## QUERY

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VYKLVLI RHGESTWNKENKFTGWTDVDLSEKGVQEAHEA


M K
$R \| V L I R H G E$
KLVLLRHGES
MK LVLLRHGES $\quad$ WNQENRFTGWTDVDLTPKGLLKEAEAA
MKKIVLLRHGQSTWNQENRFTGWTDVDLSDTGKDEAVRA
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TYTLI L L R H GQSEWNEKNLFTGWVDVGLTEKGRAEAARG
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YRIV MVR HGESEWNQK NQFCGWFDSAL SEKGIA EAQAA
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MT TLILL R R GE S
MNKANRFCGWIDVDL
$M$ VKLVLI RHGQ
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VTKVVLI RHGESQWNRENRFTGWTDI DLISDQGRNEAAKEAA
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A A Y QLVLI RHGESTWNLENRFSGWYDADLSPAGQEAAKRG

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MAKLVEIRHGQSAWNLSNQFTGWVDVDLSPEGVEQAKNA
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V MV RHGES I WNEKNLF T GWYDADLNDKGLDEAHKA
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YKLI ML R H GE GA WNKENRFCS WV DQKLNSEGMEEARNC
A MTKLVLLRHGQSEWNEKNLFTGWVDVNLTDKGRAEAQRG
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TAGTLILLRHGQSEWNASNQFTGWVDVALTEQGREEARRG
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LLRHGESTWNALNQFTGWVDVPLSEKGTAEAARG

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K I V L L RHGQSVWNRDNRFTGWTDVDLSQRGDDEARNA




$E G G D K E A R K C$
$D V G V$


## QUERY

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EKSWKLNERH
T A EKYGD DKH G E ロー

QVK Qwrrgat QVKDWRRSYDV EKSWRLNERHYGALQGLNKSEMAAKYGEEQVFVWRRSFDT EKCWQLNERHYGALQGLNKSQTAEKYGEDQVKI WRRSYDT SRSWRLNERHYGALQGLNKAETAAKHGDEQVKI WRRSYD DKTWKLNERHYGGLQGLNKAETAEKYGEDQVKI WRRSFDIV IDKSKLLNERYGALQGLNKSETAEKFGEEQVLVWRRSFDV EKSWRLNEKHYGALQGLNKAETAEKYGDEQVHVWRRSYDV YREWRLNERHYGALQGLNKAETAEKHGD EKNWRLNEKHYGVLQGLNKSETAARFGEEQVEVWRRSYDV I K DYRLNERHYGALQGKNKTETADAYGEEQVLLWRRSYDV $Y K S W R L$
Y E R H Y GAL FKSWRLNEKHYGFLQGMNKSETAEKYGD EKNWCLNEKHYGDLQGLNKAETAGKYGE HKSWR NERMYGGLQGLNKSETAAKHGEQVLVWRRSYDT GVTWRLNERHYGALQGLNKAETAAKYGDEQVLI WRRAYA HKHWRLNERMYGALQGLNKSETAAKHGEDQVKI WRRSYDV EHSWRLNERHYGALQGLNK VPDWRLNERHYGALQGLDK <br> \section*{} <br> \section*{}





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UniRef90-Q1Q4Z7
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APYK IILRHGRSTWNEKN $\square F T G W V D V R N E Q G T E A \square Q A$ VVLMRHGESEANFENYWTGWLDVSLTEKGQEQARKA MARLVLLRHGESTANRDNTYTGWSDVPLTSAGDTEAQQA MAKLVLVRHGESVANAANVYTGWNDVPLTKKGKQQAKKA QLVLVRHGESTANRNNEFTGWTDVPLTPKGRQQAKQV VVIIRHGKTEHNKLGLDTGWEDAPLAREGVDEAREA KLVLVRHGESTANRDNEFTGWTDVPLTLKGVRQANRV YKLVLI DHSDSAWNLENRFDRWYHIDQSLGGHEEVKHG KVVLI RHGESEANFENYWTGWLDVA LTAKGREQAWQA TLILVRHGQSEWNDKNLFTGWRDPGLTEKGHEEAKDA LVIMRHGESQANRDNIFTGWSDVALTQKGVAQAHSA LVLVRHGQSDWNLKNLFTGWKNPDLTEQGVAEAHKA YKLVLIRHGESAWNLENSFSSWFDADLSPAGHEEAKRG TGTLVVLRHGQSTWNRANRFTGWSDVGLSVQGVADAQRV MVKLVMVRHGESI ANALNQYTGWNDVDLTHEGVMQAHEA MTQLIVMRHGESVWTQKNRFAGWVDVPLTERGLDQARHA MNKLILLRHGQSQWNLENRFTGWKDVPLTNKGVNEATDA YQLVMVRHGESEWNKLNKFCGWHDAELSQQGVGEAHSA
TSLILVRHGQSWNEKLTGTGENPGLTKGTDEAKHA MPKLVLVRHGQSFWNTQNRFTGWVDVPLTEKGKEEAFKA MPKLILVRHGQSLWNLEDRFTGWVDVPLTDLGREEARRA TLVLIRHGQSEWNLKNDFTGWKDPGLTEKGRTEA AAA MYKLVLVRHGESEWNKSNGFTGTDVDGSSKGDEAKEA
 O
Al ETYLTRHGETEWNRRRRLQGRSDTPLNDTGLAEARKA RLLLIRHGETDWNRQGKFQGQIDVPLNDNGRLQAQKA RLLLVRHGETEWNRQGKFQGQODVPLDNGRQQAAKA RLLLVRHGETEWNRQTRFQGQiDVPLNDNGRQQAQKA MTVLLVRHGETEWNTGGKFQGCTD:ALSDEGIKQAKLL
 RIFLIRHGETNWNKEGRFQGQLDIPLNENGKNQARKT ELVFIRHGFSEWNAKNLFTGWRDVNLTRGVEEAKTA MAFLILVRHGVTDWNVNGRWHGLTNIPLNEEGRKQAKEA KLYFVRHGKTKWNLEGRYQGGSNSPLDPESYEDIKK ATRVIVVRHGESTYNLENRI
TQLLFI RHGETEWNRIKRIQGHTDIPLAASGEEQARRL MTRAIIVRHGQSTYNTEKRIQGRTDSKLTEKGRNDASLV TTRVILIVRHESLWNEKNLFTGCVDVPLTPKGVDEADEAB
PRLILVRHGETDWNQQGRFQGQTDIPLNKNGFAQAAAA LILIRHGESMWNEKNLFTGCVDVPLTRKGVEEAVEA MTRLVLVRHGLSSFNAKGLIGQRTDSLLTDEGYEQALKA TTEVVLVRHGETDWNQAGRFQGSEDIPRNDKGKSQAKKL TTQVLFI RHGETAWNRIKRTQGHVDIPLADTGLAQARQL MSKTY/VRHGETEWNKAQRTQGCSNTPLSEEGTKQAKAL RVVIVRHGESTYNLEQRFQGRLDSVLTQRGREQADCV RVVLVRHGQSTWNAQGLVQGRTDSVLSEAGVAQARAT MTKFYFVRHGKTEWNLEGRYQGKGDSPLDPQSYQEDAQL
TEGYCRHGQTDWNAEGRLQGQEDTPLNALGREQARRN

## UniRef90_B9W7K6 UniRef90-H6BRW8 UniRet90-O89AJ4 UniRef90_UPIooo3B35C23 UniRef90_J1B0Q4 UniRef90_K9ER98 UniRef90 C2ET64 UniRef90-K2CTY5 UniRef90_M3A168 UniRef90_FOPGTO UniRef90-J2Z4K9 UniRef90-UPI00046A3B4C UniRef90-KODAZ3 UniRet90 U7FPT5 <br> UniRef90-G7VJN2 UniRef90-UPIO0046B589F UniRef90-TOTZX3 UniRef90 UBBWJ9 UniRef90-15BWJ9 UniRef90 H1LKH9 UniRef90-U7GIL8 UniRef90 L9JF16 <br> UniRef90-Q13LR6 UniRef90_UPIO0021978F3 UniRef90-UP100040A7BBD UniRef90-UPIOOO35E4C28 UniRef90-G0ZJ11 UniRef90-J4WNV5 UniRef90-UPIOOO47018BD UniRef90-C1DWK5 <br> UniRef90-W5XJ43 <br> UniRef90-Q8L1Z7 UniRef90 Q1 UniRef90-UPIO0036367D8 UniRef90-COSZH5 UniRef90-G4R7TG UniRef90-UP100037AEBB5 UniRef90_O38ZH8 UniRef9O_K2AVO7 UniRef90-UPIO00315B877 UniRef90_FOLH40 UniRef90-UPIOOO3618F00 UniRef90-D9PZB2 UniRef90-Q11SV1

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UniRef90 - $\times$ OS5K6 UniRef90-U2UC83 UniRef90_UPIO002D41959 UniRef90-K9WVE9 UniRef90-Q7U5E4 UniRef90_UPIOO034BC80B UniRef90_K6U8K8
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TKTWRLLINERHYGQYQGRDKHEVVFVELIGKDKEKFQYПRRNY KRAWELNERHYGGLQGKNKAEAAEKFGEKQVKLWRRSYDT RRSWRLNERHYGALQGKDKAAVRAEFGDEQFMLWRRSYDV
EKSWRLNERHYGGLTGKNKAEAAEQFGDEQVMIWRRSYDV QKSWRLNERHYGALQGLNKAKTAEKYGQDQVHTWRRSYAT HKTWRLNERHYGALSGLNKAKVKEEVGAEQLHRWRRGYSE KRSWRLNERHYGGLQGLNKAESAEKHGEKQVKIWRRSYDT FKTWRLNERHYGALVGKNKDEMAREFGADQVKRWRRDYYE NKTWRLNERHYGALRGQNKDATRQEYGAEQVALWRRSYTT TKTWRLNERHYGALRGLNKDLARKEYGFEAVALWRRSYTA VKTWRLNERMYGKLTGLSKQMVRQRHGPTQFKKWRRGYKD HKAWQLNERHYGALRGLNKDYARQQYGANKVALWRRSYTA $V R L W C L N E C H Y G G L R D L S K A E T T A K H S E T Q V K I W R R S Y D V$
$Y K T W R L N E R Y G Q L V G V N K D M V A R Y G K G Q V Q K W R R G Y N E ~$
 FKDQALNERDYGDITGMNKDEAREKFGEEQVHI WRRSYDIV VRTWRLNERRYGALTGLNKAEAAAKHGEAQVKIWRRSYDV $V R$ S WR L N D R H Y G M L T G ME K D E A A L A Y G A E R V

  1 <br> \section*{Q} <br> \section*{Q}

TRNHKLNERDYGDRSGMNKDDAREKWGED

GLNKDTTRTIFGIVHQVARWRRSYTA DENKALNERDYGDFTGKNKWEDKKEVGEDKFFQDRRGFDT DEHENGKMKEWGTVYGEHGRNYDPVYKAWQLNERYYGKDQ IKDEHLNERHYGDLQGLNKDEAAKTYGEEQVRLWRRSFDV I ENEALNERNYGDLQGLNKAEVGEKYGAQQLIAWRRSYT NKAETAAKHGEAQVKDWRRSYDT QKAWQDNERHYGADQGYRKADPKERYGAENLASWRRDFDG QPEPRLRERCYGTLEGMTYAEVAQQRPEDFARWQARVPDY ETDARLKELSFGDWEGKTYDEIEK\WPG HTDAALRERGYGAFEGMLYTEI EQQYPQDFVLWQARDDDA ETDPRLREMNFGAWEGLAAAEI RARYADDYAAYQADPFEG QTEEGL DE DGLPLWEGMLFEQVKTDFPEHYQCWNSAPEKL ELLEPALAETSHGDWEGKFEPEVEAAYPGELERWRTTPALV VVDDGFQEDNHGAWEGVTTDEVARRDGELLRGWRTDPQRV ERSEALNERMYGQLQGLNKLEVAERFGADQLFRWRRGYA

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NERHYGALQGLNKSEDAKHGADQVLIWRRSYDI IKDPALNERDYGDYTGKNKWEVEKEVGPEEFNSDRRKWD HVTDQLREDDLTAWEGLTFAEVKEKYPEDYHLWRHEPDNL QLSEGLRERSYGAFQGHDSDEGAERFPDEYVQWQTRDPGF
 ATDK LM ETDLPDWENLLKSEVEKRFPEDYRCWKERPHEF EVTQGLVE GHGLWEGKLESDI EAGWPELLEAWKQAPQTV ILHEQAREWSQVLSEDTKKLCAPVITAWQLNERMYGELQG VALPALREDD GPWSGLTRAE IDERFPGAFVEY
IFDKNLDEVDLSEWSGLKDDEI KNKFPEDYPDWKNDPEND KALQE $\frac{1}{N F G E W E G L T F A D L Q A E Y Q S E F E A W E Q D P V T N}$
 WRRSLSV




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| UniRef90＿B9W7K6 | HGDPPLIEYGQDKSDDEKYNDLLNKDULPRGESLSM｜VMERLL |
|  | RPPEFGNGTDAKSQQDPDGRYAKSGQVPSTECLKDVLERA |
| UniRef90－Q89AJ4 |  |
| UniRef90－J1B004 | DPPNMDRDDEHSAHTDRRYASLDDSVIPDAENLKVTLERA |
| UniRef90－K9 | RPPQGQGQGSF |
| Re990－C2ET64 |  |
|  |  |
| UniRef90－FOPGT0 | MPPLVEENH FDRRYAQLADQDIPHGENLQMTVQRVI |
| UniRef90－J2Z4K9 | VPP |
| UniRef90－UPIOOO46A3B4C | IPPKQGS PIIDRRYKLCDQHLMPRAESLHQTQKRLI |
| UniRef90＿KODAZ3 | VPPPVUSSFSQHYPGNDPRYEKYPNGLEPYGESLKM |
| UniRef90－G7VJN2 |  |
| UniRet90－UPIO0046B589F | LDLPFYNTSKDRRYADLT |
| UniRef90－ToTZX3 | PPPG PLYVSENHFDRRYDDLDPRLI |
| UniRef90－15BWJ9 | VPPGRGTK RDEDPRYDRYGVKПPGAESLKDTMAR |
| UniRef90－H1LKH2 | RLTK RDEDPRYDRYGVKIPLAESLEMTMDR |
| UniRef90－L9JF |  |
| UniRef90－Q13LR6 | APPALDADHAALVRALHDDAMPHADALPRTESLRDTLRRV |
| UniRef90－UP1000219 UniRef90－UP100040 | VPPALSKPDPTTGGRDPYKYFDQNMMPVAESLYEAYQR |
| UniRef90－UP100035E4C | TPPGGES位NVVDRVRPYY |
| UniRef90－G0ZJ11 | PPPPMDKSNPHYKELDPRYADGPKEEFPMFESLKLT |
|  | GPPGGES |
|  |  |
| UniRet90－W5XJ43 | P |
| UniRef90 Q8 | $\stackrel{\text { V }}{\text { V }}$ |
| UniRef90－UPIO003636 | RNDPKYNDVPDQSIPVT |
| UniRef90＿COSZH5 | SLDESDDRHP品DPRYKHUPKRELPSTEC |
| UniRef90－G4P | E S |
| UniRef90－UP100037AEB UniRef90－Q38ZH8 | पPPLLTRSSTA <br> RRYRLVPRKSRPRGESLA |
|  |  |
| UniRef90－UP1000315 | RFPPG |
| UniRef90 FoLH40 |  |
| UP100036 |  |
| UniRef90 D9P |  |
| iRef90－U2KV67 |  |
| UniRet90＿U3J662 | PPPMQSDHPFYSTUDRRYADL |
| UniRef90－K0RE | ETH |
| UniRet90－V2 | MLEAMYHDAGTMKLPHGESFADCQKRC |
| iRef90－UP10003 | VMPAGDRVAESFRQFYARA鸟A |
| UniRet90＿K6NYF1 |  |
|  | VPALYD |
| C6X | APPGGGESLRDTVARVLAYYV NDEQVRDRVVKA |
| UniRef90－D4 | TMPG ${ }^{\text {a }}$ PGESSLADVGRRA |
| UniRef90－K7QYC3 |  |
|  |  |
| U2UC | VEGAESIAA】KERA |
| UP10002D41959 | QMPAGENLQQVWERSVATWQS |
| UniRet90－K9 |  |
| UniRet90－UPIOOO34BC | QMPEGENLQQVWDRAVVAWQS IVETALIAKGL |
| UniRef90－K6U8K8 | Y CGGDASIKNAARASKCD |
| UniRef90－E4L719 UniRef90 UPIOOO34D | NIPNGETFLQVQMRTKKF |
|  |  |
|  | ， |
| UniRef90－U2TG |  |
|  | DPSTF KLIPGGESLKQVYGRV |
| UniRef90 O2JMN9 | LWQQAQGFWEM |
| 9 |  |
| UniRef90＿UPIOOO3493817 | PPDGESQRAFYHRVLHALEPIVAA |
| UniRef90 UPIOOO47972A2 UniRef90－C5YY8 |  |
| UniRef90－K91807 | K MLLSTPEGQREHFP |
| Ref90－A2C7P4 | QMPEGETIDQVSERS |
| UniRef90－S8C820 <br> UniRef90 UPI000478609F | LNKQETADRYGNERVHEWRRSYS VPPPPGGESLEMCAERA |
| UniRef90－UPIo0047434A |  |
| UniRef90－LOK | GAPSGENLIKFQTR |
| UniRef90－Q2S | EPEGGESHRAFYHRVLHEVRVA |
|  | GLNKEETVVKYGEKV |
| UniRet90－Q9SGZ6 UniRef90－UPIO0046ECOD4 |  |
|  |  |
| UniRet90－UPIO00349A925 | RLGDRYPLRDLWQQAREFWQLLQSREWSTLSTADGSDEP |
| Q7NM | WEQARDFWRML |
| S70558 |  |
| UniRef90 Q1YGL8 | VPPGEKAESY |
|  |  |

UniRef90 B9W7K6 UniRef90-H6BRW8
UniRef90-Q89AJ4 UniRef90-O89AJ4
UniRef90_UPIOOO3B35C23 UniRef90-J1B0Q4 UniRef90-K9ER98
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UniRef90- UPIO0046A3B4C UniRef90-KODAZ3
UniRef90-B7FPT5 UniRef90-G7VJN2 UniRef90_UPIO0046B589F UniRef90-TOTZX3
UniRef90
USBWJ9 UniRef90-15BWJ9
UniRef90 H1LKH9 UniRef90-U7GIL8
UniRef90-ULIJF16 UniRef90 Q13LR6 UniRef90_UPIO0021978F3 UniRef90-UPIOOO40A7BBD
UniRef90-UPIO0035E4C28 UniRef90-UPIOOO3
UniRef90 G0ZJ11 UniRef90-J4WNV5 UniRef90_UPIo0047018BD UniRef90-C1DWK5 UniRet90_W5XJ43
UniRef90-Q8L1Z7
UniRef90 $\mathrm{Q1}$ Q4Z7
UniRef90_UPI00036367D8 UniRet90-COSZH5 UniRef90-G4R7T6 UniRef90-UPIO0037AEBB5 UniRet90 Q38ZH8 UniRef90 K2AVQ7 UniRef90-UPIOOO315B877 UniRef90_FOLH40 UniRef90-UPIOOO3618F00 UniRef90-D9PZB2 UniRef90-Q11SV1 UniRef90-U3J662
UniRef90-KORBF3
UniRef90-V219Z3
UniRef90-H1CZ60
UniRef90 UPIO0037EE1EC UniRef90-K6NYF1
UniRef90-B0C2C1
UniRet90-C6XHK8
UniRef90-O8DIP9
UniRef90-K7QYC3
UniRef90-10K101
UniRef90-Xos5K6
UniRef90-U2UC83 UniRef90-UPIO002D41959 UniRef90-K9WVE9 UniRef90-Q7U5E4 UniRef90_UPIOOO34BC80B UniRef90-K6U8K8 UniRef90-E4L719



MNRपNA乌LQEEGAEEKTTA\VAHGATLRTTLTAQLCTPDR 1]PFFREKI LED (LKSGKNVLIVSSGNSLRALIKYLKNISDE KDLINDUVKRYPNKDDNVLLVSHGAALCALTRTLEGYSTA SGPWNHGADPSPRQPDNILIVGHSGMNRALVSTADGLGPH KGFWEEIL AKHKDET LIVAHNGINRCLMSASGAPT HPFGRIACVTHGGVLDCIYRFARGLPLQ

## QFWQEVL

 SR VAYFK $\stackrel{S}{\mathrm{~K}} \mathrm{H}$ TALVVAHDAVNKTILCHLLGMTPA TALVVAHDAVNKTILCHLLGMTPA VAYFVEEDEPRLVSGKNVMIVAHGNSLRSGIMYEDKLTSQ NF $\square E D \square L K \square Y \square D K E D S N V L V V G H N A V L R C L V L L L L G K P K Q$ HPGGRI ACVAHGGVLDCVYRFANDLPLD VAYFKENTEPQLQNGRNIMVAAHGNSLRSIIMYLEKLTSQ VAYFEDNIKPELASGNNVMIAAHGNSLRSIIMYLDDLTSQ GDFWGNRIVPLVRKKERVLI SAHGNTLRALI KYMEDIDEA LINNNKEKNILIVSHGDTIKVMI CAMLGI DLA PATKSFLVVGHSGANRALIATALGLDET

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UniRef90_U2TG65
UniRef90_K2CUD4
UniRef90_17L8T2
UniRef90-Q2JMN9
UniRef90_UPI0003493817
UniRef90_UPI00047972A2
UniRef90_C5XYP8
UniRef90_K9T807
UniRef90_A2C7P4
UniRef90_S8C820
UniRef90_UPI000478609F
UniRef90_UPI00047434A9
UniRef90_LOKC12
UniRef90_Q2SZ59
UniRef90_B9H552
UniRef90_Q9SGZ6
UniRef90_UPI00046EC0D4 UniRef90-A0A017RVF2
UniRef90_UPI000349A925
UniRef90_Q7NMJ4
UniRef90_M5J5H2
UniRef90_S7QF58
UniRef90_Q1YGL8
UniRef90_A0A034VWD6

 AI LK REIAATGAP VVYGIDAE GHRVSTEEEL D GIN A T G I P RLYTFTSDMQLLDAHYLANAA A D GV EVA N GEAL YY QF GTVLLTVLKK GRL RARDFDD F NASS NRLDS W NGAAL QLMHWGD DA HLAA A A K E V L R L L N I P T G DP LI Y E Y K N R K LI R K G Y L T E R G F I N K L DE T I


 $K \bigvee P H L R I P N S V P F V F R I D$
A REHELLNASVNRLRSDSHRLTVAQW_ADVSHLA
 $R Y Q R L Q Q A N C N I S V L N F P D G F N Q K Q L E A L N L T D H L G$ $D \square P K V T \square G T G E A F V Y Q L G A D A S I V S K$
 G I E Q I E L A T GVVPR QY H F D
 NFWNGRRQGNGGAVSVLEDYPSGGLNTLR
 QFWNFRQGNGAVSVI K A WN L S QK NANI S CI $N \square W M \square K$ Q G N G G $\square$ T $\quad \square$
CVWRTRRQN TAVNDVRYDDFVPTVE
$\square \mathrm{MNGTAHL}$
DI S KLELNFGEI HI FEF DKD GNIT

 APREWP LL L N A S V NVVVE F E A GAARAVVSW A DA SHLLG R Y H S S $\quad$ QQQS N C G V V E V I S L E LDS T G I PM L Y $\operatorname{P}$ DF K E G K F I
$R Y H S$ Q Q S N C CI $N V L N F S G D G E P V Q L E S L N Q D S H L G K$





 A L L N L N I P T GUPPLVYELDDDDVKPDRRFYL GEAEKVEAKAR



UniRef90_B9W7K6
UniRef90 H6BRW8
UniRef90_Q89AJ4 UniRef90-UPI0003B35C23
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UniRef90 M3A168
UniRef90_FOPGT0
UniRef90-J2Z4K9
UniRef90 UPIO0046A3B4C
UniRef90-KODAZ3
UniRef90-B7FPT5
UniRef90 G7VJN2
UniRef90 ${ }^{-}$UPI00046B589F
UniRef90-TOTZX3
UniRef90 ${ }^{-15 B W J g ~}$
UniRef90 H1LKH9
UniRef90-U7GIL8
UniRef90-L9JF16
UniRef90 Q13LR6
UniRef90 UPI00021978F3
UniRef90_UPI00040A7BBD
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UniRef90-J4WNV5
UniRef90_UPIO0047018BD
UniRef90 C1DWK5
UniRef90 W5XJ43
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UniRef90-Q1Q4Z7
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UniRef90-UPI00037AEBB5
UniRef90 Q38ZH8
UniRef90-K2AVQ7
UniRef90-UPI000315B877
UniRef90_FOLH40
UniRef90 UPI0003618F00
UniRef90_D9PZB2
UniRef90 Q11SV
UniRef90 U2KV67
UniRef90-U3J662
UniRef90-K0RBF3
UniRef90_V219Z3
UniRef90 ${ }^{-}$H1CZ60
UniRef90_UPI00037EE1EC
UniRef90-K6NYF1
UniRef90 B0C2C1
UniRef90-C6XHK8
UniRef90_Q8DIP9
UniRef90 D4M9Jg
UniRef90 K7QYC3
UniRef90-I0K1Q1
UniRef90-X0S5K6
UniRef90 U2UC83
UniRef90-UPI0002D41959
UniRef90-K9WVE9
UniRef90 Q7U5E4
UniRef90 UPI00034BC80E
UniRef90-K6U8K8
UniRef90_E4L719
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UniRef90-A2BPZ6
UniRef90_G4AAY5
UniRef90 U2TG65
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UniRef90-C5XYP8
UniRef90 K9T807
UniRef90-A2C7P4
UniRef90-S8C820
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UniRef90- UPI00047434A9
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UniRef90 Q2SZ5
UniRef90 B9H552
UniRef90 Q9SGZ6
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UniRef90 UPI000349A925
UniRef90-Q7NMJ4
UniRef90 M5J5H2
UniRef90 S7QF58
UniRef90-Q1YGL8
UniRef90_A0A034VWD6

KVKME G

A VANQGK

A V A

AVT T Q Y K

A VAA Q GK

ETAA $\square G R$

E VADQGK

S VA S Q G K

A VA A Q G K

A VANQAK

RTAA
TV
STAS

KRK QG
UniRef90_G8MVL1
UniRef90_D8RBH8
UniRef90_R5XCV5
UniRef90_S7J370
UniRef90_C._CWB8
UniRef90_E4RKA6
UniRef90_X1UU54
UniRef90_-_UPI00047CD4D6
UniRef90_H3AT49
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$M G E$

LILI RHG

## VT


RLYI I RHGETEWNVLRRFQGRSDIPLNDEGRRLARIT VTRFCLVRHGGETDWNREYRLQQAGTDDPLDHASGEEMDLL
 MRR AETRLY ARHGKTMFNT DGRAQGWSDTPGTQAGEEGDREL TTRVIIVRHGQSSYNAQKMIQGRCNSVITEKGEKQANAL

 VVVRHGETAWNAISKVQGQLDVELNETGRQQAAEV $M K T V Y V R H G E T M L N L L N R S Q G W A D S P L T Q K G D Q Q A S D L$
 MTELLLI RHGETDWNAERRLQGFLDDGLNDRGRQQAAAL


$$
\mathrm{A} \stackrel{\mathrm{~V}}{\mathrm{~V}}
$$

 MTKLYFI RHGKTKWNLERRYQGKGDSELLPSSFVE IKEL $M L N$ Y LI R HGETA WNADNRYCGRT D DP L T EKGLKQAETG El Y V VRHGETLWNKSKRLQGNRNDDLSEVGRNEARER
Y Y VRHG

## M T

TI Y L T R H GQTE WNL NKR L Q G WK D S GL
 AKRVVLVRHGQSTWNAEGRI QGSSDSVLTPKGEAQAEAC MTKI YLVRHAEAEGNVYRRIIHGQYDSRITPNGLRQVEAL L Y MRHGKTEWNALKKLQQGRTDDPL SAE GREMAE KA

 KVFILLRHGQSELNHENDFCGWIDAKLTEKGKLQADNS ARTRICLARHGETNWNLERRVQGQLNDPLNVRGLAQAEAL TKKLYLMRHGQTRFNVQKR\|QGASDSPLTELGIEQAKMA

$T N L Y I V R H G K T M F N T L E R V Q G W C D T P L T T K G R E G I Q$
 KLYFVRHGRTE WNEEGRDQGNGDSP L LESSS QQLEA L
$\square \mathrm{Y}$ LIRHGRTMFNTTGQVQGWSDSPLTEQGIEQAKRA

$\square Y$ LCRHGES LHNLE GRLGGGDSGLSERGKKFAVEL I YLVRHGETEWNLESKI QGQTDTPLNENGRKQARELL LYI MRHGRTEWNDLRKLQGKTDDPLNEEGRLMAEKA $M L Q V Y$ LVRHGETQWNAERRIQQQSDSKLTEKGERQAYQV
 MTFI SLVRHGQTIDWNLAKRIQGSSDDPLNDTGRAQAATT

TAL WLV RHGQTPDNKQRRYQGRTDSPLTSFGVLQAAALL MGDLLLVRHGETEWSASGQHTSWTDDPLTAHGEEQAKS L AK TKLYI I RHGKTMFNT $\square$ GRAQQGWSDTPLTAEGERGDHELL

$M L Q V Y$ LV RHGET E WNVARRRIQQGQSDSPD TA T GRLLQAR QV


| UniRef90_G8MVL1 |  |
| :---: | :---: |
| UniRef90-D8RBH8 |  |
| UniRef90-R5XCV5 |  |
| UniRef90-S7 | DYIFTSTLVRSDMTALLAMTHHDSGKVPY |
| UniRef90-C91 | DAI YSSDLQRAASTAGFIAERF GCEV |
| UniRef90-E4R | DYı YCSDL |
| UniRef90-X14 | DAI YSSPLKRALKTAEDISSHHK LDV |
| UniRet90 UPIO0047CD4D6 | GNRLRSENIHNSIYSSDLKRAFETAKTLHSCLIN |
| UniRef90-H3AT49 |  |
| UniRef90_M3ZGG6 | AKF:RGQN: KDLKVWTSHMKRTIQTAEA |
| UniRef90_UP | LPLL AGLDIDLVVTSPLRRAVRTAELAGL |
| - | SELPVDMIFTSAL ${ }^{\text {L }}$ RAQMTAMLAMTQHHRQKVPV |
| UniRef90-R9, | SEVPFARIYTSPLKRAYE |
| UniRef90-S4NNM1 | GKHFRQKVPFAHLYASPLKRARVTAARINRKLKKHPKVS |
| UniRef90_Q7NT51 UniRef90-H6P803 | A AAFRPDHMAFQALYYVSDLTRTRQTSAPL |
| UniRef90-M1ZG28 |  |
|  | Y 1 VA S |
| UniRef90-14BL |  |
|  | G GAREAR PFKAAFSSDSGRMMTME |
| UniRef90-R5JYS2 | GEAL AGTPFDRIYSSPLKRAYETACLFRGG |
| UniRef90-S6A1H8 | GKRL EAVELAAIYASTSGRA |
|  | FL KNYEFDHIYSSDLKRA |
|  | ARFVEEQQLQNLKVWTSQL |
| UniRef90_UPIO004 | GQFLDTLKLHDPLVLT |
| UniRef90 UPIO00463 | $V$ SSPMRRT |
| UniRef90-O03EZ7 | L APNKFQH【YASPLRRARVTAQHELDELQGYPTPM |
|  |  |
| 6 |  |
| UniRef90-UP10002622 UniRef90-C3WCM2 | KSRLKMAGIMAFDVVYSSDLGRTMETSQ |
|  | GRKLRQMLGDGWRVVSSPLGRCAQTTGLLCEVAELDFRSI |
| UniRef90-J3HN: | DavFasdlerard |
| UniRef90-A0A052JDS6 | SLPFDALYSSDL |
| UniRet90-M1X600 | GKFLCQ IVFDS |
|  |  |
|  | KPS VIYTSDLQRASETAQIIASKCGR VEV |
|  | AlTFDAAFSSDTGRARQTAQVI DDHSGNRETPI |
| UniRef90-R619W3 | VQLDALYSSDL |
| UniRef90 F1W0X3 UniRef90- Q82M88 |  |
| iRef90- T2RCZ7 |  |
|  | A |
| UniRef90-UPIOC | V |
| UniRet90-J1 | - |
| UniRef90-UPIO002B4 | ANRLAKEP PLSAVYSSDLKRALETAQUIATTCG NDEV |
| UniRef90-G8PCV9 | ASFLSENSFK RIYTSPL |
|  |  |
| 55 | PLNRAYETACU $\square K G E R N I P L$ |
| UniRe90-P262856 | SERLEEKNIEDLVIYSSPIERAYKTAEVVKGNKD |
| UniRef90-_9JUC0 | ANY NEQNLKNLRVWTSWHYRTDQTASGVQA |
|  |  |
|  |  |
|  | A DV |
| UniRef90_UPI0002881 |  |
| UniR | GLGLKAAGLNFVAAYSSDSGRTLQTMEIILREMGQSDIPY |
|  | QIGYCSRLIRTQQTIQEILNQWDKKIMP |
| UniRef90-UPI0004 | AREL DSTRFDRIYSSDLKRAVQTVTP LLARRLGLPI |
| UniRet90-OPIOOO3- | RDFGENQGIKKNRTYSSTQERACDTAEEVSGRTD |
| UP100036DC107 |  |
| $-17 \mathrm{~L}$ | YVGLGLQQTKFEEAYSSDSGRA |
| UniRef90-K8MU45 | GQHLSQTYF DAAYSSDLPRAVHTAQIILEQNQHP |
| UniRef90-UPI00037AD845 | GALIKETQTEFDEMFTSNLGRAQKTGA |
| UniRef90-A0AO14NCL2 | GKGL ENIVFTTAFSSDSGRARATAK |
|  | GT G |
| 25 | GRKIAEEGIKADEILYSPLIRAAETARYISERGUTVIPR |
| UniRef90-M4 | NLSDLKVWTSQLKPTIQTAE |
| UniRef90-R9 | - |
| UniRe990 UPIO003E | YKDVFD |
| UniRer90-H5UZQ7 ${ }^{\text {UniRef90 }}$ D7WMY7 | TL |
|  |  |
| UniRef90-U2R | G |
|  |  |
|  |  |
| UniRef90-15C2N4 | TGPGAARFWV |
| ef90-A5ZAA9 | DVNFDTCYC |
|  | G1 |
| UniRef90 G9Yz81 | Hi SSDLGRTRRTAEI A E K VCGCDil |
|  |  |

Unequgul
 UniRef90-X1UU54 UniRef90 UPI00047CD4D6 UniRef90_H3AT49 UniRef90-M3ZGG6 UniRef90_Q67UJ0 UniRef90 UPI00034D460B UniRef90-A9SI38
UniRef90-R9J8E4 UniRef90-S4NNM1 UniRef90-Q7NT51 UniRef90_H6P803 UniRef90-M1ZG28 UniRef90 R5G907 UniRef90-14BUK6 UniRef90_C6STEO UniRef90 UPI00034D6CA8 UniRef90 R5JYS2 UniRef90-S6A1H8 UniRef90-E4RNR4 UniRef90 H2M053 UniRef90-UPI000466B013 UniRef90-NOB5D1 UniRef90-UPI0004639CC9 UniRef90 Q03EZ7 UniRef90-H3BB56 UniRef90-N6Y165 UniRef90 UPI0002629299 UniRef90 C3WCM2 UniRef90_Q2VYZ2 UniRef90_J3HNS4 UniRef90 A0A052JDS6 UniRef90-M1X6Q0 UniRef90_UPI00028A0C60 UniRef90 D7A1Y2 UniRef90-G7LGE0 UniRef90-VGIWR4 UniRef90-R619W3 UniRef90_F1W0X3 UniRef90-Q82M88 UniRef90-T2RCZ7 UniRef90-14YQ85 UniRef90-UPI00035D7A05 UniRef90_J1EGZ6 UniRef90_J7L9N1 UniRef90 UPIOOO2B41519 UniRef90-G8PCV9 UniRef90_G8TM40 UniRef90-P26285 UniRef90-B1B9M6 UniRef90-J9JUC0 UniRef90_K7U3G2 UniRef90_R6LY37 UniRef90-R6CJJ6 UniRef90-UPI000288E586 UniRef90 B3RUK6 UniRef90_G5JQK1 UniRef90-A7TI56 UniRef90 UPI000467E002 UniRef90- UPI00034B2182 UniRef90-D6DCN3 UniRef90_UPI00036DC107 UniRef90 R2Q4C1 UniRef90-17LPK5 UniRef90-K8MU45 UniRef90 UPI00037AD845 UniRef90 A0A014NCL2 UniRef90_R2QRW4 UniRef90-R5HUW1 UniRef90 UPI0002554A27 UniRef90-M4AQP5 UniRef90_R9N0A4 UniRef90-UPI0003B63457 UniRef90 H5UZQ7 UniRef90_D7WMY7 UniRef90-W9ZMA7 UniRef90 U2RMW1 UniRef90-A7NFS4 UniRef90-L7FKE2 UniRef90-S6B565 UniRef90-15C2N4 UniRef90-A5ZAA9 UniRef90-IODSL4 UniRef90 G9YZ81 UniRef90 ${ }^{-}$F4KI56

GLNKKETAEKYGVQKVQEWRRSYDVPPPNGESLAMCAERA K $L$ NKKETAEKYGVQKVQEWRRSYDVPPPNGESLAMCAERA GKNKQQTAEQFGEEQVK WRRSYNVAPPGGESLYDTKQRT KPPGGETFEDVEKRASRELEKITAAHV NPPGGEKDSDFTERVNRFFKSVLKK
KMPAGESLNEVRERARGVVDDVIAKYE
R Y P
RYPKGESYEDLVHRLDPVIMEL
1 1 I
P
PPNGESLEMCAERA
AEHPGESVEQVGERADRVLAADS
G $\square N K A E T A E K F G T E K \square K E W R R S Y D \square P P P N G E S L E M C A E R A$ YKPPRGA

E GID ELKERT
D LY DPKA $\square$ GGESYQEV DDRM
DLEGGESLRRFRAR!LDGLASIAA
EELAKGUYKVDTAGWAETWEELSSR!LE
Q $\square E G A E T L K E D Q \square R A$
K $\square \mathrm{PK}$ K E S
ID K GESFADVRSRA FTEVVERVTCGM
NTGKSFEEVTYPELAASIVEVDTANWAEPWQILSKRIYDG
KMTVEGEDFYPVLDLYRQAQEFWQE! IPP
QA P
P S GESLE HLCARA
APERGERFFDVQQRADEAVRRDVRR
GAPGGENDTQFAARIKSFFDQLLEK
RYPAGESYQDLVQRVEPVIMEL
E $\square P G G E S \square D Q V R T R A D R V L A S I E P A L$
Q P $\square G G E S Y C D L Q Q R \square A A D L D R L E R D T V A V T H$
TPPGAGAE
S Y
DPTK
KGETFQHLVKRM
$\begin{array}{ll}\text { PPPPMDQDHDYYTN } \square \text { SKKC } & \text { RTGQPTSALI ARA } \\ \text { GFPEH }\end{array}$
GFPEH $Q$ GGGES $\square Q N A \backslash N R$ VWEF $\square E E$ KDYNPIPYDGETFPQLIERVERGLKK
RCPGGESHHDVASRDAHWDADLAPGD
RFPAGERPAETMREFYQRSVQSVQR ILAG
ALDGGETLGQFHARVVAAVEDIAQR
RMLIPQSKGFKEHFPVLSLYRQARE
LPPMLSTDDPRHPRHDRRYA QVDPHLLPGGESLKTTLDRV $V P P G G E$
$E \square P G \quad G G E S \square V Q \square F V R S$

RAPGAETFAECTERIVSAVTEIAAK
EI DARFPPGPQ $\square A E T \square R E F S$ DGSRGESPQEVGERADRVLSRVDAAL
KYPNGES LIDDYERVVFELSDI IVKK
APPGGGESY
ADHPGESVEQVGKRVDTVLDRVRPRL
TPEGGESLVMLRERIGERTVFALAER

DPSD
RAGGTGEGAE $\square V Q R V D A F F Q W \square Q N R Y T S$
$\square P R E$
HGESFQQLIERM
RYPGGES
YQD VVQRLE $P$
KPFGGETYNKLIER DD DTMNEI
RYP
S ID GHYPVQE LDWRARSCWER L A A
SVKDSETFPEYTQRFLTALREAAEE
PAKG
GESFEELFART
HPSGGESGTEFEARLRSLLEDLMDD
RYPRGESYEDLVNRLEPVIMELERK
QDMA DA LLAVDTAGWAEPWDVLRDRVLS
KPPMADLDREMVQEDNDKDEEKSGEILPNSESLADVVKRV EHDGQAYGDYFVTYGGEGARQVRQRMMRTVG
$\square T P T L E G D W V E T L P S G E Q V P V H A G P G E T L E E A A A R A K S A \square$
TFPGGGESLTEFAGRVEHVL VGADTASWAEPYEKDRERV
KGKSAEELLTYED DAKGLLEVDTAGWAE P WAE WEEKLSKERVG
KGKSAEELTYED』AKGLLEVDTAGWAEP WEVLSKRUL
$H$ H D
PP PRAES
GESLKNTAERV
WETFTSKMSDKEMADATARNDKTGMAENYAA VITRLKAGII YDK LVEK KGDDG $\square$ ANAIAENDP $\square K A A E N Y D E I T T R G K A A M$

RYPGGES Y YQDLVQRLEP
$\square P P G G E S Y Q Q L L N R L L P A V D D I A Q R E$
KES 1 GGAETFDELGSRT
RAPDGE

## RRQLVNGTQDGRIPDGESMFELSERM

$P$ YRYRGGESYRDVVIRLEP
RAQGGESLDAEVNAR\|LEAWHSLFPA

RVPGGESKDELFARDKAWLDGLDREHAHVVVTHSGCFR
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R TP D GESMQELGNR


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180
190
200



HRDKH

MKF $\square$ DRLIDHETKDA V DMELE RQENILIVSHTVVLKLIILLGLLLKLHDK RQENVLVI CHQAVMRCLMAYFLDFSSB ERQENVLVI CHQAI MRCLLS YFLD KPA D VA Y F K E HVVP QLTA GK HVVMIAAH GNSLR S I I M QLDDK LT S Q $L I L G G G S G P D V A L V A H G H V L R V L T A R W L G L A P S$




 EDFLRDIVPGRESKGEKMLIVAHKGTLGHLLAAMLILDPLD K K ILND FEAMAQTV ADFMTSMILPLQ A GENILVVAHGGSI RAALAGLFAMDI S QK S CN RVM, VA H GA NK A L MT YVK G H D L S

 RDRDVVLVGHGHFSRALITRWAGFDVR
QTLLSRDQPAF QAMQRDTVCVTHGGVIRCLFRMDAGCSKD KPTlLRICEKYPAKNDNVIIVSHGAALNALDNSLLEVPDA CPSWRERGSPKKKK DEK CLL HLLE E GRLLDKLQF LANAGMSEE HAALDHD $\square$ A DHHA GQAVLVV THGGGVLDVVHRLAS GEP L S MP LK H P GAELAAVSHAGLI RLI CKQI LGGELLD $\square T E N H K E D D V I V V V T H G M T L K A I F K V I V K I S S F D$
 HA GQRLLAFTHGGALDDI WRQASGVPLD


## TSALDRDAMKHD GERVIIVTHGGFDRQLYNR

 K R IL L LK D T L L Q TEASNILVVTHSLYI CCMLYAACPN
 A R A $\square E N V I I D A R H A G Q K I A I V T H G G V L D C V Y R A A R G V G L D$


D D G DVVLVAHGHLLRILTARWLGLEPS HPGEQVLMVAHGGVLDVLYRLATRQEDQ EGDVALVAHGHVL RVLTARRLGLPPG G $\quad$ NKHRGQRVVVVSHGGTIRALCKRAHPHRH
 GNFLVAAHNGVNR LYLAHKLGMPLR
 $V 1$ MELERQGNVLVDSHQAVMRCLLAYFLDKGAD

V I ME LE R Q G NVLVVSHQAVFRCLLAYFLDKNSE HRGKSVLVVAHNAVNQALVATSLGLGAE ND GK TI AVFTHGCVLRGVQY LLSGNEWP GEF L RERVQPLLE $R D L V V I C H Q G V M R C L L A Y F L D H E L T$ $G F T D \square A K E V E S L G G G D A V V V H G G M T$ GTMMGLIDPS E P F LLENVVFRNENNQDSCLIVAHGSSVRSILLKLLQGI PDD HPGETVLVVAHAGVLDIGYRLATGLGLS

 WNGFED IA QRREKDGGNVLIVSHG LI TI AFLLSIDDSK DGFFDAAKKAEANGAENIVIVVHGMTVATFIKLLDSRRPK
 A EVIVRET



 HAALNACLALPKGSRPLLVSHGMALGCLVSTILGLPAW





GSF LK EVVQPQLDAGKDVI IVGHGAMDSSVVCQVQNDPLE





RFWSESTENCR L $\square R \square \square P D$
AERRLRLRNCSUSRVDYQESAWLAS GWVVGDVSHDDAPA
KSPWMEVP LTHTLMKLTPKAYGTEVERFKAD $\square$ P
GPGEV I P NGSVHRFVYDDGVLRLDRFNLGPED
D HWRWRVD LG SLTAIDVYGGGPIVR
DGRDFQLATGTVSRLSTEHDRPVITEWN

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 TRRY円ARHGKTMFNTDGRAQGWSDTPVTEAGERGDREL AAKRVVLVRHGQSTWNAEGRDQGSSNSVLLTQKGQAQAETS VFLIRHGQTEWSKAGKYTGRTD DELTDFGKKEATALL $M D K L I L V R H A V T S A N E K G R L S G F A D S T L S Q D G E E Q V Y K L$ $M L Q V Y L V R H G E T E W N V A R R I Q G Q S D S A L T P R G E Q Q A Q Q V$ LHTRHGQTDWNAEARLQGETDDPLINDGGREQARRN
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 YMVRHGQTDWNAESRLQQQKD M L NETGRQQATVA LYLVRHGETENNFKKVYYGKLDVELNDNGKEQIKKT RLVLVRHGETDWNMVRRIGQQLDEPLNAVGVQMAQAK MIRHGQTDWNAEGRMQGQKDIDLNATGEGQAMRN
AA
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$M T T L Y L V R H G Q T E F N V Q K R V Q G M V D S A L T A K G U A D A K A L$
MLSLYFTRHGETVWNREGRLQGWQDSPLTKKGEQTASNL
TVY LVRHGKTEWNEQSRWQGRGNGELTQEGDQGADRL

MTSLYLA RHGESELNVTGVYFGATDCSLTQKGENQACDEL

ATRLVVLRHGETDWNVGQR@QGQLD DGLNRVGRWQAARA
MTKLYFIRHGQTYLNKYERMQGWSDAPLTPEGLENVKAS
$M T$ R I L T R H G Q T L L WN I E G R V Q G S L D S P L T E K G L L Q A R S L





MGDLLLARHGETEWSRAGRHTGRTDLDPTPSGEAQAKS L

$R F Y$ FVRHGKTE WNLSGQMQGWGDSPLVTEGKNGA IAV
$E I I V L R H G E T A W N A D R R I Q G Q L D V E L N D A G R Q Q A A L L$



$T$ T L YV TR H GE T E WNVAKRMQGRKNSNLLTEKGILLQAK QL


AATTVFLTRHGQTEWNVQNRMQGHLDSALTPLGVLQAKWL
MS TLYLTRHGETVWNTKKLMQGWKDSSLTDKGIVKQAKQL






MRHGESMWNEKNLLFTGCVDVPLTSKGVDEA】EA


A P T R L L L L R H GQTEELSVRRRYS GRGNPPLTE EGRR QA EAA
$K I \quad Y F V R H G K T E W N L E G R F Q G Y S D S A L D P Q A D E E V D L L$

MK H 1 Y L I R H A Q S E Y N E K G I F Q G S L D S E L T P L G Y DQ A K L L
LYI MRHGKTDWNAKHKLQGHADDPLNEEGRQMAEKA


KKLYGMRHGQTQFNELHK QGACDSPLTPKGIADAK KV
T L I F L I R H GQ S D G N R E GRFRGRHDF P L D D E T G L R R A E E A

MPTLLLVRHGRSTANSAG LAAGWTPI DLDDTGRAQAA G L


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 I S DERI DERGFGNVEGKTDDEWKK\FGDNTHADSNYYLNF
 R CEPRLREQCFGKYEGTPRNGGEFRVSKTHFADRYDG CYDKR REWCFGSFDG CTDSDLREMDLYSFQGLLKHEGKEKFGAAYRQWQVDAANF ERWKALSEIDAGDCEEMTYEEDSSKYPTDFAARDQNKFSY
 ILEPGLRELNMGV RIEPGLKKEVSFGSWKGHTDPELKVIDPDAVAERRRDKWGF LTWKSLDELDAGVCDGMTYEEIEEHYPEDYAERDDDKFN



 TV WR WRERHFGRFQGWVYADI QREDPETYRRDEARDPDL
 ETDDRLRELSFGHFEGQNFSELDKDETGTFRYFFKQPELY LSVDDLREMDDYAFQGLMKNEGKQRYGDAYRKWQQDAPNF
 TTLMGLREENYGKFEGQL VLDSRLREDHLGEWEGMTKEGTAKKYSKERIDETFWSNPEC I KDDLLREMHFGDWEGRTKSEVMEQYGPEVQAFWDTPHEY HVHA GLDEDNFGEWE【CHHRDLARQQSAAYRAWCDDWRSA I RLKGLKEMDFGSYEAQPEYLNPPLHTDE IVFED MELDFGAWEGMNYKDIEKKYNSEWQEWDNDWVNA RTEPDLVELSFGDWQGFTFAELEANNPGSTRRRRNDKWNA

 AKDNRLTEVDVGDWAGLTTKEFENTWPS NEDSDFREFGFGKFEGEYED DM KCSQGLKERNFGDWDDLTYKELTEQYPTEYGKVWVEHLGFQ EQWKALNEDDAGVCEDMTYDEIKEKYPEEFADRDQDKYYY VIT EEVREWDYGEYEGLLSSEIKERQPGWVI WKD QMEPRLDEQNFGKY

TVDKRIREQDYGAFEGKPRDEPG F DETKRNFAVV RVDADLSEWDYGGYEG\STDEDHRTRPDWF LIFTDGVAA VPEADLREWDYGGYE GVTTADURRTRPGWDDWTDGVPPGP I SEPDLREDDDYSFQGLDKHEGKSKFGNAYRQWQDDAANF QLMDDFREMGFGSWEGEYDSDDDVRFKESRTEMLTSPATF | VTDVDLRERHLGGDLQGLVFRDTAKLNPKAHQAFVSHETCQ |
| :--- |
| NEVPGFREFGFGKFEGELEDVM |
| $V$ | $\begin{array}{ll}N E D P G F R E F G F G K F E G E L E D V M \\ V & D \\ V & R D R E V D L G K W D G Q P L T S V\end{array}$ ITHDGLKEMNFGDFEGKDTEEVMQENPD GFDDRLKKEVVVGQWAGET

 I ADENFYEINMGI WEGQMLVDLEAQYPEEVHTFWNEPHRF TCSKA LREWDLGNLEGQKUSLVCADYPKQMEAFRHNDAQF VATPLLREACFGKWEGHTDGETECDFPGQLSRWYRDHTFC 1 LE A HMGVLERRNUG ESLET

QAQDPEQHRYFWEDPEKF
$\square Q T$ D TFK
KQWKTLRELSFG
KQWKALDELDAGSCDGLTYEE IAAQRFPEDFAARDENK FE
 $T Y D Q R L R E L D F G V F E G R T Y A S L M E E F P K E A E Q F F S G D Y D F$ $R$ R E E G FRE T D F GA WE GLT F GEVVRERWPREMEA WLA D PA A





LQTPA L RE ENF GF FE GLD S T FTAHFVGGPVVGSHSYD

$T$


TR L K GVVKEWNFGGFFEAQPERLQPKFRA GAVS Q DERLREWDYG
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$E L V P G L T N D S D G S W E G V K K D E D A R R F P E L W H L W L T D P E S D$ II D D R L DE RN F GLF E GMT E P DLAE WNYGEYEGRT TA D $\square$ Q R E R P G W


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Q 1 P G GGESLIDQLISERCV/SCLYNTV
NEQNDESMRDDCERVWDLLDEIKGK
$\square 1$ NQ G $\square E E F R E A T K K A D P R H L A E N K E E L D E R M \square R A \square R N L$ EYGLLKMRDFMHAADPFHEAETSAHDES R DNSAV
DDFHQLS LMELAEG VEVDTTGWAES GESGTQSSR@K NDDGHYPVRELWERARNCWYKI

## RYP RGESYEDLVARLEP

EGGESVQD\ERRANDVISFDRDIQKDY $\square$ HHENGGNVMVVR RFPNGESLIESYNRVTKEIEFDLKDANSKG
KEEGWRKG

LMPGGESLQHVFDRAWPALARAVAGL
DKQD【EPIQQTVCRVWDLLDEIKEK
FFPDGER
K T E S PRQFHYRA
$\square P P G D D A E S Y E \square L S W R \square G A W L T S V E$
1 PPPGPDAESY
APPKGESYVEFYGRVKSFПEDTIKT
$D L Q G G E S L M Q V R A R I E A A L A G L V Q R$

YRYRGGESYRDVV1 RLEP
ПPPGQDA
V P
$R M E \square P N Q N T Y \square H P A \square D$

##  LYDRV

 VID GHFPVRELWVRAQNCWSRILSS HLPGGEDPVHAAERMAACAADIVREHPNETVLVVGHSTAH $V$ YEPPKGGESUREDCTRT Y GDTDAKFGFDGLMDDFKKNDPDHLAEDSAEFNQR HKALDAREITLAQTADAAFAANMDQHPNTAETNRMVQERJL YKPAGGETFCEVESRVNDFLTDLYQKHPNGHVLLVTHTVI SRK RGEQFPDVYKRAEEAWNKDVDKHVSVPPGGEGFVDFSARVEAVMAELLAR
TGYRDAFVFFGGEDTMVVRRRMVETVTEL
S P P NGESFKDFYTRVE 1 SLENI
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QSTVPQ LLNATRAADPADDAEDFE MFWSRV TTPGGENMELVTDRAWNY
H $\square E G G E R F A E Y T G R F \square R G M Q A A A A R$
KAPNGE
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D
$N$ D GHYPVREDWARARNCWDK L RYPSGES RELWARARNCYE YLVARLEP
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TLEGGGESRD DEAYSFGDDGY UVCETVEKMDETGMSETYDAMQLHQ QRDGAESFAHADKRGRRADNRDYDAHPD WD DN LIMQGNLEMRAPNGETDAEVRERV VPADHRNDPHYTHLMASGEDFRRSDGETTAEV LEEAK $\square$ PSPHQHFFAD $\quad$ YSMKNLEFSSPGGES $\square S Q V F R R T$ KLP A DDS YHFPVKDLYQRAQKFWAHS L
CSTSGENFYDVHSRVDEGVNLLLEKH
NNSMFEAE
SVY Q A T
CPPGGEAFASVDSRVSGVRQRVTEKYGES
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S S NTVECFSKVQERMVKTINYIVKQHPNETVC
TPPGGEDLASYRYRGGESYRDVIQRLEP
EFPDGESLAAVRTRALRALGRIV
V IP K GESVKMLFERT APPGGESFEQVARRV
GCPGGEAPAQVGARDDR
AFPGSEP
VT D Y S $\square$ NQAK DWLKEADPFHDAENS QE Y WERL NAPNGESYDSVVARLTDWDDSVKDEQ
GFNKQETAEKYGKEQVHNWRRSYHVRPPNGESLEMCLGRA DGVPNGETLQEVAARA
AMDRDLTDEKTRDLIKEHDPFHDAENDQEFWDR PPGGESFDAVAHRVRRARNRIIAEH
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PLPTQESKESFLKRVREFDD IV
$\square$ IVELFYDPEHYEPVKDGES LQELDART
F E
DLYVPY GGEDVTQVGERMLTT
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EKHQGER I L V S H G GT $\square$ RE LYR HASPMK P

HELTKNE

## E H <br> $\square$

QS ELLT D G KADTDKTYLLVAHNGIARVVQSYFYDMTNE



$H G V L E R$
$C \square A \boxed{L} \quad A$


V I M E LE R QE N L I VCH QA VLRCLYA YFQNFNQD GQDDTALVVAHDAVNRVLLCHVLGDPLA YKDKNVLLVTHGGTCRAINAYFNGIGED LE A $\square R \mathrm{NV} \mathrm{V}$ S R H C


KDDNILIVTHGGVIKS LLAY Y LIGENDD
YRGQRVVVVSHGGVLDAIYRLVTGKPVS
 TVCVSHGGVIRSCFRLIGGMDED GDFMQDKI E PLANSCERVMIVAHGALNKGDMSYIKKHQDK QKFWCQVLPRHV G E T 1 $R L L L C R L L G L P L S S Y R R V F P V F R N$ C CAVTVVRWNGTDPA KDFFQELICREKLQDKTLLIVASHGCAVRAQNVYSDAADKN LTHGQNMI RETFKAGDNVLVVTHGSAMRALANKF Q LLA $N R T L R A D V E A E T K D W Q R V L V V T H G T A A L M W L N Y \quad \square H Y N$ VKLL LKRFHNRMLD QLWDPPFIHPGC

$M N G \square P E$
HEGQRVLVVAHQGVLALLCARLLLGMAAE
GS QVLAVSHGA AI A QFFRGALE E

 EKGF LDD I I NRHRS $\quad$ GGNVFIVAHGV TISN I I HELDPS

FPGKT $\square$ A $\square$ FCHSAVLRGVLMEELFFRRD

$G D G \backslash F L I V T H L G V I R F I L A Y L L N M G \square G$

K E E S DE $\square$ C
E GKGSRDVVIVAHGHFNRCMDARWDGFELS D R V L A R $\square E E L L R$ FPDETVLLVAHNGISRAVQSYFTDMSNE TA D $V$ LVVCH GG!CRII ESYFHDMTNE $A G A L D$ G G DV L L V A H G H L L R R V L T A R R L G L P P
VIMELLERQSNVLVISHQAVLRCILAYFTNQNRD
I I Q QEKK G GNVLVVSHGMALTLLLGYLSGGEMS RCTSSLQRIGNKHKGERVVVVSHGA VIGTLDKQASPB KAALQKVCTETKVADANVLVIDSHGMA $\square$ NAMVS F F F NP

 DAAVKD IIDDTYPNKS GNVLVVTHGVTLGNYMMHLGKGREY HDHTGKTVLIVSHGGTNHALISTAFGLSPE
QR LIN F VK S LK D K K E E NVLIVVGHGAT LTAADQRLLGGES S


$\square$ I ME LEN QENVLVIT H QAVLRRCIYAYFMNSPQE L L E E RAVLVSHGYALRVLMGVLLLKVRD K YEAFEEII ANHAGKHILI STHGGAIRRAILSRYLA GNKK
 $V 1$ AR S RAME GDVVALFAH GHVLDRVLAARWLGLPPE

D R G L A T $\square R$ QA D L LDEANVLLVSHGNTCLSLIERFGEGKYD
VT F FK E H DE P L L W S G K HVMVVA H A N S LR S I IM Y L D K LT S R DS IIARVQGPQPDGTRNALLVAHGHFLRVMAARWLELDAR LQP GLDDAIVAA A QD GDKVVIVATHGTTIRSIVSKYSDIDVA

SENI MIVTHGGVMASLKCLI QQAPFE
 GEF LEEVVEPLMKEEKNVLIVGHGAMNAS I GRDRKTPDK



 WNDK $\square$ AVDH GPDADVWVAATHGGDVI


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210
220
230
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E Y A A A G $\square$ K N CELVEYHFE
E F R $\quad$ L V L L D N G S S V V TVV L
 $S P \square N I Q F D T G S V A T L S Y K D N$


 $R L W S F R Q A P T T L N L L E \quad G R D V D H L D V V R L N D C S H$
HVESAKIKNCEI REYEFKN

$\square$ FWK F A SK N G DVT LI K Y E Y G N F Y $\square$ D S $\square$ VHCD
EPRDFP IM NACI CQLRWQA GRWEILDW A D $\quad$ A H L VA
Q S P WMEVVP LA T L I
E A CE $\square$ NI PQDRI LK $\quad$ D R D A G
DFWS GGLQNCNVMIVDYTDGKYR\|V
RYHC I QQ S N C G I S V L N FP D G L E S GRLLE $\square M N L A S H V G E$
YFRQLLQSNCGVTVLDFTPRF
A L I E Y NVP
F WH GCVPPNCGVN VEVAD G
E LA S HKLD N G A I S KL I FE K K D G R VT $\square$ A A WN D TE K $\square$
ID GREMLDNA SVTKLSWTNERFRVT DFN
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D A V S M E V P Q D R V L R L
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VT Q R S SLD NA SVS ILSYENGLFKAEK VNDTSHFK
AS QVP YCDNTAVSK LLWD GQTFTYEF L N DSSHLPEDLS
$\square N P E Q A N A S V T R D G F E N G E W T \square E A \quad D N D L S Y \square E A G$
S S WR F RVD NASIT RVE $\square K$ D GYSVLTMM
LG THFNVEPAGVA\| LGYNHN
EFAAF G I K NCELVVRYEF
EFFHFNMGNCEVREYVLD
A GALLTFETGTVGVLGEEHGRPAVVGWN
$E G R L F R L E T G T L S R L S$ L $L$ E H GRPVIVAEWN
$D L P Y L K V P L H T V I K L T P K A Y S C Q V E M F$
D H R T T R I L N T S I S VVVEYYQEGK F NI L


EFLR F GLGGNCSWTVL
$P \vee H \quad G N C S V S I V K F R G D D Y D \square E K$
HHHSLQQSNCG I S L L E F S GQGVQLTQQ LNQTTA $\square K E T \square P$
QL R R G G G L D N S S LT I L E T D D F S H F N L L K WN D T S Y
LF T R L H L DLLA S L S V SEF YA D G P T S V TLLVNDTMMLR

A ERRLLRLRNCSLS RVDYQHSPWLAS GWDVGDDTHLL
 VF WH L R V DNCSLSAVVDYGDFRML CFTNDRHHL D F WS L R QP NA
 A L Y R M H L DVS S L T Q D D WY A D GPA V L R A F N D TH HLLPA R $A G Q H F L L G T G T L S V L G E Y R G V P A V R V W N$
$\square$ T E R P A N G S L S K L VM T D D D VK V IT Y N
QV INLLELS TGVPMLY DHREGNFFRRGSPIGSSEA E GRHFLL GTAKVCML GWDKKTPA IVAWGL
SSA KNGSVTKLLTVKE GHYKVN Y Y F N T
$Q L R H R G L D N A S \square S \square L E T T$ DFEHFTELTWNDTRY
ELEKFKVANTEV

P L WN H T D N T G I S K L R L VE DRFY $\quad$ EE Y L N N T CH L
NFWNDLGKNCELRRL


S F WR LAVDAA S I SLLLA HEP DRGYM LLF LNRTNHLTK


Q Y WQVD
EMAAHA

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RPPAGESRNEVLMRDCDAF LEFADDH
E F G $\square E K$ A E D M I AA A D P Y K D A E S GE

## T F WK R

## $\mathrm{S} \square_{\mathrm{F}} \mathrm{P} D \mathrm{D}$ A A R R A S R <br> Y E G G <br> E T Y K A E VNGGETYYE LAER LLE GVE

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 P HLRDGDHVLQI SHGNTLLSLINRFGP SD
$E P V L D A G Q D V L V V G H G H L L$
$I$
$I$
GDFLDRNTAEPLVNEGKDVLIIGHGAMNSSVVCQVMGLPDE K HKNIMVVSHWDADKTILAHYSDUPLS Y A GRTVLLVTHVTPIKTLVRLALGAP PE

VIVRNNPEDNVMVVSHGAADNAEDNYLLGAKDA IVTKNAANKNLAVVSHGGAI R QI LRLLENDEQ WNARVEREHGADAVYVMCSHGDDIKSLVADALGLHLD

 EVLI K S FLEEVVEPAWKDTERMMIVAHGALNKGLMCHDEKHGIE DKTVLVVSHGTFLSLFMVIMKGLPDS VHRGLKKVFFDNNYDENI MIVGHRAVNRMILSCFLSRQEE WSGFEDIAHREKNGGGNVLVVSHG LTIAFLLNLIDSS HHVYA HVCGHSYGGP■TNASVHH
RADAA LAALADDNMAERDVVFVGHGHFSRSMLTRWDELPVS LDMLSEMAASDESVH TVLAASHGAADRGDMSCDNHCELK


 RDFWIEKTTDPVLQDKTILVSSHGCAVRALLQNVYQDEAH LATLHKTYASDATVLLVSHGQLI WNLAQHYGHLSKA

 LAYFDE

QQKHAGQRVLIVAHQGVIS IICTQLLKLEDR
C

HEGERVVVVSHGFADRTGMCRLLGDYTA RELDWRAQGCWTHEGKSVLVVAHNAVNQALVATSLGLGTE VIGGRDRAQEGDVLI FAHRDI DRILI ARWLNLIAV EGVGTRDVLIVAHGHFNRILLTRWVNFPLS FPGQTVVVVSHVTPDKSLLADALGTGPE NQGDQLIRDTKDPADANVLWVSHGNTCLSLI ERYGQGKYD

 LLA SGTSPQSSDNNRLLVAHQGVLSLMLARLDAMPAA
 FKK LDEDA GKOGDKILLVSHGTTDRSI TDRYNAGNFD $V I M E \square E R Q E N I L I I G H Q A T L R C L Y A Y F H D L P Q A$

HGGETLAVVTHRAVLKPLDAACLNDASP


HAGETFVLVSHGGVNRTLLAEALGLPDA
 $\square A$ AENPENANVLLVSHGRLLSTLGQHFAQL
$H R G C N \square A L V A H R G V L K P L M A G A L G V S R P$
YAGGT I ILVAHGFALRTGDCWLLGGDYG
HKSGNVLVVSHKSTLRIVLCGLLGIDLG
HDNQNILIVSHTAVLSLMRCFFKSQNI E KHFHQSGNVLVVAHKATIRMMCSLLGQDVG VIMELERQQNILIVGHQALI RCLYAYFMELIPQE HPDETVLIVGHGGAI AQFFRDAANYEGS
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E L WTEH|V|GNCNIVTVI|D\|DGREMK\R

VSTKNGSVTKVNWD GKSYSVEYFNNVSE
QYFDYNTDNCELTYY

NDSGH $\square$ P
DHRKPRILNTSS I S IVVEYQNGEFSLKK $\square$ NE $\square G H L$
ESPWMSIPLHTLIKLEPRAYGTKVTR
 TKRDWHL GNAAVNRLLWTPE SLSLVIWGDTGHLH EGKHF LL GTAAVCSLGWDKRTPALEHWSL KFWQM GVPNCAVTIVEVEGGDPK I
$R \quad L P Y L Q C P L H T V M K L T P V A Y G C K V E S F P L G$
EGPTFLLEAGGVGTLSYEHHRDEEPALLLG HAATERPANGSVTVI GFD
FGSRLEDATAAVCLLGYGHEDRT\EGWNVGAPE
ES P WVPVPLHTLIVKTPRAYDTLVEKY
D A K $\square \mathrm{K}$
KFWSQGDENCK LDMK LM
RLSEDSDPNATLDQLEKDDSGATVVK
ALL RMELSAASUSAVAYYGDGNASVR VLNDTSHLR

LFFQRI SVEPCSI TAI RYTRLDRPFLVR LGDT


NYWGKGLQNCEATIFTYDG
ESPWMSI P LAH T L I KL $\quad$ EPRAAYGTKVTR
ARKNFVVENAAPI
$E \square P Y \square Y M P Q D R Y Y H \square Q \square D P H K R \square F E$

QE $\square$ NNVSY $\square \mathrm{E}$
$D G \square R \square S M A A A S \square A V C G F E H G V R Q \square S A \quad \square G \square T G H V$



NWWVF GLRNCRWSMLRREHGGFRLAEHNSGPLATGAAAPD

FWHGCVPPNCSVNLVEVKDG
N RPQNGAVAVVDMANDG TVSVEMFNDTSTV

$D L V K \square N V R G C S G S E V D F D G K N F T \square K \quad Y \square G D A S H \square$
A M WHFR $\square E Q G A H S R \square D Y R E G F S V I$
LLH GPQNGS T TMKINDKE I K T DYN

SRAWGGLSNCSWSLMDRFGDAEMARR
YFRTLLQSNCGASVLDF
AARHFYLVTASLNILGYDHGLDEPVIFLLND
LGTHFNVEPGGVAVLTYNHH
$L L F R \square H L D L A S L S U A E F F P D G G S V V R D V N D T G H L E$

A GALFRLETATVSVLGHEHRRPVILRWN

A MWHFHFDQGAYSVLEIHDGFVTLRAFN
EMDHFPHQNTSLYILNYADGKYELETFN NSLDHLE
LGTHFNVEPAGVALLTYNH
VTESPQNSSLTMLERDDGFNRVTSYN
D L P Y


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


ASRCMG DDNCSWS VDDHDPEDVVEARGF L
RYRRDDMPAASVSVVEFGKYGPQLKR LGDRS
HVWDPKFQNGSLSLVNYEDDKYSUTLD LA D DTH LLNK
RFYRLDCPVGSVSVVEFTSHGPLLRS LADRSHLGE
KVF N YRTPNAKLI GFD WK KVASTVK
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ISKNLGFTNCSALI FDYQDD
GYWKYKFENGG AI LEGSFEFSYLIKF

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 ARSVFGQGRLDDKVICSPRRRAQRTLELLLEQVGDDAETK

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EAAKVLAALRPDRIISSDLIRAQQTAAPLAQLTDDK GAQLTELALDDPLVVTSPRRRAHVTATLAGLTHDRHWPV V DASSQFENKPDDAIYSSDGKRAYETAQFISARTGHKN HTLMH DDPVDKVYVSSLRRSQETAQLVFPASN ADRL
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SGVRFEAAY
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ARFLTNKNG
GEALKE KKVPFDIALS
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## $\frac{1}{\mathrm{~L}}$ <br> P

 GARLAEABVKFDKI YYS $P Q L V R D A G D R P D T V W T$
GHGLND S V F R T A A Y Y

$\begin{array}{lll}\text { A } & S & S \\ A & L & L \\ L\end{array}$ | Q D | $V$ | $H$ | $F$ | $D$ | $A$ | $V$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | E | I | A A | I | Y | S |  | A D TRLTAITF

GESF R R R L L A


A DY LAAT QP $\square G K \square L C$
D GYALLPA P WDA AE
A R R L A K E A K




ADRL AEIPLA
ARRLRNQVF
PS SLI KEK GDRP LTTVW

YSDLRRCRETLA
VHQLNRHGAP IDALWCSPSQRARQTADP LI I RQRGCPV
A QYFASRG GIDVIVAS PLLKRCQETAAAVRASLRM



|  | UniRef90_B4U1A4 |
| :---: | :---: |
|  | UniRef90-F2PL96 |
|  | UniRef90-E3ZDF8 |
|  | UniRef90_K9YDG5 |
|  | UniRef90-G4ZN72 |
|  | UniRef90_V6Z3R5 |
|  | UniRef90_G2P915 |
|  | UniRef90-C2W913 |
|  | UniRef90-D7C3N5 |
|  | UniRef90_W9YR38 |
|  | UniRef90-UPI000464DDE7 |
|  | UniRef90-M7X3G0 |
|  | UniRef90-K8EUM3 |
|  | UniRef90-UPI0002882E2E |
|  | UniRef90-W4CWC2 |
|  | UniRef90-UPI0003727798 |
|  | UniRef90_UPI00037E84E6 |

 SRTDRLAEWDYGD AKDPEMREFGFGKFEGEYNQTVLQMVANEHGFDSDASYYD QLRDGVKELNYGKWEDQTPETVKKLYPEDY DSWWTEPA
 REWDALVEWDYGAYEGMTPAEIKAI RPDWLIWRDGVPEG $N Y D A G L R E S F A G Q W Q G D T H E E T T A R F G E Q Y T A W K K G E P V$
$R V D E N K T E$
 QTDPRFREFNFGSYEGDLNENMWTDIAKSQGKTDED DWTD
 VYDQRLREMNFGAWEGCTYEQLKK N AAF SLYRSWIDDDPSKV
 $\square R D P A L T E W D Y G E F E G L T T P E D R E Q V P H W T V$ V
 LIDDEDLRETDFGAWEGMTFAEVRERFPDEDNAWLADPA QK E GL KEFGGLGEDEGQLILDAADDAYPEQMHHLRNNPHEY LCLANFREEFYGSYEGSNMDIAWLNAGAPYGLKSYA
DALKSLDEKGFGEWEGLNADQUQAGFPDEWNAWLQAPFEV QVEQDLDEVDFGDWDGKEFSRAREENPRLHAAWLGDTSVAA EKDERLRETHDGLWQSRSHDEVDQLYPGMMALWRHDATW DASPFFREQFYGYFEGLDSEMAWRMIGGSHGYATRQEDFA
 EKRKNLRELNFGI FE KRFKALNEIYAGI CEEMTYEETEEKFPVEFAARDQDKFHY VKWKQLDEIDAGUCDGMTYEQVAAQYPEEYRARKTNKDHY SYDAAL RETYAGAWQGLTHEEIVERYGDQYAAWKR
RVLRNLDEDYAGVCDGMTYEEIRAAYPREYEDRRQNKDSY FVDKDLRERGGGAWEGLTREEDKAGWPVEYEKWEAPGGED EKD DEMPFGDWEGLNADQV UniRef90 TOLQ20 UniRef90_UPIO004627B4A UniRef90_A8KZ77 UniRef90_K8EFZ9 UniRef90_Q04EF6 UniRef90_UPIO00373C0A2 UniRef90_UPI000475A9A4
UniRef90 E0DGM3 UniRef90_Q5FII4 UniRef90_R6I673 UniRef90_M4ZZE7 UniRef90_W7CE24 UniRef90_C2UY50 UniRef90_UPI0002657CB3 UniRef90_A0A024ULU5 UniRef90-B5H768 UniRef90_A4RQC4 UniRef90_W5W877 UniRef90_D6Y4H8 UniRef90_C0XKW8
UniRef90 W7UYI8 UniRef90_A0A024TTJ8 UniRef90_IOHC77 UniRef90_F0YPH0 UniRef90_F4DB14 UniRef90 A9TI32 UniRef90-UPIO00370FE4A UniRef90_A0AI46 UniRef90_UPIO004670267 UniRef90_UPI0003747B22 UniRef90_J2S5G9 UniRef90_UPI00032A7DCC UniRef90 A0A024FYM4 UniRef90_UPI0004786055 UniRef90_UPI0003B3497E UniRef90G8WAF8 UniRef90-11CRY5 UniRef90_R5A5H2 UniRef90_M5J7F1 UniRef90 A0A023RLK1 UniRef90_UPIO003667F98 UniRef90_A0A024JBR9 UniRef90_G4L2N0 UniRef90_F8WXW1 UniRef90_UPI00047A79E1 UniRef90_X0SSS9 UniRef90_UPIO00377F39C UniRef90_U4S293 UniRef90_V6M5F3 UniRef90 G3JMM4 UniRef90_W5Y2A5 UniRef90_B6BC39 UniRef90 ${ }^{-}$F0BCI8 UniRef90-H2IUF0 UniRef90_V8D5J3
UniRef90_J2H078 UniRef90_UPI00036EE207 UniRef90_S3B4N2 UniRef90_UPI00037F6EAA UniRef90_Q0CUD1 UniRef90-T0Q2A7 UniRef90 ${ }^{-}$C1CYM6 UniRef90_U5HDV6 UniRef90-G2SMZ9 UniRef90-W4BVG1 UniRef90_UPIO003B40194 UniRef90_IOATY3 UniRef90_B9WC63 UniRef90_FOFWP9
UniRef90_UPI0003F76C68

ITDERLREWDYG
$\square$ VVDGLEEMFFGTCEGDKLDDLYD DWKSTVNAWVEGNLHV QPDEGL DECGYGDWE GRPLKELAKDPLWPVVQQHPSAVVF ARDARLNERHYGALQGVRKDDPGLLAPLAAHSTQTKKPLTA VQWRVLDEDNAGVCDGMTYEE KKQHMPEEYSARKADKDRY QLRDGLKE $\downarrow$ RYGKWE GQTVEYVKQHYSDDY $\square$ HWLTEPAWN TRLKGLKEWNFG
ELDPRVRETFAGQWQGLAFAEDASRFPADQTAWRSGEPAV IVDKRLREDDFGSAEGRLLAEMPADVAARFVA DPAEN
 $V K W K Q L D E I D A G I C D G M T Y E Q V A E E M P E E Y$ LIARKNNKLHY LRDARWREADHGAWEGLTAREVLARFPAQAQARWGDPWRS MADKEFDEDWAGDCEGMLYSEIRRRMPEVTAGRNADKYGY LNRKALDELDAGVCDGMTYEE IGEKYPEDYANRDDDKFNY VVEDFREMCFGI FQGRNYDDME H HP EY MA WVGAYCEG VANYDFREQGFGFFEGNDAEQAWFMAGMPHGVKTYD VWDERLVE LGMGEWESRRVPELLAAHPELDLEEPDWY LQA
 LHWKALDEDDAGVCDGMTYEEVIERDFPEDFEARDKNKYE YEFSGLREACFGGFEADFNHTMWNSAALYDHYTSVDAMYK EASPLLREVFLGPLEGRTRKELIEMYPELEHKS

| KTSDNLREQHFGVAEGKPWTFHREKGKTVEEMYAEDDWPV |
| :---: |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  | $K$

$V V D E D G V V E W D Y G V A E G K P W T F H R E K G K T V E E M Y A E D D W P V$
$V$ $\square T$ T L RERCYGLLEGLTYEEI RDRFSQE
EVTDD $\backslash$ REWDYGEYEGVTSPEIRQ DRADKGDEGRWD DWHD ELDPRLRETNLGVWQAKTHQEVDTEYPGA RAAWRHDATW $\begin{array}{ll}R T T P E L T E M N W G G W E G L H G V D L K A D P A S G F R D D E D W G W H Y \\ V & \text { R }\end{array}$ I SSAALVERDFGIFAGKNKTLIKKS $\mathrm{S}_{\mathrm{G}} \mathrm{G}$

STRPTLRERCYGEWEGLTYEEI RERF GA RKVWRDAS W


##  <br> -

## QTDDRVGECHYGDWTGQELAVLAVD

$\qquad$
LTWKSLDELDAGVCDGMTYEEDEEYYPE

 EKDE DVVE WDYGDYEGLTS A E DN E L R K KK GLDDDKD HK WS VVELLNEMHFGDWEMRHHRDLQREDAANYAAWCADWQNV

8

UniRef90 B4U1A4 UniRef90-F2PL96 UniRef90-E3ZDF8 UniRef90_K9YDG5 UniRef90_G4ZN72 UniRef90-V6Z3R5 UniRef90-G2P915 UniRef90 C2W913 UniRef90-D7C3N5 UniRef90-W9YR38 UniRef90-UPI000464DDE7 UniRef90 M7X3G0 UniRef90-K8EUM3 UniRef90_UPI0002882E2E UniRef90 W4CWC2 UniRef90-UPI0003727798 UniRef90_UPI00037E84E6 UniRef90_E9T3E9
UniRef90 TOLQ20 UniRef90-UPIO004627B4A UniRef90-A8KZ77 UniRef90_K8EFZ9 UniRef90 Q04EF6 UniRef90_UPI000373C0A2 UniRef90_UPI000475A9A4 UniRef90 E0DGM3 UniRef90-Q5FII4 UniRef90_R6I673 UniRef90-M4ZZE7 UniRef90-W7CE24 UniRef90-C2UY50 UniRef90_UPIO002657CB3 UniRef90 A0A024ULU5 UniRef90-B5H768 UniRef90-A4RQC4 UniRef90_W5W877 UniRef90_D6Y4H8 UniRef90-C0XKW8 UniRef90-W7UYI8 UniRef90 ${ }^{-}$A0A024TTJ8 UniRef90 IOHC77 UniRef90_FOYPHO UniRef90_F4DB14 UniRef90-A9TI32 UniRef90-A0AI46 UniRef90 UPI0004670267 UniRef90-UPI0003747B22 UniRef90-J2S5G9 UniRef90_UPI00032A7DCC UniRef90 A0A024FYM4 UniRef90-UPIO004786055 UniRef90_UPI0003B3497E UniRef90-G8WAF8 UniRef90-I1CRY5 UniRef90-R5A5H2 UniRef90-M5J7F1 UniRef90 A0A023RLK1 UniRef90_UPI0003667F98 UniRef90-A0A024JBR9 UniRef90_G4L2N0 UniRef90 F8WXW1 UniRef90_UPI00047A79E1 UniRef90-X0SSS9 UniRef90 R7SE77 UniRef90_UPI000377F39C UniRef90_U4S293 UniRef90_V6M5F3 UniRef90_G3JMM4 UniRef90-W5Y2A5 UniRef90-B6BC39 UniRef90- Q2QY22 UniRef90_FOBCI8
UniRef90-H2IUF0 UniRef90-V8D5J3 UniRef90 J2H078 UniRef90_UPI00036EE207 UniRef90-S3B4N2 UniRef90-UPI00037F6EAA UniRef90_Q0CUD1 UniRef90-TOQ2A7 UniRef90 C1CYM6 UniRef90-U5HDV6 UniRef90-G2SMZ9 UniRef90-W4BVG1 UniRef90 Q1JZW0 UniRef90_UPI0003B40194 UniRef90-IOATY3 UniRef90_B9WC63 UniRef90-F0FWP9 UniRef90_UPI0003F76C68

DVPYSELAES ${ }^{130}$ VIEVDTANWAEPWEVL $\quad 150 \quad$ SKRTV $\mathrm{Y}^{160}$ MRKERGLDKERNWNIDWQDGCEGGESPEQVSERVDSLIEEI
 A WPGGESPLDVVARGVSK TTEVVSNTPPK

VGYGDYFVQHGGEDSMAVRERMVTTI

| E S | I | $A$ | $S$ | $D$ |
| :--- | :--- | :--- | :--- | :--- |
| $F$ | $S$ | $R$ | $I$ | $K$ |


RRGGGELETEVADRAAPVVGEAADKLP
LRKQRGLDTERPWD $\square$ WRRGCEGPGSHSPAQVTERDDR LIS
GPEDEGDHDET\PSGQQVNVHNGPGETDAQAAARAAEVAQ
GCPKGESADQMRDRCDAMIRKIVDLADAHHGQ
QKAG $\square$ SPKDFADSVAA LDKTRVKEGENWPAEDYATDQARD

## V H G G

 ETFDELKERVDPAAESLLTPPEGESWTEFDARLRSFLLDLGQAAAAAFGCC
APPGGESFHQVAKRVSEAVARI
A GVTGERRSDVAKRAVSVI EKETENF
PCPGGETHEMVGSRADMVVHTAEAAL
PVDGMEPDKSQFDRASQFINDLRKSDHKNT
KPPEAEAFGEFQDRVWNEVDRLVNE HP $\underset{V}{P} \underset{P}{H}$ HP G V P P G GESLLSTGAR
DPSEFG GGETHSLSTGKAR
EIVDDYGVASTKDFLKAADPWHDAENNDEYWARLD
TPSGAEPFNEFQNRVWQTTEFLVEKHAQDT
$P P G G E S \square D D L H \quad R R V E G L G R R L R R E H E$
APPGGESRVEVARRARPVVTELMQSLADW
HESUDTDKDWI KEADPYHDAENAEEYWNRMDQGLKM
PFPEGESLHQVALRF $\square D A V K D I C S R C S Y R A V G \square S S H G H A \square$
RPPGYEDDDAVVHRAGAALTDLARRH
QVSGGETYQQMLDRTMRVLKRIEETDVE
A GVAAPEE $\square M K L S \square Q E V I N L I R T A D P T K Q A E D W E \square F S A R \square$
RYPQGES YEDLVARDEP
RYPRGESYQDVIHRDEPVITELMRLDRPVLIVAHQA乌LRVV GEPVRRGGGELETEVADRAAPVVLJHAD
RYPRGESY $\square D V \square A R L D P L V Q E L$
TPPGGESFDAVHRRVRRGRDSLISR
PADVAERVAGAILRWRAKLDD
TPA GAEPYRVFEKRVTTALDHYRETDP
EYEGMYRYTEGFAVNKDNFGVRMGKNCESLLQLSHRV
RWPEGESPVEVEKRGREALLRV
PNGEAMAEMSA
RAVKT
SELLEKDRRSMREPPAMSASHPHYDAKAPPTESLADCQRRVV APPGGETLDEVI ARVLQGLTELA
RYPRGESYLDVIQRVEPVIVELERQRSPVV
PPTGGETAVQUANRACAVISEI
FEGESEDLNPPLPYGDFFAAYGGEREDDFRNRLIETMENM
RAGGGESRVDVGRRMAAGTLDAVSSLT
HFPGGEHPRDAVERAMAALGELAGAYPR
GPTGGESDADVVKRVRDGLVELESRYP
RYPRGESYLDVI QRLIEPVI I ELE RQRAPVV
RYPRGESYQDVI HR
RAHGGESGADVWTRVQAACAQLLRD
AYPNGESYA LLRERVQR
CPPEGESDAQATRRVDNFDQHL
RYKGGESYRDVVLRLEPIIMDL
RCPGGEQKAEFCDRTCNAFVPLDESADKNGE
E VARYGMDAVLNFLKEADPFKDAENTTEFWTR PNGESFQSI QRRAQAWLQDEGI AKHAD
SPPGGESRIDVARRSGPVVQELVADCDPEWG YRYRGGESYRDVVARLEP
NG INPKEYADTVALLDKERMKDTKENWPAENYEEDTSRDK $D \square L A K K \square N Y R D V L N A \square Q K \square D K \square G T M G M A E N F T Q V E Q R T$
EMPGGERLLDVQERAWQADERIRERQEHGT
AVTQTEKFPEGESQND LAAARAERGLQECVMPLVWKAAR
$\square E S Q G E T F E Q L Y$ QR $V T$ QA $\square$
DEETHGTETFDAMQQRA
GCPGGESPQDVTERDDRDIHNDREKFHRPV
APPEGESRVQVAGRARSVI DELMHSFDEW
RPPGGESPAEVWDR $\square A P W L H G L T R D A V A V C H \square G \square M R M \square L A$
$E \square P G$ G
HRDYDACFHDAGGAPPDGEHWMDMYARC
$P E G E C L N D M L L R V G N$
$R P P G G E S R T D V A Q R S M P V V D E L V A E L G D W G$
ASCGDETFEDMQRRAVAAMTE』AGS

PNGESMRG
AFPGGESMRGMQARAVEAVRD
PNGEAMADMSA
MQQRAVDA
$R A \square A T$
WRDGCEDGESPEQVAAR $\square \mathrm{DS}$ LI AE $\square R A \square H A G$
A WPGGESATDVATRGTAALEALLRAAPQR
TFPGGEALRRTQARGVNAVREWNARLGP
APPGGESLAEVAARMRDWAEDLDQ
RYRGGESYRDVVIRDEPVI IEL
KYSLAATRDDLHEVDPFKDAERDEDYWAR DDEGF
TPPEGEAWAQFAARVDHFWDE L

PPGGESLVQAHHRRIKKAREELQREYGES
WSDGCE


UniRef90 B4U1A4 UniRef90 F2PL96 UniRef90-E3ZDF8 UniRef90-K9YDG5 UniRef90 G4ZN72 UniRef90-V6Z3R5 UniRef90_G2P915 UniRef90 C2W913 UniRef90_D7C3N5 UniRef90-W9YR38 UniRef90_UPI000464DDE7 UniRef90 M7X3G0 UniRef90-K8EUM3 UniRef90-UPIO002882E2E UniRef90 W4CWC2 UniRef90-UPI0003727798 UniRef90_UPI00037E84E6 UniRef90-E9T3E9
UniRef90 TOLQ2 UniRef90-UPI0004627B4A UniRef90-A8KZ77 UniRef90 K8EFZ9 UniRef90 Q04EF6 UniRef90_UPI000373C0A2 UniRef90-UPI000475A9A4 UniRef90 EODGM3 UniRef90-Q5FII4 UniRef90_R6I673 UniRef90-M4ZZE7 UniRef90 W7CE24 UniRef90-C2UY50 UniRef90_UPI0002657CB3 UniRef90 A0A024ULU5 UniRef90-B5H768 UniRef90-A4RQC4 UniRef90-W5W877 UniRef90 D6Y4H8 UniRef90-C0XKW8 UniRef90-W7UYI8 UniRef90-A0A024TTJ8 UniRef90-10HC77 UniRef90_FOYPHO UniRef90_F4DB14 UniRef90-APIO00370FE4A UniRef90-A0Al46 UniRef90 UPI0004670267 UniRef90- UPI0003747B22 UniRef90-J2S5G9 UniRef90_UPI00032A7DCC UniRef90 A0A024FYM4 UniRef90-UPI0004786055 UniRef90_UPI0003B3497E UniRef90-G8WAF8 UniRef90-I1CRY5 UniRef90-R5A5H2 UniRef90-M5J7F1 UniRef90 A0A023RLK1 UniRef90_UPI0003667F98 UniRef90-A0A024JBR9 UniRef90_G4L2N0 UniRef90 F8WXW1 UniRef90-UPIO0047A79E1 UniRef90-X0SSS9 UniRef90 R7SE77 UniRef90-UPI000377F39C UniRef90-U4S293 UniRef90_V6M5F3 UniRef90_G3JMM4 UniRef90-W5Y2A5 UniRef90-B6BC39
UniRef90_Q2QY22 UniRef90-F0BCI8
UniRef90-H2IUF0 UniRef90-V8D5J3 UniRef90 J2H078 UniRef90_UPI00036EE207 UniRef90-S3B4N2 UniRef90_UPIO0037F6EAA UniRef90_Q0CUD1 UniRef90-T0Q2A7 UniRef90_D3DCJ7 UniRef90 C1CYM6 UniRef90_U5HDV6 UniRef90-G2SMZ9 UniRef90-W4BVG1 UniRef90 Q1JZW0 UniRef90_UPI0003B40194 UniRef90-IOATY3 UniRef90 B9WC63 UniRef90 FOFWP9 UniRef90_UPI0003F76C68


 EQVLMVTHGRFNKIVLAQMLHGELN TE $\triangle L K Q H Q D G E K L L V V S H G A S D A Q F Y R G V M D N P P Q$ AARADEVVEWARSADRDVLVFAHGHILIRTLGARWLGHDAS KE $\square \mathrm{DT}$ TSEDAAKNGGGNVLVVAHG LMIATVVEMDDS
 EML PMLLAGQDVLLVAHAHILR ILTTQWLGLDPH KEGLTDVAKKESKNGDNVLLVSHGLSDGALLDTMEPGYK RQHKGDHILIVTHSITLKMIMNSFLNRPLD
$R K A H P G Q T V A \| V S H V S P \square K L I L R D A L G A T D A$ S GTI IFVVTHGGTVRSVLGS LLKLPDP ADRDVVLVGHGHFMRAVIARWVELPVT

VAAARDRDMAQYPAG RVLVVSHVTPDKGLTQLADAAEPT VVVVEEAVMQN PNENLLEVGHGATLVALDQTLSGKPDE EGFTKLLEDPNVKDGAKVLLISHGNTLLSLADRYGNNKIS

GATLVLVSHVNP $\square K S F L R Q A L G G G P E$
$\square S E \square D G A E N \square L L V T H G F T \square R S \square W Y R Y G D N \square P$ TS LIEE EVFGYQVQRVENCDYVH

GNVLIVSHGMVLRQLMYVLGGGDWR
 LYAYLTNKHPEECP
$K L P D D G T L V V V S H G G T D R T T D G R L L G L E S Q$ SYREDVLIVGHQGVLRLIYAYFAGLDRD YGGATLVVVSHVTPIKSLLRMALDTGPS GGLLVVVSHGAAI RLGIARLLGLPQE
 $\prod R K W D D L I T K E H G P E A V W V A C S H G D V I K A I V A D A L G L H L D$ LACFDERVAPAVRGGRTVLVAAHANTLRALIAADDGVPDA VV I AHQAI L R SLYAYFMDK Y
QAKYSTGNVLVVSHKATUR\ILCSLLGDDLG MNQDNHEVVLAA
$A G Q T L V V A S H G G S \square R A G L A A L M G L P P E$
$\sqrt{V I S H Q A V L R A L Y A Y F T D R P L K}$ RMDQPVLIVAHQAILRVLYAYLTNKDPS FDGGRVLIVTHATPIQLLLCALLGLPFE
QNTSAHQ VCCVVSHGHVSQGVLA $\square$ LKEGA $\square \mathrm{D}$ ERQGNILIIGHQAILRCI YAYFMNYNQE EKLV:MAHGGTQMAIMERYKGLPRH V NRGLDGLRQTAHDGDNGLITGHSGLIDRHMNRFKPEF



S GVWGE H
TARLDRVI ARVRALEGDTLVFAHGHCLRALAARWLGEPVS EQI DARHQEGENVLIVSHGMTLTALAAVLKGDHWH

RAHGWNFEGPAPFR $\square K R N$
VSY L NT T A GKH K GERVIVVSHGA SDEELCRHADPT
KHYYETVLAPLDRQGQQVLVVAHKY VVEVFALI ASGLPPA WFEKRF IEWNSSDTILIAGHEGTVCGILHRLLKLQDD

HPGEAIVVVSHGGL!NSFLHYVTVGEQ $\square R A H D A E L A R T H G D G A L W V A V S H G D V I K A D V A D A L G Q H L D$ WNAR EAEHGSDAVYLMCSHGDII K S I V A DAALGMHLD
 NMHGENPSDVLLVAHGHTLRAFTKRWLGYPMD


ERQEN LVVCHQAVLRCLYAYFHNLSQE D W LRKHHHDGENGLLVSHSITIRSUVDRYAPELRS DALYLVAHGGTQMSILEAY GQPKR $T V L V V S H V T P D K S V V R Q A D D A P A G$
$\square \quad$ AKQDPCDIVVVAHGHVLRCLGARWVQREAN


UniRef90 B4U1A UniRef90 ${ }^{\text {F2PL9 }}$ UniRef90-E3ZDF8 UniRef90-K9YDG5 UniRef90 G4ZN72 UniRef90-V6Z3R5 UniRef90-G2P915 UniRef90 C2W913 UniRef90- D7C3N5 UniRef90-W9YR38 UniRef90-UPI000464DDE7 UniRef90 M7X3G0 UniRef90-K8EUM3 UniRef90-UPIO002882E2E UniRef90 W4CWC? UniRef90-UPI0003727798 UniRef90_UPI00037E84E6 UniRef90-E9T3E9
niRef90 ToLO2
UniRef90'uploo04627B4A
UniRef90-A8KZ77
UniRef90 K8EFZ9
UniRef90 Q04EF6
UniRef90_UPIOOO373COA2 UniRef90-UPIO00475A9A4 UniRef90 EODGM3 UniRef90 Q5FII UniRef90-R61673 UniRef90-M4ZZE7 UniRef90-W7CE24 UniRef90-C2UY50 UniRef90_UPIO002657CB3 UniRef90 A0A024ULU5 UniRef90- ${ }^{-15 H 768}$ UniRef90-A4RQC4 UniRef90 W5W877 UniRef90 D6Y4H8 UniRef90-C0XKW8 UniRef90-W7UY18 UniRef90 ${ }^{-}$A0A024TTJ8 UniRef90-10HC77 UniRef90-FOYPHO UniRef90-F4DB14 UniRef90 A9Tl32 UniRef90 UPI000370FE4A UniRef90-A0A146 UniRef90 UP10004670267 UniRef90-UPI0003747B22 UniRef90-J2S5G9 UniRef90-UP100032A7DCC UniRef90 A0A024FYM4 UniRef90-UPIOO04786055 UniRef90_UPIOOO3B3497E UniRet90_G8WAF8 UniRef90-11CRY5 UniRef90-R5A5H2 UniRef90_M5J7F1 UniRef90 A0A023RLK1 UniRef90_UPI0003667F98 UniRef90-A0A024JBR9 UniRef90 G4L2NO UniRef90 F8WXW1 UniRef90-UPIO0047A79E1 UniRef90-X0SSS9 UniRef90 R7SE77 UniRef90'UPI000377F39C UniRef90-U4S293 UniRef90 V6M5F3 UniRef90 G3JMM4 UniRef90-W5Y2A5 UniRef 90 - B6BC39 UniRef90 Q2QY22 UniRe990-F0BCl8 UniRef90-H2IUFO UniRef90-V8D5J3 UniRef90 J2H078 UniRef90-UPIO0036EE207 UniRef90-S3B4N2 UniRef90-UPI00037F6EAA UniRef90 Q0CUD UniRef90-T0Q2A7 UniRef90_D3DCJ7 UniRet90 C1CYM6 UniRef90-U5HDV6 UniRef90-G2SMZ9 UniRef90 ${ }^{-}$W4BVG1 UniRef90 Q1JZW0 UniRef90-UPI0003B40194 UniRef90-I0ATY3 UniRef90 B9WC63 UniRef90-FOFWP9 UniRef90_UPIo003F76C68

210 V V 220
T TGDMSY
FPLAMMLEPGGVGVLSYDHH

RMTEI HQDNTCVNVIDFDHATQTYHAMALNNTNHLP
VRMSNCAI LKFNVNVDFNPDNQEYLYEAE
FAARIRLDPTSLSVLGWAYGEPADERW NDTGHL
SKTRMGVQNASVTKIVYQGGEYKIES VGDMSYAEKGSE
S WEALGLSNCCWSVLGEGARGWRLLEHNAG
SKLEMMLEPGGVCGLSYAH
MAKMLRLDTAHYSSLGVYKGDRVIEHWN
QGRILVADTGALHKLGFQH
LPAEGIKNASVTKITYKDGKFTTGD ■VNDLSYVEKG ELWNPPVQPASLSKVVWEDDKVHIE LLGDIAH

ILHRLFLDPAGMSIVDYYPDDA VAVRTVNDIAHLG QWGVIGLSNACWSVLELTKH HTGSKWYLAEHNA EGRRFLLDPAAHTVLSYEHGFRTDRAHNVTPREGDQ

VLYR DH DDLVSTTTVDWYSDGPAVLRGF NDTHHVA QIRKAGLDNSSLSIIEMNELGY ELILWNDTSHL LHARPKNGSVSKLVYED
CFHRपF पDVASVSVVEFMGERGVVRGПNMGQPA

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LVPGPQNAS\squareT\MTMSDKGE\square
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EHRDKNTLNTSTS\|VDYKDDTYTVRE VNK $\square \mathrm{DH} \mathrm{LE}$ SKTKLGVENASVTKLYYKDGEYTVES VVGDMSYVAKGTE

HWESLGLTNCCWSVLGEGARGWRLLEHNAG
EAATLSIPDNTVIKLTPRTHDCDEERVLLHDPSENQEPDD
LLYRLHLDPASLSTAEFYPDGNASVRLV NDTSHL
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DFWSVDFKAGCYSVFETGDGGVSLVSFN
SFANWFMDNCGLIEYNDD
KVETTAQDNTCINVLDFHHDTKTFTPRCLNYTDH
QFQRIVADPASITAIRYTPTRPFVVR LNETGDLA
LVPKIFVPNAVPCV
DFFEWQLPNGGMLSVRLSDDGGPLR
EVPHTQVPLHTIIEIQMGVAGMQEKRYKLMETST
RYRRINALAGSVSIVKFDVYGPLLE VVGDRSYMNEQDR TGKITGLKNCCILKKEYENGEFTLVNFINGDFE
LWS SLGVSNCHWSMDEELDQGPTISRWQL TEH

ECPTINIPLHVVI
RSWQWR\|DTGSLTNDDGYPSGA VVR
NFSRYAHPNASYSVFDFTDGKCAA $\square R W$ GMATHD

DYYHWCGPNGGGYVLEVNENTWH RDHTLTLVEEVQYDRE D L SEHLENGSVTRFTVTADDVTVDYYN

RSP WMVVP DHT LIQLE
PRPYSTAETRVPAN $\square$ P
LDATMGMENASVTTIQYDGE
KLFTKPLDNAAVCKVTYQNGEFTVES MADMSYVEKG LNRPFLITHNGUTKVF $\square D E M G Q A$ KFHYVNNTAHL

FGRFLVLGTATLSVLGDDRGQPAVLTWN

AGPIFLLEAGGVGTLSYEHH
 DYIDFRPNSRPLSWDELKQMTARRMNYLGEQTEIH HYPTFT $\square G N C E Y \Pi R \square T \square N E D R Q \square$
GTGDTRDDNTGDT ERYVDRRWEVLVNDTDHDKA AFQRIVVDTASTT1
LFQRISVGPCSATAIRYTPLRPFVLR LGDTGEL
QFQRIVADPASISVVRYTPFRPFVVRVNEG
FPDSMMLEPGAVGVLSYQHH
TMAN VQDNTCVNVLDYDHVTRSFYP LTNNTDH
MYHR\|TIDPCSLTVVRYGEHRPFVRR\|N
 AKN GPRNGSVTKLSVSDDDVKVEYYN

DY任KTLERGSYATHDDGPHAVL
PYYRWITGNGCGFVLDTGEWQQSKTLRLVGEVRYLREGD
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VNPQLILDAGGVGTLSYEHH
AYWRVAQDPCCLNVDVNRGGNA KVLQDNETGHDARR


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UniRef90-G7H1Z2
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${ }^{0} 1$ PKEFRDKTP菏 FN AYQHIPFDKUYTSDLIRTHQTVN SFLKLGUPH
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 YELLRSE KFDHCLRSPLQRAYRTAEVI WGEERNREKMD
 EHAL DPFTPVALYSSPASRARETAGUTEK NRFDDHKQQWELVQRQKEMLQHLDPRAGDSTPPNPSYIP AKF GEQRALWEEHQREKQANTHFPPRPGDTTPPNPEVTA SDVLKHDTLS AIYSSSLTRAIKTAAP TAVTHGLST
 $A R R L S A E A K P A D V Y S S D L K R A A E T A Q A L A K A C D V S N V R T$
$G R V L V G P G K L D D H V F V S P R K R A V D T F D L L F E G V G K Q D G R V$
$V$ RNQSLPSPWKDAMLWASPLERAAHTAAA NRRYSYPGAP VFYVS KKNVIEKYKPVQKLYCSVMKRCDETA QSYFNKKD $G$ DHVYCSDLLRTRQTY GKDLDESDSVGDTDRNSNSNRLSTPTAADFDNADPASVTS QEYF RLIPIDTVFTSSLSRCVETANAICQSKNLIPMPN GRALVGNDRKLSHUYVSPRLRAQRTLELLND SRFIDKQRDSFTEHWTSMLNRAVQTGN
GKYFIVEGSRNIDKMFTSTMQRALHTSN


 GKYL1 QK TKFHEVYSSPLKRAVQTTKLLAENYK A $\square R L K N G G V S Y D V I L A S P L Q R A Y E T A C A I G R A D D L V$ V NTGLGLSNVNFKAAYSSDLGRAVKTAKVVIENKASTNLKL
 AKEVLEL
 VQG

GPDGGAARFIT
GGNYPADRLI VTAGAGNPTADLLAS
ASRLDKE AGLPLRLVATSPLERCRQTAELIT
 GRALRDEPAARQLVVASDLTRAQQSA

 AEDLQKLYVNPFESRSS
TRFIGHQRKVWEDYQKT
VI DQGPWSRLVSSPLQRCARFAE
DKNSMY $\quad$ KPMADIVFSS PMKRCVQTAKDIYPEKD GVRFVDNPRRLGKVFVSPRKRAVQTLEELLLPADGVVQGQY AKTLRTESWRPSHVYTSPLKRAVQTTEILLSYFQVPHLPA RERLRHVRLSAVFCSDLARSRETAAIIARPHGLCP
 ATHLAGKGNDAGVVSPLGRARE TAEAAAQALGGTV GRALVGDPRQLVHIVVSPRRRAQRTDELLNLGCHHPYPWE
 ALRDTLADERFDAI YSSDLQRCQQTA LSWSRAATPGTAV AERLAAEQDKNRVIYVSPLKRAVATAAY!EKALAGEGDK GEK KKE DNFDKVYASPMGRTMATKYLLKGQGKSEDET D AE AYSHDPWKALYASPLYRTRETVRPLCE K K K GVAM AH HLNTLELLAFACYSSDLQRCHHSLQTMALHGARLPDPV
AEFCVS

GQQI

GKALVG GNDRNLVHVYVS VDR AGVPLAALVTS FE VYQNVPFDKVYT AKFMNFQREEFRKHQLERFTRTVQSVRGFLDPEVKLAH GHALRELYVHDHTDCHPFVVSSDLTMQTAHAFADALGLQV

## UniRef90 A5DWw9

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ETTDATMEWDYGDEGLTSKQTRELR RVEEGLREADFGAWEGLTFAEVRDRYPADLDAWLASTKAA RTEPGLDEMSWGDWEGKRLDDLRADPDSQUSEQEQRGLDRL ELREGLKETNYGEWEGKTPEAVSHEFHDDYILWTADPAWY HVEPDLDEQSLGEWHGDEHHTLPERLNDPAHPFWSVSATE RSLRALREDALGRWEGLPVAEVQRRFPGEYERRGKEMMTY VVDERLHELDHGHLDGRTIEDIRQDHSDFDERWRDED RDRPRNF CVWSSMMQRSVQTVDYFNEDEYDVKQMKMDDE HTDDRVGECHYGDWTGRKLADLAGEPDWKTVQQYPSGAVF QAGEERNFCVWTSMLNRSIETAQFFNEDEYDLKQMRMLDE EMVDEFREDDLGEWEGVSFNEDKGRYPNKFEKRGKNDIGY
 TTTEKLAEWGYGDYEGLVTKEIRADR KTDPALDEMNWGDWEGRIAKELRADPTCDHRDTEDWGWDY ILVPALSECNFGEWEGKTAEELKED PKFQQWLENGQKT EVADGLHEVQVGDLEDRNDAEAYKAFGEVVEKWHHGDTAV KVDDDLRERCFGDFEGKNHDELKNN PYYKEFFRTNWKS
SLRERSLGEFEGEMKTEQKPEYARYFNDENYMSFRHSFSQ SLRERSLGEFEGEMKDEQKPEYARYFNDENYGSFRHSFSQ R


E D
Y S K SHKALDENPGCDGLTYOQADKFPQDYEERKMNKLTY YFTPALRECSFGAWEGRTYDELMGTDPEHVGKWLENPFFH TYDKQLLEDSYGDWDGTKNSDLEAKYPDLFDHVLDDVLPS VQDPRLRELHDGDWEGLTWDETQLRWPLEWQARLNDLVNI VVHSAAPEFNDLVEPNPTQFVLPVYVSAALNERHFGSLQG EVENDLREWEYGDYEGLLTKQ:KELRA KESRGLGDDWDF ETDEELTERDFGLLAGKPVADLRKYAGENVLQGDKVLYFL KELEGLREVYFG VFSEDTKKQSYEGEFQNIMFSDULKYUN
$\qquad$
 HYEADLQELHFGDWEGRTAAQLMDSDAEALGRFWADPYAF TFVPEWTEMDFGAFEGHNYQELAGD PAYQRWDDSGGTG QUVDDLGECRYGAWTGRS回QDAK EPLWRVVQDQPS
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$D L E E K N F C V W T S M L K R S G E T A E Y F A D D D Y D V K A W E M L N E ~$ QADRRFREFFFGHFEGVPVVELWTKDADQHGYDNFEHLQK RDERARTECDYGDWQGRKLQDLAQE PLWRTVQANPSAV HTDDRVKERGFGELEGMPVTEMQQRWPQDFESWRNFGDGE RVDARLRETHLGDWQGMTHAQVDSAAPGHGWPGARTGPGP
 VLDKDLQELHFGAWEGQSAAALMETDAQALGKFWADPYGF LKEELLKECDFGLFEGKN EVTEETAEWNYGRYEGLKEEEDRSSR KERSDDDDREWND AVSDLIDPDSETPDEADEPSPKTIDPVEAEELKEFQNGIF EARPEMREDALGEWDGLTFDEVREKHPAAFAERGRDVVHF
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00 K I D D R L K K E I N F G EELRECDFGDFENKNYKEGEDWRKPEFLKITDNPFFR YPDEGFKEFMFGSWEGKKVSELKEHPQYFNDKQAPEKYDP ERDPRLREQDWGAWAGHTIQDLRETTPEEDARQEAAGWEF ELREGLQEDGYGQWEGMHPKDIDRQDHDLYVKWLTDPAWN LV LP GLRRENMGKAEGLPFHQVLQQYPHLHPKGRNWD



|  | 60 |
| :---: | :---: |
| UniRef90_A5DWW9 | WS D GCED GENY Q DVT K R L D K F I D R I L K I H G |
| UniRef90_UPI00046EE2CD | EVEAS S E G G S SPLDVVK T R QLPVLE T ILLSR P H |
| UniRef90-M5ABK3 | KYSFEAARDAMHQADPRQLSENG LTTFKRR |
| UniRef90_Q4WCV9 |  |
| UniRef90_M3C174 | $P$ T G D GESFAAVARRAALARDRLLT R |
| UniRef90_UPI0003812563 | Q P P G GESPRQVQDRLRPLLQRLAKQNAPHV |
| UniRef90-K9WJV6 | PPT G GELAVA I A HR ALLQVIE EI |
| UniRef90_K8ETZ9 | EVS GHFPVVELWERGDKCWK E |
| UniRef90_F3S548 | QPP Q GES MVQVCARVGAC LDR L A A R |
| UniRef90_Q3A802 | $R$ P P D GESFSDLQARVVPAFLDILLSRE |
| UniRef90_E0XU83 | A DLR F P G GE T M GEVQRRM |
| UniRef90-G3XZP5 | LY A GEMEGMTY DEDREKFPEE YA A RYYRYPGPGGE GY LDV |
| UniRef90_F8JRU6 | PGP G GESVT A M Q Q R A VA A $\square$ R D |
| UniRef90_W2S698 | LNA GSMDGMTY A D $\square$ M M N P P E E Y E L R K H D K LQ Y R Y P G Y LD |
| UniRef90_UPI000479E565 | CVP G GESFY Q CNQRVIKK F Y L L |
| UniRef90_UPI0003758B7E | SVP GSEPYSAFTHRV |
| UniRef90_U1MQZ3 | LG A $\square$ A D Q VGWR G LTF D T I A Q LD A S G Q A E Q A A A V V L RA D S A L |
| UniRef90_T1MZZ6 |  |
| UniRef90_V5FSW2 | K E H GLD Q DRE WN ITWRD GCEEGES PHEVT ARLDSSLIEE I |
| UniRef90_UPI00046A651E | TPPNGESPA A L R D R L VP WA NRLARDS |
| UniRef90_R6MXD2 |  |
| UniRef90_G7H1Z2 | SLP G GES LD DVF GRYLPVID EVVRKYLVGPE |
| UniRef90_C0R143 | NVPNGETSENFFNRTENAYFYI I E D M |
| UniRef90_UPI0003463395 | K A P GGESYA DVLQRVT Q F F E N EVD N S L |
| UniRef90_Q6C8W1 | Y M GELEE GRQRCRDENRHWDSFGESNTHMVERLSKQWDTI |
| UniRef90_UPI00046A1C4C | T PPPQGESFGALLSQR\V |
| UniRef90_B2ABF2 | GCP GGES P A D $\square$ T A R LD R L I K D $\square$ R E K WHRPVME GENVGGEGK |
| UniRef90_C5DML4 | R Y P G $\square$ G GESYMDVIN |
| UniRef90_A0BTB1 | R Y P R GE S Y LDVI S RVEE Q I F E I ER S R L P V I V I A HQA L R C |
| UniRef90_UPI0003B7B350 | A P P D GE T L R DLD Q R L M WVVR Q A $\square$ K R H R GETVVVVTH GGPM |
| UniRef90_G9ZQH7 | Y A GQAHGETFDHVIGRAEAFMQA |
| UniRef90_L0A1B9 | DGGESEASFHR |
| UniRef90_UPI000369C5E8 | APP GGENLLQQMADRVRLVVAELLAK |
| UniRef90_A0A024U2L9 | VP STS HPPH\SA IVRNEYR\KFPG_PNGESCADVEARV |
| UniRef90_G3BD65 |  |
| UniRef90_R4K8G1 | S IP K G E S LA EVF N R T K V FITE EV G S K |
| UniRef90_C9ZPN2 | EVEEGA ETFDECFNRAARLLKRVDERF |
| UniRef90_C6PX16 |  |
| UniRef90_K7M7K2 | GL L K Q E A D RY GKEQVVHEWR R S Y DVP P P N GE GLEMCCAERA |
| UniRef90_UPI0003B4BE78 | E GE GES Y EM I A N R LQPFFFDNMFE EKHEH L L I THAVT LR M |
| UniRef90-IOHZE4 | $R$ F P N GES LR EVQ S R S VA GVEMLR CR |
| UniRef90_C8XEF9 | GAPGGESSPQVADRCDRVLARAKDKLV |
| UniRef90-R5EGU8 | P P P G GES GEQMTRRVLA AYKALESR |
| UniRef90_W6QUM7 | TPPNGEPLLLQFEARVLAA L R R R L Q Q R |
| UniRef90_R6XB76 | PFPEGES REEF $\square$ R R NVA GYMDLERSA ASEQGDYNT GSEK T |
| UniRef90_C1DZ31 |  |
| UniRef90_K6WR00 | A AVFPD GP DFPGES $\downarrow$ A A M S SRAVA A |
| UniRef90_S3JUT2 | $F$ F PKGESFAKVAHRA |
| UniRef90_G8BPR3 | WR D G |
| UniRef90_I0Z2P5 | G $\square$ G G R Y P VK EVF A A A A A T WQ D $\square$ L V A |
| UniRef90_UPI0003B32BA3 | MRHRAESHAHVGARGWDALLRDWSHR |
| UniRef90_W7D1D9 | QKA G $\square$ S PKDFA NSVA A LD K N R VE E G S NWPAED Y A T $\square$ T A R L |
| UniRef90_UPI0003B2F3C2 | CPPHGES FMQAQRR |
| UniRef90_U7PWL8 | L N A G TF EGM T Y E E I A T K H P D E Y EK R Q H D K L Q Y $\$ Y P G Y LQV  \hline UniRef90_UPI000362B455 &   \hline UniRef90_UPI000344FB81 & VFP G GES MQGMQSRAVAA  \hline UniRef90_UPI0004781A37 & $L K H G A E P K A E V G K R G A Q A V D E W A H K \bigvee D S D T D \square F V F T H W \square N$ |
| UniRef90_X8AMW7 | PWRGEQGRGCRP Q |
| UniRef90_C1HB45 | L N A GKME GMTYEEDRK Q Y P E E Y A NRKREKLHYRYPGY LDV |
| UniRef90_UPI0003B437FA |  |
| UniRef90_A0A010TDY0 | T P P E GEPVTA F S A RVLA A VE R L |
| UniRef90_R5DY03 | T F P G GENPY GFRKR SVVEGFY K |
| UniRef90_E4WTE7 | Q ERVKE IVVEMELLN R F E HP SAET T E K F K A R |
| UniRef90_L7IQ51 | WR D G C E |
| UniRef90_UPI000363040C | Q G LT WA EA Q T R Y P D LCR K LEES SPD W |
| UniRef90_A0LHV7 |  |
| UniRef90_U5T741 | AVPD A ES F A E R A R R A D SVVS ELIT D H H D A Q TII IVVTHGGF |
| UniRef90_S0JNX7 | PGGEEPEEFRRRCREAFCRCVRTAQEHQWETVVFAVHGGT |
| UniRef90_UPI0003668B73 | P P D GESFDRVR |
| UniRef90_W9Y0T9 |  |
| UniRef90_U2JSA8 | EPQGDCFETAVNRFVRGPIPEGEL F F E Q M |
| UniRef90_K2C0J0 | K TH G $\square E S$ D K E V VE R L $\quad$ T F L R EV A $\square \mathrm{S}$ |
| UniRef90_H0J3L8 | Q $\mathrm{P}^{\text {P G E S S G QL R A R L D A WL D DLA A N A H }}$ |
| UniRef90-M2CE21 | $F$ P PQGETLVQTAHRA |
| UniRef90_R6TGG4 | T F P G GEDPEEFRK R C VR GFEKVIK E C R H |
| UniRef90_V6Q1Z0 | TEMGGETYSQLVARSYA E L E K L A K |
| UniRef90_UPI0003819BB2 | K P P G GES R IEVVLNRTLEAMHEATRRW |
| UniRef90-T2JBA3 | A P P D GER G $\$ D $\\|$ A R R |

## E VE E GESLA Q F T R R V

A P P GGESFAEVTARVEA ARDKLLAA
$T F P Q G E K F T S M Q K R A \square K S L D S V A Q E$
WRD GCE
RYPR GESYLDMDHRLDTMVHEMERHREPLL
SVFGGGEK■EDVLARIETVVCDAA
APTNGESFQHFAHRVRTFAEKLTHDPQP
GCPGGESPEDVVRRLDALIAEIRSKYHQPAFDQPNEHK
VF P G G E G L A QMQARAVEAVREHDAR
KPD G GE SLLE ELKHRVLGFMEKVAQS
LQAE GGESPEDVQ K R QLDPVIDL
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$M R H G A E D R M A V A S R G M Q A D A H W$
$T P P G G E P L V Q F E A R V L S A M T R L Q$

UniRef90 A5DWW9 UniRef90_UPI00046EE2CD UniRef90-M5ABK3 UniRef90_Q4WCV9 UniRef90 M3C174 UniRef90-UPI0003812563 UniRef90-K9WJV6 UniRef90 K8ETZ9 UniRef90-F3S548 UniRef90-Q3A802 UniRef90-E0XU83 UniRef90 G3XZP5 UniRef90_F8JRU6 UniRef90-W2S698 UniRef90-UPI000479E565 UniRef90- UPI0003758B7E UniRef90-U1MQZ3 UniRef90-T1MZZ6
UniRef90 UPIO0046A651E UniRef90_UPIO0046
UniRef90_R6MXD2 UniRef90 G7H1Z2 UniRef90 C0R143 UniRef90-UPI0003463395 UniRef90_Q6C8W1 UniRef90 UPI00046A1C4C UniRef90 ${ }^{-}$B2ABF2 UniRef90_C5DML4 UniRef90-A0BTB1 UniRef90-UPI0003B7B350 UniRef90-G9ZQH7 UniRef90_LOA1B9 UniRef90_UPI000369C5E8 UniRef90-A0A024U2L9 UniRef90-G3BD65 UniRef90-R4K8G1 UniRef90-C9ZPN2 UniRef90_C6PX16 UniRef90-K7M7K2 UniRef90 UPI0003B4BE78 UniRef90-IOHZE4 UniRef90-C8XEF9 UniRef90_R5EGU8 UniRef90 W6QUM7 UniRef90-R6XB76 UniRef90_C1DZ31 UniRef90 K6WR00 UniRef90-S3JUT2 UniRef90_G8BPR3 UniRef90-IOZ2P5 UniRef90 UPI0003B32BA3 UniRef90 W7D1D9 UniRef90_UPI0003B2F3C2 UniRef90-U7PWL8 UniRef90 UPIO00362B455 UniRef90-UPI000344FB81 UniRef90-UPI0004781A37 UniRef90 X8AMW7 UniRef90 C1HB45 UniRef90_UPI0003B437FA UniRef90-A0A010TDYO UniRef90_R5DY03 UniRef90-E4WTE7 UniRef90-L7IQ51 UniRef90_UPIO00363040C UniRef90-A0LHV7 UniRef90-U5T741 UniRef90-SOJNX7 UniRef90 UPI0003668B73 UniRef90-W9Y0T9 UniRef90-U2JSA8 UniRef90 K2C0J0 UniRef90-H0J3L8 UniRef90-M2CE21 UniRef90-R6TGG4 UniRef90-V6Q1Z0 UniRef90-T2JBA3 UniRef90-E6W2F2 UniRef90 S4AL78 UniRef90_UPI00036DFE77 UniRef90_Q759F3 UniRef90 FOY3G3 UniRef90-S1P0E2 UniRef90-M9W1S4 UniRef90_S8B237 UniRef90-UPIO003689150 UniRef90-G0QCE1 UniRef90-F8EAH6 UniRef90 H8WXY0 UniRef90-D1NTV3 UniRef90_A0A023WVL6 ERNILI AMHGRAMRVLLTTMMGQPLV VDAGLQRLLSRYADQDRILVVTHGTFIRSLVLRFGPQF EKFHNKYFEGSSGGKGDVLIVAHGHDLRAFAMRWTGKPDS YAGRTVLLVSHVTPIKSLVRLALGAPPE CVAHKGVLRALYALASGWNMI
 HAGQDMVVVSHGGADRGALAHALRIHAD
LAVLDETAAHRHDGADVAVVGHNGVNRAALLAHAQGRAALS INRLRAVIDEVERTTDHVLLVTHRSVARVLLAYFRGLKRD WNERIERDHGPDAVYLVCSHGDI DK SVAADADGLHDD


EHVDRAAADVPGDGAVHVLVVSHGGFПTS LLRQLVPE QCVTY LNK IAQQHDGERVIVVSHGAAIVELCRHTDP PG HAFQAGNMHGEKPA DVLLVAHGHLLRAFTKRWDKYPME HATGWNFAGPAPFAVKRN

## GRDVYVVSHGAA $\quad$ R LVAARLAEVDPH

ENVVIVAHQVVLRCCFVYDRYDTQA

VS RGDEE
MKALLNE I DQAN
K
$R \square R P \vee T E \square E R \square K$
GDV VAHAGVRVIRYFLNSEQ LYAYFHEH
RWF WARM $\square$ RRDW
TAKTYPNDK I VVTHGFT $\square K A A V L A A \square G H P Q N$
$H P G E E \prod A D V A H G G V N R V I L L D A \square G A P D T$ LPYFREY LLPQLASGKNVLVSTHGFVDRTLIVVLEGLDDEN KGD LLVVTHGGVIACALS LVFN QYD
$M N S \square K D \square C E E N S K D G G N V L V V A H G G V I R L I I D Y D D \quad K$
 HPNEVVAVFAHGDVIRTTLAHYLGTPLD $D G D V A L F C H G H I S R V L A M R W L G L P V Q$

HAGERLLLVTHGGVMRLLLARARGLPRQ E LIERSDE $\square G A Q D A G \square Q S V S A V V H G G T I M A L L S H F D G E Q Y F$ AAAKVYPHGARVAVVTHGGTLHVLKDRCDVDDPP VRSDDTAVRAEHGEGALWVAVSHGDVIKADLAAAGAHDD YSIIEDVKHKHTGDG NILFVCHGVLTAA【YTYFKPFSAE
$P G Q Q H L V V T H K S \square L R A L I C V S \square G L P A S$
QDGLDD $\square$ SKTESKKGDNVLLVSHG
DNRDRDMVREDERVSDHVLIISHRSVCRVLMAYFMDLTRE
 QVVHT $\square M G W S D F H K E F A D L V S M R N G F W T R M M L F D M P D G S E$

DNRLKAVIVEVERMTDSVLLVAHRSVARVLLAYFRGLKRE RDFLQEL ASKDYKKVAIVTHHCVIDCIVKILNNLSEE HQACAGERVLLISHGGVMRLLLARARGLPRE CMDFVHRMNCEDKK $\square E T V A F V V H G G T D M S V M S N A F G G D Y Y$ MQA WDEVI ENGSNGDRIF DFCHGGVMKALAN E LGKRKA
 ! Q Y L
I MS M E

AERVIDFVQN】LREGENNLIVGHNGPLGVLTAADLGFSDD $N P G K K\|L V V T H G G\| I R T S L V K F G F G N Y D$
 HHAESDTVLVVSHAVT $\square$ T T LLKKY $\square Q G Y \nabla V A$

QTAWEEV RRSAPAGNSLIMCHGGVIRVVVAHLLHCPDR Y A GRTVLLVTHVTPVKTLVRLALGAPPE RRSSNHLLVSHGDVIKAMIAHLLKMKLD
$\square V A H Q G \square L R L L Y A Y L M G L S R E$
MQNKGPLLFVGHGASLTAADQWLAGKS LS DHLLIVGHKGGLSLLIALLLKLPAE GDVLVVAHGHILRAFAMRWVGKPLY $\square$ T AEHGEHAVWALCSHGDVLKAVLADALGQHLD QHDDVLA A H G GPIKVLV P GVMGHTSK


UniRef90 A5DWW9 UniRef90 UPI00046EE2CD UniRef90-M5ABK3 UniRef90-Q4WCV9 UniRef90 M3C174 UniRef90-UPI0003812563 UniRef90-K9WJV6 UniRef90 K8ETZ9 UniRef90-F3S548 UniRef90-Q3A802 UniRef90-E0XU83 UniRef90 G3XZP5 UniRef90-F8JRU6 UniRef90-W2S698 UniRef90 UPI000479E565 UniRef90- UPI0003758B7E UniRef90-U1MQZ3 UniRef90-T1MZZ6 UniRef90 V5FSW2 UniRef90-UPI00046A651E UniRef90_R6MXD2 UniRef90_G7H1Z2 UniRef90 C0R143 UniRef90_UPI0003463395 UniRef90-Q6C8W1 UniRef90 UPI00046A1C4C UniRef90 B2ABF2 UniRef90-C5DML4 UniRef90_A0BTB1 UniRef90 UPI0003B7B350 UniRef90-G9ZQH7 UniRef90_LOA1B9 UniRef90 UPI000369C5E8 UniRef90-A0A024U2L9 UniRef90_G3BD65 UniRef90-R4K8G1 UniRef90_C9ZPN2 UniRef90-C6PX16 UniRef90-K7M7K2 UniRef90 UPI0003B4BE78 UniRef90- 10 HZE 4 UniRef90_C8XEF9 UniRef90-R5EGU8 UniRef90 W6QUM7 UniRef90_R6XB76 UniRef90_C1DZ31 UniRef90 K6WR00 UniRef90-S3JUT2 UniRef90_G8BPR3 UniRef90_IOZ2P5 UniRef90 UPI0003B32BA3 UniRef90 ${ }^{-}$W7D1D9 UniRef90_UPI0003B2F3C2 UniRef90_U7PWL8 UniRef90 UPIO00362B455 UniRef90-UPI000344FB81 UniRef90-UPI0004781A37 UniRef90 X8AMW7 UniRef90 C1HB45 UniRef90_UPI0003B437FA UniRef90_A0A010TDY0 UniRef90 R5DY03 UniRef90-E4WTE7 UniRef90-L7IQ51 UniRef90 UPIO00363040C UniRef90-A0LHV7 UniRef90-U5T741 UniRef90_SOJNX7 UniRef90 UPI0003668B73 UniRef90-W9Y0T9 UniRef90-U2JSA8 UniRef90 K2C0J0 UniRef90-H0J3L8 UniRef90-M2CE21 UniRef90-R6TGG4 UniRef90 V6Q1Z0 UniRef90-UPI0003819BB2 UniRef90-T2JBA3 UniRef90-E6W2F2 UniRef90 S4AL78 UniRef90_UPI00036DFE77 UniRef90_Q759F3 UniRef90 FOY3G3 UniRef90-S1P0E2 UniRef90-M9W1S4 UniRef90_S8B237 UniRef90-UPI0003689150 UniRef90-G0QCE1 UniRef90-F8EAH6 UniRef90 H8WXY0 UniRef90_D1NTV3
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SDPQ $\square M L D A G G V G V L S Y Q H H N L E E P A \square Y \square^{230}$

## EMDGYPHSNLCLYKLNYSYDTNSFEIEVAND【THL

DVLSSFPANGGVTTLQL
E TT LILLEAGGVGTLSYEHDNDHEPA!ILG
S LIF KMELSAASLSAVAYYADGNTS LLRLNDTSHLR

YFRRILQQNCGII TKVEL
TADH FSDQN LSSLSI ERLPE GWRUV

EVAS LDDV LLGMLYMLEPKPYGVEFKAYRYNDTD
LFARLSVEPCSVTAI RYTPLRPFLLR LGDTGE
DIS DLDVVPGVAYLLEPRPYGVDFKAYRWNPE
KIF QMPQKYGCFNTIAENCGKLQVK
$\square T P D V I L P N C S M T T V S L P A G T T V W Q L D R \square G E V A P V E$
SSVHRNFPNTS LVNFHVSGVTRQWALARFGDVGHL
FPLSLMMEPGAIGILSYEHH
FAVSNHDPNTGVVELSYAADG
MVIERKDENCDPYVL
EPFA LS PQNTSFTVFD $\square$ DRNTFQGT LQVFAD $\square$ AH $\square D G V E K$
N $\square \mathrm{FT}$ T K QP Y VSVYKL
DGPTFLLEAGGVGTLSYEHH
$\square 1$ A N LDVP LDHCVYCLE P K P Y GVT WS LY

QMFHLEQSYGCYNTIDFFADGYTTV
EYCRLLAPTGVPLMYAFEHGDCAGGRLVPVVDENRRARAK VNPQFMLDAGGVGVLSYQHH
YFYKFKVMHGTASVIS SEDGYMY $\square K A \square N C \square D$
SFALRADDNSSDSEVVYENGTFKVES VNDTSYSEKG

IKSHF
LF QR VVQTAS DSLAFHDGAPMDLAMNWTST
HGGLI QMNPAAVTVLGTYHDEPCLLDHAND
$D L L Q V N V G Y A Q R F R \square R \square D A D G Q$
 AFQRFVAGPASLSVVRYSPGRTFVER VNDT
E LL L L E $\square K N C Q L L E F D L$
SFRAFDVNNGG $\square$ CTFRVNTKGEAM $\square$ AN $\square$ NQTAH $\square H$
$D \square A D \square D V P G G M \square F A \prod H P K P Y G \square E F H A Y R Y N E P Q$ WLKRSPENLSVSKLVCDETSKSFE FVNDTTMDQE $\square G Q R \backslash A V G P A S V S I V R Y G E H R P E V V$
$R Y R L I D Y G H G P A I A Y T Y D W D N P E L$

Q LAD DDVP $\quad$ GGVLYMLEPKPYGVEFKAYRYN
ETLSFKVNNCEPISVQLGVD
QLLNVEVGHGALFSLCVEAD
DYSCI NGSGY ILLECKFDENNLLHY
SHDF $\backslash Q \square P N C C D D Y Y K \square N E E X R S V R \square E Y \square N E H D H \square P E K$
RSWRLRAHNTALLEFWDD
DLFA I E QDYGCVNVIR QDGFAFELVS LNEKPHLEEE

EAHRFSYRQGCFS L!E $\square$ SHGYPK $\square$ RFFN
$N L R P G A V K N G A F V K L Q T D G V D F F I K$
E LEK $\square E \square K N C Q L L Q F E L$
DFRRDGVDNTS $\square$ S $\square$ VETCDKGKT WK VLK $\square \mathrm{N}$
ALSHMRVDHCSLTIIEEYED
SLLFRMELSAA SLSAVAYYGDGNASVRD LNDTAHDR

EAPYVSПP L NTVIRDQ
E LDREMGLVNNSLSILSTKENLTPFELTKWNDASF $\square G$

E
AFQRLVVDPASVSVVRYTETRPFVLR LND
RSYQVRTDNCSVNELA HNGRYWEIELLNDTSHTG
LMDAFLHTNLGLYLLQYDYTTKSFSLKKEND $\square A H L$
D I V Q L DVP L H S L Y KL E T N P Y G T K Y AL Y

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UniRet90-S8AG22
UniRef90_H1V112
UniRef90K6V2P6 UniRef90-17IVI7
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UniRef90-l1XUH9
UniRef90-U5EIH1
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UniRef90-O9ZAXO
UniRef90_DOA6A UniRef90-U3H4C7 UniRef90 WGMKAO UniRef90-E8MYIO UniRef90-TON5V4 UniRef90-UPI000475A02B UniRef90 L8H1J5 UniRef90 W9DGV6 UniReffo-K5CBR3 UniRef90-Q1IDJ6
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UniRef90 W71487 UniRef90 UPIOOO262A01B UniRef90-UP1000465E67F UniRef90-G7Z9P1 UniRef90-E3BDL9 UniRef90-Docpp9 UniRef90-A4YEU6 UniRef90-V8C410
UniRef90_UPIO00469CE8E UniRef90-A5DE31 UniRef90-F4XBW3 UniRef90-H6BWH5 UniRef90 UPIOOO347F6EB UniRef90_UPIO00479A512 UniRef90_M3TW36 UniRef90_UPIO00400CDAC
UniRef90_UPIO0034575E9 UniRef90-AOLOD6 UniRef90_UPI000476F4D8 UniRef90_OO40S3 UniRef90-N8S808 UniRef90-c9YwI3 UniRef90-F5Y5K2 UniRef90-G8RWW3 UniRef90-KOEKP5 UniRef90-XOT684 UniRef90-S3NC30 UniRef90_UPIO00347BB56 UniRef90 W5TGN1 UniRef90_B8GAK6
UniRef90_R5BH33 UniRef90-C0ZZX4 UniRef90-UPI0003779ED2 UniRef90-1012K1 UniRef90 -L7LAY2 UniRef90-F1YGA6 UniRef90-UPGOOO3F53D3E
UniRef90-LIL23

1 KR\|TLVIRHGQSEGNVNRT ${ }^{20}$ YQSTPDSQ| ${ }^{30}$ ADTEVGWAQGV ${ }^{40}$ VTNLLLIRHGATPPNEQRILQGCDNPSLSESGQKQAAALI

YRTSTLRHGMTEANEKGTYTGRTDDPLSNKGAADLAAK MT IIFIRHGQSTSNVSKILSHDDNTPLTEEGVTQAKDA RTLIRHGETDGNLNRRWQGDTDAGLNDRGRKQVLEVV MARLYLVRHGETTSNVMRRLASLTDFGVRQAVRYGLENQ RTL WVVRHGQSAGNVARDHARDADVPLSSLGERQSQA MTTYLLRHGLTAYNAEKRYQGQRDIPLCPAGRAQ ATRI GLLRHGETTG QGFCGRGSDVPLTEAGWHAMRET
 ASRQIWITRHGESMDNVQGRIGG NSHLSEKGDKYARAL APRQVVLVRHGRSTANTSGVLAGRTPIVSLDEKGREQAAAL KI YLVRHGESQSNYDKKFCGQDDVPGTERGTWSAQLL KLLIIRHGESEADVLKVCEGWADFSLTPRGHKQAEAM
 KLILVRHGLSQANVARTVSGKSNLELSQKGIKITTMKA TFYLIRHGRTGWNEQGLLQGFGNSALTESGVKGAQLT TPAKLVLVRHGETEGNDAKILDTQVPLPLTERGVAQAKAF TTTVDLLRHGEC GDGHCYRGSTDVALSALGYQQMLSS MKTYVVSHTE Q! WI TRNGESEDNVRGRI GG NSHLTPRGEKYARAL KLLLTRHGQTPGNVAGQLTAFPGPGLTPGGERQAAAL RVVLIRHGAVDLTTPGMFYGGHDVPLSDYGKLEAQAA RLLLVRHGESAANVDRTLYSRVPIPLTERGRVQAFEC
GVT RFWLIRHADVEQNARRHLYGAMDVPLCPDSLVAQRPM KLYLVRHGQTASNVAKKLTALPGPPLTEDGHEQARQL RLLLVRHGESEANVDRALYSKVPDPLTARGREQAFEC I DLLRHGETELGAG FRGSLDDALTETGWAQMRGA

T MKILLLIRHGETNFVVQGRLPGRDPVVLTEKGDQQARAL TGKIYILRHGQTDCNVKRCLSGGTDLESPAGRAQGLAL TVTLILLRHGMTD VTGRLAGRAEVHLNDTGHTQAARL IFLTRHGQSMDNTEDKIGG DSKLTPSGERYAQALL
 VDLRHGETV LGGGLRGSLDDALTPGWAQMRQA TRITLLRHGDT SNGRSYRGODDDPTPGWQQARAD MKNIFVVTHTQSVHHVENKVGGWYDTELTPKGKADAQAT TVILLRHGRSTANTADTLAGRTPVGLDDTGHAQAQDL MT
 Th HIRHEA A 나 VD MGSI YLIRHGQASLGAEN CRGDV Y
A MATALLVRHGRTANTAGLLAGRAPVHL MKERFVVTHTEATHHLENKVGGWHDSDL
 MTRL HLVRHGPT $\quad$ HAKTMVGWSDIPA ELI WI RHLQTPGNEKRQYIGSTDEPL
AERQ YLLRHGEC EFVLTRH

ElyuvRHTET EWSQNGRYTGITDIPL

## M A

 VTLLRHGLTDANVKKOYIGWSDPPL RLLLLRHGECEGGA RLRGRVDVPLSDKGWRQMSAA

EGGABD
D LLLVRHGIISEHNTSDVISGGTSNP
MRTVYVVRHGQSTANVEAERTGSTDDPLSGPGRAQAEAT MTRLLLLRHA AHDLAGRLAGRLPLGLNALGRQQAQAL TVILVRHGRSTSNTAHTLAGRSDVDLDDKGEQAQGL KLVLVRHGETEGNVAKLLTKVPGLPLTERGAAQAKTF MCRL LEPQGLTKWEREGRLRGRLDVPLSPEGVAVVTES
$\qquad$ GSVLAGRSPGIDL
VTTLLLIRHGMNDW VAGRLAGWLPVHASEEGRRQAVALL TVVLLRHGRSTSNTAHTLAGRTPVELDDHGRKQAEGV TATFTFLRHGQVDGRAA LYGQTNIEL LLLLRHGQSYVNLPNWSGTNWDQPLTELGHRQAAAL MARLVVRHETTANIRQ QLDTALHLTDFGASQGU TITLVRHAESEGNASGLLDTKTPGPLTELGRTQAQQN AMKRI LVRHGESEGNTQEDLYTQDPIALN

## UniRef90_R1DK18 UniRef90-A6C4H5 UniRef90-UPI0002E43F84 UniRef90-M1UYW9 <br> UniRef90_UPIO0046798FD <br> UniRef90_C3MJC9 UniRef90 <br> UniRef90-TOZ8K8 <br> UniRef90_A0A022MOY5 <br> UniRef90_F8L9A3

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UniRef90 Q9ZAX0
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UniRef90_D0A6A6
UniRef90_UЗH4C7
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UniRef90-TON5V4
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S S EPRLLREQD ${ }^{90}$
100
NFQDDAQMSRVLA ${ }^{110} R Q \operatorname{V}$ F GRFYY AE HECDVGDWEGKSWDDIMQEFPEAYDAFIHDPYQN QCSEALQERNWGQWSGESWSQIHER VKTWRLNERHYGGLTGLNKAETAAKYGDEQVADWRRSFDIL VPVDDLRELNFGDFENKS DDELAKR EDYTKWLRGGKDN $\square V D Q R L R E R S D G E L D N T T F D P N D H W K L K D F K K Q M$ FT A L R DRSMGAAENLTSEEVEQKYGFYFTNDLSEDVD DVVAGVHEVQAGELEDRTDDDAHGTFRESLDRWYSGDPDAA
 VEVKDLQEMCFGSFEGRNF DEME HDPDY $\square$ A WVNANCES AVDERLAELDFGDWEGRTAAALMETQANALGRFWEDPLNH
 ELEEKNFCVWTSMLKRSVQTAMEFDNDEDYDVKNWAMLNE VVVDDLA EVDYGSWTNRPLKELLAE PDLWKVVQQQPSAA SVTP LLRERS LGVF EGKGVEAVEQNSSYTRYFED DKTDKLKEFNNGLRAGLPYDEAYKKYPK
QFSADLTECDYGSWQGSKLDDLSVQ A SEEPRIREQDFG WR NFQEPMKIRECKAQRRRFGSFFY LT DDRLMEMNFGSWEGADENYLRTTYPDDFDFELMGGTNY ( $H V L D G L Y E V Q V G E L H G R S D R E A H E F F Q K D Y R G W H H G E L D T$
$Q L E S G F Q E L H F G D W E G Q L D D H V W E T Q Q V A V E R W F A D S V N C$
$V$
 T T S SA $\square$ R MLD
 K QDDRFREVNRGRWLGLTKEQVREKFPGDLEKFQEDPLWC ERDERDREQEDGNFQPLDKMDEMWAERNEFGRSYYR R DEPGFTEQSMGEWHGTTHDRLPEKLAVPAHPFWSVGATE
 ERDERLREQEIGNFQPLDKMDEMWAERSEFGRSYYRFPDG RFDADLREDHFGAWEGRTAA QLMATDETGLGLFWNDPYSF YEEPRMREQDFG LTAEGLNEVDPGGWAGRTDKSLRRLLKAWKALREDPGRF EEAA GLEELGVGLWEGRTFQEI RTVFPELYQKRGENPERY


 QREADVRE LHFGDWEGRSAAQI MQAEADALGLEWSDPYAF
 RRDPRLREYHFGRWQGVPIAEI DRDEGPALGRFWADPVAH ETTDGLREDSYGSAGGLPQEWLDARQDPAPHHDRMD
EVEEDLVEVDYGTWTGRPLKDLTAEHMWSVVQQHPSSA

$E 11$ H I WP ELLREHDAACNKGRPRAEMQRAYPHLDFSLCAAEVWS Y RLEPRLLREYDF GDWDGFTAA Q I HA QS PDLL G H F W S D P WH S

 EKP F CVVWTSMLVNSVVEARYFNDEEYDUKQWRMLDELLNAG VDP DLTECDYGQWQGRTLSDLATE D DLDWSLVQSAPSAV QETS A L R E I NYGVAGGKPQEWLDARYTPAPPDDNRLDBDC


 V I D E R L R E R W L | $E$ | $L$ | $N$ | $N$ | $K$ | $R$ | $F$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $N$ | $D$ |  |  |  |  |  |
| $Y$ | $D$ | $H$ |  |  |  |  |  |




 LIEPA WRE IDDF GA WE GQTAE QDS S RWP DALAAEFYKDP V N F EADD GVVEVVQAGDLEDRSDREAHDTFHQVMERWHAGDLDV EVCPGFRELHFGKWEGKTYEELKSDPEYCHWLDCKQEPAP $N L L E E L Q E \square A F G D W W$ G C L L L D D I T D DRLKEMDFGSWE GQHAEGL KVKYPDAF
 LV DERRLRDREAG $\square F E$ L H P P GAQRARSPEEADRRALVGDWY VLDRRLREKSYGEAE GKPQSWLRERFDPPPATSDRLHHDE AV APEFDE DD F GE WT GQEF GQVVRDRHPGLWDGWVHRRS QA
 $R Q F D G L A E M S L G G L W Q G L L D E E V K Q R H P R V Y R Q W Q E N P Q R V$
 EPDERLLDVD Y GDWTGRALSELVKEPLWKTVQGHAS GA






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RYEGGESYGDVLNRTEPAlQSLLDRHL
KPMPLEERFTFAPPGGESWQQMEQRLTGCVEAWRGLS
PPPPMEADHAYYDTDDPRYAEGPPDQFPKFESLKGTIERT
RPPNGESDEEMTARCYKALHA ПIMDMMESGLTHCAMITH
E $\square \mathrm{K}$ GLESWEDMTKRM
ALPGAET TAHLVSRVDNTRKYLAERYQGKKILAVSHGGFL
PIPGGESLTMVLERYLPVVTDLAQRYL
FRPPGGESWCDVILRLRGVVGDLQR
EKVISRIGVRADEAWNQHAKVPEGWNAHPDA I IVN
PCPDGETKAVFSERVCRAFAALVDRALADGE
APPNGESLRAFRERVVAGWNDLAPNE
PYPGGENAADVIRRAVPVMDEIAKSGA
KQWRMLDELNAGLAEGKTYDEURRDLPGEYENRDESYLDV
LNA GLF E GLTYEELARRFPGEYRKRADDKLHYTYPGYLQV
$V F P D G E G L A A V Q A R A V A A V R D G D R R H G G D D G S G V W V$
$Q N Y L E F R H F T Q K A$

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

TFPDGESMAGMQARAVAETRRLDAFE
RFPSGESPADVYDRVSSFLESLYR
$\square K D A T G A$ KAQSNNGETFEQLIAERS
RAPGGESGHEVLERIVPVLDGLREEFL
PPPNGERADDFFLRVQQALI G
CDGAGAESFHALVARARLVLQRDEERPEET VVLFSHGQFD
$N G A E T K R E F V G R I Y Q Y L N G I E G A E N T V I S T H S F A A T Y V I A$
RYPG $\square G G E S Y M D V T N$
RMPGAFAGHDFFARFDASVEQVAAAGHQTAVIVSHGAA $\square R$ EHGG ETYRQLSERVWSGLNDM
FPNGESSVDVGDRVSKFFDSLRERVELSSLSAQNDMRGS QPPGGESMVQVCARVGAALDRMSRE
PMPGGETGEQARARFTGAIAGLAERH
ESSVDVGDRVSKFFDSLDRERVELNYLSARKQMDTGSSND
TPPGGETLLDFEARVHAAAARLQEGAADVFDRCAGFNETL
AFPGGESFPEAQVRIVAQIEELRRR
Q IPGGEPLQKCLDRVSRALRTLLERTA
FIPGVESSSTFHKRIEKCM
$R F P G G E A D A A A S A R A V E A V R D W N N R L L S F A D A T P P D A T A V V$ RYPQGES
$R \square P G G E S \square A M V Y D R Y \square P T V D D \square A R S Y \square T G T E P$
KTPGGEAFTDLDFRMDSFI SDWKEGGNLRDHWEKT
TPPGGEPVLAFAERVQAAVARDA

PPPQAEPFADFCARMAAALDD

A $\square \mathrm{PGGEDAHQFLDR}$
$R$ PQGAEPLKTFTSRVTQAWWQVMEKYAGQHVLLVSHAGTM EPHSFQAAVQRAESVRRRFLALP
APPNAEPMADFFAR
NAGQYRKEFQR\FSQVITLWDTEQNEVSGCEPWAAFVERV KFEGMTYDEDRRKHPKEFESRLRNKLYRYPGVGGESYLDV

GlEGAETRRDVANRVFPFVDEVVGR HR
VTFPPSPQFEH
PGGESWCDVILRL RPPNGESWNAVRARDDASMLDMQRRAVDAVRAL RPPNGESWNAVRARVDAA DDGLIGKYT
WK LK I I R GQLEVKNLEPWDS LKRRM PFPGGEEQSVFRRRSVE
TPPGGESLPAFRRRVLDGWQTMVQRWL
ELGGGKFEGLTYDELQKKYPKEFQARLRNKLTYRYSYLDV TFPHGESMEHF $\square A R C R R G \square Q T V A Q E$

TPPNAESYQTFAARVRQGWENLLVG
$R \square P G G E S \square E M V Y E R Y D P T \square E D L A A Q Y \square T G T R R R E V F L V S H$ PGGESFADFQKRVLEAWKEQ\|I RRFDCDGDHHLVLITHGG RFPGGESDAAASARAVEAVRDWNTRLLQAPADPDADPAPP TPPNGEAMANFEARIDGAIAQQLDKEFALLAMDDEQAHGE $\square A P G A E P W T T Y Q R R T G H D L A D L V R R Y P$

DDLGTDNSKYTKYAKDGETFEQVADRVEDFLAED

G $\square P$ GAETMHTFGARVYAATNSI
TPPGGEPFARVAERVQAGVQRLARE
$V F P D G E G \square A A V Q A R A V G A V R E H D R R \square A E E H E G D V L W \square A$
RIPGGESGNDILDARFPVI ED L RERYL
SPPEGETGAQASERARAALEKICGRHQQDT

VFPGGEGLAQVQYRAVAAVRDVDARLAARHERDVLWVA
RFPKGETLGEAQMRMVSALDQLRAR
MHPTVESFGQF $\square K R V K A A H L L L N E R F$
$V F P G G E G \square A Q V Q A R A V A A \square R E H$
$W Q D L I$
$W D$
TPPGGESLKGFADRVDSAWQDLIKD VMKE

PRSESLMHFRARV
RLPGGESLEMLRDRYLPVINDLADRHL
$R \| P G A E D G H E F K K R F N D S L A A V V R T G V Q N P V I F S H G G T \square M$
HRPPGGESWC

UniRef90 R1DK18 UniRef90-A6C4H5 UniRef90_UPI0002E43F84 UniRef90-M1UYW9 UniRef90 UPI00046798FD UniRef90-C3MJC9 UniRef90-T0Z8K8 UniRef90_H5TR18 UniRef90 A0A022MOY5 UniRef90-F8L9A3 UniRef90-C7H9A1 UniRef90 UPI0003708C42 UniRef90_D7GWW1 UniRef90-S8AG22 UniRef90 H1VI12 UniRef90_K6V2P6 UniRef90_-Q49UT4 UniRef90_17IVI7
UniRet90 UPI0003B765D4 UniRef90-H3G7V8 UniRef90-17LAH8 UniRef90-I1XUH9 UniRef90 U5EIH1 UniRef90-F3LHP9 UniRef90_C9KL08 UniRef90 UPI00037955A0 UniRef90 C5DUY8 UniRef90_UPI00037E17FF UniRef90_L1J8M1 UniRef90-G0UZQ6 UniRef90-D5QAV8 UniRef90-Q9ZAX0 UniRef90-D0A6A6 UniRef90- U3H4C7 UniRef90_W6MKA0 UniRef90_E8MYIO UniRef90_R9LUH8 UniRef90-TON5V4 UniRef90_UPI000475A02B UniRef90 L8H1J5 UniRef90-W9DGV6 UniRef90-K5CBR3 UniRef90-Q1IDJ6 UniRef90 Q5YVL3 UniRef90_UPI0003A107ED UniRef90-FOL9B5 UniRef90 E6J8G6 UniRef90-UPI00036DCA31 UniRef90-I3BQA0 UniRef90_UPI000441153D UniRef90 UPI00025584A6 UniRef90_UPI00039D5AEB UniRef90_C4YAA2 UniRef90 W71487 UniRef90 UPI000262A01B UniRef90-UPI000465E67F UniRef90_G7Z9P1 UniRef90 E3BDL9 UniRef90-D0CPP9 UniRef90_A4YEU6 UniRef90_V8C410 UniRef90 UPI000469CE8E UniRef90-A5DE31 UniRef90-F4XBW3 UniRef90-H6BWH5 UniRef90-UPI000347F6EB UniRef90-UPI000479A512 UniRef90_M3TW36 UniRef90 UPI000400CDAC UniRef90_UPI00034575E9 UniRef90-A0L0D6
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GET VVVVAHNVVNRVYLARVLGLEIS
$\square P$ F WNET $\square \mathrm{V} P Q \square K A G$
 RMFYREFVDDPHH S GPDARDVYLVSHGAA $\quad$ RLVAAHLAGDDGK NHAGARVMIVAHQVIVNCMRYLLEGMDEH WKVFAKEMREKYPTGTDLVTTSNGULRFSPHDTGDFAAFA ETLVILAHGGTQMAAMERYA LPHA

THRLKE II IEEVERTTDHVLIVAHRVVARVLLGYYTGQPRD I A RLLRDMVREIERDEDHVLI I GHRSVCRVLMAYFMDLTRN KQFFENEDDDSD DS DAVVAHQVVIVACCFADAMGMHLD
 AELGSSAVWVAVSHGDIIKSVVADALGMHLD MNFMDDLKKQA GDKTVMLVCHGFTI RCLI A GIFGGL $M K A \square Q D V \frac{Q V H D Q G N I M V I S H G H T L R L L L S L F N G I T W Q}{I}$ TGDADGDVVVVNHGAAMRLVAMTLAGVAPP N LS T T DNE HLLVVIHGGVIRAIMANCLSMS VV SCLLD $\square$ ARHSYATDDERM
WW
$R \square R P V I A E \square E R \square E D N V L I \quad$ I $\quad$ HRVVAR $\square L L G Y F \square N L N K D$ CWA

VKDAEVNGWKNTALVSHMWVTKSITTKVMGDQPD SGGGARPLLMRDFDDHNVVIISHGLLIRLFI GRWYSAPME YAGQDMVVVSHGGALRGALAHALHVHAH
VGPASFTVPDD DDHNVVIISHGLLIRLFVGRWYSAPME F FAGQRLLVVSHGGVIRLLLARARGLPRA FRQFNTEKFPNV

DNULNNSKDNEKILLVTHGGVMWSII HQKLNLVPK
 RDV有 $V$ A
 RQHAGRRVLLVTHGGVMRLLLAQARGRPRE LVAAHPGQHVLVVTHGGAIRALRCMVERRHFG TQIIVTHGFALTFVIAA WDKMPDD DRRDAEQAGRDVL WVACSHGDVIKAVLADAYGMHLD YQGGVAEA LRGEDSSAVVVSHGAAIRMFAVRAAGDDPK RA ILNHVLDAP $\square T S Q Q R F$

KGGLARVL EDAARGQNDADFTSGGADTAALQLITQMPAT MVRLRPLINEDERTTDHLLIVSHRVVLRVLLAKFLNLGKS IHRLKKEII DEVERTTDHVLIVAHRVVARVLLGYYTGQPRD VRRHDAAIEAEHGADAVWAAVSHGDVIKSILADADGMHLD $P C Q T Q \| I V T H G F T L S M V V A A W M R \square P I D D$
$G G Q R V L I V G H V V V C L R Y L L E T M R E D$ $R S A L D T \square S D H H G G Q R V L I V G H Q V V V L C L R Y L L E T M R E D$ ARELDERSNDEQGGSGVGVVVSHGDVI KSVLSDALGQHLD VEFVTSLKNEVV GADLVIVAHFGVILTQVQRALDDDAQ

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

QAGRRVLVVTHAGVDRADFAEAFNDPDT GAA $\backslash R L \square A A R \square A G \square D S R F A A A T H G N T G S \square E L E Y V D G V W A C$ P $\$ RLLLSYFAPEEKPMWEWPVSHG

Q P N S N D
KT $\square \mathrm{MVVCHGFVIRSLIARWFK} \mathrm{\square K} \mathrm{\square E}$
$G G R R V L L V A H D A D A V A V R L V C A G L G A A$ $\square$ HHDSAYQ1 IVTHGGAITFI LAAAWANLPDD HPDEVVLVASHADVI KATLATHLGLSLD CTHGDVIKAVVADALGTHLD
$R Y L V C A H G D V I K A V A A D A L G M H D D$
CTHGDVIKSLLADAFGIHLD
HHGEM $\square$ AVVSHADLI RLALAYY $\square$ GMH $I$ D

DARDAEEHGKDVV W $\square$ ACTHGDVDKSVLADAFAMHDD
GVF $\square E E L V E K H R G Q Y V L V V C H G G V!E F A F D H \prod F N T G P W$ LSADPRDVYVVSHGAAIRLVAAHLAGVESD T WS $\square$ MT ATNAAEYAGK

UniRef90 R1DK18 UniRef90－A6C4H5 UniRef90－UPI0002E43F84 UniRef90 M1UYW9 UniRef90 UPI00046798FL UniRef90－C3MJC9 UniRef90－T0Z8K8 UniRef90 H5TR18 UniRef90 A0A022MOY5 UniRef90－F8L9A UniRef90－C7H9A1 niRet90 UPI0003708C42 UniRef90－D7GWW1 UniRef90－s8AG22 UniRef90 H1VI12 UniRef90－K6V2P6 UniRef90－O49UT4 UniRef90＿17IVI7 UniRef90 UPI0003B765D4 UniRef90－H3G7V8 UniRef90－17LAH8 UniRef90 11 XUH9 UniRef90 U5EIH1 UniRef90－F3LHPO UniRef90＿C9KL08 UniRet90 UPI00037955AO UniRef90－C5DUY8 UniRef90－UPIO0037E17FF UniRef90 LiJ8M UniRef90 GOUZQ6 UniRef90－D5QAV8 UniRef90＿Q9ZAX0 UniRef90 DOA6A6 UniRef90－U3H4C7 UniRef90＿W6MKAO UniRef90＿E8MYIO UniRef90 R9LUH8 UniRef90－TON5V4 UniRef90－UPIO00475A02B UniRef90 L8H1J5 UniRef90 ${ }^{-}$W9DGV6 UniRef90－K5CBR3 UniRe990－Q1IDJ6 UniRef90 Q5YVL3 UniRef90 UPIO003A107ED UniRef90－FOL9BE UniRef90 E6J8G6 UniRef90＇UPIOO036DCA3 UniRef90－। I3BQAO UniRef90 UPIO00441153D UniRef90 UP100025584A6 UniRef90－UPI00039D5AEB UniRef90－C4YAA2 UniRef90 W71487 UniRef90－UPIO00262A01B UniRef90＿UPIO00465E67F
UniRef90＿G7Z9P1
UniRef90 E3BDL9 UniRef90－DoCPP9 UniRef90－A4YEU6 UniRef90 V8C410 UniRef90 UPIO00469CE8E UniRef90－A5DE31 UniRef90－F4XBW3 UniRef90 H6BWH5 UniRef90－UPIO00347F6EB UniRef90－UPIO00479A512 UniRef90＿M3TW36 UniRef90 UPIO00400CDAC UniRef90－UPIO0034575E9 UniRef90－AOLOD6 UniRef90 UPI000476F4D8 UniRef90 Q040S3 UniRef90－N8S808 UniRef90－C9YWI3 UniRef90 KofBz9 UniRef90－F5Y5K2 UniRef90－G8RWW UniRef90＿K0EKP： UniRef90－хот684 UniRef90－S3NC30 UniRef90＿UPI000347BB56 UniRef90 W5TGN1 UniRef90－B8GAK6 UniRef90－R5BH33 UniRef90 COZZX4 UniRef90 UPI0003779ED2 UniRef90－1012K1 UniRef90－L7LAY2 UniRef90 F1YGA6 UniRef90－UPIO003F53D3E UniRef90＿L1 L23

EFEOWNPSNCEI WALERDEGRPTYE
KAKDLAQTNTGI NLIRYQQGETKV
TSFRYDLENASVSVFGVEAEG FEVAGDNDVGHDRR
SGWGVR $\square$ PNAS $\square T \square R C E N N \square D S K V L S G G P$
FAAATHTANTGSTEDEYTDGLWVPQRW
A LDDDVPNCGVTEYYAAEGGQLLVHANFTSPELAEAPTT
QKYP\KVSTGALCTFKYLHDRWTITEWNL
DYYHWCAPNAGGYVLDAGDWAEQRVLHLLKTVQYTKEDA
ELLSIIDVPLASLHIV
YVPLLHLENCGITEFYYRESDGEMLLNRFNDFAHL
KVANLDVPLGMVFSLEPRPYGVELKAF
EIADLDVPLGMLYSI
AFQRIVVEPASISVIRY
TVIDRKIENCVPYEL
SK】KFGSGDACIHEWT DEGDNY ITDR
$\square F Q R V N V G P A S A S I T H Y G S G S P S V H S V N T G D \square S W \square A P G \square K$ EFEMLNFHNGELVVLEFNE
DILSVGVPNSSFTEIALDENNNFMPR
EHRNEGLLNTSTNDVRYNADNGKFTLEVINEAGHL
FTTNNHLDNTETIELVPTENG
DMNRFEVPYACFSRIQVTYDKNSREYFY

## IIT NVDVPLHCVYC口EMKPYG

DWAEMNDPTASVSLLDFNKRDNVEVLAGG पKPPMD VFETMNPPNCGIVVLERHDEGRLV
TADHFSVQNLSLSVIEHLREGWRVV
VFETMNPPNCGUVVLERREAGRLV
QLIMQVEVPHATLHRIVL
EFESLNVPHCAFLIMEKQPNDKDTKDRRWGD
ALHRLAAAPASLSVVVFGEDGEV
NFLTIPQPYGCVNLIVRAEADFSVR
PRTFLNCA
पFQRVRVDPCSVISTTYTRTRPFGNK LNDTGE
ECPHLDVPGHTLDETPRAYGCEEKRYAL
FAAATHLGNTGSIELEYADGDWVCHRW
EAFKSPVDFGSVHKLEFD
QLLQVEVGHGALKRLVCEGD
GFQRIVVEPASLSVVRYTPHAPYV WRपNDTGSDLSADE SMTELAVPHASLHPLAW
SVGYVSFPSGSITHLRQDDYWQNRGVIDALADVSHDK
QFQRIVVEPASMSVVRYTPHRPFVLR VNDT
FAVRNPLPNCRFVVLNPTDTFGQWELVRWGD

SAFELNTVNTSVSRLQYGKN KLSLASFNNQAHL
A VDLDVPLHTLYCLESKPYGTEYAMY
KVANLDVPLGMVFSLEPRPYGVELKAF LFQRLSVGPASVSIVRYGAGRPSV
AFVAFPVKPGSITQLRQDDFFQNRAVIS $\square G D V A H$
E ILA DDVANCSVTEYRFDAKAGPLCLHRYNVVAPLEEAGA
DFQRIVLAPASMSVIRFVGDRPFV
QTFA HR DNDSVTDLAFDGKTWSVGR】N
SAHGDSIPNASMTVIEFSSSPKILS
NFYDWQVGNGSGYRVIIDEKEWKTGNKK LRKIVEK

DRLEMMDEPGGVCGLSYAHE
QSFH $\square \mathrm{D} \square \mathrm{PHAC} \mathrm{\square TRFTSFDDGK}$
HRW
LF QRLRVDPCSVTSTTYTRTRPFLN TLNDTGE FYSQLALPVAAVVTINVLEDEQGKRYWRL
DVMTVR NVSFTE鸟HEKD
SPGALPVPNASVS QWESDGGRपRPTRWGETAHLGPG AYARFQATPGSITELHEDPYFHNRQDRTLGSTTHLPR RLEGFEDACGSLSVLEVGAQGSQVK
$S F Q R \square T A D P A S M S V I G Y T A D R P F V I H$
$\square F Q R T Q V D P C S V T A V R Y T P A R P F L L R \quad \square N D V G A T A D G L A$ GFQRIVVEPASISVVRYTPLGPSVL WRVNDT LFQRLVIJPCSLSAVAFEPMGPRLLAYNTGSLEHDRPK
SFQRIVAEPASVSVIRYTAT पPFVLR VNDTGDVLAADS
RRCEVWTHNTGLTHFEYVEH
FAFKNHDRNTDSVELELTPQGWELRRW

UniRef90 R1DK18
UniRef90 ${ }^{-}$A6C4H5 UniRef90-UPI0002E43F84
UniRef90 M1UYW9
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UniRef90-C3MJC9
UniRef90-T0Z8K8
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UniRef90 UPI0003708C42
UniRef90_D7GWW1
UniRef90-S8AG22
UniRef90-H1VI12
UniRef90 ${ }^{-K 6 V 2 P 6}$
UniRef90-Q49UT4
UniRef90-17IVI7
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UniRef90-17LAH8
UniRef90-11XUH9
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UniRef90_UPI00037E17FF
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UniRef90 R9LUH8
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UniRef90 Q1IDJ6
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UniRef90 E6J8GG
UniRef90-UPI00036DCA31
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UniRef90 UPI00025584A6 UniRef90_UPI00039D5AEB
UniRef90_C4YAA2
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UniRef90-UPI000465E67F
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UniRef90_D0CPP9
UniRef90-A4YEU6
UniRef90 V8C41
UniRef90 UPI000469CE8E
UniRef90-A5DE31
UniRef90-F4XBW3
UniRef90 H6BWH5
UniRef90-UPI000347F6EB
UniRef90_UPI000479A512
UniRef90 M3TW36
UniRef90 UPI000400CDAC
UniRef90_UPI00034575E9
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UniRef90 UPI000476F4D
UniRef90-Q040S3
UniRef90-N8S808
UniRef90 $\mathrm{C} 9 \mathrm{YW} \mathrm{I}^{2}$
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UniRef90-F5Y5K2
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UniRef90-K0EKP5
UniRef90- X0Т684
UniRef90-S3NC30
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UniRef90 cozzX
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UniRef90-1012K1
UniRef90 L7LAY'
UniRef90 F1YGA
UniRef90-UPI0003F53D3E
UniRef90_L1IL23




```
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
```




```
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmmm
```



|  | $130140{ }^{140} 150$ |
| :---: | :---: |
| UniRef90_UPI0004 |  |
| UniRef90-K2GI61 |  |
| UniRef90-D6M3L7 | HRPPGGE |
| UniRef90_S9TWH9 | RYP NGESYQDLA R R L N |
| UniRef90_K0V6Q7 | $R \square P \mathrm{GS} \square \mathrm{NGREFDARMDGA} \mathrm{\\| QTMYDNGDRNVAAFSHGGA} \mathrm{\square M}$ |

```
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
```




```
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm
```




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B B B B B B B B B B B B B B B B B B B B B B
```

B B B B B B B B B B B B B B B B B B B B B B
BBBBBB BB B B B

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                                BBBBBB BB B B B
```

$$
\begin{aligned}
& T V V E N L Q T R N A G V T Q G F F N H K V L R L A A F N Q V P H L D R \\
& \text { NWNGTE } \square \text { GPETPFRVEAFRQLRT } \square \text { SRQ }
\end{aligned}
$$

| lupas_21 |  |
| :---: | :---: |
| lupas_14 |  |
| lupas_28 |  |
| jnet | 5 |
| conf | 9861799 |
| sol25 | B |
| sol5 |  |
| sol0 |  |
| jhmm |  |
| jpssm |  |


[^0]:    0

