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AKYPKLAKV $\qquad$ Y S
SQYPKLAEA
SQYYADLAFAADGTMYGAG
AKYPKLAVA
EEYPELAKA
TGNKP

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TTYAALFAA 1 G $\|$ TYGNGSTTFNLPDVGEFIRGWDDGRGV
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VKYPGLAAVF PSGNLP
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EEYPELAKV
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EDYPNLAKA
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EMYPKLAKA

PTNKL YPS GVLP | Y P T N KL |
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EMYPKLAKA $\quad$ YP $\square \mathrm{NKLP}$
KEYADLFEALGETWGVGDGTFNNVP
AKYPGLAAVF PSGYLP
K DYPQLFKA ${ }^{\text {K }}$ G DKWGNDTTFKVP
EEYPELAKA YPTNKLP
TAYAELYAA $\square$ GATFGAGD
EMYPNLAKA
TAYPELFSA $\mathrm{A}_{\mathrm{G}} \mathrm{TYFGAGPTNKLP}$
EKYPNLAKA-GTYFGAGD
VEYPKLAKV
Y P T L K K L
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EEYPKLAKA
VK Y PRLATA YPSNKL

MYPLLA
NAFPKLA QV

S L Y P K L A EA
DAYPALITADGEVWGKG
SLYPKLAEA
TAYADLFAADGT $\square \mathrm{FGDGNST}$
NLYPKLA QV
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AQNQALFSLLGETWGDTTFNVP
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SQNDALYSLLGT $\square Y G G D G T T$
SAYTDLFSAIGTAYGDGSSS
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DVGRVIGSR
DAGRALLSAQFEDHADEMPTNQGYAGVEQSDGMRYDGKET DAGRALLSLQDDSFEAHRHESFFYAG USRNEDPLKNLPS DRGRAFGSAQGDA $T$ RNDTGS $\square D S$ DVGRLVGSDQDGSLQSHGHTASSHTHGASSDSQGAHTHNV GDSESDQDKSH SHSASSEDSGAHTHGGRSSDSGAHKHRS DTDRQFADEQHDSDKS DPGRLLGSNQTDETRSHNHTGSSHTHGASSDTQGVHTHNN DPGRVRGS LQ $\square$ S QNDSHDHAATVAAGGAHTHSVSGTAASA DAGRT LLSLQLDALQKMTGSA
DNGRA
DRNRKFA
DAGRQLLSSQGDA $\square$ RN $\square \mathrm{E}$
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QUERY
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QVWTGSNTTSSTHGQAGSYAPLATGGDG T U EKAGEHTHNFRYQUFGWPANRVGRRNPYYDPDYTT GFADGGDGMSFDADRGAFYDAGTRSARMPNN
NRMWSSSTAGAENLGTGNRTFNSTQEN\|NYGADPRGDGTA VDVQSVSGAFYGGTSVRNNDNVSMTYA
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YVSGAFSASESKAPALSGASASGYQRSLYAN
SCEMDTLSSTTNALAPTDDDTSGTLIGNDDYNCLAE GVFYNNGKNANE GVYADGSATTDGPPVGNASNGQS

FSGNNDRSGAF
STSGEYGDYVVMSKGP PSRSTIVTDAT $\square$ NFYFDESWVNSGTDI DKRGNTNDAELPA S $\square E N A G E H A H N F E Y Q G V G W P V G D \square G R L P N H Y T Y N A T L K G R$ DSGAFTTS VIGAASSDSDNGGY
VANDGYDSKE EWEDATIFRRAYKQGRGDDAAAAGGSL PSKSTVATDSSTNFYFDEAWATSGNTGVIRWGNTSDAGLP GFGEAYDGWPFGTSPTKGKMGSKGGTDWDNYFYMTSDGSA EVY VANTAYDEWDDGVIYRSTYVQGRGGDAS SVESAGQHAHNFQYAGVGWSANDIGRRNPNYHYQTLTGIT TLAVNNSSGSDGGYATDGYGGTKASQASNPVDDHTHS凹S FREDWGANGPDGTGGPY\|VGADTNGSRDNLG
GESYTNDQWPFGRSAKLGYMGSHGGLDSDNYLYYTSDGTE PFSQHGKVLSTG
Q $\square$ FRVSDY RTKEDPASEVMGRGYDAS LTPGADSPLKDFDD QYEALRRPGSPDGGKNPAF TVQS AGAHTHKYKRMEWNYGGNVGQRNPAYDYDQNWN TQEGGRNTSL AYQNGPNSAFRGEVSTLLETTRNATG Q KEGEVNGVVATGEVLTSGDDLTTGIVAYSTTSSAGQHSHT GKTDKAGKHRHLYRTAQPVSD KGGGGLLRYRTPESRY FDRSWGLENFDATAGYDVVTADINGKIVN T TEE AGQHTHEFQYNGVGWSANGRRNPSYHYSVMAGT UVGSFGYSGNGLFTYVDGAFSGVNRTGTDGLVTV EL WTGDGLATGSTREGVNPGILATYGDGGDVKTDEPGS TAFDAWNAKSTVLRSNDRSGDALLSTDNATGYGNTPNG WFDQYYALLKSFDPTGGRLVVGGPNVGARNPAYRTTYRRSA SRGMPTLPAGP VEAYGAFTLQYANSGSYNPUGTSG SWDAWDNTVLVPN AGPISSGNNQFVDELQADGAFEVIPGQKSYTGDAG DASSDAGTSPTTPTGNYUATHKVTIERGNTVDGESFNS QMGGAPQTPVVNGVMASSRYGTPETRSANGGSSTDETFFD SRMWSNSNAGPDGLGTPSY GNSVYQNVNCGGDPRGLGGA WTDEQGHHGGPNLTAANGHAGWAAPTDWGGVHYSGGHGHN VANDGYDTAMKDEELAAMEKTYTQGRGLDATNTGGSL SRMWSNSSAATADGGTPNYILNSVTKEANYGIDDRRLGUA HGWTGNPLMAVGELGTSSVFAVQLSIGDGGLLYSWKDGSG TM GPASNSSPSKTFALSDSAGGGLYTDGDSQ TNDPYGDEQVVSGVYVGFDGYSGAFYDTGSRNSTSPGST LT PNLASUATGGTYKQANY
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YVTTDRAQ $\square$ SGSNGAFSGPDMTAGANDSGQ STNASDGGG\|GGTTQEVTKNYWAKGGTYATSKFAPMKDVDA LASGYGNENSYDWTYQGAPGGYKYP THNMAYEGGTNAGTGLAAPATSRSNTSPGPTVNYSGNHSH FFDNGNRNSSVPTSYQAG
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SETE NRIIFEADWGEVKRYTALTLIKTM
NDPGHSHPYNYEGSVGSGLAGFDYDQDAWNATVYTGH
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 NLYPVGAPIPWPSDATP
SALP VSKKLLDAAVP GVPVPYPLATAPTGWMKCNGSSFNL VSKKLLDAAVPIGEVKAFAGDTAP QGWLLCFGQAVSR

VEKLIP VGEVRMFAGNFAPRGGWAFCDGQLLAV
$V G V P L P W P T E T A P E G W V Q C N G A F D K$ VYSKAEADQKAPPGLVGMFARNSAPT GWLKANGALVSR VGEVTHFAMTTAPAGFLKRNGAAVSR QY LKTADDDKY DPVGFPLPWPQAT PPSGWLKCNGAAFDK QFVTKNELANAMPLGGTLSGFN ADRGDFLICNGRSLNK

PDPESFSPGFIGTFAMEKVPTGGWLCCDGKEYSR DAVNNYPVGAPIPWPQAT-PPKGYLICNGDPFDK YTKAEVESALLPVGSVVAFPVDAPPPGFLECDNSVKSS VGMPMPWPQTTAPS GWLKCNGQTFDK
SSSELSSALLPVGVPVPWPSATAPPAGWLKCNGAAFSS VGEIRMFAGNFAP KGWALCDGQLLAV


S A GELILFAGNFAPR GWAFCNGQILSI

SALP VAEIRPWPTATAPPAGAPAKGLKCDGRAFTK
YTKAEDESMLP $\begin{array}{ll}V G E & R M F A G N F A P R Q \\ V & G E \\ V & R M F G F N F P P K\end{array}$ GLPLPFPGAVAPT GWLKCNGQSFDK
 RVYSNNPPPDSYPVGAPLPWPSDT PPARHALMQGQSFDK
$R \| L T E N D A N S N \square P V G S P \square P$ WPQPNPPSGYDACNGQAFNK VGEIRMFAGNFAPR GWAFCDGQLAD PPGEVGAFARADAPV GWLKANGAAVSR
SALPVGVPVPWPSAT PPAGWLKCNGAAFSS SALPVGVPVPWPSAT PPTGWLKCNGAAFSA VAE: RIIFPFNFAPPKGWAFCDGQALP
VGEI RMFAGNFAPR GWAFCDGQLMAV VPPGTVVSFAAPYAP QGWHTCDGSSAPR YTKDEVESSLPVGSMVPFPKGTVPPGFLEADHSVQSI GETKMFAGSYPPSGwar DGSVQS MPVGSPVPWPSNTAPV GWLICRGQSFNT I GEVRMFGGNYAPRN WALCNGQLMM
Y四KKDEASDGTP GAYLAWSSQEKDPAGYLLCDGRSLKK VGEIRVWPHETLPASGWLECDGSSLPL
 DELKSTYAGAFAWPAD IPPEGFALMQGQPFDK SALPVGVPVPWPDET PPAGWLKCNGSAFDM KAQSSQF


VPAEVRNFAGNFAPAGWMFCDGTLLSI ADYDGILPVGSPVAWPQATAPPGGWFKCNGASFDK VAEICMFPFNFAPKGWAWCDGQLLSLL
SALP


|  |  |  |
| :---: | :---: | :---: |
|  |  |  |
| J1 | SAYPDLAKFCGVKYGGDGTTFAV |  |
| UniRef90-U7R3H3 | SLYPKLAEA YPDGK | 1 |
| UniRef90-A0AO | TKYPKL | 1 |
| UniRef90-C4GI | TVYTNLFAADGTRFGAGDSTFN |  |
| UniRef90 E9WGA2 | E EYPELA | V |
| UniRef90 UPIOOO302759B | AQYPALF | V |
| UniRef90-V5ZIW4 | S | MRGWTIKGKPAGRAV |
| UniRef90-Q7N2Q1 | S | LRGEFIRGWDDGRGV |
| UniRef90 | A |  |
| UniRet90_UP100046D, | TTYSALFAVIGGTRFGGGDSTFNLP | PDMRGRAAVGDDMGGP |
| UniRet90-Q1GM | SKNPKLAKAFGTIYGGDGPTGGLP | dirgefiraw |
| UniRef90-UPIO003B5629C | T |  |
| UniRef90-J3GIB5 | T TYAAL | G |
|  |  |  |
| 77X |  |  |
| UniF | SQNSALF | PDLRGRCAVGMGQGPGL |
| $\begin{aligned} & \text { Unire } \\ & \text { UniRe } \end{aligned}$ | VEYPKLAKA | PDLRGEFI RGWDDGRGV |
| UniRef90-UPI000, | VKCPKLALA | V |
| UniRef90 UPI | A | RGWDSGRGV |
| UniRef90-UP1000 | ATYPDLSAYLGGKFNKGDENFRL | RGWDHGRGV |
| UniRef90-C6DE08 |  |  |
|  |  |  |
|  |  |  |
| UniRef90-10DPP3 | T |  |
| UniRet90_UPl0003 | SQNNVFSLIGTLYGGDGT | - |
| UniRef90-M5DX26 | SQNTALFSALGTTYGGDGTTFG | L |
| UniRef90-UPI00047B2DE8 | AQNTALFSILGTTYGGNGT |  |
| UniRet90-B8 | AQNTALFSILGTTYGGNGT | PDLRGRVPVSAGQGPGL |
| Uni | EQYPVLAR |  |
| UP100045E | AL SLLGTYGGDGS |  |
|  |  |  |
| $\begin{aligned} & \text { UniRef90 OPIOOO3 } \\ & \text { Unifego UlMos } \end{aligned}$ | SQNDALFS |  |
| UniRef90-UPI0003658AD6 | AQNT |  |
|  |  |  |
| UniRe990_A0A009 | T |  |
| UniRef90_UPI00037 | - | A |
| UniRet90-W1 GoS 1 |  | KGKPDGRAV |
| UniRef90-KowFL4 | A | RGWDHGRGV |
|  |  |  |
|  | SUYPKL |  |
| UniRef90-UP10003 | SQNDAL |  |
| A0А0з | TSYAA AADGTRGDGSTAN |  |
|  | $\begin{aligned} & E \\ & E \end{aligned}$ | $\frac{\\|}{A}$ |
| UniRef90 UPIOOO36AA02F | SQNTALFSL |  |
| UniRef90-M5DWE5 | F |  |
| UniRef90-A0A011 | A |  |
| UniRef90_UP1000312AE91 | ATFSGLFSVIGTTFGDGS |  |
| UniRef90-E7B602 |  |  |
| P1000 | YPDL |  |
|  | ATYPDLAAYLSTKFNKGD |  |
| J2PV | ATYPDLAAYLSTKFNKGD |  |
| UPI000471581B | S |  |
| UP10003B | DQQTMLF |  |
| UniRef90 | SEYNELFAV | KFNDRFMRGLG |
| UniRef90-UP100035 | SQNQAL | - |
|  |  |  |
|  |  |  |
| $\begin{aligned} & \text { UPI } \end{aligned}$ |  |  |
|  | SAYPQLAAVF | A V |
| UniRef90 T7ZE |  |  |
|  |  |  |
| UniRef90-UPIO00470 | SSNQALF | FRGRVPMHAGNGPGL |
| UniRef90-J1J2G0 | STYSDLFAAI GTMWGDGETTFNV | LRGMFLRGVDGGRNV |
|  | SQNTAL |  |
|  | SYYQALY |  |
| UniRef90_K9L5 | GQNPKLY |  |
| 楮 |  |  |
| UP10001 | N |  |
| UniRef90-T7VPN8 | SEYPELAAVVGTYGGNGSNFAL | dirgerlargwodgrali |
| 02 | RQNPALYSLTGTRFGGDGNTFQ | NLTTRAATSQGSGPGL |
| UniRef90-UP | SQNTALFSLLGTTYGGDG | DLQGRSPMHPGQGPGL |
| UniRef90-C6 | ALYP ${ }^{\text {K }}$ |  |
|  | SENPK QLAGTYGGDGSFALP |  |
|  |  |  |
| UniRee99-A0AO23EWE6 | ASYPDLSAYLGGKFNKGDENF | ALRGWDHGREV |
| UniRef90-V9H7W8 | TVYVDLFAAIGTTFGNGD | - |
|  | SQNTALFSLLGTYYGGDGSTFALP |  |
| -UP | AALFSLLGTNYGGDGSTFALP | GQGPGL |
| UniRef90_UPIO002624177 | DLFAALUYYGAGDNTFNV |  |



UniRef90 E6YwS7
UniRef90-IOKE34
UniRef90-J1K314
UniRef90 U7R3H3 UniRef90_A0A022PNL5 UniRef90_C4GFX3 UniRef90-E9WGA2 UniRef90_UPI000302759B UniRef90-V5ZIW4 UniRef90-Q7N2Q1 UniRef90_S1J7C8
UniRef90_UPI00046D5918 UniRef90-Q1GM55 UniRef90-C7BTY7 UniRef90_UPI0003B5629C UniRef90-J3GIB5 UniRef90_M9EZG9 UniRef90-A7XFA4
UniRef90_UPI00047E0D80
UniRef90-X7NJH7
UniRef90-JOYIO7
UniRef90-UPI00047E3AD3
UniRef90-UPI00047E5BA8
UniRef90_UPIO0046ACA23
UniRef90-C6DE08
UniRef90-U7QSR3
UniRef90-W1F2R4
UniRef90-I0DPP3
UniRef90-UPI0003B2F0E6
UniRef90-I2SRE1
UniRef90-M5DX26
UniRef90_UPI00047B2DE8
UniRef90-B8IH47
UniRef90-V6ET09
UniRef90_UPIO0045EB309
UniRef90-Q1R895
UniRef90_UPI0003727BC3
UniRef90_U1M0B5
UniRef90_UPI0003658AD6
UniRef90 C6DA10
UniRef90-A0A009P5Q8
UniRef90_UPIO00375831B
UniRef90-R8WWV1
UniRef90_W1GOS1
UniRef90_KOWFL4
UniRef90-J3IU09
UniRef90-T0QCI5
UniRef90-UPIO0034600AB
UniRef90-A0A031IW68
UniRef90_Q8Z6S4
UniRet90_HPIOR4
UniRef90_UPIO0036AA02F
UniRef90_UPI00036A
UniRef90-M5DWE5
UniRef90-A0A011A738
UniRef90_UPIO00312AE91
UniRef90-E7B6D2
UniRef90_UPI00037A13E4
UniRef90_J2PVQ7
UniRef90-J2PVQ7
UniRef90_UPIO00471581B
UniRef90-X4TNU2
UniRef90_UPI0003B7848E
UniRef90_J5KWU7
UniRef90_UPI00035EAA64
UniRef90-E1JUA8
UniRef90_Q11687
UniRef90-UPIO002E0CE24
UniRef90-D6HWG7
UniRef90-T7ZB79
UniRef90-W1IZ38
UniRef90 C6CWM4
UniRef90_UPI0004705396
UniRef90-J1J2G0
UniRef90_A3TL49
UniRef90-D7VLV
UniRef90_D7VLV6
UniRef90_K9L5R4
UniRef90-J2IX38
UniRef90_UPI0001A449FE
UniRef90-U5BJH0
UniRef90-T7VPN8
UniRef90-UPI0002F5ED7D
UniRef90_UPI00047A65F8
UniRef90-C6C5D2
UniRef90-K2GID0
UniRef90_W7P4A3
UniRef90-A0A023BWE6
UniRef90-V8RA43
UniRef90-V9H7W
UniRef90_C6W6X7
UniRef90_UPI0003B2ED5E
UniRef90-UPIO002624177
UniRef90_UPIO00479329B
 TVSATDGTQNNPSEAFLAVATDLNEQADNVYG NDDSMGYLGRGSGA DNSHNKANTSPGGT YTTNSDKTSLEDTDPMRG GMT STTNSDQTSLQYPDPVRG GQDGSSSQGAFG FRKQGERGLVWSRNDNNAGVV NGGNADD STGNHQHGDTMGYT DLDNGSVGGGGTQYTNAAGAHSHTDT GGRVWSYWGDSN H H L S S L VGG GEWTKAGGRHVHTNDGGH

## TGALYNGGAQWKTVTTD

$A T S G G S G A F L L Q N \| V N F$
QASTELAQDQ FTSDTGSVNPQSSPDTAGNSPVPRSATGGEANAHDAGRTA SAAVAGNHTHSMWDNLDRGPGTDGNADWGDEPYYGSTGPT
 QL $\square$ GSNTDGTTSDPTNNTLAKSSVTDERGTSPDPVNTYAS PTAYGS GGDGDMSAVFKDDNSAMSYYPAGTNEYNA PGFKEMVVQRSHDEWKAYPCGLNYQQS
GF $\nabla R R G$
GAAPPVSADGAFGDTDWCNARVAD
 FLGGENLLSNGAFELFKEFTVGADPDA YFERTWGDKGFDPTAGSFPVSAD DHGS I DNHR

 GSAGSGSANDADRTATASPEGSGDWTAYGPGSGANNLPGH
 QAANGAATTS AADAAAGTVDSPNGANLAKPDTAVRPATAVNGYTSGNPTE VGMGFNNEDS $\quad$ T D DREGSFKMPDGTTFSDPVIAMSDNGM LADTLDPADTNAVSPNASFALSTGGTLYQDAPNADAAAVA S GAKFTDSVGDGSTSSN
FDSTAATMDPAGAWQAGT $\square$ NGASAVISAGAFLSGVDGGL QA STDSVSSVNPTGTVLGTLDAADTMYTVEVVD QHYGTGAYTTPGASVGMGSSGAA Q $\square Y T T \square D D P L$ TETAGVFDANKYTGAHS GLL GLD HENEGGAGAAFGRKELTANKRTEVLDALGYTSNNST SAAPEAAE DKTPTNSALGF SF L A WQA GWGYGNQNMGAVTQTTSTDGAHAHNVY $\square G A H S H$ $T Y D V 1 A D \square F M A G D V R R N$ VSGLWHNTASDAGLQDAHGDDPHNTTDYGVSNAVFTAGNT GHG GRAQGAFGVTNQAGHPGSYHD DGKQTLPFTNNGSD TAAVDGAHTHTFTIUNRQNQGTERNPTGNVVARSGGDUYRQ VGGRDDNDAAVDUSYMSNGNSDDYGGDKTFSTNYRSDYGW MS STVN

SSKPSPGGNALARVTGATPYVAGTP MASTAEVSSSN PANDVLGSHTDGDESYTSTLSN
 TGGUNGVSESMGSAPENNFSGAFGKSPADGN YSVDTPHH $D \square T$ S SPPAGDAAAGSAVNT $\square H G S D G V V M$ $T R \| P V \quad F G N T G G A N A A G \quad I V A D N G T Q$ TRIPV P FGNTGGANAAG $\quad$ VADNGTQ TLKIGVSDQPGNTSNPVGADLANSGA FDKEYTDQDSTG ADVSQSGNIGKYVSGAFADSGALGEGDEG KAKNATAQSA DPANDATLAKP $\quad$ KDRGLPPTRPTQGFK
 GAG ATVSDPVSGEDADQDEASGKYDANGTFYHNAAGG GGTVGTAAGQTGVV $\square D N V G G G S G A S A V T G A T G D V T S D Y G K A Y G N S A S A T A K A Y K$
$G N T T T D F G H A L D D D E K S Q V S R L I ~ G V A K E D ~$ GNTTTMFGHADDDDEKSQVSRDIGVAKED STGNANTNGETGKTGFDNPSFNGTSGAAGNHAHTVDIGAH

 QGAA D PAGAKAVNPSASWSLS QGGGQYQSAQDTQLAAEA
SAAASTLHAAVTGSQLGQPMYNNTPTLGFNSDVPDKVMSN PA D $\square G N$ N
 VAYAQAAAKRVATPVAN GADYNGVIYTSSGPSW
VA YA QAAAKRVATPVAN
GA $\square$ SMPGSNA $\square K S$ KS S RALTDDADQPIPSSARSLGRSNGGSA Y N T FPSASSLEGTSNTPAGNVWAAGPS RAPNNDDLSYAAA FPSASSLEGTSNTPAGNVWAAGPS L
 $\stackrel{\mathrm{N}}{\mathrm{N}}$ $S A \square A A G G T A T S P A G A T W A Q P H L G R V T E K V Y A A S T A S$ TPGGSGARVPASSYTGAFSLSEKAAGRDSTGENW


UniRef90_UPIO0036EDDB7 UniRef90_G8P0U9 UniRef90-H2IVD5
UniRef90-F2LHB5 UniRef90_E4PPS0 UniRef90_T8WSR1
UniRef90-K3IYN3 UniRef90-K3IYN3
UniRef90-A9B452 UniRef90_Q3KH70 UniRef90_E3FUS5 UniRef90_UPI0001D957AB UniRef90 E018Z8 UniRef90_-T9VHB0 UniRef90_-V2IKN9 UniRef90_JOYWM4 UniRef90_M4SNM4 UniRef90_D3V9N0 UniRef90_Q21FE7 UniRef90_T0JVG3 UniRef90-WOHBA1 UniRef90_H8KUZ9 UniRef90_E0SFL4 UniRef90_UPI0003A0F980 UniRef90_Q7N5D2 UniRef90_J2FEZ8 UniRef90_UPI00037E4B50 UniRef90_Q7NAB3 UniRef90-F4KS41 UniRef90_B3PJI7 UniRef90_UPI0003B31F7D UniRef90_U1M3B0 UniRef90_U4J7C1 UniRef90_UPI0004675729 UniRef90_I1AQ40 UniRef90_A0A021W8Y8 UniRef90_A8EFS5

## f

 UniRef90_UPI00034D5FB7 UniRef90-F0Q921 UniRef90-D01J09UniRef90_X5I1L7
UniRef90_D2BYH8
UniRef90-I4EE50
UniRef90- C3KCU2 UniRef90_UPI0003A6796D UniRef90-J8TDY0 UniRef90_D5LGZ0 UniRef90_K2HGD7 UniRef90_Q8EKB0 UniRef90_K8DVH4
UniRef90 V6SMR0 UniRef90-M5A789 UniRef90-G0CBQ4 UniRef90_UPI0004675284 UniRef90_X6H3J5 UniRef90_A0A037Y546 UniRef90_E8THS6 UniRef90_Q6D2U8 UniRef90_B1J270 UniRef90_Z5DWA6 UniRef90_UPI000377C48C UniRef90_UPI000255A7D6 UniRef90_UPI0003D794A8 UniRef90_F8FNG6 UniRef90-F7RIF5
 S Q NA ALFSLLGTQYGGDGSTFALPNLQGQDPVGQGQGPGL
 A D Y P EL W A Y GCFST GNGSSDFRLL TAYAALFAA $\quad$ GGTTFGEGDNTFNLP $\begin{array}{lllll}A & A & P & K & A \\ A & A & A \\ A & A & A & A\end{array}$
SEYETLLF QLI GTTYGGDYGQTGVI P P P ATYPDLSAYLGGKFNKGDENFRLPEARGEFLRRWDHGRGV
 E EYP P E L A A K A
 $\begin{array}{lllllll}\text { T } & T & Y & A & T & L & A \\ S & R & Y & P & Q & L & A \\ A & L & A\end{array}$ S R Y P Q L A L A L G $G T \square Y G$ TY Y Y

 | $S$ | $S$ | $N$ | $T$ | $A$ | $F$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ | $R$ |  |  |  |  |  |
| $N$ | $P$ | $R$ | $L$ | $A$ | $Q$ | $V$ |

$N Q Y Q A L$ F G V I GF TYGGD

 AKFPELAKA AKFPELAKA YPGGNLP S K Y P E L F G A

 | $A$ | $N$ | $T$ | $A$ | $L$ | $F$ | $S$ | $L$ | $V$ | $G T$ | $A$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | S S N TALFSLLGTTFGGDGTTFGLP

 A DYPAL WA WGCYSDGDGAATFRI P S Q N T ALF S LLGTTYGGNGSNFGLP $A$ NSALP ALY | $A$ | $Q N S A$ |
| :--- | :--- |
| $V$ | $A$ |
| $V$ | $F$ |

 NAFPKLAQV





 QQNQAL FALLGTTYGGDGTTGRRLD A Q NTALESLLI GT DYGGDGTTTALP
 S QN TA L F S L L G T T Y G G D G SAYPKLAAA S QNTA L F S L L G T T Y G G D A QFPVL A S R
 Y P S GVI P

A Q N N AL F A L L G T TYGGD

 NAFPKLALA $T Q N T A L F S L L G T M Y G G D G$ SEQTTLEALI GTTYGGGG AAYAELFAAIGTQYGAGDTTFQMP A DYPAL WAYGCFSDGDGS
SENEVLFQLIGTTYGGDGQTFAAP
 A T Y A R L ARYPKLALA

| $T$ | $T$ | $F$ | $S$ | $L$ |
| :--- | :--- | :--- | :--- | :--- |
| $P$ | $S$ | $G$ | $K$ | $L$ |

AEYADLFAALGWGEGDGS
E K Y S RLIFVSI GTTFGNGTNTFSLP
S E Y A E L F NVL G Y V V G G G G E N F N L P P
H Q Y P V L F S R GGF TYGGDGDNFAL PDMRGLVARGCDH GRGL TKYPLLAQA YPTLQLP

A D Y P G L W WA WGC F S S G D G T T T F R R L S S N P A L Y S I L G T K Y G G D G T T F A L P
 S Q N Q A L F S L L L G T T Y G G D G T T F A L P
 NTYPVLFSRIGYTYGGA T Q Y P I L T S R GTNFKL HSYPVLYSVIGNNYGGDYPS GFL
 VA F P A L F SLLGT QYGGDGTTFKL P VAFPKLL


|  | $\text { T P R VVGET GGS S S } \ddagger \text { T L L } \quad 100 \quad 110 \quad \text { QN D } \quad 1 \text { P A H T HVPP }$ |
| :---: | :---: |
| UniRef90-G8P0U9 |  |
| UniRef90-H2IVD5 |  |
| UniRef90-F2LHB5 | DANRTIGSWQDSQNRGHAHSTTXHVHGAWTSASG】HAH |
| UniRef90-E4PPS0 |  |
| UniRef90-T8WSR1 | LS QEQDG $\square$ K SHTHSASASNTDTFNHGTK STNNTGNHTHTV |
| UniRef90-K3IYN3 | LS YEDDGNKSHAHTASASSTDTF DYGTKTTNTTGAHSHDS |
| UniRef90-A9B452 | A ET G G A T $\square$ T LTVQQQMP A HSHPA |
| UniRef90-Q3KH70 | DGGRAQGSS |
| UniRef90_E3FUS5 | SPRTVGAR G G TESVT $\quad$ LTTSSQMPSHAHKL |
| UniRef90_UPI0001D957AB | DSGRAFGSS QVQAMSAHQHRM |
| UniRef90_E018Z8 |  |
| UniRef90-T9VHB0 | D T G R S L L S G Q A T F I R T A LQ D Y Y G Y DLN T NVKVG |
| UniRef90_V2IKN9 | LS Y EA DGIK SHTHSASASSTSSFSYGTKGSNTTGGHNHSV |
| UniRef90-J0YWM4 |  |
| UniRef90-M4SNM4 | DS GRTLGSTQGSANKSHNHTA STIIPEHSHSG |
| UniRef90_D3V9N0 | DS GRKVLT S QF D CIQ DHAHLS |
| UniRef90_Q21FE7 | S PRRLGSRGGSESET $\mathrm{L}^{\text {L }}$ T A NQLPSHSHDF |
| UniRef90_T0JVG3 | DS GRVFGSNQGDTLKLLHGHPMFVHTYQETTFQ |
| UniRef90-W0HBA1 | DS GRGLGSFQADSLQ GFRQESM RHLGGN |
| UniRef90-H8KUZ9 |  |
| UniRef90_E0SFL4 |  |
| UniRef90_UPI0003A0F980 | S N Y T GQLQ GADSVALA S S SQLPAHTHTI |
| UniRef90-Q7N5D2 | DS GRGILTHQGDAI R N I VGSFP GAld LHFELA |
| UniRef90-J2FEZ8 | DPGRLE GS Y QLDALQHMS G |
| UniRef90_UPI00037E4B50 | T P Y P L GA A G GVEETV T L LP T E $\square$ P A H N H Q A A A D Q L G $\square \mathrm{NV}$ V T S |
| UniRef90_Q7NAB3 | D P D R TLLVWQEGSYLL |
| UniRef90_F4KS41 | DP DKTTRASKNSGNAGNRVGSYQDDMFQGHFHS |
| UniRef90_B3PJI7 | ANR L GEKYGTETVTLLSAN LPAHTHTV |
| UniRef90_UPI0003B31F7D | A D R QLGEAT GTDAVA L L N Q MPRHTHEM |
| UniRef90_U1M3B0 | TPRPYGAS G G $\square$ P AVVLA |
| UniRef90_U4J7C1 | SHRVI GQS LGQEEVSLHVGNLP S HS TQVV S |
| UniRef90_UPI0004675729 | S D PRLGAKGGA EVVTLNILQ |
| UniRef90-I1AQ40 | T PRRL GERLGASTVTLS ESQMPSHTHYV |
| UniRef90-A0A021W8Y8 | SPYVLGQTSGTESVTLD Q Q Q M M A H GHTL |
| UniRef90_A8EFS5 | DVDRRIGTS Q S Q RRSHAHAAPDHVHTAWTDAQGNHSHGG |
| UniRef90-UPI00034D5FB7 | SLHDLGETGGSETVTLL E E E I P SHSHS L |
| UniRef90-F0Q921 | $P$ TNYMQGQVGGG QETVTLLSNQMPAHVHTA |
| UniRef90-D01J09 | LSYEADQVKQHGYPNSTVSS T D L G SRNTNTTGNHAHGY |
| UniRef90 ${ }^{-}$X511L7 | DAGRA VGSWQADEFKSHTHSV |
| UniRef90-D2BYH8 | DAGRGLLSRQ APTLITANDGPDVAQLLVVEGSTANTA |
| UniRef90_I4EE50 | GPRVLGEMGGV ETVSLTPGQVSAHNHAF |
| UniRef90-C3KCU2 | D A G REVGS WQKGSMVAVDD N |
| UniRef90_UPI0003A6796D | D S GRGLLS A Q R A T LLR T A M $\square$ D Y A G T DLDNSSVL N |
| UniRef90_J8TDY0 |  |
| UniRef90_D5LGZ0 | DTGRALGS WQGDQNKEHTHNL |
| UniRef90-K2HGD7 | S LY DLGEQGGQS VTTLL T TEIPAHVHTL |
| UniRef90-Q8EKB0 | TNR】I GQSFGNESVSLV TNQLPAHNHAF |
| UniRef90-K8DVH4 | D S GRALLS A Q Q G S LMALSVS A N T D D R |
| UniRef90-V6SMR0 |  |
| UniRef90-M5A789 |  |
| UniRef90-G0CBQ4 | S NYVIA Q T A G T ETVALTGLQLPAHTHTL |
| UniRef90-UPI0004675284 | DPD A A Q K A R S G GVTGDNTGSVQDYATAKPKND F |
| UniRef90-X6H3J5 | SLHDLGEPGGTETVTLL |
| UniRef90_A0A037Y546 |  |
| UniRef90-E8THS6 | SFYDLGQQF G G SDTVTLL E ESEMPMHNHS $\square$ |
| UniRef90-Q6D2U8 | D TVRALLMSAQGDAI R NIV |
| UniRef90-B1J270 | ADVVQQ E A G GVNDVTLLLQSNMPMQQAVIPAPTVSVADPAV |
| UniRef90_Z5DWA6 | LS Q E Q C GVK SHSHTASASSTDLGTKVTS S NGDHSHTW |
| UniRef90-UPI000377C48C | SARVLGGET G GEKNVTLLTHEMPSHIHEVVLDSDEPKLK V |
| UniRef90_UPI000255A7D6 | QT INFGEKGGKDHQVLLKEN LPAHHHTA |
| UniRef90_UPI0003D794A8 | D NR NLLS F Q N E M L S T H GV |
| UniRef90-F8FNG6 | T NRTQGEAGGSAAVTLLN S S Q M Y H H L A |
| UniRef90-F7RIF5 | TS R I I G Q Q L GVESVTLLT P Q Q P S H S S S |
| UniRef90_UPI0002D26FB9 | D G GRVFGSVQACAlQ SHGHAADNHNHSAWTDTQGDHSHAA |
| UniRef90 ${ }^{-}$W6B896 |  |
| UniRef90-J3ALV2 | GVT Y IE G D R GVET VTLT T NLIPPQHTHPL |
| UniRef90_B9XBK5 | S D Y $\quad$ IGESGGV E TVTLLT TLQMPPHTHPV |
| UniRef90-K2J3J6 | TMRFL GEPT GQDRVTLT LTP |
| UniRef90-E3T4R8 | TPRNLA D $\quad$ EGGT T T L T L NEIPQHSHNV |
| UniRef90-W1IKX2 |  |
| UniRef90_K2M841 | DEGRVFASE Q Q EFKSHTHGF |
| UniRef90-19MBJ3 | DVDRQLGS MQSEELKSHAHNL |
| UniRef90_U2ES32 | NFSDGKFMRS $\square$ G G N A A Q L GVVQQDE $\square$ K S H S H S |
| UniRef90_C4MYW8 | D P GRGFGTYQDDTMQHMTGNFPVANRWRG |
| UniRef90_LOMEN0 | DS GRNLLSS QAA T S $\square$ A VA L G AFNQYHGDDTDS A |
| UniRef90_A3YFP9 | DSSN NKKASLEGRKGAANGGNHEVGSTQGFALQSHVHTY |
| UniRef90_UPI0003089226 | DAQRADGSFQSHGHGASAAAVGDHAHSAWTDGQGLHGHHG |
| UniRef90-H8GR63 | SLLHDLGE T G G SETVTLL ESEIPS S S HND |
| UniRef90-C0ZG31 | TPRTAGQTDGAAKITLL |
| UniRef90_F4L4P6 | SLHDLGETGGS ETVSLLESEI P S H S HAV |
| UniRef90_G2DMV9 | DSSRALGSK |
| UniRef90_G7WG93 | SNYNLGETGGT ETVTLTNNNMPM |
| UniRef90_L2XPN8 | LS QEQDG $\square \mathrm{K}$ SHTHSASASNTXHTHNVSGTANSAGAHTHTV |
| UniRef90_B9M3Z7 |  |
| UniRef90_K4F7A8 | DPGRGFGT |
| UniRef90-J7L1B2 |  |
| UniRef90-U4GM67 | K EKLL GE Q G G R $\square$ S A S L SPENMPEAS VS $\square \mathrm{K}$ M A |
| UniRef90-B1HUA7 | T PRKVGEAVGTQTVTLL |
| UniRef90_W8ETW1 |  |
| UniRef90_G4KKN6 |  |
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NACSTPAEDTP TGAKWSSTV ${ }^{140}$ GRGAVIPYSN $P V D A G D G R A P A P S P T T V L G A T G R G A M D V Y A A A A T S G A T M T$
$T P F V A A D S A \square A G Q P P G A K S P N N S T L I P G M A D N C M T A V Q L P ~$ NDGGHSHSYNTGTAPQSGSTTSCWVGDATGSTNPSYTGUT GAPDYR FYDGSRFPYGLGGPTRDGFQFGNFTDNAQS $G G V Y G G D S V A S G N N Q V S S T A G A H A H T D D G Q H N H T V G D G A H$
$G V R T P S D V A I Y G G L S S G H Y T P G N G S Q N S S A N T N S T G N H A H$ GVRTPSDVADYGGLSSGHYTPGNGSQNSSANTNSTGNHAH SAGSGGGQAVDPNGEDPTVVLKDTAADWVLRTEGDNAELS SAFA GEGDASVPEGCVPAVLMNTATHQPANGYS $K G G Q F D G S A T T A Q P D N A G W G T S G R T G T T Q T D$ AFATADSVITVGNPA NPKAGNNSDYVPASADN GGTYGGDSWG GNTRVQSAGNNQDSSWNGDHAHTTYIGPH ESWYGDDT LDWGNKQQRDKDAERLGVRAEDDRVHHKLAFP TTGNPNTSLSHTHQLLQSSSGQDSEADGRGLSYLSGDGDT GVEGTFGFSVPQDGSHRNVPGGFKSNGGNTSTGPTNSNWN HASSSSSTEEVPVGRVVADTTQTGLRY LDNST SYTTGS $\square P \mathrm{~L}$ GSGGTVYSAYTGTPNATTGQQ
$\square G N D D G G S G T \square G L G F A M G T A T Q G S R P R N D T G A F V T D G$ TSVLNVNAGDANTPVAGNSDGGVMDDNGDPSNGFVATNPT GWDTAELTSAKYPSI RVNVVSGQTATDPYPYCGVA T TKFLPPSAAPGAAVNTPSTSAYLSRLLNPTTSPPTSYKA AKGVFYGNATFGVATDGNPK SVDHFTRDAVYTTYGF G LDVAVDTSGMGGGNDDVKTATGVFTAQNNGLVSSNNGTS NFSVNERTKLQWDTPQNKD $\square P$ R LAARASGGSATTWTTNAAY SVSDTT ANQTAPDNNGPGNAPHYLPSTTTP K G $\square$ PFPGNAARGGAFAKPADGTPLYRDGASNATMGVNTTT SGQLAAGDTNEPSNKHLAVDGFPNERDRNLKTN S $\square D \square P V N T G A G N E D E T N P S A G V L A N N G V D R F A S D E T V G E K$ TASELNNSGQADIHIPGNGSSLAAPYDSNNNSSTPDVSLA
 MASSDDGD LLKAPTSNRVLARSANGFLYQNSTSS
 K DSSSAGNVFDSWVYGDTGNGVTDDENGKTN
 S TNLVDAAAARMRGGYDSGDVGLYSGIATMMGVNPQANVADP GLAYAEADGSTKS $\square Y P A S A$ YAPNGDNLSNTAAADNAVSG QY $\begin{aligned} & \text { GF } \\ & \text { QANSNN }\end{aligned}$ QAWRATQDDATGGVYAVGADTGAGGA
SAAQASPTSLSP
NTTADAATASSPANGVFAAQTDGDK $\square Y$ VAANG
SPPSYEALDSGVGMDSMNGYQKVFGVNK DKG L L NASTVDGD QNLPT GNDPANTKGLDKEYTASAAN PWGANTPDGQVQSPTSQTTLGRVRGGTAYQAEPLSDL VATTAAATATAPSGLLPGTV TGDVFYATDTT ITSDSGEHSHSVDHLDTDYWNAAAADT DNEGANFPSKTSE RDHD $\square D \square$ GELDNAPSSTRSLAKSTNATDYTPAANL SAGAHTHSMTFSSAGAHTHSVSGTAASAGAHAHTVG口GAH RAVTDPADLQT GYDADVPVLNTNSSSGALYYEMSTALLRDTESLLSLVVTD EGDANAAAPSSGNVLAKSFDSSGAGAAAD $\square Y S S D V P N T S L$ GSAMQKQGGSDQEVGNNSG NNFGVTSTAGAH SSSPATQTTPDTGSSDAQPGFLVNGSFAPTMGVNLEEPAV SLKVSNQNASQNAATSNASIDATSGTHQGRTFNAIENYNQS PI NGTAGENWTNFPRGDSTSTDGY A AHSSSTQSSPEGAVWSKTGGRQGPA SHSHS FSASTASPAGNVFAHSNTD A Y A A
 WT PPYNGSLT GSDTAGSGSEQAVGGGDSANTAGEHAHGVS $\begin{array}{ll}\text { WTPPYNGSLTGSDTAGSGSEQAVGGGDSANTEGAGTHAHN } \\ \underline{L V} & \text { SGAAGATATPVGSYLSSEGPAGTTQVYGYIPYT }\end{array}$ $N C N S A Q G V Q S Q H G T K A D P A G N F P A T Q S A G S G U Y Q A$ RA VASAGQAGQGPEGAYWAAGLAGRGPTPDYAAGGNLE EVSNLVHKDDGADTVGNPDATGDELNLLKNSLSNTFTSGG SYAYSDTTGTLVTPPVKSYSPNLKDF KT FTSLPGNDVVLNDGDTVWSKS IDEANPSPYN GQQPGVGQS

FTSLPGNDVVLNDGDTVWSKSIEANPSPYN
WTGGVFA $\square$ TGGQWSTNYKNG
E $\square \mathrm{G} \mathrm{V}$ Y NPSYAV

WTGSVGDHQHVAGTHSTNHVGSNGGADNDNPWAFTNHGHN DVSQADG I ERTPAGQLLATGIAD GQYAA PNACSTPTGDTPTGAKWSSTGGRGG\|IPYSNTSDGTQ
RTVNDSGLNNDPSNALVARA GFM ${ }^{\text {R }}$ NA $\square$ TSPGNSSVPGP NEY LAAQPQTPDRQE $\square D \square Y$ PG SSGTVVGNGTVPSSGAHTHSVSGTATSAGAHAHTVGDGAH SVGANATTAAPAGNY DGN QMDYRNG GNLPSSEATYELKNSEKNDQLIMQLNPAY
 TTEKGDSTVPTEGCVLAATKGTGSGFDRDEFDYKMK FTGTLNAGGDAD DNTSENTFPAVTSSDPAVKPYSTGTPNA
DASQSTATTAQAPSNNYMGVAEGASPAGTQPGNYAPSPTSS

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| UniRef90_UPIO0036EDDB7 |
| :---: |
| UniRef90 G8P0U9 |
| UniRef90- H 2IVD5 |
| UniRef90-F2LHB5 |
| UniRef90-E4PPS0 |
| UniRef90' ${ }^{\text {T8WWSR1 }}$ |
| UniRef90-K31YN3 |
| UniRef90-A9B452 |
| UniRef90-Q3KH70 |
| UniRef90-E3FUS5 |
|  |
| UniRef90_UPI0001D957AB UniRef90- E018Z8 |

LS PQA $\square$ GT
VNSVGM
ASLSNPAGVWITM
TGGTQPHNNMQPY|LGLSFIICDE
VGGSQGHNNMMPYVALNYC MDDDGNHTHGVGINPAGGGGNESRPRNIALLAMIRA PNTSTAGDHRHGLDTNNTGGSETRMKNVALLACIA AHTVALGAHGHTITVNATGNTENTVKNVAFNYVVRD TVGI GAHNHTHTITVAASGNAETTVKNIAFNYIVRL A GDLSPFANNT ISLIGGSQPHENMQPYLVVDFII
 TQSGGAARDAYTDAFGGGVSGETRPRNVALDACI K TAPNTTMHPLALQATGGTQPHNNMQPYITVNYIAAD S $\mathrm{S}_{\mathrm{H}} \mathrm{T}$ GTQRTAEDNFTGAWDS MRPRNLSFNYIVRA
 TVASGNLNHTHSFSTSSNGGTESRPRNDAGLACBIKT

PDSNFSSAA $\square D S T G G S Q R H T N \square M P S L C I H Y I V A L$ ■GGSGGTETRPRNI ALTALI K
VNGEPRVGSETRGRNVAVMWCIKA $\square Q \square N N G S V V S T \square G \square A G G S Q P H N N M Q P Y L A M N Y C D A G E$ YAPASTTAMAFPPGVQPAQAHENRQPFTT GFDTSRVVPVASENRPRNDAFNYDVRA T GNHGVVFNAANVARTANETRPRNLAVMWCIKA TASASGNLPVA $\square G N T G G S G A H E N R Q P F L A L N Y \| A \square E$ \GVS
TNPTSDGT NGTPRTGSETRPKNVYVLYI I K TNTGTDHPLADS SVGGNQPHENMMPFLCLSFI I TGGG GQAHNNRQPYLALHFI I



 GLQPMSDSALAPSGGDAPHNNMQPYLTFYFCIAAL QGPDGTDAGVTTNVAGSSMPHENMPPYLCLNFII AL
 QRSVDTNANRPLNNNPYF DSGGSRPRNIAFSYIVRA
 TSSFAA F Q T G VT P P N W $\square$ S VR S R NV A F N Y V V R A VGGAETRPRNIAFNYIVRA QQADLVTKSSGGSEARPRNVAMLACIK A APDTEMSPNALGPTGGSLPHNNRQPYLGVYFCIAL TNQPAVLAANSVVQTGGSLPHDNDMPSLGISY\|I $\begin{array}{rl}T A P D T T S P D G G T V V T G N P A V G G V A R P R N V S F N Y & V \\ T & T M S P S M D G V S G G S Q P V N N M Q P Y T T\end{array}$ VDGAPESLSTEGGSQAHNNMQPFLAVHF:I A GATAAPMATQSTT $\square T$ SGKAGLHTHTI T THSVADGSHGHTITVNAAGNAENTVKNI AFNY VVRL TVNMVPMAANMLAPAGGGLPHNNRMPYLT LTFCIAL

 THSVVIGAHSHTITVDAAGNAENTVKNIAFNYIVRL | $E L D A N L D M K D R T Q V S G G S ~ D A H N N M Q P Y$ | $G M N Y V I$ |
| :--- | :--- | :--- |
| $S$ | $D$ | SPNTSLHQES 1 AI NNTGNGPFNNRNPYLGLNYCIA $\square$ AAPDTPMSPQALGUAGGNQPHNNRQPYLGVNYIIAL GADPQVMNALSVQASGGTQPHNNDMPTTAINYIMCVE VGSSGEHSHPLSITSNGTGSAETRPRNLALLMCIK VGVAASGAHSHADHVAADGGNEARPRNLAVLAMIRA GTTQVA LDPATFMPAGGSQPHDNMQPYLGLNFII

TATAGAMNPQMDGTNGGGVAHENHQPYLALNFI I
MAPGG LAPEGGNEAHDNQQPFQVLNFII
DNGRTNPNVASD AHNNMQPFMTINYI I R VTSSGPY LTR TLRSGGGVTLASVRPRNDAFNYUVRA
VEAVTHTGGDETRPRNVAVTYAIKA
GGFVGQNSY MMSGVTGGNETRPYNMAVVIIIKAKN
GGDDWGS VVNFDSARQVRTSGETRVKSLALNYMIRV YKAQTTQTSTGTAYRAVRPRNUAFNYIVRA

TPKSSQKNENLADS VGIGGAGNHSHAlTVNADGGNEARPRNVAMLAM RA PGALSQLSDNLLTPAGGDQPHNNMQPYLTFYFCI ALL \begin{tabular}{ll}
$\square S P Q A D G T$ <br>
\hline$T$ <br>
\hline

 

$T$ \& $S$ <br>
$T$ \& $S$ <br>
$T$ \& $G$ <br>
$T$ \& $Q$ <br>
\hline
\end{tabular}


 T K A M

PQKDKSVSMQSATVNGGGTPFD DEQPYLALNYIIAL
$T N L D V Q M N T Q A L G L T G G S Q P H N N M Q P F L V M N Y I$



UniRef90 Boc4D6 UniRef90-C6CGA4 UniRef90-UPIO004673EF9 UniRef90_U7G7U4 UniRef90_D3F8R3 UniRef90-HOHYU4 UniRef90_UPIOOO34B784E UniRef90_Q02CQ0 UniRef90_U7R445 UniRef90-D2BZF1 UniRef90-A0A028DZN9 UniRef90-E6VL29 UniRet90-A1SXZ2 UniRet90-R4RAE7 UniRef90 Q98E23 UniRef90-UPIO003B4FF6A UniRef90-UPIOOO2FDF748 UniRef90-UPIO002
UniRef90 UONT38 UniRef90-U7R114 UniRef90-Q094A8 UniRef90-UPIO002375EEE UniRef90-V5CHW5 UniRef90-IBTWE2 UniRef90-UPIOOO36AADAE UniRef90-G5U0K9 UniRef90-Q21FE8 UniRef90-UPIO002E92F6B UniRet90_L7W739 UniRef90-U4W1G9 UniRef90-UPIO00470FC7B UniRef90-C6BT48 UniRef90-U1AK99 UniRef90-UP10003FB1DBF UniRef90-UP10004690D3B UniRef90-X5IA88 UniRef90-L8M2V1 UniRef90-D3V8L6
UniRef90 UOB5C7 UniRef90-A0A0261516 UniRef90_G2T716 UniRef90-A0A031GTN6 UniRef90-E5E3V2 UniRef90-FOSE36 UniRef90-J3C2N5 UniRef90-UPIOOO349206B UniRef90-UOZCR8 UniRef90-L9PHS6 UniRef90-TOGOE1 UniRef90-UPIOO031238BD UniRef90 W4BEE8 UniRef90-UPIO003F78807 UniRef90-Q7N4M2 UniRef90-UP100036C9AAD UniRe990 UPIooo36275CF UniRef90-Q12HS4 UniRef90-JOR2B1 UniRef90-V1E894 UniRef90_USSQ83 UniRef90-U7QXU5 UniRef90-HOHIU4 UniRef90-Q4KHC6
UniRef90 VIICT4 UniRef90-V7ICT4 UniRef90-13TH12 UniRef90-13TH10 UniRef90-13TH11 UniRef90-W7G4S4
UniRef90-H5GSS2 UniRef90-B5SEM1 UniRef90-B8FJJ3 UniRef90_S2XP85 UniRef90-AOAO24HHE6 UniRef90-B7US81 UniRef90-UPIO00248D06D UniRef90-K31JZ4 UniRef90-Q1GM54 UniRef90-O7NAAO UniRef90-Q4KAW3
UniRef90 V6USG6 UniRef90-UP10003FBAE8E UniRef90-B7JYU3 UniRef90-UP1000377E57E UniRef90 G2M1C6 UniR Ref90-H2JJ85 UniRef90-L8M677 UniRef90-B8L736
UniRef90_C4U3C9 UniRe99O-C4U3C9 UniRef90-V1VMV9 UniRef90-A9COW6 UniRef90_G9Z0G1

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SQNTALLFSLIIGTTYGGDGSTTALLPNLLQGHAPMHPGRGPGL NAFPKLAQA YPGGVLPDLRGEFDRGWDDGRGV VDYPTLHGVLGNTWGAAAGYFRLPDLRGVVPRGWDHGRGK
SQNTALFSLI GTTYGGDGSTMGLP SENETLFNLIGTTYGGDGQTYRLPD
 SQFPELAKV
NQYPKLAQV

- YPSSNL ATFADLEAAIGYTWGGSGGQFAVP
 NGNQALFTLLGTTFGGNGTNFGLPDMRSRVPVGAGQLSGG AQHTALFSILGTTYGGDGTTFALPDTQGRALIGAGSGAGL ATYPDLAVYLGTTFNKGAGNFRLPESRGEFLRGWDHGRGM -

TAYADLFAVIGDTYKGSS
SQNSALFAVLGTTYGGDG
SEYANLFAAVGTMFGDGS
SAYPKLAAA
ANNAALFSLDGTTYGGDG
TKYPFLASSLGGTYGGDG


TGYPALFSLLGTQYGGDG
TGYPELAAVVGA


QSALFAVI GTDYGDGSNTFNLP
AQNTALFSLLGTTYGGNGNTFAL
QTNTALFSLLGTQYGGNGTTFALP
DDYPELNSIIGTYYGTADRYFKLP
VKYPKLALLA
TTYPLLAAA
AQNQALAVVLOAF
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NEYQLLYVLLGKKYGGDGTNFALP
SQNTALFSLLGTTYGGDGSNFALP
SQYQALYALIGTTYGGDGTTFKLP
SENEVLFALIGNTYGGDGETFATP
ADYPALWAYAQFSTGDGTYTFRMP
AQNTALFSVLGTQYGGDGSTFALP
SEYEVLYVLLGTTYGGDGNTFAVP
RSHTTLFSTIGVNYGGDGTNFALP
ANNTTLFSLIGTTYGGDGTTVALP
AENQALFSLLGYVYGGTGVSFALP
AQYTALFSLIGTTYGGNGTTEALP
AKYPQLAKL
SDYPKLAAA
YPAGTAP
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RQNTALFSLLGTQYGGDGTTFQLP SAMEVLYALLGTDYGGDGPTFALP
TTYDNLFSVISTMYGDGSTTFNLPDLRGYFLRGWSHGSGK QRYSALFALLGTYYGGDGTTFGLPNLQGGVPLGMDPNA

TAYPKLA AA
SQNTALFSLIGTTYGGDG
QQNTALFAILGTTYGGNGSTFGLP


NNNESLYSLLGTTYGGDGTTFALP

SAYPKLAAA
T T Y P K L A V A
YPSGVIP
SENDALFALLGTTYGGDGTNFALP

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| UniRef90 B0C4D6 | SRSLGQKGGAEIITLS |
| UniRef90-UPI0004673EF9 | DPDAAQRTGG |
| UniRef90-U7G7U4 | TSRRLGEKVGVT TVTLTEAQIPSHSHTA |
| UniRef90-D3F | SQSYVIGG EQFGSEQVTLTVNQI |
| UniRef90-HOHYU4 | SLLHDLGETGGGSEVTLL |
| $\begin{aligned} & \text { UniRef90OPIIOOO34B784E } \\ & \text { UniRef90 QO2CQ0 } \end{aligned}$ | AETGGAETVTLTDQQTPQHSHVP |
| UniRef90-U7R445 | DPSRSLLVWQEGSYLLRAKEDDVV NLSENDHTV |
| UniRef90-D2BZF1 | DNGRSIGSKQNATG |
| UniRef90_A0A028DZI | GREL LS P Q G |
| UniRef90-E6VL29 UniRef90 A1SXZ2 | GGVGTLQTNQDGLHSHSASGHHDHYLDL WSSGMNPHSHPA |
| UniRef90-R4RAE7 | SSWSLAERAGVEQTTLTAENTPPHTHGFQVSANEAASAVV1 |
| UniRef90 Q98E23 | SLHDLGETGGSETVTLL ESEPPTHSHGL |
| UniRef90-UP10003B4FF6A | SSYTQGQMGGSESVALSLA |
| UniRef90- UPIO002FF6783 | DPGRGCGTAQEDALQNIITAGL |
| UniRef90-UONT38 | LSQEQDGKTTSSFDYGTKTSSSNHGTKTTNSAGDHSHNT |
| UniRef90-U7R114 | DPNRALLKWQEGSYLLQEGGTGDNTLTFSLNNLKK |
| UniRef90-UPI0002375EEE | PAHVHTA |
| UniRef90-V5CHW5 | DAGRV |
| UniRef90-18TWE2 | DLNRTLGSWQKPSLVNGDYNENKSVVTL |
| UniRef90 G5 | LSQEQDGKTTSSFDYGTKTTSLFDYGTKTTSNAGSHTHS |
| UniRef90-Q21F | R ETVTLNEAQ\PSHTHQL |
| UniRef90_UP10002E92F6B |  |
| UniRef90-L7W739 | M M M Y M Nopalp |
| UniRef90 UPI000470FC7B | SPRRIGETYGSNSVA |
| UniRef90-C6BT48 |  |
| UniRef90_U1AK99 | DPSRTFGVETESVA QMDAFQGHRHNV |
| UniRef90-UPI0004690D3B | QDYVQGEVGGA |
| UniRet90-×51A8 |  |
| UniRef90 L8M2V1 | DAKDRTYSAK |
| UniRef90-D3V8L6 | DSNRNVLSWQEGSY VQVYNPPDRIVNFSLDERKD |
| UniRef90-A0A0261516 | QEQDGTSSFDYGTKSTNNTGAHTHNVTANSAGAHTHTA |
| G2T71 | RPYAQQAGTDRVSLTLA QTPPH |
| UniRef90 AOAO31GTN6 | SNRPLGQRSGSESVTLL |
| UniRef9-EEE3V2 | TPRVLAQTGGQGAHTLTLAEMPAHIDHATTAGVANVKAVL |
| UniRef90-J3C2N5 | SLHDLGETGGSETVTLL |
| UniRet90_UPIOOO3 |  |
|  | DSGRGFGT LQYDAFQGHRHNV |
| UniRef90-L9PHS66 |  |
| UniRef90 UPI00031238BD | DSGRSLLSMQ |
| UniRef90-W4BEE8 | SPRHVGEKLGG EPTVTLTQT |
| UniRef90-UP10003F7 | PYQPLGAAMGQE |
| UniRef90 O7N4M2 | DAKRVILTSQEDALQ |
| UniRef90_UP100036C9AA | STYSVGDDAG MESVMLTRSNLPPHNHMV |
| UniRef90 UPIOOO36275CF |  |
| UniRef90 JoR2B1 | DSNRKFGS |
| UniRef90-V1E894 |  |
| iRe990-u5SQ83 |  |
| UniRef90-U6Z | DAKRE |
| UniRef90_U70 | PGRKLLSAENDLLASHEHGYRDRYYDENVNSLI HGA |
| UniRet90_HOHIU4 | SLHDLGETAGSETVTLL QSEIPAHSHALL |
| UniRef90 O4KHC6 | M |
| UniRef90-VICT4 | DVGRALGSGT |
| UniRef90-13TH10 | S YSMGNATGSQTVTLTVGQLPQHTHTM |
| UniRef90-I3TH11 | PFPHPLAQ QFGSETVTLTEAMMPAHSHSW |
| UniRef90 W7G4S4 | TPHSIGEAFGSNGVT |
|  | LTAREQDGKTMSS |
| UniRef90-B8FJJ3 | DP ${ }^{\text {d }}$ DGSRTDRGDGTCGDYVGTRQEDEFASHTH |
| UniRef90 S2XP85 |  |
| UniRef90-A0AO24HHE6 | SNYELGQVGGTESVTLLSSNTPPHSपNV NV |
|  | D |
| UniRet90-UP1000248D060 | S S ALGQKDGVENVTLMV |
| UniRef90-K31JZ4 | LSQEQDGVKSHGHTASAANTDAFDYGTKSTASAGAH |
| UniRef90-Q7NAA | DSGREILSHQNSTKLPNL |
| UniRef90-Q4KAW3 | TPRALGQAVGTEQVT |
| UniRet90_V6USG6 | GN |
| UniRef90_UP10003FBAE8E | SLHDLGESGGSETVTLLSNN ESEPMHGHTV |
| UniRef90-B7JY | SPRVLGESDGSETVTLLSNN OPSHTHTA |
| UniRet90 G2M1C6 | SNYVLAQRAGT ETVTLTDLQMPAHTHVA |
| UniRef90-H2JJ85 | TSGVHGSTRVGQTEDYSTSLPRTSNFSLSTD GAHTHSA |
| UniRe990-8M677 | $G$ |
| UniRef90_B8L736 | QRVI GQ |
| UniRef90_C4U3C9 | DGGRA |
| UniRef90 KOBKHO V | LSQEQDGMKSHTHSASASST |
| A9C0W6 | SNRVLGQHMGAEDVTLSI SQLPGHTHQF |
| UniRee90_G9zogi | DPGRG $\quad$ LLSYVGDKLRSHTH |

UniRef90_B0C4D6
UniRef90-C6CGA4
UniRef90_UPI0004673EF9 UniRef90-U7G7U4 UniRef90_D3F8R3 UniRef90_HOHYU4
UniRef90_UPIOOO34B784E UniRef90-Q02CQ0 UniRef90_U7R445 UniRef90-D2BZF1 UniRef90-A0A028DZN9 UniRef90_E6VL29 UniRef90-A1SXZ2 UniRef90-R4RAE7 UniRef90 Q98E23 UniRef90_UPI0003B4FF6A UniRef90_UPI0002FDF748 UniRef90-UPI0002FF6783 UniRef90_U0NT38 UniRef90-U7R114 UniRef90-Q094A8 UniRef90_UPI0002375EEE UniRef90-V5CHW5 UniRef90-_18TWE2 UniRef90_UPI00036AADAE UniRef90_G5U0K9 UniRef90_Q21FE8 UniRef90_UPI0002E92F6B UniRef90_L7W739 UniRef90-U4W1G9 UniRef90_UPI000470FC7B UniRef90_C6BT48 UniRef90-U1AK99 UniRef90-UPI0003FB1DBF UniRef90-UPIO004690D3B UniRef90-X5IA88 UniRef90_L8M2V1 UniRef90_D3V8L6
UniRef90_U0B5C7 UniRef90-A0A0261516 UniRef90 G2T716 UniRef90-A0A031GTN6 UniRef90-E5E3V2 UniRef90 FOSE36 UniRef90-J3C2N5 UniRef90_UPIO00349206B UniRef90_UOZCR8 UniRef90-L9PHS6 UniRef90-TOGOE1 UniRef90_UPI00031238BD UniRef90-W4BEE8 UniRef90_UPI0003F78807 UniRef90-Q7N4M2 UniRef90-UPI00036C9AAD UniRef90-UPI00036275CF UniRef90-Q12HS4 UniRef90-J0R2B1 UniRef90-V1E894 UniRef90-U5SQ83 UniRef9-U6Z9P5 UniRef90-HOHIU4 UniRef90_Q4KHC6 UniRef90_V7ICT4 UniRef90-I3TH12 UniRef90-I3TH10 UniRef90-13TH11
UniRef90 W7G4S4 UniRef90-H5GSS2 UniRef90-B5SEM1 UniRef90-B8FJJ3 UniRef90_AOA024HHE6 UniRef90-B7US81 UniRef90_UPIO00248D06D UniRef90 K3IJZ4 UniRef90-Q1GM54 UniRef90-Q7NAAO UniRef90_Q4KAW3 UniRet90_VGUSG6 UniRef90-B7JYU3 UniRef90_UPI000377E57E UniRef90-G2M1C6 UniRef90-H2JJ85 UniRef90-L8M677 UniRef90_B8L736 UniRef90_C4U3C9 UniRef90-KOBKHO UniRef90-V1VMV9 UniRef90-A9C0W6

130
150
160
RATSETAEDQEPGTDRALLARSSRG GALIHANNDSANTYKSMGF $G G V V G T A G G Q T G V P$ RATSGSGGVPGP DNQTWNNGVY NYY TK VA
TAQNAPGN EVSSTLVNAQTPRGNPVGNSFARLSSGNT LAABAGATNA SPSNGF WAECS
 GDTLVSNGMAYADSDSSTNT INFSNQGYPDGTLMAGSAGK G G L $K G S S S S A N S T D Q D G T P A T L R R S R U Y N A M L$ $A \square T P P \square N S \square S F G K F K R V S P T D S V T G \square Y S K G T N N S T M$ VA SASDGDNTKPAGQLFAQGAGVSDWGT
 SGNSDDKNPANNSDAKSKGKTMYSTDAPDVAMNSDSUSFS LGEGVTAS GAFALTERDSNSFADGAVTDRQGSSLT $P V G N T G A N S G L G T G K T S N A G G H S H T V N \square G A H T H T V G \square G A H$ QWDTPENKTLSLRTRAAKAFWTWNDMKASY NDPGHSHS TTTNAEGSGDL R R P NRDASKGHV PAPL ASTTLGTQQEPGATA $\square P A G S N Q R N A Q Y A A S G T A N$ $F V S T P R A A Q Y P A T D S D D G$ GLP QNRSVYGWEDP LSSGHVSSE GSYWWAPSTDQVMRELD Q PTSNGANSGRLATQYTSATTGSSGSHSHTSHQHTVGDGAH RGSSSAGAETVPSPTASMAQPRGGR I
$N D T G T L P C S A P Y G F E Q D A R G A$
$T A K A S S G T G T S N D P A G A N F A S$ S GTAKASSGTGTSNDPAGANFASASTPLNPTTTVDTQ GLGFKNEDSLFDMQQYDFKMP DGTNPNNY EGA GUNQPDQSKRTSTPVAGNYGGLPTSGAPFVPNATANAQFS $T \| T V S G R T S V T A S P Y H S A G A A R S L V T T P N F G S P F$
$Q Q U W T T G G G G I T F P S T G V N S A V Q A A I D A T D G T V$
TASTTPATLPNTGDTQNHLLATSNDYNATNPSAGTLLYGA SPAATPNSMTFGKFTGAGIITGLYSAGTGTSAAVPMNPQF EFNSGRQSKGNSGGRRGKY

LNWD WPDTEVIKDRGKAVTADKSGTWS DDKRYDGV $\square N T N V K V G D A F A T A D S V I T V G N P A N P K A G N N S D Y V P A S A D$ SSGTVVGNGTVPSSGAHTHSVSGTAASAGAHAHTVGDGAH TVASASGTLTAGPNATAPLSFCSFVATKATPPKPQTTFTQ S WGEVNSTLATSNVPAANLLLT A APSNNDKMYTSDLTG PWGENSSRYAPPGTWGGNDKTGSNNTDGDNTWGMTNHGHN $N V S S A N A S Q T A A T A N A T L A T A G S G S G R S F N P V L K Y G N S A P$ SVSGLNSQAT A ALDAVSAAVQLADTASNPDTAPTAANAF DGASGGGPGSAS NQVWTTGAGVTFPSPGVNSAGQA NASSAAPPPTGSGVN DTDGGSWVPAAPSPKPKVYAAAA WTASVGDHDAPFGTHSTNQVGSHGGVDNDNPWAFTNHGHN ENGTTASALALGNTER QGIVATGNQNSPKDAYWAQAPKPDPTAPQPPGYNNTADTQ LVSNGDGAS NDPSAASLAKSSVVIQRGANPDPTSSYT RAVVINAAGAFSLGDSTHRGNTDDGGDYG
TTYASNTDGA LDGLPAETNFDGRYKVRGNPSVAEHFLPGS R GTTGFANEREPSSTRTFAQFFAPSYSNNDQNL
 GASTANGNTSTPSPTTVPASGLNALNAFSSAAPNTNQLRVV GNFD GGSGHS IN NYDQ
 $R G N N T \square G D S P V A T G N T L A R \square A N V Y Q Q D S$
NYWA WRDGTGTGTHNYAKPWG
QALNETATSDQTLTPSATAMLGRT ANAAPYAQYPNPGPS SALSTEGTLPDPTTSTGDTTNSRESGSQPDGPEDYGTPPP
 PVGTGAGNGVSAGYNAALGTGTTSSAGGHAHNVY IGAHNH FATSGTATTITPG PGTMLATVSNPQGFYNAGTAN $\square G \square N N A G T K A S P E T G C Y \square G F D A R G G S G V V R Y M Q A N V A A$ QLATTASSPASVPSSANSYMGASGGGQGTATDYSDAQGAN MAQSQQGT TMSPKDGYWANSTLTQFGGGT GWGEASG GRHGYFDSTRNNQGSADTDWDNYKFRTSTGAH IIASLDTSSTGTPSDT SENVGLLVSPPDNHFSSNYPSEDMASDFEEAEFGSGQYFS TGTA ELDTPSTGAVLAKSVDTTGSGPEVKIYTATATDTTL
 QA TNTMASTVTPGPDVLPGTTPSPNAFYDAGTANPPG
 KGMNVAATDANDPDPNNRVVANTSGNTSDPNDYSDNTSNL
 GTME DTGTDGYGSAPAHGFTGSNASRTWSGATSTTGNHAH PSSGSGHANLNAESPAPSSKAGVTGSAGAHTHTVGVGGAH $S V A G A A S T S K P Q Q Q V P A A V T G F N L Y A P S P A T T A A T L G P S S$
$L F G N G D G Y Q T P A V$

|  |  |
| :---: | :---: |
| UniRef90＿BOC4D6 UniRef90＿C6CGA | VGAQDLDSNGWQFGYGATRPRNI |
| UniRef90 UPIOOO4673EF9 | DFIAAADALQPTAFDNVPRSAETRMKNVAVMY |
| UniRef90－U7G7U4 UniRef90 D3F8R3 |  |
| UniRef90－HOHYU4 | $\\| V P \mathrm{MSDQTLAPAGGDQPHNNLQPYLTCYF}$ |
| UniRet90－UPIO0034B784E | MASGVIANVGGGQGHENMQPYLAVNF |
|  | MPRNVAFNY |
| UniRef90－D2BZF1 | DNGVS GTASNTDFANGVNWDTVRPRNIAFSY |
| UniRef90 AOAO28DZZN9 |  |
|  |  |
|  |  |
| UniRet90＿R4RAET | VSLIN P SLIS P ALG |
| UniRef90＿O98E23 UniRef90－UPI0003B | NQPNAQFSPSAITAPAGGSQPHNNMMPYLTL S |
| UniRei90－UPIO002FDF | LVATNNLSATTTLNTGGDQSHENRMPYVVVNW |
| UniRef90 UPIIO002FF6783 | FDASRVARTSNETRPHNL |
| UniRef90－UONT38 | THSVA】GSHGHT】TVNATGNAENT |
| UniRef90－U7R114 | DTPTNHVTTGVTLDTNGGGAHNNMQPYTTVNF |
| UniRef90－UPIO002375EEE | SAGGNQPFSDMQPHLGMNY |
|  |  |
| UniRef90－UPI00036AADAE | R P P Y A |
| 90－G5U0K9 |  |
| UniRef90 Q21FE8 | TQPLESLASLAAGDTGGSQSHNNMQPY／AMNF |
| UniRet90－UPIod | EOAGGYG GIN A A MAVPTA |
|  | VYTSGANDGTMAANSGSSQSHTN |
| UniRef90 U4W |  |
|  | ANGTGP STGGGQPAENRPRNV |
| UniRef90－U1AK99 | SGGPRVASETRPRNFAL LIA CI |
| UniRef90－UP | VYGVASGVMAATGVAGSGQAHENRQPFLTLNYII |
| UniF | SSEACGSSSGNQPHENM |
| UniRef90－X51A88 UniRef90 L8M2V1 |  |
| UniRef90－D3V8L6 | dLe |
| UniRef90－U0B5C7 | NS ${ }^{\text {dMGTQRTAEDNFTGAWDS MRPRNLSFNYIVRA }}$ |
| UniRef90＿A0A0261516 | THSVALGSHGHTITVNAAGNAENTVKNAFN |
| UniRef90－A0A031GTN6 | ALASAATGATGGNLPHENTMPTL |
|  | VGTGGAGRHSHGDTVNADGGNEARP |
| UniRet90－FOSE36 | TVILNSKSVA】SGDTGGGGSHNNVQPSFALNFII |
| UniRef90－J3C2N5 | TMNFCla |
| UniRe90＿uliouo3492 |  |
| UniRef90＿UOZCR8 | DATDGTVAGVSGAPRVASE |
| UniRef90－T0C | VGПGAAGNHSHADTVNGDGANESRPRNVA |
| UniRet90－UPIO003123 | TSNGSRGKWYD |
| UniRef90＿W4B |  |
| UniRef90 O7N4M2 | AVNP |
| UniRet90 UPIOC | ELSPITVG |
| UniRef90－UP100036275C | VDLA |
| UniRef90－212H | LPVNTSTTVNVSGNTAMMGAG RPPF |
| Uni |  |
| UniRet90－U5SQ83 | DGVNYVTI |
| UniRef90 U6Z9P5 |  |
| UniRef90 U70XU： | P |
| UniRe＿HOHU | TGNTGVKDPGTGANAGGAGDSETRPRNLA |
| UniRef90－V7ICT4 | GIGQ |
| UniRef90－－13TH12 | PSPVVMMDVRSLTQVGSYQAHENRQPAL |
| UniRet90＿13TH10 | TATLTPLRPEAVSSTGGGQAHPNEQPS |
| UniRef90－13TH11 | N GPMASQ G G G G |
| UniReefol H7G4S4 | TTGDGAHAHGMTITVNATGNAENTVKNAAFNY |
| UniRet90－B5SEM1 | PTKAAFSGQAVAVAGASLIPHSNHMPT |
| UniRef90－B8FJJ | PVGSNSSGMSAVLPGSVGGAETRPKNV |
| UniRef90－A0AO24HHE6 |  |
| UniRef90－B7U | NQPGFSRFSFAGPSRGDGVNRPRNITFNYVR |
| UniRef90－UP1000248D06D | MNPGALAQSGGGQPHDN |
| UniRef90 K3IJZ4 | NHTALLGSHSHTDTVNAAGNAENT |
|  | PGALPSLSTFRGGGAAHQNMQPYM |
| Q4 | SMSPNFLSPALGTPNKAVEPHSNMMGS |
| UniRef90－V6USC | KPFNDTVPGSTVQTTGSNLPFSNQSPY |
|  | DPNGMSASSIGEAGGSQPHNNMQP |
| UniRef90 B7JYU3 | VDMNT |
| UniRef90＿UPIO00377E57E <br> niRet90 G2M1C6 | NAFAAGTLGM |
| Uni | GGDSETRPVNIYLDYIIKSSN |
|  | GGQGHENRQPSL |
| UniRef90－88L736 | AVSATGSSLPHENCMP |
| UniRef90－C4U3C9 | SGGNGATTKRFDASRVVPTAHENR |
| UniRef90－V1VMV9 | S HNVVLGSHSHTITVNAAGNTENTVKNIAFNY |
| UniRef90－A9C0W6 | MQIVG <br> GGQPHNNVMPSLVLSYII |
|  |  |




UniRef90＿UPIo0046A4E4A UniRef90－UPI000368FA21 UniRef90－D3V377 UniRef90＿LOKEE4 UniRef90 C6C6Z0 UniRef90＿U3A9G3 UniRef90－M5E997 UniRef90 I3CVE0 UniRef90＿Q1GM56 UniRef90＿C5A8Q3 UniRef90－X2H9P4
UniRef90 G0CBQ5 UniRef90－B0SX66 UniRef90＿UPI00037B3BEA UniRef90 ${ }^{-}$A0A023XEI4 UniRef90－X7N307 UniRef90＿L9PJV3 UniRef90－E8UZT3
UniRef90 J4XB35 UniRef90－A1JK75
UniRef90－K2MEK4 UniRef90－UPI00035E473E UniRef90 D5JFL5 UniRef90－HOHNH5 UniRef90－X6CP03 UniRef90 L0G597 UniRef90－B1EPN6 UniRef90＿C7R9Z4
UniRef90 E5AKP3 UniRef90－M5RNB1 UniRef90＿UPI0004721DC6 UniRef90－V6F4P4 UniRef90＿UPI000344F0BC UniRef90－H0S322 UniRef90－UPI00041E7198 UniRef90－B2FIY3
UniRef90 K2PTQ1 UniRef90－UPI0004704A42 UniRef90－NOIGT5 UniRef90－H1 Y6CO UniRef90 L1LXR6 UniRef90＿UPIO003F9DE10 UniRef90＿M8ZXX2 UniRef90 G0AKD3 UniRef90－TOQCJ1
UniRef90 ${ }^{\text {W7YOP }}$ UniRef90 UPI000467988F UniRef90 UPI000362A6C8 UniRef90＿UPI0003757963 UniRef90＿E6SD09 UniRef90 J2XKN7 UniRef90－M4TN94 UniRef90＿S9TIA0 UniRef90＿NOANT2 UniRef90 G0AKD2 UniRef90＿UPI000472A3D9 UniRef90－S1T418 UniRef90 UPIO00316960B UniRef90－X6K9J0 UniRef90－B0C4D4 UniRef90＿UPI00016A3B97 UniRef90 G2DJE2 UniRef90－A9DXD UniRef90－B0SX68 UniRef90＿H3RFA7 UniRef90－Q2T5M0 UniRef90－B3PJI6 UniRef90－JOZA40 UniRef90－U7QUL2 UniRef90＿UPI000255826B UniRef90 UPI000478C75E UniRef90＿UPI0002D4E3E3 UniRef90－U2GIS1 UniRef90＿X6H6R4 UniRef90 L7W3B7 UniRef90＿Q7P172 UniRef90－UPI0003F64A75 UniRef90－F4L4P7 UniRef90 UPI0004035F31 UniRef90＿D3FEP8 UniRef90＿J1A1Z5 UniRef90 F9ZVK5 UniRef90－D8NGP1 UniRef90＿C7PNC4 UniRef90＿I3THU2 UniRef90 UPI0002559E7A UniRef90－HOSUB6 UniRef90－UPI000299E8CF UniRef90 K1B317 UniRef90－H5LS77 UniRef90－JOKSF9

TNRLIGQQF GVDS VT
D A GRVIDMSSQSGSYSAVDPVLNDDA
D P T
$\square N V L S A K P S Q \square Q S H T H D Y$
 NN TGGANRVTLSDEQMPRHKHGDSDHSGGTHTHDV $E Q L L Q G A K Q G \square E Y V T L T A A E M P A H S H A V$
DASRVNGSG
GQKS GA
DTSRAAGSLQKHSHDASSTVGGSETVTLGDGEMPAHTHAA DDGRQLGTTQSDTVQRM
SSRQLGNSFGTAAVSLL PTQ $\square$ PPHQHGV $S Y V Q G Q V M G E Y S H T L I Q T E \square P Q H V H \square L Q A D$ DGGRTIGS YQLDDFKSHKHSL PNFSLGQPGG EEAHTLNEPEMPVHSHALL LSTELDGVKSHNHTGSDSNTQSFNHGIKTTNTAGAHSHDS SERFQGEAGGQTSVTLAAK NEOVSDOLSELPSHSHDM S GYVIGQLAG NEQVSLQLPEMPQHNHLM
RADQ
DADRVFASG
T ！Q Q
GNAAALGALQGDEIKEHSHYV

AETGGAEQVT LTMAQMPSHGH
NPNRGYGT YEGDMLGWHEHPL
SANRLTNQSGGLNGDTLGATGGSETHTLTLAQUPAHDHGG
AETGGAEGVALTVSQI PAHSHPL
SDHRPGQKGGAETNTLTLANLPSHSHSLAPVSIKA
LSQEQDGDKSHTHSASASSTDTFNHGTKTTNNTGAHTHTV
SAEHPEGQKSGE EAHTLSASEDPSHKHTV
DSGRGIGTWQDSQNRAHAHAATDHVHGAWMDERGWH $\square H A V$
GADFSLGQKLGA
TPRNIGQSGGSRTVTLL
TNRTLGDKVGA
DPSRSLGSNQRGS
ASYLLGQLDGEDEHT
DGGRALGS LQAATEVL
AETGGAEEDT LTMPEMPMHSHAL
RAREVRLGESSGSNDNT
S SWGASAGGLVSGQYQY SSYVMGQMSGSESVTLLQTQDPQHTPSLMASTVLATTGAV LSQEMDGNKSHSHTARAQSTSSFDYGTKSTNTTGNHTHQF
DD
D
SNYQMGQKGGSESVTQLTSNMPTHTHMLSMDTNSSLAATS
SSYVLGQMSGSENVTLTTNNLPAHVHDGSPAAVQTVATGT
LSQEQDGDKSHTHSASVSSTDHTHSVSGTAASAGAHTHSM
WQA EMPGHSHAV
TTYTQGERAGS
WQADEFKSHSHSY
GP $\square \mathrm{NLGQ} \mathrm{G}$ GGVENTTLTTNQMPQHTHTVTFGSPLTATGQA SDRPI GQRS GLQDNTLSVLN PFYVLGQ $\square$ GG
GEQGGAES
DTGRVFGS
APTPQL
TNRGUAQTFGSEQ
DASRQI GAF QGDAHGAGASEAPDHV
SPRVI GQQGGSESVTLISG

| SSTYSLGQK |  |
| :--- | :--- |
| LSLEADGNK AHTHGSA GETVSVTLI ANQMPAHTHGV |  |

AHTHASA ETDLGTTSSDNEHDHGW
SERFLGETGGETSDTLL QTEMPQHNHFV
S ETHTWAGNEMPQHTHQL
 TQAGTTYVIGERAGVESVTLTANQMAQHTHPL DSGRALLSAQGDAIRNITGT
DATRQI GAFQGDQHTAWTDVQGWHGHHGWTNAVGDHQHVS TPRTVGESSGSAGVSL
DAGRIILAQQGDAIR
DP WRSFAS QQACSPRRKRSLDEEECLGLSGDALQEFDQ円A DSGRGLLS DVGRTIGSDQDE

LQNQQVQFHSHLAA
AETGGSEETQLT $\square$ SQ $\frac{1}{\text { LPS S S SHAF }}$
DSGRVLLS ${ }_{N}$ NSDGKFMRGTGGNAAADGVAQQDEFQGATH
AETGGVEEVNMTISQDPSHSHPM
T N $\square \mathrm{K}$ LGERGGA
DNGRGFGTWQKGTLTFSDPS
S LHDLGETGGSD
AETGGAEEVQLLSEMPQHGTL
STAFAQGSKGG
SPRIIGETGGVPEVT
DRFRYLGTLQHDAMRKHD
QNHTLGQQSG QTYVTLNENQMPPHNHTV
DSARTLGSWQAGSHGASAGEVADHVHNAWTDGQGYHNHEM


SQUDLGEVGGVENVT 号TYNQLPSHRHTQ
RAD
DAARA LLS DQNGMLEKHRH【VVANDGYDTKDEFKKHDHKA

UniRef90 UPI00046A4E4A UniRef90-UPI000368FA21 UniRef90-D3V377 UniRef90_LOKEE4 UniRef90_C6C6Z0 UniRef90_U3A9G3 UniRef90-M5E997 UniRef90_I3CVE0 UniRef90-Q1GM56 UniRef90_C5A8Q3 UniRef90-X2H9P4
UniRef90 G0CBQ5 UniRef90-B0SX66 UniRef90_UPIO0037B3BEA UniRef90-A0A023XEI4 UniRef90-X7N307 UniRef90_L9PJV3 UniRef90-E8UZT3
UniRef90 J4XB35 UniRef90_A1JK75 UniRef90_K2MEK4 UniRef90_UPI00035E473E UniRef90_D5JFL5 UniRef90-HOHNH5
UniRef90- 6 CPO UniRef90 L0G597 UniRef90-B1EPN6 UniRef90_C7R9Z4
UniRef90_ 5 AKP3 UniRef90- M5RNB1 UniRef90_UPI0004721DC6 UniRef90-V6F4P4 UniRef90-UPI000344F0BC UniRef90 H0S322 UniRef90-UPI00041E7198 UniRef90 B2FIY3 UniRef90 K2PTQ1 UniRef90-UPI0004704A42 UniRef90_NOIGT5 UniRef90-H1Y6C0 UniRef90 L1LXR6 UniRef90_UPIO003F9DE10 UniRef90_M8ZXX2 UniRef90 G0AKD3 UniRef90-TOQCJ1
UniRef90 ${ }^{-}$W7YOP5 UniRef90-UPI000467988F UniRef90_UPIO00362A6C8 UniRef90_UPI0003757963 UniRef90_E6SD09 UniRef90-J2XKN7 UniRef90-M4TN94
UniRef90-S9TIA0
UniRef90_NOANT2
UniRef90_G0AKD2
UniRef90_UPI000472A3D9 UniRef90-S1T418 UniRef90-UPI000316960B UniRef90-X6K9J0 UniRef90-B0C4D4 UniRef90-UPI00016A3B97 UniRef90_G2DJE2 UniRef90-A9DXD1 UniRef90-B0SX68 UniRef90-H3RFA7 UniRef90_Q2T5M0 UniRef90-B3PJI6 UniRef90_K3JKN7 UniRef90_JOZA40 UniRef90-U7QUL2 UniRef90-UPI000255826B UniRef90-UPIO00478C75E UniRef90_UPI0002D4E3E3 UniRef90-U2GIS1 UniRef90-X6H6R4 UniRef90-L7W3B7 UniRef90_Q7P172 UniRef90_UPI0003F64A75 UniRef90_F4L4P7 UniRef90-UPI0004035F31 UniRef90_D3FEP8 UniRef90-J1A1Z5 UniRef90-D8NGP1 UniRef90-C7PNC4 UniRef90_13THU2 UniRef90_UPI0002559E7A UniRef90-HOSUB6 UniRef90_UPI000299E8CF UniRef90-K1B317 UniRef90-H5LS77 UniRef90-JOKSF9

NCTSAAATT ${ }^{130}{ }^{1} \mathrm{~T} P \mathrm{C}$
140
150
PSTLLATVPNAQGFYDAGTA $S G L D V I S N D P T S L T L Q Y G L$ RDRYYSENSGSGGTGATNWEW LGNAGNGSQA APQNNVLAS STLVRDYASETADANM NITEC HVDSPDSNARSIYWIPATKTDRLTGPTYWGV $T$ D ADKGEAGGTVTHGLDGSEGKE KATTANAT GTGSSYGFGGSMLGNANVDKTQ H ASSQVGNSRTPASHLLAAEDSPDAAYHAPTPGTL DQQPHAHDTWLGSGPYNGRVGEAWSDPANANDA LDPGDH


AATAAANNTSSAVAGNSFGQS LSKASSGSTSAFNMYNTA NADVVTETGA MSSTATGEAVTPGPTLHLATATDGTLYAPAAN

GSGESSEGGKPRYGTRDNTTNNFGSGESDHDNYKFNTGSH RASSAPATTASPNGNTDAVSVSPTPPY DGPSPMHPMGAAV | $G V S N L A G S L S D P T \quad G G U L A Q G N S G T D R S P V L I S D Y V S$ |  |
| :--- | :--- |
| $W Y G N N E T E L V$ | $V$ |

$T N F E V R \quad G V T G G P T S A W F T S G N G V A T S N$
$E T W G V$
G LRGTSDAASPAYTAANGALAKTAGANVYALA STGSGGAHSHTGNIPKWQAVYE LGSVATATSQLP SPAQATEQLPGTNGATTDAAPMSSVLANTQAQTYYNL $G G R Y G G D S$
SASSDNAT HDPGHNHASVVGPYGDEGYYNTHHTLTGDS $\square$ GHGDGNHDHN

HASGNNANSNVAAGNLWATAPNTTYHSLTPGG NTAAAGSGTTVEGMLWAKTPGRVGGAAYGGFT
E SHRPSSGAGGPVLGSSDG
TASQGAADYGLDSSTIGAWPGVKVVLTADTAPVVPGDATW LASTTVADTATPGTNTVLGTATTGNAPSANAGTYEVMAAC FA SANGANTAQPLNAVIG DFGVHTTNADSSRQVNNVGSGRDSRMDS $\square N G G G L T \square I G V D$ FANNQQGTSGNPTD NFPANSGASDKEYT GATVVPAADSGETMYVTDDTGANGATDAANA $G$ GYINSYWGDSNHTSFQPGGGAWTQAAGDHAHTVYDGGH $T Q P Q E A D T \square K D A D Q G S A K V V P T D K$ AD $\square N S G E A V T D H G K T$ TAQVVNADATSVAP\PGGCLG\PNDGAGTTYQLYHSGPQP GSTVQTAATETSILGAPNFTDPSTGGSVDVNTFANNTATP TFVSVNTSSAGAHTHSVSGTASGTAASAGAHAHTVGDGAH NVYH QTNATLQANVPDNGYGLTGPANTSPFVPTPTAN
QTVNSLSGTSS QAEGNYLANSGVFDKEYATSTDNEPGTV AI PAASASTATQAAPAATTVLGP IAAGGRPGTDYSTTAAD GPSSTVAVPVSGEDADQD EAAGKFLANGTFYHNAPGG
 SAGAHNHQTAFVREKDAANMVTEGGNAVFGDEMTDGPQYD QAFNSPASSLTPTGQLPAVTQGG NTGYLTPPAGS NT LNVDA NTATVSQGVAFANTTSPADGYLKDGLGT WT PDHQH $\square$ S PWGENPQMYNPPWGTWGSPNNRGAQGSDNGM AATTALANATTPAATLELAAAAGNDKTYTSSLAGLNPF $M A Q S Q Q G T S \quad N A P A G G Y W A N S T L T Q F G G G T$
 $A M$ STESGAQGTLTDAVVLGKSGGGTLYQNNTSQNLVQM QASSSAANNPDPTGHVLGEVSSG PWGENPSYQPPWGTWGAANNVGSSSTDADNRWGLTTHGHN GVA $\square$ A G $\square K$ SNYAQTAGS $\square G M D T V D M S D Y S N A R L V W S G G R Q$ SFAGSSVNAAVSQPAFNDAEGNULASGMVNAMYAPSSADAB $M A A S T A G S V G T P T G Q T M L S S M G P T G Q S L N A Y L P Y$
$S A L S Q Q P D S G F G W L P N V N Y S G A M A P Q V I N G G G R G A T T A Q P$ PWGEHNNRGAEGSDNDNVYGMTSPAGNHNNTEGNGNHGHA VAKTVNPAAS GSPQVEVPFWFTDKDKPPRDPWF $\square R S P F A N F L Y Y S T P D K E$ GHG GRGQGSFGDTKAWAYPGSYHD DSKQALPFTNNGSD WSADVSSGTVYGFGASAPGVGGGNNDGTGAFYEDGSSGHQ $\square \mathrm{A}$ GDNGVDPTVQT IG GNLSECNVDGGDGVGRVIYMPASGGVSQ $G 1 G Q Q P G V G Q S N N G G T G G F V G Q N S$
$V A S L N \square G Q D T S P S G K V V A Q L G G G A \quad \square P Y D Q D T T D$ SMKVSSAAADDDSPGSGSSIGASEDFVEGSANTALASGS
$D N T V I G Y G D L G A D P V D K N K Y D L G L S V V S T A N G V Y L P D L D S G$
 LGSTNNGSGTSPGGGTVFGRNASAPFYTTDTSVG ACNDAGNAEVQ DASDAFWAGAKG

MGSTDAGSTPNPGGAVLATGST DQVYR
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UR UniRef90-B0SX66 UniRef90_UPI00037B3BEA UniRef90_A0A023XEI4 UniRef90-X7N307 UniRef90-L9PJV3 UniRef90-E8UZT3
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SSKSGYHNHSATCDYSGNTSHENRPPYYALCYIMKL APSSLVALLAPASVSTAGSGAHDNNQPSTAVNFCIALL GASVNTPLTLGAYGAPRFGTETRPRNVAMLAVIK VGGAGAGDHABITNAGSQAHENMOPYIAVNFCIAD VHGAGAGDHNHADAVQPSGGDEARPRNIALLAMIRA TPLTLUNKVKFDNAEVATSAETRPRNVALLAC:KM LTPSAPMTPAALAPAGGSQPHENRQPFAALTDC:ALL TPSYDVMAACIVVAAGNSVPHDNMMPTVTCNYCI NHS $\square$ ALGSHNHSLTDNNTGNTENTVKNIAFNYIVRL LSGAN KNPRNDGATA KNPRNDGNTRFRFSTTNAGGDETRPQNSAVVFIIKAKN SGGDETRPRNAFNYIVRA PAGLNSMKANRVLAVGGSQPHSNMAPYLCMNYAI TKA TGVGGEETRMKNIALNYVI AA AHVHSTPSAGSGAHNNVQPTIAVNKII KT ADNASPMAANAIAGAGGSQPHDNFQPYLCVNFI SLNAGSQTVSETGRTGGNIPVNNVQPYSCISFI I SHSDATGAHSHTVTVSATGNSENTVKNVAYNYUVRM VGПGNAGNHSHTDTVNDDGGTEARPRNIALDAMI RA PTALSAQSVG NVGGSPHENMHPFQTVNFCI AV NSVPMHPGAVQSAGGSQPHNNMQPYQAIHFII $M V G T S$
VGPAGQ SMA HNNGMPTVVGNYCI RPRNVALDA Cl| K
DNSNTSMNHHMTGLVGGDपPVNNMQPYLGLNF\IAL VVSMGGNQPHDNEMPTLTVQFCIA EHTMYDGPHGHVVIVDADGNAETTVKNIAFNY VRG EPPPAKNQSQPSADSEVKLSFETRPKNVSVYYIIK VVALKGSVSGSTGMTGGSQPTPVLPPYLAVNWI:ABE THSVAlGSHGHTITVNAAGNAENTVKNIAFNYVVRL GRASGAGAGFQTFETNKTGGNETRPRNAFNYTVRA M ${ }^{1}$
TTLISGNVPNGTASSAGGGOPFSNRNPYLGRYVI VYGSGPDAASGTTNNTGSNAPNNMEPYLVMQWC|ALLE VTPAGN $\qquad$ TSDHPG TPAASTLATNAVNVAGASQPHDNHMATQTLSYLI SSTAVTLDNESVGNVGGGQGHNNVMPCATVNFVI TSPAGNHGHAHADTVQPDGGDESRPRNVALDALIRA

AMSPASTSTAGNTDPHENTMPTLTVSFI A PGGTMNPNALTPSGGGQPHDNVMPFTTVSFIIAG VY DGPHGHTITDEASGNSETTVKNMAFHYIVRA DPQAAFAENMVLNTGGNLPHNVQPAAMNCIA DPQALSMA
$A L L A G T V T$ NVGGGQG
AGVGGSGAHSHADTVNGDGGNETRPRNGALCAN
 ANEQVALTPASLTPVGGNQPHDNMQPYLGLNFII RAK
 T VDMNDDFAFDASRVVPTANENRPRNLAFNYTVRA GIHDRAH HDHHLLMSERVGDVETRPVNVSVIVGIKT FDG FTNNGAVGAETRPRNIAFNY DVPTVNMGTNATSPTGGSQPHTNFQPYLCVDFTI VVISGEYWRAV Y $\square K S G I T G G N E T R P R N M A F N Y I V R A$
T N M A Q Q A
GWANGYGS VQTLATGGQQPFHER

TRPRNDALDAC GTPMSNGAVRPVGS DQPHNNGQPYGTCYFC|

 T IPLA

NMPSGATTSTGLGQPHENCQPYLRLQYCI



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SSNPF $\square$ GTLASAAETAP

DATNNYPVGADKMMATTFAPRQWWAMCNGAVIDV RY四HADNSVNFYPV

$\square R A \| V P T G A V F P Y A G A S A$

RFATTEWVTAADS
I GEI RIFGGNFAPRD
VGEVRLFPYNFAP NGWFDCDGRLLS GEIRLCAFAFAP KGWALCNGALLSI
DSASPPATVSPTAYTTNPAWGWMVCDGRSLAC QFATTEWVRSSTTVGQIVFEPRTTVRPGGFLKANGVLVNR QLYTSAPPAEFYPVGAPIPWPSDTVPS GYALMQGQTFDK
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$\qquad$
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SAYP五 50
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S
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sunal SQNAALFALLGTTYGGNGTTFGLP
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TQNSALFSLDGAAYGGD NTYTALAKV $N T N Q A L Y S L G G T A Y G G D$
$S Q Y E V L F V L E G T Y G G G$ ASNDALKALLGGFYGGDGSTFKLP
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$M N C L G S E E I D G N G I S$ SFVMGQSAGVEQVT

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LNDPQGAA CSQEMDGNKRHSHSARAQNTSSFDEGSLGTNEVPAHNHALL DAGRT】GSWQKGS

T VVGQRTKAGLPDHKHTE

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G MAVPQFS■ATKGGE
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G
TPQTLGQSLGEASVSLATNN
SRDFVLGQAGGE EAHTDT LNEGPPHTHGF NDLDTHEYKKYGNTGTFDYGTKTTNTTGEHTHGY LSTELDGПKSHNHTGSDSSTDSFNHGSKSSTSTGGHSHPQ SSFTLGQMSGT
DVGRELLSFQEGTWDQPNDENNSTLTALQLGNGENHFNTA LSQELDGNKSHTHTARAQDTDSFDYGTKSTNPTGGHAHEF
 P VTGGLSAG GTVYVGLSQTGGS EESHILTTSEDPA PVYEI GENGGQPTMQLSQAQLPSHTHLAQFQPSGGGQHWM PNYVLGOVGGEOHTLVQAQLPSHET DVSRVFGSAQSANDQSHTHSDHTHTFSGTTNTTGAHTHAL DSARGDGTFQSFQNA SARRTGDTFGANTAVLAAENपPAHGHGLTFFNIPKTTDPV SQNYVLGESAGA LSQEQDSLKSHTHTATTGTTSSFNYGTKSTSSTGAHTHTA QPYAWGQLGGSETHTLIITEMPAHNHTALVNSLTVNPAAS
SNYVPGQLSGTENVTLI KAGEEVHVTSTMPNHSHTM

UniRef90 M4LVA8 UniRef90_UPI00046631DC UniRef90_UPIO004659B6F UniRef90_I4EE51 UniRef90_DOLMW0 UniRef90_L8MAW5
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UniRef90 $\mathrm{UPIOOO} 554 \mathrm{AF3}$ UniRef90_UPIOOO3EB3376 UniRef90_UPIooo373498E UniRef90-K4FKE6 UniRef90 Cozg32 UniRef90_UPIO00429B538 UniRef90_C1F4Q4 UniRef90_J2W7S2 UniRef90-S5M6S2
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 NPASNPANTPTATNSFIGTSGTGPGAANDYSDQLGASPVP GGGVLVDAYGGFSLASQTGGKYVDMNGAS RAAAATAASPNPSGDLLAKPATPIYGPAKNLLNLDPG

EHPGTGTLWFQVFERGPGTWPNERSGNTLGQS

 LAALDNGSTEPGTTQSPENNVFAPSPNNENIYYS GLA VANKNANSSTPTATSTVADSGTQVGRDFNAVPSFVNDANP KAVASRGTTPEPQNQLFAYQGGDPQPDYKQ SAATADPGPAYQDAYFSVSSDTKGVGTGDSYRAATNL QASNNSANTSTA TAFSNAETATNIIFPKNAKAPNNEDLKAVLSDN WFGGGPDVYHVSMDDVHMGNQDRATSDSGNHAHTVVIGPH APGASATSTLKAANATGDMTTPGSNADATSSAALIKIYSS LFKS VAS五NnAAASTPGNTGQVGA

TTGGSS VSASINAVSSAGNTTNPSGKVLATSASRDNGYSNAQDYRE ATDQAPSAGALLARSVDGVTGS SSLPQVYVPAGTAGTTV S GDFKGGDTQEPSNNKL MGSTSNNVEAT AASLNNATGSTVTGNVVGAVGALPAALISNNTDFDHFDLL AASLNNATGSTVTGNVVGAVGAGMVPAASTGATVFPYGRED GY GHYR QVQVGGASSNPAVAPSATNQFLGAGSDDSKPIKDSGGTD A ANGATDAQGNPAPGGVEPWNAGAGGDWGNHAHNVSVTGV NASRLPTDQATPALLGS VENAYRSDGANPSPGDVTT VTGGGGANGVFSRLLRPPYDGSLTGSDTDGSGNEQAVGGG TCNNTQTTNNEPTGA $W$ WTEQQGRGSLPV Y YAVSSAGSS NASSSPATALNVGVSQDRVLAASNLYNPNDPSVSGPGYGA NSAPAPSAPSPSGTAAGAPSVTSTPTKG NVYTAGAAGPDGAGDKSGSSNTSSAGDHASHTHTVDDGAH PWGEAPAYNPPWGTWGAANNRGAEGSDNDNVYGMTSPAGT TGASSAASVNTSAAGAHTHSVSGTAASAGAHAHTVGDGAH VVTTATGTVTAEAGNETAKAMVGNFQQNTQGLIFYSAN YGNNARAASPAAAGRLPARFMVAH NQSFMATDATP NASS GS YVNSYWGDSNHTSFLAGGGAWTKDAGDHAHTTWПGPH DTGP STGVCGERSGGLPATGENGRSDGGYDAVQAA GFAGVNPNSSYGTTAPQGNIINTSGTSVSNHPY GNFAFTDDNSPAMAVRVREAAGAFGLDNGNTNFVNSNSVP NAFAAAATTAAASTTVLLAQTEASQNLYAPAGTP VGDQ TVGATNPADDNYLAVPDYNGTQKSLYNSGTK SF AGTTSTTGTP AANAMLSNIIA PAQFWATNTAAN SKSTADKSTVIDGLSLAAPARSAGRAKTPTLGYNSQTGSS LSAVGNQAAPGAGVWSQNFSAGRNPTPVDQYTEVTTAAPV
 AV YNGQGLVNEPNDILADPHSSASPSVQDNTYNSNA NDSNQQVATKKAASPSAGNALGSPNANAFVAAG TASSENAS LKVPTGNVWGTMSTVTVSV GSAGDADNNAFAGGD $\square N N R L F N T N T K N A G H A H T V G I G A H$ GSFYNTQDDNVAAFKARLNSDGDASLTGISQS TYQPDASSSAGMSGSPQGNYYAASGRKAFYRTPTANTANM GGRYGGDS A AASOAEGGSSATASVTSPTGNVPATTAGVTVFAYGT AASQAEGGD RTPAANLLAAETGG INSYAA GPRPGTSLNGSPGNWNGVGGGANATF GTTNVNNVAGTSTDPTNNYLGSSGPATDKEYNDAAPTGTM VFVSTDYPGVARTYTTSGVVTSS DAD

## GA

 GGDNNLGSLS EPANLGDSSGTGVSS
S
SPA $\frac{L}{G A V T N L S A P A Q G A T \square A T S G V N N A G S F T A D A N Y N Q A T P N V A ~}$ QATSANAT VNDPANTTLLSGSPPNDFYTG

NAATGEASSADPSNNAWATTDSNP NAVSNTTATDATAADSYVAKAPSSGKPPVTTNSFQPSASA
W w TTGAQPSGTRGDWDSDGLRNTVQTSSAGNHAHTVGDGAH NLWQED

SGKWKGGGNNSSPRSTSYHD
TYGGNADTADSDGDSRYDYVNTDTVGDHSHTTADGTHAHT NAVSGAGTSESPTSHLPANTGILDKEYSNQPLTSTMKMGM ENKAVCNDPTFGSTGSRARWFI
G GYVNSYWGDSNHTSFQPGGGAKTQAAGDHAHTVSDGGH QASKD LVSLYNNVDNNLSTIASNDNGEVPVKINDNAVKLLSGGAGK PSAGSQMSSSPMGLVPAQATASEKISAGNYWAQASTGGGS VSVTVNGSSAHGNSGSANYTAGMTDVNRSAGQDFVNNPEA VSSTAIGTAVTPAQTLHLDATASGGELYAPVANAGTY TTEDNTNLGSSSAGGTDSTTNTGSAGDHSHTFSGTTSSSG WTGGSDTGSDQAGSGSEQAVGAGDSADDANTEGSGTHSHN
TGVITTDNRSNAEGYSALDR MASSNTASDP AGHQDSAGSKVGTQFALADGGPAATSSPGSHTHTITMGTH TAGTTNDPDATMVPAKLPNDGSGPTAQPDKGYAVADNTTT HASNSTVNPSSSASGSEWFVNCSVATDLSRSNALFGASDT


|  |  |
| :---: | :---: |
| UniRef90 A0A022PFM9 | MI C |
| UniRef90 Q02CQ1 | TSEI KLFSFGFAPKGWA |
| UniRef90－UPI00034B3439 | GEIRMVGFNFAPT GWAQCQGQLLPI |
| UniRef90 UP100047AF31B | Wel RMMSFGFAP KGWALCDGQLLPI |
| UniRef90 Q116W7 | VPVGT VPYAGLTAP EGWLLCNGQSYDW |
| UniRef90－G1 $\times W C 2$ UniRef90 U5VIC6 | GEIRMFAGAYVPMDWAACNGAALS |
|  | GELRLFAGSYAPV GWAFCDASVLP |
| UniRef90－W9G7 | K G W |
| UniRef90－UPI00046411D7 | 1 RIFPFNFAPR GWAFCDGQLMPI |
| UniRef90－Q0 |  |
| UniRef90－B7LNQ8 | QLYTTAPPSELYPAGAPIPWPSDTDPS GYALMQGQTFDK |
| UniRef90－JOMTG7 | TPPGVIAQYAGSAAP QGWLLCDGAQYDR |
| UniRef90－G2C2Y6 | YPVGAPIPWPSDTVPS GYALMQGQTFDK |
| UniRet90－F4Q9K5 | EPDDPIGRTIMWYFSTNIPSNHLVCDGSEDNL |
| UniReef90－A0A029NV18 | NSTFPVGAPI PWPSDTVPS GYALMQGQTFDK |
| UniRef90－UP1000468A882 | SAAVPSGSVLAYGGATAPV GYLLCDGKOY |
| UniRef90－A3TL51 | FSFNYVPR GW |
| UniRef90＿LTWOJ9 UniRef90 B2VJGO | VGFNYAPR GWV |
| UniRef90 G80H47 | GETRAFAFNYPP酎 WAFCDGT |
| UniRef90－UPIO003A | EIRMVSFNF PPKGWAL |
| UniRef90－138888 | GIDPIPYPLSTVPT GCLAMNGQRFDK |
| UniRe990＿UP1000317622F | GEIRMFGFGRTP QGWQACDGTL |
| UniRef90－C6CWM2 | VGEURMFGGNFAP DGWAFCNGQLLS |
| UniRet90－G4CJE5 | GMMAWCPTDT PPDGWLPCDGRTISQ |
| UniRet90－Y10926 |  |
| UniRet90－A9BMS2 | GEVRVESFNFAP KGWALCN |
| UniRef90－O21FE6 | EVKVVGFNFAPR GWAFCDGQIMQU |
| UniRef90 J1JT4 | （L）GCFGMQRLPS GWLLCDGRAYSR |
| UniRef90 D2QTE9 | GQi ILfag YElR GYVFCNGQ |
| UniRet90－Q4KAW2 | TGEI RLFPFNFAPDN WAVCDGS |
| UniRef90－G8PZC5 | GGI QSFAFNFAPAN W |
| Joat | GLI GPFAMERLP DGWL |
| UniRef90 W7YXL3 | GE RLPPDHYAPKGWLFCEGQ |
| UniRef90－C3X8V7 | VLQEEDAKKGVPVGTVEYFATTTAPPAGY位ADGAAVGR |
| UniRef90－J3E | GTIQAFSFNF PPNGWASCYGQTL |
| UniRef90－UP10002FCFF6C | GTI QPFAFDFAPRD WALCAGQTM |
| UniRef90－UP100035E9E1F | $V G E T R M F G G N Y A P$ QGWALCCNGQLL |
| iRef90－W4S6 | 1 GQ1 MDTGFAFAPKY FAQCNGQL |
| niRef90－UP100036C8746 | $V G T 1$ QmFGFNFAPR GWALCAGQL |
| RiRef90－F9ZKL7 ${ }^{\text {a }}$ | VGELSYVAFNFAP QGWYQCDGQ |
| UniRef90－UP100037BA7F1 UniRef90－Y1FZ67 | VGEVRLYAGLJHAPPQGWALI |
| UniRef90 U7FUD8 | TGETRMFAGNFAPR GWAFCDGQL |
| UniRef90－A0A024ECQ8 | GTIQPFAFNFAP NGWALCNGQT |
|  | GSPGAWPHSKMPNEGFARCNGQLLP |
| UniRef90－UP1000408774 | EMKMVSNFPPKGWAFA |
| UniRef90－UPI000365DDAF | GEI RMFSFKFAPR GWAQCNGQLL |
| UniRef90－HOS3 | GQ1 MPFAGSQPPR GWAFCN |
| niRef90 S23 | RLIFA WNRIP KGWMACS |
| UniRef90－H5FQY8 | IGVPFFWPSAAMPNMVFLK ${ }^{\text {G／}}$ |
| UniRef90－E8THS5 UniRef90 FoLXH3 | VYIGEIRMFAGNFAP AGWMFCQG |
| UniRef90－UPIOOO4686CDC | TGEIRLFPYNYAPQN WA |
| UniRef90－＿2S910 | 1 AEIRIFGFNYPPRS WSFCSGQ |
| UniRef90－D9YGN7 | RVEVKAKGSGGVPVGT VVAWPVATNPEDNWLEC |
| iRef90＿DOKGE3 |  |
| UniRef90 LOKFS3 UniR | GEDRIMSFVFAP KGWALLCN |
| UniRef90－F7P111 | 1 GQ DLLPYTFTPDDYAFCNGALVP |
| UniRef90＿UP1000374ABB9 | UGQ1SUAGNFAPR GWAFCQGQL |
|  | VAE RQMPYNFCPRKGWAFTNGQL |
| UniRef90－UPIOOO37406DC | VGEI RAFAFGFAEACTWLPCNGAVLSA |
| UniRef90－UPIO002DBD416 | IGEIRDFGGNFAPKD WALCDGKI |
| UniRef90－B4D819 | IMSFGF PPMGWALCDGQLLPI |
| UniRef90 c3x3V9 | IAGKLDNTEK【PVGSVITAVAGNVTP DGYLHCNGAPLLI |
| UniRef90－UPI0003091082 | G $\square$ P $\square$ PPQA $\square$ APT GWLKCNGQAFDK |
| UniRef90－A5FGG6 | MFGGNFAP AGWMFCEGQULS |
| UniRef90＿U0L3A5 |  |
| UniRef90－UP100047CEF04 | KKAENGVPPGTVVAFMGDNK\PDGW |
| UniRef90 I7KRW6 | TDUVSSYPDGAPLPWPTDT PPEGYA |
| UniRef90－T9WCLO | PVGAPTPWPSDTVPS GYALMQGQTFDK |
| UniRef90－U9FNH9 | STNPPPDSYPVGAVVAFACSNPPAGFL |
| UniRef90－M4LLM6 UniRef90 6 C6C5D |  |
| UniRef90－A6E583 | GEIAPMG\VNFCPTGWAETNGQ |
| UniRef90－N1NM | REETDRLIMPVGSPIPWPHAN PPAGYUECKGQYFDA |
| UniRef90－M5A618 UniRef90 F2LIZ3 | GERMMVGFDFAPR GWAFCDGQLLP |
| －C4Z174 | QGIRSFGFNFAPR GWAQCNGQLLP |
| $\begin{aligned} & \text { UniRef90-W3VAM } \\ & \text { UniRef90 L8MCP3 } \end{aligned}$ | ITPGATIEWHSAAPIPAGYEPNEGRSFRA |

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UniRef90_UPI000471ABE2
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UniRef90_L8MCP3
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A Q N S ALF S LLGTTYGGNGETFGLPDLRGRVPLLPGS GPGL
N Q N Q A L F S L L GTTYYGGD GRNFAALPN L Q GR V P M M M GN G H T L
$S Q N Q A L F G L L G T Y Y G G N G S N Y Q L P N L Q G R T P V G I G Q Q G L G$
$N Q N Q A L F S L L G T T F G G D G R N F A L P D L R G R A P L H V G G G H T L$

| $E$ | $Q$ |
| :--- | :--- |
| $S$ | $S$ |
| $S$ | $E$ |
| $L$ | $Y$ |
| $K$ | $K$ |

E Q Y S E


## UniRef90 A0A022PFM9

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| :--- |
| UniRef90 | UniRef90_G8PZC5

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UniRef90-UP10004686CDC UniRef90- 225910 UniRef90-D9YGN7 UniRef90-DOKGE3 UniRef90-LOKFS3 UniRef90-UPIO00360D36D UniRef90-F7P111
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UniRef90 UOL3A5 UniRef90_UPIO0047CEF04 UniRef90-17KRW6 UniRef90-K2K3Q0 UniRef90_TgWCLO UniRef90 U9FNH9 UniRef90-M4LLM6 UniRef90-C6C5D4 UniRef90-A6E583 UniRef90 N1NM93 | UniRef90-M5A618 |
| :--- |
| UniRef90 F2473 | UniRef90-F2LLZ3 UniRef90_W3VAM7

UniRef90_W3VAM7
niRef90_L8MCP3

DSGRGIVSWQEGSYLVQETNNPPNCV GERGGEQN SNDD $\mathbb{C l V G G T E N \square A \square T T E N M P Q H T H V A T V S G G G A V T G A D}$ GERGGEQ AHTLSISEQPQHLHVA SNRVLGQNGGTETVYSLNAKGGEEKHTLTKDEMPSHDHSK TPRTLGQ\|VGTEQVAMTAANTPAHSHGFSVTNAPATTAEP DTGRKLLSAQGATLLRTA MLDYYNQDTTGT SG EIVSQGQSAGEASHTLTVG DPDIGQTGGT DP
 LSQEQDGIKSHTHSASASSTSSFDYGTKSTNNDGAHTHAA SNYSLGQTGGVEQVT LSQEQDGDKSHTHSASASNTDSFDYGTKSTNNTGAHTHSV LSTEADGVKSHGTKTSSTTGNHNHTVSGNTSSAGAHQHAR YNKPGL
G
QNVAQGQKAGTNTVTVSANGAGEQAHTLTVNEMPTHGHAM
DGGRVILSSQDALVAGHVHTLARMW
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NNYVLGQRAGTETVTLVDLQMPAHTHTA
QA NNATGGMYTVGQNAGTESVTLDMNQRAHSHAA
\SQEQDGПKSHNHGASASSTDSFDYGTKTSNSTGAHTHSA G
GQKGGS
DPWRSFASVQPASSERLSSRKKRDVVTVTAAQIPAHNHAV DTGRVLMSEQGDAVRNITGT
RSYVLGQRSGSYETTLTV DNLPAHNHAL
TNRSLGQAVGGDTTTLLPA

 YVQGEDLGEYSHTLIQTEMPQHLHFLKADATNAGTANV

 GTKGGA ETVS円THNQMPTHTH PSADPNWQPPAAPMGQAAGAETVTLVADNLPPHSHRM SPRTMGQSSGSESVTLLSTNVPAQQISTANDTV NTII SMFTLGQTSGAENVTLTLNNMPAHNHPATTSTLKAVNSDA TPRPTIG ATFGETNVQLTYGQMPPHTHAF
 AQLRLGGQSSSGEEAVTAGVSLDRNLDPGTSALPANTHNA GERVGAQ AHTLSGSEDPTHLHES DSSR

## GQ

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DSGRALLSTQVDADRNITG
GQ TYRPVGDAKGADAVKMLPAN FAGHTHAM
 QNNGTTVGITSTTHSSGA RSVGQVQGDGTR NVTG GERGGEQ whe TSYNWAATAGWGSSYHLGEYGGVEEVTVTAAQLPAHNHGV SDYVEGQVGGSSNVTLLTSN
SGHSLGERGGEQAHTLSIAEDPTHपHTLNGSTTQSTT
 GERGGEQG
LAAGLPNLYG
DNGRALLSIQGDA TRNTTGN

 LSTEADGVKSHSHSASASSTDSFDYGTKTSNTTGNHNHTV LSQEQDGDKSHTHSASASSTSSFDYGTKSTNNTGSHTHSS DPGRAFGS LQLDALQAHTHVS
LSQEMDGNKSHSHTARAQDTDSFDCGTKLTNTMGNHTH
DSGRAVLSVQ
SPRSWGQSSG QQTVTLTTNQLAAHSHAV DPGRNVRSVQRGQSPFSAFSGYHETSW
SNEHHHGQKGGE AP VLGETGGAEQTTLTSSQMPMHTHTAGGTSTVSDSDPA TPRSQGERGGSESVTLTLG
DSGRSLGSVQGDAIR

UniRef90 A0A022PFm9 UniRef90-UPI000471ABE2 UniRef90-Q02CQ1 UniRef90_UPIO0034B3439 UniRef90_UPI00047AF31B UniRef90-Q116W7 UniRef90-G1 XWC2 UniRef90 U5VIC6 UniRef90-A0A017KZL6 UniRef90_W9G7U6 UniRef90_UPI00046411D7 UniRef90_Q03314 UniRef90-B7LNQ8 UniReffo-JOMTG7 UniRef90-G2C2Y6
UniRef90 F4Q9K5 UniRef90-AOAO29NV18 UniRef90_UPIO0046C06B4 UniRef90-UPI000468A882 UniRef90-A3TL51
UniRefefo-L7WOJ9 UniRef90-B2VJGO UniRef90-G8QH47
UniRef90-UPIO003A6CB16 UniRef90-13BB88 UniRef90-UPIoo0317622F UniRef90_C6CWM2 UniRef90-G4CJE5 UniRef90-Y1Q926 UniRef90-A9BMS2 UniRef90_Q21FE6 UniReffo- 21 JT46 UniRef90-K8ACJO UniRef90-D2QTE9
UniRet90-Q4KAW2 UniRef90-G8PZC5 UniRef90_JoQA00 UniRef90-W7YXL3 UniRef90-UPI0003730B47 UniRef90_C3X8V7 UniRef90_J3E590 UniRef90-UPIo002FCFF6C UniRef90-A1TUY8 UniRef90-UPI00035E9E1F UniRef90-W4S6X9 UniRef90_UPI00036C8746 UniRef90_F9ZKL7 UniRef90-UPIo0037BA7F1 UniRef90_Y1FZ67 UniRef90-U7FUD8 UniRef90-A0A024ECQ8 UniRet90-U5BVF2 UniRef90-U4W3P2 UniRef90-UP100040B77CA UniRef90_UP1000365DDAF UniRef90-HOS323 UniRef90-S2X7W2 UniRef90-H5FQY8 UniRef90 E8THS5
UniRef90-FOLXH3
UniRef90-UP10004686CDC UniRef90- Q2S910 UniRef90_D9YGN7 UniRef90-DOKGE3 UniRef90-LOKFS3 UniRef90-UPIOOO360D36D UniRef90-F7P111
UniRef90-UPI000374ABB9 UniRef90_O98E21 UniRef90-F4AS35
UniRef90 UPIO0037406DC UniRef90-UPI0002DBD416 UniRef90-B4D819 UniRef90-C3х3V9 UniRef90-I4TK06 UniRef90_UPIOOO3091082 UniRef90_A5FGG6

UniRef90 U0L3A5 UniRef90 UOL3A5 UniRef90-UPIOOO47CEF04 UniRef90-17RRW6 UniRef90-K2K300 UniRef90-TgWCLO UniRef90-M4LLM6 UniRef90-C6C5D4 UniRef90-A6E583 UniRef90-N1NM93 | UniRef90-M5A618 |
| :--- |
| UniRet90 F2173 | UniRef90-C4ZIZ4 UniRef90_W3VAM7 UniRef90_L8MCP3

 ANPSNALLAAATFGNNAYLDGTANT TGCSDQANDTPPSGSLWGKDASSPYAASGNAAMLPAD SIPATTSTQGEGGVPGPTTVLGPCNAGGRPASLYSTATDN GEYKFILKK GTSATASPQPVPTNAYLAPTASLYGPAAGLT GEYKFILKKDGKVTTSNNV AGPSAHNTCTFAAFTPAGPVKGLYSTANTDTAVTLNNGAL VGMGFNNEDSDTDRREGSFKMPDGTTFSNPVMAMSDNGM LVADASATTGVPDPLSMLATSVGSPAYAPAQNLVAMDAGA E $\square$ TTPAG $\square \mathrm{S}_{\mathrm{SQ}} \mathrm{QNAAGTS} \mathrm{\| SSKSTGSP}$ S GTANSAGGHQHQSSGPYANSNRTADFPNGSGTSR $\square$ SGK G GEVSAWSNGAA SAGNHTHSVTTSAAGAHTHSVSGTAASAGAHAHTVGПGAH QAGTSNCHWHVNGWAGGAPNHMRGVVDGRPNSVADAEGDV
SGTAANANVSSGRVASSNSAQTHLGATSAGAHTHSVSGT SYDGYNSAGPNGNAKDTGTVSGATASSWSGTTSATGNHAH NV SANNGSPGDRRDYSSDGGSSAYPQGDS NGSTTASGGS DDPTGRFLGSASNLYSPVSFQTDNPGT NTKLTAGTATNGGVTPAAGNSLTATLSSAPTAAADYTASP SSSDETNSSVKHLGVSNNDHNTTKDNMGNGILEEADGGLG VAEGANASAL ABAGAYDAKGVKGTPPRVTAVNTYA RAVDSNGOGSSANDPTTAYLANTQPNNFYSTVPGTQ $R Y V G Q N Q R A E S N R T N I D Q L T V G D S V R P N D A I I K V A N E S D$
$T T A A A T S A A P V G L V P G A V N G G L F Y A S D V G A S Q V A M S G Q S$ NSSTLSGTSNSPENAFWA ASDKNLYSDAASDVTLNAAA VGDDVVGSDAMPDRMPHVF AASGTTGQATSGN GNLPAAARGHYAQSGNT KAS LTGDANDAFDRGTEMSKPFWFTEDRSPFANFLYYSTPDKH GNVQFRTGGESGTGAQSGVFKMEASTVAGNSSAGVDP NAFSETGTAS APAGALLANTGLGDTEYपP LAKDGTDTTGALDDANGTAYLAQPRGVRLYNGTVPPTAAP DVGDSEVPFWFTEKDKPPRLPWFIDRSFANFLYYSTPITE LGSSNVASDP SAAAAGAS FGQTYGKPSSGS VLGSASGAFNSQSGASSELLASGGSGKRVNTDFVASRSNP QLANPASSPVSVPTATNSFIGTSGGGPGTATDYSDGLGAT QLAATASNPVTVPTATNSFIGASGGGPGSASIYSDQQGAT A $\square$ PLAANEPGTSSTPENMVWATGSKTSY SSANGDNRTPTGRDFANNNVASGT AHALYAA GLASAPSNATTAPTATNCYIGASAPSGPPSAGDFSDQLGT NVLTSAATMEWPTQ T Q $\square$ ASPASNPVTAPTATNSY $\square$ GASGGGPGSAS $\square F S D A Q G A$ NKSGSSNDSASSSADSGDPEGRVFAGNSNFPNRFGEKFDE VNEYGTPTDRD NAMVTGNGMATSANENNENAEANN QGTTNNAD
MAG QASSNDGTGR GASATNNVFATNKVPPDNPTLIFTTAGTN
AASTGGGDSA FGNTTNSGALYSGGAQNDTNDQPGGSTVAQ
LATT SVSSQTSPANNVVAQ
RGGTGSGN QARDGTDNTAAVDQPTTATY SAAKQAGTTSEPTGQLIFAYQAGDVQPDYKQP
 SHEHHGAADGAGFPQTDASGPMDKHAETEPDGSF
SASGSQGNSTNPNFGGTGNVLAQDPGNDY MASTVAGSVSAADNDPATTAKNTUAGSПPTPMYAAPSG $A V G D A V N L E T D D A T N A L L T R G L S T Q G T G T V L P Y T S T P G$
$Q A G B A N P A D S D T P E T L L G S E A N V G Y A P G V V P Q A M G$ ISPDTNTVLSGSTPQNIYAGAAHLV
STETVNVSTADGNSPSPDGVFADDGRDRDYNAETPDVQLS EGKVVDSAPYAGLSDEPSPTAQNSLSAGTUSRAYGPPGAA NCNNLQTTNNDPTGA $\begin{aligned} & \text { WTDQQGKGSVPV } \\ & \text { OM }\end{aligned}$ QA $\square$ SDNADQT DPA FCWSYGPEPNGTGVFAGSYTGGGSGAYNSN

VGVYSDGLLTYASGVFSLGSSSSNKNNP $\mathrm{M}_{\mathrm{M}} \mathrm{VDGVSSTWV}$

ATSDLADTASPSNADFSTNPPGSKMESS GTTILKQ\|TPLSPA\|NFDNYPD
SQFQLNTAGGSETVPQSGFJVAWKKSYLDRNTSTTGSHNHN SGNTYNSAGPNGNVKFTADVSGATASSWSGTTSATGNHAH
RASNNTGDEP
SPQDAYWAGSGAEAGY GSTGSAGAHTHGNGDRWPGGGSGTAANAGAHAHTVGDGAH VVTAIGLSGGTGEFSGAAGSPGGTRV
QFGGYINSYRGDSNHTSFQPGGGAWTQAAGDHAHTVYGGH
NATNSDGNFP
N NGRRGKGGW
QASSANADSPDAADGA NANPANGNQP GPGGNFWAQDLGGSKDYADAGTV NTTGSDGNPTDESGSNASGAFS YRYKAGGRAA

 UniRef90_UPI00041B4035 UniRef90-D2V517 UniRef90 UPI0003B4F597 UniRef90-UPI00034571F6 UniRef90_H9UT48 UniRef90 J3DLH1 UniRef90 UPIO0036BAE06 UniRef90-H8GR61 UniRef90_UPI000372D343 UniRef90-Q1QPI7 UniRef90 ${ }^{-} 4$ PKFF0 UniRef90-T6Y7G2 UniRef90-B7N3N0 UniRef90_F2JVJ1 UniRef90-Q4UNP7 UniRef90_UPI0003750367 UniRef90_TONT42 UniRef90 DOKGE5 UniRef90_UPI000471D81E UniRef90_Q4KAW4 UniRef90 Q11LT1 UniRef90-P03764 UniRef90-UPIO00469061E UniRef90_F4L4P8 UniRef90 Q58ZA? UniRef90_UPI00025581B3 UniRef90_S9S7R5 UniRef90 F2JVI9 UniRef90-V5TY21 UniRef90_A3XEY5 UniRef90_UPI00047A6794 UniRef90 UPI000476B400 UniRef90-UPI0003829ED9 UniRef90-K2IHG3 UniRef90-B0UTN0 UniRef90 F4SY22 UniRef90_UPIO001A4437B UniRef90-131941
UniRef90 H0S321 UniRef90-M8S149 UniRef90_UPI000413F3D3 UniRef90_A9AVE2 UniRef90 G0K3Q7 UniRef90-A4PE46 UniRef90-W4MC44 UniRef90-L3U8D1 UniRef90_UPIO003B6A40D
UniRef90_UPIO0036300E0 UniRef90 C6CWM3 UniRef90 F9Q9T5 UniRef90-Q79JW3 UniRef90_J3IQ07
UniRef90 X5IR50 UniRef90-DOKGE2 UniRef90_DOKGE4 UniRef90-UPI000370E2D0 UniRef90 UPI0003624287 UniRef90-A0A031IPL5 UniRef90_W1IR84 UniRef90 A0A027Y1M4 UniRef90 A3JP34 UniRef90-X6KAU8 UniRef90_J314B9 UniRef90_G9PUJ8 UniRef90-W0E439 UniRef90_UPI0003006674 UniRef90_A8LRN4 UniRef90 L9PHJ6 UniRef90-UPI0003778D03 UniRef90-UPI000316BF28 UniRef90 UPI0004651B69 UniRef90-UPI0004796586 UniRef90-UPI00047B8043 UniRef90-B4D820 UniRef90 K9X259 UniRef90-F7P113 UniRef90_H4T3C9 UniRef90_C5AlB0 UniRef90_G8P0U7 UniRef90_S6KB44 UniRef90_A0A010YCA6 UniRef90 IЗТХM0 UniRef90-V2V5K1 UniRef90_M5SZD1 UniRef90_U3HH41 UniRef90_R7E3P2 UniRef90_A6FCTO

VGEDRDFAGDFVPV GWQSCDGSLLPI
TGEIRLFPFNYAPQD WAYCDGSALSI G Q I MMTGFEVFAP K Y
RE Y T REE $\square$ D N R $\square \mathrm{P} \square \mathrm{G}$
R E Y T REE $\square$ D N R

$\mathrm{V} P \square \mathrm{G}$
NSAFPA
$G A V D Y A L S T A P$

$\square \mathrm{NKEGA} \mathrm{G}$ K G V V L G A
VGQ $\ Y$ LVGYDFAQR
I GEI RALL GFSFAPR
LN S A P G P Y YWP S S S MP R GWYACLGNLIAI
VGEVRM, MV

K D $\square$ G G D G ${ }_{S} V_{L} P$
$V 1$ WF A A A P P T GY LLE CNGQSTG

SALP

| $V$ | $G$ | $V$ | $P$ | $V$ | $P$ | $W P$ | $S$ | $A$ | $P$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $l$ | $G$ | $S$ | $I$ | $C$ | $Y$ | $M$ | $V$ | $T$ | $S$ | $Y$ |

$R \prod F R R D V V S D P F \quad D G E G Q A F P F T F A A N S A W L D C F G Q L L P I$

 FA Q
WA L
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WL
WA F
WL L
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$W$ WA

WA | E |
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| N |
| N |
| N |
| D |
| $Q$ |
| Y |
| Q |
| N |
| N |
| A |
| D | $\begin{array}{lll}Q & L & L \\ G & L & L\end{array}$

$\qquad$ F G
 V
G
G
G
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G
G

G | G W A | L | $A$ |
| :---: | :---: | :---: |
| $G W A$ | $C$ |  |
| F A F |  |  | G WWLKA

$E \square R \square M S F N F \quad P P K G W A F C N G Q \square L P$
 GEVRQFPFNFAP K GWAQCNGQLL S I \G \| P I P Y P LS TVP T ES YPVGS PI PWPSATAP PQGYLVMNGQSTSC $T G E \square R$ $M$ W WGTPVPP E GWL E L N GQPFNP

EI RIMSFGF PPK GWA C
VGE L F L F A GNFCPRS T
S V P
GATLEW
T T A Q A Q S D P L L
 GFMENN V G FK F GAKFSA WA MA GARA GWALCN GA L L A



 $A L P D G A I F D F A G P T P P P$
 VGEVRIFA GNFAP A GWMF C E GQQL L

$G E \square R M V A F D F A P \quad A G W A D C D G Q S V T \square$
VGEI RAVGFNFAPV GWASCNGSLL SI
TGE I R LVPYNFVPQN

$\square A S I V T W M P D F A P \quad K G W A F$
TGTMALWMP D AP K GWAFCQ GQIL S I
IGSVVGWFA GNFAP R A G WAK A E G Q L Y P
S SMPVGELGRGFAGATAP AGWLLCQGQLLNV


## UniRef90 D3FEP7 UniRef90-X0Y8F5 UniRef90-V4H160 UniRef90 E7UML0

 UniRef90_UPI00041B4035 UniRef90-D2V517 UniRef90_UPI0003B4F597 UniRef90_UPI00034571F6 UniRef90_H9UT48 UniRef90_J3DLH1 UniRef90 UPI00036BAE06 UniRef90_H8GR61 UniRef90_UPI000372D343 UniRef90 Q1QPI7 UniRef90-L4PKF0 UniRef90_T6Y7G2 UniRef90_B7N3N0 UniRef90_F2JVJ1 UniRef90_Q4UNP7 UniRef90_-UPIO003750367 UniRef90_TONT42 UniRef90 D0KGE5 UniRef90_UPIO00471D81E UniRef90_Q4KAW4UniRef90_Q11LT1 UniRef90 - P03764 UniRef90_UPI000469061E UniRef90_F4L4P8 UniRef90 Q58ZA2 UniRef90_UPIO0025581B3 UniRef90_S9S7R5 UniRef90_F2JVI9 UniRef90_V5TY21 UniRef90_A3XEY5 UniRef90_UPI00047A6794 UniRef90-UPI000476B400 UniRef90_UPI0003829ED9 UniRef90_K2IHG3
UniRef90_B0UTN0
UniRef90_F4SY22
UniRef90-UPI0001A4437B UniRef90_I3I941
UniRef90_H0S321 UniRef90_M8S149 UniRef90_UPI000413F3D3 UniRef90_A9AVE2 UniRef90_A4PE46 UniRef90 - W4MC44 UniRef90_L3U8D1 UniRef90-UPIO003B6A40D UniRef90_UPIO0036300E0 UniRef90 ${ }^{-}$C6CWM3 UniRef90_F9Q9T5 UniRef90-Q79JW3
UniRef90-J3IQ07 UniRef90_X5IR50 UniRef90_DOKGE2 UniRef90_DOKGE4 UniRef90_UPIO00370E2D0 UniRef90_UPIO003624287 UniRef90_A0A031IPL5 UniRef90_W1IR84 UniRef90A0A027Y1M4 UniRef90_A3JP34 UniRef90-X6KAU8 UniRef90_J3I4B9 UniRef90_G9PUJ8 UniRef90_W0E439
UniRef90_UPI0003006674 UniRef90_A8LRN4 UniRef90_L9PHJ6 UniRef90_UPIO003778D03 UniRef90_UPIO00316BF28 UniRef90_UPI0004651B69 UniRef90_UPI0004796586 UniRef90_UPI00047B8043 UniRef90_B4D820 UniRef90_K9X259 UniRef90_F7P113 UniRef90_H4T3C9 UniRef90_C5AIB0 UniRef90_G8P0U7 UniRef90_S6KB44 UniRef90_A0A010YCA6 UniRef90_I3TXM0 UniRef90_V2V5K1 UniRef90-M5SZD1 UniRef90_U3HH41 UniRef90_R7E3P2
UniRef90 A6FCT0
 ASYGDLAVLLGDTYGNGGGNFQLPDLRTHVPAGFSTG TDNASLFSLLGSNFGGDGTTYALPDMRGRIPVGSGQGPGL AQNSALFSLLGTTYGGDGTTFALPNLDGRMALGAGTSQGK SAYPKLAAA S
N Y Q A

YPS GVLPDMRGWTIKGPASGRAV AENETLYQLIGTTYGGDGSNFGMPDLRGRAAVHFGSAPE
 $N D Y Q G L F S L L G T R Y G G D G H N F A L P D L R G R T P V G A G A S V D A$ SQNTALFSLVGT TYGGDGTSFGVPNLQGRAPMHWGTAPGL NQNQTLFSLLGTTFGGDGRNFALPDLRGR\PDHVGYSHTL

SAYPKLAAA
SQYPKLALA
YPSGVI PDMRGWTIKGKASGRAV

S QNAALFSLIHTTYGGNGTTYNLPDLRGRTPIGAGD
NQNQALFSLLGTRFGGNGTTFALPDMRGRTPVGF

SGNPVLASL
YPSSRVP

SPYPLLRAALGSPFGTSGSDPRVP
SQYQALESLLGTTYGGNGQTGGL
NQNQALFSLLGTTFGGDGRNFALP
ATYPDLYYANGNSDGGMTAYFAV
SQNSALFSLLGTNYGGDGTTFGL
A S YPKLA LVV
SENDTLFNLI GTTYGGDGSTFAMP
S Y S LLA SVVG
$P N V P D G G R L P A H Q G N N G V$
NEYPALYSLI GNKYGGDGKTFRIPNLTGTVPVGDGQVP
$D P Y V L L F T L L G W N F G G S V N T F G U P N L G S M A V M G U G Q G P G Q$
$R T Y P D L R T L G N K N T L P N L T R S D V G M T A Y F P D G W D T P E L$
EKYPNLAKV YPT LK
NQYQALYALIGNDWGGSQGNFAL
NSNQALFSLLGTTYGGDGTTFAL
QRYSPLFALI GTYYGGNGTTFALP
SAYPKLAAA
NQNQALFALLGTTFGGDGRNFAL
LRTPDLRNRFIVGAGANYDSGNL
AQNQALFSLLGTFYGGNGTTFQL
TTYAALYAEI GTTFGDGAATFNLRDLRGEFLRGWDDGRGV
AENEALFAQLGSTFGGNGTTFGLPDMRGRVPVHVGGTTGT
MYPKLAKA YPTNKLP
NQNQALFALLGTTYGGNGTNFALPNLQGRAPIHVDATSG
TSYASYFSLVSTTFGDGSTTFNVPDLRGRVVAGLGNMGGS QQNTALFSLGTTYGGNGTTTFAL
RRYPKLAQK YPSGQLP
SRYPQLARA
NQNQALFALLGTVYGGNGQTFGL QQNPALYSVIGTLYGGT
SGNPVLASL
SGNPILASL
$\begin{array}{ll}G Q & N \\ Y & F \\ Y & S \\ Y & Q\end{array}$
NQFQALYSLLGTQFGGDGTNFALP NQNQGLFSLLGTTYGGDGRNFGL
 TDYPVLAKVF STNTALLFSLLGTTYGGDGTTEGL NQNQPLFSLLGTRYGGNGTNFAL QQNSALFSLLGTYYGGNGTTFALPDLR AAYPELFAAIGTRYGDGTTTFNLPNTEDRFPRFA G G G
 SQNSALESLLGTQFGGDGTTFAL NQNQALESSLGGTNYGGNGNNFAL
 TQYPELFAADGYTWGGSGTTFYLPNYRGRVLVGRDNMGGV SQNTALFSLLGTYYGGDGSTFALPNLQDTCALGQGQSSAG
 TNATP
QSNAALYSLIGVQFGGDAKTFNDP MYPKLAKA

YPTNKLP A Q N NAL FALLGTAYGGTGTTFNLP SEYNVLFVLLGTTFGGDGQTFGLP QHSPALYSVI GNLYGGTGQNFQL AQNQAVFALI GTTYGGNGTTFALP SSYPNLFAVIGNTFGGDGTTFAGVPNMIDDNFARGWDNGPGL ASYNALFSILGTTYGGDGTTFGLPDLRGRAAVHYGTGP


| $D$ | $R$ | $D$ | $R$ | $F$ |
| :--- | :--- | :--- | :--- | :--- |
| $D$ | $L$ | $V$ |  |  |
| $R$ | $G$ | $R$ | $T$ | $P$ | $D L R G R T P D V$

$D L R G E F D R G W D D G R G V$



| UniRef90_D3FEP7UniRef90_X0Y8F5UniRef90_V4H160UniRef90_J3CB41UniRef90_E7UML0UniRef90_UPI00041B4035UniRef90_D2V517UniRef90_UPI0003B4F597UniRef90_UPI00034571F6UniRef90_H9UT48UniRef90_J3DLH1 |  |
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GERSGTEG $\square^{90}$
100
DPDFGTVGQTGGAR
$P N R D I G G Q K G G T G E G A R T L T V N$
FNPLGMVAGSEQTTLL A QNDPS $\square G A G F Q F K$
LSQEQDGTSSFDYGTKSTNNTGAHTHSLSTSSAGSHQHSQ TPRVMGASSGVEKVTVADANMPAHVHALSTDTATTTDNDA SNRTLAQKVG EESHQLQUSELPSHSHSG GSYPLSQAAGTEQET LSA G 1 PVGADQ
$D V G R T L L S G$ VTLTPANLTGHTHAV
AWQP SPYD G ADDDGAETVALTSAATIMDHAHNM
TPRP $\square$ GQRAGSPPVTLVGLLGAETVALTAAQVPAHTH

## GERGGEQ

GERGGEQ A HT L S I GE: P A H TH
YP LGMTSGSMSVTLTVPQLPAHNHLI DPGW P DSPYELGEKAGTGTVMLTIAQLPSHAHQC LSQEQDGTSSFDYGTKSTNNTGAHTHSLSGSTNAAGNHSH LPGRSDGSSQGWSPGSHV LSQEQDGTSSFDYGTKSTNNTGAHTHSLSGSTGSAGVHTH Y VEPSTGVATDYSMGSKGGQEFVTLTPDNMPSHTHDF
 DSSRLLLS WQEGSY LVQEDYNKADNV SRADLSVQGDA IR
RSASFAMGQTGGEDTHTLTMPELPSHTHQA
ENPVASTSPVLGVHELGSMDGAEWVALTLNNLPAHNHVA SANRLTNQSGGVNGDVLGDTGGAETHTLSVGQMPSHNHSG LSQEQDGDKSHTHSASASGTDSFDYGTKSTNNTGAHAHSG TTRVMGENSGSEQVTATLNNDPNHTHTLAAGVTATTTVQL GERGGEQ A HTLS YRYLVGKYGS $\square$ SNVP $\square$ ANASNN $\square S V G E T Q S D E I I K K H V H K V$ GQRTDGQKGGTESTTGGV
SSTGPGLNTHILGRREGASAMH LLEKELPKHTHDV QNMPSHTHEA
 SSYVMGEVGGVENVTLTLN

QYANHTH
DS GRIF GTLQQDALQNIQGSFDGПSSTYNY

SNRTLGQTAGDASVT
YKYLI EKYTS IDDNVPKANAANELVVGRVQEDA【KTHYDNY
DTGRSLLSGQTATFIRTALQDYYGYDLNT NVKV
ANVTRAQVFGAENVSLTTSNVAPHDHPATVAADPVVNGAA
$P Q G A K A G A \quad E T V T L T P S N L P Q H N H F V$
EPRV1GGA ETMGTSTAFLTTAEMPMHSHTL
LSQQEQDGDKSHTHSASASTTSSFDYGTKSTANMGAHTHSVV
GERGGEQ
YGTNQGTTGGSDVVA LT $\square$ DQMPRHTHGGSTNAAGDHSHWV
GQPGG VEGVVLNVSQMPA
DSGRG $\square$ GTWQS GSPVV
VEGVVLNVSQMPAHSHSF
SVRTMGQQFGSENTTLTSAN
DSGRNLLSAQNDA $\square Q N V V G S F G R \quad T Q Q F R D V L S S G$ TVLGARFGEAAHTDTMSELPSHQHAV

DAGRDLLS WQYGSLLV
TPRVMGE $\square$ SGAEQVTATGGDRNRH
TDRPVGTALGADRITMGPSN
DPDRAMLSYQEDAIRNLTGEFQ
DTDHARLL LLSEQNDADRNDT T I
HQGSFGG
L—E


YPTSGGQ $\square G G T E T Q T L T Q T Q$
$D T G R K L G T \ Q G D A \square R N \square T G G F G T P T T E W G K S$

$\triangle \vee G G Q G G$
LLSAQADDFKMHEHKF

LGSSGGGGSYPVGMVSGTNS
EEFHTLTLGEMPTHNHFV VTLITSQLPAHNHLV


QPGAAGGAA
HVTLTTAQQVPQHGHTVV
 $Y$ GGALGTGQSPCNLSHYHNVGAVTVNENQGQQHGFSGTA SQYY IGQTGGEPYVTLLAA VVGGRGG EDEDAHSLDAPVAQPETQGEMPTHNHMI AETGGSGDSDAHSLADPVAQPP L
GNTGGLLKEKTTSPTTTQGGKGGEENVIGTEEQMPSHNHGV D A GRALLNRQPHTILDHAHYMELDTGD
TPVTR GQQGGTETVTLTTNQLPTHTHVATVAGGGGTT\S!


FAGHTHQV
LPCHSHNM
$S P V R \square G E A A G A E T Q T M T D Q T L P A H T H F A L P Q L H P V P L S T A$
$A F G S F Q K A T S V F M G D$
PNDS $\square G Q K A G S E Q S V L T V S H L P T H S H G \square P D A P \prod S T D N S G G$
G S
R S T
TGGADSDTLSSNQLPSHTHAL
SS $\square$ HWGQRGGAEDKVLNVSEDPSHTHTATFDGSKASATPA

UniRef90 D3FEP7 UniRef90-X0Y8F5 UniRef90- V 416160 UniRef90_J3CB41
UniRef90_E7UMLO UniRef90-UPIOO041B4035 UniRef90-D2V517 UniRef90-UPIO003B4F597 UniRef90-UPIO0034571F6 UniRef90_H9UT48 UniRef90-J3DLH1 UniRef90-UPIO0036BAE06 UniRef90-H8GR61 UniRef90_UPIO00372D343 UniRef90-Q1QPI7 UniRef90-L4PKFO UniRef90-T6Y7G2 UniRef90-B7N3N0 UniRef90-F2JVJ1 UniRef90-Q4UNP7 UniRef90-UPIOOO3750367 UniRef90-TONT42 UniRef90-DOKGE5 UniRef90-UPIO00471D81E UniRef90-Q4KAW4
UniRef90-Q11LT1 UniRef90-P03764 UniRef90-UPIOO0469061E UniRef90 ${ }^{-}$F4L4P8 UniRef90-O58ZA2 UniRef90_UPIO0025581B3 UniRef90-S9S7R5 UniRef90-F2JVI9 UniRef90-V5TY21 UniRef90-A3XEY5 UniRef90-UPIO0047A6794 UniRef90_UPIOO0476B400 UniRef90-UPIO003829ED9 UniRef90-K21HG3 UniRef90-BOUTNO UniRef90-F4SY22 UniRef90-UPIO001A4437B UniRef90-131941 UniRef90-HOS321 UniRef90-M8S149 UniRef90_UPI000413F3D3 UniRef90-A9AVE2 UniRef90-GOK3Q7 UniRef90-A4PE 46
niref
W4MC44 UniRef90-L3U8D1 UniRef90-UPIO003B6A40D UniRef90-UPIOOO36300E0 UniRef90_C6CWM3 UniRet90-F9Q9T5 UniRef90-O79JW3 UniRef90- X5IR50 UniRef90-Dokge2 UniRef90-DOKGE4 UniRef90-UPIOOO370E2DO UniRef90-UPIO003624287 UniRef90-A0A0311PL5 UniRef90_W1IR84 UniRef90-A0A027Y1M4 UniRef90-A3JP34 UniRef90-X6KAU8 UniRef90-J314B9 UniRet90-G9PUJ8 UniRef90-WOE439
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MASTT
 GFGEAFTFDLGR』APGGAKNGSKGGQDNDNYYYGTTTTGG QV T TA AVS ELDA P L TGPRTNSGSQPT GMFPAGSTQSGTAASAGAHAHTVGDGAH


FAASTAPGSFGSPEHAVVASPPGVTMFDRDS
QVKDGTEASAA LDVPNSTAYLAQPRNVRVYNNTAPDAGGP EL

D SLN A ILKA GT $T$ TAK GDIDVA QNNAYLAVDVNAGYRLRFVNANPT

VGRATNVTATTNTPSSSVVMLANSSASALYGSAASLDAMA QAVAT Q GSGR GASAANNIGGGNTLDSDNPKADFGPA GSAA GGTTTTGDKGNPTNALYG ANSAPDYGTA R D GRRFNPSVFKDTYQYGYTSSGTAASAGAHAHTVGIGAH WT SAS GS S $\square P T S T T V P S Q N G R E L G P A A T A G D G G V I R S L G G S$ GNG $\square R W P G G G G S A L A F Y D G G G S G T A A S S G A H A H T V G I G A H$ YASNDPSTNPALINGMMGKATDHTGTDFDLYSNANNLVTM EGSSAAGNNRSPS GRSFGTNASTTGPATALYAA NMSNA $\square A T S A T P T G A \square V G K K G R$
 NIT GEFNPGGS SN WGKGVFS SYGWPYPSNSGS

 ST GAA GA HAHTS GLRMNSSGWSQYGTAT ITGS LTSTVVKGTS ANPASNPVGAPTATNSYLGASGTGPGLANDFSDAQGASADV RTHWNATSTVQNT@AP RTHWVNSSDSNI FYDKTKTVIDSRLRTSTTTDDNL KASSQPGNDA TPGNHVLAAETGTDDAYVPPGSS $S L M A E T G A A T E T N P T G N$ L YA YQPP GDSDSP TSDR $\square L A N Q \square S A K E F \square N D A S$ VR GVP S LPA GA V E S Y GAFQ NQNAA GSSYNPLGGAS
 WSYSSKTGAFSNSPA PFAGSYLAY Y F A GTPSSTTGGTATA GSMLASVVAPPQFWAAPKNKMNTNLH
 G $\square$ A Y A T A D S VIT V G N P A N P KA G N N S D Y VPA S S
 A A S S AVGGTTQL FAGNN IAAAKNAA GDVNLYEP $Q \square G$ AKSATNATPGPGTGVGQVADDPGFNGFDA



 PFSQHGQVLSTG
 $N S L D D P G H T H G H N A Q T G S T T T G G G G F P A G S N G G A T$
$S$
 PFA
SLT NS S K M T TA A VA D NRAA N WF A K P G
GWLK GHHSG A GAPTATNAY QLGASGTGPGLANDMAYWAQGST $M V K D G S E S G A A D D D P N N \quad$ TA Y L A Q P R N $\square R L Y N N T A P T$ D YF GYEAS GVF GRVEKS GRA


QTFDYN GYSD T GVVSHHQSRS GSSVSG
$N V S S L S G T L R K P N N N K Q A K P A V F A S V N P D G A E A Y T K A H S N$ NGSSN A GTLA LAP GNLS GSSASQAYQAP $V \mathrm{~V} T \mathrm{~S} G V P A S T Q E A T H A T P A P G R M L A Q A Q N A G \square Y R E T A T A D$ $G N Y G D G A F D V K \bigvee T V G G R Q A G S G G D S$ LG TS GNGS

NVVF GTDS N A A P L L Y T N G $\square \mathrm{S}$ Q

 N A QVSATA GAGRGNVPPNNNVFGTNSLDANNPTMIFAVPGAG SVRY $V$ GDNQT $\square Y$ GKS GAFYDLSAGPL A A A A Q A QSGDGGEGAPGPDRVLAKTVVGTAGLAADDARTYSTGTADT TFTP T TS T GTA $\square T A T V T V N A K V G T G D Q N D A G S G Y W A T A K T$ T GTSTAAANTPSPAGALPATTGRDSSYAAGSADT Y A A N DVS P Y A L R S T S P S G N Y LDD S DP A G GANDYHGF D G S A A FASSQTGNIAAPANAFLAATGTLDPEYR | S T |
| :--- |
| $G$ | S SVVNDPGHSHSDVRTDDYWGVANGDVGGSTPPYTGSGGS


 NASQTAGD $\quad$ K NTAS GNVLIAREVVG
D D P GHTHSIEMRDSSSDLQPTSLPLYARND\| NDGNR RTYNENGDRSPP FVPANPALGGANAVKVTSTSDDKFYSAA
 TAQNGDGN TGSPSGAVFATSTADQYGP
 NVVNSYDA ILPMAA YLGNPNVKTNSSQTANNAAPSYGYAP
 GQSFDNHQP L G G L Y N $\square A L Q G T$ FPSRNLDS G


|  |  |
| :---: | :---: |
| UniRef90_D3FEP7 | Q $\square$ G A S APNGPS $\square$ GPAGSAPHQNMMPY[VIT F Cl |
| UniRef90-X0Y8F5 | GESGQDAAAPHD GIDAHNNLLQPYITL |
| UniRef90-V4H160 | G LKTNPFAEGT $\square$ GTTGGDEPHENRMPMLY |
| UniRef90-J3CB41 |  |
| UniRef90-E7UML0 |  |
| UniRef90_UPIO0041B4035 | $P V V Q K G V T T A V S G T M Q P V G G S D S M N P F L V V N F S I A L$ |
| UniRef90-D2V517 | NFTGANHTHNFTTNVGGNSAHENMQPSLVLNYII |
| UniRef90-UPI0003B4F597 |  |
| UniRef90_UPI00034571F6 | T LP T GTLTPA GQLS PGT SPQRSTLQP FL |
| UniRef90-H9UT48 | KVPSSLRALSSRGEDSGHVGTETRPRNIAFNFLVRAK |
| UniRef90-J3DLH1 | KVKLATNAVN SRGGGAGHDNMQPFQVLSFCl A |
| UniRef90-UPI00036B | QMTS MS PSMLTVAGQSYEHQNQQPYTVVSFCI AL |
| UniRef90-H8GR61 |  |
| UniRef90_UPIO00372D343 | DTPLASGTN LVNEGGGAPHNNMQPYLA |
| UniRef90-Q1QP17 | GTGEVTLS GGT ARVGGNLAHDNMQPFAA |
| UniRef90-L4PKF0 |  |
| UniRef90_T6Y7G2 | GGTNNNSATSVTTQSPTFGNQEGYPRNVAFNYVVRA |
| UniRef90_B7N3N0 |  |
| UniRef90-F2JVJ1 | SDTSCSYE GGGQAHPNTQPSAVTVFCIAL |
| UniRef90-Q4UNP7 | PGPLVAMNPATVAQAGGSQPHPNLQPYTTLNFCIALL |
| UniRef90-UPI0003750367 | A $\square$ A NPSHLATSTTAVGGSQPHENTQPY |
| UniRef90-TONT42 | GAS RPRNI AFNYIVRA |
| UniRef90-DOKGE5 |  |
| UniRef90-UPIO00471 |  |
| UniRef90-Q4KAW4 |  |
| UniRef90-Q111 | SDPSGSHSHS■P SQGGNDPHNNVQPTIIVNK\\|IKA |
| UniRef90-P03764 |  |
| UniRef90-UPIO00469061E |  |
| UniRef90-F4L4P8 | V AMNAQMVGNVGGSQAHLNMQPFLTLSFCI A |
| UniRef90_Q58ZA2 | SDNGFMHPLLD SPMATGGAETRPRAIALK L C C K K |
| UniRef90_UPI00025581B3 | LR SGTLANTGGSMSHNNMQPFLTVAFCI A |
| UniRef90-S9S7R5 | PNREMASDADSVGNTGGQQPFDHMPPYLVLNYEIAL |
| UniRef90-F2JVI9 | VTPDTRMDIRTLQSSGSSQPHENRQPY |
| UniRef90-V5TY21 | SGSQNTDRVTFDASR】ATTSTETRPRNI A Y NFLVRAK |
| UniRef90-A3XEY5 | AGSMTADRSGTDANAGGGQAHNNMQPYLVVDFCIAL |
| UniRef90_UPI00047A6794 | TPTAPMSTAMVGVSTGGNQPHDNMQPYLTLNW |
| UniRef90_UPI000476B400 |  |
| UniRef90-UPI0003829ED9 | KSSLGN A Y SEKPKAHENRQPYLALTPMIA |
| UniRef90-K21HG3 | ADPDGSMAPQS $\square$ GEMGGGEAHENRQPGLTLAYF |
| UniRef90-B0UTN0 | S GAEETRPKSLVLKLCLKAKN |
| UniRef90-F4SY22 |  |
| UniRef90-UPIO001A4437B |  |
| UniRef90-I31941 | ATGLQALDPATVSSAGGNQPHENRQPSLVMNFCIA |
| UniRef90_H0S321 | PPGNTTLAVNEVTPNGQSLPHDNMQPTQALDWCl |
| UniRef90-M8S149 |  |
| UniRef90-UPI000413F3D3 | LVQLAP P T $\square$ G GGGGSQA HLNMQP F LTTS F C T A L |
| UniRef90-A9AVE2 | T DNAGTHSHGLMDGVGGSQAHENRPPFYALAFIMKV |
| UniRef90-G0K3Q7 | PSSGTPVALTPLDTAGQSAAHSNMQPYLA NFCDAL |
| UniRef90_A4PE46 | LTMYDSSAATFVDANNKGF\NMARPRNVAFLPCI |
| UniRef90-W4MC44 | NPRDMDSGS L A NSGSNQTVNNDQAFVA |
| UniRef90-L3U8D1 | EGYGSYNWTFDASRSVRTASETRPRNI A F N Y IVRA |
| UniRef90_UPI0003B6A40D | PS DLTS SLAPATVSNVGGSQPHNNMSPYLTLNWCI ALL |
| UniRef90-UPIO0036300E0 |  |
| UniRef90_C6CWM3 |  |
| UniRef90-F9Q9T5 | VGM M R P R N |
| UniRef90-Q79JW3 | E M |
| UniRef90-J3IQ07 | GA A T T $\dagger$ S GT $\square$ T P T G N G L P L P P Y L VLN F SII A L |
| UniRef90-X5IR50 | A TNQTLAATTVGDAGTGATSTNTMQPFQTLAYCICLD |
| UniRef90-DOKGE2 | PQDWSHSKVQLDASRSVPTADENRPKNTSVMFII K A |
| UniRef90-DOKGE4 | TPQAWSHSVQIDASSTVPTADENRPKNIAVMFII K A |
| UniRef90_UPI000370E2D0 | PSSDTSLQTLTASPASGGQAHNNMQPSCVINFCIALD |
| UniRef90-UPI0003624287 | DS NMVA MAPGSDANVG |
| UniRef90-A0A031IPL5 |  |
| UniRef90-W1IR84 | RVVPTAKENRPDNKAVIY |
| UniRef90-A0A027Y1 | $P \square G G A L P A F Q \quad N P G G N E T R P R N \square T F N F L V R A K$ |
| UniRef90-A3JP34 | VEGSVATTVSNTGSG |
| UniRef90-X6KAU8 | VAMAKENITFV GGGQPHENRSPYLVLNF\\|IAL |
| UniRef90-J314B9 | DTPLAVGTN LVNEGRGQAHNNDQPYLAISYLI A |
| UniRef90-G9PUJ8 |  |
| UniRef90-W0E439 | TLKPFTATA MQPGGGQAVPVRGPCLADNFSUALL |
| UniRef90_UPI0003006 | GLP NVT Q GF S S T D T |
| UniRef90-A8LRN4 | GMGAGA $\square$ GSTGAGQPVNNMPPYTVVQMCI |
| UniRef90_L9PHJ6 | LHPDTVGTAGSSA PHENRQPYAPSLFCIAL |
| UniRef90-UPI0003778D03 | LDSPVTMGANTVVGSGGSQPHNNMQPY LG |
| UniRef90-UPI000316BF28 | AFTGITVTTTIQNKGGGQAHPNVQPAAIVNVIMKA |
| UniRef90-UPI0004651B69 | DYENANHNHNFNVNSGGGSANEARPYSATVLTClRV |
| UniRef90-UP10004796586 | TSPLVGMNPNSLSPAGNNMPHNNMMPYLALNWII AL |
| UniRef90-UPI00047B8043 | LNPGSISSVGGSNPHENRQPFLTLNUVIAL |
| UniRef90-B4D820 | A SPPTVVLHQISLSTGGSQPHDNFQPYLCVSFIM |
| UniRef90-K9X259 | KGTNSATTG $\$ SILSSKGGGKAHENRPPYYALCFIMKVD  \hline UniRef90-F7P113 & SQPVAPLSNTAVAMAGGGVGHNNMQPSTVLKFVIAL  \hline UniRef90-H4T3C9 & RAI SSRNVKRFGEDSGNVGTETRPRNVAFNYIVRA  \hline UniRef90-C5AIB0 &   \hline UniRef90-G8P0U7 & VANGTSASGPILAQTGSNLPHNNLQPYLCVNY!  \hline UniRef90-S6KB44 &   \hline UniRef90-A0A010YCA6 & SDAAANMNPSS $\square$ GS S GGSVPHENRM |
| UniRef90-13TXM0 |  |
| UniRef90_V2V5K1 |  |

[^0] UniRef90-U3HH41 UniRef90_R7E3P2 UniRef90_A6FCTO

UniRef90 B8CRW5
UniRef90-K0YNE8 UniRef90-A0A024IKY8 UniRef90-C6C8S UniRef90 U1BY63 UniRef90-B5ZFN5 UniRef90-D3QUP1 UniRef90-H1Y2C2 UniRef90-G9PUK2 UniRef90-F9ZVK3 UniRef90_C7PNC2 UniRef90_UPIOO03B72E42 UniRef90-B6VKW8 UniRef90-D5BQR2 UniRef90 C4F675 UniRef90-FOQ551 UniRef90-R4YR87
UniRef90 E3G769 UniRef90 R4R7U6 UniRef90-UPI0004685F01 UniRef90 GOAKD1 UniRef90 UPIO00377C4FE UniRef90-A0A029MKR9 UniRef90-F6CSJ4 UniRef90 ${ }^{-}$F4DP90 UniRef90-UPIO00373F095 UniRef90-A0A023XDS5 UniRef90_JoQ5B1 UniRef90- D9Y147 UniRef90-Q2SHC2 UniRef90-CODSG4 UniRef90-G8THK5 UniRef90-UPIO0046AF201 UniRef90-UPIO00255866C UniRet90_K4FLM1 UniRef90 V4CZX5 UniRef90-F7TM30 UniRef90-UPIO003758A91 UniRef90 Q55EP2 UniRef90-G9RTQ1 UniRef90-M7NOV4 UniRet90-A5ENH3 UniRef90 B8L737 UniRef90-D4GM39 UniRef90-V3TNB3 UniRef90 UPIO003B3FA54 UniRef90-UPI000466538E UniRef90-C3X918 UniRef90_G1XWC3 UniRef90-A4TXJ4 UniRef90_C5JB62 UniRet90_Q2SHC1 UniRef90 UPI000319C938 UniRef90 A4NOW1 UniRef90-EOI8Z9 UniRef90_UPI00037D610A UniRef90 C3X9L4 UniRef90 G9RT16 UniRef90-A6E585 UniRef90-UPI00026CCE7F UniRef90 J314K6 UniRef90-A6VVW6
UniRef90-E1X834
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UniRef90_C3X910
UniRef90-H8XVA2
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UniRef90_UPI00037FE110 UniRef90-G8W1N8
UniRef90-S3YTK8
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UniRef90_Q2W7B3

TGETRPFAFNWAPQD WLLCNGQPVNQ
ANSPVGWI GWYPVET PPEGTLVCNGGAVSR GEVKLWALNFAP KGWHLCDGTLMPV
GEI RAFGFNFTPT GWLPCNGGLYPI
GD HLEGFNFGQEGWALCQGQLMAI
YTRAEVDSEDPVGSPVPWSPDPHPPFGYVTCNGQAFNR
DGVPLGAIVSFPRAVTNPVGFLRADGSTFSR
GGTVLLWTAAFVPR GWALCDGSVLN
GERRLFPWAWAP QGWLLCQGQVLAV
ENCVPVGTVIFVSHNKPVIGRFLKTVGPAVSR
$V G Q 1$ MLSGFNFAPR GFAACNGQLMP

$K K G D P V G A V A F H K S A K P H G Y L K A D G G T F N R$ TRDKVSSLLPSGFI GPFGMERLP DGWLLCDGKAYSR EKKIENSIQPGSVNDFTGDEUPV GWSUCDGAPLNK

$1 P$ GGALEFWGMSAPNSAFAFPYGQALSR
GQIIMAGFPFAPR GFALCDGQMMIV



SGVPVGTTEYFAMPTAPPAGYLKADGAAVGR NNKAVPVMPVGCVIPFAGAAAPT GWLLCQGQAVSR G GDIIAVGYNFCPR GWMSAEGQILAD VGERQAFPFAFAVNQAWLPCGGQLMP
IGEVRLFGFYFNPR GWYRCEGALLP VGEVRLFGFYFNPR GWYRCEGALLPI VGEDRDFTWDWAP KGWALCNGALLN(L) NNYPVGMPVPWPSATMPPTGWLKCNGAAFSS AQQSSAVP GTVAYFAMTTPPAGYLKADGAEVGR VGAV GDYAGANPPPGCLACDGQALSR DDVRDGTPVGAVLAFPRADTHPQGFLLADGSTFGS

GVPVGT THFA ASAPPQGY伿ADGAVSR GTI KLIFAGNFAPGGYFTCEGQTLPI



## UniRef90_B8CRW5

 UniRef90-KoYne8 UniRef90-A0A024IKY8 UniRef90-U1BY63 UniRef90-B5ZFN5UniRef90 D3QUP1 UniRef90-H1 Y2C2 UniRef90-G9PUK2 UniRef90-F9ZVK3 UniRef90-C7PNC2 UniRef90_UPIOOO3B72E42 UniRef90-B6VKW8 UniRef90-D5BQR2 UniRef90-C4F675 UniRef90-FOQ551
UniRef90
R4YR87
UniRef90-R4YR87
UniRef90 E3G769
UniRef90-R4R7U6 UniRef90-UPIOO04685F01 UniRef90-G0AKD1 UniRef90-UPIO00377C4FE UniRef9-AOAO29MKR9 UniRef90-F6CSJ4 UniRef90-F4DP90 UniRef90-UPI000373F095 UniRef90-A0A023XDS5 UniRef90-J0Q5B1 UniRef90-D9Y147 UniRef90_Q2SHC2 UniRef90-CODSG4 UniRef90-G8THK5 UniRef90-UPIIOOO46AF201 UniRef90_UPIooo255866C UniRef90-K4FLM1 UniRef90-V4CZX5 UniRef90-F7TM30 UniRef90-UPIOO03758A91 UniRef90-Q55EP2 UniRef90-G9RTQ1 UniRef90-M7NOV4 4 UniRef90-A5ENH3
UniRef90 B8L737 UniRef90-D4GM39 UniRef90-V3TNB3 UniRef90-UPI0003B3FA54 UniRef90 UPIOO0466538E UniRef90-C3X918 UniRef90-G1XWC3 UniRef90-A4TXJ4 UniRef90_C5JB62 UniRef90-Q2SHC1 UniRef90-UPI000319C938 UniRef90_A4NOW1 UniRef9-EOIz29 UniRef90-UPI00037D610A UniRef90_C3X9L4 UniRef90-G9RT16 UniRef90-A6E585 UniRef90-UPI00026CCE7F UniRef90_J314K6 UniRef90-A6VVW6 UniRef90-E1X834 UniRef90-G1XWC1 UniRef90-H5LM79 UniRef90-Y11PC8
UniRef90_C3X978
UniRef9-U1D74
UniRef90-A1HR57 UniRef90-UPIO003A2B4BF UniRef90 C3X910 UniRef90-H8XVA2 UniRef90-UPIO0047970FD UniRef90-UPI00037FE110 UniRef90-G8W1N8 UniRef90-S3YTK8 UniRef90-UPIo0037B2F8D UniRet90_W1A654 UniRef90-UPIO004755FB2 UniRef90-UPI0002630592 UniRef90-H3K511 UniRef90-S1HSA1 UniRef90_UP1000381F10C UniRef90-14F829 UniRef90-UPIOOO4661780 UniRet90-H3NBA1 UniRef90-M4TNV9 UniRef90_C7BSQ5 UniRef90-A4NKW8 UniRef90_A4NKW8
UniRef90_Q2W7B3
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SQYGALYSLLGATYGGDGSTFALPDLRGRFLG RG SEYQALYALI GNDYGGTQNTFALPDLRGRTADGSGPDSGT KDYPSLFAALGTYYGDGSTTFNLPDLRGEFVRGWDDGRGV ATYAALFAVIDTTFGDGATTFGLPDLLRGRVAAGVDNMGGT NQYMPLYSVIGTDYGSVQTSFNLPNLMGHALDGSGQ TAYAELFAVLGTKYGDGSTTFNLPDLRGRFIRGTG
AQNQALFSLLNNYYGGDGTNFALPDLRGRVPVATGHNSQT
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QNYPELYR QQNVALYSLIGVYYGGNGTTFNIPDLRGRTPRHLSQ
EMYPGLAKA YPTNKLP SAYPLLAAAF ETYPELFSATGTTFGDGSTTFNLPDLDDRFAQGPGQKFEA TTYADLES I GTTWGDGSTTFNLPGLMARFRRHRDNSTDS AAYPRLWAWGCFSTGDGSTTFRL

ETYPDLFAVIGTAFGDGTSTFNLPDLDNRFAQG DGGL SQYTALFSILGTTYGGDGTTFKLPDLRGAFPTQCTNDSGA NDGTPNL
STYPQLWAQASGMपVSDTEWTGSVANRSKFSSGDGSTTFR TTYAALFAADGTTFGDGSTTFNLPDLRGEFIRGWDDGRGV AQNQALFSLLGTTYGGNGSNFALPNLGGRFALGVNSNFQI

 TKYPKLYALMHNT
TTYPKLALVEPGLV
TDYPFLAQHFNYFGGDGTSTFAVP QLNPRLALLYYRNRD ELFPKLHDV LQ

MP
80


| $P D$ |
| :--- |
| S D |


 $P$
$P$
$P$
$P$

## D

RF VGAG
 $D D R G L F K R A L D S G K G Y$
$D L D G E F D R G W D N G R G V$ $D Y R G V F L R G L G S V T S$ ESRRGEF I $\begin{array}{llllllll}D & R & G & R & V & A & G A & G V \\ N & R & Q & D & S \\ R & F & V & G A & G & S & Y & G\end{array}$ DLRNEFLRGYHA

 | $G M T$ | Y | $F$ | $P$ | $V$ | $G Q R Y P E L$ |
| :--- | :--- | :--- | :--- | :--- | :--- |

UniRef90 B8CRW5 UniRef90-KoYNE8 UniRef90-AOAO24IKY8 UniRef90-C6C8S UniRef90 U1BY63 UniRef90-B5ZFN5 UniRef90-D3QUP1 UniRef90-H1Y2C2 UniRef90-G9PUK2 UniRef90-F9ZVK3 UniRef90 C7PNC2 UniRet90-UPIOOO3B72E42 UniRef90-B6VKW8 UniRef90-D5BQR2 UniRef90-C4F675 UniRef90-F0Q551 UniRef90-R4YR87 UniRef90_E3G769 UniRef90-R4R7U6
UniRef90
UPIOOOO4685F01 UniRef90-G0AKD1 UniRef90 UPI000377C4FE UniRef90-AOAO29MKR9 UniRef90-F6CSJ4 UniRef90 ${ }^{-}$F4DP90 UniRef90_UPI000373F095 UniRef90-A0A023XDS5 UniRef90-JoQ5B1 UniRef90 D9Y147 UniRef90-Q2SHC2 UniRef90-CODSG4 UniRef90 G8THK5 UniRef90-UPI00046AF201 UniRef90-UPIO00255866C UniRef90-K4FLM1 UniRef90 V4CZX5 UniRef90-F7TM30 UniRef90-UPloo03758A91 UniRef90_Q55EP2 UniRef90-G9RTQ1 UniRef90-M7NOV4 4 UniRef90_A5ENH3
UniRef90 B8L737 UniRef90-D4GM39 UniRef90-V3TNB3 UniRef90 UPI0003B3FA54 UniRef90 UPIO00466538E UniRef90-C3×918 UniRef90-G1XWC3 UniRef90-A4TXJ4 UniRef90-C5JB62 UniRef90-Q2SHC1 UniRef90 UPI000319C938 UniRef90 A4NOW1 UniRef90-EOI8Z9 UniRef90-UPIO0037D610A UniRef90 C3X9L4 UniRef90-G9RT16 UniRef90-A6E585 UniRef90-UPIO0026CCE7F UniRe990 J314K6 UniRef90-A6VVW6 UniRef90-E1X834 UniRef90-G1XWC1 UniRef90-H5LM79 UniRef90- $\mathrm{Y} 1 \mathrm{IPC8}$ UniRef90 U1ID74 UniRef90-S6EIT7 UniRef90-A1HR57 UniRee90 ${ }^{-}$UPI0003A2B4BF UniRef90-C3X910
UniRef90 H8XVA2 UniRef90-H8XVA2
UniRef90 UPIOOO47970FD UniRef90-UPI00037FE110 UniRef90-G8W1N8 UniRef90-S3YTK8 UniRef90-UPI00037B2F8D UniRef90 W1 A654 UniRef90_UPIO004755FB2 UniRef90-UPI0002630592 UniRef90 H3K511 UniRef90- S1 HSA1 UniRef90_UPI000381F10C UniRef90_14F829 UniRef90-UPIOOO4661780 UniRef90-H3NBA1 UniRef90-M4TNV9 UniRef90 C7BSQ5 UniRef90-A4NKW8 UniRef90-Q2W7B3
 SSTAYARGSVGGEATHTLTISEMPSHGHEA RAAVGAGAGQGLSPTSLGSYGGQESVQLDQSQLPAHTHAA TSVYTPGQKDGQEVSNVVGTG SVTVTASQVPPHTHPA AANLLTGSSVNGVADGASGGSQDMASHTHTVTDPGHTHTV DAARA LLSQNGMLEKHRHDV GNA STASG TYQTPTKEGTEGVTLSQLEMPAHTHTF GANPQLGDKGGTETTNLEGQQTNLCG PPHNADV NLQNPSFGVPGVKGGSENVTLTTAT TPAHTHMM SQWPMGRDAGAETCVIQESQMPTHSHPANFSSQSSLF

YAVGSSGGEAAHTLTVPEMAAHTHTV
DNGRKLDSWQEGSAYLGSFTTGVAQNDHQRDGVTYHD
GSANRLTSPINGDTVLGATGGSESHTLSEAELPAHTH TGAASHSVALSGAAVGMVSASQLPPVGGKASLGMPANSAP SSRRLGESVTVDRGLAHTETTEQVIVYPTAGANGDHNHAA DTNRAlGQ WQGDALQDHTHQY T A P LLDDRELASMDGTELVALNASNLATHSH口A GSKQGDATRNFT

PNWQPAPY $\square Q G Q L A G V E N$
NFTQGEVVGQNSQTLLSVAN DGGRTLLSAQDFAQQRITGNFM
SDSFRDPDATSRQASNSDGWKGNAVGSTQLDALQVHQHQY APVTDGEVAGVENVTLNDTQMPDHQPDAQFTGQPSAVNLT s पrd\GeVVGSS
DRERSFAST
GNSAA $G$ GVQQGDA $\square R N \square T G K F G F D$
GTPPGSATGTDDEAW
 DA VPKANASGS FRNYALGQKLGT

HPIGSKQSDAMRNLTGFV
DVDRDLGSSQLDQMQRDTGSFVNRT
DPDSTRSTTS
DPGRSILSE QSTVT QS SYPE DYTHLVAKYGS $\square$ A QVP पAEDRFDRNAGRG DPWRSFAS
TN
CGGDRGATSHAQLPTEMAKHTHLYLSA EGQQSRVLV
VNNQAGPSLRGTQADGLKSHDHAKGSLAVDHGGSHSHGM TANRLVAGNLAALRHSLGGAGGEDAHTLTLAELPAHTHNN ISVDSAWQPPAQPVGTAA GAES DTLLVGNMPPHTHGV DAGRGLLTAQSPTYLRTGMMDYNGSDVDNSG PTYA GERAGATVRVLSVNQMPAHTHDAVAAQLPAHTHPA SOHNVGAKFGNETTQTLA GLPNATGGFTGFAARKEGSSEGMSGMF
TQRTVGQTGGADTVALLSSN FPAHNHMM PASLLFGSRGSASQVLTVAQMPAHTHTATFDAAQGNAPLQ QNVNLAEQMGTQSVTLSTLQVP QVGVTGGLEQ VGTVTESTMGAHNHPV GTVGG EESHTLTLNEMPAHTHNV

 SPRSQGEMTGAESVTLSAANDPGNHTAVFHGTAGHSTAV SNYMVGETTGDENNVLTLSNLPQHNHTAVFHGTAGATTAS FDWRMGQUGGAEEHTपSLREDTAHNHTATGONMARHSHVLV QQPQVGLSAGSENVTLTAAN GETQSDETKMKHVH
DAGRTILSAQGDALRNDYGEF GLPN ILGSPQVGSPSGAYSTSGTGFHWAASSYANANTLTF GAVGNKQNPTNLTHTHGVNDHSHYVSGYTGSMNQNATHTH DNIQVSEQAYPELYRHLVAKYGSAVGEVQQDALQDHFHYD DAGRALDS DQDDSFEAHRHESFFYAG DSRNEVPGKNDPS HPGQKYSAGQVGGNQSTT DTAANMPPHTHS,
 DPQRDLGSWQRS GQQAGLGSTQRSS
 DSGRTLGSVQGDAMRNL
DSGRSLGSNQGDA IR
TPRNVGAAGGVEQQSLTLAQLPMHNHTASFTATSAPTFTG NHYGTVTHTSSNLGELQGDADRNDTGTT
DAGRG
GASYQAGTYGGA
LLVAQGHTYQSHSHRL KTTGGQATVTLTAAQLPAHNHMV
 DPDRALLSYQDDA DQ
DPFRPILSWQEGAYLV
YGHLVGQYGSTNSVPLRNAGNGBN
TLTTQGAPASSLSPVRLGGKGGTETVQLASYSGLKKHNHKI

UniRef90 B8CRW5 UniRef90-K0YNE8 UniRef90-A0A024IKY8 UniRet90_C6C8S1 UniRef90_U1BY63 UniRef90 B5ZFN5 UniRef90-D3QUP1 UniRef90-H1Y2C2 UniRef90-G9PUK2 UniRef90-F9ZVK3 UniRef90-C7PNC2
UniRet90 C5BRC7 UniRef90_UPI0003B72E42 UniRef90-B6VKW8 UniRef90-D5BQR2 UniRef90 C4F675 UniRef90-FOQ551 UniRef90-R4YR87 UniRef90-E3G769 UniRet90_R4R7U6 UniRef90-UPIOO04685F01 UniRef90 GOAKD1 UniRee90 UPI000377C4FE UniRef90-A0A029MKR9 UniRef90-F6CSJ4
UniRef90 ${ }^{-}$F4DP90 UniRef90-UPIO00373F095 UniRef90-A0A023XDS5 UniRef90-J0Q5B1 UniRef90- D9Y147 UniRef90-Q2SHC2 UniRef90-CODSG4 UniRef90-G8THK5 UniRef90-UPIO0046AF201 UniRef90_UPIO00255866C UniRet90_K4FLM1 UniRef90_V4CZX5 UniRef90-F7TM30 UniRef90-UPloo03758A91 UniRef90_Q55EP2 UniRef90-G9RTQ1 UniRef90-M7NOV4 4 UniRef90-ASENH3
UniRef90 B8L737 UniRef90_D4GM39 UniRef90-V3TNB3 UniRef90-UPI0003B3FA54 UniRef90-UPI000466538E UniRef90-C3X918 UniRef90-G1XWC3 UniRef90_A4TXJ4 UniRef90_C5JB62 UniRef90-Q2SHC1 UniRef90-UPI000319C938 UniRef90-A4NOW1 UniRef9-EOIz29 UniRef90-UPIo0037D610A UniRef90_C3X9L4 UniRef90-G9RT16 UniRef90-A6E585 UniRef90-UPI00026CCE7F UniRef90_J314K6 UniRef90-A6VVW6 UniRef90-E1X834 UniRef90-G1XWC1 UniRef90-H5LM79
UniRef90 Y1IPC8 UniRef90-C3X9T8 UniRef90_U11D74 UniRef90-S6EIT7
UniRef90
A1HR5 UniRef90-UPI0003A2B4BF UniRef90-C3X910 UniRef90-H8XVA2 UniRee90-UPIO0047970FD UniRef90-UPI00037FE110 UniRef90-G8W1N8 UniRef90-S3YTK8 UniRee90_UPI00037B2F8D UniRef90 W1 A654 UniRef90_UPIOO04755FB2 UniRef90-UPIO002630592 UniRef90-H3K511 UniRef90-S1HSA1 UniRef90_UPI000381F10C UniRef90-14F829 UniRef90-UPIO004661780 UniRef90-H3NBA1 UniRef90-M4TNV9 UniRef90-C7BSQ5 UniRef90_A4NKW8


YTT YPGGDNDRGSQSSVFSTDDATW NVSTAAGVAGPAGNDPADSSNSKGAVSRSTYVAFGDTSHV GMVSGRTSTNSARDFSSSTAGVFSVSGTDGAMVDNGSGTS NATATAGSTKNPTNTLYGGSGTEA SYAPPCSTAAATSSDPTNNVPATTAVNSYSSPATVNLGYT GGAMGSSGSDKAGALVN SYTNYGAA QEAESLGSTADKGNASFNQ GSSVDVATGTPGTVYLSNTTAKSGPSNVADSGLFTSTAGG ODGV SGTDAAASSTSADASAFGANSGANLYATGG QपGV KTATNATTGPGTSSNLTADPAFNGFAA GTDETKASSS NGYDGAFADAGYAPYGAANEKREFGA QA SNNAVTVNVSPSNQVTGV GTEALYSGYRYTLYTKADGAFTMDLDDGANSTFSSSKGDS DITQLPANSGPGIDPTVN GGFPGDFTGAYATTANS YGRTVNTSGRVFGSNASGVFET SGESGEFMQSSPTGSS NNTG $\square$ SGGAFTTSSTSETSRHEGS
S $\quad$ RR RYTWGG
PSKSTVATDSSTNFYFDEAWATSGNTGVIRWGNTSDAGLP
 GPASSDD
$\square \mathrm{DPGHTWHS} \square \mathrm{GGGFS}$
SDGAASDSLASGTGS
TF TLSDPSHVHGSTHTGTAVAYQGPSSLGTNGSSALQDAANV GVTSAGTVRNPTGATFAGTASNPKMYATQASP VY TGMAYAEADTAGKSVAAPSGDFRAPNNTDLTGQSR VFTPVSGSQTVNDPATTGNLNVSA
VFVSTEDGQTVVADPGDYI GASIK SRSDKNLTFVPAGGLE VFTPSGGGSGGSAATVSVLSTQGAGTLSVPQEGSMLAASLL HSGHSSNDIADPAAGTG

[^1] TNTAA NY V G L P T T A T Y L T R T T G E F DY V A P T S T A P T G


 $P T G G \quad T G S S N R P A P A D P D T V W S V S S D V N F Y P T S G T V A T$
 SASTVVDATSSKAP QGMTWM, TPGGNKA
 SA YLLYSTGAENGR』NS QE GA GVKW A








 Q S Q P Y L F VE S F
 AQ GYCNGYGAMTEAFYGTGSA DGTGGDAHGGYSAFDNDDA

 SVDPTLKLTNNGLE S IVS G GGSATVVAPGAGRVHVTNGAA GGSSSDPSNAVWANANDSSTGSVYDTFTQSTNSLVNMKTVV TFRPPCNTGPGTTSDPTGAYPAATTTGSYGPNADVNVAVG

 PAAAEESGGSFSGVFYSNGLGSGTGEWSH

 TAESSSQHANVYNNANNWADANSYAYTYGDPVAQWTPNSAP





UniRef90 B8CRW5 UniRef90_KOYNE8
UniRef9_-A0AO24IKY8 UniRef90-C6C8S1 UniRef90-U1BY63 UniRef90-B5ZFN5 UniRef90-D3QUP1 UniRef90-H1Y2C2 UniRet90-G9PUK2 UniRef90-F9ZVK3 UniRef90-C7PNC2
UniRef90 C5BRC7 UniRef90-UPIO003B72E42 UniRef90-B6VkW8 UniRef90-D5BQR2 UniRef90-C4F675 UniRef90-Foos551 UniRef90-R4YR87
UniRef90 E3G769 UniRef90-R4R7U6 UniRef90-UPIOO04685F01 UniRef90-G0AKD1 UniRef90 UPI000377C4FE UniRef90-A0A029MKR9 UniRef90-F6CSJ4 UniRef90- F4DP90 UniRef90-UPIO00373F095 UniRef90-A0A023XDS5 UniRef90-JoQ5B1 UniRef90_D9Y147 UniRef90-Q2SHC2 UniRef90-CODSG4 UniRef90-G8THK5 UniRef90-UPIO0046AF201 UniRef90-UPIO00255866C UniRet90_K4FLM1 UniRef90 V4CZX5 UniRef90-F7TM30 UniRef90-UPIOO03758A91 UniRef90_Q55EP2 UniRef90-G9RTQ1 UniRef90-M7NOV4 4 UniRef90-A5ENH3
UniRef90 B8L737 UniRef90-D4GM39 UniRef90-V3TNB3 UniRef90-UPIO003B3FA54 UniRef90 UPIO00466538E UniRef90-C3×918 UniRef90-G1×WC3 UniRef90-A4TXJ4 UniRef90-C5JB62 UniRef90-Q2SHC1 UniRef90-UPI000319C938 UniRef90-A4NOW1 UniRef90-EOI8Z9 UniRef90-UPI00037D610A UniRef90-C3X9L4 UniRef90-G9RT16 UniRef90-AGE585 UniRef90-UP100026CCE7F UniRef90_J314K6 UniRef90-A6VVW6 UniRefolo E1X834 UniRef90-G1XWC1 UniRef90-H5LM79 UniRef90- $\mathrm{Y} 1 \mathrm{IPC8}$ UniRef90-U1ID74 UniRef90-S6EIT7 UniRef90-A1HR57 UniRef90-UPI0003A2B4BF UniRef90-C3X910
UniRef90 H8XVA2 UniRef90-H8XVA2
UniRef90_UPIOOO47970FD UniRef90-UPI00037FE110 UniRef90-G8W1N8 UniRef90-S3YTK8 UniRee90-UPI00037B2F8D UniRef90 ${ }^{-}$W1 A654 UniRef90-UP10004755FB2 UniRef90-UPI0002630592 UniRef90-H3K511 UniRef90-S1HSA1 UniRet90-UPI000381F10C UniRef90-14F829 UniRef90-UPIOOO4661780 UniRef90-H3NBA1 UniRef90-M4TNV9 UniRef90-C7BSQ5 UniRef90_A4NKW8 UniRef90_Q2W7B3


 $K \square G S S T T T G R S V S L T$
$P Q N S V N A S R P I L P N A G Q E T R P R N D A L L A C D K$


 ANLVVPTAVENRPVNVALLPCI $V T L G G V T G E V Q V G N A G N S S L F S L L D P C D A V S Y A I A T E$ AAPNTAMNAASUSDSGGSQPHENRSPYLGLQFVIAT IIGTGVDYFRF GNPATYTVSGTSGSVGSGTAHNNVQPTILLNYIKT SDNGFMHPLLD SPMATGGAETRPRAI ALKLCIKAKN $T V A P V G A Q Q P L A \square P \vee A A A G M G T L Q P S L T V A F I I C V E$

SGPHGSRGESHN $\quad$ MQPY $\square$ T $\square$ NF $\square$ KK
 AVPQAGGSVGVSGS NGQAHANMQPFGVINFFICIE DNGVTGSASNTVYSDAGAVWVSTRPRNVAFNY\|VRA
VDAVGGKPTVINAETGGDQQFSVLQP $\square 1 \square A N F S \square A$ ASGGSSANTYAPPGTTGP
TDGSRSNALYGASNTVGPTQPALTLLPCTKAFD
YSLAAASIGATGTATPAPRAND QPYLVMNFCI
ISAQLSGTGGVTVAPTGGAAVGTMPPNLALTACI
TGATPGNLSGPYTTTQPGTGNAATVGNVAVV
TGANG NNDNWWUTPNTNSNFATGGDETRPKSLLKLCIKAKN TTMDKYMSGEADGTTGGSQPHNNMQPYLTLNYCI AV FVSLGGALETSTFAPEGLGGGARPRNVALLPIGK PPALTLLPCIKAFD VTMAPPMDPTNTRNSGGGDNHNNMQPSLYLYHUIK VTMAPPM
$T$ L LGGVSGGAGHGSVTVEGNGGSEPLQPVQVLNYCV:A
 DGAVYPKVIGLDASKIVPTANET
TVAVGSHTHTHTDTVAAAGNAENTVKNपAYNY $\square V R \square$
AQSGGNHVHAFSVTSQASGANEARPYSATVLTCTRD
TYLASTKD
DAERTSTAKWVTHYTSNFGGPETRPRNVALLYCIK
SRSSSTYGNSNTVVQPPA\|ILLPCIKAFD
VDANGGEAPKDYTNSAPSQN
I ANSGVHNHNFSTSDGGNEAHENRPPYYALCYTM
VPFNPLTPGEYLGNGTPRTSNETRPRNAGRLPITKA TYQPTYLRYKDTEGAVSGSPLQTRPRNVALLACIK K K
 GNSD AYSFDASRQVSTANEFRPVNKAVVYITRV AGRS TAYFDVSRVVPTASENRPRNDAYQY I QPGAQPVPAGVSGSISGVQGTVT TDHRTGFNASRVVPVAVENRP DNKAVRYFTKAK NQPGG GQLQADENAGGTETRPRNAFNFLVRAK TDLVPDDARGVSDVGAGQAHPNMQPFLVATAVIAT TGGKGEHTHNLDINQSGAGAHNNTPPYYALAYIMKL WSSTGDGKYTARPTNDAVLYCIKYE AWSGSPQRLNTDTLSGDEGGEETRPVNKSVHYIIK TERGRDCAIGFNASNVVRTAEQTRVKSVAWNYITRAK RPRNIAFNYIVRA
SDNGFMHPLDD SPMATGGNETRPKSLEKLCI KA
YTNPPPPTSPSAPVVMSNAHENRQPYVPMRFCI

UniRef90 G8AK53
UniRef90_V5YTB8 UniRef90-G8THK4 UniRef90 ${ }^{-}$C4F381 UniRef90-W3VCF5 UniRef90-G8THK3 UniRef90-C3X192 UniRef90-Q99363 UniRef90_UPIOOO412DE14 UniRef90-C3X3V2 UniRef90-UPIo0046984CB UniRef90-E4T5W3 UniRef90-UPIO002559E78 UniRef90 B8K8G6 UniRef90'UPIO0034BE652 UniRef90-J3E9A5 UniRef90-UPI0003EB38FB UniRef90 K8GNE3 UniRef90_N9M4B3 UniRef90-E4U0G1 UniRef90-H5D6F2 UniRef90 C3X8V2 UniRef90-A5ER49 UniRef90-ЈЗАНс9 UniRef90-N8ZV04 UniRef90-UP10003B4FEC2 UniRef90-UPIO0035D1DAC UniRef90-U2RSK1 UniRef90-D3P8A9 UniRef90-G9YoG6 UniRef90-A4NIH3 UniRef90-B90XG8 UniRef $90^{-}$V4HK24 UniRef90-A0A024ZXW5 UniRef90_C4F417 UniRef90- 11 IZS7 UniRef90-UPIo003B3EB76 UniRef90-B4VMZ3 UniRef90-R9B4A5 UniRef90-Q1INU5 UniRef90-V4NDDO UniRee90-UPI00029B2A95 UniRef90 J1GCB7 UniRef90-B4WZ19 UniRef90-UPIO0031CB629 UniRef90_F9GSW5 UniRef90-R9CNTO UniRef90-A4YX40 UniRef90-ROBL65 UniRef90_T9BLD9 UniRef90-DoKG77 UniRef90-UPIOO03750AF3 UniRef90 C3X8R3 UniRet90 B1JGT8 UniRef90-M6QZN2 UniRef90_UPIO004673D91 UniRef90_J2W418 UniRef90-U1LSG1 UniRef90-UPIO00476C2EF UniRef90_Q9L3N1 UniRef90 J2lKW4 UniRef90-K6HRU9 UniRet90_UPI00037D537C UniRef90-JoRA49 UniRef90-R4XS93 UniRef90-UPIOOO3EBOE51 UniRef90_U1LPA1 UniRef90 UPIO002EC78EC UniRef90-H1SDI4 UniRef90-UPIOO047976E1
UniRef90_M2C3B6 UniRef90-F4QJU1 UniRef90-F9CTR5 UniRef90 B9KOL5 UniRef90_F9S7B8 UniRef90 V4LFT8 UniReffo-F5B3N1
$\square G T V C T F A F D W C P R N$
$\square G V V V P F A G N F A P Q S$
GEI RLF GFNFAPV GWATCCDGQLLS I
K DASGDGVPTGAVVSFPRAVTNPVGFDRADGSTFSQ EVINS LREEDNVPVGSPIP WPLPHPPFGYFICNGSPFNK
QLVEA $\quad$ NKRS GVP
KTD V V S
SYP GAPDPWPTDT PPDGYA DME GQTFDK



VS N NVY A S CDVPDGSTCTTAANFCPR G Y L Q A
D N T A LGRPF LET T T T L N P G GY G VP N G D L L K K R $\square$ SSMPTGA DIPFAGTTA DPSGWDMQGQTFDK VGEII LVPYNFVPR GWAICNGQLLS I $V G A V W A G G T N Y C P T Y S G L$ PA D GRLL
LE QE $\square$ AK R GAPAGT DEYFATA MPPAGYG DANGAEVER VP I G G MIM WLT D T LD T E G WC WA N G G V L S R
 $\square G D V I L T S Y D F C P R D \quad F M E A S G Q T L Q I$ GVI QALG F K FAPA N WGYCA GAIV A I

 IGML ACCLGFTFAPRN,FGFCAGGLVAI $E \boxtimes Y$ TS K NLP ESYPVGGAPIPWPS DTVPS GYADMMQGQTF D K D GVVI GAVVSFPRAVTNPVGF LDRADGSTFR Q QLYTSAPPAEFYPVGAPIPWPSDTVPS GYALMQGQTFDK


ES GVNDSAY LGGMRMFAGNFAPSYT TTAS GQLL SI GQVIMFAGKSAP AGTLLCNGAAVSR $E \prod R \square Y$ GFNFAPR GWALCD G Q $\square$ L $\quad$ P $\square$

 F $\square \mathrm{ANDDVP}$
$\square G \mathrm{~S}$ VC Y M VT S Y C P S G Y LP A A G Q S L S I GSIVAWSAPFAPKY WAFCNGQEL P $S G \square P I G T V E Y F A M P T$ PPA GY LIKADGAAVGR SVK WHMSRTY YPE GWAPA DG ILLDR
Y $\square$ N T T Q G $\square E D T P$ VG N $\square$ I S $V M$ G K T A P S H Y L VCD G S V H N $\square$ $N$ VPIG S CI DFFGMTAPNSSFVLA Y GQAISR ANNGVVPTGSSMMPY I GSEAP E GWV LCCDGRAR R

$\square G S V C A F A F N W C P R N \quad W L P A D G R Q I A D$

 GSMGTF GGAFT】RN FAMCLGQTMA $G \square P V G A \| V S F P K A \boxtimes Q N P A G Y L K A N G T T F A Q$

$$
\square K E S G A \square G E \square R Y F T S K K \quad Y T Y G
$$

 EVYTSSKNLPESYPVVGPIPWPSDTVPS GYALAMQGQTFAB
 $\square P R G \square I M M W A V D T \ P \quad D G W A L C D G S N$ GS $\square$ CAVAAKYCPS GF LPAQGQLLST
 $G Q \| \frac{1}{1} N S F G F A \quad R K G T A F C N G S L L A$

IGEDQAFTFQFATSNAWLPCFGQ】VA $\square$ K E S GAI GEI RYFTSKK Y T Y G Y L Y A N GYS F I P

 $1 G G V P F F W P S A A M P S M V F L K F N G A K F S A$

## UniRef90 G8AK53

 UniRef90_V5YTB8 UniRef90-G8THK4 UniRef90 C4F381 UniRef90-W3VCF5 UniRef90-G8THK3 UniRef90-C3X192 UniRef90 Q 99363 UniRef90_UPIO00412DE14 UniRef90_C3X3V2 UniRef90-UPIOO046984CB UniRet90-E4T5W3 UniRef90-UPIO002559E78 UniRef90-B8K8G6 UniRef90_UPI00034BE652 UniRef90-J3E9A5 UniRef90_UPI0003EB38FB UniRef90-K8GNE3 UniRef90_N9M4B3 UniRef90-E4U0G1 UniRef90-H5D6F2 UniRef90_C3X8V2 UniRef90_A5ER49UniRef90 J3AHC9 UniRef90-N8ZV04 UniRef90-UPIO003B4FEC2 UniRef90-UPIOOO35D1DAC UniRef90-U2RSK1 UniRef90-D3P8A9 UniRef90-G9Y0G6 UniRef90-A4NH3 UniRef90-B9QXG8 UniRef90-V4KK24
UniRef90-A0A024ZXW5 UniRef90 C4F417 UniRef90- 11 IZS7 UniRef90-UPIO003B3EB76 UniRef90-B4VMZ3 UniRef90-R9B4A5 UniRef90-Q1INU5
UniRef90-V4NDD UniRef90_UPI00029B2A95 UniRef90 J1GCB7 UniRef90-B4WZ19 UniRef90-UP100031CB629 niRet90_-F9GSW5 UniRet90-R9CNTO UniRef90-A4YX40 UniRef90-ROBL65
UniRef90-T9BLD9 UniRef90-DOKG77 UniRef90_UPIO003750AF3 UniRef90_C3X8R3 UniRef90 B1JGT8
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 TTYAGLFAVIGDTYGDGSTTFNLPDLRGRVPAGVDNMGGT AENEALYALLGTTYGGDGNTFALPNLCGRVADHASQ TQNQALYALGTTYGGNGTTTFNLPDFQGRTLLHANATYGE
QTFPDLYRTLGDSNQLPDLLTS

 SAYPKLAMA TGATALFALFGTTYGDGATTFNLPDRRGRVGVPADNMGGT ATYPDMWAAGKFPVVPEATWQSDATTRASYTTGDGATTPD TTYANLFLVLGTTYGDGSTTFNDPNLKGRVPVGYD
SQNQALFSLLGNRFGGNGTTFALPNLYGRMVQGTD GD SDHTALYSLLGTRYGGNGTTFQLPDLRGRSALGSGNSPG
 SAYPLLADA
TTYATLFTATGTRWGSTSSNFRLP LLTDRGLMGAAADENV
AQYQALFSLLGTTYGGDGRTFALPNLVNRFALGVNAQSPGL
ATYPKLAKVF
TGNAALFA
SEWPWLWDFGGWSSGDGALNFRIPEVRGEFLRVLDESRGL
AQYQALFSLLGTTYGGDGTTFALPNLGGRFAMGHNN
AQYSALYALI GTTYGGDGRNMALPNLNGRVPVHYGLGDGL SQYNALFSLLGQRFGGSGQSFGLPDLRGRSAMGQFQGPAT REYQALFALIGFRYGGDNATFAIPDLRGRAVYGTGKSPVL AKYPKTAAA
QTFPDLYRThGNHNQDPDDTHSDVGMTAYFPAGW DAFDE
SQNNALFSLI GTIYGGDGTTFGLPDLRGRAADSQGRFPGS NNNPALFSLIGATFGGDATSFALPDMRGRAPVHFGQYDIL
SAYPKLAAA Y SAYPKLAAA YPSGVDP
AQNSTLYSLIGTQFGGNGQSFGLPD
DENDDLASLLAGKNQPGDTFRVPDLRGRVPLGBGAPPL N
 TTYADLFAAIGTLYGAGDTTFNLPAMGDEVIRHAHTASSA
 NTFPDLYRALGNSNRLPDLSRTDIGMTAWFPTGWLAFDELV
QTFPDLYQVLG EYQEFITTFCRS GDHKT NDYAALYKVIGATFGQDNLNFYRPDLRGYFVMGAGQ EDYPLLFGAVDYFGGDGATTFAVPDLRNEFLRG MYPNLAKA YPTNKLP NTYQALYSLIGNLWGGSQQTFTLPDLRGRSLVGSGQGTGL
 A LWPDAWDA:GYSRVTDESWIRDPDLRGCFSTGNGSTTPD TDYPHLSQYIKDQFGDGTATFALPDLRNEFIRG TTYSTLFSLLGTTYGDGSTTFNUPDLRGRIIAGKDDMGGS GQFTSLYSLMSTFYGGDGRSFAMPDLRGRSLVGRGKAPD DAYPELFAVIGTपYGKQGDNFRLPDYRGLFMRGVDAGSGL AENPELAAL SQTGEMITNTEYGFGDGSTTFNVPDRRGVFARGAG NGNQALYSLI GTQYGGSAQSFALPDLRGRALLNSGTGPGM NDFPILWAAIKDRDGNGSTTFRVPNLGNYFPRFADLSR AAFPD WA LLEGKFPLVPEASWQSDVMARASYTAGDGATT SQNQALFALTGTDYGGDATTYALPDLRGRSPVGQGVRPGG STFPDLYRALGNSNRLPDLSRTDDG|TAWFPTGWLAFDDG|
 ASNTALFSLFGTYYGGNGTTFALPDLQGKAVVGLGQGPGL
 NVLTELAKVF


SPYPNLDPYYPD DTPNLS NIPDRRGEFVRGWDNTKGV SQNQALYYLLGNTYGGDGTTFALPDLRGRTVTGVGSGPGL QQYPSLFSLLGNAYGGNGTTFALPDLRARVPVGAGAGPGL QQNQALFSLLGVTYGGNGQTFGLPNLNGRAAVGQS S AQNQALFSLLGTSFGGDGTTFALPDMRGRTPVG

GNGSSTFQLPNFCARAGFQQGQGPGL
QSFTPLFSLIGTYYGGNGTTFALPNLNGSVADSQGQGQGL E ITYPEFYQFWLKNFGDRNKYPKLPDLRGVALRAVDDGSGR NGNQALFSLIGTTFGGNGTTNFLPDLRGRCALGAGTDPHS RSNTALFSLGTTYGGNGTTTFGLPDFQGRT1 GAGGGL TAYAALFSVIDGTFGDGSTTFNVPDANGRAIFGRDNG


## UniRef90 G8AK53

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UniRef90-V4NDD UniRef90_UPI00029B2A95 UniRef90 J1GCB7 UniRef90-B4WZ19 UniRef90-UPI00031CB629 UniRef90-F9GSW5 UniRet90-R9CNTO UniRef90-A4YX40 UniRef90-ROBL65 UniRef90-DOKG77 UniRef90-UPIOOO3750AF3 UniRef90 ${ }^{-} \mathbf{C 3 X 8 R 3}$ UniRef90-B1JGT8
UniRef9O-M6QZN2 UniRef90_UPIO004673D91 UniRef90-J2W418 UniRef90-U1LSG1 UniRef90-UPIO00476C2EF UniRef90_Q9L3N1 UniRef90 J21KW4 UniRef90-K6HRU9 UniRef90-UPI00037D537C UniRef90-JoRA49 UniRef90-R4XS93 UniRef90_UPIOOO3EBOE51 UniRef90-U1LPA1 UniRef90 UPIO002EC78EC UniRef90-H1SDI4 UniRef90-UPIOOO47976E1
UniRef90_M2C3B6 UniRef90-F4QJU1 UniRef90-F9CTR5 UniRet90-B9KOL5 UniRef90_F9S7B8 UniRef90 V4LFT8 UniReffo-F5B3N1
 AAGRLTTAAGGVNAAVLGAVGGASTHTDTAAQMPGHTHG NYUPGEปGGNEVTVTAGNLPMHGHEF
GKAGGVET YRHLVGKYGSDDSVPLRNAGNGLSVGQIQEDELKRHVHRV DQGRALLTWQESTLLAQF $\square G N W A S E G G S Q E$
TPYVPGETGGTETTAGPLTNNNDPGHTHTL
KEAGLPNDIGSDSNVA
LSAEADGVKAHGTKTSNTTGNHSHTVSGTTSSAGAHQHAR






































































 DGGRELLSWQA
$\square$


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GADPSNGRDVGAWQGDA ITR





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[^4]
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UniRef90_UPI0003750AF3
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UniRef90_UPIO0047976E1
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UniRef90-F4QUU1
UniRef90-F9CTR5
UniRef90-B9K0L5
UniRef90-F9S7B8
UniRef90_V4LFT8
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UniRef90_L8MDJ1
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UniRef90-K9GWM2
UniRef90-D7VLV5
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UniRef90-B3HJY6
UniRef90_F3YW30

T F
TTAAGGAHKHNDPAKNSDGSGTNDTTTDMYGTTKTSTFTY GADTGNPSCSDDAGTTSAPANNYPA VVNGGSAEYSTSASD AANTGPGGS NVPQGN LLAATQSPDNTKTAYATAKATP P $\square D Y F N H S S Q G R N N S Y F D Y T T F A Q S S D L W S T L G Y D N A D G D$ QGTDT PHAAGVANSLTPKNAVYATNNNQQMYAYSTD GANASSASGALSDAARSNNNMTPGSSAYGHTFALADNASD S GPQYDGYNSVGANANAK T GSVSGATAGSN DAKTSSGAH S SVDNGHNHPYTAPQNPGIATPGGSA GPVVQGNFGS E GWILYKNWDNLNASRSSPDYGNSHT A LDA YGVIS GA

GTGVFGGSRQGDRVARTSPAYP GNGGYNVLLSYGGGANTTDGLDNTGGEPD

ACSGEPASSPTPSGHVGAQT
$Y$ VQNSFSYNPEAMLYGKGEG PPNQTGDSSAVGVAG
TSPEPTDTDYFQNSFSYNPEAMLYGKGEGDADPLEGIS T K
$P T G \quad T G A T F K P A P A D P D T A W D V T T N V N F D P T S A T V A T$ GGQYGGDS $\quad$ GGG $\square R V Q R D G N N Q L T S W N G D H A H T T \| G P H$ SDPGHVH GVFDPGHSHVVTTPQVTTGDNPPNLDWEAWS SSAGGNTSSPTDADWANANDTTTGGTDDTFAQNVAQPVNM
 GTGTYQPDMSFDASRSNSIYGASN
 TLQASNGGGNTSDPSNAVWANANDPTTGGUFDTFTQNPSS QASPDQRNSA TYGASGGGGGDDDVVVEVATVAGQNATATTGDYDAAVATA KVSELAPHAHAASVASSATVTTPTGTAYLAQP GKAAYA SF SPTYGGSPAVASGPASLNLNNAPVTGLSVTSTP DSNGVKVAGSTGGAATNKSDSSTTVAAGNGHAHTVADGAH
PIDVYFDHSQRRNNSYFDYTTFAQSSDLWSTLGYDNADGD $P D D Y F D H S S Q R R N N S Y F D Y T T F A Q S S D L W S T L G Y D N A D G D$
$S L A G T T T Q G T L S V P S S G D Y D G A G P P F G A A Q P A Y V P S G G V S$ QVEGDEGDSFLPFSPSDPNAEYT $\square A D T N T Q F P T G V K E F Y A$ YGTKTTNSAGNHSHNDPVGHTGAGNGVSAGFNAALGTGT
$\square E G N T A S D P R F Y N D K T F D Y D S R D S T D R T S L D I G T A L R D D ~$ NNTGAHTHSLSGSTNAAGNHSHRDGRRFNPSVFKDTYQYG $T T M P V S S D P A F G T S P D N A Y D G V T S S S S R \square Y A T T M S D P A G T$
$K A T N A D S N E T$ QVNSVAADASSAVGSFFGNAGASN
GTGDHQHLTAFAEAGFAYPWGADYGAGSRGNVDYDNPWPN LFGNGD GGEVPAVHEAFRKSSALSYYAAAGKSGLY TQGAQMDS $\square$ A
DSGNRSTEQLFDTAVPEGAFGDDKA RKNWTYDAGD NAGNGLSVGQTQEDADRNDTGKFGPVDGDDRHTGSFGYGA TVGWAEADGSEWKGLM RYEGKNDNVSRQTDDGNC
 $K \square P G \square F \square F S D G K N N Q K \square A C E Y N S D K S N N P M E N T D G S R$

PFGDSVNPGS $\square W G \square G N A A V T K \square A S G S \| I L N A G V \quad G S Q$ GS LGGQ $\quad$ NN A YG $\ V \square G S K$ NGVFVGHGENGRPTSAN $\square G$
 TNAN LLNDFW WGSNLTTGGAAPSN $\square D N T \square N S S K \quad G \square Y \square S$ NSSQS $\square S V S S G S T N V T Q N A V Y \square S Y P N A G G G G T \square V L N S G P T$ $G A T S S M S V A N N N A N T P A P N I S A F L G K P Q D Q S F F V P S A F E A$
$G P N E P N H E H E D G R N H D T V H I D E G G S F N F L N K N V Y G N D D S G$

R W $\square$ GF $D N V G S \square N G \square G D A G G P G G F R Y A G G D D P N W H N S P N A D$ QNG FPNNYTPGPTGGSGVVGTDNKADTDYAMAYGSNG TFVGTGGGQQTVNVPASAGTLGVSA

A SNSWS WLMGGTGA DRTTSANADGVGYS A $\square T Y G V I T G P G S G P F A G S R Q G D R V P R T S P S Y P A$
GTLQAATNAANTKTPDSSSY $\square$ AANNSGFASADLTTDKGLT HWTNHPHAAALGYEDHNERQRSALVSTWTDENLSDNGFLT ATAGVGDHTHPYTRSPAASNPDAQGADGDNTGAGGAHAHG S A $Y G A A D T E D P A A A L L A G S G A A V Y T G$
$D G Y P N L T A G V F H T L D T G Y \square D S G T S$
SGSTGSAGWPGGGGSALAFYDGGGFTYVQNSQYQVSPGTS $\triangle \mathrm{V}$ TPTGNATVNDPAQTGTQTATMKASPAAGTSQLD YNYSAYGEYVGN GTHKPVGRNAGTTNTTSHAH E GTDAPGLSFGDTTVDMAWGGGDNADPKDRRRRGKVNTD PTQNNAATSGAGQSVPNG

GATAAAATHATPDPSRMDAQAQNAGVYAPGGSGSQVALGN TQGLGNNPVAQSGNKLSTNNGSAGFTTANFAAYTTATAGT TAAAAGQPAADSTLAQSQ GGEGRTPDTVQDYAPAPGS TAYSQSDPTKRTGTPASGVTLSSLSINSERPFL
QGSVGMSTGWLANTSTDGHSLSGTAASAGAHAHTVGDGAH $G P G T S A N M V A D D P Q F N G F \square A P P G N D T D A A N A V T L T G Q G L P$ SFDSGNDMLSSSGPFSSHYTGSARSWLSESSWDKQV EAVAANGGTS ANATTA $\square P V N G V S \square A R P G Y M$ EGTNFVTTLGFVSDAAD STGSAGSHDHGGGTGQS GQHNHGGSTDGGGGHNHTGS ATNFSQFAGNDGDGAGHA DNFHDGDA

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UniRef90-H1SDI4
UniRef90-UPIOOO47976E1
UniRef90_M2C3B6
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UniRef90-UPI00046A6A55
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UniRef90-D7VLV5
UniRef90-UPI00034679AD
UniRef90-B3HJY6
UniRef90_F3YW30

MATAAAHTHTFTTDSAGGGAHPVVQPTMA LNH！ T $\square$ SMGGAALNTPTPLAPTLPDNTLSPFLAMNY I VANLAGGTLSP AGGSAGHNNVQPSLTVNFCIAL NGFVSPK DTSQMATGGDETRPKSLVLKLCIKA

 THTVADGSHGHTDTVNSTGNTENTVKNVAFNYIVRL TTGVGFAS $\square T T T V N N G G S A A H N N V Q P S \| V C N Y 』 M R 』$
VNNGGDT T R F DNS $\square$ SARTASENRP $\square N A T G C W V V K \square$

 VKALGGSVFDFLQDVGYTGGNETRPRNLAVMWCIKA TYPNPAFDNDAY DHTVY $\square$ GPHGHAVTVDADGNAETTVRNIAFNY IVRL NPGAGAYGSATAVTA
KA AQGSAQVT IPL QTTSNTGSNDTNPY LGLYY IIS LE TASAGTGAASVTVNPTGSQADNTVPPAGGVKYCV
$T A D A Q F A F F N A A N A G V P V A A E N R P R N G S F N L L V R A K$
$S \backslash P V A \square P S \square S V S V N S G G G T P H S \| V Q P A R V V N Y \square I R \square$
TYPNPAFDSDTYI GNDGNFSGETRPRNIA
$S P A N \square P \square P Q Q N T S \square A G G S \square P V D \square T N P Y L V L Y Y \square I$
NGPDFAPDADTTEGAGDTQVFNTQPSLTMKWCIAV
TGA $\square N T R G F \square A P A D \square P A G Q$
ASASTAMSAGSVAPVGQNQPHENMAPYTVVSY I I A L SLS GTVNVPAPTIAQSGTGGSATPVAN


QNSGSNLSSQSVGAAGGGQSHTNDQPTTVIGFVIAL
TSSAGGHAHNV
NDDNWWDTPNIN SKFATGGAETRPKSLILKLCDKA YTSSGQNTWGVQGSVGMSTG
$M G P I S V P P Q Q F N V N N T G T T G D G V R S P Y Q G V N F Q!$ TNFVEMDCDSSSIGSSENNAHNNLQPY LAA NF I I A FDSVTPVQATMSV ATADTSMASGA DASAGGGQPHNNLSPYLVLNFVVAL
TSPAGAHSHSFTTDGAGGHAH NTGMN $\square T$ PEGD NETAPCN【VFNY VRA
GGNDRPSATTFDASRVVPTADENRPKALVLKLCTKAAD TLERSRWWVSFDASRVVPVANENRPKSLILKKCIKA TASTVAGNHSHQD，VAGGDAESRPVNDNVDY I R FK TYQDI VLSP LDRSSSNVGAYGYTSRPTNVAVDYCIKYE RQGAIVNGRFTSQYRTESSEGNETRPRNIAFNY』VRT $\mathrm{V} P \mathrm{~V}$ G A A
TSNGDVT T TDASRSNPTYGASNTQPPALTLLPCTKAFD QPALGSEFVAFDASRVVPTAADNRPVNATGCYDIL

 AHPVGVKGINVEVQSSAWANVEIRNPVQAVNWLICADN GGGAHDHQHKVEGRTAETGGNETRPVSYGVNYUIKLC
$\mathrm{LL} \quad \mathrm{TGGDETRPKNVAAMYDIKTD}$

> TPRTATETTPAFVAVKYKVRV

TNGYRSG LTFDASRVVPTANENRPRNDAFMPFDR SVGGDTLRFDNSASVRTAVENRPLNATGCWVVKL
VS GGGSAGGTVTVTNTGGSAPLN
PRLDSKM $\square N G D G S H A H N V T T N A A G A G G D E T R Q R G T G Y P F I M R V K$


TQSAGAHTHS LSGTAASSGA
$P T A G S A D A G G N T A A T R I Y G A A S T T P V T D$


 ELPAQAGLQVELGDSGQNDPTGVVQPFLALTQCI $\begin{array}{ll}A N G A T V A L H P A T L S S T G N Q P H P N M Q P S S V L N F C \\ V & \text { N }\end{array}$


LQFDASRVVPTAEDNRVKSYGVYPYワKV
QPPDQQMGGGIISPAGGGAGHYNVQPFSVMAWFIALI
TADEAANQN IPAFNTD DKGGNENIQPYLGMNVMU
TGGAGAHSHGGTTSVSGG
GNQPGFSRFNFTSNSVGDGVNAVRPRNDAFNFDVRAK
SSATSSKD DAFDASGAVPTADENRPKSVIWWPCIQA

UniRef90 J3IGE5 UniRef90 M6SL26 UniRef90-X1CDM8 UniRef90_UPI00046A610F UniRef90 H2EI64 UniRef90-B5JF21 UniRef90-W7FZF4 UniRef90 E3IMM2 UniRef90-Q2J1N0 UniRef90_V9RZQ2 UniRef90_UPI0003033711 UniRef90 Q31Q92 UniRef90_G7QP01 UniRef90-C3X3W3 UniRef90- F4M4J0 UniRef90 C7PCL6 UniRef90-H2CJH0 UniRef90_V7Z9C1 UniRef90 UPI0003EEFE43 UniRef90 Q72P74 UniRef90_UPIO0037AF6FE UniRef90_V5US27 UniRef90 UPI00037B0112 UniRef90-A5FCL0 UniRef90-D6JLV7 UniRef90 V4PPL6 UniRef90-N6W3A1 UniRef90-Q38155 UniRef90 V6F4L4 UniRef90 K8KB67 UniRef90-G8AVI8 UniRef90-W0V9V8 UniRef90 UPI0003EF997A UniRef90- G0J6Z1 UniRef90-R8ZUW5 UniRef90 UPI0003941C25 UniRef90 X1TMC9 UniRef90-UPI0003D3EBFB UniRef90-V6GQI5 UniRef90-F9S0Z5 UniRef90-H3K51? UniRef90-UPI00047534DF UniRef90_C5IHQ0 UniRef90 A4P1I8 UniRef90-A9DEL7 UniRef90_W0LJV6 UniRef90 A0A038FRF8 UniRef90-16NML7 UniRef90-S7U124 UniRef90-M6R815 UniRef90 W8GB60 UniRef90 T9YQ96 UniRef90_H2CJG8 UniRef90_M6CK83 UniRef90 G8AVJ0 UniRef90-W3X5F6 UniRef90-H4VBQ0 UniRef90 I8SM42 UniRef90 K6P4E1 UniRef90-G9PUJ9 UniRef90-B0TDPG UniRef90 Q7N651 UniRef90-E5Y705 UniRef90-K0WBT3 UniRef90 K8X1U8 UniRef90- M6F7V9 UniRef90_F1D043 UniRef90-M1M1X5 UniRef90 M6CH79 UniRef90_K8KZV1 UniRef90-S4JXP1 UniRef90 ${ }^{-}$B1M1N8 UniRef90-E2CGT8 UniRef90-F4V6A6 UniRef90 X1FKE5 UniRef90-K8JEQ8 UniRef90_C7BQB5 UniRef90_A9H7F1 UniRef90 N1SMS2 UniRef90-F7VH46 UniRef90-M5Z4E9 UniRef90 UPI0004665B0E UniRef90 ${ }^{-}$W9GZ80 UniRef90-D8NJ06 UniRef90_J2XYB0 UniRef90- UPI00035CB6AD UniRef90-D0Q1C4 UniRef90_M6FIV9 UniRef90-M6V8X8 UniRef90-E9UKG5 UniRef90_G1UVQ3

$1 G Q V S T F L G S L \quad P D G W L P L A G G T Y D A$ VK S A VPL GAVALDPLRSS IPAGQIPADGQTISR SQFQS GTPVGAVIDYAG VNPPNTWQFCFGQAIEV

 PGSTVDWWDDTMPEDGWAWANGQVIT A
 1 G SVC Y T A A Q F C P P A G F V V $\underset{I}{ }$ P A D G R S L
$\begin{array}{rl}E L M E K L D K & L \\ \text { E }\end{array}$
$\square G V P$ F F WP S A A MPNDSWLKFNGAKFSA
EVIS A A E L $\quad$ N R N F P E GE VSAFY $\square$ S DCP E GWTIA D G
$P G Q \perp V V M A S P Y P P T G L L V C D G A A \square S R$ E VYTSKNLPESYPVGAPIPWPSDTVPS GYALMQGQTFDK
 GWI ECDGRTLEK
MPVGMECWYPGTTAP AGWLVENGALVSR I GEDRLFAATFAPMT WAF CMGQLV A $\square$ IG TA WFP S DQ $\square$ Q T GWLAA D DER V T E
EEGVNNSAYMGGIRMFAGNFAP QGDALAA GQLLS I PGD $\ 1 \mathrm{MH}$ Y G D S K $\square$ R P G WA L C D G

V
$\square G T \square F P F A G N F A P D N T$ Q Q C L GQTVNS
 YPVGAP IPWPSDTVPSGGYAMQGQTFDK
$E V \square S S A R \square N Q N F P E G A V V A F Y L N D C P$ E GWAPA DG
QVTT GNDIQRSF VGMIADFQIA APRPGWLNANGGEVSR I GQISSFLGELL PTFWLPLDGETNDK NDFQ $\square$ SATP $\frac{V}{T}$ SGAMRAFAFNYCPKN WVPAA GQTMLI VVSAASGSAGALIGAPVYWPLASVP KGYLPMDGQAFDK GMDI P F Y GEK N $M P$ E G WL L C D G AAK $\square F P V G A G I P W F S D V A P$ NGFA M K N QA Y DM $P \vee G T V K Y W D S D D P P P P G Y F V C N G Q N$

VT QVMWH S T Q K H LDP A G CLLLS D G QEVD R AFRPGMILMFSGTTMPT GWALCDG
$P \square G T V K Y W D S D A P P P P G Y F \square C N G Q N$ GS 1 VE WEAEA $\square P$ T D GLLDEL NGDVVDL SVK WHMSRNYIPAGWAPADGQLLSR $\square G V P F$ F WP SAAMPSMVF LIKFNGAKFSA EVIS SAE $\square$ NQNFPEGA $\square M A F Y L A E C P$ E GWAAADGDN LT S GLV IP FAGAYAPQFTABCLGQQMQV $F P V G G 1 D A P G N N L D Q A T W A P C D G S K Y N R$ SAAMPDTVIVESWSGMV FLDKFNGAKFSA

VGEDKFFPVDT PPAHT LVCNGAEEL TV S RADAGS $\square P F L G E I R L F A F D F A P N D G W V P A D G Q T L Q L$




 | L | T | S |
| :--- | :--- | :--- |
| L | T | S |

LPR GMDMMFSGSSVP K G WAFCDGSN GAIKAFAGPNVPS GWEDCDGRAVSR
 $\square G Q \square T H F$ VASAP A GWLLELDGSTYA Q
DPNKVLPRGM】VMFSGNSAPT
GWAFCDGN
$M L C C G Q A V S R$
G Y A L M Q GQTFNK
K A NYVDATPRGA \IMWGSASNVPTGWAGCDG
$F \square P W M G Q A F D P$ CAGQLVSR $P R A G Y V R S$ GA S NL S R
D S TPLGRTVFETTTQLNP GGYGPLNGAVFSR $N V P V G A G M L Y F G L T A P N S S F A F P V G Q A \square S R$


UniRef90 J3IGE5 UniRef90－M6SL26 UniRef90－X1CDM8 UniRef90－UPI00046A610F UniRef90 H2EI64 UniRef90－B5JF21 UniRef90－W7FZF4 UniRef90－ЕЗімм2 UniRef90－Q2J1NO UniRef90－V9RZQ2 UniRef90－UPIOOO3033711 UniRef90－Q31Q92 UniRef90－G7QPO1
UniRef90－C3X3W3
UniRef90－F4M4JO
UniRef90＿C7PCL6
UniRef90＿H2CJHO
UniRef90 ${ }^{-}$V7Z9C1
UniRef90 UPI0003EEFE43 UniRef90 Q72P74 UniRef90－UPI00037AF6FE UniRef90－V5US27 UniRef90－UPIOOO37B0112 UniRef90－A5FCLO UniRef90－D6JLV7 UniRef90－V4PPL6 UniRef90－N6W3A1
UniRefofo－O38155
UniRef90－V6F4L4
UniRef90－G8AVI8
UniRef90－Wov9V8
UniRef90 UPI0003EF997A UniRef90－G0J6Z1 UniRef90－R8ZUW5 UniRef90－UPIO003941C25 UniRef90 X1TMC9 UniRef90－UP10003D3EBFB UniRef90－V6GQ15 UniRef90－F9SOZ5 UniRef90－H3K512 UniRef90－UPIO0047534DF UniRef90－C5IHQ0 UniRef90－A4P 118 UniRef90－A9DEL7 UniRef90＿W0LJV6 UniRef90－A0A038FRF8 UniRef90＿16NML7 UniRef90－S7U124 UniRef90－W8GB60 UniRet90－T9YQ96 UniRef90－H2CJG8 UniRef90－M6CK83 UniRef90－G8AVJO UniRef90－W3X5F6 UniRef90－H4VBQ0 UniRef90＿18SM42 UniRef90－K6P4E1 UniRef90－G9PUJ9 UniRef90－B0TDP9 UniRef90＿Q7N651 UniRef90－E5Y705 UniRef90－KOWBT3 UniRef90－K8X1U8 UniRef90－M6F7V9 UniRef90 F1D043 UniRef90－M1M1X5 UniRef90 M6CH79 UniRef90－K8KZV1
UniRef90
S4JXP1 UniRef90－W1J5×3 UniRef90 B1M1N8 UniRef90 E2CGT8 UniRef90－F4VGA6
UniRef90
X1FKE5 UniRef90－K8JEQ8 UniRef90－C7BQB5 UniRef90－A9H7F1 UniRef90－N1SMS2 UniRef90－F7VH46 UniRef90－M5Z4E9 UniRef90－UPIO004665B0E UniRef90－W9GZ80 UniRef90－D8NJo6 UniRef90－J2XYB0 UniRef90－UP100035CB6AD UniRef90－D0Q1C4 UniRet90－M6FIV9 UniRef90－M6V8X8 UniRef90－E9UKG5 UniRef90＿G1UVQ3
 FGDGSTTFNTRDRKGLFIRGAG DLYPELFVADDSQFKDVPSNFTLPDLGGLFPLSSGDG ATFPDLAQMV $\quad$ DGVVAEADWVADPLKRGSYTLGDGSTTPD SAYPDFVAACYVTAGFGYRTTVLPDLRGRVGAGKDDMGGS GGTPNLRDRFIVGAGGGYGV AQNQALFSLLGTQYGGNGTTFALPNMQSCTPVGAGSSVDP TAWPRLAWYRCNASGATGDHIRLQDRRGEFARGWDHGRG ATFHDLAAAGTVPVVPEADWLADPLKRGSYTTGDGSSTIR QQNNALYSLVSTVYGGDGTTFNVPDLRGRVTVGQGSTTEA TTYARLWAYAQYSTGDGSTTFRVPDLRGEFIRGWADGRSV SQTGEMIINVEYGFGDGSTTYNVPDRRGDFARGAG
TDYPVLAKVF PSLVLPEARGDFIRIWDDGRGA SDYPRLAASWGWGWGDGVNTLQVPDLRGYFPRWLDLGAN｜
TKYAALFAADGGПYGDGSTTFNDPK K
SAYPKLATA YPSGVIPDMRGWTDKGPASGRAV SQTGEMIINVEYGFGDGSTTYNVPDRRGDFARGAG
SDYDAAYQVL GDTYGNQSTTFNLADYRSRMDMGTGTGDGR ADYPML WAFVQGMMVSDASWQSGTANRSKF SSGDGT RSNTALESLGTTYGGNGTTTFGLPNFAGRTADGAGNGPGL SAYPELYRLLTEKYGRDQ NVPQAEDRFDRNAGNGLAVV AQNTALFSLFGTTYGGDGTTFALPDLGGRTTVGIGTGAGL SAYPKDAVA YPTGT円PDMRGQTIKGKPSGRAV QQNVALYSLTNNVYGGDGTNFKVPNLVKTGIIGSGTAADL」 SQTGDI ITNAEYGFGDGSTTFNVPDRRG\｜FARGAG QQYQALWAVTAGAFGGGASTFVLPDLRGRVMVGPGDSPYT NTNAALYALDGTTYGGD SAYPKLAVA NGAENL1ALLGST

YPSGVIPDMRGWT：KGKASGRAV TNGTPNLRGAFVRGRDDADA TTDA乌LWQYAQDAELIDDQTNKDA DDYPEL WEALDDQY KDSTTFTLPDLSDLFLAVAGDG APNQALYALMGDNYGGNGTTNVLPDMRGRAPLGQ SQSGTMIINIEYSFGDGSTTFNUPDRRGLFARNAGV HGT AAYPELAKV
VANPEDAK $\square W$ TNGT

STYRHLVGKYGSTGTP
ATWPSDFERGSYTLGDVVNTFRVPDAEDRFIVNTGNGLND AVNAPWGDGDNSTTFNRP
 NLFPALAETLSGKYPADDSWVFYKDWRSSFSMGDGSTTRM SDYPVLAKVF
SQtGemDtnTeygfadgsttyn SQNQALFAlTGAMYGGNGTTFNLPDLRGRVMVGSGTSPY RVYSALFAAIGTTWGDGDQWFNVPDLNGQYLRGADLHGNP SQTGEMITNVEYGFGDGSTTNGPDLRNRFLVCAGDSYGV AAYPELYGVI GTKYGGNGSTTFKLPAAEDVIYAAGSKHAV TQYDYLFGLI GTAYGGDGNTFAVPNLNGAGPWGAGKGRYF HGTPDLRSRFVMCSETDSETGKSSN KRASGSGNGK AVYPELVGVVGS
SEWPWLWRAGGWSSGDGVKTFRVPDYRGRFVRGLQSGRND NGTPNLQDKFIVMEGP SQTGDIDTN EYGFGDGSTTFNDPDRRGIFPRGAG TEYPELYAYLGTNV LTPNFNDRYLK VDYQKLANYFNYFGGDGVTTLAVPDMRELVPVGAEQ SQTGEMIT NVEYGFGDGSTTYNVPDRRGI FARGAG SQTGDMITNIEYGFGDGSTTYNVPDRRGIFARGAG YPSGVIPDMRGWT GKGKPSGRAV
TAYAALFASTGWGNGDGFTTFNDPDARGRTLFGANRGTG
TAYKKLALK SAYPKLATA

YPSGVIPDMRGWTIKGPASGRAV GDYPELFDRDPAGW DTGSDFTLPDVEDTFLE SQTGEMIINVEYGFGDGSTTYNIPDRRGIFARGAG SGTPDLRSRFIMCGETDSETGKSSN ATYAALFAVIGTTFGDGATTFGLPDLRGRVATGVDSMGGT SAYPKLAAA YPSGVIPDMRGWTVKGKASGRAV FGDGSTTFNVRDRG\｜FVRGAG

## QKYPLAHALWPDNHLP

VDMRGYGIRAWDHGRGD SDYPALHAAIGSTYGDGATTFQVPDLRGRVAAGRDNMGGS TTYAALRAWIADKDNADGTTFTAYDVRGEFPRFWDDGRGV SDWPWL WAEGGWTSGDGTLTFRGPESRGEFTRLSDEGRGU TTY TEYPELYAYLG
SQTGEMIINUEYGFGDGSTTYNIPDRRGDFARGAG ATYP【LALVL

UniRef90_J3IGE5 UniRef90-M6SL26 UniRef90-×1CDM8 UniRef90-UPI00046A610F UniRef90 H2EI64 UniRef90-B5JF21
UniRef90 W7FZF4
UniRef90 E3IMM?
UniRef90-Q2J1NO
UniRef90-V9RZQ2 UniRef90-UPIOOO3033711 UniRef90 Q31Q92 UniRef90-G7QP01 UniRef90-C3X3W3 UniRef90-F4M4JO UniRef90-H2CJH0 UniRef90 V7Z9C1
UniRef90 UPIO003EEFE43 UniRef90- Q72P74 UniRef90_UPIo0037AF6FE UniRef90 V5US27
UniRef90 UPI00037B0112 UniRef90-A5FCLO
UniRef90_D6JLV7
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UniRef90-N6W3A1
UniRef90-Q38155
UniRef90-K8KB67
UniRef90-G8AV18
UniRef90-W0V9V8
UniRef90 ${ }^{-}$UPI0003EF997A UniRef90- G0J6Z1 UniRef90-R8ZUW5 UniRef90-UPI0003941C25 UniRef90 X1TMC9 UniRef90-UP10003D3EBFB UniRef90-V6GQ15 UniRef90_F9S0Z5 UniRef90 H3K512 UniRef90_UPIo0047534DF UniRef90-C51HQ0
UniRef90 A4P118 UniRef90-A9DEL7 UniRef90_W0LJV6 UniRef90-16NML UniRef90-S7U124 UniRef90-M6R815 UniRef90 W8GB60 UniRef90-T9YQ96
UniRef90_H2CJG8 UniRef90- M6CK83 UniRef90 G8AVJo UniRef90-W3X5F6 UniRef90-H4VBQ0 UniRef90_18SM42 UniRef90-K6P4E1 UniRef90-G9PUJ9 UniRef90-BоTDP9 UniRef90 Q7N651 UniRef90-E5Y705
UniRef90 KOWBT3 UniRef90-K8X1U8 UniRef90 ${ }^{-}$M6F7V9 UniRef90-F1D043 UniRef90_M1M1X5 UniRef90 M6CH79 UniRef90-K8KZV1 1
UniRef90 ${ }^{\text {S4JXP1 }}$ UniRef90 W1 J5X3 UniRet90_B1M1N8 UniRef90-E2CGT8 UniRef90-F4VGA6 UniRet90 X1FKE5 UniRef90-K8JEQ8
UniRef90
C7BQB5 UniRef90 A9H7F1 UniRef90-N1SMS2 UniRef90-F7VH46 UniRef90-M5Z4E9 UniRef90 UPIO004665BOE UniRet90-W9GZ80 UniRef90-DDNJO6 UniRef90-UPI00035CB6AD UniRef90-D0Q1C4 UniRef90-M6FIV9 UniRef90-M6V8X8 UniRef90-E9UKG5

90
DपNRVAGSS
100
110

## YVLGDSDGAVSVSASGI

QGSALLQHHQHY(L)
VHGTRAKAASGNYDGGPVGYEGQDQMQGHRHNF YNGQAAGSVGALFMRGDGAMSSGANGVTQRDADPNDNGTF AANRVTTTGSGINGALIGSNGGEQNSTLTMDQIPNHDHGG NATGGASS
NWSPAPYVQGQLAGA
DAGRVLGSAQGDADRNIVGSM
LVPGVLSS $\square A G A L K T A L H A L I G A D A V T L T T G H D P N D E S S G$ VPDFNGKAAGSLGALFQRGDGAVANGIITRDAMQGHFHAA DFRNDGTKAGNTRVMLTSTQDTPHDHPATFTPSTTPTTDV DTGRADGST VHGSRSKAAGGNYDGGAVGYAGQDQTQDHSHQL YA KGGATTGAVSGQTGETTपT INQDPSHNHGV DGGRELLS WQA
DADRVASSLQNKP GSAQSDEFKSHTHTW GAANVDPQSAD THTSVAASVGS YGAGQVISHTHGASAAAVGDHAHYD Ls

QEQDGITKSHTHSASASSTDLGTKTTSSFDYGT
 TTFRGPD DTVGLF DRAQSPGDGNFGRRQEDDLKSHTHA SPYVAGEILGTNTTVTMTSDNLPDHTHAA
TPRTLGQVFGAETLNपASANDPYSAG
GAVGGSADAVVVSHSHGASTGGYHGHSASTSSAGSHRHDS LISAGADGDKSHTHGASASNTNHNHTVSGTTSARGNHQHSQ AANFQWSKPYGSATKT LTMAQMPSHTHAA VHGSRPKAAGGNYDGGAVGYAGQDQLFRHVHELL SSTLNPGNSGGTQYTTVSGA

AVGYAGQD DRIVTAPVTTPGGAGNPNTSSGNVTVADTQANLPAHTHTA LSQEQDGIKSHTHSASASSTSSFDYGTKSTNNTGAHTHSA QFADNRRDGGVNSTQQDSNMAHNHSVDLTTSNNGEHSHPL NPTHPRGOQGG VYGLGDTG RNKMDGGNYDGGA LTRQAQSVQPGG QETTTYIGA VGYAGQDQLPDHAHALV WGTVTYKVKESGGERL GVFEEGHVKSHGHPNSTVASTN RATGGANTVTLGPEHMPVHSHVR HKपTTKEMPSHNHT

GQTQSDEDKKHVHRV NQTNGSKVNANKQFLVNSNSIAPSVTVLTIIAQDPSHTHQD DSNRGFGLD
GATGGANTVTLAPEQMPVHNHGHDPGHAHGDMQGH DSGRVLGS RNKMAGGNYDGGA DGGRKLLS WQ
GAANVDPQSAD RTGGEQLDAFQGHRHSP
VHGTRAKAAGGNYDGGAVGYAGQDQFQAHWHLY
NNQTLNPGNNGGAANNL
GGDPDRGSRFASLPGGSSSG
DSGRALLSWQAATSLSQFGGNYPE
GAT GGEATHALTPSEGPVHAHAATAWTDSQGAHAHSD VHGARGKAAGGNYDGGAVGYAGNDMMPGHNHAS
GEVIVEG
ПAAYGVYPDSGTDTMATПNPYDGEDRDFMFSPATPVPKGW NYSRNTTSTTVSVSVTVKT YSVGQTVANSLKSHNHTQ DTARVAGSWQSGTNDTGNGNAPAVQGワGDLATVGVDPTSF TTQTKEKTIKGSVNVKETI LTIKGI PPHSHEY DHGTRAKAAGGNYDGGAVGFAGQDQFQRH
VNDNQGFNAQMPDHWHDVTEHTHTRGNMETGEFRNVNNSG NTTKTTASHDVYTAGQFKDDQMQK
THGSRAKAAGGNYDGGAVGYAGQDMMFGHGHED
VHGTRAKAAGGNYDGGPVGYAGQDQMQGHRHAF
 VRTAAGGLDGSLGNMGGADQVVMLAPQMPSHDHTS $A G T V L$
LSQQEQDGDKSHTHSASASSTSSFDYGTKSTNNTGAHTHS SV
 VHGTRGKAAGGNYDGGAVGYAGQDMMPGHYHSV NFSRNTTSTTVSVNVTVQNT QMAPSHTESQDPKHKHEE AANLLLTGSK SHTHSASASSTSSFDYGTKSTNNTGAHTHAA UAGDWNATATTTNNGNHNHYSNTQGHTKTVDNMPSHQHTY DSGRGLLSYQEDALQNFTGTMRF
VAGRLATS $\square$ SGSTLGAAGGA EQHLLD $\square$ SE $\square P H H A H P M$
DNGRSFGTWQSGSPVV $D$ VGRS

VGS WQVDMFRSHRHEL G $\square R \square S G L T F N S T D \square G G S G G Q Q A \square A L S T A N L P P Y T$ QPSDEVNTNQGFNAQMPDHWHDVTE HTHTR

THGTRAKAAGGNYDGGAVGYAGQDQMQGHNH
VHGTRAKAAGGNYDGGAVGYAGQDQGQSHGHTS
DNGRALLSSQI
GD T

UniRef90 J3IGE5 UniRef90-M6SL26 UniRef90-X1CDM8 UniRef90 H2EI64 UniRef90-B5JF21 UniRet90-WFZZF4 UniRef90-ЕЗімм2 UniRef90-Q2J1NO
UniRef90 V9RZO2 UniRef90-UPIOOO3033711 UniRef90 Q31Q92 UniRef90-G7QP01 UniRef90-С3х3W3 UniRef90-F4M4JO UniRef90_C7PCL6
UniRef90_H2CJHO UniRef90 ${ }^{-}$V7Z9C1

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PANGGDPFAVIGSGSSWLNTGSSNSGASSQTGПMVSDGT GFGEAYKDWPFGTTGDKGQKGTAGGEDSDNYFYNTSP
PGGQTGEAVYYSVTTSKASYSGTALVNYGDGEFADKNSTT YHTQUGSYGAGGGVQELFNNLGT THANHPDABAVVGYPDFGDLNTPNGNTDASKTNMYSTEAG

GKAEANDASAYGGVSGSSGLTGSNASTYHYTSTAGGHSHS TGPRGPNNQPTGIYPNGSTQ\|SGTWVSWSGTTSATGNHAH TFAP DQGTPLQGALSLTAKQANATLPDPANGAVLAGLT WLNDNNNTTGGTTAYSSGAGPNTPSSASANGASPGYSLRS A FGSVGGSVPFNATVSVPGNPAVGNSNSPSGNPVVLGGQF SVSTPPSVVNMNATASLDNGNSITPMANGYDAQSKANGAS
 GDQTGNFMSATGPFYPS TPPLVDDDLEAVGVP TATT TYNNVWG■GGGAGGYWLAGGASRSA TTNNSGHNHGLPTTGNYNGGGTGAGGRATNSVTVTGCFS PAPRGYYSNGGNGMGG NDPGHNNNGIFSRLLRPPYPGSITGSDSGTGUWLNGSGTG RTHWADSSDS SAWVANPAGGGQTYRDPEVWDTTNAADKVEVHYKT GVS KSAGKEGTGGQALYERNGLTPSFKTTFTQAVGSGLAHDH SWGGNRMY NDPGHAHGQLTGGGYQSPNDGEFNGVTNGSGTGDWLNGSG RVPAAGGSAAGGNV
TY $N N V L G \square G G G A G G S W F N A G T T G T F Y$ GGDGGQDNVSYGVIGEAAGAFTRTGVATGRPTTPSNTG $\square G Q S F W$ GHNGGGAAGPALGSDAWAPYSTTGDP $\frac{L}{N} Y N S \square Q \square A \square G S G T F \square D N T Q G P S A G V P L T D R A R G A \square T D G T$ SFTPSGSSTNATVTAAAAMPVSTSVGSSATPAGGNNY AGSYQNYATGMPRKPLNUGUSYPNDVEMTSKATSKGTN TMRTPSEGSSGARVSNTPRDSGG
STVPNGAGGFGGSGGSGYAGGALGQVGПNVAVGADANT VSLTASTTGAFATGDLSGYNCAAGGHDFYRKSFHASGANA RVCNGDALPVSGNAALYSLLGTEYGGDTTNFALPDLDRGLE GMGYWTNKGMKYGTEYYSEYASYDRNDLDSVMQSANGASP PTHTHSFSGQLVSTALSGTAAGQSFSSAANLGVSGWAAGQ AGDSYWSAAAFAENLVSGYWG
YTSTESSK

TW HEMTYTSTNASHSGNVFGMDGGVGSYWDNGGGTNAGN VTGSYVGILKSDGSASGAVTKKNTGTYTWGSGGF
WGETGSASGAGTV
HFNTNSANTILIFGGGP VGLNNSSAAAPNPPPGSGGTYMMNNAVYDPUADGT
G GYVNSYWGDSNHTSFQPGGGAWTQAAGDHAHTVYDGGH G TY YLDTSSNNSTWGMGGVCVDGKPFVPGSGTDDRPYSST TMSPAG
AYASNVSDGTARTSVRTFGSGRTVAETGESQELPQGNAAE S GTAASAGNHTHSHR
TFPVQGPT IGGAGPPLPAV GPNSGGVATSATPGTP VALPYYNTGNF ALPYYNTDGAYGNTPWGSTKYQDNNTPSPTGNDYHPYTSE TDPGHAHGPGSGTGFVVPQGTGGEIVTFDGGSLTPEHATA GAHQHKSSGAFGGPNTSDFPNSGTAASAGAHAHTVGDGAH SWHGITSEGHGTDTMGSGGDTSTWNGSNGTSYTGGNOPHS WLINNNSSTA NEMDGGVPSSGVF SEQRAWVPRTYRS PTGVSAGDAANPGRYDGASYTDDGSDDTDTSFDNAVGGGQ K PAGSVPSVSVSSTAQFTNNTGNVSVSAGGNPIPIPGGNST GTGEFRNVNNSGTWREMTYTGGAFHAGKPEPNCAFVQSLT

UniRef90 J3IGE5 UniRef90-M6SL26 UniRef90-X1CDM8 UniRef90_UPI00046A610F UniRef90 H2EI64 UniRef90-B5JF21 UniRef90-W7FZF4 UniRef90-E3IMM2 UniRef90_Q2J1N0 UniRef90-V9RZQ2 UniRef90_UPI0003033711 UniRef90 Q31Q92 UniRef90-G7QP01 UniRef90-C3×3W3 UniRef90-F4M4J0 UniRef90-C7PCL6 UniRef90-H2CJH0 UniRef90-V7Z9C1 UniRef90-UPI0003EEFE43 UniRef90-Q72P74 UniRef90_UPI00037AF6FE UniRef90-V5US27
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170
180
ANDTMPAQTFFDGYPSGTFATETRPRN\|A
SNLQULDPMTDGVNGTPRTGNETTPASVAVKYKVRV
TSSAGSGNAHENMPPYI TLNYGV GYS DYLESYTFDASLVARTATETRPSNVSGVWTI QT FS THNHPDSPQGGGPHNNMQPTVIINKIIKV
 $F G P A S G V P L Q G V G A G G G N Q P H S N L Q P Y T V I S F V I$
$T G P T C$
$D F T F D A S R V V P T A S E N R T R N I A T L Y L V$ $\begin{array}{ll}P V N V S G S V N D T T R F N G G G N A H N N V Q P S R T V N W U V R D \\ G T P T S D G T & R\end{array}$ TGKADNGLSSYNVNFTGVFSQTRP

VGGTETRPRNDAYDACDK
PGSVIRNLIVNNTNGTPRTGNETTPAYUAVKYKVRV $T V Q G G N Q P H S H S L S G S V S$ GNQPGFSRFNFTSNSVGDGVNAVRPRNDAFNFLVRAK

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DASG\squareA
TSAS GDHQHPGVIPSNA DNG
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                                    GGSETRPKNI
     SGGDSPHNNMPPYYVVHYII
TSPECSGFRNGGADVTNN $\square$ ENATQ
VQTVMSTGGNETRPKNAGRLPIIKA


VSVSGNGSHSHSDSVQSAGEDKNLPPYYADAFDMK L TVGIGGAHTHTHTITVNSTGNTENTVKNDAFNYIVRL DTSATPVAKKSYANGTVAGA
VIADGP NGTPRAGDENTPAYVAVKYKVRV
1 DPSTDVTLN
V S SVY DDKLGTTGSVTMAGGS
TSSDGAHTHS LSGTAA $\square$ AGAH
TDDSGDHTHAVSGNTS SEGTESRPDNYGVNY I IK K
QGGSAST 1 KTDG DNGTPRTGNETRPKNVALTYCMR
TAGSGYTAVT DDTSRVVPTADENRPYNISV
VAAARLGIPTATGSTGGGDAHENRPPFHAV
YVEGPANTALAMAPSGSNQEVPTRDPYLAVTWCVAL PNANG

ANGTPRTGNETTPAYVAVKYKVRV
TN GLHNHNLIINNTGSDNPHNMQPYLVVNYI $\mathbb{L} \square$
MH TIACGAHAHTVADADFGGLKNTDNHRKVNWIVR
 TSGDSLQESESGDThAEDGEADARPSNVAGCYII R TATGSQVSHNHTTNVV TDGT NGTPRTAAETRPRNNTLMAI I R TG $\square$ S $\square Y$ GS GTG $\square$ WNAGGGQAHENRPPYVA $\quad$ P I I R SGSYG IVVDSSATGGSETRPRNCATMYLI $V S \square G \square F G P V A N G A N G T P R D G N E T T P A Y V A V K Y K V R V$
 QPGFSRFNFTSNSLGDGVNFVAVRPRNVAFNFLVRAK
TADASG

DT A GEPR KQS LPDTNWGDESAPRSVVVKYFDRA RFQYTSNSVGDGVNFVAV RPRNVANFLVAK

$\square Y G A S A H$

PVPGS
S GGGQGHNHPATASSPSHDHSVN $\square P P Y Y \square L A F \square M K \square$ S $\square$ TSGGAGGQTYQA VQSSGGT

T GGGQGHSHQADFTSVSHSHEEP $\square$ PPYYALAF $\square \mathrm{M}$

FNASRTWTGNTSAS
GSSGGGFDLDSSLVTRTDTTNTTHGKQDGVLFCTKFE
TGQPVRTPNSDGTNGTPRTGNETTPAYVAVKYKVRV


GNETHPLTGPASAVPGVRTASETRVKSDTVDWY $\square$ KAAD
TSASGSDN AHENMPAYLALVLAV
TSDGT NGTPRTGNETTPAFIAVKYKVRV
VGGGQGHNHKATASSSSHTHSDVVPPYYILAFIMKL
QTTADTTGVTVDTATTGTGASQNVQPTLMLANKI


DGGGYSSTITFNPATVARTAAETRGKNVAWNMIVRVK
SHP $L$ TMYDASAATFVDANNKGF $\square S M S R P R N V A F \square P A \square K$
PDALFNQANDSLGFTESTGGVETRPRNMA
$V 1$ SNGSGTFSGTAQGGTSTPFSTVQPSVICNYAMRD PTYTGLTMAYFNASRTWTGNT
GSPTSDGT NGPPRTGNETTPAYVAVKYKVRワ
$\frac{1}{11} G A \quad P \square T D G V N G T P R S G N E T T P A Y V A V K Y K V R V$
YASWSRVSATSTGVFGQTEYQGVRPRNVAFNFLVRAK

UniRef90-T0GFN2
UniRef90-X1H3J0 UniRef90_Q7N6A5 UniRef90-E4U0G2 UniRef90-F5T0Y0 UniRef90 W3V6E3 UniRef90 G2H6X1 UniRef90-W9H3C5 UniRef90-M6XB41 UniRef90 M6Z768 UniRef90-M8VT94 UniRef90-E9KIH4 UniRef90_TOGWL7 UniRef90-UPI000349209B UniRef90_A1HR55 UniRef90-M6V6T5 UniRef90 H5W7R3 UniRef90-R5A3S8 UniRef90-E3IK82 UniRef90-A0A022PDV2 UniRef90 W4T834 UniRef90_UPIO003A51CE3 UniRef90_K6SUQ0 UniRef90-UPI0003EDC7B1
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UniRef90-D4CXR4
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UniRef90-F7JJL9
UniRef90_K2AWV9 KEAGAGLPVGSLVPWSSRTTLPAGWITRDGQLLNR

VGQDTSFVGPAPSGWDEDDGSTHAQ DANKLLSKGMIVMFSGSSAPS GWAFCDGN GAI WPTAAQYCP DDT VEADGT $\square Y P V$ PEGMLAHFYLDSCPDDGWVADGSQ
DPDKVLPRGMUVMFSGSSVPT GWALCDGE GMP $\square G M T F W W P G T T P P A G S L A D N D G P L L L R$
TNDFQ $\square$ SATATGA MIDLLTSSQA
GTMLVN $S M P \begin{aligned} & L G S \\ & V G D V M P V Q S M R D Q G F \\ & V \\ & V\end{aligned}$ VGDVKTSARNT PPTGWLQANGQTIGN GD $\square K M W S G S S D \square E V G W V L C D G K T R N H$ PRAGYVRSGASNLSK

SGMPVGMPFWWPGTTPPAGSLA $\square$ HDGPLLQR DPNKVLPRGMIVMFSGSSVPEGWALCDGN 1 GERRQYATEFAPEGEFSLCMAPDEDD $G V P V G A S L S W G G M Q E P$ EGWLFANGGLARK
$\square \mathrm{PSG} \square \square$ S M WS GANA $\square \mathrm{PS}$ S WT $\square$ CNGEN $\square$ T S $\square G V P F$ FWPSAAMPSMVFLKFNGAKFSA
 DPDKVLPRGM\VMFSGSSVP IGWALCNGEN

DTTPLGRPVFETTTVFAPGGYGALSGSELIR KVAGKDVE E Y $\square \mathrm{F} P \mathrm{~S}$ G G $\|$ I A WS GATNDPAKWTLCDGS

DPNKVLPRGM VMFSGSSVPEGWALCDG
 K

PGQlVYTAGKRALP GTLLCDGRAVSR $G M V V G F T G T Q A l P S G W Q L C N G$
DPNNVLPKGMIVMFSGENAPT GWAFCDGN

DPDKVLPRGM』VMFSGSVVP QGWAFCDG
DNTPLGRPFFETTILLSPGGYGALNGTVMKR $\square G D \square T P V A R N Y V L A N E \quad E F C H G Q L V S V$

DPNNVLPKGMDMMFSGTHAPT GWAFCDGN $P A G S V A W W P \square R S S \square P A G Q \square P A D G Q T V S R$



[^5] DNAALGRMFFETTTAFSPGGYGALNGKLLNR VT AS EAFRLSMUGVPRYWRSTTLPAGHVWANGDLALF

PPPGM\AVNGD\LGR PAGWLLLNGQTLGN PE I WARAQPGAVSE $S R \| L P A G T P Q L Y S G S T Q \square P S G W Q L C D G$

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UniRef90 E9KIH4 UniRef90-TOGWL7 UniRef90-UPIO00349209B UniRef90-A1HR55 UniRef90 M6V6T5 UniRef90 H5W7R3 UniRef90 R5A3S8 UniRef90-E31K82 UniRef90-A0A022PDV2 UniRef90 W4T834 UniRef90-UPI0003A51CE3 UniRef90-K6SUQ0 UniRef90 UPI0003EDC7B1
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UniRef90-V6HVA4
UniRef90 UPIO004244ECB UniRef90-U7QTG4 UniRef90 UPI000365F554 UniRef90- S6JNJ9 UniRef90_UPIOOO4725B7D UniRef90_S3UZ72 UniRef90 Q7N435 UniRef90-16NW36 UniRef90-M6YP68 UniRef90 N4IUQ4 UniRef90 W7LDV0 UniRef90-M1NW06 UniRef90-U7QUF9 UniRef90 K6JoL9 UniRef90-F7V97 UniRef90-Q38189 UniRef90 UP10003EF64E UniRef90 A0A022PG07 UniRef90-UPIOOO42101A6 UniRef90_UOLPI1
UniRef90 Q3KH47 UniRef90-F2UA27 UniRef90-HOHIU5 UniRet90 UPIO003EE722 UniRef90 W3V2A2 UniRef90-E5UB12 UniRef90-16XGF3 UniRef90 UPI00041FA215 UniRef90- МЗНОЕТ UniRef90- J2U9L UniRef90 BoN9S6 UniRef90 M6PQBO UniRef90- K8L9E7 UniRef90_N3INV1 UniRef90 A0A022DZT2 UniRef90- G7ZIZ4 UniRef90-J8RSE9 UniRef90-O7N687 UniRef90 UPIO0046B50DE UniRef90-D4CXR4 UniRef90-UPI000468894F UniRef90 U6ZUQO UniRef90 E5Y5X2 UniRef90-Q6V7M8 UniRet90_F3YY48 UniRef90 M604T7 UniRef90-F3YZR3 UniRef90-T2KRC5 UniRef90_F7JJL9 UniRef90_K2AWV9
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NGTPNLIDRFILGGNFDG MARGFGKSNTVG AAYPQLWAMAQASGNDITEAAWQAQAAVQSSVGAFS TGD NQYSALYSLLGTTFGGNGQNFNLPDLQGRTDVGQGПNGSV AEYG FGDGSTTYNVPDRRGLFARNAGV HGT SQVGDMIINVEYGFGDGSTTFTIPDRRGIFPRGAG SAYPKLAVA GANAPYPSGVIPDMRGWTDKGKASGRAV AEYQNLYTLLWNDWSNTNSTGSATVRGVSADADWDAGKRL SQTGDIITNVEYGFGDGSTTFNVPDRRGIFTRGAG PE GGTFTPPDLRDRFDAGAG
SQTGEMDTNDEYGFGDGSTTYNVPDRRGDFARGAG
AAYPQLWAMAQ ASGNDITESEWQAQAAVQSSVG NGTPNLDDRF ILGGDFS GVKGQSNTKVS ANYTRLNSILNYRFGKGPNGFSLLDMRGYFSRAWNNQAGV ADYPALYAAI GDAYGGADDSFRLPNDREYADVSSGNCQIL SQTGEMIIDVEYGFGDGSTTYNVPDRRGDFARGAG

NQTGDL\SH $\square Q Y G F G D G S T T F T \square P D R R G \nabla A R G S G Q$ TDYPVLAKVF PSTPDMRDKFVVGAGGSYAV SQSGDLITNVEYGFGDGSTTFNVPDRRGDFPRGAG AEWPWLWDHGGWTSGDGADTFRGPEGRGEFRRVLDESRGM GTNFGGDRTNFQLPDMRGRTAVGQGFGPGL ADWPWLWDHGGWTSGDGVATFRGPEGRGEFLRVLDDGRGL NGTPDLRGRFIIGAAGAYTATGTTSLQGDHNHGAATWNGG NQTGDL $\quad$ SHDQYGFGDGSTTFTLPDRRGVFARGAGQ DNRPNLI DIAAVHGPGWQLADGTNGTTDLRDRFIVGAGTSTGG
EMIINDEYSFGDSTTYNDPDRGIFARGSG SQTGEM】IN $\ E Y S F G D G S T T Y N \square P D R R G \square F A R G S G$
AMYPRपFEEDNTSYGAGDSTFNTPNFDEGTVGVHTADPGV $V G S T A G G P V P D L Q R F V I G T A D P$ NGTPDLRSRFVMCGETLSET GQSNSKAN FGDGSTTFNVPDRRG $\|$ FPRGAG RFLLAAGGG
GHTHSGSGSTSTNGEHSHYDEAWNGTGVGG
TNGTPDLRDRFVSGAWQLSDA WVCAPHGDGDGSTTFTVPDYRGEFLRGLDNGAGV G $\mathrm{DK}^{2} \mathrm{SHTHSASASSTDDGTKTTSSFDYGTKS}$ AEWPWLWDHAQWTSGDGAATFRGPEGRGEFLRVLDEGRGV FKFPHLFAQMGYTYGGDGRNFRLPDLRGSTVLSANETSSI
NGTPDLRSRFVMCGETTSET MRGEFIRGWDDGRGV
NGTPDLRSRFVMCGETISET GQSSSK ATFPDLAAAGTLPVVPEADWLADPDKRGSFTAGDGSTTPD D $\triangle A A V H G P G W Q L A D G T N G T T D L R D R F I V G A G V S Y A P$ SQSGDMDTNDEYGFGDGSTTYNDPDRRGDFLRGAG
AEWPWLWDHGCWTAGDGVLTFRGPEGRGEFLRDWDENRGD TIYPVGSDYMSVTSTNPATYFG GTWVAWGSGRVP SQTGELVINVEYGFGNGSTTFNVPDRQGIFPRGAG SQSGDMITNVEYDFGNGSTTFNVPDRKGIFPRGAG

QQYEALFSLTGTVFGGNGTTFALPNLATRAPVGTGLLNG
 GGNFSGIID GKSSTTVS

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TNGAPLLNAEFVRALDRGR GTWIVAWGA
A N WVNVPT WT S WS VT LIN $\square$ R WE F $\square$ R WLD N WR WV

[^6]

UniRef90_A0A038H8U7

## UniRef90-A0A023C2M9

UniRef90-TOGFN2 UniRef90-X1H3J0
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UniRef90 UniRef90-F7JJLG UniRef90_K2AWV9
 NAKHADGNTLAAMFLRGDGKNSAGSGLHQADQVQGMRHTV HASRAKAAGGNYDGGADGQENQDLFQGHNHYT A GVGAGGTAGASGGANTHVLTEAELPAHTHTY $N \nabla S R N T T S T A V S V N V S V L N T$
TSYTIQRGDKVGQETSTLTQSTFHTHIATFTRSSSTNPITV DLGGRLGSTQGDADRNI
GNNKDDKSFNFKSDEATLD $\square$ NGKTNG $\square L S \square G Q \square P N H N H L S$ GATTFRCPRLRDYVRGADPAGGRAVGAWQDEATFDPAHIN SQYVAGAKGGAVSATLSTANVPLAPHVHPDTGGGTGTVTI RNKMAGGNYDGGA VGYAGQDA IPDHSHAF
VHGSRAKMSGGNYDGGPVGAAGQDRLPSHRHQQ LSQEQDGTSSFDYGTKSTNNTGAHTHSVTAASAGAHTHSM
 P IDPNMAGRTAIGSPRAVGETFGEEAHTLTDPEDPNHDHGG MHGSRTNAAGNNYDGYS $\mathcal{G}$ GEGQDAFQGHGHEG VHGTRAKAAGGNYDGGAVGYAGQDQMQGHFH
DSGRGFGTWQSGSPVV
HDDVG GS GDE YSLNSTGGEKEHLLT INEMPSHSHSV AFSSGDGATTFRCPRMRDFARGAD PPSGGRPV GPKDGKSFSFNSDEAT LNDNGRTNERSLS DGQDPNHNHLS DM NATERKAPGTGTITGDHVSTFEND\|FKKHDHGL $D L N V A T G D V V F T D A A S A N G V R L L R D G A T D P E D L P Y$ HASDL VHGSRSKAAGGNYDGGAVGYAGQDQEQGRGLAA SSTDLGTKTTSSFDYGTKTTSLFDYGTKTTSNAGSHTHS $\square$
 DGGRELLSWQE

VH G S R T K T T GVNYDGGSVGFAGQDKQDPHVHQQ DGARLA GSWQDGTWMRTIPQEWSGSDLEGGTFALGNAHAQ SSNSFSGSKKDKKFTFTSENQTVHDHGLTADENGKHTHEQ RA $\square$ A $\square$ A QRGGEDLIK
DTGRAGGSRQADSLRATVNV
GFTATVQTDTKGDHAHGGNTQPTH LTTDQLPSHVHNA HASRDKAAGGNYDGGATGQENQDQFQGHKHA TFlSESQTVR】SGSTDG HGLTADENGPHQHEQ ANTVVLAATQMPAHNHAVSDPGHAHGVSDPSHAPGHAHNT VHGTRAKAAGGNYDGGAVGYAGQDKFHEHGHFV $H T H G N G D R W P G G G G S A L A F Y D G G G F T Y V Q N S Q Y Q V S P E T S$ VGTFTS GQVISHAHTATAEEGGTHDHPVTVHPAGRHTHPA GDEGALVTGSTGGASTHTHTVTVNDHVLTINQDPAHTHDQ GSGTEKSFSKNTTSTADSVNVTVENTILTESQUPSHYHIGG VHGTRAKAAGGNYDGGAVGYEGQDQGHAHGHEL
 NKMSSYA $\square$ SYRAGGSNTNGEHSHYDEAWNGTGVGGNKMSS GNTNDKR $\square$ T G DNKNKAFNAQT TADKTNLT IDQ $\square$ P SHSH $\square \mathrm{E}$ DTNRSAGS TNNTGAHTHSVSGTAASAGNHTHSVTGASAVSQWSQNGSV DAARAMGSFQVGS GTTRNEDDASALLMDKH $\square$ PQ QHKT LTTP $L$ QAAAANEPTTGL AETGGAEEDTLTDQQDPVHSHPL DSGRTILSFQEGTIVSGFDDNDTG IVGUSGGANYGF ANGSGTGKNFFKNTTSTTVSVNVTVGNLTEAQIPSHKHDG $\square N G K S A G A V G A V F L R G D G A R S A G S N G L L Q V D V V G P H A H T T$ GATGGANTVVLAATHMPAHNHVTDPGHAHTVSDPGHAHSV GSYSVGDTGGEAEHKLTESELPRDTPKASCSTTGNHTHQ

VHGTRAKAINGNYDGGPPGYEGQDQFQSHRHSA $D V A R V A G S S K L S Q N K E H Q H A A R Q G L G$
$V G \square N T S D S N F N T V E K T G G A S A V T \square T A S Q M P S H T H T F$ VHGSRAKTSGGNYDGGPVGFAGQDRQ円PHRHQQ VHGSRAKTSGGNYDGGPVGFAGQDRQUSHRHQQ TGTLGYFRSDSGNFYTASGAFTGGSAPAHGFTG
RVLKNDQVVFEDLEVHFDEHSSVALITGDANGSHNHNG TSYTLGAFGGTPTTTLLVNNLPLHNHSAQVVSDPATSGNL DPGRVLGSWQNHDYAS GPKDSKSFNFNSNEAT $\square$ N $\square$ NGKTSERS $\operatorname{LS} \square G Q \square P N H S H \square S$ TGNWNPGSSGPGSTGNPGSSGPGSTGTWNPGSSGHGSTG GGSNSKTDTVNNMPDHTHNVWINESGYHTHSQ
 DVGRGAGSWQTGTNDTGDNGQAPAVHGU
YVPNLSEQF FRAWGQGDTREAGTTQGDADRE AATVALTVAQMPQHNHGVNDPGHGHGHAHSVYDPGHSHGH TTFRLP KLVDYVRGADPNNGRPVGLWQADALQGHGHTN P IPN A A GRTPVGSARNDGETFGEEKHILT DPEIPAHDHGG DVGR\|HGLVQGRQNDAHVHGDND YDYNTIGKTGGEKK

${ }_{\mathrm{B}}^{6} 77777777777710177776534411177777777711$

UniRef90 A0A038H8U7 UniRef90-A0A023C2M9 UniRef90-ToGFN2 UniRef90-X1H3JO UniRet90_O7N6A5 UniRef90-E4UOG2
UniRef90 F5TOYO UniRef90 W3V6E3 UniRef90-G2H6X1 UniRef90-W9Н3C5 UniRef90-M6XB41 UniRef90-M6Z768 UniRef90-M8VT94
Uniinefoo =9KII4 UniRef90-UPI000349209B UniRef90-A1HR55 UniRef90-M6V6T5 UniRef90-H5W7R3 UniRef90-R5A3S8 UniRef90-E31K82 UniRef90-A0A022PDV2 UniRef90 W4T834 UniRef90-UPIO003A51CE3 UniRef90-K6SUQ0 UniRef90 UPI0003EDC7B1 UniRef90-V6H9P2 Uniinefol-c3X7Y 2 UniRef90-V6HVA4 UniRee90-UPIO004244ECB UniRef90-U7QTG4 UniRef90-UPI000365F554 UniRef90- $\mathrm{S6JNJ9}$ UniRef90_UPIOOO4725B7D UniRef90_S3UZ72 UniRef90_Q7N435 UniRef90--16NW36 UniRef90-M6YP68 UniRef90 N4IUQ4 UniRef90-W7LDV0 UniRef90-M1 NWO6 UniRef90-U7QUF9 UniRef90-K6JOL9
UniRef90-F7V974 UniRef90-O38189 UniRef90 UPI0003EF64EF UniRef90 ${ }^{-}$A0A022PG07 UniRef90-UPIOOO42101A6 UniRef90-UOLPI1 UniRef90-Q3KH47 UniRef90-F2UA27 UniRef90-HOHIU5 UniRef90_UPIOOO3EE7221 UniRef90-W3V2A2 UniRef90-E5UB12 UniRef90-I6XGF3 UniRef90-UPIO0041FA215 UniRef90-M3НоЕ7 UniRef90-J2U9L7 UniRet90-BON9S6 UniRef90_M6PQB0 UniRef90-K8L9E7 UniRef90-N31NV1 UniRef90-A0A022DZT2 UniRef90-G7ZIZ4 UniRef90-J8RSE9 UniRef90-Q7N687 UniRef90 UPI00046B50DE UniRef90-D4CXR4 UniRef90-UPIO00468894F UniRef90_U6ZUQ0 UniRet90_E5Y5X2 UniRef90-O6V7M8
UniRet90 F3YY48 UniRef90-F3YY48
UniRef90
M604T7 UniRef90-F3YZR3 UniRef90-T2KRC5 UniRet90_F7JJL9 UniRef90_K2AWV9
 VTASTNATRPASMDPEFLFIADKLYSQS INGTAFGAGYVA VNASTNATRPASMDPEFLEFAADKLYSQSTNG TMPPVAAPDT TGAGPPVPSVATVTPA SLPYYTTLGTTIGATNNKIDNSVNGLIWTSGPDYHPYTSD VNDPVSANTNGNLPAPDSTHNTMAGTSGGPGGAAMWANTM TGSGlid GGYANARGAFYKSSGYNPQDFNGSEQH
GTDUMAQHGAFADTTDKRAVASSNNTRDRYSTGMTTSKGD TFYTSETSGNTQTQGAGSDWTSTSRAEDK
NGTTAAATDPGPGSNRVLATGNY苗DVDGNYSPAAPAGGGT TYNNVYGПGGGAGGYWFGAGGTG YAGDIA GGTYGQGGRYADSGGSSSATILYT
TFDYSKYSVNTSSAGAHTHSVSGTAASAGAHAHTVGTGAH NSGGVVGNSGYVATAGKAQMQYQVGGVDAAGAHAHNVGVS GVHNHQ WLNSSNNSTGGSSAVLY GAGPMTPTVGSGNGPS
 GTASFNDAAL GDGSNVAWSSTADPWVGAFPLTMYDAS SGGTHKHNVSGGANVQSSGGSEGLESYGSRYKTFRTRGDA GAWQRASRISATVLYEGGSPGSGLRLNVGDLDGQQTVSTS KFSTTAMIPPGNGPTPMSIIDTKSSSRTD
AFDSSNGHLWCAGTLKANTSHHADAVLRNGNWE VVVSGT
PLGTLAGGAYGLNQGLGGQWVFTGGGNW
PTSDGANSGRLATQYTSATTGSSGSHSHTSHQHTVGIGAH NDGISASLVHPDNYFGTGSSRVGQNGVSILDPTDD GQAYADA IGPNIATTDSSSSSYSPFASVKN

ATNFSQFAGNDGVGAGHADNFHDGVVGNPGFS YAGDTA ADGRLSSSGPGGALPPGALVPAGGGA GETVNEKGMCHNTTDTSSRDWVNGGSSGSNPPKYRPYTFP

TASVQTGTGTSVTLVETNGVSEANGPYTSATGSGEGHNHA PPDALG $\| A P G S V Y P S G P \square S F Q A A V I Q V G D P T$
GQGKCHNGYTEDNTDRDWVDGGRRGPEPPNYRAYT FP YSNYYNLGAQGSGTGSGQVVSGGAVLTGYTGWGUYGAYTG S L N Y VNNT
SYRSYYQRTQTQSAGAHTHSपSGTAASSGAHAHTVGПGAH SAAAAGNHLHQAWSDEQGDHQHTGSTSWDGDHAHILGSFR RYR GMSYSNGGGPQTEYQUNNHYDSSUWRKPSTSWNQYASTSN GSGKYVHDTTDGDTGAEGYSGGDSGLPRSKSSENYTHGSK YADSYRAGGSNTNAAGNSHTFSFGTSSAGDHSHSVGDGAH AYNNTSAYAETPGTGGGSKTASNRVLSAGAHTHTVAlIGAH GMRMQDTQAATQKANQLDRYNLNNQU $1 H D S N E D Y S L H T N E$ TVQAVSPSGGGWNDTGGGGGFFAGPLTLSTGGPQGD
HKVVSAASVNTSAAGAHTHSVSGTAASAGAHAHTVGIGAH AMGANGAGAVGAWWSDSLTSFGADTREEPQYVSGLYNGGP

 GMAYVNYNGYPGGTNMKQILNQSDTVMAAYDAPYYAYTSN PMFASAGSSST WASGGGASTTYTVNNGTGIGPETRP YDPGHAHNTYSNYYNLGAQGSGTVTPYNGAGQVVSGGAV SGПSADVSNQTGNNQSYNYGASSWATWQN GVYVN
TGSSTTTNSAGGHTHTDGGAGSSRYTVHSAGTSGAQATSP YAGDV AAGTYGRGGRYADSGGANAAT LYTGSPVSDGT YAGD $\forall$ AGGSYGSGGRYADSGGANAATILYTGSPVS SQFTYDVPVNFNASRTWSGATSTTG NHAHSVPTGAH STGNTGQDGSHSHSFNASGTTGSTNAGGDYHSHSFNANGS GVGVTDNATANAGTKATPQTGTGTGAPSPSALLYAAPAGT
$\mathrm{G} \square \mathrm{N} \square \mathrm{D}$ T N Y GA T Q $\square$ G K T D R A VA S S K N T S ER Y LYY Y S S S S N G T HWNPGSSGPDSTGNWNAGSSGTGGSRDWNPGSSGTDSTGH EAHAHNNSTYGGGDPNTAVYGEMGGSANQGDGFYTKYAGG VSGFNQATNVLADGSLNAVMPSGGNFVGYTFTTTR

ПWAAWDSPAYTSVAGGAAYHDNDSSGCYQT NTAALTPSSTGGGAFQDNGYAGGTDNASATGDGIYGAATG SSVSIASSGGTGECLGTN SSPSSATSTGRD GNHNHNSDSASLNA乌VGNYVYYGWGTGSTAYPVKTGFSGF
TNTVYSNE SGGIINAGDKLSHDGN Y
TGNATTTGSAGGHTHTDGGAGSSRYTVHGSGVSGADATAP EAYSSQVNGWANYAGAWGTSGVTSTPYSLSQTTAAVG


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[^7]UniRef90 A0A038H8U7 UniRef90－A0A023C2M9 UniRet90－TOGFN2 UniRef90－X1H3JO UniRef90＿Q7N6A5 UniRef90－E4UOG2 UniRef90－F5TOY0 UniRef90 ${ }^{-}$W3V6E3 UniRef90－G2H6X1 UniRef90－W9H3C5 UniRef90＿M6XB41 UniRef90 M6Z768 UniRef90－M8VT94 Uniinefoo＝9KII4 UniRef90－TOGWL7 UniRef90－UPIOOO349209B UniRef90－A1HR55 UniRef90－M6V6T5 UniRef90－H5W7R3 UniRef90－R5A3S8 UniRef90－E31K82 UniRef90－A0A022PDV2 UniRef90 W4T834 UniRef90－UPIO003A51CE3 UniRef90－K6SUQ0 UniRef90－UPI0003EDC7B1 UniRef90－V6H9P2 Uniinefol－c3X7Y 2 UniRef90－V6HVA4 UniRee90－UPIO004244ECB UniRef90－U7QTG4 UniRef90－UPI000365F554 UniRef90－ $\mathrm{S6JNJ9}$ UniRef90＿UPIOOO4725B7D UniRet90＿S3UZ72 UniRef90 Q7N435 UniRef90－16NW36 UniRef90－M6YP68 UniRef90－N4IUQ4 UniRef90＿W7LDV0 UniRef90－M1NW06 UniRef90－U7QUF9 UniRef90 K6JOL9 UniRef90－F7V974 UniRef90－Q38189 UniRef90 UPI0003EF64EF UniRef90－A0A022PG07 UniRef90－UPIO0042101A6 UniRef90－UOLPI1 UniRef90－Q3KH47 UniRef90－F2UA27 UniRef90－HOHIU5 UniRef90－UPIO003EE7221 UniRef90－W3V2A2 UniRef90－E5UB12 UniRef90－16XGF3 UniRef90－UPIO0041FA215 UniRef90－МЗНоЕ7 UniRef90－J2U9L7 UniRef90－BON9S6 UniRef90＿M6PQB0 UniRef90－K8L9E7 UniRef90－N31NV1 UniRef90－A0A022DZT2 UniRef90－G7ZIZ4 UniRef90－J8RSE9 UniRef90－Q7N687 UniRef90 UPI00046B50DE UniRef90－D4CXR4 UniRef90－UPIOO0468894F UniRef90＿U6ZUQ0 UniRef90 E5Y5X2 UniRef90－Q6V7M8 UniRef90－F3YY48 UniRet90＿M6Q4T7 UniRet90－F3YZR3 UniRef90－T2KRC5 UniRef90－F7JJL9 UniRef90＿K2AWV9

H Q W W
T
170
T T G R QVA 180 TGDETQPRNVTGCFVDRA VNGTPRVGAETRGPGETVIWC LNGTPRTGNETAPASTAVQY
ПGGGQGHNHNASASSPSHTHSDVVPPYYILAFTMK■ TNPVNDNGVTTSGGTAAPTAVTTVPPQGGVRFCI YTANFDASRVVPTANENRPVNLLALLTC VNGSSPETHNHDDNSLGKHSHNNRVPYYILAFDMKT GGTETRPKTVNWLPCIKAFD
 YGPNANG ANGTPRVSNETTPAYVAVKYKVRV GSPVSDGTGAPRNGNETAPAWTAVRYKVRV

 PGNSTRUPITEGASGSPRTAKETTPAFISVKYKVRV PPPTSAFNIY STGGNQPHENRPPYYALCFLYKL GS NGNPRDSNETNPAYVAVKYKVRV AATFVDANNKGFTNMS RPRNVAFLPA $\square K$ AMSGGTHNHSTSLTSATTGAHNNMPPYIVVN
TANSSSPTTQLSVAEG RMRPPSVSWLPCDKAFD TNSPETHNHD】DVKNTGKHSHSNTVPYYILAF IMKL VEADGLETRPKN【AELYTDK
TPVNATLPDTDGVNGTPRTGNETTPAYTAVKYKVRV THSVA GGSHGHTLTVNAAGNAENTVKN】AFNYTVRL GT TGGSDPHSHSTSGSVP RFNFTSNPAGGGVNFVAV NGTGNPRN

GDERPRNIAFNFLVRAK
TGGA
SGEGKPHSHSTNTTSGEHSHKNNTVPYY $\square L A F \square M K \square$ DNFGDNHEVKIYGSAGTSGAH
$\square$ A A D G A DHTHG $\square$ ASDGTHSHTT $\square P P Y Y A L C Y \prod M K \square$
TDGVNGVPRTGNETAPASTSVQYITRV
SGKGNPHSHPTNLTSGGHNHSNNTVPYYILAFIIKL DADQGAYTGVSTQNAGGGAAHENRPPYYALAFI VRNTVDYAVAYEANGTPRTGDETNPAYVAVKYKVRV A TYASGRDMGFYVTTNVTGGH
STGGGQ AHNHTATS TGQPVRNDNTDGTNGPPRFGNETSPASVGVRFKVRV TASAGSHTHSFTGSAGGGVSHNNMPPYLVV
THTVADGSHGHTDTVNSTGNTENTVKNVANYVRL IGGGKAGNHOTSVAIAAYGNAENTVKNIAFNYIVRL
 VFPAGT SYQRDAANALLDAFKSRPRNUA
VSTRGDWPTSPQDSLQSITTEGTARP
DTPTVTMAANA DSPVGGSQPHTNFQPYLCVDF！ PRNAFNYIVRA
TGGGQGHNHSATASSPYHNHND【IPPYYLLAFIMK■ LNATGVWTBQAFGAVTNPGAA
LTGYTGATGITTQNAGGGAAHENRPPYYAVAF
TKAAGNHSHSVEDSSGGGAAHENRMPYSGVAYWVRT
PDTDGTSGNPRTGVETNPAFVSVKFKVRV
TSSAGAHTHS LTANTGGGGSHTNLQPY
GNPRNGDEVAPAWI AVRYKVRV DGTGSPRNGNEVAPAWI AVRYKVRV
AHSVATGSHGHTITVNAAGNAENTVKNIAFNY IVRL TNSNGSHSHSVNLSGNVVGGAHT HNITV
TGTAGSGAATVTUNAVSNTPFTNMPPYLAMSFVIA
$\square G Q N S P E T H D H D \square N \square T N T G N H \square T P Y Y \square \square A F \square M K T$ WNPGSSGSGSFRPDSSGHGN TRPAN DYGSGSHNHSAGDGSGGGSAFDVTPAYYAVNMWDRI QTTSGNRW $\square$ ANTGDETRMANATGVWT IHA
VDGSGFHTFGVRVSDTVPTAAENRPVNVAL
IS DQGAGTGQSTQNAGSGTAHENRPPYYALDPCTQA GTSATYNSGNDQSQGGSLGHNNMQPGLVLNFF』K MNAAQTTTASLTITIQSSGSDEARPRNUA TSNAGSHTHSLTASTGGGASHSNLQPYI PNQYVSTTW WTETRPRNVALLYCVK

[^8]76677776510134677777777763121001230099

jpssm $10 \Rightarrow 20 \Rightarrow-30 \quad 40$
jpssm

| jpssm | 130 | 140 | 150 |
| :--- | :--- | :--- | :--- |

jpssm 170


[^0]:    TSALQT GLSGNTASAGSGEAVD DRPAYFVANY! I $T$ LIFDASDSVPTADENRPVNMALDPIIK

[^1]:    

[^2]:    
    

[^3]:    

[^4]:    

[^5]:    MVP WS WA P Y N Y QLCCQGQVVNL
    QEGVQPGETSFFAGAAAPRQGKRRCDGGAVRR LPRGMIVMFSGKSVPT GWTLCDGN

[^6]:    lupas_21
    lupas 14
    jnet
    conf
    cont
    sol25
    sols
    joum

[^7]:    lupas_21
    lupas_14 14
    lupas 28
    jnet
    conf
    con
    sol 25
    sol25
    sol
    sols
    solo
    jhmm

[^8]:    lupas＿21
    lupas＿14 14
    jnet
    cont
    sol25
    sol5
    solo

