGFRSRDWATGFDASDHAVL
NAFIGNAKKEEEYPTPFAHTPSFVG SHITGWDNMFEGI G GAYVQTAKNEGSVPVPHAHTPSFVG SHUTGYDNMDKALL GSVAVEMESEGGQPV1PALQCEGFRSKHWSTGFDATQHGGL KQIVAKANADGKVPVIEASTPSYVGSHVTGYHNMLQSIVQ DGLVLKLEKRTKKELVPVHTP
DSLLDEDRQLSARVVPVHCEGFKSKFVATGYDAAYHGVL DGVVRKLNGLEVHLDSIHTPSFKG SQVTGYDVALDEAFL

## M

PTIVKKAEDDGGKKVIHASTP
DGVVRKLNEGLEVHLIPTHTP





 S A F IVKN A R NK G D M P V P Y A N T P S F S G S H V H G Y D A M L L S $L$ L

 D S V V E E LID R E L P V P V V A M H C E GF K S K V WA T G F DAA D H A I L











 E G A L K E A F P G R K l A H I V P V C H T P S F K




## UniRef90_J9DD39 UniRef90-AOL6W8 UniRef90 A1VPS2 UniRef90-UP10001E2BDB0

 UniRet90_R4KG98 UniRef90_Q2JP76UniRef90-H21kR3 UniRef90 ${ }^{-}$C4LAS7 UniRef90-W6NFE2
UniRefofo-O53011
UniRef90-P16267
UniRef90 Q3B2P2
UniRef90-F5YENO
UniRef90-P11347
UniRef90-I3YET4
UniRet90-UPIO0047C41C5 UniRef90-J1L1F8 UniRef90_UPI0003B3E977 UniRef90-COGKD4 UniRef90-UPIOOO4011C2D UniRef90-F7NPZ7 UniRef90_UPIOO030569B0 UniRef90-UPI000422A073 UniRef90-FoSYF2
UniRef90-UPIO003787D6A
UniRef90-W4D8N8 UniRef90-FOT2L6
UniRef90-UPIooo37B9113 UniRef90-R4KIFO UniRef90-QoW439 UniRef90-UPIOO041616E7 UniRef90-P15052 UniRef90-WoIWP8
UniRef90 $19 \mathrm{MIX4}$ UniRef90_Q3Z7D1 UniRef90-A3PLS7 UniRef90-W0ISZ1 UniRef90-UPIOOO47B9069 UniRef90-R4K6V5 UniRef90-U7FUV8 UniRef90-UPIOOO377844D UniRef90- W6RT95
UniRef90 ${ }^{-130 X W 7}$ UniRef90-B3QXW7
UniRef90-W7YQYO UniRef90-K6TOD9
UniRef90-FOSXV5
UniRef90-19BZ09 UniRef90-G2FXR2 UniRef90-E4TZQ2

UniRef90 K9T9M1 UniRef90-D6SLD6 UniRef90-EEY8D2 UniR Refo-G2EE4N5 UniRet90_A6LR38 | UniRef90_C6C8T3 |
| :--- |
| UniRef90_W6SOF | UniRef90-I3VXJ7

HFWDDKERTPNA KTN\| ${ }^{22}$ PGFDGFCVGNNRELKR\| $\square D^{2}$ YFTLDKHESAVVGSNGKINLVPGFETYLGNYRILKRYME HFWDGKAKTEPLVRVEDES NFTGGFYVVGNMKEIRRDFS Y ZSKNSGEPNGK DNTKGNSGKFQLEEDNYKKSKIVNLFNFGSDEVETHRLDE TLTTMNSEPVGRTGSNGYMNVIPGEDTYMGNLREVKRIFG TFTADKA DYKVGSNGKLNIVTGFE RKIVKPPVKKRKDLINVIN DWVFDKNEVE K RHFAKREAPNDK QFAVSTGEKKDQ GKTLENPAYQKKIVERKYT YLSENTGAKNGK RHLTLNYMDDKVVGKNGKINLVPG NYII QLAESTGHKNGK AEATDDSKKEVNILPGWVEPSDMEEIKRLAT Y AEATDDSKKEQANVIP SYFAKKEDH RNLTAPPERDCKDRK TNGKINLITGWVDPGDVTEKS

 TGFTLNEMEDKEVGSN
 STFAKNTGERN TLFTREATPGSGEGTGEKLNVILPGEPYTGNFAE RKIVKPARQKQAD RKIVKPARKKQADLINVISFQHRFVYESV
RKIVKPPRKK TNKVNIINFWGSHIFDDD LLE YL AEADGQPKKNRVNILPGWVNPGDMREDKRLVA


 Y LSEPAEGMPERRAGEGDNNITPGWVEPADMREDKRLVE

 RYFTLNYMEDKKVGSNGKINLVPGF DCLSKDKKQETTNGKYNFNL TQFAESTGEKN HFADKTDEAK GQVNVAGWMEPSDMREDKRLSK KKLVDPVPRYAKEGKKNNKINVVGTGWVNPGDVKEVKHIGN TKIVK VPRPDRKTNKVNMVNLSGSTSYGDEVELSRLEK QTLJAKKETPNGK QLT EGQKGETKQRDNI PGFETYDGSLRSVKSUVE YLSEKTAKGKTKNQLVDPGYEPSDVRHLKQFLQ DYFSEYNGSKNKD DKDQVNLIPGFVEPADMEEMKRLAA KYFAEPGEPGEPNGK VNVNVTGWVPGDVKALKHLMT RTFTGGGDNHYQPGSLQRLNLVTGFETYGGNYRVIKRMMA DLSEKTATSTGKLCVIP KDNDIPGFVNPGDMREMKRQMN KYALKGEKAD RQENLVNLFAPTTISSDQQEMERMLG ETL TEGKAVEGRCTGKLNFI AGFDANVGNYREYKKILE YLSKNTGVENGK
QLSNVSQSADKKDRDND RYIDAEKGDASDK
CLAENTGVKNGKAMLTP
ALTEGKKVEGRCTGKINLL
$\qquad$ NV V

PGF
 RKLVKPPVKKDNGLINVIN NGFDANTGNFREYKRIFE ELNMVEEGVEVEKDNERUND DPGFESYLGSLKEVKKWAS SYFAQKGEPSEK KI NTLTGWVNPGDVTALKHLGA RGIVKPPREK RNVINFKNFNELAR REITEMFA THVVGL DDTVMDAKYKI NLLGEYNIGGDGFII EDLLN TTFAQKTKPNGK
AYFAEKTEPSGK
SSIVQPPRE GVKSNK NVLT
QYF TSGKKRDEEKAKKKMNVKNFYESAR PGE: DE: FK TRIVKPPKEKHEEKAKIMNMLTFNGSGRDY VIME N DWVLPKRKTPEGFVSSPYDVNTI GDYNDGGD DWPSRILLE YFAEPGTVPADR
KFATKNEPNE
KI
 RKLIQKPRRRRDDMINVIN VQMAEKTGK KTMAKKGEPTGK NFABAT
FFSTATPKK
$S \overline{N G R V N D P}$
GTRNDNVFTGWINPGDLKELKHYFA
RQIVKRKPE
THVVKPPOKKQKDLDNDVAL
TNTVNVI NFFGSAR KT ATHKGAPN
TDKVGTYEPK DNGAGPGEPEDT SPYTINVIGDYNU QFAEKTGESNGCF

## UniRef90_J9DD39  UniRef90-UP10001E2BDB0

 UniRef90 R4KG98 UniRef90-Q2JP76UniRef90-H2IKR3 UniRef90-C4LAS7 UniRef90-W6NFE2 UniRef90-O53011 UniRef90-P16267 UniRef90-F5YENO UniRef90-P11347 UniRef90-I3YET4 UniRef90-UPIo0047C41C5 UniRef90- J1L1F8 UniRef90-UP10003B3E977 UniRef90-COGKD4 UniRef90-UPGO004011C2D UniRef90-F7NPZ7 UniRef90_UPI00030569B0 UniRef90-UPI000422A073 UniRef90-FOSYF2
UniRef90-UPIO003787D6A
UniRef90-W4D8N8 UniRef90-FOT2L6 UniRef90_UPIooo37B9113 UniRef90-R4KIFO UniRef90-Q0W439 UniRef90-UPIO0041616E7 UniRef90-P15052 UniRef90-WOIWP8 UniRef90_19M1X4
UniRef90_Q3Z7D UniRef90-A3PLS7 UniRef90-W0ISZ1 UniRef90-UPIIOO047B9069 UniRefe90-R4K6V5 UniRef90_UTFUV8 UniRef90 UPIOOO377844D UniRef90- W6RT95
UniRef90 ${ }^{-130 X W 7}$ UniRef90-W7YQYO UniRef90-K6TOD9 UniReffo-FOSXV5 UniRef90-19BZ09 UniRef90-G2FXR2
UniRef90-E4TZQ2 UniRef90-K9T9M1 UniRef90-D6SLD6 UniRef90-G2E4N5 UniRef90-A6LR38 UniRef90_C6C8T3 UniRef90_W6SOF8
UniRef90 $13 V X J 7$ UniRef90_UPIo0041D5307 UniRef90-A7HES9 UniRef90-A5N1999 UniRef90_UPIOOO367F427 UniRet90-E6U880 UniRef90-Q39xW8 UniRef90_UPIo003B65B14 UniRef90 W6ED72 UniRef90 W6RSC1 UniRef90-H6LJT9
UniRef90-FOSTP6 UniRef90 UPIOOO372152F UniRef90_W9DPW4 UniRef90-1203U7 UniRef90-10x943 UniRef90-C9RH91 UniRef90-UPIOOO2893657 UniRef90-H1ZT19 UniRef90-UP100046D3D99 UniRef90-FOTA88
UniRef90 UniRef90-A3DFR2 UniRef90-15B6E6 UniRef90-W9V8C7 UniRef90-F5YPA7 UniRef90-E4T4C9
UniRef90_A5NGZ5 UniRef90_B9M073 UniRef90_S9SFK1 UniRef90-UP100040C50AD UniRef90_U6BP04 UniRef90-F6D760 UniRef90_UPI0003B57137
UniRef90-K9RMB2
UniRef90_K9RMB2

280
VM G|V|QYTKMYMGGTT|LADTAEALNAKATVISUQHYCTRKTL
 LFGVKVNDMYAGGTTKEEVQAALHAKAT:VFQEYCCEKTS

 K GLKPN Y UVPFSTDDQLQKDSEAAATVQUCPTLGTY YA EVGLRVVGNWSGDATLAEVDGARKRKDNLIHSYRSUTTSV EMDIEANVLFHGNTTIEDLDDTGNARATFALNRYEGTKAA EMGAKVVLFPDTSDVLDELKSTGDSKFTWALGCDSAEPAA AMDVPYIMFPDTGTKDEDLKDTGNSDLTLSLGSYASDLGA EMGVDYSRMYAGGTYLDEMRDAPNADDTLLLQPWQLDKAK EMGVPYEMYPRGGARVEDVDSGNSKMTLSLGAWSSDEAA LVGVEYKMFPEGGTTVEELKATGDAIGTLALGEWCSADAA EMDVQANHVSHGETTLKDLRSTANAIGT:ALNKYEGAKAA A GLTVNLLP HFAHPEQFKEATEAALNLSICATHDDYFV K Girviak ba GNSQYK QDAQAHRAKLNVVI S SKQLLKLA

 QMGLRPNHVVPLSTMEELERMSEAAATVQYCQTLGTYLA RIGYEAQ YIVPFSTVADLEYISEAAATIQVCSTLGTYMG DLGVEMDMFPDTGATVAQURDSGNSRDTLALGAWSSEAAG LLGVETNYDPFYSS LEEKIRKMPSAAASTSICKVFADEFM LMNVDYTVMYDGGTTFAEAEAALNAKATVCMQGISTEKTM EMQVDANVLFYGNTTIADLTETADALGTLALNRYEGGQAA

## $\stackrel{1}{N}$


 EMGGITK TVVMYPK GGTTIVPELVSMGDSMKTVVAIGEWATKGAA


 EMGGEYSMYPKGGIKMQELEQTGNSLHTIAMGHFSSLEAAA EMGDK Y K M F P D G G V S IIE ELKM T G S S I G T I A L G P Q A S S A A A
 QMEVPVYRMYAGGTSQQAMREAPNADDTLLLQP WHLI I T K

AF G V V Y V P F Y S S
 EMEVDATFFFHGNTTVEDIKDSANAKATITMARYE GLSTGG
 A F GVV P Y T DI YY P G G T R L D D A A D S D N G K A T D S L G P Y S A T K T Y

 NF GVTP F FLLYSNTTVEELSHISEALATVSICGTLSS YLG



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












AEFCLDLEMKPVLLNSKYVDDPRDKALQENVDYGME!VTN TEFLLDLGMKPRHIVSGTPGGRFDKRMKEILERAPGANFN ANLLVEMGFEDAAI RSFHHDEEEYEKLHKIAGDFPFNVAN


 TEFVMSLGMVPVHVLTGTPGKSFERQVKAMAGVEGNVKAA AEFCDDLEMEPVLLNSGYKDDPRDKALIEGVTFNMEIITN AEMLQYL GMEVI GAYHYDQFADNLLDDLANREK DPDNVAT TSTAKILNLDII LI AEH GNEKDKSKDTQLFNQEVIVLLNK VKFLQELGCEVKHILCNNGNKRWKKKMEALDAEDAEIVFK
 C EFFCLSMVMDEPI HIVVCSNGENGFKEEAKAELYGAETTVVAGG LALVKDLGMEVVGTCVVWHHDQVYDNATELYGNFPVGVCN 1 ALLRELGFTVQGAADGFHDPFYDNVKTYGDVPHYNVCN I ALLRELGLEVQGAADDKASDALAQDVKNYGDIKNYNVCN TEFLLTMGMIPVYVMTGTPGSRFETEIDKDSDDKVVVKAE A A LI DDFGMELVGLETPTYDDDDDEYLNGDHKDFVVDDAN A GFLLELGAEPVHVVCTRGNKDWAEKMNALEGTGCHAYPG TKFALEGGMLPVYVITGS IGNHFEKRLHQLLDPDAKAKQQ



 AEF CLL E CEMKPVLLLLLGG
AEFYQSLGMNVL GLVKPH

[^0]
A niRef90-G2FXR2 UniRef90_E4TZQ2
UniRef90-K9T9M1 UniRef90_D6SLD6 UniRef90_E1Y8D2 UniRef90_G2E4N5 UniRef90_A6LR38 UniRef90_C6C8T3
UniRef90_W6S0F8 UniRef90-I3VXJ7 UniRef90_UPI00041D5307 UniRef90_A7HES9 UniRef90-A5N1T9 UniRef90_Q7M8U9 UniRef90_UPI000367F427 UniRef90_E6U880 UniRef90_Q39XW8 UniRef90_UPI0003B65B14 UniRef90 W6RSC1 UniRef90-H6LJT9 UniRef90_FOSTP6 UniRef90_UPIO00372152F UniRef90_W9DPW4
UniRef90_I2Q3U7 UniRef90_IOX943
UniRef90_C9RH91 UniRef90_UPI0002893657 UniRef90_H1ZT19 UniRef90_UPIO0046D3D99 UniRef90_F0TA88 UniRef90-A3DFR2 UniRef90-I5B6E6 UniRef90-W9V8C7 UniRef90_F5YPA7 UniRef90_E4T4C9 UniRef90_A5N6Z5 UniRef90_B9M073 UniRef90_S9SFK1
UniRef90_UPI00040C50AD

UniRef90 _99D 39
 UniRef90_UPI0001E2BDB0 UniRef90_R4KG98 UniRef90_Q2JP76
UniRef90_H2IKR3 UniRef90 ${ }^{-}$C4LAS7 UniRef90-W6NFE2 UniRef90_Q53011 UniRef90-P16267 UniRef90_Q3B2P2 UniRef90_F5YEN0 UniRef90-P11347 UniRef90_13YET4 UniRef90_UPIO0047C41C5 UniRef90-J1L1F8 UniRef90_UPI0003B3E977 UniRef90 C0GKD4 UniRef90-UPIO004011C2D UniRef90_F7NPZ7 UniRef90-UPIO0030569B0 UniRef90-UPI000422A073 UniRef90-FOSYF2
UniRef90-UPI0003787D6A
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UniRef90 W0IWP8
UniRef90-I9MIX4
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UniRef90_C6C8T3
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UniRef90-I3VXJ7
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UniRef90-A5N1T9
UniRef90-Q7M8U9
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UniRef90-W6N8C3
UniRef90-A3DFR2
UniRef90-15B6E6
UniRef90-W9V8C7
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UniRef90-F6D760
UniRef90_UPI0003B57137
UniRef90_UPIO003B5
UniRef90_K9RMB2_

|  | 460 - 470 |
| :---: | :---: |
| UniRef90_J9DD39 |  |
| UniRef90-A0L6W8 | LHRMTTL GYEGAMYILTTLVNAV |
| UniRef90-A1VPS2 | FDRHHPTWGYEGGMRLLDEFF |
| UniRef90-UPI0001E2BDB0 | LDRYMPVVGYK GALRRLIEM |
| UniRef90-R4KG98 | GSFN YFGYKGAFEVARRMTRLLKNSSFQHTSLPYK |
| UniRef90-Q2JP76 | FDRHHPTYGYVGA $\square$ NL |
| UniRef90-H2IKR3 | LHRSTTL GYEGAMYILTTLVN |
| UniRef90_C4LAS7 | LHRMTTL GYEGAMYMLTTLVNAVV |
| UniRef90-W6NFE2 | G LGGYQGLINYGNKVLDVLETPEFAHAKFPY |
| UniRef90_Q5 |  |
| UniRef90-P16267 | Y DRA GPTVGYGGADWLAEQMANTLFADMEHKKNKEW |
| UniRef90-Q3B2P2 | LD RYFPSVGYSGGLRIVEK\LGVLM |
| UniRef90-F5YEN0 |  |
| UniRef90-P11347 |  |
| UniRef90-13YET4 | LHRMTTL GYEGAMYI LTT T L VNAV |
| UniRef90-UPI00047C41C5 | LESKRPTFGYNGLLYLARKI ENAVENPSFKHKKLPYK |
| UniRef90-J1L1F8 | FDRAMP \TGYRGCLRLI EMI S NAL |
| UniRef90_UPI0003B3E | LDRYFPSVGYKGGLRLLEKI |
| UniRef90-C0GKD4 | LDRY LPPIVGYK G ALRLIEEMIS |
| UniRef90_UPIO004011C2D | Y DRRHPVVGYAGATWLAEQMANAI FTDMEYKHNKEW |
| UniRef90-F7NPZ7 | FQQSNNYMGYNGTFEVARRLA |
| UniRef90-UPI00030569B0 | HQSTYAGYT G\\|IKAAQELYIAFKSNVWK Q |
| UniRef90-UPI000422A073 | R NATL GYE G A M M M LT T L VN |
| UniRef90-FOSYF2 | E Y M F G G Q G T NFAYSVLD T |
| UniRef90-UPI0003787D6A | LD RYFPTVGYKGGLRLLEKML GA L |
| UniRef90_W4D8N8 | F DRHHPII GYQGALNLLTTIV |
| UniRef90-FOT2L6 | EPTE MLYDGLVRFGQTI HDAI F NPAFRHSKLPY |
| UniRef90-UPI00037B9113 | EQL $\quad \square \mathrm{F}$ GYQGLLNYAERLLETLDNKEFKHSTIPY |
| UniRef90_R4KIF0 | EQFG FGYQGVLNYAGRIA |
| UniRef90-Q0W439 | FDRAMP V VGYRGCLRLIELI SNAL |
| UniRef90-UPI00041616E7 | LDMKRPTMGYDGLIFLGNKI AD QLENPGFRHVKLPYK |
| UniRef90-P15052 | HHHRYP $\square \mathrm{WGYQGAVNV} \mathrm{L}$ VWI LDD |
| UniRef90-W0IWP8 | FFTTMGYAGA!RLIDDQTSALEDKKDRDCEEEW |
| UniRef90-19MIX4 | Y ${ }^{\text {P }}$ RHPVVGYAGATWLGEEMANTLIFTDMEYKKNKEW |
| UniRef90_Q3Z7D1 | LD R Y F PVVGYRGAMRLLEMI |
| UniRef90-A3PLS7 |  |
| UniRef90-W0ISZ1 | Y D R A GPVFGYa GA TWL AEAMANTLETDMEYKKNKEW |
| UniRef90-UPI00047B9069 | LT Y Y NPVVGYEGGKRLVENDSNVLLDR |
| UniRef90_R4K6V5 |  |
| UniRef90-U7FUV8 | MHRATTL_GYEGAMQ\\|LT TLVNTV |
| UniRef90-UPI000377844D | F DRHHPTLGYQGA\NMHNWI VNT |
| UniRef90-W6RT95 |  |
| UniRef90-B3QXW7 | VDRYFPNVGYTGSMRIVEKI L GVLM |
| UniRef90-W7YQY0 |  |
| UniRef90-K6T0D9 | FDRAGPVIGYNGAIYLAETMANALFSHMEYKHEREW |
| UniRef90-FOSXV5 | F GQTFNYMGYSGAYELARKAARKFQNT |
| UniRef90-I9BZ09 | E FSAFGYQGLIDFGYRLSDA |
| UniRef90_G2FXR2 | DYRHPVVGYAGAI WLLAEEMANTLFTDMEYKKNKEW |
| UniRef90-E4TZQ2 | FDRHHSISSGYDGALNLLT WITINKV |
| UniRef90-K9T9M1 | LDRVGPSFGYRGSMHLLCN |
| UniRef90-D6SLD6 | L D RYFPSVGYKGGMHFLSAMI |
| UniRef90-E1Y8D2 |  |
| UniRef90-G2E4N5 | Y D RAGPVVGYEGAAWLAEQMANTLFTDMEYKKNKEW |
| UniRef90-A6LR38 | EHDA ${ }_{\text {d }}$ |
| UniRef90-C6C8T3 | LHRQ TTWGYEGAMAILTTLLVNAV |
| UniRef90-W6S0F8 | I DRYMPLVGYKGAMRVLELILTALMDRV |
| UniRef90-I3VXJ7 | LDRHFPIVGYKGTAWLVERTGNTL |
| UniRef90_UPI00041D5307 |  |
| UniRef90-A7HES9 | FDHRYPLVGYQGVVNMVTEI |
| UniRef90-A5N1T9 | LDRYGYYIGYRGSMRLI EMMCDA |
| UniRef90_Q7M8U9 | FDRHHSISGYKGTLNLLTWIVNKVLDKMD |
| UniRef90-UPI000367F427 | FDYRHPIVGYAGATFLGEMI ANTI F T DMEYKKDREW |
| UniRef90-E6U880 | PHHYFPIVGYRGATRLMEMI TNALMD |
| UniRef90_Q39XW8 | PVHRYPIIGYQGVINMVTTI CNK |
| UniRef90-UPI0003B65B14 | E QANMGYEGLISYGEKI VETLENTEFKHATNPY |
| UniRef90-W6ED72 |  |
| UniRef90-W6RSC1 |  |
| UniRef90-H6LJT9 |  |
| UniRef90-F0STP6 | E YMTYGYKGTLDFAYKILAADTNRSFEK |
| UniRef90_UPIO00372152F | YDTGGPYAVFKGFMNFCDEI DRMLNANDWEYLEAPWQ |
| UniRef90-W9DPW4 | P $\square$ HHFPVMGYAGAARLDEWIGN |
| UniRef90-I2Q3U7 | Y DRA GMYVGYAGA |
| UniRef90_10X943 | E YMIFGYK T T E F A K S L D Si R N R F K RV |
| UniRef90-C9RH91 |  |
| UniRef90-UPI0002893657 | E FSAFGYKG\\|IDLGYR\|ID TLANNLSKRVKLPY |
| UniRef90-H1ZT19 |  |
| UniRef90-UPI00046D3D99 | D R VGP TVGYRGAMR\L |
| UniRef90-FOTA88 | YDYRHP\VGYAGATWLAEEMANVLFTDMEYKKNKEW |
| UniRef90-W6N8C3 | EHLP FGYEGIIRLGEALLEVLAHKKFRHVKLPY |
| UniRef90-A3DFR2 | EHYS MGYEGLVNYGERILEVIENDEF |
| UniRef90-15B6E6 | D R Y P P V VGYK G GL HLLEKI L GVLMD |
| UniRef90-W9V8C7 | FDRAGPTIGYRGAI ELAENI ANTL |
| UniRef90-F5YPA7 | RMGPITGYRGGLHLLDKVLDAFMD |
| UniRef90-E4T4C9 | DRPGHGYEGGANLV/KQIMDAF |
| UniRef90-A5N6Z5 | P VGGYDGl\| |
| UniRef90-B9M073 | E YA TFGYRGLLNFAS Si HDVVTNRSFGRVR |
| UniRef90-S9SFK1 | F DRAGPTMGYQGAMDLGESI ANTLFAHMEFNKDREW |
| UniRef90-UPI00040C50AD |  |
| UniRef90_U6BP04 |  |
| UniRef90-F6D760 | YDHRHP IVGYNGAMRLMELITNAV |
| UniRef90_UPIO003B57137 | LD R Y F P T T C Y K G G |

UniRef90 Q3Z
UniRef90_K4KVC5
UniRef90-Q28W35
UniRef90_B9E0G5
UniRef90 U4UVS3
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UniRef90 D1J784
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UniRef90 UPI000478EAD2
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UniRef90_O07356
UniRef90_S9SGV8
UniRef90 I9LLL0
UniRef90_G7QBS7
UniRef90 U5QEL7

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NDKKFAVINPCKDCQPMGA LLALLGGVKNAMPLIH
 KEKNFAREALVINAPRTCQPYGAMLCALGGIEGCLPFLH ERAKTNTDPLRSFSQCSSCPEGCASGTVVGRTRDAAVVFH NASEDEFCKERSYSQCSDCAQMTASTDTF FIRDAAVVVH K E $\square \mathrm{K} P$
 KCKLCELLKMP $\square N$ Q Q T M C T Q S $\quad 1$ VA C Q
 NPRGGCVLSG $\square$ N SVV LA A ID HVVC IL H TKRNYATVNACKMCSPLGGAS LVERGB TTPYV STTNACKLCGACMAFKGG
K HRST $\square$ N P G 1 C Q P L G A VMAF L G K K N C L A S GSMPLI H
TKRNYATVNPCVMCQPMGSALAFKGVENTMVVYH



V WT YEGPP HVGAMRVATG MK GLHYVLH
 1 VT TSKKACSVNPLKMSQPIGGSFAFMG LRGAMPLLH
 $E L \vee R$

GCK LCELQSPLNQ





IN P C K M C M P L G A VMAFK G I E N S M F V L H QPR Y VCA I GAQQTVLADNKADPI L N WMYA GPA HI GTLRVA SSFKNVHAIIMH
VSESKKACAVNPDKMSAPLGASYAFMG LQSCMPVMH



KKACAVNPLKMSAPIGAALAFLGMDR ALDLLH
S V WT Y E G P P H I GAAM R I AA T A M R D V



VT T R Q K S VAVNPLK QS QP LGAALAF LGG LK GTMPL FH WMYA GPAHI GTLRVA SSFRNVHAIMH N A C K LLCN P L G A C L V $\operatorname{G}$ F R G DE K CVVP F L

TNLTVNPCKMCMPLGAVTAFYG VKGCMSIIH
 NACYLCAPLGASIAFSG K K Q A S N Y R NVS ENPCNMCMPG G G I L A F K G ila G S M TV L H VWTYEGPP HV GAMRVAT AMKGLHYVLDH
NKKSST■VHPHYACAVGGAYTAVADANGVIAN A A
 WM YA GPAH LGTLR $\square$ A SS FKNVHAI MH IN P CKMCMPMGSATAFYG LKN SMTILH $V$ WT Y E GPP HVGAMRDAT AMEGLHYVLH WMYA GPA HI GT LRRVA S SFKNVVAADMH WMYA GPAHI GTLRVA S SFKNV HA I M H


 WMYA GPAH DGT L R V A A S S FK NVMA S QAS MCAECIAVTNAT II QD SVVI QH
 WTYEGPSHI GA $\square$ SRVAA A A MTGVHFVLH WTYEGPPHI GAMRVATAMTGGLHVLH


| UniRef90 F5IU65 <br> UniRef90-UPIO004636D60 <br> UniRef90_F6D7D0 <br> UniRef90 ${ }^{-}$V4J0Z9 <br> UniRef90-UPI0002E792BD <br> UniRef90-F4BXC7 <br> UniRef90-U5RSV1 <br> UniRef90-K6UAL4 <br> UniRef90_H2JCF0 <br> UniRef90_C1DE18 |
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पMAATSSFSEGSS

GSQGCCSFHRMQLTRHFKDP
APAGCTALAPT TIGRLLAEKR
SGPGCCMQTTAAEQGQSGHKHACFVSGVVAGTSSFTEGSS GGPGCCMQTAAAEQGQSGHKHACFVSGVS


GSQGCSTYMRFQLTRHFREP
GSYGCSACGSLAAI NTIYKHMGDTNGE
GSQGCSTYMRLHLAHHFREPVD
SPDGCSANHPRFDLGFKDGLI RRHKPVIRI ASSSLSEKGA
GSQGCSAY PRYMISHFREPVRRHKPVIR

GSQGCSTFVVRYGFARSAGYQGESDFGGTH:I PCTNSSEKDI

GSQGCATYMRRY ISHFRESID
$A P D G D D Y F$
$G P Q G C A S F G L T L F V R V M R S$
R
ARHPDMQTTAMSEVAT
$C G P G C A D K Q Y M N I A F Y N G Y Q S A G Y G G G P V V P S T N A S Q R E V$
$C G P G C A D K Q F M N L S F Y N G F Q G G G Y G G G A V V P S T N A S E R E V V$
GSQGCTSFGLVLFVRHFRE
GSQGCATY IRRYLI SHYKEPDD
SPDGCSGENSKFNLSMHVGLRGKPLQNTLNASSNFNEETA
APQGDTYADLLFTMDERRGKR
CGPGCASKQFHAL SGDSGYQGGEFQVPSTNMGNREV
GSQGCATYMRRYI DSHFREPVD I ASSADGEKHA
APAGCGMINFSDNRNRVNFNKSGEKKHLVVVSSNMKESDA
GSQGCSTY RRHMAGHYNEPID

SGPGCSEKVFSAVSFNSGYQGTGYAGGSTVPCTNTSEKEVV
AP $\square G D D Y F$ NVMRSMLERERDFTPVTAS
GSQGCTSFGLVLLVRHFKE
CGPGCQSQAAS LGGCNGGQNAYSYQESII PCTDFGESDV
GSQGCATY $\square R R Y L I S H F K E P \square D$
$A P V G C S A S A L G Y R E L F R N D P D G R P P F D$
$G S Q G C T A F G L V L F V R H F R E T$
GSQGCTAFGLVLFVRHFRET$\quad$ A
SGAGCCDR LYQGMSYCNGYQGFGYSGGSFI PNDNDHREDF
A GPGCGAKLWTTLGLQNGCQGSGHSGGHSIPCTNVTEKEV

 $A P L G D D Y F \quad N V M R S M L E R E R D F T P V T A S V V D R H V L$
GS QGCATY $\square R R Y L I S H Y K E P V D$
APQGDTYFTMDERRNHR
APDGCASDSSGRNVSFRARARGFDVRPVVTYTTFQARDLD
GSOGCNTY RRHMATHYNEPRGDVRNV


APQGDTYADLLFT MENGMERRDHRPPVTYTTVEGRDLL
CGPGCMYKQYFFMGFENGFQGSTSTGGGNVASVNVGENDI
APQGDTYFTMIERRNHR


GS I ASSSLTEEGT
APQGDTYADLLFTMDERRGKR PPVTYTTFQARDL
AP LGDDYF NVMRSMLERERDFTPVTASVVDRHVL

AGPGCASKASGFAGVQAGQQGEGYAGRTHVSCTNAGEKEV APQGDTYADLLDTMI ERRNAR A GPGCGQKLWGALGFQNGCQGSGYVGGHSVPCTNIGEKEV GSQGCSTYIRRHMAGHYNEPID GSQGCSTYLRRHMAGHYNEPID
AP DGDDYF N
S GPGCGNMDQGFFERST
SPDGCAASQSFTCRYYRAARRGWEVKNPQSDCTNDTERDM
GAQGCTAFAKVVLVRHFRES GWEVNDPSTSTAMTEVST
APQGDSYADLLFT M
APQGDTYADLLFTMDERRDAR PPVTYTTFRAQDL


IASSSSSFTEGGAS
$V R V L S T E M D Q N D V$ ATSSFTEGAS A STS LHEDSA LAAATSSSTEEDSVV

GSHGCSTYMRFQLGRHFKEPVSVSS
GSQGCSTFVRYGLNRHFREPAE
GSQGCAAYFRSALTRHVREP
APVGCYATTLEATLGTTGAANARKPDH

SPMGCFANTPLNNTQFRNSARGEEPDK
GSQGCCAYHRSALTRHFREP
GSQGCTSFGLVLLVRHFKE

[^1]NTLCTNLQEKDT $V$ MAA T S S FT E G S S




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UniRef90_U5QEL7
130
140
150
UniRef90_F5IU65
UniRef90_UPI0004636D60
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UniRef90_V4JOZ9
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UniRef90_F4BXC7
UniRef90_U5RSV1
UniRef90_K6UAL4
UniRef90_H2JCF0
UniRef90_C1DE18


$V$
VFGGRSN DNGVKNLVKR
K
K
N

|  | $F$ | $G$ | $A$ | $A$ | $E$ | $K$ | $L$ | $R$ | $Q$ | $A$ | $L$ | $R$ | $E$ | $A$ | $H$ | $N$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |$R_{l} \quad F \cdot H$

$K^{E}$

| $V$ | $F$ | $G$ | $A$ | $S$ | $E$ | $K$ | $L$ | $R$ | $Q$ | $S$ | $I$ | $Q$ | $D$ | $A$ | $W$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $R$ | $F$ | $K$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $V$ | $F$ | $G$ | $G$ | $G$ | $A$ | $N$ | $L$ | $K$ | $T$ | $A$ | $C$ | $K$ | $N$ | $I$ | $F$ | $S$ |
| $V$ | $I$ | $Y$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $V$ | $F$ | $G$ | $A$ | $G$ | $D$ | $S$ | $L$ | $V$ | $E$ | $T$ | $A$ | $L$ | $I$ | $S$ | $Y$ | $E$ |
| $V$ | $R$ | $Y$ | $K$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $V$ | $F$ | $G$ | $G$ | $Q$ | $S$ | $N$ | $L$ | $I$ | $T$ | $A$ | $I$ | $D$ | $N$ | $I$ | $F$ | $T$ |
| $L$ | $Y$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


P
$P E \| I T G T T$ T $C$ CLS E T
D DV

## UniRef90 F5IU65 UniRef90-UPIOOO4636D60 UniRef90-F6D7D0 UniRef90-V4.JOZ9 UniRef90_UPI0002E792BD UniRef90-4BXC7 UniRef90 U5RSV1 UniRef90-K6UAL4 UniRef90-H2JCFO UniRef90-C1DE18

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UniRef90-E1JU24
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UniRef90-D8EZD4
UniRef90 O8PY
UniRef90_UPI0003B3409A UniRef90-D9PU63 UniRef90-UPIO00418B8EA UniRet90_Q8TJ87 UniRet90-UPIO004640E8F UniRef90_D5EQN4
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UniRef90-R4KAL 1
UniRef90-POCW53
UniRef90-C7DFS1
UniRef90-UPIOOO3740525 UniRef90-U9W3C1 UniRef90-H5YF73 UniRef90-E314U2
UniRef90_S9SAJ7
UniRef90-F1Z4V1
UniRef90-B3QQ18 8
UniRef90-c9RQ15
UniRef90-B9KK25
UniRef90 S9SAB4
UniRef90-C6BX25
UniRef90-L7EG97
UniRef90_UPIO002481C42 UniRef90-UPIO002886238 UniRef90-Q6YXN5

EGDIRLFKKNEDDPLVPTSTPSYKNTHVEGYDSTVKALVS
DGFMRELREELGTKLVHISTPSFVENHFRGYGNAIKSFIL
ESVADEMEEELGYSVVPDYCEGFKSKIWSSGFDAGFHGUL
 NQDAIKAVKDGKVPVIHTSTPSYVG SHVTGFSNMTKAMA
EGYLTLARKKHDTVYYVSTPDYAGAFQDGWAKAVTGLVS



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## $\stackrel{D}{\mathrm{D}}$



 ANFVERAQLDAEGDVMLADVN

 PMDLKDYKA MMETMIFASTPSYTGSHDDGFHTAVRSAVQ DSIAEEMEPEVGVPVIPLHCEGFRSKHWSTGFDAAFHGVL ASVVSGYRKR GVPIVFAETNGYQGNNFTGHEVVARAITD PMYLKEFFDEFGDDVVQVSTPSYNGTHVDGWHGAVRSMVE QRLI DEFKEEEPVSFVPVSTPGYGGTNYEGYYFTDREVVK KRIVQEFYTEEKVKIVPISTPGYGGTNSEGYNAALLSIVK GQVVSEYQKK GVPVVYAETGGFKGTNYVGHELVINAVIN EAYVELARQKHDTEVVYVSTPDYVGAFQDGWAHA QVVV EEVASYFSESRVPVLHAEIPGFKGNNLYGASEDLKSTI DMLLKEFENGEPLPMIHASTPSYQGSHVDGFHAAMKATVA AGFLKLIRDKHGTEVVFAPTPDFVGGFSDGAWGAVTAMI KAVVSEFKEKGGIPVVYVDTAGYKGNAYDG HELLLKSII FAVVNDFREE GAPIIGADTGGFRGNSYWGYDLVLQALV DRMAQDYLKERDLPVVPVSTPGYGGTHAEGYWVTAKKVVE QNFVDRASTDSDSDVILADVNHYRVNELQAADRTLEQVVR GGMAETMG $\square P$ VPVIPREDPSYQRKENFGADETFYQIVK
 PGILREYKKETPMPI IHASTPSYQGSHIDGFHAAVRATVK $P A L I E E F R Q S V D T Q L V F A S T P S Y A G S H L T G F H K A V L A T A K$
$G R I T S R Y Q I T G L P I I N V P T P G Y G G S H S E G Y W L T V I R T V C$ GGLAETMQ EIPVPVIPLELPSYQRKENFGSDETFYQ GAK GGLAEALG LPVPVVALELPSYQRKENFGADETFYQIVR EGYLRLIRQKHDTALVYVGTPDYVGAFQDGWARAVEAVVR QNFLNRASLETQADVLLADVNHYRVNEMQAADRTLEQLVQ
 QNFVDRASMSVNSDVILADVNHYRVNELQAAADRTLEQIV EFIIKNFYASHPVKIIPVKSAGYGGTQFEGFNRALKADVS AGVAGRF LRNGDPVVGVDTAGFRGNNYFG AGMAEAMR
GEVARRFQ
RRITQEFYDENGVPVIYAETGG QTFVDRAKDESTSDVLFADVNHYRINEFQAADRTLEQITR ESLAGEFRAEGKPIVAVETAGFKCNNFA AHSLVVNAII DSTAQALEAELGVTIVTLHCEGFKSKHWSSGWDVI EHGIL EGLLKDIRQKHPLPIVFVSTPDYKGSLQDGYAATVEQVA GGLARAMN DLPIPVVPVELSAFMRKENWGANETFYQLVR PRLLAEFKKEFADEVVHVSTPSYSGTHMEGWHAAVAALAG
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UniRef90 S9SAB4 UniRef90-C6BX25 UniRef90-L7EG97 UniRef90_A6TTX7 UniRef90 UPIO002481C42 UniRef90-UPIO002886238 UniRef90-Q6YXN5

F Y STATPKK 210
220
230
VVNL $\quad$ A GWMEPSDMREIIKRIA A KYMTKKTGEPN GKVAIFPGWVNPGDDRELKRIAG
 ALAKRSQRRNGK VNILPGWVEPADMAEI KRDAS
 QSFARRGSPNGK

 RDIVRRKNPKKQEDLVNVINLDWGSDVF KPMLK R D WARPSAAPAARAVTLFCREMDGAW
$R G / V R D L E$
NLA T P S K S N S K L N L IT GMVS P S D TA E I K R L Q
 $N$ SLADTRNGKWT NGRLVVVPGFDLYAGNLREYKRMMIK R KVVKPPVKKQKDLVNVFNFAGIDTFSPL
 QL RQVNKKPKKQKNLINI IAL Y L SVV S N RA $\mathrm{A} V$ K P P K E K GFAAKTGTPNGK
 GFAAKTGTPNGKDIDGFCEPSDMAEVRRLCA
 AMAQKKGKA GEH KFTEKPESPEKPK $\square$ PN GKL N E Q LA GESVP HHGG SLVMEHAEPVDR $N F \vee 1 R$ NARPQ

KEKG NL S
 RQ Q A NKNPVRQPDLINIVAL RFAEGEGRGDKTK NLDPGMVSPAPLRHYR DLD


 QLCLEK T SAS DT




 T F ATGGAKKNM $R Q I V N R H P T K K Q N D L L N V V A L W G T D Y F S E A M L A$ $K$ A ARPMERTEKVSCNLLGPTALGFRHRDDVLEVTR LLE QYAD D Y A GPVQPGLVNVWSLLPYQNPFWRGDLEEI QRLLDD QLCTEKAE |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ | $T$ | $I$ | $I$ | $K$ | $V$ | $P$ | $K$ |
| $N$ | $E$ | $K$ |  |  |  |  |  |
| $N$ | $A$ | $K$ | $D$ | $T$ | $T$ | $P$ | $\square$ |

 E L C T DSKANNK N LVA GSLVADVRKVKEMMD
 Y Y R Q G T L D Q SLLT K E P S A N I I GI F T G F H N Q H D C R E L K R L L

 $K$ Y L VK K P E K K Q D D L DN D ALVPE T TVRTPWQVNDAGCHLTPGD\|EEDRETVE ALAASSADGSPRHERKAGARPVCNGFRHRDDLAEVTRQVV E Q F V S K K LP ILK K GK I N L WVN P P Y LDP P FWS G N I D N L K N M L E



 WKLVKPPRKKQEDLVNVFSFAQSDGFGPL




 QFVGD YK GEKKK GLI NLWFETP FFNTNWRGDYLEIVRIL K

 T L A FYl K K A S K | E | $P \mathrm{G} V$ | V | T | V |
| :--- | :--- | :--- | :--- | :--- |
| N | K | G |  |  | S I M D S G K N N LLVNVVTAPDSPGDTRYI K SMLK HLTTPVERTPMTGRRPSCNLLGPTGFRHRDDVVEITTRLLE F Y I EK A K Q N N T S TVVGSKNEVVNDF G GF H H Q H D C R E L K R L L A RYYLDKARRQGKLNQS $\square$ T DVPSANGFHNQHDCRE LKRLL K HVDMDSTKH D K K I N I I S S M $\quad$ S P A D TR Y L K DI L D

 D Q Y L K P A N TVEPGLINDIWSVVPYQDPFWVGNLKEI ESLIA K E L A K K C E S T G K

 NA F IA EN A R S A V I Y P QP QVTVVLA G S SLDS P G D I Q E ITK S I I E ALAGPHVVPPPGTPRPQRPRCNLLGGFRHRDDVTEIARRLLD AL A GPASPRSPDEPRQRPLCNILGPFRHRDDLIEIRRLLDD




UniRef90 F5IU65 UniRef90-UPIO004636D60 UniRef90_F6D7D0 UniRef90_V4J0Z9 UniRef90_UPI0002E792BD UniRef90_F4BXC7 UniRef90-U5RSV1 UniRef90_K6UAL4 UniRef90_H2JCF0
UniRef90_C1DE18 UniRef90 UPI000345533A UniRef90_A6UNA1
UniRef90_P95296
UniRef90_K4KXG5 UniRef90_UPI00025554C4 UniRef90_UPI00047DFC50 UniRef90_C0QKL2 UniRef90_B1Y6B3 UniRef90-UPI00047C0030 UniRef90_D9SS81
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UniRef90-S9SAJ7 UniRef90-F1Z4V1 UniRef90_B3QQ18 UniRef90_C9RQ15 UniRef90_B9KK25 UniRef90_S9SAB4
UniRef90_C6BX25 UniRef90_L7EG97 UniRef90_A6TTX7 UniRef90_UPI0002481C42 UniRef90-UPI0002886238 UniRef90_Q6YXN5 UniRef90_L7EHB2 UniRef90_B4S911 UniRef90_A719V1 UniRef90_H0PXC9 UniRef90_A4YNP2 UniRef90_L7EQG8 UniRef90_F0SXY6 UniRef90_B9M0N8 UniRef90_F6DLK9 UniRef90_UPIO0035CFBA5 UniRef90_B0YPM9 UniRef90_B3QXW5 UniRef90_UPI000465CE57 UniRef90_UPI00025554CE UniRef90_E6U878 UniRef90_F8ANM3 UniRef90_B4SC65 UniRef90_Q3Z7D3 UniRef90_K4KVC5
UniRef90_Q28W35 UniRef90_B9E0G5 UniRef90_U4UVS3 UniRef90_A0A059KIH8 UniRef90_D1J784 UniRef90_UPI000463A24E UniRef90_D9QPA8
UniRef90 C7BET8 UniRef90-Q85AC2 UniRef90_UPI000478EAD2 UniRef90_UPI0003B7795F UniRef90_UPI0001DD052A UniRef90_18SA73 UniRef90_G8LZM3
UniRef90_C7BEF1 UniRef90_F0SWH3 UniRef90_S9SFJ6 UniRef90_O07356 UniRef90-S9SGV8 UniRef90_19LLLO UniRef90_G7QBS7
 TS LCLLELGMSPKYI I TGGTPKERWEKEDKALVDQEYVVKA D


 ALLL L K D L G L E I L A D H Y D T G A Q P R Y Y D R V

## ,

## V










 IV VVVRDLGVDVNG S IVFHHDPTYDAGYPEQETLQHLING
 A R F V A E E L G M I P K V V V C T G V K N E Y D

 S S SL HEMGAQVTAAVTTTNSPV LLQRVRTADVLI

A AAFLREDGVVPVLCASGGKSGLMKKRMLELIPDEDDQVRE DS V L S E L G H DP I Y D GA GK H Q D T L K E L V E T Y G D DP HY TV S K ARVAREMGFEVVGMGCYNREFARPMRAAAKGYGLEADVTBD SAFMDDQLGLVPACHDIDTENPPEAERAALSDDSEVPVYFA
 S K L C L E E N I R P L V I A T G T R A K E L L E E D L K K Vid E N CMMV I D D
 GSFLAEMGVELSVCVTTTQS
 SHFFADMGATVACA S QD ARVAQELGGEVVVGLGT

SRFLD DLGWLPEVTVCTVQVKD DEREAISARGYRTNLVVE
 TK L L C EMG IRVVSCA GTYCKH DEEWFKEQVQNFCDEILIT D


 TA F Li T



GS F L V V M GA ELVVA CVIT T THS P


 | $T$ | $K$ | $L$ | $R$ | $E$ | $M$ | $G$ | $V$ | $R$ | $V$ | $C$ | $C$ | $A$ | $G$ | $T$ | $Y$ | $C$ | $K$ | $H$ | $D$ | $A$ | $D$ | $W$ | $F$ | $R$ | $E$ | $Q$ | $V$ | $E$ | $N$ | $F$ | $C$ | $D$ | $E$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $L$ | $I$ | $T$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $T$ | $K$ | $L$ | $Q$ | $E$ | $M$ | $G$ | $I$ | $R$ | $V$ | $S$ | $C$ | $A$ | $G$ | $T$ | $Y$ | $C$ | $K$ | $H$ | $D$ | $A$ | $E$ | $W$ | $F$ | $E$ | $E$ | $Q$ | $V$ | $Q$ | $G$ | $F$ | $C$ | $D$ | $E$ |  |
| $I$ | $L$ | $I$ | $T$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |





 LADL RELGVVT VDAA YSFHHDPSTDSGDPRQDSLSHLVET A WLL T E MGAK Q A A AVTTTTKS P A RAAKE LGGTVVGGLGTYSREQRDVREAAKLYGI EALI TAD A R MAR E L GFTVVVGLGT GREFAREVRAAEAAEHGIEALI T D D



|  | 50470 |
| :---: | :---: |
| UniRef90＿F5IU65 | VD R P GP HTGY $\square$ GATN |
| UniRef90－UPI0004636D60 | LDRYGATVGYAGG\RYVEKIVDTLMDRLDRDV |
| UniRef90＿F6D7D0 | QE $\square$ T M GFEGALK L A V V K K A L N |
| UniRef90＿V4J0Z9 | LD R H F P TVGYMGGLRI LEKI LEAL |
| UniRef90＿UPI0002E792BD | FDYRHPTMGYRGAMLLAEEQIANAMFTHMEYTRNREW |
| UniRef90－F4BXC7 | $P \square H Y F P I I G Y A G A A R L V E M I G N A F$ |
| UniRef90－U5RSV1 | VVIS K S YVGY R G A L T L L E Ki Y T T I V S |
| UniRef90＿K6UAL4 | PAR PFLGGYTGEFAFVKNIAFNLENPSFQKVKLDPYK |
| UniRef90＿H2JCF0 |  |
| UniRef90＿C1DE18 | A ELNRTAIGGFAGTERLARLLL QRLFDSP L R K CII PP W |
| UniRef90＿UPI000345533A | ERH HPYAGYTGMLEMARELYEAVYSPVWEQVRAPWE |
| UniRef90－A6UNA1 | Y D RVGA QLLGY S A GI K L V D TIT |
| UniRef90－P95296 | Y DRVGGPITGYR G AVNLL NRIT T N TV |
| UniRef90－K4KXG5 | HLLHR Q P I I G Y Q G T I NL I T M L A N M F |
| UniRef90－UPI00025554C4 | A NYS $\\|$ G Y E G I V K M G K RLLLELLE T N |
| UniRef90＿UPI00047DFC50 | EGETN】SAGYDGVITT GKRIK L L L E T R G I L Q T LA E Y |
| UniRef90－C0QKL2 | VD R Y F P SVCYK G G M R |
| UniRef90＿B1Y6B3 | FD R \ G C YV G Y R G T R NFVYEVGNVLM D |
| UniRef90＿UPI00047C0030 | EHLPP VGYEG\I RVGEALLNVLARRKFKHVKLPY |
| UniRef90＿D9SS81 | LD RYM T TVVGYKGAI NLI REMSDA |
| UniRef90－K6U1E0 |  |
| UniRef90＿E1JU24 | LDRMGPT F GY T G GMRLLEEKILAAIIMD |
| UniRef90＿UPI0003B6FAEA |  |
| UniRef90－D8EZD4 | HDRMGGHDGYRGAQQLFD TI S N TV |
| UniRef90－Q8PYX4 | HDRVGGATV GYRGALELLDRII T N I I |
| UniRef90＿UPI0003B3409A | HDRFGGILGYQGAQELFDRIVNAV |
| UniRef90＿D9PU63 | YDRVGGRリJA G Y G G G I S FVD SLTNLL |
| UniRef90＿UPI000418B8EA | LD GKR P T F G Y R GVL Y L GRKI E D ALD N N N F NKK |
| UniRef90－Q8TJ87 | HDRVGATVGYRGALELLDRI T N T I |
| UniRef90＿UPI0004640E8F | EHFP L GYEG\VRTGNALLDILNNVLKR HVKLDP |
| UniRef90－D5EQN4 | HDRMGGHI GYRGAQQLFDRIVNTI |
| UniRef90－R4KAL1 | P IL N K T Y I G Y T G GLNL IE EI Y S S I L S |
| UniRef90－P0CW53 |  |
| UniRef90＿C7DFS1 | QDRYSPQMGFEGANVLFDTWIHPL |
| UniRef90＿UPI0003740525 | HDRFGGH\GYEGTLSLLDR\INAL |
| UniRef90＿U9W3C1 | QNFYRPFLGYEGANHLVDLI Y N S F T |
| UniRef90＿H5YF73 | $F D R L G A D V G Y R G T R D L I A D I A N L I ~$ |
| UniRef90－E314U2 | VVLSSRS YVGYRGALLTLLER I Y S TVVVS |
| UniRef90＿S9SAJ7 |  |
| UniRef90－F1Z4V1 | F D TLL A GHGYK G T R DL I F AII G N M L M H |
| UniRef90－B3QQ18 | HDRFGGHLGGKG T Q ELFDRIVNTV |
| UniRef90－C9RQ15 |  |
| UniRef90－B9KK25 | QDRYS PQMGFEGANVLEDTWIHPLT |
| UniRef90－S9SAB4 | V V L S R S Y $\quad$ G Y R G A L HL DERI Y T T V |
| UniRef90－C6BX25 | HDRF GP TLGGYRGTQHLFDRIVNAM |
| UniRef90＿L7EG97 |  |
| UniRef90－A6TTX7 | HDRVGAYS GYE G SMRFLDEI T T T L |
| UniRef90－UPI0002481C42 | HDRVGG $\square$ T G Y N G S LELLLD L I T N T L |
| UniRef90＿UPI0002886238 | LI LID K N Y V G Y S GALLTLTEDI Y N N I |
| UniRef90＿Q6YXN5 | PV $V$ Y R P F L GYE GTNQIADLI Y N S F |
| UniRef90＿UPI00034DD7D3 | $F D R \square G C H V G Y R G T R N F V Y E L G N L T D D L I H H H H A D D W$ |
| UniRef90＿L7EHB2 | $\square \mathrm{l}$ ¢ N N Y F G Y T G G $\square$ S L F A D Y Y T AVA N |
| UniRef90＿B4S911 | HDRF G G H L G Y R G T Q L F D R V V T V |
| UniRef90＿A719V1 | VRKWSQQQ A Y A GAVA Y G S F L L Q GMK S $\square$ S WQ K T |
| UniRef90－H0PXC9 | FDRHKVTVGYRGTRDLIFEVGNVFMEQLHA H |
| UniRef90－A4YNP2 | P THYSPQMGFEGANVLFDTWVHPLM |
| UniRef90－L7EQG8 | PVLNK S Y IG Y E G G L NFIE DIF S CIIFNK L |
| UniRef90－F0SXY6 | S DRMRA YVGYE GAL R LTEDI Y S Vi Lin |
| UniRef90－B9M0N8 | AVLDRGY TGFRGGL R L A E DLFSAV |
| UniRef90－F6DLK9 | HDRTGGQVGYAGT T QFLDRIT NTL |
| UniRef90＿UPI00035CFBA5 | FDRHRCSVSYRGSMQLLDDIGNVL |
| UniRef90＿B0YPM9 | PVHYRPFLGYEGTNQIADLVYNSFT |
| UniRef90＿B3QXW5 | HDRF G G H G Y K G T QEL F D RlA A T |
| UniRef90＿UPI000465CE57 | QDRYSPQMG DEGANVIFDTWVHPL |
| UniRef90＿UPI00025554CE |  |
| UniRef90－E6U878 |  |
| UniRef90－F8ANM3 | DD RYGPMI GYNGAMNI A N DI ANDLS |
| UniRef90－B4SC65 | HDRFGGHLGGYRGTQELFDRIVNTV |
| UniRef90－Q3Z7D3 | HDRLGGGAVGYA GTQELFDRIVNAL |
| UniRef90－K4KVC5 | DD RVGG GQV G Y E G S L R F LD R T N T L LENKYKNYRA |
| UniRef90－Q28W35 | QDRYSPQMGWEGANVI FDTWIHPLL |
| UniRef90－B9E0G5 | PVLNRCHDGYR GALQL DER |
| UniRef90－U4UVS3 | QDRYSPQMGAEGANVIFDTWVHPL |
| UniRef90＿A0A059KIH8 | $F D R \square G N H V G Y R G T R S F V Y A V G N L L M D Q \square A H H$ |
| UniRef90＿D1J784 | PVHYRPFLGGYE GANQDADLI Y N SFT |
| UniRef90＿UPI000463A24E | HDHVGGMLLGYE G S M Y YMDE』SNHL |
| UniRef90－D9QPA8 | QDHFSPQMGFEGANVLFDTWVHPL |
| UniRef90－C7BET8 | PVHYRPFLGGYEGANQIADLAYNSFT |
| UniRef90－Q85AC2 | PV HYRPFLGYE GTNQIADLVYNSFT |
| UniRef90＿UPI000478EAD2 |  |
| UniRef90＿UPI0003B7795F | $\square \mathrm{D}$ T S S Y V G Y d G G LRL I E K I Y S L A F N |
| UniRef90＿UPI0001DD052A | QDRHSPQMGFEGANVLFDTWAHPL |
| UniRef90＿I8SA73 | SDRNRS Y VGYQGALRLVED Y S |
| UniRef90－G8LZM3 |  |
| UniRef90－C7BEF1 | PV H YR P FLG Y E GT NQI ADLI Y NS FS |
| UniRef90＿F0SWH3 | LVLTT T Y A GF S G G L R V DE DI Y D TV |
| UniRef90＿S9SFJ6 |  |
| UniRef90＿O07356 |  |
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 SFGLKPIIVPDLSGLLDTHFDAPHSPIVIVGCCGESMRGAA DGGLKVNILFGNESGVEEWKTIPNAEFNGVISPGVGVKAA TIGGDANIIFTEYDTLEKLNDIPAAEYNVVVSPWNGHRAA KLGLKPNTLFGNKRGLENINKISSAEFNLLVSPWVDLENV KLGLEVNTFFTQHQGMDEIKNSGAAALNIIVNPWLLKDAA GIGLVNILFGNESNVSEWKT TPQAEFNILAGAWTGLGUV KLGAR L GSLIAADARYRQVAMMHRAKVTMMVCSKALINVA SFGLTPIFVPDDGASVDQLKAVGCSAFTVALGBESMRGAA ALGVEINLVAPLDATPSDIARIGAADFNIVLYPEIADEAA SFGLKPIVLPNFGTDVEETEFMSASADTLTVGGESTKEAG

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## D

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## R

SLNKNA! S GLKTNTIFGFG
 DLGUDVNLVIPQGGDVLSLKDLPKAWCNLVLYREAGUMAA
 AFGLKPNVVPDLISASLDELREIGNSVFTLALSAWPGLRSA SFGGEPIVLPMGGTYLAEMRALGASVVSUAVGAEQMRASA QMGVVEVLVPDFGTKMADDVAMGGAAATVQFGLEVADSMC
A
$K L G L R V Q A V L P H N$

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5
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 L F GLLKVIVLPPN GTALRDI QRMSSSTIVTIAVGEESABAAG







410
420
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440



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VSPDKTGQP LGALLAS $\square$ GAQA PVH NPLKMSSPLGGALFFLGLDR SLPVFH
NSPCKMCMPMGGVMAFKGIENNMVILH RKA SVVRYGCALGALHSVTAAPGMP AH RKAASVNPLKSSTPLGAALAYLGALDGAVPLEH LTKRKKALSVSPLKTSQTVGGALAFLG LNKAMPLMH AECIEQSRVACALGGDYTALLAI DGVLPVTH VLTHSRRALSTNPLKTSAPLGAAMAYLG DEGAVPLEH WTYEGPPHVGAMRIA ASMKGVHCVLH CSLNGADDVV GNLYKGAPI H
N S
NSCMLHGAVQTI KSIEGAVPI DH
ASNPLISQPVGASLAFLGLAR TMPLEH


 KKEGNVTCHERKFQQSGGCVLNFYLANRVTTRRDVVIFN SAAVNPLKSSQPLGAALAFLG VGADPLFH WTYEGPPHVGAMRIIA SSN VNP位S | $Q$ | $L$ | $G$ | $A$ | $A$ | $A$ | $F$ | $L$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $P$ | $L$ | $G$ | $A$ | $A$ | $L$ | $A$ | $F$ |
| $M$ | $M$ |  |  |  |  |  |  |  |


MKTKAYTATRNACKMCTPLGAALVFHG $\square E G T \prod P L L H$ WTYEGPPHVGAIRVA ASMRGVHLVLH $\square N P L K S S Q P L G G A L A F L G V G G A I P L F H$ QGRGTYSKALVKQEPLHGCALGGAMLATLNALPKAVPIDH NFEEFLSKNVVLREPLHGCAFNALVAVSG I TGSAA VA
 DQNRY■SKNLTR WTYEGPPHVGAMRDA ASMEGVHYVLH DQNRYLSKNLDRGEPLDGCAFNGAVSTAVH DRDALVLAH INPLKSSQPLGAALAFLGGQGALPILH ACILPQTKSAA INPLKS

PGSHCAFFGVAGTVVSLINGAYALH NGCLLQGAVSV LKAI GGVVPI। CMYTDTCALAGA SAFFAGIRDAVIVVN AEPLSRSRAGCALWGAMKILSGAVKNSVVITH FWMYEGALHGVSBT NAMKGVALVH
F A QV SKSLVS REP AQVIRNKKPLAATSPIKSGQPLGALLASQG ARLLTOTKTVA PAQL QTK PAQUARSPSEAGRLKNCSGHFLAESNSGWGANLDMLSLAH

PGTHCPLMGAAMAVGG YHTFCPISCVSWLYQK NPQKNSPALGATLAYLGG EGLLALLH WMYAGPAHI GTLRVA SSFKNVHAIMH AQ【LNMSKTKPG

TP
QPRYKCAL GAMQTV HSITKALPILH FWLYEGTALHGLSRVT NSMKNVHTVVH
 NRNKADAVSP亩KASQTMGAALAFLGL

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UniRef90-LOH237
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170


200
E EVVVEGFQ DAKKPVI YASTAGFKGNNYKG HEQVVDAII
 D A V EVVKAREDAC G K K V
 DTI AQEAENKFNIPVVYVSCEGFRSKDWTTGFDAAYHAII
 NRDVEEFYREQDIKII TASTPGYGNTQAEGYFSVLRKIV


 GALAA LSMQLPVPVVPLELPAYSRKENWGASETFYRLVR

 PAMTKELQ EQQYKAVYY STPGFKGSLHNG PRTDRAFRAAYPVAVVPVNATDAQGCLESGF
$\qquad$ A LAAVEATI A WGKAVVSAMII FADVRT $\square Q A K H D T Q L V F A A T P D F A G G V Q E G$ WGKAVSAMI
 GALAEGMGELNDPVIPLEDPAYTRKENWGASETFYTMVVR DAVVSRVRPE
 A RQDA NDE E E LGAEEVVLANTPDFDGALE EGWAQQAPRSKR NQ C CQKARTEGYVPVI HCNTPSYVGSHVTGYANMVTSMVK
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 DSVVLELEDEDGCKDIMYIVDNGFRTKNADSGYDQVYHSFL AAMAKEAR DDSLPALCYPATGFRGGSHNGYANVLQSVLQ GALAAGM DLGGIPMVNDDGPAYSKKENWGAAETFYQLVR

A GD DFSAKERVDTEVVLARTPDFIGAVEEGWWSKAVRAVI
 DAA E E DRPEDRAQLLVIHTDNFTCEDAAPGDERTFLALAA

 AAMAQEAR DVGDDIVDLATAGFHGSSAYHGYE F LKGV $G Q M A R A S G V D Q S K \| M V Y A, V N P F R V A E N E A A E G L F T E L V R$
$R F V Q D L A$
$V$
 K GVAKTKAKELDDRLI TTPLACEA A ARSAPPYIVDTAWALR



 HSAVHQFRREYDVAVVSVNSPDFSGCFESGGFAAALKAML



 D D ALLS L L ST E R T L L

 EGLAPKLEAEI G $\operatorname{LP}$ I VVARANGLDYAFTQGE E GIAAP Q I E A E I K T P I V VA R A N GLLD Y A






UniRef90 C9RQ1 UniRef90-UPIOOO4245727 UniRef90-D5WN16 UniRet90_D1JCC6 UniRef90_W1JX59 UniRef90-UPIOOO363A842 UniRet90-W6NHL9 UniRef90-A5N708 UniRet90_B5XPG6 UniRef90-101S22 UniRef90-A5N1T7 UniRef90-UPI00037E33C9 UniRef90-A9H5X4
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210
220
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 QWVAPTPRPGQRPRRVNLLVSHD CSPGDI EWGGRCVE ELVVTGEKT EQVCKECENTGKLNIVCANLN PGDVRNIKKILD QYVDKNKDKKlKGLINVWSELPFQNTFWRGDLVELKRVI E ESVVAPWSPTVTSFQQVNVLP GVHQTPADIEALRDLI E SLSSRPSERPPRPAGQRPRANLLGPFRCRDDVVEVTRLL ENLVPEDKSRVGLRKKQVNVLCGGNLTPGDLEYVVDSII NQYLEPTGEVNPLQVNVFGIVPFYDTFWQGTLERLEELLK ALVPVTAERDPDLRQVTLLVPSC FTTAELDEAVRMIR SALNERDAAGRGRERMPGEAPVANGFRCRDDVQERRLLE GLLETNAQPDASRAPRANLLGPTSGFRCRDDVQEVTRLLE KLARKT KLARKTEEEKARKLHNVNGVGGKN
FMDP
RQFDKTPGEKGPIEKNGRLVNLLG SLVPPTP TKVKRPNQVNVA
ERLVEPSPVRTPTQVNVLA NVA DRFVPAGDGTTL
KYYVQPKFQGVPDAPTVNIIGSFS
ALLVGEQAEKQEDLVNRPSASMLSYTWQ DRLEIKRLLG RITLPGEQAROSKKITAIL ANGWFRCRDDIIEVSKLLD LMDKPDSESRVALASSVNIVGGKMGPEIDADVKHLRETVE TLLKDAANENCKISPQRWKVNLLGPFRCRDDVDEVQRILS AGVIERDKKPREQPWKRKKVAILPGWHLVADI EHLREMVE ALAVPTGGLAKLHQDNLL PGCHMTPGDIEALKDIIA HFATVSTTPK GQCNPLSNRTKYTPKTKKRINLFPGMLSNEDLRHLKEIGT QRNAEEKPRDDGSSNRRRTVNLLGPFRCRDDIQEIQRLLQ KADTRDGEQE RQSRTIAILPGWNLTADIEQLRDIVE KEFVPAQAVKDTQTVNLWGVVPVQDVFWKGNLAAVKQLLH KFLVDPQEKPDPYLVNLYGEKPIANATS GNFKILEDWL G RGLIKKNVKKEENTVNDSEKFUARRNTEKNFNTMKKLLN
 SLLKPQLPPPWRAENRRPRVNLLGPFRCRDDVRELTRLLA RSIDKRNVPPVPDTVNVVAEKIVGVTNTEDNFSVINGYLS VLLPERQEPGQVNTVNLIGMTSAYYNGGNDVRELVRLLEE
 QAVPRGEAPAQRGVVNLWLPTPCYCSFWEGNQDAMVGMML
QLMQPQAVEE
GLSRSYNQEVDRDLINTFGIAPNIDPYWEGNLGELYNLLE TLSAERCEMVQAHAVNLIGMTDAYYNGGNDARELVRLL EKSLQQAGPRQAGLVNILGPVPRQDGFWLAEI EELSRLI R


$\stackrel{R}{R}$

DMMEKVPQNDTA NVLGQRMGEFKTTEEYKMM
 NHHSPASALKTDDQEAPYLALLPGCHLTTPADVDELKEIVR $R$ Y Y LD K K S H T L D Q F V T D A P S



 EHV EAS P QT TKGQI NIP GSHLT P
QFTEV VK E E $\square$ N Y K K MLL L L P N V V S
LMDKPTEESKAAMLDTVNIVGGKMGTEVD
 RLI G S R S Y K P $\quad$ IS PYSVN L L G D Y N I A G D L WP I R S Y L E K QI K S L L E K K T V P N N Q D Y V E HV P F G S I P D P V V N Q L T L E L K K QI DDRSVVEKRERTVNDVFEKVVA RNTEMNFQRLKTRGLA


 A A M A Q K C P K K N E S I I N K V N N S L L L F G S DP D S V N Q L T L E L E


 KCPEDARETEKQERNPI QKLIDNFGRQREQVVEAEELT LDEL K KRFASPQEKTAQPSVNLLGFTSLGBHLRANLTSIRRMLQ R CPK R QMSK Q Q C GE DVVVNTVNGGE P N E SK S D L S N SK H Y L V

|  |  |
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| UniRef90-D1JCC6 | GVGVTDNAVLTSD DFKHIVGAPKAT $\backslash \mathrm{NVVLGG}$ |
| UniRef90-W1JX59 | $D \bar{F} G Q P S F L P D G G T G V D E \\| A L M G$ |
| UniRef90-UPIO00363A842 | AFDLRVQVLPDDGTRVDTL |
| UniRef90-W6NH | DFNEKYRRIPKGGTKLEDIKKMSGAVATVEMGVTVSNSPG |
| UniRet90_A5N708 | RUGLUPN YIVPFST DQLQK |
| Ref90-B5XPG6 | QPVIPQGGASLRQAQN |
| UniRef90_101522 |  |
| UniRef90-UPI00037E33C9 | GAGFQVNILFGNGSK\\|AEWKT\P |
| UniRef90-A9H5 | SFGLYPVILPQGGARMEEVAQM |
| UniRef90-LOH237 | AVGVEVNVVAPLGATPEDLLRLPEADFNVCL |
| UniRef90-C5BTE8 | SFGLRPLMI PDLSASLDEFKIAGESAATLVVGKSLSAAA |
| UniRef90-UP10003B45F85 | A |
| UniRef90 UPI0004762ACF | STGVTVNVVAPLGAHYADLQRIADADFNVDLYPEVSS |
| UniRef90-A1WX18 | SVGVEVNVVAPLGASPEDLRRIPEADFNVC |
| UniRef90-UPIO004 | KLGLKLNTFFIARDGTQQit d SGNaAL |
|  | GMGAEVNSVIAGNCTLEE\KRAPSVA |
| UniRef90-UP100046EE8D1 | G |
| UniRef90_S9T | A |
| UniRet90-D3NS | PDGGVTVDQIRAMGASAAT VVG E |
| UniRef90 K9GZL4 |  |
| 6D3 | KVGLRVN |
|  | AVGVDINVVAPAGAAPEDLLRL |
| UniRef90-K0Q4X44 | SFGLKAVILPYGGTTVKDIQELGTAM |
| Q8TRG1 |  |
| U1000302 |  |
| U4Q7F1 |  |
|  | V |
| UniRef90-R9GRG1 | QMG KTVIMFPDTSDVLDELVSTGDSKFL |
| UniRef90- A0Z4G7 | SVG GVNVVAPGDADIRDI SRMPEADANVCLYPGVALSAC |
| UniRef90-P12781 | SFGLKPIILPYGGDSVEEIRELGTAAQCIAIGGEHM |
| UniRef90-F7NPZ6 | QLGLKVNTFFGEGETLENLRNAGKAALNI VLS |
| UniRet90--9MW73 |  |
| UniRet90_F5YCN3 |  |
| A0A037Z | SIGVSINCRFICKTKAEDIQNFMKADLINILAYEYMGRLIQ |
| UniRef90-F5YCN4 | A AGLKANLIFGGTPDGVGDLERSVQAGHTLV |
| UniRef90- ${ }^{\text {a }}$ |  |
| UniRef90-C8W4Z5 | QMGVRVNCRFLYNTTANALENFCAAPLNLP |
| UniRef90- F5RNZ4 | MAGYTVHAVFGSEMFAAELCTLSRAALNI |
| UniRet90-JoVP45 |  |
| UniRef90 UPI000478A83D | SFGLEPVVLPYGGTSVEDIRELGTAGQCIAI G EHMRCPA |
|  | QSGLRVNRLFGYGSDIENWKEIPRAECN |
| UniRef90-F6CH74 | SKGIKIKNVIPSYSTPAEDARAPEAR |
| UniRef90_S0FIM7 | EAGFRANPLFGYRSTVENWKQURNALNVVFTGW GLE |
| UniRet90 UPI00047543B8 | DMGAQINAVIAGNCSLEELKRAPSVAVNCTLCLDIUGYAIGG |
| UniRef90- Q07LR1 | GTGLKPNPIFGPQGGVASLRALGQAELSLSV |
| UniRef90-09F7 | TLGEVNVVAPWGAG\\|DDLKKLPAAWVNI |
| UniRef90-UP10002554F6B | RFG RINCHFDCETTVDEIRRFRRGKL |
| UniRet90-Q6D226 | (eal |
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| UniRef90-WONHG9 | GDQWNS |
| UniRef90 UPIOO | GLQPVHAL TGSSTSDMARVSACKLI GFSDHLVGGYA |
| UniRef90_D9SVW1 |  |
| UniRef90_R6HN25 | KAGGKGMELPAGTV |
| UniRef90-B8FZN9 | QLLPRSRACLSFG LSMEKAG |
| UniRefofo-88CS46 | DLD R NQIDPEGGSVEDPKNLP |
| niRef90_UPIOOO40 | GLAVTVFPDGGTS |
| UniRef90_H2J219 | AFGLQPVILPDLSQSLDQ EQMGQSLTT T G |
| UniRef90_19MA51 UniRef90 B3EP24 |  |
| UniRef90-B3EP24 UniRef90 C6KIZ6 | KQNINING WLPSPRYSELPTITENDFVCGI |
| UniRef90-R61916 | KAGVKIGLQLPCGCSVDDIKNAAAAKVNIVVNDIALP LiA |
| UniRef90-A4VJ78 | SFGLRPLLIPDLSGTLDELASAGQSAATLVIGQSLTAAAD |
| UniRef90 B3DXX3 | DFGLSAIILPDISGSLDMIKEMGKSLV |
| UniRef90-UPI0004670D3F | SFGFETYALPDISTTLDDIKNLADSAYVVTI |
| UniRef90-L7EG71 | GMGAKINSVIDGNCTLEEI KKAPSVAVNCGLCDDTGYA G |
|  | DVNTTFTAYTSIDEIENAG |
| UniRet90-F4BTU5 | ELGTEVDSATTGDSRVAEI QRAHCAD |
| UniRet90-D1GJK9 | KQG |
| x8K550 | RMN S NCRFLCNTSYASLRDFCSAKLNLLAYRDYTGKLL |
| et90_F9U7N5 | GUGATVNQVFPLGSHLDRVPELVNAEVN CMYREFGRSLC |
| iRet90_W4D7B6 | FEVIAVPDISTPLDSMLQSLHSGLTIAIGG SMERPA |
| UniRef90-A5GUA9 |  |
|  | G\\| ${ }^{\text {TVSGWLPA KRYTELPVIAEGSYAIGLNPFLSRTAT }}$ |
|  | G |
| UniRef90-A4WQL4 | GLRANPVFGPSGGLGAL |
|  |  |
| UniRef90-K8GIU5 |  |
| ee90_D9Q886 |  |
| UniRef90-L8LUB3 |  |
|  | L |
| S4UB61 | P SL |
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UniRef90_I9MA51
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UniRef90-R6I916
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UniRef90_B3DXX3
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UniRef90_K9Z631

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UniRef90-LOH237
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UniRef90_P12781 UniRef90-F7NPZ6
UniRef90 F9MW73 UniRef90-F5YCN3 UniRef90-A0A037Z3P3 UniRef90-F5YCN4
UniRef90
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UniRef90 B8FZN9 UniRef90-C8CS46 UniRef90-UPIOOO40C2253 UniRef90-H2J219 UniRef90_19MA51 UniRef90_B3EP24 UniRef90-C6KIZ UniRef90-R61916 UniRef90-B3DXX3 UniRef90-UPIO004670D3F UniRef90-L7EG71 UniRef90-KOAUD6 UniRet90-F4BTU5 UniRef90-D1GJK9 UniRef90-F9UTN5 UniRef90_W4D7B6 UniRet90-A5GUA9 UniRef90-P54208 UniRef90-M2VYT3 UniRef90-A4WQL4 UniRef90-F5YLJ9 UniRef90KK8GIU5 UniRef90-L8LUB3 UniRef90-B4SC78 UniRef90_S4UB61 UniRef90_K9Z631



 GDLEDLEEVAKSKGCDLLTTHSHGR
DLEDLEMRAKAAGAELLITHAHGRQPAARLGMPLLRQPM

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H S D V E T LA R
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HSSLDLETAAETGADLLVTHSHGRQASERLGLPLFRFPQ

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$\begin{array}{lllllllll}\text { Y T A } & K & K & R & R & Q & D & K & S \\ G & R & L & K \\ S & \end{array}$

## 


 $Y$ D R ERR RA D D I A A Y R P D V L L T N Y A S S VAA E D

$L$ G DLL E A L A A
DDSFA I EA D I GQA


F D

YDHGRREADI ARVKPDLLLANYGSNE
 DLGDLEELAAD ADLLVTHSHGRQAAERLGVPLMRFPV PSLEAI EAYIVEAAPDLVLGLDRDEFDWRKRGRAALPFSS GQTFEVANTLYKLKPDIYIGSPYKTSWAAKDGV
AN $\square$ A PMQYVYDELHPWLYMGHEFGARDRKKG



DKF QEVAK K IV DEMPE LVCGTQMERHSCRK LDDVPCMVIS T $P D N Y N Q L H R I T Q L K P D L V I T G M A N A N P L E A R G I N T K$


[^3]|  | 470 |
| :---: | :---: |
| UniRef90＿C9RQ14 | LI IN R S F VG Y K G A L NL LEK I Y S A |
| UniRef90＿UPI0004245727 | $L \vee M N S Y Y A G Y D G G L K L I E D I T Y$ |
| UniRef90＿D5WN16 | F DR HRCQVGYRGTMNFVFELANLLIDRVTHHRPADW |
| UniRef90＿D1JCC6 | A LT E T P Y A G F R GVS T WLE S I V N SL V S |
| UniRef90＿W1JX59 |  |
| UniRef90＿UPI000363A842 | $F$ D R L G A A H G Y R G T R E L L L WA N T F L A D E HVNTP |
| UniRef90－W6NHL9 | H D RVGG L T GY N GASFLI D SVANAM |
| UniRef90＿A5N708 |  |
| UniRef90＿B5XPG6 | $F D R L G E F R G Y A G M R D T L F E L A N L L R D$ |
| UniRef90＿IOIS22 | F D RLGAFVVGYRGAMETLFRLS N M M W S |
| UniRef90＿A5N1T7 | HDRVGGQRQYNGSSFLI D AV S N A M |
| UniRef90＿UPI00037E33C9 | VVLNK T Y I G Y R G A L T L L E NI F T A |
| UniRef90＿A9H5X4 | F D RLLG T T I G Y R G T R DL I F RVANLFLLGQMHEHT |
| UniRef90＿LOH237 | QDRYAPQMGFEGANVLFDTWVHPLM |
| UniRef90－C5BTE8 |  |
| UniRef90＿UPI0003B45F85 | LIGGSKNYF GYE G GVALTFS DYY A Eli T N P |
| UniRef90＿P19077 | F D R $\square$ G A Q $\square$ GYRGT RAFF FE $\square$ A N A M |
| UniRef90＿UPI0004762ACF | Q D RHS PVFGFE GANVLFDSWIHPL |
| UniRef90＿A1WXI8 | QDFPARYMGLEGANVIFDTVVHPLM |
| UniRef90＿UPI00041D8F54 | E I L N S HVGl R G Cli SLM E D M Y N |
| UniRef90＿A5N905 | L NL N R P R F G F R G A L KVAK CVVK T A LE |
| UniRef90＿UPI00046EE8D1 | 1 VLTK GYA GF D GAFTLLLEDV |
| UniRef90＿S9TWS7 | Y DV H G G WVGY G GARQTL F HLA NLL |
| UniRef90＿D3NSM4 | $F$ D RLG A QVGY R G T R E L L C DI G N |
| UniRef90＿K9GZL4 | F DRIGGAAHGYRGTRALVCDLANTFDDHAHHASPADW |
| UniRef90＿D9IXN1 | Q NFYRPFVGYE GVNQ\｜ADLI Y S S F |
| UniRef90＿F6D3P7 | LD P WS A Q S GYA GAVAFGNFLLLQGLK N K S Y Q K T |
| UniRef90＿V4JS30 | QDRYAP QMGFEGTNVIFDTWVHPLM |
| UniRef90＿K0Q4X4 | F D R L G S Q H L Y R G T R DL $⿴ 囗 ⿱ 一 一$ DVA N I F |
| UniRef90－Q8TRG1 | $\square$ L N P R F GYRGALKV A K C I C T ALLE |
| UniRef90＿UPI0003028E4E | Q DRYSP QMGWE GA NVI FDD WV H P L M |
| UniRef90＿U4Q7F1 | $F D R L G S Q H K Y R G T R D L I F E A A N \\| F$ |
| UniRef90＿H8FPP5 | FDRLLGPA HGYRGTRDLI TR L G N I L M |
| UniRef90＿R9GRG1 |  |
| UniRef90＿UPI00040EAA00 | H D R L G G H G Y Q G T Q HLF D T IV N T L |
| UniRef90＿A0Z4G7 | Q D Y F P Q M GVE GANVLFD TVV V V P L |
| UniRef90＿P12781 | $F D Q L G S Q H K Y H G T R D L D F E V S N \\| F Q S$ |
| UniRef90＿F7NPZ6 | VVLDR A Y A G C S A LRL A E DL L S QL |
| UniRef90＿F9MW73 |  |
| UniRef90＿F5YCN3 | $\square S$ Y Y Y Y S GLEKL S S EL |
| UniRef90＿A0A037Z3P3 | C P DVGFFFS GLLNLVK R WA |
| UniRef90＿F5YCN4 | $P N L H K T Y A G \square R G A Y F L A E D Y \square S A \\|$ |
| UniRef90＿H1KZZ3 |  |
| UniRef90＿UPI00020013F3 | QDRYAP QMGWE GANVI F D S WV HPL M |
| UniRef90＿C8W4Z5 | T IP MCPNVGFES GLTL A R R WARLL |
| UniRef90＿F5RNZ4 | $P \bigvee$ Q A P F M G LR GARHIEE Q L W |
| UniRef90＿J0VP45 | $F$ D RVGS Q H K Y R G T R D M I F DVTNVV |
| UniRef90＿UPI000478A83D |  |
| UniRef90＿UPI0003647A78 | LVLNR S Y A G Y N G G L T L E DVA S S I |
| UniRef90＿F6CH74 | A Y H T L G A G TQQVLRLL NR |
| UniRef90＿S0FIM7 | $\square \mathrm{I}$ L L K L L GVS G S L A L L E Y Y N A F T R |
| UniRef90＿L1N981 | QDFDNPFMGLRGARHI EERLWN |
| UniRef90＿UPI00047543B8 | $\square$ L N P R F GFR G A LKV A Q CI K T A L E |
| UniRef90＿Q07LR1 | P SRRTGF G G $\square$ R GALTLLLEEIVA A |
| UniRef90＿Q9F715 | P THYYPFFGFDGADVMADRVYTS |
| UniRef90＿UPI0002554F6B | LCPTA GF LS GLLIFANRWAE $\square F$ |
| UniRef90＿Q6D2Z6 | Y D RLGEFRGYAGMRDTLFELANRLLN |
| UniRef90＿B8ITG3 | F D RLG S Q H GYE GTRNLI FEVANLE |
| UniRef90＿W0NHG9 | F D R I G N Q H Q Y R G T R D MIF DVA NIVQ A P ALA HLP NP Y |
| UniRef90＿UPI0001D2F21E | FDRKGAFWGY DGFACLAAELDRCLNAPWRGLVEPPW |
| UniRef90＿D9SVW1 | S $\square$ GK S A LY G F NGDENLVKLVK S A I |
| UniRef90＿R6HN25 | S D A A G S M L G F EVVT N Y L L K Q I |
| UniRef90＿C0JX56 | $F \mathrm{~T}$ F A Q I H GF L GARNILLELVTR |
| UniRef90＿B8FZN9 | F D RA GCWIGYEGT QRFLFATLNAVS |
| UniRef90－C8CS46 | XXXYRPFLGYE GTNQ A D L L V |
| UniRef90＿UPI00040C2253 | H HLR S TA GYRGTMSLVFSIIGNTMENKMFAKKEA |
| UniRef90＿H2J219 | Y D R L GEFR GYA G $\square$ R D TLLFEL A NL M |
| UniRef90－19MA51 |  |
| UniRef90＿B3EP24 | P THYYP L L GFD GA D L L A D R VY T S |
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| UniRef90＿R6I916 | S DRAS D M L G F EVT GY L L Q Q L VKS |
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| UniRef90＿B3DXX3 | F DRVGA A HGYRGSSNLLLFEIA NLV |
| UniRef90＿UPI0004670D3F | YEEF GNQLKKYE G GAYFLFEVVANILLN |
| UniRef90＿L7EG71 | $\square L N R P R F G Y R G A L K V A K C I N T A L R S S V F K E M V F P$ |
| UniRef90＿K0AUD6 | $\square \mathrm{Y}$ P Y T P F VGF S G A L Y L $\quad$ Q C L Y E L |
| UniRef90＿F4BTU5 |  |
| UniRef90－D1GJK9 |  |
| UniRef90＿X8K550 | C P D N GFF T GLEMVERWS RLFS |
| UniRef90＿F9U7N5 |  |
| UniRef90＿W4D7B6 | WNELGAYMGYRGAMEWSNKAANLLMR |
| UniRef90＿A5GUA9 | QDRYAP QMGWEGANVIFDSWVHPLM |
| UniRef90－P54208 | WSVEFT F A Q IH GF G N A R A L E LVTR P L R R L L |
| UniRef90－M2VYT3 | WSVEF T F A Q \( |
| ) H GFANC R D L E L V T R P L R R N |  |




UnRequg0

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UniRef90-V4J2A5
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220
230
240
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RC P
CPKKDQLTKPEKGPKYD




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EQI T A E S TEVVRANKLVLLPHLSMQPIEV
EALVPTLADAGSTTSLMVVGAVADIVED
 A QRCPTVPA QLNRRGETPSTLPDGEKNSNTVATQLSNEL K
 S LARPETA $S L M$ K TLLP VRT PRTI
 $D$ A CLLS A L V P D L A F S D E K QL M I V G S L P D I V E D

 DRFMHP $P A R V R Q G T V A F L G D Y F$

 KPPVPRPYPRPYPRSDPPLVNLIGDPHAADDVEALRAMLA

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 EVVIEPAEK R C P E Q E F D S RERKHSTLKTTDLVEDYSLPSNVA EVVKDSNEKFDSFNDIGCTTDQ FNFLSDCEEDKRMMK CSMVPHMPKSTTATQELLIVGTVADVVED
EKI GLLNKNLVKKKK QVNL L GCTYGHYNAYNDLQELLQAMM D E ILAS QVVKENTKD DNKYNI LGFNDYNYLSDCKELERLMK

 RCPEYEVTSSSRFSNNNGLFTPGPKGRMEKDSWQLNSELK
 K GRMP P EKK R E E GAKPRVNIP MYGTFNMPSDLAE I K R L I Q $K A L V P E L P Q L P S G E R S L L V L G T L P D V V E D \quad Q F A R L G A$ H Y $\square E K A K R K S E K P T A N D L G V F T L G F H N G B D C R E L K R L L N$ ADETLKSARTSVVEDQATKTVTSNSSNS DNADANQLQQEL K

 LEKFARNGKK LAA GKTVNILGGSDFHRDFAGDKEELKRAFS VPELP TAPSGSPQETDSRSLLVVGSLAEVVEDQFRRIFD



 SAF LPEQRA GQANAVNLI G MTSAYYNGENDAHELMRFLAA A A LV P D LPA E SADA A PSLLVVVGALAEDVEDQFSSRRLFA A ALVPELPRASADAPPSLLI AGA $L$ K S MFK TITEVVHGKGQPSGKLNVFPGWVNPGDVVLLMRYFA KTAKPAPRPAGAKPRVNLI GAAYGTFNMYSDLAEIRRLVE $T S L V P L L P$ S S P E P QLLIVGTLAD GVEERFLSSLFA





 AVPFDGPDADDARHGSGSGRGSGGPSLTAADLDELGA LIR
 A SLA S DLPEDT T SEERLLVVGTVPD IVED QFRRLGS


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 TLMRRRKCKLISAPFP GGPDGTRAWIEKICSVFGIQPQG
 RLLEEEYQMPY VVCPGFGFAAAESWICSVGGYFDLDPADF EEMEKPY乌QA PTGLHSTTKFLRALGELLGLD

ESLEERPWLRA
 EALORMHGVPHGAVHS GLHSTTRFLRKLGELTGLDDP EAL QRMHGVPHLAVHSLGLDAVDGFVLTACRGLSGRPDPER TLMRRRKCKLIGAPFP:GPDGTRHWLEKICQTYS: QTKGL TLMRRRKCKLVGAPFP:GPDGTRAWVEKICSVLE:EPRGL
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 TLMRRKKCKLIJGAPFPI GPDGTRCWIEKICSVLNDNPNNL

 RGLEEAYDVPY VETSPIGSKNTATWLQQVAEVFGSTGDK ADMEQAFGTPTFRLHSAYAPAQTDSLY SALAEKLGDQ DWLHERGHPVPQLRLTGGHSLSDCDDQLNDFLSELSGDP LDKRGAEHLPALFPFGAEGTTAWLHAAAQAFGVP EAR | NLMRRRKCKLIGAPFPTGPDGTRAWIVKHCSVFN:\|EPEG |
| :--- |
| QMMKEKNPTHLHEDSLGGLSNSDKFYKALLEFKHI DTPSP | ILMRRRKCKLIGAPFPIGPDGTRAWVEKICSVFNVEPDGL EELHTRFGTPYFAEAFAGGEETAHWLRCI GARCGRASE NWLKEEFDDPYNKDLPYGDEPTKMFFHQI NSWFGEEDS TLMRRRKCRLIGAPFPIGPDGTRAWIEKICSVFDI E AMMRRRKCKLIGSPFPIGPDGTRAWIEKLCSVFNIEPKGL QAMKEYFGIPWEELDYYGAAGADDLWSRLERRFGLE RALQSRGAQHRPAPFPLGVEGTTAWLQAAATELGVAPEV RALESRGATRVSAPFPLGAEGTTLWLKAAADAFGVAPER

RTLQRRGARHUPAPFPLGEEGTTGWLRAAARTFGVPD ER
 AYLSDRFGLEFFELPFPGFRESSLWVKALTARLLPPGED EVLNKPYLQA
ELLEERFGTPYHYGLPFGLKGTVAWLEQVAQKLGLADEQK TLLRRDNCELIVAPFPDGPDGTRAWI EKICSVLEIEPQG NFMKDKYNDPYVYKKPYGDKNTEEFI NEIQKVTKWDLDKN RALMARGATLLSAPYPFGVNGTTAWLKAAADAW NDSDAH QFLEDNYQMPYLEDGMYGI GGSTNCLKKTKQYTDTDLSQD EYMKEKYNDPY|YKNLYGLKNTIDFLEEVNQUEGYDLNKK RALEDRGAVRLDALFPFGAEGTTDWLHAAARAFGVDEMH TLMRRRRCELI GAPFP DGPDGTRAWI EK CNVFDIQPVG EYLKNRFGTPYIDASPHGLSATLSFLREVAVLCGVDGQEA EVLGKPYLQAP GVESTTKFLRKLGELLSLD RACEARGASLLSAPYPFGI EGTLGWMRAVTEAWGVT RER QYLKKEFNMPYITSTTPMGIVDTATCVREICKTVTNISSTK RALDDRGAELIRAPYPFGVEGSRDWMAAAASAFGV APAR EFLSARFDMPYVVCDGLGFRAMEDLVSKVCDDLGSDMSSY RVLEERGATRLPAPFPFGAEGTTAW LAAAASAWNVPNAR ALQRRMRCNLVNTPFPGGPDGTRGWIEADCKTLGV
RLLQEELQ PYQVFNGVGLAETDEFFLFLRQFSQSDGQNK QQLEKELGI PWYPDPMPGLAESKDWIESFGKHMGVPDGVR DYMNEKLGUSHFASDYTGWEGTRRWLDDFSVFLQNFKSDE EALDKPY FQAPIGLHSTTRFLRSLGECLGLDP RLLAEDCGMPCDAPPPYGRAGTRKWLAE IGRVLPAPRADA RLLEKRGATRLAAPFPFGVEGTSGWLAAAARAFGVDEEH KALEERGARRLPAPFPLGAEGTAAWLAEAAQAFGVD PAR ELLQKTYAVP
EAI GKPWLRAP VGLGATTNFLRALGAHLGLDP RALERRGAQRISAPYPLGVEGSCAWMTAAAAAFGI D PKR RALEARGARRLAAPFPFGAEGTTLWLQAMAREFNVEATKF EFLHKEYGMPCEEGPPMGFDAASSFVRQVCEARGADPGK E D E ETLKELGGTEYCESQPVGFKATELWAKEICKRLAELDNPRR KWMKEKYNDPYDEGDPIGFEATENLINNVCEKLNGNKKDF TLMRRRKCQLIGAPFPIGPDGTRAWIEKICSVFNVK AALDRRGACMI QAPFPFGEEGTTLWLRAIADEFGVDDETF KYSNNLNTLNVNLPDPTGDANTEEWLLKLAEQFGNT EK RALEERGARRLAAPFPLGAEGTTGWLRAAAEAFGV SGEA EAGVDLAARTDADLVHFDHLSGLRAVDALVTELMARSGRG RLLCETLDRPYLQAP TGDHSTTAFLRELGDMLALDP
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UniRet90 UPIO0036B6749 UniRef90-M4YM26 UniRef90_R5BP29 UniRef90_UPIOOO3795113 UniRef90-C4V3L1 UniRef90_J5PS20 UniRef90-B8EPX8 UniRef90-O9XBY6 UniRet90-H6SJF9 UniRef90_A3YZ47
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6CC061



360 ASHEAAKLKERKGNNLESLWGPLWFDAVLISAPPSEALGI FEQVTAPNRARAERALSAFKSELGGRRIFFFPDSQUEIPL VER


## A

LEER
E A Q W WA S M E D Y M Q Li R
EPF
D QA
AREKHTTIK
 V
WENEFDREERAYQKAMLEGFCDMAGSRVCFAHLGPLSADPL



## A

## A A P F F

## 

## V



El
$\qquad$
A ER

| $A$ | $E$ | $E$ | $V$ | $R$ | $R$ | $E$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $C$ | $D$ | $E$ | $V$ | $V$ | $S$ | $C$ |
|  | $R$ |  |  |  |  |  |
| $A$ | $G$ | $L$ | $G$ | $E$ | $R$ |  |

A ER


AEDEVVSQRE

LREECLLRQEE
EP F I E R E K P M WD L WR S VT Q DFFA TA S FAVVA GETYS R GLL VEPFIVE QEKSTDKPVWDLWRSVTMDFFGTANFAMVAN DTY



FEQS E R A R A K C F S H L S R $\square$ H T R P K G VK F A V H G T L S Q C L G Y



VAAVTAPRRKRAQEAMEPFRRALAGKSVFFFPDSQLLEPPL

 V

 $P D S L E Q R E N Q \square W N N L K D Y L R \square V T G K S D F F M G D N L L E D S L$ A RVTDAPRARARTA IAANAAKALQGKSIFFMPDSQLEIPL
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UniRef90_UPIOOO36B6749 UniRef90-M4YM26 UniRef90-R5BP29 UniRef90-UPIOOO3795113 UniRef90-C4V3L1 UniRef90_J5PS20 UniRef90-B8EPX8 UniRef90-O9XBY6 UniRef90-H6SJF9 UniRef90_A3YZ47
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370
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 ARFGIRCGMIVYEIGGUYMDKRFQAAELAMNVPMPRIVEK LQTAVDLGMNVVFVGILNFSQDFKDHILELLHSYENTRRK ARGVRHFLEQEMGLPCNFAFARRPGN
ARFLDRCGMDVHE GDPYMDKRYQAAEDKMCVPDPR VEK RRFLEEDMGLDCAVSRTAGTKTDNDAVRALVRRHAPLVMF RNF EMGLPCTFAVSQTAGAASAPEPSAVPPGDPVAVV
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 $T R G L K N F G E E E M G$
$\square P G K G G E V G$
$K$

A AYLASLGMEPLMLHLEEFWPDDKEKALHAYGYDPYVCHM TSGLSEIGCETVAAVIPTASTALIRHKIQQFPSEMLIVGD ARFLREAGMELLE GTPHQHRQHLAEELALLPEGTTLSEG AARFLAELGMELVEVGTPYLHKGHLIDELAALPPGTM|SEG


L
 LIMLKELNI EVIDMLFDNSTDPFFKKDMSLYGLDGVKLSF
 RRFLEELGMEVV ARFVRELGMDLVEVGTPYLHRQHMAAELALIPAGTRMSEG ARFLRELGMTLAEVGTPYLNRQLIAPELALLPSGTRLSEG SALADETGVDLQLVVTTLNHHALKQLSAKE DVGVVVGD LDTMRDLGMEVVKVGQSVGFFGRGSPGLGSCEAFPVERD ARFVREEW
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SRGLRHYLADELGLPCNFAVARRPG VK AQALRTEWADV CHLAVAADAEGVPTAAPDADEDGE ARFAREDGMRLVEVGTPYLHRGHLAPELALLPAGTTISEG ARFLRECGMRLIEVGTPFLHRQHLQPELDLLPEGTLISEG

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 T K WL C Y LG M I P A A I SVLDPES DTEFT E KLLR I FLLTG GHYQET RHFLE TEMGLPCTFSFARRPG VK CK F L L E Y F GMTPD S I S I LD K DMDYSKNALENFDSAY GVKS



 GS LL H DVGGAEIVAAVSPTD A P


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UniRef90 L7NP78 UniRef90 UPI0003643A41 UniRef90_Q132L4 UniRef90-BOTAP7 UniRef90_Q2JS72
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QQPFE
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$P D N A A V R E A M R K T P P L V L F G S Y N E R M Y A A E L K S R A M Y D P R ~$ PDNAAVREAMRKTPPDVLFGSYNERMYAAELKSRAMYDPR YDPQRRAED IMKLKPDLFLGNYQPSGLPETAHYDTVPL PDNYNQDQRIKELQPDLAITGMAHANPLEARGDSTK AD VARIMPDLLITNYSSND $\qquad$ TSMEDLKKDILSTDAELVFADG NIIAKDKARHLDFSG PDNDAVRAAI HDNTPLILFGGYNERYLAEAGGDPSLPGTI PDNSNQ\|QRIRELQPDLADTGMAHANPLEARGUSTK GSYNERMYMAE CGGRGSYIPASFPGALIRRHT
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 PDNYNQIQRI RELKPDLVITGLSLLANPLEARGIT T K


VNSDSDAPLLESFAPDLCLGEDSGA LGVV LEHLACQQQHAELLI TNSHGQEDSERTGDPLLPAHA QHLDKQLDRCRAARPDVVVCGLGLANPLEAEGITTKWSDE QDVDKQLDRVRAARPDLTVCGLGLANPLEKEGLSTKWAIE PDNYHQIERI MAENPDLVI TGMAHANPLEARGFSTK
GDFEDVENELE QNDLLI SNFHGERLTKKHNDMDRGFPN PDNYNQDQR REDQPDLAI TGMAHANPLEARGUSTK LAVEEPASEELLRSVDFVFTTH
NQAYVL!NS ISHID PDLLIKHYS DRSWGARMGDSTDWDEN PDNYNQIQRMRELQPDLAITGMAHANPLEARKINTKWSVE PDNHNQLQR LLELEPDLVITGMAHANPLEARGIDTK
SDQEDFYRELRGSEAALLFGSSFEQDGADEDEIPLIRVDY


 $V W Q A D L T Q \quad G A P D V V F G S G A V V V R H R L T G R P F T G I Y H$ YTDEKRARDVR DLMPDLVLSNYAPSVP EDGVHYDTIP TNNDDVRAMMHEKKPLIVLGS $\square$ NEKMYLAEMKAGFGPAPS

PDNSNQ DRRMRELQPDLAIT GMAHANPLEARG\|STK
NDELDRSKYLKESDLLVLLADGASIDMKHKLDIPNLKSVN QDVEKQLDRCRDARPDLTVCGLGLANPGEAEGLRTKWSUE SNGEE DED IFENDSNNLFLASSIEKTAVMRHNITPKVFCN K SELDERMKFLKEKQLMI LL GDGPS DDMKHK LDIIPNLEKVN WN





T DNDMVRASVQGKTPLVLFGSYNERMYLAETGGRAMYDPR QDVEKQLERVRASRPDLVVCGMGLANPLEAEGFATKWSIE
 A
A
LI $\frac{L}{P} D N Y S Q V Q R M H E L K P N L A I T G M A H A N P L E A R G I D T K$ QDVDKQLDRVRAARPDLTVCGLGLANPLEAEGLTTKWADE PSYFDYGNSIKEAQVDFAI GSI HDKPLCDGHKIPHLSLAG



UniRef90 A5N5K0 UniRef90-R6AG76
UniRef90_O6N9K3 UniRef90 K9SUS9 UniRef90-Q32RK6 UniRef90-K9PUC0 UniRef90-UPIO00365B7D3 UniRef90-Q8LW53 UniRef90-B8FK02 UniRef90 AGYGA5 UniRef90-F0YZ14 UniRef90-V4J2A5
UniRef90 LTNP78 UniRef90- UPIO003643A41 UniRef90-Q132L4 UniRef90-BOTAP7 UniRef90-Q2JS72 UniRef90-D0EVT7 UniRef90-B1XJN7 UniRef90-A9DA61 UniRef90_E4TY40 UniRef90_O9WXB4
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UniRef90_J4J336 UniRef90-A5N3G5
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UniRef90 A0Z4G6

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$C P N T G H L G G L A L A Q R W R R L I V A P L C N R K$
$F$

$\prod E\|S M P T L G Y S G G L M L C E Q\| I N G L M$
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FTFAPDHGFGNTQALLELVTRPGRR
WSVEFTFAQIHSFTN ARDILELVTRPLRRNKNL
WSVVFTFAQIHGFTNARDILELVTRPLRRNTNL
RHTGTPVMGYSGASWLIQEVCNALFDALIF
YEELGNQLKYEGSTYFLFEIANEL
HAQK SPGEGFEQAADLANLEARPL
ENHYRPVLGFDGADVLADTVYTT
WSVEFTFSQDHGFTNAARDILELVTRPDRRNTNL RHLGTPFMGYAGTSYLMQEVCNALFDMLF
SVANAVLYGFNGEQKLDESIKKAERN
DLY G L CGGHERTAGLLKKLLHALEEPGERN
GEHARQWIGYAGDRQTLYRIDNLLASG QQVVEPY
LVF TP I QGYDQAADLAELFARPL
LVF SPIHGYEQAGDLAELFSRPLHR
WSVEFTFSQDQGFTN TRDLLELVTRPMRRN

E LEFYGYKGMLKFAQK LDDLINNRNFKHATLPYQ
$F T F A Q Q H G F T N A R D \| L E L V T R S L R R$
WSVEFTFAQDQGFTNTRDLLELVTRPLRRNTHL
PVFPRPHLGGQGTDHLLEDIFRGIMN
GTPVMGYSGACWLIQEVCNALLFDMLFE
LVFTPIQGYEQAADLA AG GLESRPLKRRLKL
ELLFTPI QGYDQAGDLAELFARPL
ELLFTPIQGYDQAGDLAELFARPLNR
LGYPCHQLGYQGARARLFEMANLLKANHHDEVPA
HVIPPKAYMGCQGALYYVERIINGGL

WS $\square E F T F A Q \square H G F S N$ ARDVLELDTRPDRRN

1 TYNNPFVGINGAACMLEKIDWN


WSVESTFAQDHGFTN VKDLLELVTRPLRRN
RHTGTPFMGYSGASYVIQEVCNALFDALF
FILGTPMMGYAGATYVLQELCNGLFDSLF
LVFTPVHGFDQAADLAELIFARPLRR
PV HYRPFLGYEGDNQLADLVYNSFSDGMEEHL
WSVEFTFAQDHGFTN TK DLLELVSSRPMRRNKNL
RSTGTPFMGYSGATYVVQEFCNALEDALIF
LVFFSPDHGDDQAADLAELFARPLRR
RHTGTPFMGYAGCTWLMQEVCNALIDDALF
\ETALDPSLGY
ELLFTPIHGYEQATDLAGLFARPLRR
WSVEFTFAMDHGFTN AHDLLKMVRKPLDRN
FNRFGSPAGYRGTADLLNHIANTMHS
FNFGTPHPGVRPAMECGKRIVRMME
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HLSDAPFMGLRG
ARHIE ETLWN
ELLFTPVHGFEQAADLAELFARPL
ELLFSPLQGFEQAADLAALCFARPLDRRDRDRD
RHTGTPFMGYAGATY LVQEVCNALFDALF
LVF SPDHGCDQAADLAELFARPLNR
LVFTPVHGFDQAADLAE LFTRPLERRTRL
$\mathrm{ML} \mathrm{P} V \mathrm{~V}$ GYFGGQGALFLLEQULNGL
RHTGTPYMGYSGATYUVQEVCNQLFDALF
DVIPKTHLGLSGAALLVELILNGL
HVVPK S LLGUS GALMLI EHILNGV
WSVEFTFAQiUGSAN ARDVLELVTRPLRRN
$L V F T P V H F Y E Q A G D L A \quad G L F S R P V R R R$

ELLFTPVQGYEQAGDLAELFVRPLRR
$Y D R L G A T A G Y A G S L R L L V D A A N R L$

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UniRef90 G8IVY9
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UniRef90_B8EPY9
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PS GRMGTLWST■RNAALVEF
PAVSPGSHC FCGLTSIVWRRMPDAFFLVV CP】SCVAW LYQK』EDSFFLVI PHDQPQTMCPAFGSLRVGLRMRRTAMVLV PPMSGRMGVLWASIRDAALI EY FCGLTSIVWRKI QDAFFLVV SFCGCVGWLYQKIKDSFFLVL SMCPAFGSLRVGLR MRRTATILS
 QANACS LTGAIMAMEG RDAAVLLN
G $\square$ ERENGCTFCPIASVAWRKIKDSFFLIV
ANAVAAPHDQPQTMCPSFGALRVGLRMRRTAMLMV PHDQPQTMCPAFGSLRVGLRMRRTATVLV VNPHKLSPVMGAHLACLG VDGVMPI I H ASAYWAAVNTFCAL RDVHVI AD TNCSCAMPGVWRALAYVRGAAVVFH MAGCTLT GALSVAC FI P GAVTVVH RSMTAVRQLTPAAYPGVHCPMHTA LALAANIRGVSTLLI MPKDATQVGCAFCGLTSVVWRKMQDAFFLVV PHDQPQSMCPAFGS $\square R$ VG $\square R \quad M R R T A T \| L S$ PAADPGSHCPMNAAARLA GS $\square$ QG $\square$ SSLI

PS GRMGT\WAS DRDSALLEF
FCCGLTGUL WR K I QDDAAF F L V V KNNEKLKKWQPC QGYCQMTGAASAILSITGSKVILMN QALRRDYPAGPHDQPQSMCPAFGALVTVGLRALRDRTATILD PHDQPQSMCPAFGSLRVGLR MRRTATVLS PAAFPGNHCPMHTA LALSSRVKGMSTLVV.

GNQT $\square \mathrm{GGVLA} \mathrm{L} Q \mathrm{G} \square \mathrm{Y} R \mathrm{~S}$ LPLLH
PHDKPQSMCPAFGSLRVGLR MKRVATVLS
FCGLTGI I WRKDQDAFFLI V AEFDAGVPS $\square R T F S Q \square A A D D V S A A L R V V G E I D G D G V V I H$


FCGLLTS S IWRRTQDAFFLVV GDYVMPACTSHGAAEALLABIEAAVVMH PAAFPGNHCPMHTA LAAISNIITGMSTLVV
GCTDSPVRRERGQKA
VFCGLTSIVWRKMQDAF FLVV
$P A F G S L R V G L R M R R V G$ PHDKAQSMCPA $F G S L R V G L R M R R V G$ SFCGLASVGWQK IKD
FCGLTGI DWRKMODAFFLI PHDRPQTMCPAFGSLRIGLRMMRRASVLC AKDYPTGPHDQPQSMCPAFGSLRVGLRMMRTATVLC
 ERCDSPVWPCAMVGAASCMAGDRD LGVI I H PHDQPQSMCPAFGS $\square R$ VG $\square R$ MKRTATM
 PHDQPQSMCPAFGSLRVGLRMRRTG TILS


PGAQGFGVKRAGLVIPESVMLVV KAGGKMNNSFENDTPDSHTGALSAVERKMHDAFF SPAVSPGCHCPMRMAALTA KDIRGLSSLLV NRNKALAVSPLKASQTMGAALAFLGLAR SMPLLH HPQTACPAFGALRV LTSRIEGAQPAMV
$P G A Q G F G V K R A G L$
$C S C G M P G V V W R A L I$
$C$


GVVKRAGL AVPDSVMLIV
PHDQPQSMCPAFGSLRVGLR MRRTATVLS
 ERFKADYPVGPHDKPQSMCPAFGSLRTGLRMRR PHDKPQSMCPAFGSLRVGLRMRRVATVLS

UniRef90 Q1JXL3 UniRef90 A5UYB4 UniRef90-A1BIZ9
UniRefo-
GIVY9 UniRef90-19BY15 UniRef90-M9P841 UniRefe90-K9P1K8 UniRef90- D91XS7 UniRef90_W9VB48 UniRef90_B9E3Z9 UniRef90-A4ACP2 UniRef90-A5UUJJ UniRef90-B8KT23 UniRef90-10HS99 UniRef90-H1PV22 UniRef90-B8FK01 UniRef90-A0A011QJ53 UniR Refo WOE5A3 UniRef90-_OH2 UniRef90-Q0YPJ7 UniRef90-K9ClQ7 UniRef90 A2SPT4 UniRef90-A0A011AF00 UniRef90-UPIO0037D4D9A UniRef90_A3WHV8 UniRef90 C9LLG4 UniRef90_UPIOOO2E37CA6 UniRef90-19NSX6
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UniRef90-EOMPY4
UniRe990 R6IIH8
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UniRef90 BOUCNO
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UniRef90_A4SCK5 UniRef90-Q8KZ55 UniRet90-M9SCK4 UniRef90_UPI00037AE2E9 UniRef90 P26164 UniRef90-A8LQ11 UniRef90-R7DBU5 UniRet90 B3QZE3 UniRef90 A3PL16 UniRef90-H8Z3O3 UniRet90-A4ACR1 UniRef90_D4M1M9
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|  |  |
| :---: | :---: |
|  |  |
|  |  |

GSMGHMDYGRAT पKRMGKNPD
CK $\square \mathrm{YSTH} \square \mathrm{NESD} \square$




## F

$\bar{V} T G$
K

VTGRHDK K
A GLAD
$V_{V}^{\top}{ }^{\top}$

VTGKLFED RAAVHELLADPDRFDAVVVTNLCVPTASGVP
VTG
VFGTEA
VTG
RLRETGALSQIYDR
IVMGNDAKFIHDIEETARELK
VTGKLFEDIREAVHAEADPEKVDTVVITNLCVPTASGVPL VTGE GKGLKENIEEIISQNPKIE\|I AIISTVVPQIIGMDL VTG $\qquad$ VTGETK VTGRHTRDDKT EN N I EK
AGMADAMEEGVVTRLLARRG
$\qquad$
VMGADENVVEALRTMCDK QHPAVIGLLSTAALAEGGCDL
ASCGSSEVVQELVIVEKLSAPHRQLILISSAESEMDGSDH
VTGAHKNDPQAVEEDCKCTPMPSVVMI CITCVDALLGTDM
I FGGEERLRECI RFAVDKYC PQAVFIANSCVSGVIGDDT VTGRHLKKIKAVAEDCELKKKPSVVMI CITCVDALLGTDM II LGDDEKMIQKVLDATESLI PELIVLIGSPVPMVIGTDM IFGSGDRLREVISDLSGKGDRYAI AVVTTCVPSALGED

8 F

$V S G Q L Y E D V R E A V D T L A D P E R Y D T V V V D N L C V P T A S G V P D$ $V$ SG RLFED IREAVDEDADPARYIVVTNLCVPTASGVPL

 V GGF R K GL M EAA


 ALGGVRRFSSAVADTAQR DKPGLLFLLPSAVPEII GTDL


SS S G
 $\vee T G$ K $\checkmark \mathrm{F}$ G

|V

## A

LD G G D Y S








[^4]路

 $\frac{\mathrm{T}}{\mathrm{V}}$

## UniRef90 Q1JXL3

 UniRef90_A5UYB4 UniRef90-A1BIZ9 UniRef90-19BY15 UniRef90-M9P841 UniRef90-K9P1K8 UniRef90-B8FQH0 UniRef90_D91XS7UniRef90_W9VB48 UniRef90-B9E3Z9 UniRef90-B1IEU9 UniRef90-A4ACP2
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UniRef90 ${ }^{\text {Q8RGI9 }}$ UniRef90_Q8RG19 UniRef90_UPIO004679C31 UniRef90-X8IQW8 UniRef90_UPIO0037F2225 UniRef90-F5Y845


## SALCRELQTSYPVRLLPFGAGGFNVELHRGVQETLLLLAT

 EDQPDVI LADVNHYRVNELQAADRSLDEQVR AKAAERLNTQLLGRVRVLNYSGSGIETTFTQGEDNALLAM E G I DQE I QPAELSARVTYVMLGQFKNVSHPPGSWKTMKALG RGL A P K E L SALCKELQPEYDVRLLPFGYGGFNDTQHRGVQEALLLLVK

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


 K GAIIGQLSY PALYFPTPDYEGGLEEGFALAIIEVFIM
EKML


#### Abstract

$\qquad$


$\qquad$ ENEWQGRDRALRWWLY ERVAEEAAEEYGMPVIAAKSHGFLDGEYFGGYGETMRLLA
















E R MLLA M


E G IVVREI QPEVKA QLVCFVLMGHFKCNSYPS GYWK TLAAAFG


E RVCRKAEEKAGLPVRPC YMY
HRAA ERRLSA H H
RRALAERLSAHHGGBAVRVYNFSGSGDETTATVQGEADACL



| $E$ | $H$ | $F$ | $L$ | $E$ |
| :--- | :--- | :--- | :--- | :--- |
| $R$ | $Y$ | $N$ | $A$ |  |



E S I VE N I E ETMDD I P CVV F I NTNSSFE NYY S G I S L T L L K S L A K
K A V C E S L Q L K Y P V K L I P F G C G G LDDVK Q H R GVVQEAL L L L V K






 ERVCHKAE E Y A GVPVRPC Y MYALTREGRKPPMVHVR K G I A A D DE A R T G $\ P$ CLLGFD T T G T R Y Y S D
$\begin{array}{lll}R E M V S \\ Q I L & G K E D N & G S E R I V V D S P G F A G D D E A G B Y Q A A L D A A L\end{array}$
$R$ SV CA E L R R E




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UniRef90 A5UUJ6 UniRef90-B8KT23 UniRef90-10HS99 UniRef90-H1PV22 UniRef90_B8FK01 UniRef90-A0A011QJ5: UniRef90_WOE5A3 UniRef9O-LOH217 UniRef90_Q7MRG0 UniRef90_Q0YPJ7
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 LSKMLPKDGEKTERPTFNUIGSCADFRFNADAEEURUMKG

 HSTLAAPSPEAVPADVNLLGLVPGDPDWEADLDEVAAVLA
 EEKKRSWFSFGKDEGNKASVPAAPTRNLDSTTQQQQWELLK RSFTLNHMADKAPGQNGRLNFVPGFETYLGNFRVIKRMMA



 KTDEKSVSKGMTVNVL GRSALEEHVPMP
 A YAREEATQGPKERPDRPTITLLGEMFPPAPVGQSQMLE

 S DGVKKNEKS TDEKNIFGIVPEKDPYWQGNGEEVRRMFA
 ASLVPTLPAEPDNAPAELMVVGADPDVVEDQFS RLGK


 NLMKKGKRSPDTINILGRSPREKHVPMP

 $N Y T A G P V A A P V G G K S A R P T V A M L G E M F$ PADPMMDGQMLA ALVSPGGERRS
 A YARAEAEQGPRVKPDRPTVVLLGGMFMPDPVGUGMMLE TA $D A A E M P V L P T G Q R S L L V L G S L P D V V E D A D Q A R L F A$ KNFDDGRPAAVEPGTVSII GPTYGCFNSPSDLAEDKRLDA K STVAEDPVLEAGKENLIVLGTVSDVVED VRGFRRLFD RMMDWDMPE VPGTVSFLGMTPGYLVRKENREYVDSLLS
 $A A M V P T$
$N Y E A G P V Q A P A S A E$
$N$ QSLYSLLEPTKKKG NVVNLLGFFSPLVDDCELYDLLAH FCPEAEAGDKKVVF $\square G S I N D A V A D D F V A E A E A L G I$

 FVTEKEARGNYAKRTVNLLGATPLDFGPFPRVEELKNNLEE
 NYQAGPVPKPAGGVSDRPSVALLGEMFAPVDPVMUGQMLA RYARGEAEQPREGRKDKPTVTLLGEMF PADPMGLGAMLE $\begin{array}{ll}F T G E S E T V S K T A E V N Q P H T L N L L & G D F G P Q D N D D V M K K N L\end{array}$ KFMVENKKIKNTVNIIGYSPLTFGGKDEKLEELFSLIK


 A




 Q SVVY S L L E P K K K K G $\quad$ G V V N L L G Y F S P L L T D E C E L Y D L L H


 QK QK QKF E P QR V Q P R S V N



UniRef90 Q1JXL3 UniRef90_A5UYB4 UniRef90-A1BIZ9 UniRef90-19BY15 UniRef90-M9P841
UniRef90-K9P1K8 UniRef90-B8FQH0 UniRef90_D9IXS7 UniRef90-W9VB48 UniRef90-B1IEU9 UniRef90_A4ACP2 UniRef90_A5UUJ6
UniRef90 B8KT23 UniRef90-10HS99 UniRef90-H1PV22 UniRef90_B8FK01 UniRef90_B0TBM7 UniRef90-A0A011QJ53 UniRef90_W0E5A3 UniRef90_LOHMR UniRef90-QOYPJ7 UniRef90-K9CIQ7 UniRef90_A2SPT4 UniRef90-A0A011AF00 UniRef90_UPI00037D4D9A UniRef90-A3WHV8 UniRef90 C9LLG4 UniRef90_UPIO002E37CA6 UniRef90-19NSX6 UniRef90_D4J1M0 UniRef90-JON416 UniRef90-J7FXS4
UniRef90 FOMPY4 UniRef90-R6IIH8 UniRef90-B3EEC2 UniRef90-BOUCN0 UniRef90_UPI00037BA275 UniRef90-B1KWD0 UniRef90-UPIO0046F8E0F UniRef90-X4ZR76 UniRef90_U3V819 UniRef90-F7ZM25 UniRef90_UPI0003B2F919 UniRef90_Q07LR0 UniRef90-E8LFH8
UniRef90_UPI0003B31A14
UniRef90-V4LLB2
UniRef90-A4SCK5
UniRef90-Q8KZ55
UniRef90_M9SCK4
UniRef90_UPI00037AE2E9
UniRef90-P26164
UniRef90-A8LQ11
UniRef90 R7DBU5
UniRef90-B3QZE3
UniRef90-A3PL16
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UniRef90-A4ACR1
UniRef90-D4M1M9
UniRef90_S9Q8R7
UniRef90-A6FQ08
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UniRef90-R7DAV6
UniRef90_Q58PM7
UniRef90-F9ENL4
UniRef90-EOMPW2
UniRef90_Q8RGI9
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UniRef90_UPI00037F2225
UniRef90-F5Y845
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UniRef90-B8EPY9
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UniRef90-E8LBQ3
UniRef90 19M994
UniRef90-Q02432
UniRef90-C8RYQ4
UniRef90_UPI00046AE58F
 GAGGRI NLVYPMEATLADTPRLAAAQVNVVMYREFGAGLA







 $P L G L G A G P V V P T R E W R E L Y S A L D C A A A A M L H P F Y$ TATA EAGLAARRLAGEGTAAAWQAAARSRASLVLSPW GETAA



 D F GVVRALALPDLS GTLEEI EEASRAGMILSIGGETRKAR


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

 S $\square G \mathrm{GLV} \mathrm{V}$ CLLTNGTQLQELQKIGQAALNVVINKELGATVA
 $P L G L A A G P V V P T$ WR R WRELYGALDCAAVAADHPFYTA $K R G F Y L R M L A P K S D V E D F D V S P D A A L N V V L S P$ FMNPDA



 $L A G Y E V L C T P G C E C T L E E D Q R L P E A A L N I V T N A E L G L P L A$
$P L G A A G P V V P T$
 GAGGRLKHVFPFESRLSDISDLKNSEVIILMYHEFGSRLG ELGGLTDVVHYPGRKAGDMPPIGPGTSLVAAQPFV GETA $A F G L R R N G A L V D V G R M E D V L K V P S S Q Y L V Q V H R H P M N D R A$
$R L$ QLGVGPVRMLPARRSDIEPAVGPNTRFILARQPGGETTGA PLGGLAAGPVVPCREWRELYAALDCGTAAAIHPFYYGETAA SAGUKTVMEI SRCRDFEEYKTMAEANFNLVLHQESARYAA QLGDGPVRCDPAHHAAEAPGVGPNTVFALVQPFQGDTHGA PLGLAA GPVVPTREWRELYGALDCAAVAADHPYYVAS IR

 PMGLAA GPVVPCREWRELYAALDCGAVAAIHPFY TAA LA GIKSAAVYCRDTF ESIR SPAEHDISVNPDYDPRT $P L G L G A T G P V V P T R E W R E L Y A A L D C A V G A A V H P F Y T E S V R$
$K Y G W E V V S S W A M G D T L E N L S R T G E V E M N L V V S S S V G L P A A$
$P M G L A B G P V V P T R E W R E L Y A A Q D C S V A A A I H P F$





 GAGGKLKHVYPFESTLDEDLSDLKNSDIVVVMYKEFGSECLA
 RAGI EVNLRFVRGISTDEDARLGRADLNLLREP SLVAFG
 QNGLELVSSFCDGLTMETVQNAAQASLNLVVSQ S GLDQPA RAGI PVGTVFCRDRA DKVKTA SPFTVGTNEDFGS P L GLLAAGPAVPTREWRELYAAYDCAAVAAIHPFY GS RAS GCGI QVN TWIPSAPLSSLVHAPAAELNLVKRVRWARRMR KMGIVVNA YLPAADLQTIKKAPRAALNVVRR KK KA
 A MLAAPMGLAAGPVVPCREWRELYAALDCDVVAAADHPFYTA

UniRef90 Q1JXL3 UniRef90_A5UYB4 UniRef90-A1BIZ9 UniRef90_19BY15 UniRef90_M9P841
UniRef90-K9P1K8 UniRef90-B8FQH0 UniRef90_D9IXS7 UniRef90-W9VB48 UniRef90-B9E3Z9 UniRef90_A4ACP2 UniRef90_A5UUJ6 UniRef90_B8KT23 UniRef90-IOHS99
UniRef90-H1PV22 UniRef90-B8FK01 UniRef90-B0TBM7 UniRef90-A0A011QJ53 UniRef90-WOE5A3 UniRef90_LOH217 UniRef90_QOYPJ7 UniRef90_K9CIQ7 UniRef90-A2SPT4 UniRef90-A0A011AF00 UniRef90_UPI00037D4D9A UniRef90-A3WHV8 UniRef90 C9LLG4 UniRef90_UPI0002E37CA6 UniRef90-I9NSX6 UniRef90_D4J1M0 UniRef90-JON416 UniRef90-J7FXS4
UniRef90 FOMPY4
UniRef90-R6IIH8
UniRef90-B3EEC2
UniRef90-BOUCN0
UniRef90_UPI00037BA275
UniRef90-B1KWD0
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UniRef90-X4ZR76
UniRef90_U3V819
UniRef90_F7ZM25
UniRef90_UPI0003B2F919
UniRef90_Q07LR0
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UniRef90_M9SCK4
UniRef90_UPI00037AE2E9
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UniRef90-A8LQ11
UniRef90 R7DBU5
UniRef90-B3QZE3
UniRef90-A3PL16
UniRef90-H8Z3Q3
UniRef90_A4ACR1
UniRef90-D4M1M9
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UniRef90-R7DAV6
UniRef90-Q58PM7
UniRef90-F9ENL4
UniRef90-EOMPW2
UniRef90 ${ }^{\text {Q8RGI9 }}$
UniRef90_Q8RGI9
UniRefo_UPI0004679C31
UniRef90-X8IQW8
UniRef90 UPI0003
UniRef90-UPI00037F2225
UniRef90-F5Y845
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UniRef90_R5V647
UniRef90_JOWWN2
UniRef90-A71A34
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UniRef90-G9YUY9
UniRef90-E8LBQ3
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UniRef90-Q02432
UniRef90_C8RYQ4
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KALLQKK NPQVAHEHFPHVNGDDATDALAHLLKIITGMQR $G M \quad L G Q P T \quad L Y A P F G L R E T T G F V R E L G R L L G T T D D Q$

 VYLKSEFNMPYVS DTPMGLIDTADCURSUCKMITNQVEFD RALQHRGATLLSAPYPFGVEGSRDWMAAAATAFGVPADDR
 EHLKRRFD $\square P Y \mid L R R P Y G \prod E G T V R W L E E I A Q \ S G L A V N Q$

 DWLEREHRVLRVDLGWVGSADAALLLERLGEALALDVQAA $K L L K E K F G T P Y U Y Q C P Y G Y T G T L E W I$
$E$
$E$
 KLVENTWNHEVVKLNPMGVDWTDDFLMKVSEETGKPDPE
 QAFLAKGAFDLNVESLYGLRSSDALI RALMDWTGHEPSVR ELLTARFGUVCGD TYPVGMEATLRWIARUGQLTGRTAAE QWMAKEHD DPFVLHDVYNVREDESTYSQDGQYDDLEMAHE EEMVRRGAKP ISANFPFGAEGTTKWLWAI AERFG ISKAK SVREEAAGRPVLGSAPVGAEGTAAWLDAI GQ TCGIAQAK DLLEKKFGDHVKD $\square$ YPI GWENTCKWI LEI GRLDHNV EK

 $R \square$ L WLERGATLLQAPFPLGAEGTTAWLKAAADAFG DSET EWLFNNLKQDYI I A DPYGFTAS


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

 (IDLERLHAVPFHLSPPLGTAATDRFVSELAAFMAGLPAP
 A L QERGAKLI KSVYPFGI EGTRAWLGAAAHAWGUGA E H KLLNR RALIDRGAALIEAPFPDGAEGSKSWFEAGAGAYRRPA DL AKAVAGRRKVHLVESMGGMRGVREWVAAFSEMT GLREA ELMKRRCGDPYILHETYDVPGUDRLYADVAEADDDQWHDE AL ERRGAKRI AAPFPFGEEGTTLWLKAVADA YGVSAEK VREFEAAGRSIVGSAPVGHDGTAAWLAAI GDSFGISADK EDFNDRLK DPFIEDRRLYQTDK\QQYQALASVLGUSFE LTRRGARHIAAPFPFGHEGTTDWLKAIADEFGVSAET E F

 EF F EAA GRSVLGSGPVGVEGTEAWLAGI GAAFGLP $\square R E F Q A A G R P I V G S A P V G H D G T A A W L A G I G D A F G L S$

 KYMEKEFS $\square$ PYNVVSKYGI ENTENDLKNI

 FALEAARLGUPYALSRLYEDDRIRRQYALFAAALGSADDD GLLAAARGARLLSAPFPRGVEGTLGWWAAAARAWGVSDAAR LYLETQFGISY CGPP DGFDSIKAFILQQCRADNADPNKA VRMKEEFGVPYVALHTFSVEAI DRAYEEI AERFGFTWAGE ALAARSGVPDRRF GLLLGLEAVDAWLMALS
KLLER
 A HMKARFGTAYLA VYAVGAEETKLWLRRVGADCH EELQQQFSDPYLEGFPVGLAGT LRFVQETADRCAVDGTTA EDFHDRDKI PY ELRRLYQDDKIASYRAFAAALGVEFEDE RSMEQRFGIPYLVQDP GRKAQENWLEAVHNCLNE
$G V G T S L G G T L G D P S L R T T L G K L A G \square F D H A D T D P$ $\square R E F E A A S R K I V G S A P V G S E G T E S W L N A I G E A$ CGVPRAK

 SVREQAAGRAIVGSAPVGHDGTAAWLAAI G EABGBA SV RE LTAGRKVVGSAPVGHDGTADWLAADGAAFDVGPDK

UniRefi90 Q1JXL3 UniRef90-A5UYB4 UniRef90-A1BIZ9 UniRef90-I9BY15 UniRef90-M9P841 UniRef90-K9P1K8 UniRef90-B8FQH0 UniRef90-D9IXS7 UniRef90-W9VB48 UniRef90_B9E3Z9 UniRef90-B1IEU9 UniRef90_A4ACP2 UniRef90_A5UUJ6 UniRef90-B8KT23 UniRef90-IOHS99
UniRef90-H1PV22 UniRef90 B8FK0 UniRef90-B0TBM7 UniRef90-A0A011QJ53 UniRef90_WOE5A3 UniRef90-LOH217
UniRef90 Q7MRG0 UniRef90_QOYPJ7 UniRef90-K9CIQ7 UniRef90_A2SPT4 UniRef90-A0A011AF00 UniRef90_UPI00037D4D9A UniRef90-A3WHV8 UniRef90_C9LLG4 UniRef90_UPI0002E37CA6 UniRef90-I9NSX6 UniRef90_D4J1M0 UniRef90-JON416 UniRef90-J7FXS4
UniRef90 F0MPY4 UniRef90_R6IIH8 UniRef90-B3EEC2 UniRef90_BOUCNO UniRef90-UPI00037BA275 UniRef90-B1KWD0 UniRef90-UPIO0046F8E0F UniRef90-X4ZR76 UniRef90_U3V819 UniRef90_F7ZM25 UniRef90_UPI0003B2F919 UniRef90_Q07LR0 UniRef90-E8LFH8 UniRef90_UPIO003B31A14 UniRef90_V4LLB2 UniRef90-A4SCK5 UniRef90_-Q8KZ55 UniRef90-M9SCK4 UniRef90_UPI00037AE2E9 UniRef90_P26164 UniRef90-A8LQ11 UniRef90-R7DBU5 UniRef90-B3QZE3 UniRef90-A3PL16 UniRef90_H8Z3Q3
UniRef90 A4ACR1 UniRef90-D4M1M9 UniRef90-S9Q8R7 UniRef90-A6FQ08 UniRef90-E1RDU1 UniRef90-W8KR37 UniRef90-R7DAV6 UniRef90-F9ENL4 UniRef90-EOMPW2 UniRef90_Q8RGI9 UniRef90-UPIO004679C31 UniRef90-X8IQW8 UniRef90_UPI00037F2225 UniRef90-F5Y845 UniRef90-UPI0003FF89FE UniRef90_Q93JU3 UniRef90-A1BJB1 UniRef90-D8GKM9 UniRef90-L1N925 UniRef90-B8GJ47 UniRef90-R5V647 UniRef90-JOWWN2 UniRef90-A7IA34 UniRef90-B8EPY9 UniRef90_G9YUY9 UniRef90-E8LBQ3 UniRef90-19M994 UniRef90_Q02432 UniRef90_C8RYQ4 UniRef90_UPI00046AE58F
 AEAFI AAEKRTTLRAVWDLWRGPQGDWFGIVAGRSYAEGL YESYI DGQTRFVSQAAWFSRQNFTGKETVVFGDATHAAS SFI LQEQAEAQPDMEDAPGFFSHQKKPVEHADVVTGIL FNKYI DQQTRFVSQAAWFSRQNLTGKKAVVFGDATHSAAM

VQR EQQVWSVCRPY LDWTQG $V D A A K N K F B P A I G G A L A A M P D K$
$\qquad$
F
AF A EREVVSHVRSHPDEAVLS

ID KAINEFRPADSGALAANPIKAARMLSGYEGSELLV AARLHARQRRALLQAAAERGWLAALDPERFAVAAPSATAVGL

 SLAKERGRLVDLMSDSHAWLHGKKFALYGDPDFVMGM


I $\operatorname{KKRWRARLQDMMLDSHFADGGKRVIAADENDHLLGI~}$ AAAFMKEEKRTTLKPVLWDWRGPQAEWFPTIRFGVIAAESY AEEEIGGEECAAFDTAIAAGRDADAGKRAVLAVGYFRPEPV
 VDVAKDRFVGADRGALSAMPV NGRITVSGYEGSELLV AKVI DEEEKKRIDSYVKSILHDTKGKKAVI GIDGRGNPSDT



VE
 $\square$ IRKAAEEAVEKFRE IHPDAVFAVGEWM

NGDPFEL
$V \square K E \square D L Q E E R \square \square H A G D K F \square R R Y E P P R V A \prod F A G A A Y A L F A$ I DAA N N RLLPRI I RAAGAARPVK GRII TLSGYEGSELEV VEPVVLAARAQALEETAEARRRDGQARAVLRSIQQAPFEL V ERVLQEEYERVAA RYQELGADFAKYKFCL HGIAYMPDAL EANGLEQKHD MMNKEQQEI WGNDWFDSDFIAAPASVAFS I A DKVAA A Q N A FLPA DRGALAGAPDKGRITVSGYEGSELIV



UniRef90_A0A011AF00 UniRef90_UPI00037D4D9A UniRef90_A3WHV8 UniRef90_C9LLG4 UniRef90_UPIO002E37CA6 UniRef90_I9NSX6
UniRef90_D4J1M0 UniRef90_J0N416 UniRef90_J7FXS4 UniRef90_R6IIH8 UniRef90_B3EEC2 UniRef90-BOUCNO UniRef90_UPI00037BA275 UniRef90_B1KWD0 UniRef90_UPI00046F8E0F UniRef90_X4ZR76
UniRef90_U3V819
UniRef90_F7ZM2
UniRef90_UPI0003B2F919 UniRef90_Q07LR0 UniRef90 E8LFH8 UniRef90_UPI0003B31A14 UniRef90_V4LLB2 UniRef90_A4SCK5 UniRef90_Q8KZ55 UniRef90-M9SCK4 UniRef90_UPI00037AE2E9 UniRef90_P26164 UniRef90_A8LQ11
UniRef90-R7DBU5 UniRef90-B3QZE3 UniRef90_A3PL16
UniRef90-H8Z3Q3
UniRef90-A4ACR1 UniRef90_D4M1M9 UniRef90_S9Q8R7 UniRef90_A6FQ08 UniRef90-E1RDU1 UniRef90-W8KR37 UniRef90-R7DAV6 UniRef90_F9ENL4 UniRef90_EOMPW2
UniRef90_Q8RGI9 UniRef90_UPI0004679C31 UniRef90-X8IQW8 UniRef90_UPIO0037F2225 UniRef90_F5Y845 UniRef90 UPI0003FF89FE UniRef90_Q93JU3 UniRef90-A1BJB1 UniRef90_D8GKM9 UniRef90_L1N925 UniRef90_B8GJ47 UniRef90_R5V647 UniRef90_J0WWN2 UniRef90_A7IA34 UniRef90_B8EPY9 UniRef90_G9YUY9 UniRef90_E8LBQ3
UniRef90 I9M994 UniRef90_Q02432 UniRef90_C8RYQ4 UniRef90_UPI00046AE58F
 ARFLAECGMELTEVGSPFDHKSLVHADLEDLPVPTQI SEG ARLLVESGADVRYVGSACPRTKWSDPDRELEAKGDRVNFR $\square$ SAL RQLEMRIEAVIYDNDTDKEKAEYRHRIGKEEPVYDG
 GKLFKEFGARVVGAVLTDALKKDEEHETDLEAVAENIYDT AGGHADV VQGlVSFAGSELSLSKGACWCDSPDMADGD
 A A VI K K DLIS MVVE QCFVRIINGPNE ENRNCNY QRWQAGDLPK A L G L E T F L S K EM GM Q C L F S H D T T
ARLLVESGAELPYVGTACPRTRFAEDDRALEARGTRVQFR ARLLVESGADLRYVGTACPATKWSEADRDLSSKGVRVACR
 SQWLS EVGV
RDLLEELGLKT
ARLLDESGANVPYVGTACANSPWADDAAWLEAKGVKVKYR ARFLREDEMNLVEVGTPFLHRQHLATELEMLPAGTMLSEG ADLVKSFGGQLAGLSMDWIHLGALKAIAGRHPALPVHVAA A QTL REWTD IGSLTVIDCQQPLKDAPACDTAEADYTVGVDD

 ARFLEECGLAADNEGTPFHDQLVMRGEMSRDAPEVPIVEG
 ARFLRECGMKTTEIATPFDHKADMAPDLALLDSNTALTEG ARLLRESGANVPYVGSACPRTKWSDPDRELVARGVKVKER
 SRFLKNAGADVVECSSSYDNRRFHGPELAALEEGVKVVEQ ARFLRECGMSAVEVGTPFLHRGILGPDLDLIAEGPVLSEG
 AALI EKEYHYKTKVLCP $\quad$ LEETDGLDGSQDLKVCG ARLLIESGAEVPYVGTACPRTPWSEADADLRAHGATVRFR ARLLIESGADVPYVGTACPKTPWSEADAELRARGVTVKFR
 ARLLDESGADVPYVGTACPKTPWSASDREDEAKGVRVQYR


QMR
A R LLVES GADVRYVGTACPTEWSKDDCDWLEAKGVQVKYR
 LSF GCSELFLSSKGTCWCDSPDMGSEEIPPFFS ALLALE K L G L R VK A V F A NI S G D D F F D A R F L R E C GMELVVEVGTP YLDDR RAM QP E L D D L L

A EGLETF LAAHEMGMQCLFS $\square D G$ A K
ARLL L E G GA HVP YVSTS IVGQSMLTEAWLKAHGCETVVYRK $S L A L L R Y G F K V A E I Y$ A S TAE DFVY $\square R K V A K \square S P K T K I Y S N$

 $G R L L V E S G A D V R Y V G T A C P L T P W S E Q D R Q L E A K G V K V Q F R$ K S YVVR Y G L SVS HL CVE D SLL LA RVREAAALYSPETQLLL N

 A R LL LIESGAEVPYVGTAAGRTPWSAADREREARGTVVKFR $\left.\begin{array}{lllllllll|lllllllllllllllllllllllllll}A & R & L & L & E & E & G & A & D & V & P & Y & V & G & T & A & C & A & K & T & Q & W & S & E & A & D & R & D & L & E & A & K & G & V & A & V\end{array}\right)$

D|LIEDVEVA|L|DE ADVVLISNFHAERLAHHAG|L|MLRGMP N PDNDQIRQMLHRRAPAFVFGSTNEK YYLSEAGAKFARFFM PN F H RQLEDV T R IQQPDLI DTS LMTANP FA GHGFVVK WSME D HAEVGD II ARVEPSAI FGTQMERHDGKRLEI PCGVISA

 PDNS N QL D RI R D L Q P DL VI T G M A LLA NPLEARAA KTKWS VE



 GS DEVVAA L LAA A A GFDVVLLA S A L EAP V A A A A GV P L V P LAR K K E K D K I





UniRef90 Q1JXL3 UniRef90 A5UYB4 UniRef90-A1BIZ9 UniRef90-I9BY15 UniRef90_M9P841 UniRef90_K9P1K8 UniRef90_B8FQH0 UniRef90_D9IXS7 UniRef90-W9VB48 UniRef90_B9E3Z UniRef90_A4ACP2 UniRef90_A5UUJ6 UniRef90_B8KT23 UniRef90 IOHS99 UniRef90_H1PV22 UniRef90_B8FK01 UniRef90 B0TBM7 UniRef90-A0A011QJ53 UniRef90_W0E5A3 UniRef90_Q7MRG0 UniRef90_Q0YPJ7 UniRef90_K9CIQ7 UniRef90_A0A011AF00 UniRef90_UPI00037D4D9A UniRef90_A3WHV8 UniRef90 C9LLG4 UniRef90_UPIO002E37CA6 UniRef90_I9NSX6
UniRef90-D4J1M0 UniRef90_J0N416 UniRef90_J7FXS4 UniRef90_E0MPY4
UniRef90 R6IIH8 UniRef90_B3EEC2 UniRef90-BOUCNO UniRef90_UPI00037BA275 UniRef90_B1KWD0 UniRef90_UPI00046F8E0F UniRef90_X4ZR76
UniRef90_U3V819
UniRef90_F7ZM2
UniRef90_UPIO003B2F919
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UniRef90 E8LFH8
UniRef90_UPI0003B31A14
UniRef90_V4LLB2
UniRef90_A4SCK5
UniRef90_Q8KZ55
UniRef90-M9SCK4
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UniRef90_A8LQ11
UniRef90-R7DBU5
UniRef90_B3QZE3
UniRef90_A3PL16
UniRef90-H8Z3Q3
UniRef90-A4ACR1
UniRef90-D4M1M9
UniRef90_S9Q8R7
UniRef90_A6FQ08
UniRef90_E1RDU1 UniRef90_W8KR37
UniRef90_R7DAV6 UniRef90 Q58PM7 UniRef90 F9ENL4 UniRef90_EOMPW2
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UniRef90 I9M994 UniRef90º Q02432 UniRef90_C8RYQ4 UniRef90_UPI00046AE58F


AS LEDDCAAMEA $Q Q P D L A D G T T P V V Q K A K Q \square G \square P G \square Y F T N$ QHVENQLDRCRAAQPDIVVCGLGLANPDEAEGMTTKWADE GQPP E LVVN WL G R L K P D L V I G T P I TAA A I A A R G G I A S V A V Q S A A IIS E Y F K T C E N N V L L L L A S S S S E S S V V L Y R R R K Q C S F D A C N I E


 $V N E E A D A \| V L E R M N P A L S F G E I P G G T G A$ Q DLE A QLDR RHEATNPDLTVCGLGLANPLEAK GHATKWADE A S L E D D C A A M E A I K P D L A I GTT T P V V $Q$ K G K E L
 Q DVERQLLDRVRAARPDLTVVGLGGANPLEAEGFTTKWADE A S L E Q D K A A $V$ D A A S L E D D $\square$ A AVVEFRPDLAAVGTTPVVQHAKEQGIPGLYFTN EE E M E E A L K D A Q ■ V V VA D P L Y R P I CPA E C




## 






A DNT T I REELRRQKQPQF LFGRMPDKY LAERF DPASFPGP
 LEE TM M Y Y DCSEEK $\square$ D $\square T \square G K D A E Y Y H P D C V N V P$

## LE P T MLYY Y K S Q S G VN M T $\square$ G K D A GYY H K E CS NVLW

$\square A G L E V G R R D T E S D P D L V I G S S F E R S L C P D R A D P P F R G Q V$ A S LE H DLAA ALAE Y QPDLAI GTTPVVQKAKQGGTPALYFTN PAEETLRRGIFAE ADVVVGTGDAGMEGMGAPLI PAVN




$\square \mathrm{L}$ S A R P LM GP A GA G S LA T V I N S A $\square$ A N P R F D R M Y G Y
HPYDPPFDGFRGAVNDANLWDN


VRRATPFMGHSGTVWLLQE V V A L L Y D MLDFNF L
$1 \quad L S D V R P D F G M D A S L S S F V R E L L$
WNE D $\square Q P$ F GYA GVVK K L F E E L L K H S L

NEERQPY GYAGVRRLFEA LAE
 ETTSLSFPSY VRTVRRMCRRLEH N L F D R S VWS Y Q GFVD IME EVWQMLLQQP
YDEMRP FMGLQQ T SHMVASSLWN
LIS A R P LM GPA GA GSLA QVI NA A IG N
L I S A R P L M G P A G A G S L G Q V V N A A


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UniRef90-A4SD70
UniRef90 W3AS51
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[^5]|  | UniRef90_J1L4U9 |
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| UniRef90-B9E447 |
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| UniRef90-C9KK64 |
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| UniRef90-A2SSA2 |
| UniRef90-C6JMQ4 |
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| UniRef90-M1ZYJ3 |
| UniRef90-U2TJJ4 |
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| UniRef90-F4YZD3 |
| UniRef90-R5TNH5 |
| UniRef90-R5GDW4 |
| UniRef90-D1Y4U7 |
| UniRef90-R6PZD2 |
| UniRef90-F9MQQ6 |
| UniRef90-F5YIT6 |
| UniRef90-U5RP87 |
| UniRef90-R9MPI3 |
| UniRef90-F4LLI7 |
| UniRef90-E9SAG9 |
| UniRef90-R6AIM6 |
| UniRef90-C6PPZ2 |
| UniRef90-S3JNS0 |
| UniRef90-S7HR88 |
| UniRef90-X8IQZ5 |
| UniRef90 ${ }^{-} 77 \mathrm{~V} 450$ |
| UniRef90-Q9Z5Y4 |



 EHKIKVISSIGMGSTLDEDRKAASAKVDLVVS YTGLETA G G AEVNMVMPLGAHVAEMRNLVNADANVVMYREFGRGLAB KI GVESVVTLD G GRALEDYVDAGQAEACAVLHPFYGKTV



 SCGFR LICSLAPGDELLETVIDKAPNAEKNVVVRAEAAKVAA NLKLEI QSIFSHRDSLEAI EKSTCAELNLVLSHE GIELA

 $P$ L G LLA AGPVVPAREWRELYAALDCGAVAAI HPFY TAS

 IVGIDVNLILAVNHNMADLKCLSQADLNVVI HPEDSHEVA K HFEI ISTFAMGSSDEDIQKAGEADVNLVI S S VGFPAA QKGYRLL HDSEYDRFEDFREMSSSKLDILAGP AAKMAS SKRQSVRVWGRLPAQYTALPS LGAGVYVCGVNPSSSRTAT NYGWNVLSA WAMGDTLETLQQAGTADVNLGTARMS IWWYYR GKGFSKVLCYGMGDGLEAVKEAAAAEKNIVISP SGIAAA RMGA APARQDTDFSTFDGFQQMARSRDNVVLAPP GVYAA KAGYTV RELQSCRTWEEYKELGNAG TVGCCYPSGKYG\| QNGYHVYQLPTCKT YDEYQKMGSS ILNDGQEPLAHVACD

 QLGYEVI F


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

[^9]

| UniRef90 J1L4U9 |  |
| :---: | :---: |
| UniRef90-R5X334 | KYMYENFNTPYVVGTPFGKEFANKVIAD |
| UniRef90-UPI00037CFFE8 | EHVVLNHGVPYVKLPFYGFTQSDQCLNTFGKWL SAED |
| UniRef90-E6UG72 |  |
| UniRef90-E9SAH0 | R Y MEKEFGIP Y I C GVPVG |
| UniRef90-Q9WXD7 | EVLGKPYLQAP I G $\square$ D S T TKFLRKLGEMLGLDP |
| UniRef90-A4SD70 | D LFREHGVK\VGGNPIGANATAEWIRDI GAALDLDSAA |
| UniRef90-W3AS51 | K DMEKNFHI PYLEVPVFDPEETSESYKAI SQALGMDTVPD |
| UniRef90-B9E447 | ELLYGTEFMIVKNEDYGYGGNGIEEFYDDIAKKI GTY ER |
| UniRef90-D3R039 | QALQARFNIPY LEPNFYGYHPCLTALRAIATQLG口TVNAS |
| UniRef90-D4LQL1 | KILK K KFGTPYVIGTPVGDEDLVMALEQVTNNTNKKKKS |
| UniRef90-C9KK64 |  |
| UniRef90-F2JJS3 |  |
| UniRef90_A2SSA2 | EKMREKYGIPFCAMLPGTTNG K ER |
| UniRef90-C6JMQ4 | EFMKKEYDIPY I I VNVVGRYSMEKMKEELGKYFNDEYKQD |
| UniRef90-UPI000464BE | EKFGTAYLHIGGAGRYAGLDGDCTFYRDIGQALR MEAA |
| UniRef90-UPIO00288F |  |
| UniRef90-H1HUF5 |  |
| UniRef90_X7FC50 | VRVVFEAAGRPVI GSAPVGAEGTAA WLA AVADAF GLPAARLL |
| UniRef90-M1ZYJ3 | KQLKERFGTPYLLARPYGDKGTLEWIDKIVK\S |
| UniRef90-U2TJJ4 |  |
| UniRef90-UPI0003609F75 | VGLRRFYAPGRIHHQYQALSRALGVTLDD |
| UniRef90_R5BKF6 | QA HK P |
| UniRef90-R6GC39 | KVLEERFST |
| UniRef90-R7KWW1 |  |
| UniRef90-F4YZD3 | T LM R R R KRRLIGAPPPTGPDGTRAWI |
| UniRef90_R5TNH5 | Q WGC |
| UniRef90_R5GDW4 | KYLK Q F G P Y EVFCP PE\\| IPEWKER |
| UniRef90-D1Y4U7 |  |
| UniRef90-R6PZD2 |  |
| UniRef90-F9MQQ6 | A LEQRLGQAQLY |
| UniRef90-F5YIT6 | GTPFTMGFPVGKQESSR\\|LSA |
| UniRef90-U5RP87 | DYLQDKLGQKHLHLPPLYGFDEDTKNLNTLSEYLGLPKKE |
| UniRef90-R9MP13 | EEMKRKFQTPYIVLPSYDPDTI HEYYQKISEALNLSVDDS |
| UniRef90-F4LLI7 | RS LIET RLGILPYLESVTYDPDDVARWYRTLEEKLGTGPLGW |
| UniRef90-E9SAG9 | QF GCEELSARLGAQAMYDPNSFDDEDRANMAKLCEALGVN |
| UniRef90_R6AIM6 | WMQERLQTPSIISRPLGDHAWSTWKKQVQELL R DGKGER |
| UniRef90_C6PPZ2 | DYLQEKLGQKHLHLPLYGFDEDTENLNTLNEYLGLSQUIR |
| UniRef90-S3JNS0 |  |
| UniRef90-S7HR88 | DMGKRLDQQALYLPYAYEYGRMRRNLQKAADALGLTMPDA |
| UniRef90-X8IQZ5 | CLEERL GQQFi Y MPYTY |
| UniRef90-F7V450 | KLEKRLNQQDLYLPSVCTFSEIRQALT DLADTLQIPLPD |
| UniRef90_Q9Z5Y4 | R RPPRRPGSTWPRTSSSTTTSRLAAMDRLVTELIDGLLGR |

[^10]

|  | $V \overline{L L} E \text { T D E A A E Q } \\| \text { D R A C D K Y }$ |
| :---: | :---: |
| UniRef90－R5X334 |  |
| UniRef90－UPI00037CFFE8 | F A NLIKKYHAEYNDTLTKLQRQLRQLEVLPILSNRNDWNL |
| UniRef90－E6UG72 | DKYYDKAKTAVDNF】SKHGK】SAAVGECVNAD SFEL |
| UniRef90＿E9SAH0 |  |
| UniRef90－Q9WXD7 | EPFDAREKST\K P VWDLWR SVTQDF FA T A S F A V V NETY |
| UniRef90－A4SD70 |  |
| UniRef90－W3AS51 | FEA DRRAAEDAVERTRALVGDLP I I V D S S A H PFGM |
| UniRef90－B9E447 | LGRYLNERKVHDQERLEKKLLKMSKYTCAIYCEDFRDYFY |
| UniRef90－D3R039 | VENHLNAR\KRCAMLPY ILRRRATAPVLLYSVAHAEVNTSL |
| UniRef90－D4LQL1 | EEESTSG GQDEPE $\square$ PYLWNRLSTSPEILIGEAVTMGSL |
| UniRef90－C9KK64 | SFAAAEAREQAEQAADAFCQQYGRETVLA $\mathrm{C}^{\text {CGNANPFE }}$ |
| UniRef90－F2JJS3 | LT A $\square$ QEEAQAQ $\quad \square \mathrm{KKAREDIGDFP} \mathrm{\square II} \mathrm{GHSAVR}$ |
| UniRef90－A2SSA2 | MQAFLQDYTPQ |
| UniRef90－C6JMQ4 | 1 KYKEIDERKVLI ISSPVMAENI |
| UniRef90－UPI000464BE25 | V E P V V $\downarrow$ A |
| UniRef90＿UPI000288F6DB |  |
| UniRef90－H1HUF5 | VFAPEAGGEEKHQTKASW LLFHDALIAHSL |
| UniRef90－X7FC50 |  |
| UniRef90－M1ZYJ3 | SFDKSEKEKSMSQISPDREHPDEARISLGGHRDVVKGI |
| UniRef90－U2TJJ4 | GPWQARARGAL R S FRERHPREVFAVEGSNANPFEL |
| UniRef90－UPI0003609F75 | 俍 |
| UniRef90－R5BKF6 | LT DLILQSEKARQFERTKEIQRLCGEPWFLVSAPSSVVRGM |
| UniRef90－R7KWW1 | LLPLTTAPYRDKARQK\AEAKAVIGDYP\AVDYQAVRPFSLL |
| UniRef90－F4YZD3 | R QVWEGSK DYP SVRGKPVFLTGDNPL |
| UniRef90－R5TNH5 |  |
| niRef90－R5GDW4 | K E QLE H S E Q E Q T A M P NRKERSDKKVLIVHQQVLANTL |
| UniRef90＿D1Y4U7 |  |
| UniRef90－R6PZD2 UniRef90 F9MQQ6 | EKK $\square$ SLCEAALEHTRQVIGNTPISIYTFHPRPLGLL YEQEKKQCDAAL GALQVVQDRPIAIDFTASRPFSL |
| UniRef90－F5YIT6 | GKTVDPKNSIPDTSKQTSEAGTII DGEPV |
| UniRef90＿U5RP87 | A DEKSAALNALKEAKKVIGGAKISIYTAVPRP |
| UniRef90－R9MPI3 | YYKKARKLIHLLRAKAAD\T CAVGERNISPVLNVA |
| UniRef90＿F4LLI7 |  |
| UniRef90－E9SAG9 | AEENSAKEALIAAAKEAVGDTP |
| UniRef90＿R6AIM6 |  |
| UniRef90＿C6PPZ2 | GYELKD T T CKT Y DE＠GDAKIS S |
| UniRef90＿S3JNS0 | VSFDI ERDYENAKTSLRETAAFLDGTPVALDFQSVK |
| UniRef90＿S7HR88 | YEQA |
| UniRef90＿X81QZ5 | RTEAEESLTNALSUVGTAPI G\｜D Y M S S P P F L S L |
| UniRef90－F7V450 |  |
| UniRef90＿Q9Z5Y4 | AAPEVRPP ARLAHGLLDTHFVLGGARVALAMEPEALVAV |

[^11]


[^12]

UniRef90 J1L4U9 UniRef90－R5X334 UniRef90＿UPI00037CFFE8 UniRef90 E6UG72 UniRef90 E9SAH0 UniRef90＿Q9WXD7 UniRef90－A4SD70 UniRef90 W3AS51 UniRef90－B9E447 UniRef90－D3R039 UniRef90 D4LQL1 UniRef90－C9KK64 UniRef90－F2JJS3 UniRef90＿A2SSA2 UniRef90 C6JMQ4 UniRef90－UPIO00464BE25 UniRef90＿UPI000288F6DB UniRef90－H1HUF5 UniRef90 ${ }^{-}$X7FC50 UniRef90－M1ZYJ3 UniRef90－U2TJJ4 UniRef90－UPI0003609F75 UniRef90－R5BKF6 UniRef90－R6GC39 UniRef90－R7KWW UniRef90 F4YZD3 UniRef90－R5TNH5 UniRef90－R5GDW4 UniRef90－D1Y4U7 UniRef90－R6PZD2 UniRef90－F9MQQ6 UniRef90－F5YIT6 UniRef90 U5RP87 UniRef90－R9MPI3 UniRef90＿F4LLI7 UniRef90 E9SAG9 UniRef90＿R6AIM6 UniRef90－C6PPZ2 UniRef90－S3JNS0 UniRef90 S7HR88 UniRef90－X8IQZ5 UniRef90－F7V450 UniRef90＿－Q9Z5Y4



TNNAEVRA $\square M G Q K R P L V V F G S \square N E K \square Y \square A E \square S A G H G P K P A$ KYLEDDMEAVVRLKPDLVTGTTSLDSFAKERGDAADYYTN

 KGEEEAENYLKDAK $\square$ K LI PREDRAVTLALGADACLCHPHAKHV
TNHNRDSRVVEEEQDCIADGYNAAYIDKAKHV VDLIQ SNEGHLQKLDEEGCYDDI VGDPFERFTNRQQ FVSLPHPA
$S E K E D L K R \square F K \quad H V D \square V I N G T$
 FSETEWVGADSSEKKGLLMAS GEALKWAK
 LSPTMAAFPDDEDAPDLVLGADAHFY YPSCPCIA $V$ QGHDWQAALQTGENGLLLGSDQERRLCPDKH【AYQT】SN NPDHHDSVKFGLTDKDFLCDGFDCGYDTASDKVANLMEDD PDNYDQ】QRMRESRPDLA TTGTANANPSEARG』DTKR
KEEDDW $\square$ S Y $\square$ KENEYD I I $\quad$ A D LLLKKAVPFYKGEW
$K P E \square E \square R S T V H A K M R L L H E E H A T D K \square L A \square G Q K A A W R Y F V N$ VRHVNMKGQVEKGQSEYVA $\square G Q K A A Y \quad Y T G T S H F V N$ ELEAEQ
ATVHAKMGVLDRKCSEKSLAGQKAAYF TGSEYFVN THPGMWNYI HSPQNYD ISFGVP F FPY LRNTPYTMDAPI LHPDMVRFALR GTDCICDGFDCSYMTGSTKT

ATVHAKMRLLNRKCD EKNDA $\square$ GQKVAYFYFVN PLHHDSPKFAYRSYSDCDCDGFDCGYMTGSEKV KV VNI STSHFKRRLLSKKYGKVLAGIGMAAYF GSEK TDTKYFVN ATQARFYPRDEEADGKVI A I GQKAAYF $\quad$ G


[^13]UniRef90 J1L4U9
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UniRef90-R5BKF6
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UniRef90-F9MQQ6
UniRef90 F5YIT6
UniRef90 U5RP87 UniRef90_R9MPI3 UniRef90-F4LLI7 UniRef90-E9SAG9 UniRef90-R6AIM6 UniRef90_C6PPZ2 UniRef90-S3JNS0 UniRef90 S7HR88 UniRef90-X8IQZ5 UniRef90-F7V450 UniRef90_Q9Z5Y4
$R G R \nabla R P \bigsqcup A G \square E G S \square A F \square E D V V M A C R S$
$\square G D D C D \square V G Y P G T \square R \square G E T \square L E K \square S N P Y F$ EQPFG
$F \square P A G P F M G Y A G A T Y$ YVQEVCNSLFDALF NISARPLFFATGAAAVLGMISGLLN MFGYDG\|VSLMRRITEAYQNP

QF Y D L P H $\square$ AF S GR $\square \mathrm{Y} L \sqrt{K} R$
DEYM FGYSG $\square$ MK $\square$ MEKMTKCY $\square E P M$
VSSKLHWQSY
GYSTKLYMDYE
$L I S A R P \square M G P A G A G S \square A E V V N A A \square$
WD GDEQPFGYTAVSGLFGALDHLLSH
WNSEEQPFGYDALLRLTDALDEKL
PEPERPFMGDRGHRHMQE\IWN L
YMY GYDGVCRLMDMLIAAFN $S V E S T S A Q \square H G F T N$ ARGVPRPVTRPDRRN
Y D L P H
LVQGAGLQGFDGПRRTAELMEEAF $1 \vee E G G G L R D F A G \| D E L A K K L S E A V$
$\square V E G G G M Y G F D G \| V R \backslash A G L M K E A F T C P$
H F F P
LMEDEGLFGFAGICTLMKKI RDA
$\backslash V Q N G G Y W G F T G U S A l A D L I A G A A R A P$
$\square V E G G G M Y G F D G V K$ VAG LMKEAFTFP
MDDEGNF GFSGVVRLMEMMANAHRADVAEMDR
LVENGGFYGYTGLLKI LDDIAANAAENPKMRDI
MIT NNGRYGYDAIKSLAAELDDAYEN
YN GLWGFHGUVRLMELMMEAYE
ALRTTGGGYGAGLRLLVDAANRL

[^14]
[^0]:    19

[^1]:    >

[^2]:    MNTVKKPLQVNPDKHSQPMGAADAFMG VKNCLPDMH AKEGKDKTSLQGSHT RACKFWTATKILSG I KNAVILTH

    ACAYSRADVGS DEYVEF CPDSCVAW LYQKI EDSFFLVI P■HGCAFNGAMTMSSNLKDAVILAH YWGSVYV FAA 1 KGLQVI $1 D$
    NKRSKPSVNPMKDGQSLGSVLAFQGCYK ALPIVB WTYEGPPHVGAMRIAA ASMQGVHYVLH ANYHCPISCVAW WLYKIEDSFFLVI SRVRTDTQSSPGVGPQASCALHGALLTA AA PGQVIPVVM

[^3]:    PDNYNQVDRDRDMKPDLV!TGMAHANPDEARGDNTK
    YDRDERSSDI KRLKPDI I LSN YEPVSEQSYITDTIPM PDNDAVREAVHKKTPDIVFGSYNERMYLSEMGARATYDPR NYLEVEAAMAEAAPELVLGTQMERHSAKRLGIPCAPLHV PDNYNQLQRI EALQPDLVI TGMAHANPLEARGISTK PDNQNQLERI YDLQPDIVI TGMAHANPLEARGINTK
    
    GQQFEDANVLNRYPADFYI GRSETAAAAARFGAIPLP
    $P D N Y N Q \backslash Q R I K E M K P D L V I T G M A H A N P L E A R G I N T K$
    $T D N A E I S R L V R E T K P L V L F G S I N E R Y L A E A A W V P F P G A A I$
    PDNYLQLQRI KELQPDLVDTGMAHANPLEAHNISTK
    K FQDVAQUI DDQMPDLVCGTQMERHSCRKDDVPCMPTHD
    PDNYNQ1QRMHE LEPDLADTGMAHANPDEARGI DTK

[^4]:[^5]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf sol25
    sol5
    sol0
    jhmm
    jpssm

[^6]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^7]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^8]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm

[^9]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    Sol0
    jhmm
    jpssm

[^10]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^11]:    lupas＿21
    lupas＿14
    lupas＿28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^12]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^13]:    lupas 21
    lupas＿14
    lupas＿28
    jnet

    ## conf

    sol25
    sol5
    sol0
    jhmm
    jpssm

[^14]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf sol25
    sol5
    sol0
    jhmm
    jpssm

