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GANLTTRTGDTVYGFNSNTERDFYSATSSSSKLVFSVWDA ${ }^{10}$ GANTKTRNTDTTYGFNSNTNREAYSLKSANDTPIFCVWDG GANMTTRTGDTVYGFNSNTDRDFYTATNSSKALVFSVWDA GANRQTRREDNTYGFNSNSGRDYYSLASYRDSAAFCI WDG GANYSTRAGDTTYGFNSNTGRDFYSATSNADKLVFSVWDG GANYSTRAGDTTYGFNSNTGRDFYSATSNADKLVFSVWDG GANHETRKTDTTYGFNSNTEREAMSLKSAADKPVFCVWDG GANMRTRTGDDVYGFNSTTNKDWYTISDPRDGCIFSVWDA GAATSTRTGDTVYGFNSNAGAVF NFAAYTSAPALTIYDS GANPHTRDGNTTYGFNSNSSREYLTANNASD\|LIFCVWDA

DNDKGNNNATKNGDEETGSFGDDED GGNDTLSAGNDVLAGEQGDDQLIGGDGDDS ANQTLILGADDDTLHGGGGDDYVGSHGGDDWLYG

MQGGRGDDTYY团DEGDVVRESSSSFGGFSFFGNRS

GNDVLT GDAGHDVLLGEQDDDQLIGGDGDDSL VT D S NTRVVESAKGGYDTVRSSVSYA
GPLLKGTSGDDTHIVTDSNTRIVESAKGGYDTVRSSVSYA TWSPTTGEMFI DGVGGGNRILLT $\square W D G$


## GTDTGEIIYGTASDDFLLGMGGDDN

DARTGDVTVSVNGESRT FTGSDRNNLVIRAG FDAN $\square G D D N \square Y G G E G N D \| I Y G$ ADGEDIRIGBMTSYT TNGGDLIDADAGNDTVDGGGGNDS DQGGDGNDSLL GTDTVRATAASYTLGANVENLTYDGTGTGNGLANDITGA GNDTITGLDGNDDVSGGAGNDS DDGGAGNDTLDGNIDT■

GTTLSGGLGADQFVGRTGGN
GETDSDTLYGNQGSDTLLGDYGTQ GNDLLLGEDGADETYGNEDNDTIFGGDDTDVVYGND\|VF GNDTLKGGRGNDTLDGRDGQDALFGSNGNDVLFGRGGND GDDTLYGGTGADDLSGGAGNDVLSGGDGNDDLVGGNNWD $\square D G G A G D D S \| L G Y G G D D A L T G G L G A D T L R G G G G N D T V$ $\square$ TGGGGADR $\square F G S G D K D E\|V A G G G A D Y V S G G T G \square D Y\|$ $N D N G V G T A N N D I I Q G K A G E D H L L G K A G H D R L L G G Q G D$
$G V G T E G N D T I L G S D F N D A D D G V G G N N I I F G L G G D D F I D R$
 GAGADFLDGDVSDLQPGGSNNDVLQGGEGNDTLQGGFGAD

GGNDSLLGGNGNDNLRGGNGNDILRGGAGRDTLSG GGQDTMKGGDGDDTIYGGADNDTLKGGNGNDFLYGQDGDD GGQDTIKGGDG\|DTIYGGADNDTLKGGNGNDFLYGQDGDD

TVPGADTTDGGNGNDFGDLTT LNGGYQALQTYVAQK GपNVNTRTGDTVYGFNATADRSWFSATSASSTLIFAVWDA AGDDTLYGYLGDDRLEGGAGDDLVRGGEGADML GDDVIYGGGGNDGADTIDGGDGEDWVDYGKSPR
GGDDD $\square R$ GNDTLYGGAGNDALDGGSGDDALYGDAGDDVLE $\square N G L A G N D N L S G G G G G N D T I A S T T G N D$ TNGLAGNDNLYGKEDNDVLNGGGGND GNDTTFGGTGNDTIDGGAGDDEIYGGTGADSILGGTGDD GGHDTLYGGNGDDKLYGQDAGDKLYGQEGHDTLYGGYGAD GGHDTYGGNGDDKLYGQDAGDKLYGQEGHDTLYGGYGAD GGNDQLMGGDGDDEMAGNEGDDYLDGEAGDDKMYGDDGWD G G DDTLAGNAGNDTLRGNAGNDRLAGGDGRDQIDGGAGH GNDRISGGFGNDQLWGGTGEDTINGDDGDDKLIGGYGD GNDTMNGGFGNDQMWGGTGDDRDRGGSGDDKLYGDLFGE GNDTTNSNDGTETLTGGAGADNTTGGNNDSTYGGFSTG GNDTVSNDGTETLIGGAGADNITGGNGNDSIYGGFSTG GNDTLGGADNDFLSGGAGNDLLHGGAGNDELRGGGGDD $G N D T I Y G Q D G N D V L S G G A G N D G L D G G T G N D R V Y G N D G N D$
$\square N A L A G N D T V I G L R G N D T L R G A G N D T D F G N E N R D N L ~$
 GDDTLSGGSGNDRLNGGDGNDALEGGAGDDLL GNDSMFGGIGDDLMAGNDGNDTMRGEDGNDRMFGSNDDD GDDILYGGNGNDY!NGGKGADRMDGGAGDDTVVMDAEDF



## QUERY <br> QuERY UniRef90_I4K2H6 UniRef90-P16316 UniRef90_UPI0002E16DEC UniRef90_A0A031INL7 UniRef90_O87806 UniRef90-W2DJN3 UniRef90_W2DYA9 UniRef90_D2TXX2 UniRef90_UPI0003FB43AB UniRef90_C4UUT3 UniRef90_G2H1U9 UniRef90_Q10VL5 UniRef90 B0UQ58 UniRef90 I4Z237 UniRef90_UPI00036EFECA UniRef90-B3EFZ0 UniRef90_T0GM24 UniRef90 K2X8L2 UniRef90_UPIO00361CA2C | $T$ |
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 $T$

- V EN AF G G S G N D L I I G N N A V N NII I G G G A G N D I I Y G G G GA D Q | $T$ | $L$ | $E$ | $N$ | $l$ | $G G S$ | $G T D V$ | $T$ | $G N$ | $D$ | $A$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

EII GNF GEDVLEGNAGDDVIA GGSEDDLIKGGPGNDF GA D WMA GQA GD DALVGGDGSD SL F G GA GND WLVGEA G D DA

 GNDHL YGGDGNDVLRGGSGD DYLDGGSGNDILDGGLGND』

 GHDRIF G G A GNDVLIGGDGDDRLAGQDGNDVLDGGA GSDR GDDELVLGNGFNVL RGGKGNDKLYGGAGSDFLDGGEGDDV $G N D K L Y G L G G G D A L F G G S G S D R L E G G A G N D K G Y G Q A G K D$

 GNDTLI F GDNDNDWLWGGDGDDFLNGNRGDDTLFGGNGNDT
 GDDFVA GDGDQDWVMGGSGNDQVLGGAGNDTVFGDDGNDR
 ANDELWGGTGNDYLGGEQGNDWLSGEEGQDTLKGGAGDDH GNDSLF GDAGNDNLQGGAGDDNLDGGNGVDVLQGGDGNDT GADQLF GDAGDDSDHGGDGNDDIHGGAGADTLWGDAGDDT GD D LT D P A GNDMPR GGPGD DAI D G G D GHD F T D G GAN G D E

 ARDLI FGGEGA DLI NGNEGD DTIUTGKGDDUALGGKENDL
 D D DSIL G GMGD DSI YGNEGND YIDDGGLGGSDTIDGGEGN DU

 GNDHL F GQAGRDRIVGGGLGHDRLDGGTGQDRRGGGAGRDR
 GNDTLLGGGEGTDVYLRGDSGDNVFDGGPGADVLDGMDAA DD GD DALI G GH GA DILVGGGM GDD TVLY G E D GK D TMMLG GS GR DVV SA DVI FGGGGNDDLMGEGGDD QLLGGAGADMMFGGE GNDL
 GTNNLD GGDGNDSSIFGGTGVVNNIFGGWGNDFYYANAMNDN

G
DAD NAR GGS GADLI TGNSLDNVLVGGAGADTLSGGD GNDN
 GQD LDDGGD GT DTLHGGAND DEI DGGSGND RLY G DEGDDI



 GNDHI E G GNDNDFLWGGDDSDYLNGNHGDDHLYGDRGADT




 GNDTIN G GDGNDTID G GDGNDTIN G GF GLDDVMDGGA GDD T



 G D D T I N A G L G D D H 1
 GEDTLE G GVGAD DMYGGNGNDDMYGDNNADTMLHGDA GNDT DADTMNGDAGNDTLRGENGDDRMFGGTGDDLMAGND GQDT $N \square E S F\|G G D G N D N D I G S Q F S D\| I R G G K G A D T Y Y T L G G D D \square$ GDD WVRGDS GNDRIWGDA GNDLLEGGVGNDYIS G GT GA D E GD D WV R G D S G N D R I WG D A GN DL L E G GVV N D Y I S G G T G A D E
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$\square W G G A G A D T$
$\square T$ GGAGRD $\square$
130
140
Y G D $\square$ AESSAAAPDTDRDF 150
㑆
L L

LWGEKGKDV $F V Y$ Y G S G F $\mathrm{F} V \mathrm{Y}$ G H T R | F |
| :--- |
| F |
| $\mathrm{F} V \mathrm{Y}$ Y Y K A |

 F F GGSSG LKGEEGNDTLDGGQSDSLTAADTLHDFNVDKDKDLSA LDGNTGDDQLEGNSGNDQLEGGKNDVLKGNRDNDW DGGK LVA GEGSDSLFGGDGADWVGGEGTDSLFGGDGNDWLVGEG MWGGAGKDVFAFTSVKDSVGSQRDIIVDFKSGQDRIDLRD IWGGSGHDRLLGEAGSDTLTDGGDDHLAGGPGHDHLNGGD LTGGSGRDD FRYTNASESGAETMDDISDFTSRQDRLDLS G
 $L Y G N G G L D T L I A G A G N D D L D S G P N D Y M N G G L G D D T Y V G D G$

 | LVGEAGDDALVGGGQGSD |
| :---: |
| $\mathrm{L} Y G D S G A D R F V$ | LAGGEGNDFYVYRS $\qquad$

 LVGGSGADTFVFQALSDSRGSSFDTDQDFRRGSDRIDLRS 1 FGGNGNDLLDADEVFEALMNGEHDGPVHDEEDDAAEGDD LRGGEGADTLFGGDGDDLYGGAGNDLLSGDAGRDYLEGEA L HGGKGNDFLYGQEGDDF Y GNA GNDYLEGGEGNDTYGGDGNDVVSGGLGDDRLFGGA IVGSEGEDSLYGDYGNDTLGGAGNDCLSGGAGNDLLDGCE LNGDEANDSLNGASGNDLLNGGVNDTLLGGTGNDTLNGAD LYGGDETPNGDSANDELWGGTGNDDWLSGEEGQDTLKGGD LFGDVGNDTLQGGAGND LS GDAGDDVLNGGDGNDLLNGGFDDワN TFAGEGDDLIYAGDGADTAGDAGDDWI EGGAGNDTLNGGLD FIGGAGGVTVHGRAGNDTINAGSNDTLYGDEGADVISGGA LNGSGGNDQINGGGSNDKLNGGAGDTLNGGNAQDNLIGGS I WGELGSDTLFGGIGSDSLFGGIDQKASDSQGLDLLYGGF LDGGRGRNALFGGDGNDTLFGGVDDTLNGGDGNDTLDGGR LVGVA GDNWLDGGEGVDTVGSDGDDTLFGGGGNDVLYGVT
 VNGEDGDDLVIGDFGNDTLTGGAGQDVFFLRYEAALGSPT
 LN GDAGDDTLAGGDGADVLNGGDGDSLSGGAGNDTLNGDA YYF GA GDGLDIVTDVG
FVPGPGPDLVDGGS GRDTVLYRGDHEKGSGVYVNLLSGQG LDGGAGNDULFGGAGNDDLLGGAGN DILNGGEGDDUIS LDGGDGDDYLVGQAGNDIIFGGNGNDVLVGDGATDLGRGS LDGGDGDDYLVGQAGNDIIFGGNGNDVLVGUGATDLGRGS LFGNKDDDDLFGQGGNDTLFGGQNDTLIGGAGNNELWGDK LGGSGADTFVWKAGDFGNDVIKDFKLDADKDKDDLSD LDGGAGDDLLTGGTGSDVAVAAGVVVDLADTAAQNTGGSG I $Y G G A G A D R F V F N A V S D S V G A R D I L V D F S Q A D G D L D D L S A$
$V$
$V$ LEGGVGNDTLYGGTGDDELDGDEGDDHLYGGGGDD\|LDGG LEGDIGNDSLIVSANDTASGGDGDD
VVGGDGNDAAFGQEGDDILSEAGNDDADGGDGSDTLIFGGD LKGGSNNDTLYGNEDNDLLSG DESNDQLYGDQGNDULN RGNDGDDEIYGSAGDDSLRG DNGNDTISGGNGNDTIR
 LVGDRGADKLWGGDGGDKLYGGVGADQLFGGGGN DY

 YVVDCSGDTVAEQANEGHDTVIASCSYALTANDEDLHLAE LNGGAGDDSLSGEDGDDRDIAGSDDSDSGGVGDDVLNGGA VVENANEGHDTVIASCSYTLSGEDEDLRLTEGGDFDAD
L DVTFFAGAYVLNMTTGVTNFVGETAI NFGAGNDS I IGTA L NGGDTGDIIYGGFVGNNQNNDEADSINGGAGNDTLYGNL L NGGDTGDIIYGGFVGNNQNNDEADSINGGAGNDTLYGNL LRGGAGADLLKGGTGNDELHGOADDVIYGEDGDDKMYAGT L RGAGADLLKGGTGNDELMGDADDVIVGEDGDDK LIGGDGYDFLAGGDGNDTITDDGQDTVLGEGGDDTLTAAA LIGGGDGYDFLAGGDGNDTITDDGQDTVLGEGGDDTLTAAA I GGSGDDMLDGGLDGDVLDGGDGADLRGGGGDDTLWGGD
RGNDGDDRMFGDDGDDLMAGN DGQDTMRGGDGNDRMF $L R G N D G D D R M F G D D G D D L M A G N D D G Q D T M R G G D G N D R M F$
$M R G D D G N D R M F G S N D D D V L A G N D D D S L D G G T G N D R M F G G N$ VY IDDGEDDKAKSGNFDDTGDGYDKDYIVDSDGVDFDSGSG




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HYADAEGDVLKD VEAVIGT $\quad$ VYSD DLVS GYGSDGND LVVS GGAGNDVILGGDGNDTLSGGAGEDVINNGEGNDV
GADLFNDQGFDT ITDFRRFFEGDRFTFGFSSNDSDFDDQGN l D L L T G G G G F D R F

L LQ GEKGSTIDNYL KLTTVDGTTTVQVSSEGKLNA

 $D G T D T L Y G G A N D \quad D E L D G G A G N D R L Y G G G G D D$
GNDTLFGGAGADLLSLDAGND\ADGGAGNDTLLGGAGNDT GDAGNDALYGSTGNDTLSGGVGRDTLYGNENNDLLNGDDD GDQGDDSLFGNDGNDDLQGHQGNDFIDGGNDDD
G G D S D D Y L R GE GN K D T L L G GN GN DT L I G DN EN D S

$G G D S D D Y / L_{L} G E G N K D T, L G G N G N D T L I \quad G D N E N D S$
GDDNDYGGG$\quad D G T N V L V G G S G N D T Y Y \square D P T R E D T E D Y D N$
 $R N D L L D G G T G G N D T L N A G A H D R L D G G E G A D D F V F N$
 GNARDNLLTG GNS GDNVLDGGKGIDTMDGGRGNDTYMVD $G N N V I N T G G A K N D S G G D G N D T I D G G A G N D T D D G G F G$

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GNDNLLSGGNGGKGRDTLSGNAGNDNLFGNAGNDSLLGGNG GGTGDDTLIGSDQNDTLYGGADQDTIQGGAGDDSLYAGEG

 GSNDDDVLAGNDGNDRLSGDSGNDRLFGGEGNDTGAGQDE GQDTLEGGDGADDADTMNGNAGNDTLRGENGDDR

 GHDILSGK $\quad$ G GAD RFVFK GAGSNLVTDYDAGEDT LDDLS


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210
220
FS GDAHADFAlNLIGQATQAD VV


 LKGT VNNDDIADFAI DVYGYI NPTDFI TNGDGVADFAI DLTGNVAlS F D NQVHNDMLIKLT GNHQLS

FDPTQGDK $\cap$ Q
LDGEAGNDVLVGGAGN
VNGDGRADFEI K IVGKFAFGDVIL KLQDGSAVIRIK
TDGDADAEFAI QLSGVNS L
DNNPATVDFAl RLDGV LTAS DFLL
LD G VTVGDLLSNLENI I Q DK D
$P G L N G V D Q L R D F T S G V$
LD GEAGNDVLVGGAGN
ID G D L R P D FAIT LLDV
VN G D S LVD F K VK VA G L S A L S
GGSDTV
D D
RDELQGGAGKDTLDGGAD
E D
S G $\square \mathrm{D} \square \mathrm{I}$ A D F E
VNGGDGVDFLFGEDGNDS
A $\square \mathrm{N} \square \mathrm{T}$ A A T F A A N $V T \square A D V G N D T L V$ MDGGAGNDTMFGDAGD

SDSADGGD
VN N N S A A D M
ADTLLGDSGGSQS $\square$ GD $\square$ GE QDLI
DGVDT1 TD F
$D G V D T D D F T$
$\square D G G D G E D L I F G D E G D D S$
$\square \mathrm{KV} \mathrm{VA}$ T G T LLGTVLGV
F

T A T NF G ND
TGGD
$\square S G D G G N D V I D G G A G N D T \square S$

A G G $\square$ A N A D VT $\square \mathrm{K} \square \mathrm{L} \mathrm{E}$ G V
RGGDDILD
$V N G D G V A D F T L L V A A G L T T A D F V L$
N D
$\underset{H}{\square} \underset{D}{\square}$ GGAGADLIDGGEGN

FNGDEQN T T K VLGD $\quad \mathrm{NLDDNVVT}$
NDGGSGNDLILGGDGDDT
G D
LS GGDDNDTLSAGSGDDLA
VD
GNNQTGDE
GNNQTGDE
QDGG
NDNLSGGNGRDTLRGGA
NDTITAGDGNDTVYGEA
NDTITAGDGNDTVYGEA
$N D 1 L R G G D G F D S L D G$
MTGNGGADVFV
DF GVMVNLLTNSVSGGYATGDTI
NDGDA GNDYVEGNDGLDTIS
NDGDAGNDYVEGNDGLDTIS
ETGARYSDLTD
G D

UniRef90_UPIo003483AFA
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UniRef90 C6MAE0 UniRef90-A9DRQ9 UniRet90_A4EY51 UniRef90-A3SBN4 UniRet90_BoCDK3 UniRef90_UPIO0036A0EE7 UniRef90-C9X0Y3 UniRef90-F3F149 UniRef90 UPIO0047CE436 UniRet90-F9R8T1 UniRef90-F9R8T1 UniRef90-B3EGS1 UniRef90 K9VNG1 UniRef90_G8AJC8 UniRef90_B3EM99
$10{ }^{10} 40$
GND TGNDLLLASGYAGNDTLKGGSGNDSLDATGVYS GNDLLAGGLGNDLLSGGAGDDTASYAAVGAGVTVSLLVT NDYDGE NDRVYVFDFFDDDMQEGQTEPVSRILLSQGTR

GGDDNDKGGRGDDALNGGSGEDLLLGGSGRDFVVNPD
TGDLGDDTAFGGKGKDRCEGGDGTDWVHGNQDDDDV NTNDTLIGGDGNDTLFGSDGANSLLGG NTNDTLIGGDGNDTLFGSDGANSLLGG LDGAGDDTLQGGGADDSLYGGANDN NDTDYGQDGNDALSGGEGNDYVNGGNHNDTLYGNNGDD GGNDTLSGGAGNDTTEGGTGDDIVEGGTGADVLDGGAGTD GNDSLNGGSGNDTLHGGDGNDTLVGELGNDVLLGEAGND TQUWGGNGNDQITGGSNRDTIYGDPGNDTI R GGAGSDRLEGNAEDNLLEGNAGNDTLDSGGGQ GGDDNDVVKGGKGNDYLKGDAGDDMLYGGRGSD NDSGGSGDDLIEAGTEDDSDRGKGGDTLKGGSGNDYL GGNDTVDGGMGDDR1PTGDGNDTVFAGPGNDTMGGDDYVE GGNDTVDGGปGDDR亡ETGDGNDTVFAGPGNDTILGDDYVE GNDKDYGGDGNDYDDGGEGADEMEGGLGDDRYVVDNVGD DGNLTITFDSGDSITTMEGVSADOLD
 TARGDWDDGGAGHDLLIGTASGG GMLGDVILTYY $\square T D G$

## TTNSVDPAGTNGQSVF

 GNFSGTGNTLDNITTSGAGNDLLNGGAGNDQLLGGIGND LRGGTGNDTLKGGAGDDGMEGQSGDDRLLGNAGSE GNDILNGGEGKDELKGDDGNDTLNGDAGDDKLDGQDGNDGNDLLGGNGADTLGGDGNDALFGGNGQDVIHGGTS
GNDKLWGDGDNDKIFGNEGDDLIVGGFGTDKLYGGRGND GNDKLWGDGDNDKIFGNEGDDLIVGGFGTDKLYGGRGND GNDLLFGGEGHDQIAGGEGDDQLFGEAGDDSLSGGAGAD GNDLLFGGEGHDQLAGGEGDDQLFGEAGDDSLSGGAGAD GDDYLYGADGNDLLNGDAGNDSIYSGNGNDT GNDTLYGGQGNDTLDGSQGEDSLYGSEGDDLIRGGLYGE
GVNQNYRSGNDVYGFNDGGGVDTFDASNENEGVLVNLTPG GEAGADILRGGPGHDTLIGGTGAD

GNEGDDTDFGGAGADRLLGGDGNDTDHGGADNDVL
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 GSDA ILDNDHADGSNAPS

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VHGSEQNDTLTGNRGEHDVLYGLGGD
$V Q D N D Q D S T R T G L G D D S V W G K G G D D$
GNDTLLGSDGNDTKGDNDGDSTMRTGGGDDSVWGKGGDD
GNDTLLGSDGNDTLHGDEGDDTLLGELGDDTIHGGDGAD
GNDTLRGAAGLDTNGGGDGDDSVVGGPGVETLDGGDGQD

GS W VGGRGGNTY H IVGKSGDDS 1 YAGNGNDTVFVSGGTNF $\square S G G D G N D \| V$
DTGGTGDDT $\square Y G G D G D D R \square F G N T S \square D T \square Y G G A G N D Y \square$ GNDTLMGGVGSDTLSGLAGDD\|LDGQGGNDLLNGNDGND GDSDSDGEGNSDGEG GDDK LRGTSGKD $\square Y$ GHGGNDF 1 QGDGDTDDIYGGDGDD TRTGDNTYSFNK GDDTLLGGSGADTLLGGSGND\IEDESDSNSVY $G D D T L L G G S G A D T L L G G S G N D I I E D E S D S S N S V Y ~$
$D T L Y G S D G N D A G D A D A D T L D G S T G S D S M L G G$ GNDTLRGGKDDDLVQGDAGNDLMYGDSGSDILLDMCGD
$N T L G G T G V A S T A P T A V V L D T T A A A G P V T I Q L D N V E F$

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UniRef90_V7EK96
UniRef90_V7EK96
UniRef90_V7EK96 UniRef90_UPI000465DD48 UniRef90_UPI00046D2A38 UniRef90_UPI0003B3F0AB UniRef90_UPI0003B3F0AB UniRef90_UPI0003B3F0AB UniRef90_J2N3Z0
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50
S ${ }^{5}$ GT 60
70 FYEAGNDVLLGGSSSDLLDGGADYDLIMGNAGNDTIDGGS
 YGHTGNDFLI A GS GNDT LI A EA GNDTLMMEAGNDLL YGGE Y L D G G D G D DVID GD S WY WVS GSARDTIVGGS GNDK WGGE

 $S G G D G S D S D Y G G K G N D I C D G D D G N D T I S G D R G N D T C S G G A$
 $H L V H G N D L L D G G H G N D F L Q G G A D N D K L Y G E W G N D T L Q G G A$ $R A S D G R D L L Y G G F G N D F L H G Q Q D N D T L V A G K D N D R A Y G G K$ $T L T Y A G S A A G V T V N \square G T N T A S G G D A Q G D T \square S N F E N L T G S G$ $L L T G D D G D D S L S$
 EGGTGQDTLNGGLGNDLLK GEEGDDTLLGGKGNDNDDGG RGDDGNDSLE G GS GNDSLDGAS GDDTLDGGSDHDTLLK G S S GGA GNDFFNTDA GNDTVFGGDGDDVTVSVNLGNDFMDGGA GGAGNDFFNTDAGNDTIFGGDGDDVTVSVNLGNDFMDGGA GGAGNDFFNTDAGNDTIFGGDGDDVTVSVNLGNDFMDGGA



 NDRDTLI GGAGD D LLS GDET T GALE QKWGFKVDVLI DGGV
 $N G T D T T D R T W G G V D N D T F W G G P G N D R I E G N D G A D T A L G G E$ $T L N \quad G G D G N D S L N G G L G D D I L N G G A$
 TLNE GQDELK G GKQD DLLNGDAGDDKLDGQDGNDTLNGGE
 1 A G D D GESE Y I GLLK D Y I F GE T G D DI L Y G QA G D D S F GGAGDDTLDGGDADDQLFAGDGDDNV IGGLGSDFVDGGS
 G A GNDALWGGNGDDYNDSHWGEDGNDQIWAAAGNDII YGGK A NSPSLNGSTGDDVITGSD SWNDGVTVTGVLDKDFSHTVYTKGQSFIGYGTQINVHGSK Y G GDGNDSLE GLLSS DDLLFGEAGHD T LAG G $\square G A D T L Y G G S$ GNDNSADDSEIVFGDSEDNELIGGTE WGDA GND TLNGGDGDDALRGGT TGGNGADHLDGGNHNDVLYGEGGHDTLYGGNGDDKLYGQD C G G D GND DL R G G LA S D R L F G GRGD DE L DGGS GNDK L F G G G GGS GD DGLY GQD GQDSSLYGQDGNDY LSGGNGNDYLS G GN TESYGDVVVDA GTGDDTVWTNEGNDSINGGDGNDHIN A GA
T
T VESYGDVSVDAGTGDDTVWTNEGNDSISGGDGNDHINAGA YWMS GNDALYGESGSDVMD G GE GDDVMDGGEDNDIL DGGT T DEDDNNVGTALSEYIQGFGGNDTVVGVGGRNILEGGP TIGAGLDTVNAGDGADDVLGGAGEDVLDGGAGNDTLDGGD T I GA GLDTVNAGDGAD DVLGGAGEDVLDGGAGNDTLDGGD

 E GNDFLNGGEGNDTLLSDTAGNNSLASGGAGNDSSLVGGP $G D G N D Y K D G V D N K D D L R G N G G D D T L H G R L$ DEESGNDELYGGRGKDTLHGDS GHDALLGDEGN DTLDGGGS $T 1 D D G D D A L M G G D G D D V V T D L F G N D R L Q G E A G N D A L N G G P$

 GGRDVVLFGSRFDDF』HARGGDDVVFGSNGNDTIFGDG
 R G G D GRD TVNGDS GNDVI F GNGGDDHLNG GA GNDTL F G G E



 GTAGNDTL
 EGDDY LYGGGTTYVSTYDSATDDWDTMIDYDGNDTLD E GNDTIF GDRGENLR GAVGF GTQQDCDNGGSGDDLLYGNE


UniRef90 UPI0003483AFA UniRef90_B1X2S6 UniRef90-W0A683 UniRef90-K7W8E2 UniRef90_A1WL15 UniRef90_Q6SF13 UniRef90 A0A021VP81 UniRef90_D8FYJ0 UniRef90_E8R560 UniRef90_E8R560 UniRef90 W6UYL2 UniRef90_UPI000371C267 UniRef90_K9VI87 UniRef90_UPI0003B37CEF UniRef90 LODR81 UniRef90_UPI0002D9B546 UniRef90_UPI0003B56FE6 UniRef90 UPI0002FEF2A0 UniRef90 F4XIE4
UniRef90_V7EK96 UniRef90_V7EK96 UniRef90 V7EK96 UniRef90_UPI000465DD48 UniRef90_UPI00046D2A38 UniRef90_UPI0003B3F0AB UniRef90_UPI0003B3F0AB UniRef90_UPI0003B3F0AB UniRef90_J2N3Z0 UniRef90_UPI000364DCAC UniRef90_K8NWM1 UniRef90_UPI000367895D UniRef90_N1V051 UniRef90_V9WWF9 UniRef90_UPI0003A63148 UniRef90_A0YVP1
UniRef90 UPI000472DCE4 UniRef90_G7ZCP8 UniRef90-W7UJU3 UniRef90_W7UJU3 UniRef90_B8CJS3 UniRef90_B8CJS3 UniRef90_Q1GLX0 UniRef90 P55126 UniRef90_UPIO002484134 UniRef90_F9RT23 UniRef90_WORAH0 UniRef90_A6FLF9 UniRef90_H1W865 UniRef90_U7QI27 UniRef90 UPI0002DA017D UniRef90_UPI00036BCED8 UniRef90_A5PAQ8 UniRef90_U5DPR5 UniRef90_K2MCC2 UniRef90-K2MCC2 UniRef90_K2MCC2 UniRef90_K2MCC2 UniRef90_UPI0002DAB67A UniRef90_D5A5H4 UniRef90_A6FMU1 UniRef90_A6FMU1 UniRef90_UPI000367812B UniRef90_L8MBYO UniRef90_UPI00034A4595 UniRef90_UPI0003761306 UniRef90_K9TCD9 UniRef90_L8M4L7 UniRef90_UPI00029B33BB UniRef90_UPI000255F0B6 UniRef90_A6CZA9 UniRef90_A6CZA9 UniRef90_K1PLL3 UniRef90_UPI0003A3D3BA UniRef90_J2VA52 UniRef90_A1JL74
UniRef90_C6MAE0 UniRef90_A9DRQ9 UniRef90_A4EY51 UniRef90_A3SBN4
UniRef90 B0CDK3 UniRef90_UPI00036A0EE7 UniRef90_C9X0Y3 UniRef90_F3FI49 UniRef90_UPI00047CE436 UniRef90_F9R8T1 UniRef90_F9R8T1
UniRef90 B3FGS1 UniRef90_K9VNG1 UniRef90_G8AJC8
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EDDFLDGGAGNDSMLGGDGNDSMLGGDGNDT|LDGGTGNDS $G \square D I L Y G G T G N D L I L G G D D S D Y V Y G E N G N D T L Y G G N G N D T$
 D NDFI DS GS GNDTVDGESGDDTIWAWQGNDTLYGGDGNDN GDDRLS GFDGA DHLEGNAGNDTLDGGAGSDTMVGGTMNDT GDDSLVGGSGD DLIV G GS GND TVVGGSGDDTVVGGS GADT GADLVQGDNANGFQNDNGGHDVLLGGPGNDDLDTEGGDDT

 GNDAL D GDEHNLKA GVTNDDY, Q GNE GNDTLWGGLGAD T GNDEV Y G Q D G H D H L T G Q D GND LI K G GT GND TI G G D G G N D T
 GDDDI H G GDGNDTLS GDEGNDSIIFGEAGNDQAYGGBGNDT GDDW G $\square E N L T G G G S G N D R L I G N D Q S N D L I G G A G N D T L Q G G A G N D V$ GNDVLNGGKGADILHGDEGDDTLLGGLGADELQGGVGDDT
 GNDTFD G G DGDDTIL GGTGDDALSGLAGNDSLLSDA GNDA GNDTFDGGDGDDTILGGTGDDALSGLAGNDSLSGDAGNDA GDDTMMRGGIGNDDMSGGADDDVLAGNDGQDTMRGDDGDDR D NLNATGNELANTVVGNDGNNILDGGEGNDVLDGGRGSDT $G N D H D M G G D G N D T L S G D A G D D T L S G N A G S D V L S G G E G N D T$ GNDHIMMGGDGNDTLS GDAGD DTLS GNAGSDVLSGGEGNDT



 GS DTL F G DN GN D I L S G G S GN D F I N GAA GND TVVNGGA G D D T
 GNDVI S G L LD GA D QL F G G L G N DVL D G G L G N DIL NG GLLGA DA
 GS DE I H G GTGA D H L Y G S E G S D K i Y

 GNDMMTGDLGNDELNGGTGNDTMEGGAGND\|MRGGEGSDF GNDALNGGEGNDHLNGEDGNDTLIGGAGNDYLEGGSGSDT GQDTLGGGAGNDSLYGGDGNDLLDSQDGNDWLMGDAGNDT A D DVLLGHQ GNDVI DGGDGDDYLVGGEGDDVLDGGLGN DVV $F A D I L L I G N N A D N N M S G G L G N D K I Y G G L D G N D Y I D G G E G A D E$ GND RLLGNTGVDLIVGGDGDDWI SPGNGVDVVYGDAGNDT
 GADDLNGGAGNDTAFGQE DDDRIVGGND GDDELVGQAGDDV A G D K L Y G Q E GH D T L Y G GY GAD Y L D G GN GND Y L R GE GNQD
 GNDIVDAGAGNDTVVGSAGNDTLSGGDGFDTLDMSDVDAD
 GND DVDAGAGNDTVVGSAGNDTLSGGDGFDTLDMSDVDAD GNDKINGAQGADIIDGGTGEDLI TGGEGDDNNHGGADAD T
 DNDS LTGGAGDDSLLGGAGEDTLAGGEGADVLDGGLGNDA GNDYVNGGNHNDTLYGNNGDDHLVGEHGNDLLDGGHGNDL GRDRI LGNKGNDTMLGGNGVDTLVGGNGHDSLSGNGGNDQ GNDFI G G GE GNDTVNGD DGNDTVGGGGF GDDEVIDGGTGD DV
 $D D D V V D G G P G N D R L M G G N G K D T I H G G D G N D V I F G Q G H S D L$ GLDRLTGGFGNDWLSGKQGNDRLFGLENDDTLRGGK GSDV
 G GDLLFGGSGQDFIVGGHDAATTFGGLGNDFILGGTGKDN $G N D N I \quad L G G S G A D F V I G G A G N D T I S G D A G N D V L V G E F G N D T$
 $G N D R L L G E A G R D D M F G G T G N D V V S G G A D N D \| L S G W L G D D N$ $G N D L L F G G N G N D S L F G G N G T D I L F G D A G N D T L S G G A G S D V$ $N S V \mid F I K G G K G N A T L V G G G G N D V L A G G S G K N L I I G G S G K A V$
 GDDTLNGGGDDDWL S G GSAWDVLFGND GNDTL YGNF GSDV

 GDDYLYGADGD DLL NGDAGNDSI Y S GNGNDTLDGGE GNDA VIE NAIT GA GA DTLIGNASDNFLNANAGND QL Q G G D G N D R GND S L L GND GADTILGGLGNDFLNGEDGPDSLDGGS GSDT GADTII ATGDNNILFGGLGNDDI QS GSGNNQIDGGDGNDT

 GNDTIASAGGNDTLYGBDGDDVV,

|  |  |
| :---: | :---: |
|  | LWGDAGNDSMLGGDGNDTDDGGTDDTLDGGAGNDSMLGGD |
|  | T ${ }^{\text {G }}$ |
| UniRef90-L8L | 1 TGDTGNDTLTGGEGNDTLMGEAGNDTDSLEGGDGSDLLT |
| K7 | IDAGQDHDLVYGGSGNDTIYGDRNDWDDKGNGNDTDYGES |
|  |  |
|  |  |
|  |  |
|  | $\downarrow \mathrm{VGGGGDDTL}$ MGGDGNDACSGNEDDSDSGDAGDDSLLGGD |
| UniRet90-E8 | GTPDEMNTLIGGDGNDSLFGSLGDDLMEGGAGEDFLDAYE |
| UniRef90_E8R | GTPDEMNTL GGDGNDSLFGSLGDDLMEGGAGEDFLDAYE |
| UniRef90-UPIO00371 2627 | IYGEDGNDRIWAGSGDDADGGNHDDVIYGQDGNDVLSGGA |
| UniRef90-K9V187 | VQAGKGNDCVWGGKNND |
| UniRef90-UP10003B37CEF |  |
| Un | F |
|  | GGGGMTGVNNGAGNNTIGGAGNDKAALIGSGNNTVDAGS |
| $\begin{aligned} & \text { UniRef90_UPIC } \\ & \text { UniRef90_UPIC } \end{aligned}$ | LKGNAGNDELYGAAGEDNLGGGLGADR |
| UniRef90-F4XIE4 | DGGOHHDFKGGSGNDYITGGSGND |
|  |  |
| UniRef90-V7E UniRef90 - $77 E$ | AGNDTISGGDGDDVGSGGDGDDLVNLGGDD |
|  | MFGGNDDDTVSGNDGNDSVDGGNDDELFGGNGNDTMKGGD |
| UniF |  |
|  |  |
|  | ADYSTESAGUTADLANGTVTGGDGD |
|  | YGTEDALLSGDGANDT |
| UniRef90-UPIo00364DCAC | DDTLHGGNGND |
|  | NDIIFGGSGDDR |
| UP1000367895D |  |
| UniRef90 N1 |  |
| 03 A | MFGGAGSDTFTYNSVGESGGGARDVISGFETGADTUDLSA |
|  |  |
| UniRef90 UPIO00472DCE4 | MTGGAGNDTFVVDNVGDTVSEALINGGVDYNLGANVENLTY |
| Unip | DGGAGDDR YGEEGSDV |
| UniRef90-W7UJ | LDGGAGDDRLYGEEGSDVYV |
| UniRef90_B8CJS3 | LIGGEGDDELHGEFGDNTLDGGADDVIY |
|  |  |
| Q1GLX0 | GNDYIQGGGGNDH1 |
| 248 |  |
| UniRei90-F9RT23 | LTGGEGNDTFLWMNGD LDGGLDVIKDFTVNEDKTDISD |
|  | MEGGLGDDRYVVDNVGDKVIEKADEGTDTVYGSDNLNATG |
|  |  |
|  |  |
|  |  |
| UP | NGNDTIYGETGDDVVFAGQ |
|  | LIGGLGSDKFIFR GHDGVDTILDFTRGEDRISLWG |
| U5D |  |
|  |  |
|  | N |
|  | VAVNLQDGTANGSETGADVISGFENVI |
| UniRef90-UP10002DAB67A | I WGDSGNDALYGDADDY\NGGDGDDILMGGAGADAIEGGN |
|  | IGGGSGINSLFGEGGDDTIIGGDDNLLSGGVGNDSLIGGT |
|  |  |
| $\begin{aligned} & \text { Uni } \\ & \text { Uni } \end{aligned}$ |  |
|  | GN |
|  | AAGGPGDDLLRGGAGDDTMGASFGDTVDGQAGNDSLGGGT |
| Priou | FGDDGD |
|  | D W TGGEGDS |
| UniRef90 L8N | SNQQDGT |
| UniRef90-UPI00029B33BB | FYFEQGWGQDTLLAPREYFEAY酎DENGEFANADWRYDPHN |
|  | ARGDEGDDWIDGGANADLLVGDQNDPGLYHGGHDVIVGRT |
|  | LSGGDGNDVLIGDSGNDVLVGGGNDELYGGEGSDT DAGD |
| UniRef90-A6C | DDVLIGDSGNVLVGGGNDELYGGEGSDTIDAGD |
|  | NGGSGNDSLDGGGDDTLVG |
| UniRe990 UPI0003A3D |  |
|  | S |
| Unif |  |
|  |  |
| A4 | A |
|  | GGLGDDIL |
|  |  |
| UniRef90- C9X0Y3 |  |
|  | LMGGAGSDVLNGGNGDDTA |
|  | FGGADNDFLYG DDGNDTLFGQGG |
| UniRef90-F9R8T1 | T A AGGSNQDGGLGNDTVTVTSGTNTTGGEGDDKLTTGS |
| go F9R8T1 | N |
| G1 | D |
|  |  |
|  |  |


#### Abstract

170 180 190 200 GNDSMLLGGTGS D S L N GAD GNDTLIUGATATA\|VGEVVD GNDNLNGGNHNDHLTGDSGNDTLEGGNGDDYLAGGSDNDY  

VEA Y T GSAGTGDTFSFSDT $\square$ T DRGT $\square$ AN L DD DSAT GT F TA D GNDVCEGGAGDDSLVGDSGKDTVVGGTGNDACDGGTGSDS  GDDTLI G GE GNDTLL G GA GNDSIE G GS GDD SID G GS GDD Q GNDTLYGGAGVDGNNVFGGG■GNDYLDGQDGDDTYYFGAG   GNDTLFGGDGNDTL  GGKGNDYVKGDAGDDMLYGGRGSDELKGGTGQDT 1 DVLVGGAWSDTFI  I GND T D S L D G GANAD T L E G GA GI D T LA GGDGNDGGDANDN  GADDMSGG NDADTELGGNAGADTMRGDGGDDRMFGGDG  HDDTLI GNVENNTLSGLDGDDVMVGGGGDDVLDGGDGSDT   GGEGA DVIFAGMGHDVI QGD DGK D TI DGGE GNDRIS GGAD GADLLQGDSGAPFFDDPN KPGHDVIGGQNGDDDYDAEGG  VDALPA I P GDFDFTF DTGSFS GAGQVRVVDQGARY VQAE


TGVGNF $\quad$ GGGGNTLANVI IGGAGNDLLNGGAGADR
$G D D L L S G G A G Q D V F \square F S G G G G Q D V V L D F K A G E D V L Q \square S R N$

GK D HLESHLGNNTVEGGSGEDT\|ITGSGHDT\|DGGDDNDS GK D HL E SHLG NNTVVGGS GEDTIITGSGHDTIDGGDDNDS GDSGANGGPRDVI QDFSAGGGDLMVFQGFGATT S D LVLLSASEQDNVRDSGFFYGENHRVDTFVFDDAA $\square S N P D$ GRGEQD LLTAWTGVNTFVLGDASQAFYNDGQNNT
 GNDGNNILDGGEGNDILDGGRGSDTLTGGAGADIFRFSAI GFDF LYGGDGHDGSDLLEGGSGNDSLFGATGNDT GNDTMF LVVPGDGYSVVADFQMNQDLI ILDPGTPANYEDGDL GNQDEDTLDGDEGNDTLYGGKGDDLI FGNEGDDF
 GGDDAD Y L N GNHGDDHLYGDAGADTLVGDRGAD VDADESTNDPF QFDGQKAFS GNA GEL RFEKVVGNGVMVFGD FENDYTGN GI DTVIGNAARNDI RSGAGNDRLYGMGG

 $\begin{array}{lll}\text { A D D T } & \text { S T G A G A D T } \\ \text { A D D T } & \text { S T G A G A D T }\end{array}$

 $N$ G D TLLDLLS G N G P V T L L D F D T T D P T F D P V

DNDF L A GNTGADGNDVLAGGDGRDSLFGNVGNDSLAGNTG GTDGDDTVLGQNGSDFLAGGGRNDVVRGGAGNDTGDGNDT


 VI A F GHG@S LIS D
GSNDHDGEGGDDGTDRLAGMLGFDWVTYDKTN
GDDVVHSNEGADVIATGAGNDQVYAGEGNDVINTGSGDDV GDDIV H S N E GADVIAT GAGNDQVYAGEGNDVINTGSGDD\| GSDTFFRQQAGD\|IVEESGGTD\|DTVISY』NGGT $R D D N L F G G T G A D R L D T L R G G D G D D I L V G G G G$ GDD TLDGGAGSDTFVFNGGGGNDVVLDFTPGQDHDQDSSG

NS GGKITTIDNQYLKG SNTASVGEFRLDEGTGTVETULDKL GDDTVYGGIGNDTIDGGAENDLLDGGAGNDLLYGGAGDDQ GD DLLRGGTLRDTFVFNTGYDNDEDNDFEEHRDFLLLSTS FNNGNVS GDTDTMA DVVLGGGDGNDTISANDGATVT GLSF IVVQGTGTQTADTLISVAETDEL
DNDALWGGNGNDVLYGQNGDDNLHGENGNDLLIGGAGDDS $G N D Y L E G G S G S D T Y V F G E G F G Q D T V Y N Y H V D K N S D T M H F$

GDNGNDF LD GAGGADTLFGQEGDD LLLGGAGNDS GADELRGDAGQDTLNAGSGAGGADNDKLYGGSGDD\|LQGD GA D E L R G DA GQD T L NA GS GA G GA DND KL Y G GS G D D L L Q G D GNDSLYGGDGDDYLEAGYGSYSGTWDTGNVTLDGGYGNDT $G L S F D S L Q \square Q S T A N A T L L Q V A A T G Q V L A Q V F G A D N S L T$ $G N D L L F G G A G D D F L D T L S G G A G N D V A L G G A G R D D I G L G A G$

| UniRef90_UPI0003483AFA | - ${ }^{210}$ |
| :---: | :---: |
|  | \TGGLGADTFVJ |
| UniRef90 ${ }^{\text {W WoA683 }}$ | LTSGGDGNDYLEGGSGQDTL |
| UniRef90-L8LPF8 | $\begin{aligned} & \text { DD } \\ & \text { EDNDSI } \end{aligned}$ |
| UniRef90-K7W8E2 | EDNDS |
| UniRef90 A1 | GGGST $\square$ A |
| UniRef90-Q6S5 |  |
| UniRei90-D8FY ${ }^{\text {U }}$ | VGGDGNDTCLGDDGDD |
| UniRef90-E8R560 | DDGEGNTLLGGEGNDT |
| UniRef90-E8R560 |  |
| UniRef90-W6UYL2 | DDGDSGDDLVGGHGN |
| UniRef90-K9V187 | NDGDSGD |
| UniRef90-UP10003B37CEF | LDGGAGNDTLLGGAGNDTL |
|  |  |
| UniRee99-UP10003DB6546 |  |
| UniRef90-UP10003B56FE6 | N N |
| UniRe |  |
| UniRef90-F4XIE4 UniRef90 V7EK96 | L |
| UniRef90-V7EK96 | DGGAGADTLGGEGNDTLA |
| UniRef90-V7EK96 |  |
| UniRef90 UPI000465D | LDGGAGADTLIGGEGNDTLA DDVVAGND |
| UniRet90-UPIOOC | PDSTGIAD |
| UniRef90 UPI00 | VDYSNATD |
| UniRef90 UPI0003B3FOAB | VDYSNATD |
| UniRef90-UP10003B3F0AB UniRef90-J2N3Z0 | NDTGKGOD |
| UniRef90-J2N3Z0 | NDTLKGDDDVLNGVAGD |
| UniRet90-K8NWM1 |  |
| UniRef90 UPIOOO367895] |  |
| UniRef90 N1V051 UniRef90 V9WWFs |  |
| UniRef90-UPI0003A63148 | पDGDNNAD $\square$ EFLVFGDPVEADFVL |
| UniRet90-AOYVP1 |  |
| UniRef90-UP100047 | $\square \mathrm{NGLK} \mathrm{VND}$ |
| UniRef90-G7ZCP8 |  |
| UniRef90-W7UJU3 |  |
| UniRet90-W7UJU3 UniRef90 | TEAGAGDNVSGGAGDDTTT |
| UniRef90-B8CJS3 |  |
| UniRef90-C1GLXO | $F$ |
| UniRet90_P55126 |  |
| UniRef90-UPIO002 UniRef90 F9RT23 | LD G |
| UniRef90 F9RTA |  |
| UniRef90 Woraho UniRef90 A6FLF9 | LDGDT\\|IDFTV |
| UniRef90-H1 W865 |  |
| UniRef90-U70127 |  |
| UniRef90-UP10002DA017D | LS GDAGNDTLIGGLGQ $V Y G G A G N D Y L S G G L G N$ |
| UniRef90-UP1 | TDGNGVADFQLMVEGNLTMLDF |
| UniRef90 A5PAQ8 |  |
|  | NDSLYGEDGDDRLFGQDSL |
| UniRef90-K2MCC2 | VLAGAGDDTVIAGAGNDSL |
| UniRef90-K2MCC2 UniRef90 | VLAGAGDDTV1AGAGNDSL |
| UniRef90-K2MCC2 | VLAGAGDDTVIAGAGNDSL |
| UniRef90-D5A5H4 | ПQGGPGNDTLIGGSGNNT DNGD |
| UniRef90-A6FMU1 UniRef90 A6FMU1 |  |
| UniRef90-A6FMU1 | DNGD |
| UniRef90-L8MBY0 | NDLLFGNDGLDTDYGGA |
| UniRef90-W4HQ17 | LIEGGAGDVFVWTDAEAGAVDLVL TDSLSGGDGNDLLF GN |
| UniRef90-UP100034A4595 |  |
| UniRef90-UPIOOO3761306 | LNGDDGDDILWGGKGTDT茴 |
| UniRef90 K9TCD9 | FGGDGEDQF $\square$ UK $\square$ EGRNLISDF |
| UniRef90_L8M4L7 |  |
| UniRef90-UP1000255FOB6 |  |
| UniRef90_A6CZA9 UniRef90 A6CZA9 |  |
| $\begin{aligned} & \text { UniRef90_A6CZA9 } \\ & \text { Unifefon K1PLL } \end{aligned}$ |  |
| UniRef90-UPI0003A3D3BA | $\square \mathrm{NGTD} \square$ |
| UniRef90-JJVA52 |  |
| UniRef90_A1J | SASGQTGGFETVNSGVGSFS <br> LEGGGGDD\VHGGAGADVIS <br> LT G G |
| UniRef90 C6MAE0 |  |
| UniRet90-A4EY51 |  |
| UniRef90-A3SBN4 |  |
| UniR | $\square \mathrm{YGDAGEDT}$ ¢SGGTGNDS $\square$ |
| UniRef90-UPIOOO36AOEE7 |  |
| UniRef90_C9x |  |
| UniRer90-F3F149 |  |
| UniRef90-UP100047CE436 |  |
| UniRet90-F9R8T1 | $\begin{aligned} & \text { DGDDS } \\ & \text { DGDD } \end{aligned}$ |
| UniRef90-F9R8T1 | DGSGRDGNDLLVGGAGDDD䀎D |
| Uni |  |
| UniRef90-G8AJC8 |  |
| UniRef90-Взем99 |  |

UniRef90_B3EM99
UniRef90_A6E282 UniRef90-A6E282 UniRef90-UPIO004281C6D UniRef90 UPIOOOOEOF60D UniRef90-EOMSS8 UniRef90-UPIooo37410B1
UniRef90 G5JBY3 UniRef90-C8S116 UniRef90-A8TIX3 UniRef90-UPI0003037B5D UniRef90 F5UB09 UniRef90-с9Dом9 UniRef90-B9QYk9 UniRef90 F9S765
UniRef90- A6X417
UniRef90-Q2GAZ6
UniRef90-E0XV97
UniRef90-S6BA43
UniRef90-L8M3L7
UniRef90-B1K647
UniRef90-UPI00034C05DA
UniRef90 F5UB10
UniRef90-UPIO00362499C
UniRef90-A6E3F4
UniRef90 G4RB83
UniRef90-K0ESL3
UniRef90-A3VG06
UniRef90-W4HJZ4
UniRef90_D2TWK3
UniRef90-A4ESK2
UniRef90-UPIOOO2E64450
UniRef90 A0A024IWIT
UniRef90-EOU879
UniRef90-UPIO003688E90
UniRef90 UPIOOO2DD0400
UniRef90 UPI00037DA5B8 UniRef90-K9V8Y1
UniRef90-S5YF96
UniRef90 K9V1S0
UniRef90-X7F123
UniRef90-X6KVEO UniRef90-UPI00037E93F7
UniRef90 R1J2Z4
UniRef90-BoCGA5
UniRef90-Q10Z19
UniRef90-K2MGG2
UniRef90-D8IZN0
UniRef90_UPIo003A36DA0 UniRef90-B4VP21
UniRef90 B4VP21
UniRef90-D4L9Z4
UniRef90-B9NTX7
UniRef90 E8R510
UniRef90-V4NEV4
UniRef90-BOCES7
UniRef90-BOCES7
UniRef90 U5DBG3
UniRef90-D3Q6V4
UniinefolobaZafy
UniRef90-G7ZGF9
UniRef90_G7ZGF9
UniRef90- UPIO002F7BEAC
UniRef90-W4HMZ8
UniRef90 UPI0003484775
UniRef90-U7QL28
UniRef90_W4LIS7
UniRef90_B1Y442
UniRe990-U4R8MOAO1DE6
UniRef90-
UniRef90_UPIOOO3,
UniRef90 M8B039
UniRef90 M8B039
UniRef90-K9XGN8
UniRef90-K9TSS8
UniRef90-UPIO004280637
UniRef90 UPIO00471AB25
UniRef90-UPI000471AB25
UniRef90-U7QC86
UniRef90-G8PM52
UniRef90_C4S4A0
UniRef90-B5W9P2
UniRef90_Q118N9
UniRef90_UPIooo3A99930
UniRef90-A4WV98
UniRet90_B4VV80
UniRet90_B4VV80
UniRef90-Q10UY9
UniRef90-UPI0002FF1D51
UniRef90-U7QTZ6
UniRef90-V4P1F0
UniRef90_UPIO0046B0004

NDVLF G GNGNDYLNGDAGNDLIFGGKGDDVAI GGDWGD
DDS RAGDGDDTVWAGAGSDTVDGGSGKDSILGQ


GGNDS $\square E G N N G N D T D D G G N G N D L L K G L G N Q D L V E R Q G D$ A GDGNDMMGGSSRNDNLWGGTGNDTLFGYDGDD GDDTLNGNSNDDS $\square$ S GGTGTD IIEGGKDNDLIWGDEGND

T LN G GA GNDVID G GA GDD DGGAGDDWD GDD\|IGAGFGDDSVTGGAGNDVVAGGAGDDTLEGGDGND DTMDGGDGND】MNGGGNGD】MDGGEGNDTMIGGAGND TVGNKTYDNTGAGNDEIT TGDDP GGA GADDLDGGLGGADLAVYKKSAS

GDDT $\square$ LGDAGDDN $\square S G N A G N D T \square L G D T G D D N L S G N A G D D$
 GNDT $\square E A G D D D D H \square D A G A G D D W I D G G N G G D H I T G G D G F D$

GDDNLYGEDGNDQLNGQDGADTLDGGDGNDTLFGGNGMD GNDRLRGGVGDDKLFGGVGNDXLFGGDGNDTLNGDDGVD

$G N D T L Y G G P G N D L L E G G S G D D Q L F G G D G D D T L R A D S G A N$
GGDDWLF GGNGDDHVRGGTGHDEAYGGAGTDRLLYDLATT LTPSGGDTVSGNTVTANNAAEATNQAGGSVRVDIAGP NAMGNTLDNVITGNSGNNNLNGYVGNDTGSGRLGNDTLD GNDSLNGG $\square G A D I L D G G A G D D S L L G G R G A D V L N G G L G D D$

T GGGGNDT $\square E G G E G D D K \square Y G G P D D D L I K G E D G Q D K \square$
TFANSSSGGYVFVDNANGSATATPTVGGR GGGDDWVKGDSGYGDDGDDGNDTLEGGAGEDF\SGGIGSD GGGDDWVKGDSGYGDDGDDGNDTLEGGAGEDFISGGIGSD

GGDDT LLGGEGDDT $\square \mathrm{DGGAGDDY} \square \mathrm{NGGTGDDY} \mathrm{\square LGG}$
$\qquad$
S A GAGNDTVYAANTDLTPLVTQL
 GVDF $\square P \square A K D G D V I L H G G N G N D E L H G G N G N D K L Y G G N D D D$ DTPLIVNSGGGNDKVS 1 DDKVGSGI TVSAG

$$
\text { Y } \square \mathrm{H} \text { G N G G D D N } \square \mathrm{N} \text { G G A G D D K } \square \mathrm{F} \text { G }
$$

GGSDNLFGN $\square G S D T L N A G D G N D V A D G G S G E D V L V G G F G S$ GDDY $\square D G G A G D D D L K G E E G D D T \square R G G A G N D A L K G Y Q G N N$

GNDYVNNDEGMAGADSLYGKGGNDNLRGG
GTDGPDNLEGGSGDDTINGDSGD

GNTGK $\|$ VGKVD $\square G A G D D F V N \square W \square G S D \quad \square Q G Q \| L L G$ GDDFMS GGAGNDYMEGGADNDTMDGGDANDVMFGDAGHD GDDFMSGGAGNDYMEGGADNDTMDGGDANDVMFGDAGHD GNDTINGGDDNDYGTSASDEDFGNMGNDYDEGQASSETD $G N N T Y G G N G N D T H H G G Q G Q Y \square H G G S G D D I H G T \square Y G N$

TGSGGNAEGDMDTGDENV
GGNDTLAGGGGADRMYGGAGHDDYLVDNAADRVIERAGEG DT\SGGAGNDTIGGGGNHDIINGDEGND DTiSGGAGNDTiGGGGNHD\|INGDEGND
GNN $\square L H$ GNDDNDTLYGGSGDDS $L Y G D A G D D R L S G N N A L$
GVSNLYGGSGNDTLIGSWLVG

HGNAGDDVLDGGVGDDEVLGGTGDDALSGGTGDDQLAGDS HGNAGDDVLDGGVGDDE:LGGTGDDALSGGTGDDQLAGDS TGAA GSDTLTGGDGNDRI DAGAGNNDINGGAGDDAVTAGA
 $G D Q \square T Y T P G D D F E G V D A F T Y T V S D G T T E V D G L V Q I V V D N P$
$T D D G G N D C I Y G G N N H D K L Y G E G H R D T I F G G T G N D Y I D G G N$ EDNDTNDSITGGTGNDTLIGGAGEDTLKGDDDNDVLRGGD LLDGGA GDDTADYTASSIAVNVNLGTGATSGGDAAGDTLS YGDAGNDTLYGGGGVDTLYGGVGNDF LVYGETGNDLLFGED KGNDGNSDGUSDSTNFTTTIKNTVIGTEGDDSSLAGT
 T LD N
 QLHGGL
$D V L /$
$D Y \square R$
$D L I Y G N D G N D S L L G G A G K D T L N G G D G N D L L L G G A$ YGEEGDDELNGGAGNDVLDGGDGNDKLFGHVGNDIMNGGD SLNGNFGNDTILGSNGTGDAATEAD\|IHGNPGNDMLSGGM DRTSIPGPNIPENVLNGTDGKDTLTGSD\|NDIINGFN DGGDGNDVLSGGAGADTVFGGAGTDTLNGGAGDDWLDGGD SMSGSFDLIDGGEGADDIGGGTGRDTIDAGAGNDSVGGGE
QMSGGLDVMDGDLGADTMNGGDGNDTMNGGGNGDI MDGGD FSDGTLVTDNGKSYVVPKGQEVVVRTGAGDDHVNVPGGTQ GVTVDLGAGTGTGGDAQGDTETGVERVMGSDHNDVLTGDG TIDEGDD\|LKGNAGNDIILDGDAGDDEILGDAGNDQISGGS
 TVTYFNSEVSMRADLES SIIGQVGYAQGDTGRGGDEALNGGO

TTEQYKIMGTNGNDTLT GANAADTLIGGL V $\square N E G N D Y \square D A E N D \square D Y L Y G G N G V D T L Y G G S G N D Y V D G G N$ VGDAGNDTMNGGAGNDTLRGGDGADVMHGNEDNDVIFGEN TNGDDVLRGTPGADEIYGLDGNDFIQADGDTDYVDGGR NEGKNIFIAGNGNNIAYGGSSDDVFFFGKGNNVIVGNE Y $\square H G G A D Q L F A G T G R D T L Y G G D G D D T L R A T T G R H L F Y G G A$ GWQ IDLAAERARRPGDDVVGGTGADTVSGDAGANRLWGGR VSRUEIDYGNALNGTQGIWVTDVQFDAVPVGGDDLILGGA DGGDGNDDLQGNEGDDVIYGGNGDDTVRGGKDNDTIVGGVV S L N G GRDVLHGGDGADLLHGGRGNDELNGGKDNDTLKGGR YGNDGNDAMEGGADDDTVIGNADSNNLEGDDQANRMDGKA LDLSADDFTGVTDGGTPYDDSLTGGDGDDVIDALLA
$\square A M F D V E \square I G G S T A T D F F F G N S G D D V F Y G V G G G D T Q A G G A$ FGDDEAD QLYGDAGDDHIVGGTGDDQLDGGADNDYLEANE FGDDEADQLYGDAGDDHIVGGTGDDQLDGGADNDYLEANE

DDNDTLIGGAGNDFПDGGNGDDLLDGNDGNDELFGGL GGNDQADLSAFADQGVTLNGGDGSDTLRGTNFADRINGDA PPDQFYNRILGEAGDDSLVGGASFDFLEGGADNDTLEGGG VFTHTNGAGTPASTTVALFGNGGNDQLSGGSANDYMEGGT
 VI SGDDTVDGGGKA

## GND S

$\qquad$
DS GEDMLLGGDGDDRワHGGG T DVNETVPAPSEGVLQIGTDGPDVLEGTAFDDTLAGQA GNDALYGGTEADILLGQAGDDYLDGGADNDVLDGGE DTLIGGSENDSLVGGSDNLVLPDTDGEDLLDGGE $T$ TV GGEGDDTLYGGFDSSDAYAGDDLLDGGPGNDVIYGRK GGTDGADRDRAGAGDDTLHGDAGNDRLEGGAGNDFFFAGE DGNDRVWGEVGDDMLYGDAGNDTMAGGTGNDALYGGT $D V L S G L G G N D L I F G G N G Q D T L F G G T G V D D L F G G N$ NDEMHGNW NDTLF
DA $D A G N S G D D L L V G G P E N D L L M G D L$ DGNDILISNDWISTKMEIDGGAGNDEIYTSFGNDTIHGGE SMDDGSDYMEGGDGADTMEGGAGWDRMFGGDGHDIMSGGT SMDDGSDYMEGGDGADTMEGGAGWDRMFGGDGHDIMSGGT



DRLDGNSGNDTLTGEAGNDSLNGGSGNDKLNGGG NVTEETLEGTEADDFKVGTSMAESIYGRGGNDTIFGMG TGSAFDDLLDGDNSSNTLYGGDGNDTLYGRDGSDLLHGNA TDTSSVSYQLEAHVERLVLTGSAADNGIGNGQANLMIGNG $I I W W G S S F D I D D V R T P A A P G A E G N D T I D D G G S G N D E I H G E A$

 GAGSNTYVGGAGDDVFVISASDDTKNIHGNGGNDTIVGNK D D T G G DD I FLLG GQ GND TLY GRA G WD WL DG G A

## UniRef90_B3EM99 UniRef90-A6E282 UniRef90-AGE282

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90
100
110
120
GNDY। HGGDDNDYLLHAGSGNNRJVYGGSGDDMLIIAEDGDDS GDDVIFSDEGDDVSHGAGNDVLFGGDGDDLLDGGDDDD GSDAVSGGDGDDTLDAGAGNDTLDGGSGDDVLLAGAGFDR YVLNSAPTSGFENIQGTKQDDVLTGDDTANIIYAGLGSDE YDDVEDGGNGSDVFFGGRGADYLSGGAGADVLFGGRGADV DADRLFGESGHDTIVGGTGNDHIEGGDGNDNLSGDGHDDK DKDKLYGGDGEDNIYGEGGNDTASGGGQNDYIEGGEGDDS GDENLDGSAFNDSLTGDAGANSTSGGTGNDSLDGGGGADT GNDGMSGGVGDDTLYGGNGNDTLIGSSGADRLYGGDGNDW位 AADTLSGGEGNDTVYGGKGNDVVVGGTGNDLLLGDRGSDS GNDTLSGDAGNDTLYGQSGNDSLSGGDDDDRLDGGVGEDT GDDSLDGGSGDDIMTGGAGADVLKGGSGNDELSGGSHNDE GDDLLMGELGDDYLEGGSGNDTLIGDDGQDTLLGGEGNDK GSDILFGGAGNDTLFGENGNDILFGNEGNDVLSGGNGSDV YADTLTGQGGNDKLFGFAGKDVLAGNGGNDWLEGGNGNDR EADYLHGNRGADTLEGGAGDDHLSGGGDDDMLSGGLGADA GNDTIETADGADSVYGGAGDDILMTGGGDDSIWGDAGLDQ DDDELNGNNGNDFILGHKGNDVLNGGNGNDKLLGGEGSDT GDDTLFGGRDGDTVDGGEGSDLLFGDRGADILMGGGGDDA GSDWLNGFLGNDNIYGGADSDTIFGNENNDYLVGHAGNDI DNDVLNGGAGNDTLWGGAGDDTLNGGAGDDVMDGGDGNDL GDDSILGGEGNDFLAGGGRNDTIDGGAGNDTINAGAGNDV VNFTVLGGSGVDRTKTGAGADRVLGGRDNDE ETGAGRDA ADNMLIGLGGQDDLQGLDGNDRLVGGDGWDALYGGADRD GNDNISGGSGDDMLSGGSGDDTLRGDSGNDRILGGSGDDT GDDVLEGGTGSDTLDGGAGGDTLSGGDGDDYI EGGLGDDS GDDVLAGGRGNDELQGGVGNDVLKGGLGADALYGGDGEDT FADQLGGDAGDNRLEGRAGNDVLEGRAGNDTLLGGEGNDI GNDLLTGLGGNDNLSGDAGTDTLLGGDGNDSLNGGTENDS QDDSLGGEDGDDRLFGGAGLDQLQGGYGNDRLVGGVDNDR GNDTVIGGDNDDVVRGGEGNDSVRGGFGNDELFGDDGDDI GINKITTSSGNNLIYGGSQGDVIYTGAGNDVIYANGGNNV
 GNDRLSGQSGNDRLFGDRGDDTLDGGTGDDLLQGRDGNDV GDDTLFGEEGDDTLDGGTGADSLS

## G


GNDRRLLGQAAGDDF L S G G D G E D S

 A A D TLL Y G GS GS D SLLVG GD GNDTLN G G G GND T QL $\operatorname{L}$ G GA GD D Y
 GNDELQGYT GNDTWSGGDGDDTLYGWDGDDTLYGGVGNDA

 GDDSLTGDSGNDTILGGAGNDTILGGAGSDEMHGGAGNDQ GND G I WG GYGE DTI $\quad$ Q G GYGNDYGDGGWGNDIIMGNQGDDN GNDSII SA GD G D DN I S GAD GND T ID G GA GD DNI G G GLGG G D T GNDRLYGQQGNDKLAGSAGDDYLDGGAENDKLNGDNGNDR
 GD DILT DSFGD DNMKGQGGNDVISNS GGFDLLGFGGDGKDF
 N A DLI Y A G D G D DTVVNGGTG N DF IV G G S GA D S I A A G D GED T

 GNDTI Y G G S GNNTLVGGTGHLLVVDWEGQDFLVGGPGDDLD



 GNDTIF G GD GA D TI S G GA GT D I I H G G DEMDY LMGDD GNDY
 GNDDNLNE G GF GNNLL WGGEGNDFILGGGPGNDTLYGGQQDDF
 AANRLVGGGGNDRLEGRNGHDRLVAGAGHDTLDGGA GNDR
 G DDLI T G GA GNDTID G GEDID TI K G GLGDDS L Y G GS DNDF G $\square D S L N G G A A G N D S F R G G K D E D T L R G G E G S D V L N G E E G N D V$ $G N D T L T S G S G N D T W L G G D G N D S L V G G E G A D R I E S G A G N D V$ G E L NMAEAGLTMAQGGSGSDVIKGGSGDSVLVGGMGNDV GNDD C Y G G A D N D V L I G G L G S D N L Y G D A G D D Y

## UniRef90 взЕм99 UniRef90-A6E282 UniRef90-A6E282

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MSGDDGNDT130 GGGGDDRLLYGGTGDTLYGGAGNDYLYGOD 160 VSGDAGQDSLYGGDGNDILSGGADEDTVLGGAGDDIVVAD
 ASGGGGADQVAGGDGNDALSGNDNDTLDGGAGDDVLDGGT VYGLAGDDVIYG AYGTANWSSDDNDGADLLFGGA LNGGSGNDLLFGGRGGDTINGDEGRDIIFGGGRDTITGGA YGGAGNDT SGGNEKDQLHGGDGDSUFGGNDQDFIGGNA LDGGTGTDTVDYALSLAGVNVNLTTGAGSGGDADGDLLTA MWGGRGDDLLYGGNGADTLSGGDGVDSLYGEADD DLIS DGELGDDVLSGGDGLD YGSGGGNDKDDGGE CGGDGDDTLLGDSAIDFNGGAGNDLMFGNGGSDKLCGEE YGGGHGDDTFYGDAGNDMMHGGRGNDTVDYSAFDVDLSSV LYGGNGDDILQGGNGSDLLGGAHNDLYGGNGSDILDGGA LTGGAGADSFVFRA
LRGGSGSDLLYGGAGADTDNGGSGDTLDGGAGDDRFYGGT I EAGAGNDVVHGGDG LRGGMGNDELLGNDDNDVLLGGNGR DSLVGGDGDDTLI VSGGDGNDTVFGGAGNDELGDAGNDRLLGEAGNDRDFGEA IVGRSDDPTLADEDGFELIYGGAGN DF LYAGKDQDVAIAGKDNDVVWG DTGNDTLLGDEGNDSLI ITGGTGADQFVFSAFFD GEADVITDFEDGLDSFFIRR MSGEVGNDWLIGGEGDDTDDGGDGLDTAFFSGS LGD VLAGLGRDYVDGGDDDLLSGGAGNDTVYGLGGNDRLLGGR LIGGEGDDYMDASFGDDKLIGGGGDEMYGRSGDDTVLYTG IGGGAGRDVIDGGAGDDMLGGGVNDMMDGGAGDDTAGAGG MTGGAGNDTMSGDSGNDMLSGGGNDTLVGGSGDDK SGDA LNGGKGKDVLQGGNGDDIARGGQNDEVYGGSGNDQUYGGL LSGDAGIDTLDGGDGNDNLSGGTNDSLSGDAGNDTLNGGA YYGQAGNDFLYGKDGNDNLQGGDGHDELFGGLDDD DLLN VEGGLGVDLLYGGNGNDSLGDEGNDTLYGDAGNDRDRGGV IS SGTGNDTVYTGSGADDAGTGSATIIGYGANDQISRGST LAGEAGNDLIYGGAGDDRMDGGDGNDTYGGDGQDRVDGGA MIGGLGRDTFDGGAGRDTVGQGWDDDLARGVAQAVPAPGS I YGGNGDDTVRGGKDNDTVYGGENDSLRGDLGNDILYGEN LRGDSGDDTLHAGNGNDAYGGSGDDVLNGGNGEDSLLYGGA LLGGDGNDYLDGGAYGDTLEGGDDDHLTGGTGKDRFMGGA IKGEDGQDKLYGNDGNDAMEGGADDDTVGHAGDDSTEGNA LYGGDGDDTYIVNSSDDRVVETINGGHDTVIASCSTVLAA LAGEAGDDHLEGADGDDELYGQQGDDHLDGGGGDGDDVIF LGGGDGNDMLDGGEGNDILDGGEGDDSLSGGTGDDTLSGG LI LGTGND ITMGTGSD

## LLGDSGDDTLEGGDGDDTLEGG

 FAVFGGDSIVGGDGTDTLDTTSYTGNYGVDGTTGLSSFG LEGGTENDMLVGGDGADALYGGEGSDTLLFDADDTVVDGG LEGGTENDMLVGGDGADALYGGEGSDTLLFDADDTVVDGG LIEGGQNNDR YGEDGDDELWGGNDNTDRGGAGNG DGAR LEGGQNNDTIDGGTGKDVVSGGYDDTLRGGAQNDKIYAGA I YGGTGTDTLYGGGGGDDDLIDGGGGADYLYGEDGADSVL LYGGTGTDTLYGGGGLDDDLIDGGGGADYLYGEDGADSVL FAGANGDDWMSGGTGNDNLRGGNGNDRMFAGGDGDDYLN I YGYQGYDILDGGAGSFLDGGLDDDWLYGKEGSDRLYGQA IFGDLGNDTVVGGEGNDFLLGNQGNGDTVSGGEGNDFDA ILGGQGDAESFGGHGDDFIHAGTGDNTVFGSGNDWDEGGD IWGESGNDVIRAGSNNDYLYGHDGNDRLYGDGGSDFQYGG VFGGNGDDTVFGGNDDDALYG DTGSDYGNGGAGDDSMF IHGEDGFDHLVGGANEDWIGGGHSDRLYGEDGNDTLIGGW IHGEDGFDHLVGGANEDWIGGGHSDRLYGEDGNDTLIGGW LDAGRGDNRLYGGAGNDTLFAGSGDSLFGGDGDDQLFAGT IDGGAGTDTATFSNADDSVNDADQAGTDGTDTLSNLEELG MYGEAGDDVMSGGAGND FMYGGTGNDQMAGGD MYGEAGDDVMSGGAGND $\quad$ FMYGGTGNDQMAGGD VEGNEGNDTLHGNQGVDTDSGNDGDDLDGNNGSDTLFGDN LVGGDGADTLHGGEGNDILAGEAGNDTIYGGGEN DTDY SGDAGGEHFSTGNHLFGGSGN DMIFAGDGGDQTEGDG LLGDSGDDVVFGGSGDDILFGGPNDQLYGGADNDILYGGQ LDGGEGNDVIWGDПGNDT TDGGEGDDLTFGGEGDDLILGG FGGGGQDVLYGGAGFDSLDGGEGADHLVGGGDEDAANYE L $\llcorner$ GLMGEAGNDLTDGGEGTDTVSYENSPNGVIVNSDEVLGYSN LMGEAGNDLIDGGEGIDTVSYENSPNGVIVNSDEVLGYSN
 LQGDSGNDTLISGSGNDQLFGGEDDKLYGGSGADTLDGGV LRGGDGNDTLVGGTGGDSIVGG


UniRef90_B9NTX7
UniRef90_E8R5I0
UniRef90_V4NEV4
UniRef90_B0CES7
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UniRef90_M8B039 UniRef90_K9XGN8 UniRef90-K9TSS8 UniRef90_UPI0004280637 UniRef90_UPI000471AB25 UniRef90_UPI000471AB25 UniRef90-U7QC86 UniRef90_G8PM52 UniRef90_C4S4A0 UniRef90-B5W9P2 UniRef90_Q118N9 UniRef90_W6S8Z6 UniRef90_UPIO003A99930 UniRef90_A4WV98 UniRef90_B4VV80 UniRef90_B4VV80 UniRef90_Q10UY9 UniRef90_UPI0002FF1D51 UniRef90_U7QTZ6 UniRef90_V4P1F0

GDDLLVHRLDANGFDपMTGGPGNDTVSVLGTAGGDSFQLA GESFTEMENLVSGTGNDTLTGTAGANVISAGDGNDTVSGG

 $G E N G N D E L A G G G D D D E L W G G D G E R L F G E T A R$
GKDT $\square D G G D G T D E T F A$
 $G G A G A D Y L Y G Q A G N D T L D G G A G N D A I D G G A G N D L I R F I D G$





 $L G N D V F V F A A$ L $\quad$ V D S N I S T G

GE D L L D G G N G D D G F D I L H G G S G H D V L H G G G H N D T L R G D D D

 GSDSLWWGGE GQN

 $G N D V M Y G G S G S S \quad D S M F G D A G D D I M F G D N G D Q D S N G D D M$


 G D D E L $\quad$ G GS GN D L L N G GS G D D





 DQAFNWYMGGSDFNFTNDATSNDA I

| UniRef90_B3EM99 | $\left\lfloor\text { T A G D G D D } \\| \text { M S G D D G N D T } \downarrow \\|^{210}\right.$ |
| :---: | :---: |
| UniRef90-A6E282 |  |
| UniRef90-A6E282 |  |
| UniRef90_UPI0004281C6D |  |
| UniRef90-UPI0000E0F60D |  |
| UniRef90-E0MSS8 | G D Q $\square \mathrm{A} \square \mathrm{S} \square \mathrm{DGG} \square \mathrm{DS} \mathrm{F} \mathrm{A} \mathrm{Q}$ |
| UniRef90-UPI00037410B1 |  |
| UniRef90-G5JBY3 | LK G G R G D D Y L |
| UniRef90-C8S116 | NDGGSGSDVLS G G A G $\square$ D T A |
| UniRef90-A8TIX3 | D D |
| UniRef90-UPI0003037B5D | A GNDRDADMGDTLTGD |
| UniRef90_F5UB09 | S GP DQ ${ }^{\text {T }}$ T F T |
| UniRef90_C9D0M9 | D NTN |
| UniRef90-B9QYK9 | D D T $\square$ R S $\square$ Q G A D T LT G GE GS D T F V |
| UniRef90-F9S765 | ND |
| UniRef90-A6X417 | $\square \mathrm{N}$ GLDD $\mathrm{S}^{\text {d }}$ |
| UniRef90-Q2GAZ6 | GT GWHSAVVVATLAPHLTASDF■V |
| UniRef90-E0XV97 |  |
| UniRef90_S6BA43 | S D TLT G GA R D R V CGGLD S D T $\square$ |
| UniRef90-L8M3L7 | S D G |
| UniRef90-B1K647 | NGNDA |
| UniRef90-UPI00034C05DA |  |
| UniRef90-F5UB10 | N D |
| UniRef90_UPI000362499C | M D G G A G D |
| UniRef90_A6E3F4 |  |
| UniRef90-G4RB83 | VNGTNNADNPLVGAGGAQ |
| UniRef90-K0ESL3 | RD |
| UniRef90-A3VG06 | $\square \mathrm{T}$ G D G GANRLIGRDGAD T $\square$ S |
| UniRef90-W4HJZ4 | VTGGAGAD |
| UniRef90_D2TWK3 |  |
| UniRef90_A4ESK2 | S D |
| UniRef90_UPI0002E64450 |  |
| UniRef9-AOAO24IWIT | LT G GRGND L L G GM G D D ${ }^{\text {L }}$ |
| UniRef90-E0U879 | LNGGAGDDYL NGGAGTDTL |
| UniRef90_UPI0003688E90 | ADGDVGDD\\|LDGGVGDD |
| UniRef90_UP10002DD0400 |  |
| UniRef90-UPI00037DA5B8 |  |
| UniRef90-K9V8Y1 |  |
| UniRef90-S5YF96 |  |
| UniRef90-K9V1S0 | NDS LLGGDGTDVINGDAGA |
| UniRef90-X7F123 | ADSIVGAAGADTLHG |
| UniRef90-X6KVE0 | Y G GLG ${ }^{\text {N D T L }}$ |
| UniRef90_UPI00037E93F7 | NDGGDGNDTLIGGS GNDTLT |
| UniRef90-R1J2Z4 | D DVLNGGDGKDTVRGG】 |
| UniRef90-B0CGA5 | S N N |
| UniRef90-Q10Z19 | D DLIK GED G Q E L Y G N |
| UniRef90-K2MGG2 | DGTDT |
| UniRef90-D8IZN0 | LD G GVGA D T M $\square$ G G LGND S |
| UniRef90-UPI0003A36DA0 |  |
| UniRef90-B4VP21 | NDSLSGGDDTDFLYGH |
| UniRef90-B4VP21 | NDSLSGGDDTDFLYGH |
| UniRef90_D4L9Z4 |  |
| UniRef90_B9NTX7 |  |
| UniRef90-E8R5I0 | P LT N Q P G R F S VA A N G |
| UniRef90-V4NEV4 | D $\mathrm{G}^{\text {N D T }}$ |
| UniRef90-B0CES7 | E N |
| UniRef90-B0CES7 | E N |
| UniRef90_U5DBG3 |  |
| UniRef90-D3Q6V4 |  |
| UniRef90-G7ZGF9 | $D \mathrm{G}$ V S 1 A |
| UniRef90-G7ZGF9 | D GVD S I A |
| UniRef90-G7ZGF9 | $D G V D S \\| A$ |
| UniRef90_UPI0002F7BEAC |  |
| UniRef90-W4HMZ8 | 1 S G GA G D F L |
| UniRef90-UPI0003484775 | L Y G G D D S RLLGQAGN |
| UniRef90-U7QL28 | ND ${ }^{\text {d }}$ |
| UniRef90-W4LIS7 |  |
| UniRef90-B1Y442 |  |
| UniRef90-V4R8M1 |  |
| UniRef90-UPI0003A01DE6 |  |
| UniRef90-M8B039 | N D |
| UniRef90-M8B039 | N D |
| UniRef90-K9XGN8 | G A G L A F VD L A $\square$ A Q T G S D T |
| UniRef90_K9TSS8 |  |
| UniRef90-UPI0004280637 | LD |
| UniRef90_UPI000471AB25 |  |
| UniRef90_UPI000471AB25 |  |
| UniRef90-U7QC86 | FDRNLIT DF |
| UniRef90-G8PM52 | $\square \mathrm{DGEAGDD} \mathrm{\square F} \mathrm{~V}$ S G T G D T T |
| UniRef90_C4S4A0 |  |
| UniRef90-B5W9P2 | S Q $\square$ T T G T D L L D F T |
| UniRef90_Q118N9 |  |
| UniRef90-W6S8Z6 |  |
| UniRef90-UPI0003A99930 | FGTDAH |
| UniRef90-A4WV98 | GY D RAAEVRQVGADTLI VLS D |
| UniRef90-B4VV80 | FDDVIIGNLQANSTQSLDGNDLLI |
| UniRef90_B4VV80 | FDDVIIGNLQANSIQSLDGNDLLI |
| UniRef90_Q10UY9 | TDGTA |
| UniRef90_UPI0002FF1D51 | $\square K G D S G N D V L W G E D G N D S L$ |
| UniRef90-U7QTZ6 | DS GYEVADKVAGRDGTVTLKN】 |
| UniRef90_V4P1F0 |  |
| UniRef90-UPI00046B0084 |  | GGDDK $\square E$ GAHNADVLKGGS GDDHLKAHGGDDMVYGGTGDD

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 NGT F EA Y S K T L G E T TFA T M V Y S L $G \boxtimes N E T D F A G G S \square S N A G D V N G D G \square D D \| I I G A G N A Q L N G N Y D$$\square R S$ G G G D DR LIF GLE GND R LFGED GS DNLSGGVGND
YTGGPTDNLVGFDS GGDGDDLDHGSNGKDLLFGDAGN
A GNDTLSGGLGTDTARYGAASGGVRVDLATAGA $G V G S D T L T G G T G N M L A G G S G N D S L F G N S S N T L S G G E G D D L$ $G \bigvee G S D T L T G G T G N M L A G G S G N D S L F G N S S N T L S G G E G D D L$
$G V N P N Y H S G D D T Y G F H D G G G Q D T F D A S E Q T L D L N \square D L T P G$ ND TLD G GDGYDILE GGDGSDTLS G GNQEDILKGDAGDD $N D T L D G G D G Y D I L E G G D G S D T L S G G N Q E D I L K G B A G D D$

Y Y FNK L H D $\square \mathrm{D}$ TH HVGSPSADGD\GNAVN
VRGTESNDSDAGSPGPDVISGLQGNDTGVGGDDLL GNDVIYGDDENNKEIQGADY DDGGAGNDSLIGG
$\square T G A G G D D \square L Y A G D G A D N V D A G \square G D D T V Y G E A G Q N T \square$ $G D D R L I G G P G N D V L E G G A G A D D \| D G G P G H D I V S Y \mid V A T R$
$G \square G N D T \square F G L G G D D K \square Y G G L G Q D$ A G $\square$ ATPVVTGDADLGSNSPNRI
GVS S STR DDNT TYGFGSTDSTSA $\square Y D F A R N A H P D L S D Y D S$ $M Q G N G G D D V M L G G G G N D T M F G G S G D D A M E G R I G D D K L$ DNMYGGRENDSLIGGSGDDVLFGDKGNDTVVGGEGND

GNDT $\square R S N R G N D F V F G G K G D D E D Q G G E G N D H L S G E L F G E$ GGDGNDTVDGGEGYDNIFGGAGNDSLIG D T $\Pi$ D GGAGLDSIRGGAGNDSI DGGDDNDKLYGTLQGG

$\square$ ATGSGNDR $\square$ TSGSDDDT I GGGDGNNE $\square$ TAGEGKNT $\square$
 GNNSLYGAQGNDNLNGKAGADTVTGGEGNDSYVVDNAGD
 GNEDGYRDTATLY L S VT GEANTTGFQ
GNDSMMA GA GMDTMI GGMGNDYMA GGADNDS LLDA GRGND GSSDLILGGGSGHDSILGDSGSDLLEGGSGNDTLFDTLLGG $G G N D Y L V G G S G K D V L N G G A G N D T L Y G G F G D D S L Y G G Y G K$

VE T N Y LR
$\square \mathrm{N}$ G $\square \mathrm{E}$ G Q D W L E G E K G D D Q $\square \mathrm{R}$ G D M G H D
GNDKVYGG $\square$ GDD $\|$ VDGGNGDNF $\square D G G D G N D V L D$
A GA GGDRFDGGAGFDTVNFS KVQ
IGGGNDGSDFLFGNRSDNTIWGDLTIQ
DT\DGIVEDTINDDEDVVTGDNDDEDVVTGD
D $\square$ TS $\square D D R$ AA FTQDDASYGQNGSDQYVHKDWKANND GNDTLEGGLGNDELTGGEGNDRLFGNDGEDIINADAGND GDDTMFGGAGHDELNGGSGRDTLTGGAGNDKMFGTMYGG GND ILNGGNGNDDLEGGDGND\|MYGGAGNDEMEGGDGDD

NTNDFLQGTSGDDFLDGLNGDDTLVGGPGD
NDTLRGGDGNDRLKGGDGEDFLSGGADDD
T L E G D
GNDTLDGGRGSDALFGNDGND\|LNGGKGNDTLDGG
GGHDFLYGGDNDDFLYGQEGDDVLYGGNGDDRLSGGNDDD NDTLFGNDGDDLIKGGAGDDTIDGGAGADTATYAGNFV
$N \square F G L A$ GDD D D D G GDNS DY S GDEGNDSMF G
$G G N D S \| L G L G G D D G V F G E A G N D T L S G G D G N D S I A G A D G D D$

GND $\square L N G G A D N D V L N G E D G N D T \square N G G T G A D V M N G G$
GND DE LVVSEVDATGGFAGAGDK
NDS $\square \mathrm{DGGTENDSLIGGEGTDTLVGGNGNDT} \mathrm{\| IGGLQTA}$

G GNNRVEGGLGNDVI $\square$ TGSGRDLLYGGDGNDTLSAGDGYN GSDDRLKGGDGNDLLAGGEGRDTLLGEGGEDTLAGGTGND DTLIGGAGDDVLKGGGGNNVLIGGDG1DDADYSAETE

FALGTGNDTMNGGDGDDLFYGDSRLDANGSGADEDDGG
GDDRLYGQDGSDRLYGSTGGDFLDGGKGDDFLY
 GNDTLYG DAGAD LL $\square G Q N D N D R L L G G$

## UniRef90 G2GXXS

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UniRef90 UPIOOO35D85BE UniRef90-F6E910 UniRef90-L9M260 UniRef90-K9VC15 UniRef90-UPI00039A8A24 UniRef90-AOAO11 QWN1 UniRef90-X7EAQ8 UniRef90-U7QJP? UniRef90-W6SF75 UniRef90-UPI00037AB267 UniRef90-UPI00037AB267 UniRef90-UPI000399D476 UniRef90-K9YRW5 UniRef90-F4QGJ5 UniRef90-UPIO004690178 UniRef90_W6S744 UniRef90-A0A028VDM3 UniRef90-UP10003B4D5D7 UniRet90_L8M1K3 UniRef90-V6AVC1 UniRef90-EOU9D9 UniRef90-X5EQC3
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50
60
GDMV 70
LNNNQLDVLA
GDDMVADYSGRNHTLLKGGE E IGDGNDLVWGNEGNDTTDGGAGHDQLDGADGNDDVSGGD YTDYGNDVIDSGTGDDLIFAGSGANQLAGGEGSDVVYADA IPHSGLLSENMLATMGYRIGKDGDDTLRGNNNANYLYGDK VGASYVVFGVDNSQPNKITGTPGNDVIDGTVNADQUHADA VLYGGLDVLYGGDGTDVSRTSENGDDKLFGGDGNDLLFGQG DTLTGGNDGDTADADTLDGGDGNDSLTSGQTLAPEAGREG QADGGGQGSDMGLGDDTLWGDGGNDTLEGGYGNDLLHGGA LDATASSELYGDGGNDMLQVTEGENLLHGGDGDDVLAGGS LDATASSELYGDGGNDMLQVTEGENLLHGGDGDDVLAGGS
SWDYAGSKAGH $\square A \square D D S G N P T T G Q A F \Pi G Y G T Q \square E S A K G G T$ SLDGGADVLEGGAGNDLLQGQTGNDALFGETGNDTLKGGL SLDGGADVLEGGAGNDLLQGQTGNDALFGETGNDTLKGGL TTSNGKHAMFGYGTPEGGLYGGGGDDYKSGMRGNDTHYGGS FGNDDDDVLFGNEGNDVLDGGSGLDTLYGGKDNDSIEGAN GGDDWDFGGDGDDKDWGDENKNFVDADCSDNGNDHLFGGN MS IIHGTRKPDLIKGTASADRDFGWASGDNAASPS N GEGQDTDYGGSGNDTASGGLGDDSLFGGKGDDNLSGNE SVRVDLDTEAYLYGDAVGDRFANVEEFRTGSTVDQLRGDA

DGNDRUYGGLGDDVIKAGLGDDYVDGGDGNDR DGGA RLVGGNDTLYGGDGNDKLYGGLGEDKLYGDSGDDLLYAGN LGTNGDDTLTGDSPNNVLLGLRGNDSLDSGVGNDTLFGGK NGTDGDDGLRGGPGNDRLNGLDGDDRLNGLDGADQLFGQN GGLDTDNGSGWSTPSRIDLHAGAFSSSNDMSNNDALAGNT FGVDGDDKLQGNDGDDVVFGGSGNDTAFGGSGDDLIMGGGD SVSDENDVLFGNSGTDLLDGGDGDDQLYGGQGDDSATGGD NNSITQPFPNQWFGSDGDDVIMGSDSDETLLGFE
 TVNKSYGGGTNTGTDLVKGFENVTTDHGNDTLIGDN EGNDGVDLLDGEEGRDVLLGGEDNDQLQGETENDVLFGEE AGNGHDELQGDDGHDRLKGDAGDDRLNAGAGDDLVEGGT EPTDNSDFILGTEFDDIIFALGGDDTIYGLDGDDILGGNE NNDKADVLIGGDGNDILFGQGGDDFLFGGAGNDILFGGA IINDDNDTLWGQADNDSVIGGAGRDRILGNNGNDTLLGGN SPTPLFCGLPESAYDKVI HGTNRGENI RGTQGNDLIVGGG QVIDEVAQGTDKVQDDYILPENVEHLTLTGTDNDSGSGNL DGDGDGNTLTGGTEDDTLNGFGGNDTLDGATGNDRLHGGD TLFGGLDVLRGREDNDLVYGGEGHDTIWGDSGNDALYGDG YTGDELVGGAGNDTLYGGYGDDTLVGGYGKDVLNGGA YTGDEHVVLGGTAGDDVMIGSIUGDDTLWGDGGNDRLEGGD

## GDDD

GADTHLGGGGDVVAGDAGSDDRGEDGDDVVTAGD
GDDGNDSLLGGRDDEFSSTRDTNGNDWISGGF SEG G $\square D V A Y G G V G K D K I A V G A G N D L A F G Q D G D D F L F G G A$ GRVLVD GVDQGTEGDDVIVGTEEDDTVAGQGDDMVIGN GATGGKDTIIAGRGNDIVFAGGGDDIVFGGSGNDRLYGGA NDDEDVVTGDNDDEDVVTGDNDDEDVVTGDNDDEDVVTGD VGDSNNNIIDSGSNDDTVYGQGGDDYI EGQSGADYIDGGS KVGNGNDTVNGGDGRDVLFGDNGDDII NGDGGTDVLWGGN FGNTGQDTLDGGTALDTLYGGKDNDLLSGGSEGDLLFGNN DGNDVMDGFTASNERKQWLGETDDDVMHGGAGNDFMLGAL
 D TLQGGDDDDSIFGGPGDDTLRGNDGDDTLTGAD AGNDTLIGDGGGDEDHGAAGNDELHGDTG DALVTEQ DRGTGNGSDNLIYGMGGNDRDYGMAGNDALIGGT KGNDTLDGGRGN DLLNGGRGLDVLDGGRGNDSLNGGA GYAMSLNTDGSLTVTDQAGTNGTDKLSNADGTWTLRTGTD NSGDDCLSGGTQQDTMIGGDGNDSVFGGSGNDSILGSQ

## VVN

NGGNDNUGGGFGNDTINGGDGDDIMGAGFGDDSVVGAA
 NDSFDGNK TVKDWWSTAGAELKPDEKFSFAATGSQVLSGYTDAAGATD $D Q S D Q G D T H T G G D G N D S L G N S G V D T L L G D G G N D A L F G G R$ DNTGAIYLTDQDDLYYAGAGAQEIHALQGDDTVSGQL NDLLYGNDGKDDLFGENGDDRLHGQD KADGGLDLISGGSGRDQFKGGDGNDTIAAGDGYNKADGGL QLTDGNDLLEGNEDNDTLLGNSGSDTLLGGSGNDLLRGGE Al SDDLRTGELRHGGWMADRLSGIDTILAGGGNDALAGDG AISIDLRTGELRHGGWMADRLSGLETILAGGGNDALAGDG EGADTLYGDSRFGSGFGRDSLYGGGGNDLLYGDSEEGPGS


UniRef90_G2GXS5 UniRef90-A0AO17H7U5 UniRef90_U2ZU68 UniRef90-UPIO003A1A8F1 UniRef90_C8N7B2 UniRef90-L8M495 UniRef90-LLLSY8 UniRef90_U5D897 UniRef90_-25LM90 UniReffo-S6AJOS UniRef90-UPIO0036EBE99 UniRef90-B3EF48 UniRef90-B3EF48 UniRef90-L7H3D9 UniRef90-G9ZHL1 UniRet90-U9W278 UniRef90-U9W278 UniRef90-K7SD42 UniRef90 K9VG05 UniRef90-×2H6P0 UniRef90-J2ZQV6 UniRef90-F9RM12 UniRef90-S9RC14 UniRef90-UPI00035D85BE UniRef90_F6E910 UniRef90-L9M260 UniRef90 K9VC15 UniRef90-UPI00039A8A24 UniRef90-AOAO11 QWN1 UniRet90-X7EAQ8 UniRef90-U7QJP2 UniRef90-W6SF75 UniRet90_UPI00037AB267 UniRef90_UPIO0037AB267 UniRef90 UPIO00399D476 UniRef90-K9YRW5 UniRef90-F4QGJ5 UniRef90_UPIO004690178 UniRef90_W6S744 UniRef90-A0A028VDM3 UniRef90-UP10003B4D5D7 UniRef90_L8M1K3 UniRef90-V6AVC1 UniRef90-EOU9D9 UniRef90-A0A059FKW2 UniRef90-UPIO00380DCCB UniRef90-UPI000464ACF3 UniRef90-K9WWS7 UniRef90-JJUJQ4 UniRef90-S31140 UniRef90-A3JRG5 UniRef90_AOYIC2 UniRef90-R4VH98 UniRef90-A6UJI3 UniRef90-K1W3C5 UniRef90_S9QLS2 UniRef90-UPIOOO3481C52 UniRef90_U3N7N3 UniRef90_A3Y174 UniRef90-UP10002ED4D94 UniRef90-D8G8ZO UniRef90-J3HXI7 UniRef90-Q16A20 UniRef90-UPIO003498B96 UniRet90_C7RKY6 UniRef90-B7RJ37
UniRef90
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LIEAGDGDDQFAGGDGHDSESGGNDR\ALTSDV\|EK\||WLEK MA GGDDNDRMYGDGGNDLMTGNGNDVMYGGDGNDKLDGNE LNGDA GSDVYRF SRGWGQDTVNNNDSGTGKVD
I Q A GDGDDAVFSGDSADVIA GSGNDADYAGSGADT』DAGE L Y G GA GHD T L D G GA G D D HLE G G
$V$ WG QA DNDSVVGGA GRDRVLLGNNGN DTLLGGNGVDTLF
 L D GE G G $\square$ D TVSYRHWKNGGTFNLT TEVAS L S A N I Y S GAAEANQSGNDTADGGAG DDLLVGSNGYDHLKGGB I 1 G GTD GK QVLA GS GDDFVV G GD GDDALF GN GND WI E G G A L NGGLGAD Q FVF LT LGESGAAGRDLIDQFSHAQDRI DLR G
 L Y GLLF DADMQGGA GDDLLSSAFDNNTMDGGAGNDSSLY A D $L$ S G GA GA DTF VWLK G DT NTS G GF DR $\quad$ TT D F K H G E DK L D L S D LK GGAGADTFLFRSPFDGTDDTLLDFNAAEGDRDQLDHND $V$ DGGAGHDVLSGGAGADQLQGGTGNDTVFFDAADTVVKGD $V D G G A G H D V L S G G A G A D Q L Q Q G G T G N D T V F F D A A D T V V K G B$
 LIGGRGSDELYGGANDDTLLGMDGYGTSDNCEADYLYGGT
 LEGGNGSDRLLYGEANNDLLAAGGKDDSDYGGSGKDTLY LYGGK GADAI T GDA GADDLYGGDD NDILSGGR



 LD GEAGDDTIKGGAGEDVLIGR $L V G G T G N D Q L Y G G D G T D T$
I NGLLS GNDLLVGGNGADMMLGGTGD\|IGGGAGDDT\SGGA
 L F G GNS GD TLLYGGQGHD TLVAGEGNSLLFGDKGNDIGGSE
 L F GE T GEDNLH GNT GS DLLVGGANRDILDFGGDDD SDLFGGT
 TS GVVGGASSDDGGTMDDTNGANNADTVVEGGBGNDLIDSTAD LFGDRDNDTLFGNQGNDTLYGGQGD DLLYGGQ GDDLLF $L V G G L G N D I L K G D G G A D T F T W L Q G D T A A G S V A K D$
HGTWGNDSFFGGDGNDIVADGGDNYFDGGADNDTLTGGW LFGYGGADELFGEAGNDVLWGQANN DFVSGGAGTDVLY L Y GNNDDDFMYGEDGNDKFGNNGDDDIDGGNGDDECRGHS
 L NGDAGNDSI YS GNGNDTLDGGENDALYGYNGNDVLNGGE
 L 1 $L V G G Y G N D Q L D G G D L D D T L L G G G T G S D R L L G G S G$ $1 \mathrm{~L} G \mathrm{GH}$ GNDF I I T G DVVEVFAGTGNDF ILGAK GNLQTMGNE



 L Y G NR GA DVMT G GP D S GV GRGNRDVI T DFTP GEDREI E I SR L F G GR GA DV FA $\square$ G A G D
 EDVVTGDNDDEDVVTGDN

$V W G D Q G N D T L S G G G G D D L L F G N E G G G D W L F G N D S K D T \prod F$ LYGGEGDDVLVGFTGNNQSLLAGESDNDHLYGGAGSDLLL
 LEGKAGHDIL LGGTGDDSLGGGNNDTLSGGLGGNDTVRGSS

 | $L V G G G N N D$ | $T$ |  |
| :--- | :--- | :--- |
| $L$ | $F$ | $G W K$ | 1 D Y S L I G F K L TVVD L A G RANVIDGTAF GDTVIDGT D GVVVLN


 LF GDLLGNDKLF GGKGNDI LEGGKD DYLDGGEGDD KFNFNN $M N G G A G N D T F V V D N V G D S V T E A V G G G T D Y V L G A N V E N L T Y$ 1 FGQAGND LIIGGEDDGLAGGAGND ILDGGDGNDELHGDA

 LEGGNDNDFLYGETGDDRLGEDGDDRLEGGDGNDFLSGGB I S G S G K D K K G G L G N D TIA A G D G D N Q
 ATYA AGYAGVTVLAVGTGTGGDAFGDVLSGVENLIGSA
 L Y GNE GNDQLYGDNAHNALT DRNTYGNYYTGGNDYLLDGGA I A DGSGSDVI DAGDGNDAAADGDDDHYDGAEGCDTLDYSQ



GNDWV H GD GGND LVV G GA GDDHVY G GDGDD V VRGGDGD DE


GGNGNDSVFGNAENDQVNGNAGNDTLFGGLGSD
LLQ QEKASTIDNY LTVTTVNGESTLQVSSEGKLNAS


GFDYIA GDNGDDF FDVINGGGGDTD YDAES GDD SDNSMMQGGE GD DSLL S GWDGNSMMDGGA GDDTMLFGGGYGNTGL

 VGYDVA A ETSE GASLDLGANSFNEAHGNAGND TF
 GYDTY $\square A G D G D T D S D D D G K G M V T D I L K G G T L T E S H E L Y D Q$ GGDTFFS GD GDD 1 V
GNDR $\square Y$ GDESFS GNDVLY GE G GDDY $\quad$ N G GY GNDY $\backslash D G G \square G$ GGDGHDHDHGGGGNDVLYGNAGDDVLNGGYGDDTLAGGIGG GDDD LVVGGAGDDRFKFARGDGRDTIFDDFATSG
 FDADTTQGQAFDFVGLNGLS GTAGEL GYRHENGDTVVEAD G GA GND T I Y G E G GNDALK GQS GNDRIYGG GGNDIVD


GADEFHFDAGTGSD I ILDFTQGDDVISF LDDG GSD DFSVGLVLNQ

SESGGSII I GTTGGQTDDQADII $G I D T L N G G E G N D T F V M L P G E G Y T V V A D W E M N Q D V M V L L G N$ I E KVLL G S N S A D S G D N L T A A H S S IlA N I LIE GNA GND T L T
I E KV L G S N S A I S G D NL T A H S S I A N L L G N A GND T L T
$G S D Y L S G G G G S D V L H G G A G N D N D Y A D G G D D L I D G G G G D D F$
GNDF LY G DQGEAGAD T DDGGA DNDYVTLFRRGANQ GLTVD $G D D L V S G G D G N D G D D T I T G G T G N D R L T G G G G D D D F H Y T A G$ GDRGNDTLIGDQGSDTLTGGEGNNWFYLGLNTGGFT
GKDTFYGGSGD DTLSSGGGDDKLYGDEGDDTLLGGAG GNNGNDVLVGGDGTDSLLGNVGNDSLEGNTGND GNNTI
FDGELLLG L L N QAQFVLG GNDHLNGE GGAGNDYLE G GSGSDTYVFGKG

 $N$ D QL T GF GF G Q NE F D L T G G DE K D T FA L L G DANS VY Y L GD DWI E IGTQD GAPGDNLEP FASDSVNGHDVVFIT GPGFDE
 GEDII Y T GKGND DND L V VWGDHGDDTLSGDD G D DT
$\square G \square T$ RYS S S GAN GTVFAY DTTGGDVLIKGNDSVGRVFS L L
 FDADTLTGGTFDGARSFSGTPGELRAGAVSSEGDTLVQAD NTTFKDLTDTKVGSNT
D DEDVVT GDND DEDVVTGDNDDEDVVTGDNDDEDNNDEE A GENSDTLLGDAGDD\|LMGEGGSDSLSGGADDDGGTGSDT
GGEGDDIVF GGDGDDN\|VGESGNDVLWGEFGRDTLS


 GNDALGDDLLD GGSGS D GLR G GDGADTMIGGTDTDY LEGG GDLGDDDLRGNDGRDRLFGREGNDSLDGGADDDDLDGGDG

GDSSSEYDTLA GGA GT DTFVLLGDLGRVFYMGSGHAHID D F

 GGS GNFA GTGNVLGNTIGGGAGNDVIIGGAGAD T
 TGAGNFTGTGNA LANTITGGGGNDVLNGGAGAD
DGFGPYAESNWRGND\|IFGGRGDDRIEGGKNHDYLAGG S S G GSNAARAY LGNAWANGGVGGDVYSGVEGDEGTSLSDR
 GDDRLYGEDGNDGNDSLFGGNGDDRLYGGEGNDSLLS



G N D Y L E G G I G N D E LY G S D G N D
$T S Q G V T V D L$
G G A Q D DVLF G D D N D D R L L GK D G N D T L N G G S G L D T L Q G G N G
$L G Q D E T M E E L L D S D S A N V V D S N G \square E L T \square Q R D N G Q T T Q S \square K$

UniRef90 G2GXS5 UniRef90-A0A017H7U5
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G G $\square$ A NADVT DK LDEGV NDALFGEDGEDRLYGQ

S NGDGRADFSVALNGSHSL
S G GDG
S G G D G
$A S G G G T A D V T D K V D G$
GNGSGAAVTIARL

A D QLS QWDFI I
YEGDGGTYYLLKTTNAL
ND
ND
D D
MDGDGRPDFE $\square E \square A G V L S \square A$
D D G
K N
R D

TDFEQGVD Q I GLTGGLVFEDLLI
ATNYR【GD
ILGRSGADLMFGGAGADT
$A V L A A T A G G V V L A D G T V$
D GADT $\square$ T DFNSGNSGALNDSD

R D T LDDGGDGNDTLFGGDDDDTLI

QDGTGS
FGQDTVYNYHVD

LD G GANDDTLIGGTGQDLLT
VIGE G G D D $\square$ MVGG E G
HD
LF GDEGAD

VD
DDGGEGDDILIGAEGNDTLT LD GDGTPDFEIELTGVLTAGDFLI
VTGD NDDQIVVTGD
LT G G T GADMFVLEDTNDT $\square$ T DF

A GNDTV
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A G D D
D N
T S N S L A T E D K $\square$ Q TS GNLS
FDTLDLSDATGALTINFTAG
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TNASVS $\square$ D
L G N D
L G G DA G DN $\|$ L GL L G
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## UniRef90_A0YQM5

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UniRef90_V4PKL6 UniRef90-UPIOO00E11B6C UniRef90-UP10000E11B6C UniRef90-UP10000E11B6C UniRef90 F4QRR9 UniRef90-F4QRR9 UniRef90-B3EF45 UniRef90-UPIO0047337B2 UniRef90-AOYSA9 UniRef90-AOYSA9 UniRef90_UPIOOO2F32181
UniRef90_I1XJU6

- ${ }^{50}$

60
70
80
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VAYTNVQRNTTEGTDGDDQVGTDCGENIVGRA FGRTGNDTLLGGSGNDSLDGGSGTDSLDGGEDNDTLFGGS DTHYNSGNDKLYGEGGNDYLDGWT GNDNMYGGS TDDHGDTLDGGRGNDTLDGGRGSDVLFGNDGND LFGEA KLYGDAGSDELYGGKGNDFLNGGNDHDELYGGNNEYGAED VYGGDGDDF UWGDSDYLDENLHGDDYLDGGEGNDQLVGGA GSGLSDSLMGTDDNDTLSGGA YGGDGNDRLYGRDGEDLLKGEAGNDLLFGNDGNDRLFGES GESGGDDHLYGGDHNDVLYGDQGNDSLYGEQGHDTLHGGD YGNQGQDTI RGDAGDDTAYGGQGDDWVEGGLGEDLLFGDK TGGDGDDVLSGGYGNDTLLGEDGNDLLRGWKGDDSLDGGE

RDGDDSLWGGNGNDRLKGGSGNDLLDGGYGDDTVYGGT YGAEGDDHMFGGAGDDLIYGGTQDDLLFGEAGNDELHGGA HGDLGGNDDLAGGTGDDSLHGGKGNDLLTGEDGFDSLWGEE AVWEGNDMIWGNLDSDSLMGSSGNDSIYGGQEDDYIWGGL AGADGADTLVGDEWNNLFEGNGGDDY/ASKNGDDTVGGGD EGADFDNLSGDQDDTVFNVNAGSGDDLGNGYANSTI HAGY DGRDTIISSNGVGDLAAAANSENNDSVYGHQSNDLLQGGP NDHLWGAEGDDNLIGGDGDDYLGGSW RGGYGDDHDFGGAGDDIITDDGDADVIHGDDGNDVIHTGP FTGNGDDLIFGGKDNDI $\square G E N G N D K L L G D S G D D T L T G G F$ TIVEGDDILSGGADNDKLYGGEGADRLYGQGGDDVLIGQG INPDIADHLDGGAGNDFLDGSDGDDVLIGGSEDDRIVSGF $N G V D T Y D L S A Y T G R V L V D L A P G A W S V F D P D Q L A V M D Q T G S$ RGYDGNDNLKGGNGSDKIYGNDDRDYLYGGSGADRDKGGK DGGTGNDVLHGDAGDDSLYGGSGSDLLHGEDGADALDGGE FGGDGNDTLNGGRGNDLLQGGNGDDTLSGGKGQDEIYGAQ GAGDDLLDSRWSTDPDRGGLDFETWRAAKVGTGDEMHGGD
 VPQNGRDTVRGGEGNDVTYGGDDDDLLSGDNGNDW| DGGD Y GGEGDDSLNGDGGEDYUGQGGEDTLNGGIDNDQLDGGD
StGTGADtLLGGRDNDTIGGDGDDSLVGGEGTDTПTGGD DLFVGTAGVDIWTGTAGDDVASGGA GGDDNDDLRGDEGSDDLRGENGNDSLYGGQDNDSLYGGD QNTGDDENVNAGGGNDVVTGNKAANTLNGQNGNDVLYGAA KLVYGADELYGGDGCDELFGGSDNDLLSGGNHSDSLWGGW GVLLQSVQSQTQP TTDTVNLGSGNDTVYGGGGNDAAYGGA EGGEGIDDDLKGGSGDDKLLGEQGEDKLWGGDGNDELDGGQ FGGKGNDLVSGKEGNDLLRGDGGTDTLTGGEGDDIINGGA FGGKGNDLVSGKEGNDLLRGDGGTDTLTGGEGDDIINGGA GGDDTDDFRGTTDSSNLNLGDTTMTVNNNGNLIFSANN VPTSGADNLYGYASDDVLNGLDGNDTIRGYGGNDTLRGEA VQGDGSDTITGGAGNDYLQGNAGDDRLDGGTGSDRIQGGQ GADDVTPGPVPFHNLNLNGSDTIDAGSGGDRVEAGA GADDVIPGPVPFHNLNNGSDTIDAGSGGDRVEAGA DGGEGNDTVTGGAGNDTTTGGAGNDTVSGDAGDDSTGGGE DGGEGNDTVTGGAGNDTTTGGAGNDTVSGDAGDDSTGGGE DGGEGNDTVTGGAGNDTTTGGAGNDTVSGDAGDDSTGGGE

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$V I N G D N A Q L S D G D D V I G G A G N D I F G M D G N T L H G A E$

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## 






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 GNDSATGNDGADFI DAGFGDDAIFGGNDNDVI KGEDGNDF GADKLVGADGNDTLYGYSDNDKLYGDAGSDKLVGGDGDDT GDDRARGDSGVDQI F GDDGDDTLSGGLGNDRLEGGDDADV GDDVLNGGLGYDNLYGGDGDDRLVGDNASDKLWGEDGDDT LIENVIGGAGNDRI DGNDGDDTLTGGAGRDYLRGGSDNDA GNDRIYGEAGSDKLYGESGADTIYGHSGDDSIYGGSANDK GADRLYGHFGADSLLGGGGNDVLHGGQDGDWLEGGEGADS GDDILNGGNGADRLFGGDDNDTVRGGNGNDYIKGDAGDDA GDDLVRGGNGNDEI HGDAGNDQLWGSKGDDKI IGGANDDT GADTLDGGLGADTISGGDGDDYIEGGDGDDSLTTGLGNDT GSDTLFGGSGADKMYGNGNNDVMYGDAGADLLAGGRGSDS GEDSLCGGSGNDVLF GNEDQDRLCGGEDSDTLYGGLGEDT GSDVLEGGLGNDYLGGGAGSDFLSGGAGSDTLVGGAGDDV ANDTITALGGNDYI YGDGGADSVDAGTGDDTFYGGSGNDT GNDVIVAGSGNDQLFGGADDDFLSGDNGNDFMNGGSGNDT GNDQLFAYSEGDELRGDAGNDQLIGNLDRRELLIGGSGNDF YADKLSGNALDNVLDGGRGNDILDGRGGNDVLIGGAGNDT GNDVLRGNFGDDTINGGAGDDFLAGSGGSDLI TGGAGNDT S IDILLGQAGEDTLSGGAGDDDLVGGLGNDILTGGLGSDD
 GNDRIEASFGNDTLTGDVGDDVIRGQDGDDQLEGGEGQDT GGNTLSGGAGNDTLTGGAGNDLLDGGTGADKMAGGAGNDT
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GNDT\FSGDTADTI SGGAGNDQIFGNLGSDSILGDAGNDT

 GNDRLLGGRGDDRLHGNSGRDYLYGDSGYDQLYGYSGNDIT GNDTLIGGDGNDALRGGADNDYLVGGRGNDVLVGMGENNDV SDDELWGGDGNDALRGGADNDYLSGGRGNDVLRGDSGNDV DNDDIKGEAGDDKLFGGDGDDLVSGAEGNDLLKGDGGTDT DNDDIKGEAGDDKLFGGDGDDLVSGAEGNDLLKGDGGTDT VIENATGGDGNDAITGNADNNDLTGGNGNDQLQGDAGDDT GADNLFGGDGNDVLDGGADNDYLYGESGDDSLLGGSGNDN GNDSVGGNSGNDSVNGNLGSDTIDGGEGNDSGRGGQGGDS GHDVVLGRLANDVLDGGFGADTLIGGSGDDTLLGATGHDV GHDVVLGRLANDVLDGGFGADTLIGGSGDDTLEGATGHDV GDDSVDGGEGNDTVTGGAGNDTTTGGAGNDTVDGGEGNDT GDDSVDGGEGNDTVTGGAGNDTTTGGAGNDTVDGGEGNDT GNDTVYAGNGADTIDGGADNDLLYGESGNDSLSGGMGNDT GND VAGNGAD SDNVLYGGDGNDSLNGGDGNDSLNGGNHNDSLNGGNGNDL GQDTLSGGENNDQLYGQGGDDELTGEAGKDTLDGGLGNDT GQDTLSGGENNDQLYGQGGDDELTGEAGKDTLDGGLGNDT

## UniRef90 A0YQM5

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UniRef90_D8G806 UniRef90_W6W922 UniRef90_UPI0004228484 UniRef90_K2J7B9 UniRef90_UPI0003AB3423 UniRef90_B9NXX7 UniRef90_UPI0003803D5A UniRef90_UPI00038093C5 UniRef90_A0A058ZM67 UniRef90_UPI00036C9172 UniRef90_UPI0003A4E33B UniRef90_U7QA09 UniRef90_U7QRQ3 UniRef90_C7LRT0 UniRef90_UPI00046874E6 UniRef90-M5T7W8 UniRef90_R4Y219 UniRef90_Q07GP5 UniRef90-W3U864 UniRef90_D5AUK6 UniRef90_A3PNG1 UniRef90_UPI0002891F4A UniRef90_V8HRT7 UniRef90_K6YH86 UniRef90_T2IFE9 UniRef90_B6AZD3 UniRef90-J2ZLE3 UniRef90_K9VLM3 UniRef90_A5GSF3 UniRef90_UPI0002E3E4A1 UniRef90_K5MX38 UniRef90_E3BKE3 UniRef90_Q113P6 UniRef90_Q113P6 UniRef90_K9QCL7 UniRef90_Q8Y2T6 UniRef90_A5V3X9 UniRef90_V4PKL6 UniRef90_V4PKL6 UniRef90_UPI0000E11B6C UniRef90_UPIO000E11B6C UniRef90_UPI0000E11B6C
UniRef90_F4QRR9 UniRef90-F4QRR9 UniRef90_B3EF45 UniRef90_UPI00047337B2 UniRef90_A0YSA9 UniRef90_AOYSA9 UniRef90_UPI0002F32181
$|V| T G G Q G N D T F \mid V \bar{V} G$
140
VG 150
150
50
GK D L I $|G| L V^{160}$
160 LYGGTGDDQLAGDA GDDQLGGDGNDDLNGGNGHDSLFGQA
 I SGGDGSDYINAGNSDDIVNGGANDTVIGGGGKDTLDGGD L G Q D GN D T G GG D D DY L DGGSGND IL NGDA GNDS L S G G D
 LT F D G D HVAA S GE T T D HVGS P T T D I D G GADD D L LE GGTGDDE!T GG T GNDTLDGGDGND LV I DMA S VT S DLTVVRLGNTMGTDRGSVTT E EGGGRDTWSSDENGV


 LLGGDGNDLLFGDAGSDQLGGNGDD\|LFGGNGNDTLLGGN
 LYGEC GNDQLTGGAGNDWLGGAQGDDSDGVDTDNNFDLTG I LGGS GD D Y I F GEAGNDYLS GDEGDD IVFGGDGDGDDDID

 $L S G G L G D D V L S D G E G S D T V R G D E G D D V V V A A A D G A P D D L S$


 S GDA GD D QL E G D S G D D ELLT G GA G N L D G GTG D D TL Y G GQGNNDSMNGG DND LL GDRGND LLT GS E
 L H G GNGS D T L N G GA GADTPN GDVDTIVDFASAEDLLVVLAS LYGHEGNDYLSGGSGNDLLKGYADN IFAGKDNDSI CGGSNQDLLLGNLG A DLI R
 MIGGDTA DENNR

GNDALR $\qquad$ $D S \square R G G A G$ G G D GD D T L $Y$
GED T LI G G GDADENNI EAERGLPGMIDFMWGGAGDDLMNGGR L G G S L G K D R L D G GNGND T LN GHEDDH LNW GAN GDDSLLQ G G D LG NE GD D WL E G GA GF DTLA G DNSENLFFNSP GHDVVMMGGG $V$ S G D S G D D T L C G G G G S D $1 L Y G G D G D D V M D G T D N D T L Y G G A$ L Y G G A G D D R L Y A D E GA D TS G G R D D DY QF S EA D G D I I N L S G
 L F G G D D S D R L F G D R G A D ML S G GP G D R LA G G S G G D A L Y G D D



 L G G Q G D D WL F G D Q GND F SGS GT D T DQ DF QLDGTD LVVAL G G

 LEGGQGRDDLDGGDGDDVFVFRGRTNTDEIRDFNEGDRDD

 LT G G E G DD TFT F T Q E S L L D M T S S R D V I K D F F R L LTGSADNDVLVAGNGNDMVRGGNGNDIINGVGD $L M G D A G V D V L S G G E G D D S L D G G G D D R L D G G E G S D R L I G G N$
 L Y GE G GEDLL E G GD GNDKLY G GTMDF LYYGGNGEDELYGDS






 $L W G G L D D D I L T G G V G K D S T N D G D D H D T D F E G G Q D Q Q V L V K$ L G G G G N D TL E G GA GND Y LVSN E G D TYVFNS GWGQD TIY N I Q G GA GNDVLLDGDLGD DTLAGGAGDDILT GGGDDVFAFA T
 $V T G G A G N D T T D G G A G N D S V S G D G D D T V D G G E G N D T V T G G A$ $V T G G A G N D T T I G G A G N D S V S G D G D D T V D G G E G N D T V T G G A$ $V T G G A G N D T T I G G A G N D S V S G D G D D T V D G G E G N D T V T G G A$





|  |  |
| :---: | :---: |
| UniRef90_AOYQM5 | GLEVSQLS F NVINGNNTEVV/F GD |
| -L8MAT8 | GHDTLNGGEG ADIILHGAAGAD |
| UniRef90-K9TC79 UniRef90 A6FRV7 |  |
| UniRef90-K2LGH1 | GTDTLYGGSSNDTL TGSGDDRLYGEAGND |
| iRef90-A0ZD83 | GNDILNGGDGD DTIISDAGNDTINGGSGTDRYYAADY |
| UniRef90-A3 | VSVEGYDVALFMDIIAASALGE |
| $\begin{aligned} & \text { UniRef90-K2MRC6 } \\ & \text { UniRef90_WOABU7 } \end{aligned}$ | (l) |
| UniRef90 | GGAGDDTIFASDAANVLDGGDGNDTF |
| UniRef90-UP100034D4180 | GTDTIRVGAGS |
| UniRef90-UPIOOO3F739B0 | DASA】GDQAFSFVGTAAFKGVAGELRFD\\|LASDTY |

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UniRef90_IXJU0

F
LS A E G T
S D
HAGGGAANPS $1 \mathrm{~V} \square \square \mathrm{EN} \square \mathrm{NAG}$ G G N D

DDNDGAVDFALWDA
T LGDLGVDDFI
VGRDNQVDELQLAS GQLTAAD
GADD
L S N P G G LVT $\square$ A T L T G
Y D GADT

F T WQDGDK $\square$ QVNA $\square$ G
$\square$ DA GA GDDR VGGGEGDDS $\square$ S
$N D \square L N G G D G N D Q L Y G Q A$

ADGNGAAEQ L L
FN
$\square E K D T \square A D F V V G Q D K \square A L A G D L$

T N D N D T P
$L D G G E G E D Y \square G G S \square G N$
QGNDT\|VDFE
$\square N G D G A A D F S \square H V D G V V$
EGGVTV
AGGGNI $\square Y$ YDSTTLSDLSASDF $\square$
D N
LRGEAGADTLGGDG
MDYDAAEDQLVLV
F G G G D S LLLRNLT TEDLGADDF L L
F GNDT
F T

LD N Y G
VD R G S VLTVN NVT A A DLDASAF LL
DDVLHGGEGNDRTEGQQQNDDL
$\square$ T GEGSNTMSVALEN
$\square D \square G A G D D F D A A \square E D L G R G D D V I$
NDTLLGGD
VDTLLGGD
LYG GQGNDTDEGGEGN
RGGDGEDELLNAGANADT
ND
SD Q $D$ FGEDGDD $\quad$ LDGGSQND $\square L 1$
VGHDRDMDF
LD GVS S VELINNLAS $\|$ DQ
LN G GQGDDQIWGGVGN
ND
ND
Q D G N

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LKGEAGADTIVAYTG
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$N D T V V G G D G R D T L V I A A B Y$
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UniRef90 Q115C3 UniRef90_UPI00039DF06E UniRef90_W4HLB9 UniRef90 UPI0003A5CBBE UniRef90_M4UC97 UniRef90_UPI0002484B35 UniRef90 K9SEP2 UniRef90_L8M1X2 UniRef90_D0IBC7 UniRef90_UPI0003F54061 UniRef90 W8S0B8 UniRef90_I7DUF2 UniRef90_A3CMV6 UniRef90 A5VDI3 UniRef90-A0A023Y5G9 UniRef90_K0NLD0 UniRef90_C8S2B9 UniRef90 UPI0002D3BA4D UniRef90_E2CK92 UniRef90_E2CK92 UniRef90 E2CK92 UniRef90 I4NBE8 UniRef90_S3TN06 UniRef90_B4RDS9 UniRef90 W4HL72 UniRef90_B3EE03 UniRef90_M1PTS1 UniRef90-A3VZ42 UniRef90_F4QKA0 UniRef90_V7EI08 UniRef90_UPI0003772F2C UniRef90 A8LNC4 UniRef90 A8LTN3 UniRef90_I1B035 UniRef90 UPI0003B6FFFD UniRef90 UPI00046A87F0 UniRef90_B6R118 UniRef90_M5EJ35 UniRef90_A9W5V8 UniRef90 U3HEZ0 UniRef90_UPI000301E7D4 UniRef90_W9HDR5 UniRef90 R1IXC4 UniRef90_UPI000466704B UniRef90-F2ZNR8 UniRef90_E7P5A4 UniRef90-A5WEE6 UniRef90_B2J010 UniRef90_D3Q322 UniRef90 U3BPX6 UniRef90_V9VWM7 UniRef90_-Q2SIZ7 UniRef90_G8B1F0 UniRef90 K9XQT7 UniRef90-K6BXC5 UniRef90_Q28SM8 UniRef90 D8G2I0 UniRef90_A0YLR4 UniRef90-V4Q727 UniRef90 ${ }^{-}$TOIT31 UniRef90_UPI000288707A UniRef90_K9V251 UniRef90 W1RRM2 UniRef90- Q8Y2T5 UniRef90_UPI0003B6C8C5 UniRef90_Q0FVV8 UniRef90 I4Z108 UniRef90-A0YT58 UniRef90_M9ZZ19 UniRef90_W0HGD3 UniRef90_W6K831 UniRef90_D8NQU3 UniRef90_Q0IC95 UniRef90_G8PVD8 UniRef90_C7RST5 UniRef90_S6P115 UniRef90_F9ETU6 UniRef90_A0A022IND3 UniRef90_F4XRN7 UniRef90_UPI000401B683 UniRef90 B0JGS0 UniRef90_Q4ZRV1 UniRef90_U9EUI4 UniRef90-B0CEE1 UniRef90_K9XYQ2 UniRef90_M4VE81 UniRef90_UPI00036012CA UniRef90_B0C0X5 UniRef90_B0C0X5
 GNNSTQFIQGTFNSDTVFGFGGNDTIDGQ GGDGNDTLDGAAGDDGLLGEAGDDSLVGGPGDD
$G G N D R \square L G G A G \square D \square$
NS S DKVTVQS Y F N S DA T GA Y R V D L I G GA G N D R $\square F G Q D G B D L I F F G D S R F F$

## GGSD L L S F N N

VNMVVD G GAGDDR $\quad$ TT T GNGDDRVDGGSGDD
F WG DAAAAVFDGA WMD A LDDPDP GLLA GFTLS GDVLD D PVTT

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

A D NSNNQGDT\S GFENDTGGDASANVIDGGA GNDTDE G G A DNSNNQGDTI S GFENLTGGDASANVI DGGAGNDTI E G G ADNSNNQGDTLS GFENLTGGDASANVIDDGGAGNDTUEGG
GNDY LY G GK G GDY DDGGEDNDY LY G GQGSD T LIG GE GQD $G D G L N T L V G G E G F D T V D Y S D L S T S I G A D L Y A G$
$T$ D D Y L F G LD G N D M LY S Y E G N D T DE G G S G N D L ID
GNDTLIGEEDLDRLYGQE GNDDLYGGEGNDDMYGGLDDN $N D T \| \quad G G D G D D V M G S G F G D D S V S G G A G N D V V A G G A G N D$ $T Y E G T D G N D T Y L G T G G N D V V S G V G G D$
$G Y L G Q A G G D D L D G G S G N D T V S Y A F S N A$ GS DHVI GGDGASTDFGDTLRDAATVTA G GEGDDY $\operatorname{H} S G S A G H D S L H G G V G$
GGNDTDIAGDGFDEVDGGAGDDLLKGNAGNDFIAGAA
$D G N D T L N G G V G R D T V N G G A G R D R L L G G$
$G V G F T D L D G D Q D T D N A D T I L G N G G A D G \square G S G G G D D L V Y G G$ TVSGSAGNDTINASYTGDPQGDQVDDGWAG




$\square G S S D S L R V A S H F A G D A T A G Y E \square D R \square$ F Q IS D T GETLLRVS SHFSSDAYAIDQV T GDDKLDS S DQDVALTY S G GT G D D $\square \mathrm{F} \square$
LDGGGDGNDLLFGNANNDRLFGQAGTNDLYGGSGDDYL $G G N D \| V Y A G N G N D V V N A G N G N D L V Y G G N G D D R L F G$

T G A G Q G $\square \mathrm{H} D \square \mathrm{SV}$ T A $\square \mathrm{ST}$ T
G G D G N D T L F G G S G S DE L $\quad$ S GEVVGA D
$G N D \square L I G N G G N D T L I G G G \square G H D T M D G G A G A D V F D G G D G F D$ TGSYNLDLTLFSPTVI $G$ VSNEGMDYQL GMS DDYS LDP N G D GVVFSIDDN P Y EVV QLDT F Q Y G
GNDF $\quad$ L $G G K N N D \square L L G G E G Q D S \square L G N R G Q D S I N G G E K N D$
GARNGVNEVNDGSDYTTVYGNT】 GNDT $\square$ G G GRGDDVSNAGDGNDVNNGGPGDDVLLGGE GDM
GNDTLTAAA GGSWLVGGGGSNTYNGGVGDDVFVISASDN $G N D T L N G G A G N D Y L D G G N G N D R M L G G T G D D \| Y I V N A T G D$ GGSDTLLGNDGDD\|LDGGAGDD\|LNGGNG】DTADYRTATS

D A LY G GN G D D T $\square D G G T P G G G G D \square A Y F N S A R A$ $F R L G S N V E N L F L T G K A T S G Y G N S L A N K L$


RFADGTSWDVAA VKA $\underset{W}{L} V \underset{W}{Q}$ $\mathrm{W} V \mathrm{~W}$

D S LD G GD GNDS LWGNGGAD T L LGG A GDDALSGD DGTP A GDDVLVGYASNDLLNGLAGDDT■SGYEGNDTL


GNDF LDGDDGSDTLHGGLGNDFLDGGDGNDTLNGGLGD
 GDDSLQGGDGNDYLGGSWGSDTLDGYRGNDQGNDTLWGG

G GAGNDS LIG GS GTD TVDYSASMS
GNDTLHGGEGHDHF LGGRGNDVIVGGNGEEY\|DAGDGDD



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UniRef90 A3VZ42 UniRef90 F4QKA0 UniRef90-V7E108 UniRef90_UPI0003772F2C UniRef90-A8LNC4 UniRef90-A8LTN3 UniRef90-I1B035 UniRef90-UPIO003B6FFFD UniRef90_UPI00046A87F0 UniRef90-B6R118 UniRef90-M5EJ35 UniRef90-A9W5V8 UniRef90_U3HEZ0 UniRef90_UPI000301E7D4 UniRef90-W9HDR5 UniRef90-R1IXC4 UniRef90_UPI000466704B UniRef90_F2ZNR8 UniRef90-E7P5A4 UniRef90-A5WEE6 UniRef90-B2J010
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UniRef90_K1ZZ42
 DGNDSLFGNSGSDS VVGGDDDDIIFGNVGDDTIDGQD $D R L F G G A G N D F V F G G D D A D L V N G G L G E D Q L F G G D$ $N \square S D G N D V V D G G D G N D F L G G G D G N D M L D G G E G S D T L G G G Q Q$

 VGT TGNDS $\downarrow$ E GS LINPDNI FALA GNDTVRGRLGDDTINGRD PVPEPEPEDASAGGRNDLFGNSGNDEI RGGGHVDVI HGGD IIE QGDDTVMGGEGNDVVYGQGGNDSLLGEEGDDS LGVSDEGSPFRTLYGTSESEYLSSPDNNDTIYAGA Gid HALTDMTLLGGGDGNDTINGTAGKDWLTGNGGDDVIDGGQ $D G N D H L Y G E Q G N D L L F G Q K G N D V M D G G A G K D Q L Q G G E$ A GNDTLLGGTGTDTLSYASASGAVTV A GNDTLLGGTGTDTLSYASASGAVTVNLADNSNDQGDTIS A GNDTLLGGTGTDTLSYASASGAVTVNLADNSNDQGDTIS GNDIFHGADGNDYI EGNYGNDRLYGDD YGGSGSDT LYGGNDDDHLYAGDVENDLADAGTTNRLYGEK A WRNA GVYVDSFDSDENLVGTGFNDTLDGDWRDNDLDGNA GGLDHDLLYGGEGDDTVYGGVYFDYSWYGWSGDDSIVGDA DQLFGGDGDDVLRGDEWDNTGTGEDLLYGGDGNDQLDGGG TGGDGADSMSGSFGNDLIFGGAGADDIGGGTGQDTIDAGA
 GTGF GADRIEGG GGRDMLHGGDDDDDISGAEGFDEIFGDA
 GAGTNDNLIEALDGDDSVAAGLGADTVYGGSGNDTLDGGII DGGAGVDMLDGGDGNDDLLGGAGSDTLMGGAGDDTLDGGA PTGDYLRVYTGSEFSDRMIGDDLLNHLLGGGGNDFMHGGG LGANVENLTLTGTAADNGTGNDLDNLI DGNDANNALKGGUC $F G Q N G N D T L E G G V$
$L G S D T I Y G D A G N D$ MADERGD TDGADAVNGTEEDDYLRGTNDVDTIYGYG QFADGSEWNQTTDKSNVIQSTDSDDTLRGFATDDVISAGG QFSDGDF WDKTQUTAALLVGTAGDDSIT a DGGDGNDS $\square Y$ GDANND LYGQSGDDYLEGGDGNDGLFGGA GNGNDRLFGQNGNDRLYGGNGNDTLSGGN SNNDTAE SAP IHIQLEVTGDGTDDDKSAATEDSWLSGDD DKGYGNSLANLI EGRNGNDFLTGRGGNDTLDGGG $T L H D G Q D Q L S G G L G N D E L F G D S D A D V L S G G E G N D M L H G G S$
$V V T Y E N A T T G M V I D D G N P A N S T G D A A G D S F T G D E R W I G S N$ TGTAANALLNGGTYYGNPANSTGDAAGDSFTGGERWIGSN QVNTAPSYLGSYLDQDAHGGQDAAAVSVGYQGDSWL YMHSTGGTLTSNTGTTVDGGGAPGETFI RGDGADTVYGTD NGNQGDDFI DGGKGNDSLFGGKNNDVLIGSRGEDSLWGNL GNDSIFGEQGFDTLEGGNGNDFIRGGSGDDQILGEN QNTRGAAVVLTGSNSTVQMPPPADGIYRGSDYADAIIGTA GASFGDDSVVGGSGDDSLGGGTGQDTLDGGTGNDSLGGGE PNNDHGNGGRDTA $I I V G D K G V Q L N M A K A G L T V A Q G G R$ NVIENANAGIDTVRSSAYTLTNNVENLTLINTAQSGTGNA $G V T V N L S G A A Q N T V G S G T D T L V N L E N I F G S A Y A D T L T G N S$

 YANGGDDYV WTGWGDDL YGDDGNDTLKGNGNDKGRD YANGGDDYVWTGWGDDLI Y GDDGNDTLK GWS GDDFI DGGA $\square G T P G N D T \perp F T L G G N N T T F A L D G D D R L F G G A G N D D F D S G A$ GGVSFHDFVTGSPDLILEGGS VPTSGADNDYGYASDDVLNGLDGNDTLRGYGGNDTLRGDA TGTDGDDKKYGSVQDDRLSGGSGNDRLNGYTGNDKLFGDD FEFADGTTLSKDEVRADGSLKLTDTLGDDIIKGGN APYHGADFLDGGSGKDTLWGNGGNDTLLGGLDADKLQGGD F GGDGQDVLDGGAGNDNLYGEAGADTLEGREGNDLLDGGA TDGDDHIDGKSGDDNIYAGGGNDTVFVSGGTNFISGGD $Y G T S A P P E S A D P T R Y D L I Y G G L G Q D V I W G N G G N D D L Y G G D$
$V V D D G L A F N N V S E V A T L I T V Q D N D S T V I G T F Q N D T L D G G N$
$G T A D T K L I Q G A G L N D T L S A G A A A P V I I V G F S G D D L I Y G S N$ TLYGGLGNDTSDGGDGNDLI IGNDGDDLLLGNA
 $G V T V N L T T N T A S D G L G G T D T L S S D E N V I G S A Y A D T L T G S S$ II FAGAGNDGFNNRVNPATGKLTQQAVSGGAGNDIIYGES SGGTGNDSLYGEAGHDVLSGDEGRDLIYGGTGNDVVLGGA


## UniRef90_D7A046 UniRef90_Q115C3 UniRef90-UPI00039DF06E UniRef90-W4HLB9 UniRef90-UPIOOO3A5CBBE UniRef90-M4UC97 UniRef90_UPIOOO2484B35 UniRef90-K9SEP2

 UniRef90_L8M1X2 UniRef90-DolBC7 UniRef90-UPIOOO3F54061 UniRef90-W8SOB8 UniRef90-17DUF2UniRef90 A3CMV6 UniRef90-A5VDI3 UniRef90-A0A023Y5G9 UniRef90-KONLDO UniRef90-C8S2B9 UniRef90-UP10002D3BA4D UniRef90-E2CK92 UniRef90-E2CK92 UniRef90-E2Ck92 UniRet90-l4NBE8 UniRef90_S3TN06
UniRef90 B4RDS9 UniRef90-W4HL72 UniRef90-B3EE03 UniRefofo-M1PTSI UniRef90-A3VZ42
UniRef90 F4QKA0 UniRef90-V7E108 UniRef90-UPI0003772F2C UniRef90-A8LNC4 UniRef90-A8LTN3 UniRef90-118035 UniRef90-UP10003B6FFFD UniRef90-UPIO0046A87FO UniRef90-B6R118 Uniinef90-M5EJ35 UniRef90-A9W5V8 UniRef90_U3HEZO UniRef90-UP1000301E7D4 UniRef90-W9HDR5 UniRef90-R1IXC4 UniRee90-UPIO00466704B UniRef90-F2ZNR8 UniRef90-E7P5A4 UniRef90-A5WEE6 UniRef90-B2JO10 UniRef90-D3Q322 UniRef90-U3BPX6 UniRef90_V9VWM
UniRef90_O2SIZ7 UniRef90-G8B1F0 UniRef90-K9XQT7 UniRef90 K6BXC5 UniRef90-O28SM8 UniRef90_D8G210 UniRef90_AOYLR4
UniRef90 V4Q727 UniRef90-W4HIC2 UniRef90-TOIT31 UniRef90-UPIIO00288707A UniRef90-K9V251 UniRef90-W1RRM2 UniRef90-Q8Y2T5 UniRef90-UPI0003B6C8C5 UniRef90-Q0FVV8 UniRef90_14Z108 UniRef90-A0YT58 UniRef90-M9ZZ19 UniRet90-WOHGD3 UniRef90_W6K831
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S6P11 UniRef90_F9ETU6 UniRef90-A0AO22IND3 UniRef90-F4XRN7 UniRef90-UPIO00401B683 UniRet90 BoJGSO UniRef90-U9EU14 UniRef90-B0CEE1 UniRef90-K9XYQ2 UniRef90-M4VE81 UniRef90-UPIOOO36012CA UniRef90-BOCOX5 UniRef90_B0C0X5

##  <br> a

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100
110
120 GADNLI GGFGHDQLYGGQGDDLLTSGDGNDLDGGEGNDQ GNDSLLGNEDDDLGGGEDNDTMRGTGSDEDGGSGDDG GDDLLKGGDNDDVLAGLADDDSLFGGDGSDDLYGGLGDDV GDDALAGGTGDDVAAGGPGDDLIEGGAGDDTMGASFGADT GGDTVGETGSDRLYGGVGDDTLFGGDGGDSVFGGAGSDV GADNIFGDAGDDNIRGGSGDDILNGGDGNDWLRGDDGNDR GNDTVNGNAGNDDVRGGMDNDQVLGGMDNDLVNGNRGDDL GNDNLFGNNGSDLI FGDNGNDTLWGQADDDTVEGGFGDDR GNDT:RGGTGNDTIYGGAGNDVLLGNAGDDILYGGEGDDT GDDVLHAGTGTNFVEGGAGNDVI HGAGGEDIISAGLGDDV QDDLIFGYDGRDKLVGEGGDDYLDGGAGEDELWGDAGQDT GDDVI EGGVGADTLMGGSGGDTLSGGDGDDYi EGGEGDDQ GNDTLNGSSGSDKLYGDKGNDELNGGDGNDLLDGGSGNDK GGDLLMGNDGNDTLRGGADNDVLYGGRGDDLLHGGAGADT

 GDDY SGGAG
 GDDALD GREGAD RLMGGDGADTV TGGGDGQDYVRGEAGSDS GNDF L D GSYGQDDLD G GA G D DIL H G G S G LDD TL T G GN GN D T G D D S L Y G E I G D D A L A G E G G D D D L GNDNLDGGTGNDYLNGDAGADTLNGGDGNDTLAFSGGGDT ANE T L Y G E L G D D LL D G GA GND LL E G GADD DTLLT G G S GND T $G V D T I S A G G A A D R V D A R G G D D L V C G Q Q G D D V L F G G B A A D R$ GADALNGGSGHDVLHGDDGADNLIGGSGDDTLHGGAGADD GD D L L R G N A G N D TI E G G A G D D R I E G G $\quad$ IGA D T L R G GV V N D E
 $G N D S L L G G G G N D S I L G G A G A D S I D G G A G S D T L D G G D C T D T$ DNDMLEGGGSGDDDLRAGHGADTLVGGSGNDTLDGGADNDV GNDWI E G G DGNDSIA GDAGDDSLYGNAGDDT』KGGD GNDF

 GNDTLDGGAGNDTLNGGSGNDTLTGGDGNDYIYGEDGADLL GDDA YGADGNDTLSGGDGDDALYGDVGNDHLGGDAGNDT
 GQDTLF GQAGDD K L D G G DGNDK L NGGDGNDVLVGQA GDDY GNDKAYGGNHADKI SGGNGNDGLYGQNGNDVVRGDAGRDV S G $\ H L T A G D G N D L I E G G A G N D T L V G G D G D D V L I G G L G S D$ GNDTLH G GRGRNFLSGEDGDDTVVANAGADRIVGGLGNDN
 GNDFIRGGNGRDLIE GESGDDVIFGDAHDDTVNGGDGLDV GD DVLLAA GGHDCLNGGNGNDVLDGGPGDDVLTGGE GQDR GADWID G GNGND LLA GEGGNDTLIGGGSADTLNGGAGDDM GDD TLCGSQANDYLS GNGNNDIIDGCGGNDTIYGGKGNDT D D D NL L $\quad$ D S G N D TI D G G Q G D D NI S GVS GD D S I S G GF GEDT AP ETFLG DKGNDTLDGGGGNDTFDGGSGNDSLDGRD GDDD GNDTVLGGSGDDF LA G G GRDDRDE G GT GND TVNGGP GN DT $R G N R L E G G A G D D R L S G L E G D D V L S G G N G A D R L D G G R G A D R$

 GNDSIIDGGADNDYLYGEAGD DRLLGGSGNDTLYGGNGNDT
 $G K D R L D G G S G N D R L Y G G D G N D T L N G G A G D D V L S G G K G A D Q$ GND QV Y GEDGNDTLD GWS GND LVVGGN GNDFIVWGWY GNDS GNDFVDAGAGNDLI FGDEGNDTLLGGAGNDVFFAGGGNDL GT DTL S G G D GA D F I S GMD GA DTL S G GA GDDDL Y G GA GDD K
 GDQQI DGRDGNDTI F G GDGND QLYGGSGRDKLYGND GND T GADLLD G GTGEDELFGEDGNDTLLGGLDADKLQQGGE GGDL $G D D S L D G G A G R D T L Q G G S G N D Y M V G G A G D D F L A G G Q G Y D R$ GDD VVRGGDGRDTVNGDSGNDVIVGNGGDDHLNGGAGNDT
 VD DE LY GN Q GSDTI Y G L G GKDF I A G GE GND LL Y G G D GDD T GNDFLDGNAGNDSLDGGLGDDFLNGGDGNDILNGGDGVDS GNDILD GND GND TL F G G T GD DF L A G GK GAD Y L D G GD GND Q GNDSLY Y Y A GNDLL Q G DEGHD IL Y G GAGD DTVVGGDGND Y GDDNLDGGDGHDSLNGHDGNDTLWGAAGNDTLQGLDGNDY GNDTLNGRDGNDSIQGQEGDDSLLGGNGVDNLNGGEGNDT A A NVLN G GDGNDTMTGNNGNDTVNGGNGDDVITGGA GNDV GDDALKGQSGNDRMYGGSGNDFVDGGNGDNYLDGGD GDDV GRDRLY K G GEGEDIIVGNEGADRLYGDAGHDILNGGAGND T


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 $L Y G E A G D D R L L G G S G N D T D A E D G N D S L Y G G N G N D T L E G G A$
$F$
$F$
 ILGNNGNDSLNGGDGSDTLIFGGANN DFLVGGAGNDLIF VHLNGGSSHVYTGQGGDTVEGATGADKVYAQVSDLINSLG
 STGMGNTLGGGEGNTLNSAGDDSVGGVGNDVVATD
 LFGGGGVDIASYAGSVGVRAYLEGTFANTGDAKGSUDGLE YKLQGGGDDVIIDSQGAST

| IGGS GHDKLF G G $\square$ G D D T GP G G GDD Q I F LGA GRDYLSFAV |  |
| :---: | :---: |
|  |  |
|  |  | I Y G GE GNDKLYGEAGNDTYGGDGNDQ\|EGGDGNDII Y A GQ


 L Q A H GA Y N L L S G GT G D D KL G G G G ID LLD GGE GNDY LN G GF L D G GDGNDILDA GNS GDRYNK ELD MYF L G TKSDFEQFS Q


 L D G GE G LDD WMVMMS LG S E T S NLLT DDL S GDN T S T GK VL F D G T



 $L Q G G S G N D V L H G G D G A D T L G E A G N D E L D G G A G N D I L I D G D E D$

 $V$ F G G $\square D D D E I$ Y G GRGND DLLRGGSSD $\qquad$
 $V R G G A G N D D F L Y G G D D G D D R V E G N T D D F L Y G G R G N D F L Y G G E$ I D G GE GQDYLTGGSGA D LLLGGENDSLDGGADNDDLVGGS
 VYAPDNDSMNGGGGGDDTLLFNRD $L T G Q A G D D F L D G G Q G N D L L Y G N D N D Q L Y G Q Q G N D F \backsim Y G G A$ $V$ VA G G GKNQLFGGAGRDSLFAKNGFPDFLNGG $L T G G A G S D \| F R W T E D S V D G G V T D T D T D F S D A E G D S D D L R D$ L NGGDGKN RIA GGEGDDATGGSGNDKMSGGDGNDTI YA GD
 I F GGE GN DK I K G GN DK D RLLF G GK D D Si WG QA GH D F FMWLA G D

 MM G GS GNDRLSGGNGVNYLDG MS G GAGADVFVFTEWFD MLD





 $L N G G G G N D T L L G E N D D D V L N G S S N D S D N G G S G \square D T L I G G S$ D G G $\square$ GN D DI A A Q D GND TI NG GENDN LIGGS GTDLI YG DA

 $L D G Q V G N D I L D G G D G N D K L L G G W N D T L A G G A G M D V L N G G D$
 LD GS T GD D ALFGDAGNDTLIGGPGCDY LVGDAGDDVYLLA L E G GS GTNSY L F A R GD GQDTI ID D
 LK GED GDDILYGGNGNDIFGGANNDII YGGEGKDALEFEA


 LYGEA GNDVYRFDRG WGQDT DQNNDSNTNKVDADIE L G G S L G D D RLD G GNGNDTLNGHEGDDHLWGANGD D S L Q
 $L D S E G G T D E A Y G G R G N D R \square S V G A G N D R A F \quad G D D G D D \square L T$ I Y G GTGNDDIDDGGAED
$\begin{array}{ll} & Y G G T G N D D \\ L G G E G N D & V G A E D \\ & S G G G A G K D\end{array}$
$\square Y$ G G A G N D T $\square / S G G A$

UniRef90_D7A046
UniRef90_Q115C3 UniRef90_UPI00039DF06E UniRef90_W4HLB9
UniRef90_UPI0003A5CBBE UniRef90_M4UC97 UniRef90_UPI0002484B35 UniRef90_K9SEP2 UniRef90_L8M1X2 UniRef90_DOIBC7 UniRef90_UPI0003F54061 UniRef90-W8S0B8 UniRef90_I7DUF2 UniRef90_A3CMV6 UniRef90 A5VDI3 UniRef90_A0A023Y5G9 UniRef90_KONLD0 UniRef90_C8S2B9

170
180
190
200
A GDGNDQLHGEAGNDVLDGGSGND\|MSGGAGDDR

GGLDADADEGGLGSDLLKGGDGDDTLRGDADSDLLFGGND GGDDGLTVGMGDSVDGGTGNDGDTATFGSAVSGUTV
GNDYGVGNEGSDTYVFNSGWGQDTDYNYDTTAGRSDVITF GDDTI RGGSGNDVL VGGGFTNDTLSGGDGND
GDFGVDSLT GNEGRDLFVIQNGKGTDVITDFRDGEDLIGL GQNGDDNLSGGKGLDTLFGGAGNDTFNISRGGNTDRIKDY VD
GGMGEDD LE G DAGNDVIDGGAGEDELWGGDGEDTDWGGAD GFDTLEGGDGD DTMYGGNDDDLLLGGADNDGETGNDS G ISPPEKLRLAKSDNWNLSLTLGDDQLILNN
 GSSGDDRLGGSVGADVLRGGGGSDVLYGGEGDDTYEYNLG
GADGNLFVRAGAGRDALFTGMGNDTLRGDSGDD GNDQ STGNGDDGNNKI DSGSGLDKV $\quad$ GS GSGRDTFVLAAG ATLGGSEDDTDSNVENLTGSAHNDTLSGDASANVISGGAG ATLGGSEDDTISNVENLTGSAHNDTLSGDASANVISGGAG ATLGGSEDDTISNVENLTGSAHNDTLSGBASANVISGGAG
$G N D I G V Y R O N Y G H H T I A D E G G K G D R L H L S D I S F D D I A F K R$ GNDIYVYRQNYGHHT ADEGGKGDRLHLSD DSFDD IAFKR FDTSRNTLIGGEGNDVIYGSYGNDRI
SDDSYDVVYGNLGNDSCHGGGGNDWVRGGQGDDADYGGAG GSDTlGGGAGS DT@FGRHGDDF!GGGTGGDRVFGG\|G GDDTLYGGNGQDQLYGGIGNDTDDGGDGSDMLDGGDDHDS GGHGDDVLQGGLGNDALYGEDGNDSLAGGEDDDSLY
VDPDTGVENITNGGNGLAGFVAAMNITDTADGAQMTVNGN LVRNVERVNVWTGAGSDSFVGSAREDWVSTGDGNDTVTGG
 GDDLLSGGG DGKDKLMGYSGADVLDGGAGADRLYLGAG GADTLRGGDGDDGADTLIGGVGDDELRGGQGGDRLSGGAG GGGGDDRILAGAGADRVNAGAGDDVIVWRSGDTLIDSDDG TITHVDDDDGGSNVLT D GGAVGTDTVVLATGAGTYR】QGN GQNILRGGDGDDYLEAGSGNS
GNDF RAGNGDGGNDTITGSEGRDTINGGAGNDSLY
GDAGNDVLFGDYGNDRMSGGTGTNTLDGADGDDTAVFNFN LG DSVFEYLNEGUDTVEASTSHSDAFGVENLTLTGEVADD GQRGDDYLDGGDGNDEDYGILGSNTLLGGEGND
GNDLLTGGDGVDVFNYSVDSAANDGADTITXFVVGTDHDS GTDVLYGEEGNDGNDTLHGGTGHDVLFGNEGNDT
GNDSLSGGSGSDTYRFSRGWGQD VVYNYDSSTNKTDV
NYDASTSNDTVQFDASVS
Y NDTT
F D QLEVVIDMT GNGSQTDTNLLKTNDVLEVINDLDRDMDNKG GSDFLDGGEGDDFLDRLYGQAGRDLLDGD\GNDVLDGGTG
 GTNKLYGGNGNDLITSDSGADNLKGGMGDDTLSAGDGNNR WTDTTNTLAGGAGNDTDYGSFGDDTY LIFNDGDGRDTL GNDTLFGEGDAADTMYGGAGDDSMDGGQGND GLDRI $1 G G G G N D V I D T L Y G Q D G H D L I K G G S G S D Y D F A G S G$ LLQGMGAKAETLEDFL HVRVSGVGTQPVSTLEVG GNDVLHGDNGQDGDDALYGDMDNDALNGGLGNDTGTGNDA DFTKGEDLLGLSGGDTFN
GGDGSDNLSGDLGDDTMKGGGGRDSMYGGRDDDA GGTG\DSIAGGGGADVVFGGDSNDT■NGGDGNDT VENAPGSGL
TGSSAlAAGTGNGLAN LLYGNAGDNLLSGRGGADK LE GNDVIEVGHGNATID GDGGDNLVTLHGNHGDYRDTRT

 GNDTFVGNGADGADVVFGGDGTDGATFAGSTSGGYVFVIVN SVFKALGKQGALGDDAFTASDANDRI DYD DAKGALYYDAD GKDTLNGGGGGSGFDNLTGGAGEDVFVLRNDSYTVYEDFE GNDKVFAGSGNDGADRLGGDTGDDKI FGESGNDVLI GNDG GRDTMDGGAGNDVLDRMDGGTGNDTLTGSLGNDTFLFRRG SDVIA F GEGITATDVIATRSGEDLILSWRNGSDRDTVQYY GNDTLT GGVGADVFVMSNGRDTITDFRIEDGD LT GDASGDVYVSIENVIGSNFGDDHLVGDDSAND

AGNDTYVFCFGEGHDT TSDNHGNNALQFGQGDAVKDLH GDDILFGGAAGNDKLVGGQGSDLYVFSVGDGQDVIQEE
 GNDNLYGGAGNDTIYGGAGNDVIAGGDGNDF 1 N G G DKGNDN SLAPGTLGTQGFGIENLILTGSANINATGNGANNILV GSDYLMGGQD NDTLYGGTGEDFLFGDD
$F$ GSGlSAND IL
GGDGDDYLGGSWGDDTLDGYRGNDFLRGHQGHDT
GQAGNDILQGREGNDTLTGAAGSDSLVGGEDNDGGDSNDT
TIMNDIENVTGSAYADTFTGDAGNNVLDAGNGDDTVDYSAA
$G G A G D D D L R G G N D H D R L V G G A G N D T L Y G D A G E D T I S G D G G$

| UniRef90_D7A046 | $\text { F D G G T GAD QL\| }{ }^{210} \text { G G D GFD T A }{ }^{220}$ |
| :---: | :---: |
| UniRef90_Q115C3 |  |
| UniRef90_UPI00039DF06E | D D |
| UniRef90-W4HLB9 | T P G D |
| UniRef90_UPI0003A5CBBE |  |
| UniRef90-M4UC97 | G T G $\square$ A A T DV $V$ A T R S G D |
| UniRef90-UPI0002484B35 |  |
| UniRef90-K9SEP2 | GD D L N F A D LT $\square$ S QVGA D T |
| UniRef90-L8M1X2 | V ${ }^{\text {d }}$ |
| UniRef90-D0IBC7 | VDGDTNVDFT |
| UniRef90-UPI0003F54061 UniRef90-W8S0B8 | DDK L R GEEGQDQ\FGGDGNDD |
| UniRef90-I7DUF2 | LDGGDGNDVMDGGVGNDTL |
| UniRef90-A3CMV6 |  |
| UniRef90_A5VDI3 | F Q NS GVS F T T V |
| UniRef90-A0A023Y5G9 | D GNDQUFEGAFALEEVVTSA |
| UniRef90_KONLD0 |  |
| UniRef90_C8S2B9 |  |
| UniRef90-UPI0002D3BA4D | E G F DQ ${ }^{\text {E }}$ N F |
| UniRef90-E2CK92 | D D T 1 DGGGGADTLNGGAGNDTFTL |
| UniRef90_E2CK92 | DDTIDGGGGADTLNGGAGNDTFTL |
| UniRef90-E2CK92 | DDT DGGGGADTLNGGAGNDTFTL |
| UniRef90-14NBE8 | VGNDLIMNKA $\square$ N GV |
| UniRef90_S3TN06 |  |
| UniRef90-B4RDS9 | D D W WG DRGNDT\EGGAGADTFFV |
| UniRef90-W4HL72 | ADTIGAGDGNDFVVGGA |
| UniRef90-B3EE03 | LD G SLGNDM I IGSAGNDTLS |
| UniRef90-M1PTS1 |  |
| UniRef90_A3VZ42 |  |
| UniRef90-F4QKA0 | VGG DS S D T L |
| UniRef90-V7EI08 | P N A VT G |
| UniRef90-UPI0003772F2C | T GRD |
| UniRef90-A8LNC4 | A D |
| UniRef90-A8LTN3 |  |
| UniRef90_I1B035 | GD G |
| UniRef90_UPI0003B6FFFD | VN G G T F T S F E |
| UniRef90_UPI00046A87F0 | F S A S G |
| UniRef90-B6R118 |  |
| UniRef90-M5EJ35 |  |
| UniRef90-A9W5V8 | F A Q A G V' |
| UniRef90-U3HEZ0 | GTGNTLDNQL |
| UniRef90_UPI000301E7D4 |  |
| UniRef90-W9HDR5 | $\square \mathrm{T}$ G A G G |
| UniRef90-R1IXC4 |  |
| UniRef90_UPI000466704B |  |
| UniRef90-F2ZNR8 |  |
| UniRef90-E7P5A4 |  |
| UniRef90-A5WEE6 | LI IK G D S E D TVSLK G N |
| UniRef90_B2J010 | D D QLY GRDGLDSLNGGAD |
| UniRef90-D3Q322 |  |
| UniRef90-U3BPX6 | T D NDVT Q T I V Ve DL G |
| UniRef90_V9VWM7 | ANGGEGNDMLSSGSG |
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| UniRef90-G8B1F0 |  |
| UniRef90-K9XQT7 | N D T L S GVDLL |
| UniRef90-K6BXC5 | VDA GHPSQSIELAGVDLAA P F |
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| UniRef90-D8G210 |  |
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| UniRef90_V4Q727 |  |
| UniRef90-W4HIC2 |  |
| UniRef90-T0IT31 | G G G GAD $\square \mathrm{FLGFDVPEGARAADTII}$ |
| UniRef90-UPI000288707A | A K G Y EVA DKVA G R D G TVTLKN |
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| UniRef90-Q8Y2T5 | F Y S D A T G P Y R $\square$ D |
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| UniRef90_Q0FVV8 | G N |
| UniRef90-14Z108 | GS GA GKAVQFAK 1 D |
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| UniRef90-W0HGD3 |  |
| UniRef90-W6K831 | G G A D RVT DF T A L S A G A Y A |
| UniRef90_D8NQU3 | FSSDATGPYR\\|D |
| UniRef90-Q0IC95 |  |
| UniRef90-G8PVD8 | $\square \mathrm{L}$ G Y A G N D T L I G G N G D T L |
| UniRef90_C7RST5 |  |
| UniRef90-S6P115 |  |
| UniRef90-F9ETU6 | ASTDAN |
| UniRef90_A0A022IND3 | V T DLIA ALIN Y Q |
| UniRef90-F4XRN7 | ED G |
| UniRef90-UPI000401B683 | LS G N A G S T F AFS QVG T A N A DVVV |
| UniRef90_B0JGS0 |  |
| UniRef90-Q4ZRV1 |  |
| UniRef90-U9EUI4 | F S Q A T S N P L E |
| UniRef90_B0CEE1 |  |
| UniRef90-K9XYQ2 | LNGGKGDDT LIGGAG |
| $\begin{aligned} & \text { UniRef90-M4VE81 } \\ & \text { UniRef90_UPI00036012CA } \end{aligned}$ | TS GVVVDVLTGTASDGLGGTDTLL R D |

GNDT 1 YTGSGRDTVVGGDGNNIVNAGEGDNRIWTGTGN TNYLHYTGDEHVVLGGTAGNDILDASDGDDTIWGDGGND TGDGSDLIFSGFGDDTIDAGGGDDAlFSGFGND
 GNDTVGGNDGDDTISTNAGNDTIWAGNGDDVIYAGDGDD $N D T L A G G D D Y W V D G G A G N D D V H G D W G N D T V A G G A G N D$
$G N D T V F G G D G N D L S F G E E G N D$
GNDVIIGGRGFDLGGGGQGGDVWWGDDSDETVIA

GGDGSD $\triangle L G D \square G A D T \square Y G G D G N D L L F G N T G D D$ GDDVIDAG】DDDVIDGGQGDDR\|VGAEGNDSTRGGNGND NDSLTGNTSVNELRGEDGDDTLDGGAGNDRLFGGEGAD

GGDDVIYGNGGDDEDYGDEGND $\square H G N E G A D K \square$
FADGTVWTVNQTKSMAAF
FADGTVWTVNQUKSMAAF
$\square T G N S G N N \square L A G A N G N D \square Y C F N A S T P L G S D T \ Q E T T T$

L LS GGAGDDVYVVDNVRDVVRELVNEGVDEVRTSLNSY GGNDSISGGGGSDVLYGGSGADSLEGGSAKDHLHGGNGQD GNDTLLS GNDNDGLDGEDGND\|LDGSSGND\|LDGG

GDDQLYGENGDDQLVGAEGNDLLSGGAGADR $\square \mathrm{FA}$ G G $L$ GND

GADTMVGGVGNDTYEVADLGDVVSELGSADTDT GTTENDVIY GLDA GDDSLVGLGGN SAADGTYN GSTSDPFR
 GE TLiLRSHFSAESSNWSYAUDQLL
DY $\square Y$ GGNGDEP $\square Y$ AGAGDDHVDGEEGTDTGY GGTGNDRLRGGDGADSLWGGNGHD DATGRTESVTVD $\square R Q G A F S S F D S D H D V V V T F G T E \square E N A$ GGVGNDFDS GGDGNDTLDGG

G GNLNDADAGGK GND IIY G GK GEDCLF G GLG DF NDF $\square Q G G A G E D T V I A G A G S D R V E G N F G D D S L T G N A G D$

GSDARVTVSSHFYNNANGPYALA QV
YHGKDYLDGGEGDDEAEGGGNDDTIL

NNSNVVDVHDVNT
DDTLTGNDGYNDLRGNAGNDVLNGGGGADDLRGGAGAD D SLN GFAGSDSLFGVGGSDTLSGGDGDD

GGNDTVFGQGESDS $\square L G Q G G N D Q \square N G N R G N D T V S G G \nabla G N$

YFYGGSGDD VITGGDYRDVLDGNAGDD AGDDTFVGEDGTAYYGGSGDDGVGGGDYRDVADGNAGDD TGTGNDSVTSGEGYNSDSNTDHGN

S GGGGADTLEGTPWTD
TTYRLVQGNDADNLT LQGVDDGVPSLVIGH GDDVLRGAAGEDELFGNSGHDELLGDDGNDYL GGDDSLYGGAGFDFLMGGAGADLLDGGTYTDTASYSASDA


GDDT $\square$ HGGDHDDY $\square$ SGGTGRDVIFGDDGDDK $\square \mathrm{MGGRS}$ G

DNVVITAEKFNPLFLRDYYAY TI DAYDDEVDYSAPARNY GSDADDTIEGSDGNDTLQGLAGN GGDTFFGGVGNDSYTGGAGANAFDGGEGNDWGS
$\square S T G N G D D T \nabla F V G S N A S V S T$
G N G N D QVF $\square$ GVN G P

UniRef90_A3PPI8 UniRef90-Q2CIIO UniRef90-K2MHP4 UniRef90 B1WPH5 UniRef90-K9VEN4 UniRef90-UPIO00370493D UniRef90 ${ }^{-}$K2LDG2 UniRef90-UPI00034575CD UniRef90-U7QAA9 UniRef90_B7QP35 UniRef90-17EV83 UniRef90-UPIO0037FC1A9 UniRef90_UPI00036D292E UniRef90_A3Z1Q7
UniRef90-K9V2Z6
UniRef90-UPIOO04784EFD UniRef90-K9NH37 UniRef90-UPIO0046A71B3 UniRet90_UPIO003FE028E UniRef90_UPIOOO46EF24F UniRef90 Q9zIB3 UniRef90_UPIO004663F41 UniRef90-UPIo004663F41 UniRef90-A8YEJ1
UniRef90-UЗНА70 UniRet90-A3W4J2 UniRef90 G8AHB4 UniRef90-DOCRT2 UniRef90-J31PU8
UniRef90 V4MZV1 UniRef90-V4MZV1 UniRef90-UPI0003825ABB UniRef90-A0A023X6J5
UniRef90-V8KYK3 UniRef90-K9NH53 UniRef90 K9VK15 UniRef90-1716M7 UniRef90-Q8YYQ5 UniRef90-W0HF26 UniRef90 WOHF26 UniRef90-A8TSE7 UniRef90-Q2C9U2 UniRef90-A3XF81 UniRef90-B8IG94 UniRef90 UPI000379EBB9 UniRef90-K6E2E7 UniRef90-T2JUK7 UniRef90-ROE6J5 UniRef90-J2TYS9
 UniRef90-14C996 UniRef90 ${ }^{-}$KoG2H5 UniRef90-UPIOOO40078FO UniRef90-UPIOOO34A3652 UniRef90-F7ZBI8 UniRef90 ${ }^{-}$Q1111N6 UniRef90-UPIooo3613069 UniRef90-L8MHN6 UniRef90 K9TG17 UniRef90-A4BTX5
UniRef90 A5PCK8 UniRef90-17DKR7 UniRef90-L8XTX7 UniRef90-D3QAR6 UniRef90_C8RY14 UniRet90_UPI0002EDD47C UniRef90-UP10002EDD47C UniRef90-S9R269 UniRef90-U3BER8 UniRef90-N6YQK3 UniRef90 W4HMF5 UniRef90-A4EY26 UniRef90-D5VN39 UniRef90-B6BEX8 UniRet90-B1ZB67 UniRef90-N8QBH44
UniRef90 A6DZVO UniRef90-UPI0002FCC300 UniRef90-D3P5M2 UniRef90-Q7P0Q0 UniRef90-16RGY1 UniRef90-Q2CHQ1 UniRef90-L8LKC6 UniRef90-V4PTV4
UniRef90 A309N7 UniRef90 G774G3 UniRef90-Q3M5Y2 UniRef90_W819E3

ASVDDDDS DSLYGGAGIDDTHGGGGADVIDGGSGNDLLHGDG RTGDGVDSLNGGAGDDIITDMGGDDNIKGDDGNDVIHGGN NIINDGNFVFSSFGDDTIIDGGEGDDLIFSGFGDDQINGAN GSNSNDAIVADDANDPVYGNK TFDYSAPDGGGNSQAVVAVSGTSLKATDLVTSGGASQAFV TGDGGNDTTYGGGGNDTLHGGEGRNTIDGGTGNDYПTGGS SVDTGLDVVLGNEGDDTLFGGADNDTVDGGSGNDLIDGGLD TGRGGHDVLTGHEGEDHLIGGVGRDSLSGGRGRDYLSGGN NEGDDCVHGNVGDDVLFGNSGNDTVNGGDGDDLIYGNN


VINGTPNADTLQGTNANDTTRGFEADDLNGLN F $\square G G S \square D T \downarrow Y G G Q D N D A L L G G A G N D L L G D L G N D T L D G R S$ GYNSHEVLSGTD TTNNDPDGGLDALEDEDDGSNPGGPDGAPGNGRDTVDGGS TLIGGA GIDSAYYTAAAAGVTLDLATSGTGGEAAGDSFN HDSVTGGGNTGRFDHGGGDDNLNGDG FGGAGDDATYGGEGNDTIEGNEGKDKTYGNDGDDTIKGGE TSTDGNDVLTGYASDDVISGALGDDRIDGRAGNDVLSGDQ TSTDGNDVLTGYASDDVISGALGDDRIDGRAGNDVLSGDQ GGUDTLDFTGTNTAVRVNLGUTTNQTAVTNNLRLTFSANN TNDGLSGLAGDRVNLGYAGNDTLLGGEGRDTHDGGL TLGANLELTFAGTGNFAGTGNTLDNMIVGGSGNDTLTGGA VLHGGIDRLTGGGGNDRLFGEGGRDFAQGGLGHDMIRGGI NGNDSLDAGDGNDYLESGNGDDALDGGSGNDYMVAGU NGNDTVDAGS RПWGGDGDDDLYGNDGПEPGQTDDDQTVGGAGNDSISGGL DADDNPGPANPGRATGVNPNACTUTGTSGNDTLRGTA VWTSLANYTLSANVDNLFFGGSGNFVGNGNELANTMVGGA DFLYGGEDDDTLYGGFGDDQLFGENGDDFLDGGY YTNTTGSQSATAKVDLDRTQAGENTLDGTYRSEDLLGRDT LGVNLENDTLVGNQATLGDGNDLDNRDTGNNADNVLFGEA QFADGTVWDRAQLTAALLDGTESNDTLTGYDTADTLGA GQ DGNDETLGGDGDDSTFGGNGNDSTDGGNGNDVITGG YGGSSGDRLWGGDKNDRLFGNGGADRLYGESGDSLLGEE FGALGNDRIVGNYLDNLLRGHGGRDLLAGKAGDDQLEGGW EGNNLLFGDENDDRUTAGDDNDLAYGGTGNDVIFGQT YGGKGNDTMFGEEANNTLFGDEGDDLVYGGSGDDRIYGGK DYUQGGSGDDVI IGNEGQDQL LGNAGDDSIEGNQ RFADGTVWDAAQDKSVVTSTAGNDQLTGYEGNDSLSGGR GGDGNDVLWGDADESKLSLEFHGKDTLNGGAGSDTLYGNG DGNDLIYGMGGNDILKGGEGADVIAGGGGRDLIHGGN NDDDNRMFGTSQQDYLYGRSGDDALYGYDGDDFLYGEE NYSNHADEDYAKDGVDFVYAGGNNDIIYGGDDLDLLYGED THNGGAGQDTAYYFESNAGVTVNATTGQGLGGHAQGDLLI YGQDGDDSLSGDAGSDSLYGGTGSDTLIGGTGSDFLIGDS

DGD DSI RGGRDADSLLGDAGNDIVLGDRDLDT NGGQ DVLIGGYGNDHLNGGTGNDYLDGGDDHDALYGED MTVLQGTTGSDSLMGSS NT TGGUTSETHHGTS T पDGGGGDDEDDGGDGTDLGGEGDDALDGGNGDDTLRGGG GGDGNDMLNGLGDVDTLVGGAGDDTLLGGDGADVLNEATD VGNDTLYGA AGNDLIDTAYLGDPDGDRIDNNDASLVGHAPNDDLVVAGD GS D GGAGGDDLLSGAGDDDELMGGDGTDSLLGGAGNDTHHGEA TLVGE GSGCDHWLYAPVAGALTGG GGNDTPDYMAGGTGNDTLTGGAGNDTLVGEDGNDSVVGGD SGHTGDDTLVGGRGRDSLRGGQGNDSLRGNAGNDDIDGHE AVNDDDRRAGAQSGGDAQGDTVGDERVIGSNHNDTVGSN EGGDGADTLIGGDGDDTLDGGAGADTLQGGSGADILIGGA AGDEAADSLSGGAGDDQi GGYGGGDWI DGGTGSDSIYGQD
 TDDNDTLIGEQGHDGLAGGPGNDTGEGNGGNDSISGSD HADSLTAGDTAVWFWGHGGDDVEHGGA GTELDGDT|RGGNVDDWIQGNG
GFSSSAQETGDPDVEVVYWGSAG
IGTAGDNTIRGTMREDKIEGLGGDDSIKGRGGDDLIKGGT DSLTVISDGNSLQGASGDDTLIGGTGDDTLLNGN ASTGTSAQMGGGGGNDTLAGGAGADNLSGGNDNDLVSGAG $D G \square D G Q G Y A A D Q K Y V A L Q L G E D A S T V T D Q D V H E F V A A N A$ MA WYGTSGDDVYDAPTGLNTLFGGA ASNTTANGGNGEDEDTVIEAGGNNLFGAAGNDTLQVIEG
UniRef90_A3PPI8 UniRef90_Q2CIIO
UniRef90_K2MHP4 UniRef90_S6BKM0 UniRef90_B1WPH5 UniRef90_K9VEN4 UniRef90_UPI000370493D UniRef90_K2LDG2 UniRef90_UPI00034575CD UniRef90_U7QAA9 UniRef90_B7QP35 UniRef90-I7EV83 UniRef90-UPI00037FC1A9 UniRef90_UPI00036D292E UniRef90_A3Z1Q7 UniRef90-K9V2Z6 UniRef90_UPIO004784EFD UniRef90_K9NH37 UniRef90_UPI00046A71B3 UniRef90_UPI0003FE028E UniRef90_UPI00046EF24F UniRef90-Q9ZIB3 UniRef90-UPI0004663F41 UniRef90_UPI0004663F41 UniRef90_A8YEJ1 UniRef90_U3HA70 UniRef90-A3W4J2 UniRef90_G8AHB4 UniRef90-D0CRT2 UniRef90-J3IPU8 UniRef90_-V4MZV1 UniRef90_V4MZV1 UniRef90_UPI0003825ABB UniRef90-A0A023X6J5 UniRef90_V8KYK3 UniRef90_K9NH53 UniRef90_K9VKI5 UniRef90-1716M7 UniRef90-Q8YYQ5 UniRef90_WOHF26 UniRef90-W0HF26 UniRef90_A8TSE7 UniRef90_D9SS98 UniRef90_Q2C9U2 UniRef90_A3XF81 UniRef90_B8IG94 UniRef90_UPIO00379EBB9 UniRef90_K6E2E7 UniRef90-T2JUK7 UniRef90_R0E6J5 UniRef90_J2TYS9 UniRef90_A0A021X8M7 UniRef90_I4C996 UniRef90_K0G2H5 UniRef90_UPI00040078F0 UniRef90_UPI00034A3652 UniRef90_F7ZBI8 UniRef90_Q111N6 UniRef90-UPIO003613069 UniRef90_L8MHN6 UniRef90_K9TG17 UniRef90_A4BTX5
UniRef90 A5PCK8 UniRef90-I7DKR7 UniRef90_L8XTX7 UniRef90-D3QAR6 UniRef90_UPIO002EDD47C UniRef90_UPI0002EDD47C UniRef90_S9R269 UniRef90-U3BER8 UniRef90_N6YQK3
UniRef90_W4HMF5 UniRef90- A4EY26 UniRef90_C7LRJ7 UniRef90-D5VN39 UniRef90_B6BEX8 UniRef90-B1ZB67 UniRef90_N8QBH4
UniRef90_A6DZV0 UniRef90_UPIO002FCC300 UniRef90_D3P5M2 UniRef90_Q7P0Q0 UniRef90-I6RGY1 UniRef90_Q2CHQ1 UniRef90_L8LKC6
UniRef90_V4PTV4 UniRef90_A3Q9N7 UniRef90_G7Z4G3 UniRef90_Q3M5Y2

90
100

120 GDDII DGGTGDDRITGGAGNDQMRGGAGRDTMSGGSGRDS
 GNDAI FSGFGNDNIDAGDGNDFVNAGKGNDFVFGGAGVDT GNDTLIGGSENNTFFGGKGDDALFGDDGNDLLFGNDGNDT
 GADVLKGDTGDDEISGGEGNDYI EGGADDNDEVSGDEGDDV
 QADTLNGDAGNDTMYGGHGNDLMNGGTGNDVMMGGQGEDT GYDTLYGGYGDDFLHGGKQPDNLRGEAGNDVLVGGAGDDT GNDLMDGGAGKDLMTGGAGNDRLMAGDGDDVMMGGFGSDL
GADRDFGGEGSDSLDGGNGNDRLFGELGDDNLLGGAANDT

 S I WVF GSDFDDSLTGDAGNNRLYGEDGNDDLNGAGGNDR
 GDDTLYGDLGADILSGGAGSDVLYGDDGADKLAGDAGNDR GDDTLYGDLGADILSGGAGSDVLYGDDGADKLAGDAGNDR TDEN $\square$ GDSGNDRLTGNSLNNTLTGGGGNDQLTGQDGNDS GDD MMAGFGDDSVVGAAGNDVVAGGAGNDTLSGGSGDDS GADTLIGGDGDDRFYFDDADAPLQGGAGFDTAVGSVGASLD GNDRLLGQGGNDRTYGGSGDDVLNGNVGTDRLFGGAGNDK GTDTLVGGNGDDTLSGGSGNDMLDGGSGNDLLVGDDGDDT
 GNDQLWGGIGNDSLYGEEGDDKLYGEAGNDRLYGGAGNDV GRDVI CALGGNDRVYGLGGNDVLRGGAGKDFLYGGDGNDR
 GYDQLNGGSGNDELRGGYADD LIGGGGNDKLDGEFGDDF SNDTI IGNDGNDILDGLGGNDTLSGGNGDDULAGGAGNDT GNDULNGGAGNDELFGSDGNDVLNGGAGNDELFGSDGNDD GNDTLYGRNGNDVLDGGDGRDILYGEAGDDTLLGGAGNDT
FADTLSGGDGNDTISSGDGADIVSGGNGNDR NAGQGSDT GNDTIQGGTGVDNLLGGNGNDNLDGGLGNDTLDGNAGNDV GRDRLYGGSGGDRLWGDEDKDLLKGQSGKDRLYGGGGADK GDDTLWGDQGDDVLFGGRGKDRVKGGTGDDRLDGSRGKDT GNDALFGETGDDFIGAGSGDDFLSGGDGNDTLFGEEGNNL


 GEDTIN GGGLGNDTVFAGDDNDYVDGDDGNDLIYGHNGDDT GNDRI DA G G GHNQVRGGAGNDRIVSGNGNDKLWGGEGDDV GNDTI Y GEKGS DVLMMGGQGNDVLD DGS GADLLMMGGK GD D T GNDFI M GEAGDDVI TGGAGNDRLLGGYGDDTLYGSE GADW $D V E N I G G S Q F N D S L V G T A T K N D L R G Y A G D D V L R G G G G V D E$ GS D S L M G G E GND TLI G GE GND TL DGGDGT D G G G V Y D S GD D T I F A GS GD D F V A GAT GN DLI Y G G G GN DTVR G Y S G D D GRDTI Y G GKEND DVAGGEDNDFVSGDVGDD\|VVGDGGNDT
 GNDFI Y GWEGNDVLNGAEGDDDL

 TNDAANIVAGNNVLSGEAGNDNIDGGEGNDILRGGGDDDN GHDVLLYGNDGNDLLKGGGGDDSLYGEDGDDVLEGGAGNDT
 $A D Q Y L A G Y A T D D L I D G G A G D D T I V G G A G N D K L A G G A G A D T$
 G G D L L R G G A G D D A L F G H D G S D T L R G G D G D DV L Q G G L $G G N D L L F G A Q N \quad V G G G P G N T L N G G A G N D F L L G G N G N D I$
 GTDYLYGMDGNDDVRAAYGNDTLDGGAGADTLWGAT GTNL GNDTLD G G S GNDTLTGGAGADTLTGGRGDDTLDGGA GADV GDDSLK G GE GQD LL H GEDGAD WLEGGAGSDSLYGHF GSDT $D L D Y$ I A G GPGND TI Y G GNGFDQI DGEA GND TI YGQD GND Y
 GKDCLYGEEGYDKLMGGFGNDFLDGGS GNDKLIFGNA GNDW

 GD ILK GNR GD D S I K G N S G D D RIIR G GS GDDNVK G GS GDDN

 SRQFAFGGSGGNDTLITSNGSYNRL

|  |  |
| :---: | :---: |
|  |  |
| UniRet90-Q2CLII | HGGSEADYLSGGAEADHLAGGDDDVLHGDEGNDRLDGG |
| UniRef90- S6B | EGDDWIEIGGTQDGAPGDNFSPF何EVAGNDVFVGGG |
| B1W | KGNDTVDGGKGNDGG |
| UniRef90-K9VE | $V 1$ GGDGNDDELGGKGEDVLYGG DGNDADSGDLG |
| UniRet90_UPIOOO370493D | MLGGAGA |
| UniRef90 K2LDG2 | DGDNYVSAGEGNDITIGSGDDSILAGSGND |
| UniRef90-UPI00034575CD | GGAGSDRIEAGSGDDVVMFDSEDTVVKGGDGYD |
| UniRet90-U7QAA9 | GDTADENEI EA |
|  |  |
|  | 兂 |
| UniRef90-UPIO0037FC1A9 | WT GNDKLSGNLGNDLLYAHEGHDVIFGDSGD |
| UniRef90-UPI00036D292E | DGGFGNDMI HGGEGTNWI TGGEHDTI TAGWGDDVIDGGA |
| UniRef90-A3Z1Q7 | FGNQGDDLI LGNEGHDYLVGGQDDLI RGGRGRDLI SGGL |
|  | GGEGKDTLDGGAGADSLVGGFEDELSGGDGNDLLFAN |
| Ref90 UPloou4784 | GD |
| UniRef90_K9NH37 | FLDGGEGDDG |
| UniRef90_UPIO004 | GNDSLEGGQGEDT |
| UniRet90_UPIOOO3 | GND |
| O27183 | GGNGDDVAVYHSTSDSNSPGNGLTDGTS |
| UniRef90-UPI0004663F41 | LSGGTGDDLLDGGSGNDY |
| UniRef90-UPIo004663F41 | G |
| UniRef90-A8YEJ1 | LIGGSGDDLLTGGNGSDSSNLGTDA\SDFTPGSDK\VLSK |
|  | GAGNDYLNGSAGRD |
| UniRe990-A3V | (1) |
| UniRet90-G8AHB4 | AVS |
| UniRet90_DoCRT2 | GVGDDKL |
| UniRet90_J31F |  |
| UniRet90_V4MZV1 | LLGDTGHDVLYGSDGSAGGYSDDADGNTDGHPDFDRDSLD |
| V4MZV1 | VLYGSDGSAGGYSDDADGNTD |
| UniRef90-UP1000 | LQGGDGDDVLYGDYAAATNDIGGDDLIYGGAGNDSLHGGV |
|  |  |
| UniRef90-K9NH53 | SLASYTLDANVENLFFGGGGNFAGSGNAQANT |
| UniRef90_K9VK15 | N |
| UniRef90-176M7 | LDGGAGNDTATYUDATAGVTVSLITS SAQNTVGAGTD |
| UniRef90_Q8YYQ5 | NGGAGNDELDGGSGNDSLDGGFGSDTYVFRKGSGQD |
| UniRef90-W0 | LTGGSGNDILDGGSGNDSLDGGFGSDTYVFRKGSGQD |
| UniRef90-A8TSE7 | $\checkmark H G G A G D D$ |
| UniRet90-D9SS988 |  |
| UniRet90_Q2C9U2 | A |
| UniRef90_A3XF81 | DGQAGDDLLSGGHGRDIFIGGADTVSDF |
|  | DENDDRILAGTGNDLAYGGTGNDVIFG |
|  | GGAGNDSIAGGQDD |
| UniRef90 K6E2E37 | N |
| UniRet90-T2JUK7 | GGS GA |
| R0E655 | GGEGDDRLDGGANNDI |
| UniRet90_J2TPS9 | DGGAGNDTIAGDGDNTLSGGSGADQLTAGD |
| 7D5E6 |  |
| UniRef90_A0A021X8M7 | GNGNNWLSLAEGND |
| UniRef90-14C99 | GNGNDFYGAGNDTYYFYKGAGRDEDFDVEGEN |
|  | GGNGN FLGAGNTY |
|  | LIGDAGADTFVFGSTADSSVTGVDLIHDFGSDQGHLLAT D |
| UniRet90-UPIO003 |  |
|  |  |
| UniRef90_O111N6 | QS GF |
| UniRef90_UPIO003613069 | L WGDAGNDQMHGGFGNDYLDGGDGDDVLHGEGNE |
| UniF | QGNDILNGGEGND |
| UniRef90-A4BTX5 |  |
| UniRef90-A5PCK8 | LDGEAGDDTIDGGAGDD |
| UniRef90_17DKR7 | G ${ }^{\text {N }}$ |
| 90-L8XTX7 |  |
| 3Q |  |
|  | GND |
| UniRef90-UPIO002EDD | GNDLLQGSGNDTLTGG AGDDV |
| UniRef90_UP10002EDD47C | GNDLLQGGSGNDTLTGG |
| SgR |  |
| niRef90 U3BER8 |  |
| UniRet90-N6YQK3 | L TGGDGDDVLVGGMG |
|  | GVGSDS YGGEGN |
| UniRef90- $\mathrm{C7}$ L | LGGDGDDKLYGQGNNDTLAGGAGDLLDGGTETDTADYSA |
| UniRef90-D5VN39 |  |
| UniRef90-B6BEX8 | GSGADLLHGGQGQDWMEGADDTLHGNDGDDS |
| iRef90_B1ZB67 | PGEDVLYGGQGDDFLVGEQG LDLVGEDG |
| UniRet90_N8QBH4 | LGRDVFRWEAGDQGlVGTP A |
| UniRef90 A6DZV0 | ITGGAGNDVVAGGADSDTLQGGENDSMSGSFGNDSIDGGE |
|  | D D |
| UniRef90 D3P5M2 | VAGGGGADL YGDAGNDLLKG |
| eef90-Q7P0Q0 | ( |
| UniRef90-02CHO1 | L GGNGLDS |
| UniRef90-Q2CHQ1 | KGNSGDDTLKGGSGDDK GGSGDDFIKGNRGEDRLDGGS |
| UniRef90_L8LKC6 | LLGDSGNDTLISGIGGDNLTGGMTGDDSLNGGGARDVLL |
| Uni | S |
| G7Z4G3 | L'GNNEHDLLVGEDGND |
|  | LFGQAGSNRLSGGAGADSLPTSKNTVTDFAVGVDKIGLGG |
| UniRef90-W819E3 |  |

## UniRef90 A3PPI8

 UniRef90-Q2CIIO UniRef90-K2MHP4 UniRef90 B1WPH5 UniRef90-K9VEN4 UniRef90_UPIo00370493D UniRef90-K2LDG2 UniRef90_UPIO0034575CD UniRef90-U7QAA9 UniRef90_B7QP35 UniRef90-17EV83 UniRef90-UPIO0037FC1A9 UniRef90-UPIO0036D292E UniRef90_A3Z1Q7 UniRef90-K9V2Z6UniRef90-UPIo004784EFD UniRef90-K9NH37
 GADSFDGGADFDTVNYLNLSSG
FGALAAF
GKDTLKGGEGDD
A $\square \mathrm{FTALQS} \mathrm{\| IGNGFSQAAEFASVDDDDLVATSSAF} \mathrm{\| VYSN}$ GNDRLDGGNGTNYYFARGDGQDVIVDAYEGVVTUYA GDDVISGGDDNDFLAGGGRNDIDDGGSGDTUNGGAGNDQ GSAFNDTLTGGNGSDTLIDAGDGDDVLY IDADDALVSGGAG GNDTLRGDSQTD
SLINAGAGDDTGDSVATVTGGSGRDTYLLDRFSVGQLLVSD GGQGNDTLIGGNGEDRLTDWVGNNLLQGGDDGDNLLGNGT GGQGNDTLIGGNGEDRLTDWVGNNLLQGGDDGDNLLGNGT GNDLLDGGAGNDY LLEGGKGDDTYVVDGSGDTVVENAN G
FADTYDFNQG DGHDTDIERDGTTLVFGAG
GNDVLTGGGGNDVMSGGVAGNDTFVFAAAGFGNDQDFGFG YGPEI DADTLVGGTGLDTFVLGAPGQAFYNVDGDADYALI TLTNIENLTGSKFDTLTGNNSANTDKGLEGNDTDSGLGG
NYAYNDTTPNKLDVVRLEGLNADDV
NYAYNDTTPNKLDVVRLEGLLNADDV
ESAADDTLVGGAGNDTLYGGGGNDLYRFSRGDGSDF $\square$ RDE
GSDR $\square K G G A \operatorname{ARDK} \square E G G S G K D V L T G G S G A D D F \square F D R R$ HGDMGDLLDQAQDTDA
GDDFDGAGAGDDGDDSRFGEDGNDLLFGNSGDDELVGGAG GDLGDDALSGGRDDDFLFGASGSDILLGDSGNDELVGGLD GNNTVFGGPGNNLIFGGKGDDVIHSGRGDNTVYGGQGNDR GNDYLSGDVGSDTYVFGRTSGQDTIFNYIVDNMSTDVLED GSNTLNGDEGNDTLVAGDGGNSLLGGNGNDSLTSGAGVDN GDEGRDGLYGNDGADVMNGGLGNDELFGGTGEDNGV
GNDKLLGGEGDDKLLGQAGNDRDIAHEGNDALDNGSGNDT TSSINGSGNGNSAANKLFGDLGNDTLDGRAGNDT
FANGIRPQDITIDATTNDLGNVSWH|RVNGTDDQVFDYDQ
ANTTVAGDQAFTFDGTSDFTGVAGQLRFFTTAEGTLVWGD GEDLLKGGGGSDLIRGGEGHD
GNQGNDTHDGGTGDDSLSGGKDNDLLLGGEGRDT
GGAGNDALYGENEKDHLYGGDGNDYLDGGNDDD
LLQGETNATIDNFLKLIVDSDTGNATLLVSKDGHLSPAGD GSDRLFGEAGL DIFYLEWGADTVIGGQDKDTFILFPT GFSGLQTGRLSNSAFHIGTEAHDSTDQVIYDNQTGALYFD GNDLLHSNFSGDVADTLDGGAGEDTALIDMGSS
LNAD
GEDLVSGGYGDDDLRGGGDDAGGGRDTVDGGDGTDESFSQ
DVLNVSSMTGDVVLDLSAGNPASDEDGTLTSGTD
GNDRLDGGAGDDTYLFGKGSGQDTHYYVNEARAGKVDTXQ AGVGDGGDF LNAGDGDDTGDIGAGDIATGGAGAD
AVGETGHNTMDELLSSTSGNDLTLDI PHGETGESQT IVIK NDVFVFGGGGADGSNVITDFSTGDRIRDGG
TDTLDFEAAGAGGANVTFGGWEYGTYAFGTATGQFYEVEA GDDTLLGGDGDDTDRGGSGADS $\square D G G S G D D R L F G S R G Y G D$ SSAAVNDDLRRAGTQSGGDAQGDTLVSDERVIGSNHNDTI SD SL
GADALFGGYGNDMVSGAGDGTEQDYVNGGDGNDTLI
GGEDDDSVHGGNGDDLVDGDLGNDTLYGDAGNDTLFGDFG GGDVLDLSSLLSGASRVGTNSVNDYLFFTENAGNTEDHDS GADDIGGGTGRDT NNAGAGDDRVGGGEGNDSGFGGDGNDF AGDVTSGSYAQTQNDLVYGDAGNDRYIVVSQYDAGTVSFD
GNDQLTAAW YGWNNVLEGGTGNDTLTGSFARDVYLFNLG
GDDRVRGGKGD

> DRリVVSAGEDS DDGGSGDDTFVF

GGPGNDTLDGG】GNDNLRGGRGMDRFQFNSVGDGRDNDAD GSFTTDALTGDDGDNLLNGEGGNDYLVGLGGKDTLNGGAG FD DNQDKLDLSDDLQQENGGNLEDYLHFTVDNGSTTDEDD GDDTLHGDYGTDGVDALTGGAGNDILYGGNDSDNYYYTCN
GGVTQFSALSLQGADTLVKGGATELVYGQGDNSTSLLTLTD

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UniRef90－Q7P0Q0
UniR Refo－l6RGY1
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NDMLLGGDDDDTLIG
$P A G$
पDADNVEAFETNASG
VAANPGRGEDTLDGAEGNDTFLL
VNGDGVADFVDNVTGTLTSADILL
$\triangle T A G E G R N T \| D T G S G D D S D T$

F
A G D D
S D

LDGGQGDDILNGDEGNDT■

S S G
MTGGTGADQFVFSAFVAGESDVI
F D
FASGASGD【L
LEGGAGGD
LEGGAGGD
EGHDTV

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TDYLPFADTI QLQGSAS
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F
SGRDR $\square$ RD F
A D
NDSLEGGDGLDTLAGV
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LT
AAGVAVSDVTV
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Sad TTTLEGAASQ
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T

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ANNDGHVDQT $\|$ VLDGV
SDG
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UniRef90－J3HHG2 UniRef90－W7LS99 UniRef90 Q3AX46 UniRef90 K7T0M8 UniRef90－F4QGJ7 UniRef90－S6LVC6 UniRef90 UPI000377D288 UniRef90 G2KQ90 UniRef90＿A3XC27 UniRef90＿B2J026 UniRef90 F4XMZ4 UniRef90－K2ESM1 UniRef90－UPI0003750432 UniRef90 K9WMZ0 UniRef90－JOBT04 UniRef90－W9H978 UniRef90＿Q5MK32 UniRef90 UPI00047D3275 UniRef90 C7LX97 UniRef90－M4Z6W6 UniRef90 D1B1P5 UniRef90 UPI00034B692F UniRef90＿UPI0002489F97 UniRef90＿A0YZZ7 UniRef90 B0T558 UniRef90 UPIO0037BBF05 UniRef90－B7QRA9 UniRef90 W3N2P4 UniRef90 A5GSF9 UniRef90－14JFQ3 UniRef90－UPI000346038C UniRef90 K9XVS6 UniRef90－J2WC77 UniRef90＿A4WPF2 UniRef90－UPI0003811FF4 UniRef90 W4LNB5 UniRef90－UPI000255A713 UniRef90－M5EK34 UniRef90 K1RVF5 UniRef90 UPI00037A65A1 UniRef90－S9QWGE UniRef90－UPI0002FED69E UniRef90 K9TEB1 UniRef90－Q87NB6 UniRef90－UPIO0037AE9F9 UniRef90 G8PUZ UniRef90－J2WA65 UniRef90－E0TBS4 UniRef90－A5PAF2 UniRef90 L8MFU5 UniRef90－U7GJX6 UniRef90－D5AT01 UniRef90＿UPI0003A56793 UniRef90 W4MG39 UniRef90－R4SVM6 UniRef90＿L8M7Q3 UniRef90 I4Z2S9 UniRef90 F6BQA6 UniRef90－J8WA8 UniRef90 UPIO004784486 UniRef90 Q1ML69 UniRef90＿F6G8C1 UniRef90－K9RK18 UniRef90 D8FTA8 UniRef90－F3EZI7 UniRef90＿K9VGT1 UniRef90 N8XWA0 UniRef90 UPI0003763E3E UniRef90＿A0A024JOF6 UniRef90＿A3VGL9 UniRef90 S3H818 UniRef90 K9FGS3 UniRef90－WOIDP8 UniRef90－UPI00038284B4 UniRef90 UPI000369B8BF UniRef90－A3W239 UniRef90－C7LX99 UniRef90 Q9LAE6 UniRef90 B6AUY8 UniRef90＿Q48NC4 UniRef90＿Q48NC4 UniRef90 T0GHP3 UniRef90－K1ZVI1 UniRef90－A5P720 UniRef90＿A0A017HGIC UniRef90 UPI000469F2F3 UniRef90＿UPI0003B542CD UniRef90－D7N1M3 UniRef90 Q9XDI1 UniRef90－UPI00046DE105 UniRef90－UPI000378FDDS
$10 \quad 30$

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DVLVGGKGNDTY\｜VGEGD

TFSDGTTLSTND VNLQGT
 GGAGNDALFGNGGDDRIEAGAGDD GQGGNDVIVPGPNNPDATUFGLSGNDSUFGGDFGN

A GT GADEVYGGGARDTDGGGVGGD
GNDK $\square$ RGFSGSDT $\square Y G G A G N D T L Y A D F E N S V D S D S A D R L$
NGDDK LY G GNGNDGNHNDYLHGGSGTDTAQFSGR GGLGDDVLIGGAGADVLDGGAGMD GDDS $\square V G \square G G D D N D V G G E G D D L A F G N R G Q D \prod L$ AGNDLLDGGSGAGVDTMRGGAGNDTYNVYHNGD $N D \| R G L D G E D T \prod F G N G G R D R \prod E G N D D D D L L Y G G A$ $D N T I D G G A G N D \| I F G K G G N D Y L V G G L G N D Y L S G G D G D D$

GNDF $\square Y$ GRAGVDA $\square N G D D G N D F \square A G G A G D D L L N D T \square N G G$ GNDYINGFGGDDVINGGDGDD
DGSTQQTLNVNGDPNETGSDT $\square Y G G$
$D V N G G$

GNDTLRGEAGTDKLWGGTGTDHLEGGDGDDQLWGG
$D \square L R G G N G H D T L I G G N G N D T L S G G V G D D K Y Y V H D S N D$ $G T L G R D D L V G T D G D D F V V A$
GDDTATGGEGDDK $\square Y G G D G \square D N L S G D N G N D L V L G F A G F D$ TGYGEDGDDVLDGKAGAD

HLY G G
GDDQ $\quad$ FGEAGNDTIVAGAGRDT $\Pi$ NGGADSDTVDYSRSEA GNDWLRGGDGPDRLYGDAGLDRIWGGDGNDLIRGGADDL
$T \square V G G \square G R D H \square I G G D G G A$

GNDA LK GQS GNDRVYGG】GDD VVDGGGNNY L
GVVIDTG $\square$ GNDTVNLGMGSDT $\square Y$ VGESRSPTQDVDE $\square P K D$ DNT $\square R G A A G A D I L D G G A G A D S L I G G A G N D T Y I V D N A G D$ GNGRNT T $W$ WGNGGNHVTVGSGNDT $\square G \square G N G S N V V S$

GNDNPETPQQGDDTW
$\square G S T D S \square R V V Y H F Q S D A A G G Y Q \square D R L$
$\square T$ G GA GADLIF DGGAGVDLVS Y LEASA

TGTLSSTATATATEPSNGDSKT

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GNDQLYGGDGNDR LEGGEGND L LHGGAG DDTVRYATSGV
GNDT\｜LAGAGDDVIEGGAGDDLITDSAGRETVTGGEGND GADYTTNSGNTVYKWKPNEGVTYVNGVAADNRIFATIWDG MQGTAADDVYYVTGSTDK $\operatorname{V}$ E EAVNGGTDSVYSNVSYV

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 ENIIKPGVERGVAMTGYDGEASGFNRWRGYDDTADVFLGGY SG $\square D T \square N L S N F K K D L V V N L N G G Q L S T M S F D V A D Q N W I G G S$ GSDNNDLISGSDNRSDLILGHNGNDILFGKGYGDLLYGNG GGAGTNSFSGGEGNDWGNAGTGTSAQMGGGGGNDTLTGGA TEGNDNVWGYATDDSLNGGSGDDSLYGQAGNDTLVGGA YGGEGADFLYGEAGNDTLEGGAGDDELYGGDDQDDLRGGT D ANDALGTVDVGKDGSVDDGFVNDEDITGSNYDDKIDGDA
 NSKDSLYGGTGNDSLDNAKGNAYLNGANGNDELGRGGG K 1 NNGNDCI 1 GGPGNDKLYASNGNDVVFGNEGNDKLDGSN $M L S G G F D L L D G G N Q S D R L F G G E G D D Q L I G G N D S D V L F G D A$ T Y NAAD VTEAADEWDDTVRATLASYALGANVENLTYIGT GNDTRNGTAGADA DRGLAGNDTLNGKAGNDQVWGGT QVVEAAKGGNDHVYSSVDYTLGDNLENDTLAGAALQGTGG DGDDTLIGGFGRDTLYGGDGNDSMIA GGMYEGGHHMDGGA VDADTVHLLDSTSDTDRIVGNGGNDVIVRFGGNDR|LAGGA AGNDTLI GGAGNDSLD GAGGDDTLAGLAGNDTLDGGN VASDGADLLLGGDGSDWLYGQDGADTLDGGAGDDSLSGGN EGNDTDDALYGGQGDDYLF G EDH AFGGNDVIYGGTGSASABENGGGSGSRLIGNA
 SNRGNLNSTRWQNTRDGRDRIDGNDVLNGWKGKDNLLGGLL
 KGGDGDDTLLSGQGDDTISGDDGNDUISGDLGVDLLDGGD TVTENVSYALTSNVENLTLGTVALQGTGNDLNNVIIGNN $F \square S T G A D T \| L G G K G E D R L Y G Q G G D D L M T D E S G N D R F F G G A$ ADNDTDRGGDDSDVIDLGTGDLGDDQLGGYSGEDTLAGGA FGGDDSDLLYGGNGNDGGYDDLYGGSGIRDSDDHTPGD AGDDT ILGGGWDDDLVTDNGADDGEEVETDGNNNFIWAGA

NEAANTDFADFGDDRVLGGAGDDYLVGGGGDDYLQGGS GGNDWFDGSTVSRPMRLIGGTGNDVLTGGCGADTVY NPGGQNPLQGTPMDDVIAGNPIIPNSINGQSGNDTLFGGE SGDDDLTGTKGSETTDIFFGFGGNDKFVGYGGNDYIFGGW
 NTDUVLRHHPEPDGPLWALGTTGNDVVVSDDHDVSVSVDD F $\square Y G G L D R M F G G E D D D V I D G E D G D D S V V G G D G N D L E V G G S$ NGNDVIYGGD DDDFDDGGEGDDUVYAGTSAGA DDVVIGN $A \square T V N \square S G A A Q S G G D A A G D R L I S D D E V V A S G F G D Q L D G S G$ $E G Q N G K D E \square H G Q G G N D Q L S G G N G N D V L Y G N A A N D S$ RGDA
 TFPNI I IGDDNANNLEGTDDKDHIIGLGG

DGGDGNDVLDSEGGDDEARGGNGNDRDAAGAGNDLAFGDA DYLYGADGDDLLNGDAGNDSIYSGN RFDSALDDKELTDTYDQEDRSLQGFDKYSAPGLDDAHAGG LVTEAAEVGIDTVRTTLTLGANVENLLYTGSANFTGTGNA AGDGANNVSVGNGDNQUTLGGGHNTVNAGSGANTVIAGDA TGTNGPDRKQGFAGNDNFDGRGGNDFLFSGPGNDFLQGGE VFADGSVWDQTQDK SQVLQGSDSDETLSGTSGNDVISAGA NDASNYLIGSLFNDTISGRGGDDTLLGRDGDDVLRGDD GVTVDLANAAANSGEAQGDSHDSDESVQGTWFDDDLSGGG WWQLLGLGGDDRII GSRWNDY DGGD GTGNDVLIGNDANNALMSGRGNDLVRGGE TSNNAVIVGTRRTDTITGGS
 EGTAGADLIDASYAGDPEGDKDDNLDHSDGSNADSVLAGA QNGTTAQTGGGAGNHAEGDVLTGVEDVNGSQYSDSLTGNG $G G G D D D D V L H G N G G D D V L T G N D G F D A L F G D Q G S D A L D G G D$ GSD QAGLGND\|VIGGAGKDNDQGDGGND\|DFGWRGSDTワAGGA GNAAANVMT GNVAANTLS GLA $R \nabla N L Y V T G V W Q D T Q G A G N D Q L N S V E N F D G S D F A D T V A G T V$ Y SGGRATGLNDDALTDVLRLSGTGGNDRI SGEA VIDTGRAGTPAPDLGYETDDLSFAPDDDPEDDRDAVDGGA GGLDTYDLSAYTTRLKMDLRPGGYSVFSQGQLADLNGGPN $\square P N N V E N L T L T G T Q N L Y G L G N N A D N T L T G N D G Y N R L N G G R$ $T \square K G G S D Q L F G D E G N D R \square E G D T G N D F \square S G G B$ LGANLENLELITSGGAQNGTGNGLANRITGNAFANQLSGLL

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110
120
QGWGSS HRDVMF GLQ GEDHLDGGDGNDTLYGGGGNDRII GGAGKDK GD DV LS G G D G D D T L Y G G D GN D LL H GDA GND TV Y G G G GN D L GNDSI 1 GNSANNTLKGNAGNDTLS GNDLL L $\quad$ G GEGND T L GADTVA GGNDND LLLSGA DGADTLQ G GDGTDTVVGGA GNDV GA D S L S GE S GD DTLLLGDA GND YLY G GS GDDQLSGGE GAD Y GEDKLFGGAQNDRLYGGDNNDTLRGGDYSDTLYGDDGDDH VRNEI S SENGNDFVYGGGGNDLI YGGSGNDALHGEDGNDN
 GRDQLHGGTGNDTLS GDSGSDDLSGSSGHDYLYGGDGNDY GNDLLDAGSGDDKLD GSNGNDRMF GEDGNDVFDGSNGDDY
 AAFTGIGNDLDNVITGAAADDTLSGGDGNDTLNGGAGGDT
 GNDTLLSNALHNQLTGNNLDNTLNGGAGNDVLQGGGGKDV $D D D L I D G G L G N D L L A G Q E G N D Q I D G G G G S D I M S G G S G D D V$ GDDTINSGAGNDTLLGNEGNDVLYGEAGNDVLNGGKGADN GNDMLFGNQGNDLLDGEDGNDTLYGGRDSDILDGGNGDDF D D D D L S G GA GN D DL Y G D D GA DWL M G G D D D DLL D G GA GH D G GNDS L F G G E GND LL E GND GD DVLYGNQGNDL L Q GD G GS D T
 GWDRLLGGADRDLL RGGNGRDYLAGHSGGADVLADGGAHADR GDDTLNGLA GDDWLE G GA GND IL NGGEGNDLLEGGAGNDT GANTLNGQNGNDVLNGGSGNDKLVGGQGNDKLVGGQGNDK

 GGDNLYG

 SNDLLCGGGAGNDELLGDSGDDQLNGGSGDDLLRGGNNDDT

 GD DVAAGS G G S DV I GGSS GAD T L K G L G G D D T L Y G N D D D DV


 LDNTL TGNDGDNQLNGSAGNDTLNGGSGNDTLRGGVGDDK

 GNDHLYGEAG $\square D E L Y G G A G N D Y I D A G G D T D V V H G G D G S D E$ GNDNI SAGDGRDLI F GGDGHDNI S GGAGDDVII G G L L GNDN
 GHD C L D G GM GA D E L R GS G GR DE L E G GN GA D T L R G E G GA DV
 VI VGDAYANTLTGSPGDDTLLNGKGGKD GD D I L S G E A G D DV L N G G L G N DLVIA A E GND T L R G D T G R D T GNDTLNGGEGNDALYGYNGNDVLNGGEGNDHLNGED GNDT GNDEVY GEEGSDDI F G GS GHDILDGGEGNDAVRGGS GND LANTITGGVGNDTLDGGTGNDTLDGGAGNDTLDGGGGSDT GN AVYAGDGANTDKLGSGADTIGVGGGNNTIDAGGGDNT S D D TLY G L A GNDFLSGGKGNDTVNGGTDKDWLLGAK GNDV GNDFLD GEQGNDTLVGGPDNDTLWGGQGNDSLLGGAGNDF GDDTVNGGSGNDTFSGGAGADTLNGDAGNDLLQGGAGNDT GNDSLNGGAGKDVVEGGRGSDTARGGKGDDLVSGDRGD DL A NDNATGNGLDNVI TGNAGNNDLD GS D AL F GY T G N D S L Y GRN GN D F L Y G H D G D D N L
 $K K Q R \| A G K N G N D T I R G K G G N D T I Y G D Q G A D K V F G E R G N D K$ ANFTGTGNALANTITGGDGNDTLNGGAGADSLIGGAGDDT GNDTDS G G A GNDMI Y G G A GN D T L N G GVGHD Y L Y G GVVGND T
 GSNRIWWAYD GDDTI F G G GFYDTI H G G D GNDSSIDGGTHEDF
 GNDTLSGNDGDDALSGGKGNDSLYGGEGDDTLLGGLDNDT $A D Q Y L A G Y A T D D L I D G G A G D D T I V G G A G N D K L A G G A G A D T$ $A D Q Y L A G Y A T D D L I D G G A G D D T I V G G A G N D K L A G G A G A D T$ GDDLL YGDSGDDTI DGGTGNDILYGGRGSDRMTGGDDDDD GADRIS GGGGNDYLS GGGGNDTLSGNAGADLLQGMAGNDV


 GNDTVYGMGGEDNI S G GE GNDKLY G GE GKDSVVNGDE GDDR D D H S L T MLANNPQLNGGNGNDVLHGTTGNDFIRGGQGNDT GD D Q L E G G D GN D II E G G D G N D I I K G G I G S N Q L

UniRef90_W7L146 UniRef90-W3HHG2
UniRef90_W7LS99 UniRef90 ${ }^{-}$Q3AX46 UniRef90_K7TOM8 UniRef90-F4QGJ7
UniRef90 $66 L V C 6$ UniRef90 UPIO00377D288 UniRef90_G2KQ90 UniRef90-A3XC27 UniRef90-B2J026 UniRef90-F4XMZ4 UniRef90-K2ESM1 UniRef90-UPIOOO3750432 UniRef90-K9WMZ0 UniRef90-JOBT04 UniRef90-W9H978 UniRef90-Q5MK32 UniRef90 UPI00047D3275 UniRef90-C7LX97 UniRef90-M4Z6W6 UniRef90 D1B1P5 UniRef90-UPI00034B692F UniRef90-UPIOOO2489F97 UniRef90-A0YZZ7 UniRef90-B0T558 UniRef90_UPI00037BBF05 UniRef90-B7QRA9
UniRet90 W3N2P4 UniRef90-A5GSF9 UniRef90-14JFQ3 UniRef90-UPIooo346038C UniRef90-K9XVS6 UniRef90-J2WC77 UniRef90-A4WPF2 UniRef90 UPI0003811FF4 UniRef90 W4LNB5 UniRef90-UPIOOO255A713 UniRef90-M5EK34 UniRef90 K1RVF5 UniRef90_UPIO0037A65A1 UniRef90-S9QWG6 UniRef90-UPIO002FED69B UniRef90-K9TEB1 UniRef90-Q87NB6
UniRef90_UPIOOO37AE9F9 UniRe90_-G8PUZ UniRef90-EOTBS4 UniRef90-A5PAF2 UniRet90-L8MFU5 UniRef90_U7GJX6 UniRef90_D5ATO1 UniRef90_UPI0003A56793 UniRef90_W4MG39 UniRef90 R4SVM6 UniRef90-14Z2S9 UniRef90-F6BQA6 UniRef90-J8WA80 UniRef90-UPIo004784486 UniRef90_Q1ML69 UniRef90-F6G8C1 UniRef90-K9RK18 UniRef90-D8FTA8 UniRef90 F3EZ17 UniRef90-K9VGT1 UniRef90-N8XWA0 UniRef90_UPI0003763E3E UniRef90-A0A024JOF6 UniRef90-A3VGL9 UniRef90-S3H818 UniRef90-K9FGS3 UniRef90-WoIDP8 UniRef90-UPIOOO38284B4 UniRef90-UPI000369B8BF UniRef90-A3W239 UniRef90-C7LX99 UniRef90-Q9LAE6 UniRef90 B6AUY8 UniRef90-Q48NC4
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UniRef90-D7N1M3 UniRef90-D7N1M3

LISGDYGDDTLYGEAGDDLLGDNGNDVLDGGEGHNRILEGGA LYGEDDDDVLDGGAGDDLLDGG LLGGAGDDVLDGGEGSNRLDGGAGNDVLKVSYWSADNVLN FKLQQGKGHAIIQQFNSG
LFGGKGNDMLEGGAGNDLLQGGEGTNTLIGSTGNDTYLVT VWGDSGNDLLVGGVGNDTIVGSVGNDTASYADAASGVSVD LTGGEGNDTLLGDAGNDT LNGGDGDDALYGGDGSDTLGDAGNDVLYGGNGLDTLYGGS LVGDLGDDLMKGGNGNDRLLGGVGRDTMFGDGADRLFGRS MYGGSGNDTYTVDSSGDHVFEYANQGĐD IVYASTTYGLSA MIGGLLGNDKDASNGNDYLEGNENDQMSGGNGNDTLLGGQ LEGGNQNDTLIGGLGDDLLQGGNGDDVYQYALGDGDDIIN LIGGAGDDTYIVDNAGDSVTENAAAGTDYTLGANVENLTY LYGDAGTDTVWGDAGNDILKGGTGDRLDGGTGNDS:YYDP TGGAGNDQFVFSSLLDGTVGGDETDFQAGVDK ILS LYGGDASNDEYYTDWDLLDGGAGDDVLDGGRGADTLYGGD ITGYGDGSFFEGGEGDDRLLGGTGADIYRFARGDGTDLGG LGGNLGNDLLDGEDGNDTLYGGRDDTRDGDSGNDFLSGDI LEGGAGADGLYGGTGNDSLGDAGDDALLGEAGDDWLEGNA MFGGQGNDTLQGGDGGDSLLGDKGNDRLNGGTGTDTYAFT
$M I T G A G D D R Y I I D T L H A L R E M A E G V D T V S S N Y T L G T$ LSGGAGTDRFAFGAG HGDDI Llagagnd thk gat gid LTGGAGQDTLTGGSGNDVMTGGDYEKDIYGSGNDLLFGGG LWGQGGRDTFVLSEGA GYDRMDFRNGQDR川QIGS MTGGAGRDTFVWRAGDNGSDTIDSDFHDDAGDTSDVLDLSE LSGDRGADVLIGGTGKNDYIIDTTSGGPADEDADRI IGGD YVVDSTNDVVTEAAAAGTDTVVTCLTYALSANDENLTGTG HGGEGNDRMSGGAGNDRMWGGEDDVLNGGRGNDVMIGGE YAGDGDD LSGGDGADFDDGGGSTAGDESVNGNLFVVTS

 VFGGSGDDEIYSGDGDDTDEGNDNDTVYGEGGRDTVYGGN LFGWVGDDLIRGQDGNDRVLGNQNDTLLGNAGNDREWGRT LLGNLGNDLLFGGKDSD FLDGGEGNDTLSGDL LFDYSGNNFLSGGWGNDTLVVGDGESVLSGGCGDDTFVFT LYGSGGSDTLRGEGGADKLWGGSGTRLAGGRGNDVLDGGS LVGELGDDMLNGGSGDD RGFGGDGNDRLHGD
IEGGAGYDYIIAGDGDDVIFGGNDSDYLYGDAE
IYGGDGPDILFAEGGDDIVSGGSTGDQLFGGEGDD\|LLPG LSGGDGSDLFMYGLGDGSDTINAGMGAGWTDVIDDGGGPG LTGGSGNDRLFGESGADTLSGGDGTDLSGGTGNDQGAGGT LRGGRGRDDLNGQNGADELRGGDGDELRGGNGADVLRGGA VWGGSDDDAVYGDTGTDTLYGNDGVDTMFGGDDDTIEGNN LTGGSGKDTFVFDTAAEAHG DTLRDFVHGTDRПDLRN LLGDAGSD LWGGADADGSLVGRDSVMDFQDGTDLLVLEN L GGAGNDYLEGGSGSDTYVFGKGFGQDTVYNYDYATGRK MSGGTGDDIYVVDSATDVINEAVSAGTDETRTANVENLTY TYAGRGAGNNVITAGDGRNVVTVGNGTNQUTLGRGNNAVN LTDGDGGDFTGGEGADDTPDTPTTVLDFK】GEDTIKIGR

 LVGGAGSDVFVFRSASETGSGGADSILDFTRGEDLIDLSW LRGQGNSDWLSGDDGNDTLEGGPGDLDTLIGGIGNDVNR YAGRGNDRISGGAGNDILWGRKGRDDIDGGTGDDLIIAG VFGGSGNDYVHGGSGNDRVNGGSNDRLLGGWGNDRLVGGD YIGGNAGD VGTEAADEGTDTVRTTLASYTLGSDLENLTY LNGDDGYDYLNGGAGTD I YAASGDDYIEGNDGDDVDTSDGNDEAKGGAGNDTLFGNN AGDAGNDHLFGEGGDDRFTLQNGFGADTITGGETDETAG IYGDAGNDTLHGGGGDDSDWGGAGDDYDYGGSDNTQDLLI LVGSAGNDLLDGGEGSDLLNGGGGDDALNGWEETTERADF
 LYGQAGGDNMSGGSGNDDADTNSNDTLNGDAGNDQLYGGA LSGGPGADRLNGGGGADDLSGG DGRDSFVFVDNFGVDR LRGGSGSDVMDGWTGFDMFGDGGDDYMKGNNGTDRMFGGT 1 GGEGSDNIFGGTGDDTIYAGLDPALGLDLLNDPDDPED LSGGAGADLLVGGSGVDTASYGTAT
 LEGGGDDDHLEAGDGNDITEGGTGNDQLFGDGRDVLYGGD


UniRef90-J3HHG2 UniRef90_W7LS99 UniRef90 Q3AX46 UniRef90_K7T0M8 UniRef90_F4QGJ7 UniRef90_S6LVC6 UniRef90 UPI000377D288 UniRef90_G2KQ90 UniRef90_A3XC27 UniRef90 B2J026 UniRef90 F4XMZ4 UniRef90-K2ESM1 UniRef90_UPI0003750432 UniRef90 K9WMZ0 UniRef90 J0BT04 UniRef90_W9H978 UniRef90_Q5MK32 UniRef90 UPI00047D3275 UniRef90 C7LX97 UniRef90_M4Z6W6 UniRef90 D1B1P5 UniRef90 UPI00034B692F UniRef90_UPI0002489F97 UniRef90_A0YZZ7
UniRef90 B0T558 UniRef90_UPI00037BBF05 UniRef90_B7QRA9 UniRef90_W3N2P4 UniRef90 A5GSF9 UniRef90_14JFQ3
UniRef90_UPI000346038C
UniRef90_K9XVS6 UniRef90-J2WC77 UniRef90_A4WPF2 UniRef90 UPI0003811FF4 UniRef90 W4LNB5 UniRef90_UPI000255A713 UniRef90_M5EK34 UniRef90 K1RVF5 UniRef90- UPI00037A65A1 UniRef90_S9QWG6 UniRef90_UPI0002FED69B UniRef90 K9TEB1 UniRef90_Q87NB6
UniRef90_UPI00037AE9F9 UniRef90 G8PUZ1 UniRef90_J2WA65 UniRef90_E0TBS4 UniRef90_A5PAF2 UniRef90_L8MFU5 UniRef90_U7GJX6 UniRef90_D5AT01 UniRef90_UPI0003A56793 UniRef90 W4MG39 UniRef90_R4SVM6 UniRef90_L8M7Q3 UniRef90 I4Z2S9 UniRef90_F6BQA6 UniRef90-J8WA80 UniRef90 UPIOO04784486 UniRef90 Q1ML69 UniRef90- F6G8C1 UniRef90-K9RK18 UniRef90_D8FTA8 UniRef90 F3EZI7 UniRef90_K9VGT1 UniRef90_N8XWA0
UniRef90 UPI0003763E3E
UniRef90_A0A024J0F6
UniRef90_A3VGL9
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UniRef90-UPI00038284B4
UniRef90_UPI000369B8BF
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UniRef90 A0A017HGIO
UniRef90 UPI000469F2F3
UniRef90_UPI0003B542CD
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GKDVLVVVSTDGSSDNVFSGGTGDDMLLYGSVHSDTYLFNWG

NGSNNTTIHENILGFNFFGH
$L S L F D T Q N T L G A G E D R L S S V E N L I G S F T T D A L T G D D G A N Q$ GD DILLYGGAGADTMFRF GKGYGA DLIDDSSDTESSNRDDDMADM GA D T L S S $\square$ G G S E A K WA S L L A G G E D N D T Y V I R K G D N WL K
 STETTLKKS SLLGDGFNNLKKDFAVVTNGTAAKSSQAFIVVDS
 DTDKANGNLGRDTCDAET
DANGNNDSLLVSEELTSFSRNEDNLT $\square G F V G N D G S \square T V T D W$ GSE $\|$ L NGGA GDDEIYG I G GND I I DGGFGNDFIFGA $\square G T A A F V G T G N S L A N T I T G G V G N D T L N G A A G A D T L I I G G A G$ TS D N $\square S N V G N Y$ L S S TAA NG GSNYDTLNGVNNAKYTV K GDGNDIIT DS D GND KL S F S D S N L

S SVF GALR S E S DIIA NH $\square R$ Y D K S S GVLLS Y D
GNDSLYGGDSTADNDLLDGGAGNDTLDGGAGKDT
 GNDTLSF GEGITSADDIVKASAN
GS D S I D G GNGNDTVD LI G GAGADRFILDNSTSHFYD DGN
 FA G GS DADT IVAF ES GET $\square A L G G E V F D A L G G D$
$G N G L A N V I D G N D \square S N K L S G E A G N D T L S G F G G D D G G A G N D S$
 NDKSYDWTNLQYFNDVKFEGANFTDAQFLR DGNNLVIKAF GVD S L
$L L S$ G V D G D S A T LDD N Y LT F A F G S D TVISVVSVT S G G
A D D
$G N D T F V F D N V R Q G V D$
LSAGLTATTANDAGSTLVGAAGNDTWIGGAGDDSLV
GDDRFVFNFGADVIRDFDDDDDK DDLS
NDVLLGGSGNDS FI 1 G DEF E G DT F I S G G VS GLDN T
V N PGDQT GNEGDGV
GAD T LIF GAS GD DWI S G LVAS LGGD GSAPEGDVDSDLDTGDY
 GNDYIDGG DELDK DFGEAGDDTDYGGGMT D GDD】LTGGDGADTFAFGAAAGNDTVTDFSVDDD\|LHLAA GHDEI SGGADD DMDSSGGGHDTDSGGAGNDRDDGGTWADR $G T N H L L G G D G N D V I L G G S G A D S I K G G N G N D L L A G G L G A D L$ GQDFLTGGPGNDVFVLSSETAATDLATAD
$N R$ LAA GVPD QPDVSND DE $I E A D V L D F N \square F H D K L V F D L G K D$ GDDTLLG
ESD $\square$ NATGNS $\square D \quad$ NT $\square S G N G G D N V I N G A S G S D$
GNDRLNGGAGDD $\square Y$ FFGKTDGADR\|FNNDADGDD
$\square G G A P G Q G D G D E A L G D V G F D$
IT A A GEYGT D WTVTVT NGS DETTDD
$G N D Q L A G G S G D A G N D A L S G G A G N D T V D G G S G N D V V Q L E S R$ $G D D F L D G G P G Q D F D F G G I G S D T$
GNDTLLGGNGRDDLAGGAGDADH
GKDWIS GG LA G DVIVGGGTRAA GQPDD GDKLF GDGGTDTII

 LLS D S DTM S DLLLANISVVSVEDSTVLKLTVVHGEDTEVIV T G S A S F $\square$ GTGNALAN I I T G G $\square G N D T L N G G G G A D T L I$
GGNGGNT$L T T T G D G N N T V W M G A G S N L I V V G N G N N T V G V$






 IGTTLAFA GTGNSLDNTITTGAAAADTDLSGGDGNDT
 GHDDL F G D DG D DTMLD S GVVGPLTVNLSSNAVSESSGTVVSDGTATAASFS EDEN
 LNGGDGDDT $\square F A G A D Q V S G G L G A D A I V L N T N M D G$
GNDRLD G GAGDDTY LDFGKGS GQDTMYYVNEARAGKDDTDQ GNDRLD G GAGDDTYLFGKGSGQDTLYYVNEARAGKVDTIQ GSDELYGGTGDDLLDGGSGGAGNDTILAGAGNDVIDGSAD
 $G N D R L T G G N R G D L L D G G Q G G R D G N D R L T G N A G R D D F V V F H K G$ DALSTPDRSPFNGRDTVSGGDGNDVI YGADDDDLLLGG

D NQGNNT
DASVLNLSDLLS DAD LE TNS LDNY L NVSTTEEGDTADK VD GDDKL Y G G

UniRef90 W7LI46 UniRef90-J3HHG2 UniRef90-W7LS99 UniRef90-Q3AX46 UniRef90 K7T0M8 UniRef90-F4QGJ7 UniRef90_S6LVC6 UniRef90_UPI000377D288 UniRef90-G2KQ90
UniRef90-A3XC27
UniRef90 B2J026
UniRef90 F4XMZ4
UniRef90-K2ESM1
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UniRef90_K9WMZ0
UniRef90-JOBT04
UniRef90-W9H978
UniRef90-Q5MK32
UniRef90-UPI00047D3275
UniRef90_C7LX97
UniRef90_M4Z6W6
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UniRef90-A0YZZ7
UniRef90-BOT558
UniRef90_UPI00037BBF05
UniRef90-B7QRA9
UniRef90-W3N2P4
UniRef90-A5GSF9
UniRef90-14JFQ3
UniRef90-UPIOO0346038C
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UniRef90_UPI00046DE105
UniRef90_UPI000378FDD9

DGRDTTVIE Q 210

LNGEGGNDY LVGRDGRDTL 1 D

P LT DATTDF V
HGDDT\| LDFA
VHGD
TVNGGDGDD\|I
FDG
$\square G N D V I F D F A$

ADGSTVAFAKVQGLDDDLSAN LLL
$\square D G G S V I E T \square A F A D G T$
A A T $\square G A G D Y A L I A D F N \square S Q$
$\square \mathrm{S}$
$\square \mathrm{F}$ GGDGTDF LLGGAG
FTVNGLA
YGNDTITDFSV
GTDDSVS

LN G GS GD DT LVA GA GD
FSGHSPASVQDT $\mathbb{V}$ QGFKHGED $\square$
MAGGAGDDVYV
IEGDAGNDILFDGA
T D G D G $\square R$ D T F LDD S A D D $\square$ T $\square \mathrm{S}$

TEAD

GDNGDPAAAGGPVFDLATSAD
NDTLVGGDQ
TNGDGAADFAVKVMGNHTGADF $\quad$ L VD
FQNDGSGAYR $\square$ D

FAEDATSGYQ $\square$ D
RDGEASAESGVQLV
TDADADAEFAIRLDGVAALND
$\square$ NGGAGADS LIGGAGDDT
$\frac{D D}{\| L L} G A G T D T L V L A D G S G S D A$
GYGD
LT S L H H D DFHFTTA
$L V G L G V S D V S V S R D G$
$L V G L G V S D V S V S R D G$
V D
V Q F A FSPDEVVVLAGVTATT
LHGGSGND
$\stackrel{L}{S G T D A V T D F R V N D D}$
GAGDDLLDGEID

PNGNGNFD
SQQNT $\triangle$ Y ${ }^{D}$

UniRef90 AOYIK4 UniRef90_G8B0Z1 UniRef90-АЗЈM76 UniRef90_X6L173 UniRef90 J2ZNC9 UniRef90-M2TP02 UniRef90-UPIO0041077BF UniRef90 G8B0D9 UniRef90- ${ }^{-10 R 64}$ UniRef90-Q28WJ0 UniRef90-14VKA4 UniRef90 Q2CG81 UniRef90-J4J825 UniRef90-17EJJ5 UniRef90_B8CJ62 UniRef90- $\times 6 \mathrm{~K} 9 \mathrm{M} 4$ UniRef90-UPIO004750A9A UniRef90-F4QNV3 UniRef90 A9EEF5 UniRef90-A3TXD3 UniRef90-।1 XJ95 UniRef90_K9ZML2 UniRef90 M4WUC5 UniRef90-U2Z3s2 UniRef90-UPIO00373E1F5 UniRef90 UPI0003785C82 UniRef90-UPI0004683A9D UniRef90-UPIO00371BE23 UniRef90-B7QRA8 UniRef90 L8NWR9 UniRef90-S9Q719 UniRef90_Q10XS3 UniRef90 BoU6G7 UniRef90 ${ }^{-}$W4HOH6 UniRef90-UPIO0034CA4EE UniRef90-K9X755 UniRef90 L8M6B9 UniRef90-B3PQE9 UniRef90-D3Q7Q3 UniRef90 Q3IUV0 UniRef90 O113M8 UniRef90-UPI00030B8A4C UniRef90-D0X451 UniRef90 14L7Z9 UniRef90-G8PQ87 UniRef90-S6AL19 UniRef90-UPI00046AE9E8 UniRef90-G2DRY8 UniRef90-W4MG33 UniRef90 K9RA34 UniRet90 UPIOOO468890E UniRef90- UPIO0046A41A6 UniRef90-K2KGW8 UniRef90-G8B157 UniRef90 C8N8S5 UniRef90-A8SQ59

GNDLLLDGGAGTNTLIQGNDGNDVLIGGNESNTLDGGKGND NTEGGNDVLRGGEGDDE $\square$ YGGAGDDKVIGGADNDE $\square$ DLS GGAFSNVVQFRGN S D D WVYENDGEGDDTVERRYETNLVLKDNVENL
 AGDSVTNVT $\square$ NAPEVIVTAGSGDDHVTTGSGED

GHDTVYGGDGDDTLAGGYGAD $\square 1 \mathrm{DGGKDNDTADYSTSTG}$



NNVFEGDASNDKVNGKSGVD LSGGGDGDSEE


GNDTLTGENGNDSLFGETGDDLI IGSQGLDY $\square \mathbf{L G G G G N D}$
TDGDDDLYGLAGNDGDDVLAGADGNDLIAGDEGND FNGNLGEDTLLGGAGSDLGFGGQDSDLLFGEFGDDTD


NT TTGGAGNDTLDGGAGNDTLDGGAGDDUYV


GNNTLVGGAGDDQLYGGSERDRLYAGEGNNTLYG
NSLDGNDII FGDAMRFDVDGEQGVS
 $G D D E L H G G A G N D R F D L D A G D D Q D H G G E G T D \ I Y F Y G H Q G$
$A N G T G N T L D N L I Y$
$A$ GDDELRGYGGDDTLIVGGGGDDLAVGGDGDDQL
GND TY YLEDTWDSITENPNEGTDTVLS S GLDAN
AGNDTMFGNAGFDLLMGGDGDDVIDGGHQSDN $\square$ GNDSLLGGNGDDEDWGEAGADT DDGGTGSDLVRYRDEAR LTANLGDTHYTYDPGAA IIFQARWDGGGYDTFNFASY

GANMDNGTAGNDPSLTGTGNADGULAGGGNDTV DKTLNGDLDATLNDNTWGGADGREAVRQHQSGDSHVH
GDDTSLUNS DSDKLIIEGFFSSEKNREFSLI F
NDS $\square E G G N G N D S \prod S G S D G N D V I N G G L G A D N T G G G L G T D$
 GNANTLTGGAGADT\|VGGAGADTLNGGAGNDTVTYDGSDV

GGGDT $\square W G G T G D D \square L R G A G A D A \square E G G S E \square D L V S Y G A T A$ GDDTYYGGYRDSFVETAGGGRDLLYFAGGVDL GGADSLDGGFGHDLLDGGRGADRLTGGNGDDTYVVDNRND ANNVLFGNQGDDKLDSTDRDTVSSYFNQDATSNYRLEED GDDTIVGAAGSDTL ${ }^{1} G G G G T D T L D Y S T G S A A V V V N M G S T$

GGDD\|LIGGNGNDRDDGGTGDDYFYDDGNSNSRQVQQ\| GGDD $\triangle L \square G G N G N D R \square D G G T G D D R \square E G G L G N D D Y E V D S G Q D$

DGSGE $\square T V N S Y F S Q D G A G G Y Q \square D Q \amalg$

TASGAANATGNTLDNVLHAGTGDNVLDGR
T GDVD S GF DD TS DV
$M \square G G A G D D T Y \square V D S G D K V V E D A G E G D D T V R S N V T$

STQGDDT DSGGEGND $\lfloor$ LFGDLAPN GGNDTLVGDGVTDSLSDSLSGGEGDDLVSSGAGHDFUYGD

## UniRef90 AOYYK

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DVLTGTETDDS $\square$ NGFGGADR $\square$ TAAGGDD VQAGS $L$ LG A A GETLT GDA $D V I R G L G G H D K L S G R A G D D E L R G G G$
$G Y R G G S G D D Q L T D D G N G G G Q M R G G R$ DADNDIGGSVGLNGQGYRGGSGDDQLTDDGNLGGQMRGGR
 YQNGHAATSTEDYDY LKANHAQFNDPDDPRGGDDTVHGGT YA GEGDDHVFGRDQDDLIYGEGGNDTLDGSMGTDTVWGGA EAGNGNDTINSGSGNDTIYGGAGNDTINTGAGDDIAYGAA GDDEI SGEDGNDYIQGLG
GNDY LVGGEGND LLHGGAGNDY LDGGSGDDTLNGND DTLSGGVDADTVYGLGGHDSLSGGEGDDVLEGAT $G \nabla T V S L T T G K G T G S D A Q G D T L T D \square E N L T G S R F N D V L T G D D$ VGNDLANT@NGADGND\|IDGGAGNDFLDGGLGNDDILGGD IADDTTNTTNQLDILGTTIIGGERFDLSSFAGTVSFGGNA WLSGDDDYASDGVSQV TGNDTLLGGAGNDSLLGGN VIDDGDREADFDRFDNPYPGDGGTPDPDVFDDRDTVYGGA TDNNDTATFTGGRWDDWFEGGAGNDVLNGGDGEDWLEGDA DGKDGNDILDGGAGKDKLSGGNGDDTLTGGDDNDLLEGGA A G $\square E G N G L P A \square K A Y \square A G Q L G \square A D P N Q V S A E Q \square H Q Y I S D N H$
 TGNQGNDSLVGNVDDDLIFGDQGNDTVSGGTGNDSLRGGA NDGGGFDTMGASNNYLRGYNDGSNRIYGLDGNDTIYGGA $N L G G G F D T M L G G A G N D T L G G G R G D D E V Y G V E G N D V I A G G P$
$Y A D R G D D T V A G G S N A D L I G G G D G S D L V Y G D F S D D T L L A N L$
 VDGAEADVIKDSAGTDEDRTALAAYSIAAALANVENLTYGGS SGNKGNDEDYGNAGNDNDAGGDGRDY 1 VF NGDKRDNNI QAGFADDKVRGFA
 TGVTVSSVTASNVHQYVTEHYVDFDVSGAKDANDTLLGGA SRVDLTENT DETAYGN DT SGGDEICAAGHGDDYLRGNE AVSANLSLTAQATGGSGTDSLANFEHLTGSAYNDTLTGNS ILKDNDENLTGTGNADAKAGNDGDNNLLRGDNGDDVLRGGN GTAGNDTYDCPSNQGCLIYGGAGNDTLEGGTGDDVICGGP YGEEGNDILIGNLGFDRLFGGRGDDRIFGGDSGDGVFGQE GVSVDLSIGVATDGGQARDTGINDENVHGSEHVDQITGNS
 DHGNGDAHADGTTYHHGTTAYS $\square G D Y T L A N D E T T L Y L L G T$ GDTMIDITSYNSPARVLNGTPDNDQLGGFDDSGFVIYGYD DTVTAAAGDDEVYGGSGADTLIGGQGGDHLVGGV TDDGGDGDDIIGGGFDSISGGAGNDVVAGGADNDTLDGGD LSENVENLILYGTSSDDGIGNSGANTILGNASNNFLNGAA $\begin{array}{lll}T & N G G N D V L S G N G G N D A D S G E D G S D S I V G G S G N D S L S G G G D \\ S & A G G A N T D T L V V T G A V T I N L A S A D O S S G D T A N T T\end{array}$ SAGGAN $A D T V D D A F G V G D G G E A E G D T F S G D E N V N G G K A G D W D T G S A$ FGSYIEDVVQTGTLNSY LIRGNGLGNRLTGG LADDSLYGQE VVIESNGLLGGDDTVR RFVDGQVLNIDAVKALVQKGTTESDRLYGYAVADTLSGGLD SFA GVAANTATDGMGGTDS GNASNNNITTNSGGDTLVGT IFADGTVWALND RAKVLEGTAEDDALYGYASDDTISGLA
 GTEGKDTLTGGKGNDVI FGLG GGGAADTLQGGGGSDTLRGGD
 A GVDTLNLGGWDTNCTINLAPGSFSSGNSMTNNDAMAYSC DGNDTVSYSPE E SAYDTRIDGTAGNDKLKGTNGNDLIIGGYE DSLSNDENVTGSSGDDEVLGDDGANVLNGLDGNDFAVGSS Y TLPDNVENLVLTGTGDIDGTGNALDNSVGNG GNDLVTGSTGNDVINGNAGNDSLDGNDGNDYIFGGK
 SFAFEDGYTADKTYVAGEAGVNVDNLSVSDVHQYDRENPD GGNDTLRGDAGGDR
 TGTPDNDSLT GTNRDDSDKGLAGDDTIKGLGGDDTIEGNK L

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$S N D N G G R G G$


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UniRef90_R7UVW5 UniRef90-UPIO0037280D0 UniRef90_W7X238 UniRef90_UPI0003FD8A98 UniRef90_C3MHM2 UniRef90_W9HBL6 UniRef90_UPI00037A5376 UniRef90_V4PL78 UniRef90-H8GNA1 UniRef90_A0YMZ8 UniRef90_K9RK37
UniRef90 A8ZPZ5
 IH G GS GMA ML F F G G S GKDF L I A GP D S NLQ G G TE D D F L L G G D
 V H G GA GR N LA Y LG A G D DF G E S A G G D SVVF S M A G H D T L I G G S





 L G G G S A G S S F Y G E G G R G N DVVM N S G V G N D T L L G G E GY D R L S L D VG A D G G QA Q G G D GN D T L G S G A D D Q L F G G A D D D T L E G G D

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$L L G G K G K D H L D G G A G D D R L E G G E D D$
 $L N G G L G D D V M L G G A G N D T L Q G G G G R D V L L G G A G D D L G Y L D T$


 LIGNS GRDVVRGDHGADLLAGNGRDHLLGGAGSDTLDGGR



 YIVDHA G D LVIDEAA DA GI DTVRTMLAS Y T L G S D V E HLLT Y VSGGRDND F L E G GKGDD TI Y A G H


 LSE G S G D DLVEA GA GNDRDI GDGND I LD G G D GNDRII I S N
 LYG G D G D D T I Y G $V Y G G A G D D W L H G D D G T D H V D G A S G Y D E C Y D F G N$ $L$ VGNGGK D YFD G G S GVD TVVSYSYYT GNVMGDLIMNVA $V I G G E G N D M M F G S F N A D E F V F S D G H G N D T D G D F D A F N G N E$



 $V$ G G GE G DD SI LG G D GN DFA G G G R DDVVI DG GA DN D T I N A G A




 L Y G E A GNDVVYRFDRG
LT G G L G A D RFD F D A V A E S G N S N R D II A D F K S GED K DD L S T LDGGAHASGGDTADYS DQGTAVNVSLATGSAAGGSI GTD LVGGNGKDTVLGGAGDDLYVTDSVLETLTEAANQGIDVSN

 $L I G G D G G N F R I D E D T L R G G A G N D V L T A A W Y G Y S N T L E G G A$
 $L$ Y A G A G A S Y L D G G N G K D L L A GN GH T V L H G GP G D D R L I G M D


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UniRef90-B8CJ62
UniRef90-X6K9M4 UniRef90_UPIO004750A9A UniRef90-F4QNV3 UniRef90-A9EEF5 UniRet90_A3TXD3
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UniRef90-Q3IUV0 UniRef90-Q113M8 UniRef90-UP100030B8A4C UniRef90-D0X451 UniRef90-14L7Z9 UniRef90-G8PQ87 UniRef90-S6AL19 UniRef90-UPI00046AE9E8 UniRef90-G2DRY8 UniRef90_W4MG33 UniRef90-K9RA34 UniRee90 UPI000468890E UniRef90-UPIO0046A41A6 UniRef90_K2KGW8 UniRef90-G8B157 UniRef90 C8N8S5 UniRef90-A8SO59 UniRef90_UPI00037A985E UniRef90-A3VYD6 UniRef90_N9FLT3 UniRef90-B9JYK1 UniRef90-UPIO0037E7054 UniRef90 BOUL98 UniRef90_UPI0003F98326 UniRef90-V4NXV7 UniRef90-UPIOOO3815073 UniRef90 - B3GOT9 UniRef90-UPIO00380AAE2 UniRef90-UPIO003EDAB70 UniRet90_UPIOOO346B698 UniRef90-UPIO0047B354D UniRef90-K9QRN0 UniRef90-G4CTQ2 UniRef90_U1ALU2 UniRef90-B4R936 UniRef90-UPIO0045EBBFo UniRef90 U1TEA4 UniRef90-A0A011MSL9 UniRef90-F3КНX5 UniRef90-UPIO0046639AC UniRef90 K9VBZ1 UniRef90-R7UVW5 UniRef90-UPIO0037280D0 UniRef90 W7X238 UniRef90_UPI0003FD8A98 UniRef90_СЗМНМ2 UniRef90-W9HBL6 UniRef90-UPI00037A5376 UniRet90_V4PL78 UniRef90-H8GNA1 UniRef90-A0YMZ8 UniRef90-K9RK37
UniRef90_A8ZPZ5
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SAD $\Pi$ DGTGNGDD NYTAGNGGANRПDGGGGNDTLVAGGG FSDTLGGDAGDNWLSGVDGHDELTGRAGDDTLLGGAGDDT NDTVANGGDVLDLKDLLVGEKDGTLTQY
GGTGGDSLDGGSEDDVIEGGGGADTLIGGTGADSLYGDDD DSSSYRDSSGGRGDDSFTMGYGSDTYHYDDGDGHDVIMNGE DNNFFTGLLASDLSDAGAGNDGLAGDDTYSSTGNDVLGE SVSVVVVDRPDNAGLSTTGNAAYNWIFGGGGNDT
GGEGKDLEGGLGDDSLNGGADDDVLLGGAGDDT GDVLIGGDGNDTFSDGDEFEGMTVIQAGVSSADN

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S DDRFDFNTNKEFNSQDIGTDRDTDFNTGQDRILLDLDTF AGTGNDTVYAGSGVDKYILDAGAGEVSIIGFGANDQISRG LFDDLSKDEDGELL LLKGETDSTI DNYLKDTTVDGVSTLQVSSEGKLNA
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GNDKLNGGLGNDTYLFGRDDGHDTDTEYN
SFSTSPYTETपKS $\square E N \square T G G S G N D W R G D N S K N S T G N A G$


पNQAVFGR $\square G D N W Y A A G Q H \square T H T R \nabla Y Q Q G \quad D T \square Y H D$ LLSGGDGDDTLTGLDELLGGAGDDELTANGDPWTSGMGSF GNDVITGGTEADQFVFSSFFDGEADVITDFEDGIDSFLI TLAANVEDLILRGAANLNGTGNDLANALLGNAGRNILTGG GDDNDNIFKGGDGSDTIHGGDGDDTLAGGFDADVINGGNG ADQSSGDTANTTGFENVNASASSAAVSLTGDGNANI GNDFVFGDEGDDFVSGGEDNDIVRGGUGYDYADGDLGDDT
NVRTGGLTGSAVANRLEGFGNDTLSGLGGADTLIGGDG $N V R G T G G L T G S A V A N R L E G F G G$
$D N D L E G G A G T K L E G G T G N D T$
$\square D A N V L T A E N D A F D A T \square A A G T A F Y A P G Q \square Q \square S G G \| Y G N$
 TLSNDENDSGGSNHDTLTGDSGDNQ $\begin{aligned} & \text { LWGNAGNDT }\end{aligned}$
TLKVNFENLTLLGTTNINGTGNTVNNIITGNSGNNTLDGQ GNDTLVSGIGNDTYDFGRGDGQDVIYNYDNRVNKQDKDVGF

 GNDTLTGSHAQDLYLFKDGDGQDVILDRKYTVSDTDSYRD GDDTLSGGAGADVFHSFQGAGLDRILDFNAAEGD | RSTFYTGSGCDK |
| :--- |
| 1 |

GDDT $\square T G D \quad E G N D R \square H G G K G N D T \square D G G T G$
FDAQMLTDTRDAFTF IGNAAFSTSNTGELRFADGVLYGN GKDTLTGGLGPDIFVLRSDSAVSDPAAADVITDFNSFVD TVNKSYGGGLLTTGTDTVTGFENVTTDHGNDTLIGNDVNNV TAADDATG NEGANSLTGNNGDNRDDGGAGNDTDSGRGG GLDTLLGGAGNDTLLGVAGND
1 N
ST $\square D A D T T W S G N Q K F T Y \square G G S A F T G D A G Q \square N F R S G \backslash L S G D$ $N$ N N N NGLKTAAQVISTATANEDGDAVLHLGGGDEILLVGV LLEGVNSDDLGHYLEFSFGSESNSTADI
GGAGNDKDTSREGADQDDGGAGTDWLY L R R GSATVGFAYD
LNKLLPSGQQFVLVTAFSEQAGELHF
GNDLLEGGKDEDTLNGGGGNDTLMGEKGDDLLDGGEGDDL
LGSVEDDD LD QQGKNAVIAVDGSD

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UniRef90 X6L173
UniRef90 J2ZNC9
UniRef90-M2TP02
UniRef90-UPI00041077BF
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UniRef90 I4VKA4
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UniRef90-J4J825
UniRef90-I7EJJ5
UniRef90_B8CJ62
UniRef90- $\mathrm{X6K9M} 4$
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UniRef90-F4QNV3
UniRef90 A9EEF5
UniRef90-A3TXD3
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UniRef90-L8NWR9
UniRef90_S9Q719
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UniRef90-R7UVW5
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UniRef90 W9HBL6
UniRef90-UPI00037A5376
UniRef90-V4PL78
UniRef90-H8GNA1
UniRef90-A0YMZ8
UniRef90_K9RK37
UniRef90_A8ZPZ5

LAGGAGGDLLDSDAGN
11 N G GRGD
FDAGPGWDT $\square Q G G A G N D T \square A$
PDGGSEANLS $\square T K G G$
Y A GVVSVSLLLGTATGGDAEGD
EDGNGSTDR』1FLDG

## D D

LDGGAGGDALFGGAGDDTA
R D
A G D D T $\square$
R D G D

G D

G N
NDGGAGNDT\|IGGQGV
LDGGVGYD
PDGLGTTEQVIVVEDLAPQ
$S D G G \square A S D$
LRGDGGDDLI LGGRGADTL
A A S $\square$ T $\square$ D GF L L

D F D D GMDSFRMTG $\square E N A P G S$
SDGLAAGDI
ADGTGS GNQVLVAT
LINGGAGADHM\|GGAGDDT

TALDSSAD
STLLATD LLDDTK TS GKDTL VAPDGSSETNLSITKGSSTLDI A G G L A N A DVIIKLEGN T D G
TDADTAAEFE $\square$ S $L V G \nabla T S \square$

ND
GDGRDS $\square$ ND $\square$ G T T T G

PDGSGSA
LEGGTGDD
LG N D S
SDTASFVDNMAVVVN
FTGGGGADTIIGGAGVDTLA
VYGDEGNDVVFGDAGN
DDA $\square R G G D$
VDADARPEFADNV
T DADNAAEFS $\square Q \nabla T$ G VAS $\square A$
G G D D
K A GDSATDLAVN
A DGVGGANQV
FDGGAT
$\square \mathrm{G}$ G A G A


 QPSHLHADMVI

VAQAATATGFALGDG
VT GDGDADFEDMLT GV
LDGGDREDTITGGTGNDTL

NNT $\square$ TGNSANNVLNGGTGADTMAGGAGNDTY VDNAGD D Y $\square$ D F A D GS S F S VR T ELS E $\square \mathrm{S} L$

GADTVTRTGDT $\square Y$ GFNSTDAERP $\square$ Y DFTSNATPDFT $\square W D A$ GDLGNDTLHGDEGNDTLVGDTVDE


GNDTDNA GE GDD I IF G DLT DFFGNSMQGMDA $\quad$ R Q Y VA DE $A N G V T V S D G L L E V F R G G A G N D T \square D G G Q G Y D R V H Y D T S T S$

GG $\square G N D S Y V V S E A G D V V V E A L N Q G$
GGADTLYGGGGTDMLKGGGGADTLDGGAGDDTADYSQSAD ASDTLSGGVGNDTLNGGAGADRLDGGVGNDDY IVDNAGD

GDDTLIGGVGNDVLTGGGGNDLLIGGAGDDDVSGDANYV GNDT $\square$ NGGDGNDK $L$ F GGAGNDW $\square$ DGGFGFDT $\square$ G G G $\square G N$ G GF GF
A D D
TY GNGD $\square \mathrm{H} \mathrm{V} \mathrm{S} \square \mathrm{GN} \mathrm{Y}$

D TAYGGKNADVIF GDQGDDVLMGDNGND IIYGGSSDK TFA $\square E D V E D V I S S E A V E D T I D G V V E D T$

ND $\square \square \mathrm{NGGNGKDTF} \mathrm{\square LSGGS} \frac{\square}{H}$ YDLPAMDEHDFLDDRTK GTAASTRGGNTTYGANATEAGS $\quad$ YYD DDQGDRPPSFS I YDT TAGNSTTLSVDDATGRAYSTGAGVGNTDSMTGFVK $N V N Q T L N L A P G S F S N L A G L V G N L G I$
GSNTNYNVAFSTQNDDTGTGUGGGTSGND\|LNGTSGMDNL GNDTLYA GAGDDGEDTVSGGTGNDVIGGNDFVV

D G TVWD!

GGNDT $\square \mathrm{T}$ GD $\square \mathrm{P}$ DTTGGNDGTD $\square \mathrm{D} \square \mathrm{L}$ T NS $\square \mathrm{T} Y \mathrm{Y}$ G DT $\square$ Y GNGGDDTLTGATAYGGEGNDTLSGTEY

DGDGT $\square D G V K L T V I D G$

TRHGDDTVY $\square$ ADT $\square$ KNR $\square \mathrm{H} \square \mathrm{ETGAGHDTVVGYAT} \mathrm{\square K}$
TTVFIDNGTNSNEQDSGYCSGENEFDGNVII GNDTLIGGTGNDTLDGGSGTDSLVGG\|GDDVYVVD. GESTTEGNSGENTTEGNSGENTTGGNS GGADTपDGGNGNDTLIGGDGDDVLIGGTSAADपRDVIYGG GNDLIRGDAGADQMNGGAGDDTLEYGNSNARVIVNLSNN
 NFQSATGTVAVSNDYF

## GNTGNDY LHGNEGNDT $\square$ YGGKDDD DGTVWGV

 $G G S G N D I L D G G A G D D T I F G Q G G D D$

GDDT LRGGDGNDDLGGNADDDRDFGGDGDDVL
$G G N D T L S G G S G N D F L Q G N D G D D D V T G G W G N D T L L G G A$
$N \square H A G A G N D V V Q V V G G Q A G S A G V T D N M T Q S E A E V F \square G G$ GNGGNDLIDDGGTGD DN $\square Y G$ G G GV $\square G S G F Y$ QT TPAF $\square$

UniRef90＿UPIO004707291 UniRef90－F4QH85
UniRef90－B5S057 UniRef90＿UPIo0046917E3 UniRef90－A3STQ1 UniRef90－U3B4Y1
UniRef90－TOJTM9 UniRef90＿UPIO003801EA7 UniRef90－A1SAQ4 UniRef90－QOYQDO UniRef90－AOYNR6 UniRef90－C8SOF9 UniRef90－V4NCT3 UniRef90 S2EJB3 UniRef90－A0AO21XC19 UniRef90－B8CHV3 UniRef90－Q12119 UniRef90－G9ZZ95 UniRef90－A3M3K9
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UniRef90－S3IUZ3 UniRee90－UPI0002001FAC UniRef90－A0A023EBQ9 UniRef90－QOFHU3 UniRef90－UPIO0038186BB UniRef90－UPI00046AC5CB UniRef90－R11JX2 UniRef90－D9SPT9 UniRef90－UPI00035D2937 UniRef90－D3P0F7 UniRef90－K7J5WW1 UniRef90－UPIOOO3479343 UniRef90＿X7F1L1 UniRef90－UPIO0046AFEB8 UniRef90－K9ETK2 UniRef90－A6FWK8 UniRef90－J8W315 UniRet90＿L7E6D2 UniRef90－А0Ао23XF84 UniRet90＿V4PMZ3 UniRef90＿B8HOFO UniRef90－K9TJ10 UniRef90－UPIo00475DDCF UniRef90 W4HDT1 UniRef90－UPIOOO365EOD3 UniRef90－J6DR55 UniRef90－A6UK74 UniRef90 K9FIC6 UniRef90＿UPIOOO39B5846 UniRef90－V4PER5 UniRef90－K9ZQA6 UniRef90－G31Q17 UniRef90＿UPIOOO465F343

DGGDGNDETS ${ }^{50}$ GEGNDITAGGDGMDKLIRGGLGNDTI ${ }^{60}$ GGGG
 EARNGDDTVFGDSGDDTLRGGAGNDDLHGNDGDDLLVGAE

GNDSLIGGNGNDSLDGGTEDDLLWGGAGVDWLDGGD DDLVQSSA GEMDTVDCGYTTQQIINLNPGTYSSLGGMTENVAIAFDC DTVDYSASAGRVLLDFQSDVGGRDFARFYDVGAAEGDTYA GTDGTDTDSFSNVEHLILGSGADVVYGGADAGGLVIDGDG NGDDTYDFSNFTDNQTINLAPGAWSTMSTARLVDLRPGDG ESDYTRDDGTPGNDKIKGTNGNDLIFGYEGNDK DGKK LSVNVATVTDAEVHNF SQNDEDFDVSQQDDGGDTLNGAN GVTVTLNDTADGSASDGLGGTDVLRSDEGVRGNDIIGNS NDTVNGTS QEDHDDNPAPANTSDDVIDGGNGDDVLYGYGGNDNIEGGN

TPDFHGTYTVNDNHGGSDSAGVTITSYQDGHTLTGTS NDTVSASYTLTNHVETLLYTGDGDFSGTGNTLANLIEAAG GVTVDATDGTGSGGDADGDTLTGDENDFGTTLADFLGGDE QDMEVTAAAGDALEGTEGQDDLSGQE FDAAGALSGNARDTATPVANRIDAGAGTDSVVGNG

GNDKTQGNENNNYLFGDG ASD【NWTDSTTNGVRDMTPADAGADVIYAGAGNDYVWAGQ TNTAALSPQTTTTVPTSDNSDTQMTTLAGTSADDLMNGTS GTEAADLIHAYSSDDLIEALG DTTSYAFYWGPDNANLSTGVVSFPGNSVFTDTLV FGNAGNDFLRGELGNDLMFAGAENDFLDGGDGDDAMAGEF TINGTPNNDTLTGTQ NFNDGKDपGAY四GNNNFWGGRGDDVFYSMGTSNIFTGGE MNTLIGGPGNDFLAGDNNDDNLIGGA DGSTVSPQSDPILSSAEADELRGGYFADVIDGRE KDNNGNDEDHGGKGDDFLSGNQSNDVLSGGTGNDIIYGGK INDDEDVVTGDNDDEDVVTGDNDDEDVGDNDDEDVVTGDN GSEDKMALYNGNNSDNLITGSVLADQUYGRGGNDVLDGGD SDTLIIDFSNPNNQDQGПSGNVESFDARGFDGTDNS DGGA EYDDQSNFALLGGADDLIFANGGNDIVLAGQGNDLGFGGE GGNDKVFVDPSVKAILHINGGDGDDRIAGGGGHGIYYGGD GGIDTFDVSTYGTDQTINLMPSGDFAVFSSVGDNGGAAGT VE لAGPVARIEDDYNNPNPGDTTHMRIGDLALSPDTTTGA ARGTTIEVGITGGGNDRIDGNAAANLLNAGAGNDTVRGAT NGYEGNDILNGYGGMDNLNGDSGDDTLNGGDGMDNLNGGS GDNMNDEVTGEAGADLIFGGSGSDTIVVDNWVDDNANGGT DALKAMTRGVASDSADTLYGDVGADVLDGLNGDDRLYGDA

> DAFTGTTGSDMYGEDGNDUMTAGS GGSGDDEI SGWTFDDWLTGGA TSGEGNDT $\square Y G G D G N D D \square S G D G G N D T H$ GDDGDDSUSGDD GQPDRDY【YGDAGDDT LGNEGGDY पYGGEGNDTVLAGEV IGSGTIGADSITGSTGNDTINGGE DLTWDGDGTPNGVYVDPGFLGSGERNLTGTKRGDSLIGNV T $\square N \square A S S A T V A P T M E G S S A N D A L V G T S G D D V L L G H A$ TGSGDDLVMTREGपSY五ETADGND\｜VSANGSGTVVAYTGK GGTTGQAI YFSDII NGFDGNDTLNGSAGNDKVYGGNGDDTVVGNDGNDRTAGGA R VFTRSGASYVEAGAGDDLVRAMGSGADTAYGGQ NVSDVVTELANEGTDEVRTTDNAYTLGANVENLTFIGS GENTTVENSEENTTGEGNGGENTTEENSGENTTGGNS AGNDSDDGGHGN

SARGGHAQGD I IANFER\HGSRFND\L！GNAGNNVLLGGG TGTNAADEVTGSAQ IDNDSTGTGNDLVNAGDGADVI DGG LSANLENLRLDGTANINGSGNADANRMDGNSGNNVLTGFG DT $\square G N Q G V A N S A N \square A M T V G G G P D P N D G P S G G D S V I G S G T \square$ $N G P M P A V R I F G G D$
$T Y G T A A A D V N G T$ $M D V N G T Q G A D T L V G G A$
$D T V Y G G P A D P V R V L L D$
 DGADTLNGGDGNDKLEGRGGEDHLDGGAQNDRLYGGA GNDTLVGWETGDDLDGGDGEDWLFGNRGNDDLEGNR

DGGSGVDTVVGGSGVDTLYGGNGDDDLFGEFGNDFLIGEA GFDVLAGETGDDLLQDASGGSRQDGWTGNDTLRGGT TGDDVII GGGRSTVFV RGGAGDDLILGGAANDVLSGED QGNDFLDA
$G E G R D W D I G G G K N D V L L G G T G N D F L W G D D$

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UniRef90_T0JTM9 UniRef90_UPI0003801EA7 UniRef90_A1SAQ4 UniRef90_Q0YQD0 UniRef90_A0YNR6 UniRef90_S9QZB1 UniRef90_C8S0F9 UniRef90_V4NCT3 UniRef90_S2EJB3 UniRef90_A0A021XCI9 UniRef90_B8CHV3 UniRef90_Q12119 UniRef90_G9ZZ95 UniRef90-A3M3K9 UniRef90_UPI00036B94EA UniRef90_J2XJV1 UniRef90_UPI000363AD8D UniRef90_UPI000371F47B UniRef90_Q2KC97 UniRef90_A0A059IR05 UniRef90_D4ZGW8 UniRef90_I1ARK0 UniRef90_UPI00035F8CB0 UniRef90_V4H4Y7 UniRef90_G3IQ10 UniRef90_C7QQS7
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UniRef90_S3IUZ3
UniRef90_UPI0002001FAC UniRef90_A0A023EBQ9 UniRef90_Q0FHU3 UniRef90_UPIO0038186BB UniRef90_UPI00046AC5CB UniRef90_R1IJX2 UniRef90_D9SPT9 UniRef90_UPIO0035D2937 UniRef90_D3P0F7 UniRef90_K7J5W1 UniRef90_UPI0003479343 UniRef90_X7F1L1 UniRef90_UPIO0046AFEB8 UniRef90_K9ETK2 UniRef90_A6FWK8 UniRef90_J8W315 UniRef90_L7E6D2
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UniRef90_UPI000465F343

GADE\| E GDGGAD QL|SGGEGNDQ|I|WGHGGDDQ|L|YGDGGNDT S A NVLS G L A GND TLA G Q D GND TL S G GD GND NLTGGLGGDV GNDNVYGQGGD DVLDGGAGNDTVYGGEGNDTLRGGADNDN ADNTMQGGGGDDVLSGAGGNDTIYGGTGDDYLYGQQGDDN DADGLTGHNDDDILQGGVGHDTLNGSAGGDTLFGDS GDDA


 $T D E R A V G G S G N D V L I G S A A L N Y$ L $\operatorname{D}$ N G GNA GDFYIVNRA G D $N V E N A I G G A S A D N L R G D A G V N V L E G G G V S D R L Y G R A G D D V$

 GA DTL R GEAGNDS I K G GK GED K I K G DA GND K L A G G A D A D K GNDDL F GQ G G M D L L N G GA GN D I I M G G D DN D T I S G G S GR D L GNNK E GLGGNDSL LGG GA GAD TLLGGA GNDWLVGGGGNDF G GA YDDVLRGGGGDDV
 $G D D V L V A G T G N N V I N A G D G N D V L$ SA GS GNNELHGGAGNDL $G N D T L N G G S G N D E L R G L G G N D Q L D G G A G D D D L L G D T G D D V$ ADNHLE GSSGA D ILK GA G GTDNNLEGGADDDTLLKG G G GADV G N
G N D T I E G L G N D T L S SV D
$S G G D D T R R G G$
GD DWIF A GAGNDFL GGGLGNDELNAGSGNDILDGGAGNDDR GNDVLFGEDGNDS L NGQE GNDTLMGGA GNDII GGQQ GDDD GNDIL T GNSGNDTLDGNAGNDVI TGSTGNDLLGGGS GADT GDDVVHA GAGNDSI YGGDGSDRLYAGS GNDLI DGGT GDDLL


GNDTGVMLGRENMMFGGKGNDVAY



 GNDTIY G GK GA D TL R G G D GND T L R G GA GK DLLDGGNGND T

 GND L LNGGADADNI NGGSGDDII TTNTAWA GTGSDSVYGAAGADI, NGGSGNDNINGGS GS DK GND QL L G GA GRD TLYGESGNDTLNGGA DNDYYLDGGDGN D T A GSYMTGGAGND QMTGS GVNDTLYGEAGNDTINAGAGDDY GDDFVS GNA GSDS LS GDA GSDVAVGGQ GNDTLTGGA GND D


 | $Y$ | $Y$ | $D$ | $D L F P D D G T H A D G G D G D$ |
| :--- | :--- | :--- | :--- |
| $G A$ | $D$ | $D$ | $V$ |

 GADVLNGKNGNDRLVGGAGNDTL GADDRL NGNDRLE G GAGNDTL
$\qquad$

 LLG GTGHSVLS GSDGDDH GENTTQENSGENTTGGNSGENTMTDGGAGIDTLRGGAGNDT GA DVLS GNAGSDVITGD GGDDDVVGGQGDDDVDGGA GNDLD

 GVD T L N G Q A GA D N T G GE G D D I D G GA DV D T N G G $\square$ G N D K
 GAD S I T G S T G D D DL S G ID GT DTIN G G D GND II DGGNGYD T

 GDDRLE G GA GNDSLGGGDGND LING GA GNDYLSGDY GNDR D GDVLDGGDGNDKLWGGSEDDRLDGGTGKDLLYGGVGSDT GS DRI F A GK D G D RV A G G D GD DA I A G E L G D D CLL L G EVVGN DV
 G GTA GD DVLQQGGDGEDRDFAGD GNDV
 $\begin{array}{lll}G A D T & D G G D G D D S & H G G D G D D V L W D G A G N D V L R G G A G D D V \\ G D D T & D G G A G N D L I & R G H R G Q D Q L L G G Q G D D V L D G G L E D D D\end{array}$


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UniRef90 A0YNR6 UniRef90-S9QZB1 UniRef90_C8S0F9 UniRef90_V4NCT3 UniRef90_S2EJB3 UniRef90-A0A021XCI9 UniRef90-B8CHV3 UniRef90-Q12119 UniRef90_G9ZZ95 UniRef90-A3M3K9 UniRef90_UPI00036B94EA UniRef90-J2XJV1 UniRef90_UPI000363AD8D UniRef90_UPI000371F47B UniRef90_Q2KC97 UniRef90-A0A059IR05 UniRef90_D4ZGW8 UniRef90-I1ARK0 UniRef90-UPIO0035F8CB0 UniRef90-V4H4Y7 UniRef90-G3IQI0 UniRef90_C7QQS7 UniRef90-U8RHQ2 UniRef90_S3JXC7
UniRef90_UPI000477BA70 UniRef90 K9XGZ7 UniRef90-W1IWB2 UniRef90-F4XNQ3
UniRef90 A7N878 UniRef90-A0YZ19 UniRef90-P0C6U5 UniRef90-F4QIL1 UniRef90-K9T5P3 UniRef90_K9PJ06 UniRef90-A0A058ZK54 UniRef90_I4KYB3 UniRef90_UPI0003FD8434 UniRef90-B7RRK1 UniRef90-V8HBN8 UniRef90_K9ZQ87 UniRef90-UPI00037EB66F UniRef90-W0HEK1 UniRef90-K9CNX4 UniRef90_UPI00034DE06A UniRef90_UPI000370CC80
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UniRef90_K2LV50
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UniRef90_UPIO00465F343
 $\bar{F} N G Q L G D G Q D T D D D F E T G D$
1 DAGEGDDVLHGGSGNDTLLGGAGDVLDGGTGDDRLEGGS LL GGAGNDFFRLDNVA NRDLITDFSVPADTI LLAN LTGNFGDDVMAGEVGDDTVQGGDGNDLDFGNDNDDLDGSR LNGGKGSDTYIIDNTNDIINEAANAGI DYTLGSNLENLTL IV VASGNFNRIEAGNDQDYVVTGNNNQVDLGEGNDFATVFG
 LYGGQGNNTLTGGQGGD
VTGDNNDEDVVTGDNNDESVTGDNDDQIVVTGDDVDD\|ES
 YFADAED IIQEEDDGGTDTVLSSDSYTLGDNLENLTL $L M G G L G D D L L V D G L G S D T A Y G G F G S D S F V F T Q S D L I G G D A$
$M L A G T G N A Q L S G G D G N D V L Y A G E G V H L N G N G G N D I H A G K$ AVYNGAQSSYT ITDNGDGTWT IT GEGTDTDSNDEFARFTD
 AI FSGLSTGYSDNMNGTSGTISGIDDGTDLLTGUEYLQFDD


## V LGQDGDD LDGGAGNDNMGGGTNDTVNGGDGNDSDNGEG

 $M V N G N K G N D I V F G G D G D D T V N G \quad G A G N D S L L G E A$ VSGGAGDDYLSGGSGDDRLYGGSG HDVIYAGSGSNLIK $\begin{array}{ll}\text { L } \\ M Y D A G E D N L A G G S G D D V I V A G H Q V V M F G G S G A D V F G L S A \\ M & L\end{array}$ $M$$M T G G L S D D F F K S V D E D S D S V I E S A G E G T D H V Q S T A T S F T L P ~$ IEGGMGDDAMYGEDGQD 1 MRGDHDDQLVAGAGRDLLEGGR

 LNGAEDDDELNGMVGDDSVVGGPGADTVTGWFGA
ISGGDGSDTLSGDAGDDTLNVGSGDTASGGDGDDTFLIDA LIGGAGSDTYVFRKGD
 TEENSGENTTGGNSGENTTQENSGENTTGGGNSGENTTE
$M V G N K G S D Q V F G G D G N D T V N G G R D N D S L F G A G D D W L S T D$ $M V G N K G S D Q V F G G D G N D T V N G G R D N D S D F G A G D D W L S G D L D$
$F F H D G V G G H G S D W D Q D F S H E E G D R L V Y G G T A D R D Q F Q V N F$ $\begin{array}{ll}1 \\ V G G G G D D T L L G G D G Q D D L D G G A G D L D N G G A G D D T V R G G D \\ V & L\end{array}$
 IVGGAGADAMTGGTGGDSSEAARDTVVDFSAVADVTVADT 1 RGGTGNDTVISGUGGFDUYGGSGNDIINGGNGNDTIVGGF $L D G G S G D N Q L F G E A G D D W N P G G G T N L F E G G D G N D T A Q L N G$
$M T G G Q G D D V Y F V N D V A D V V L E E V G Q G N D F T L G T G V E A L V L D$ $M L G G P G N D T L D G G A G S D A T A G V K V D L N D S G A Q N T G G G G T D$
$V I G N V G D V I F G D K G N D T D Y G G T G N P H D F G V G G D G N D Y L H$ LDGGLGNDRLSGGAGNDTYMFYRGMGQDTISEFD L GGAGQDTLTGDAGADTFVFGADWDEDVIT D DEDGDD LLGNAGSDRLWGGDNNDSLFGGKDNDELFGDGGDDF LSG YIVDHAGDT VTEATDEGTDTVRTADANYTDAANVENLTY LRGAAADDQLYGGGGNDGIVGGSGNDVVSGGSGDDILLGV FQNQGGDD AYGGDDDDVAGFGEDEFYGGDGFDGVVFEDG IF S L A G S DTID G GDGVD SLY LDDDRWY $L S G G A G N D V L V G G R G D D S L D G G D G D D V A Q Y S G S Y A D Y R D T$
$L L G D D N E N L A Y H G N D D L D G G A G D D K L Y G G D G N D T L L G G S$

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UniRef90-V4NCT3 UniRef90-S2EJB3 UniRef90-A0A021XCI9 UniRef90-B8CHV3 UniRef90_Q12119 UniRef90_G9ZZ95 UniRef90-A3M3K9 UniRef90_UPI00036B94EA UniRef90- J2XJV1 UniRef90-UPI000363AD8D UniRef90_UPI000371F47B UniRef90_Q2KC97 UniRef90_A0A059IR05 UniRef90_D4ZGW8 UniRef90_-11ARK0 UniRef90-UPI00035F8CB0 UniRef90-V4H4Y7 UniRef90-G3IQI0 UniRef90_C7QQS7 UniRef90-U8RHQ2 UniRef90-S3JXC7 UniRef90_UPI000477BA70 UniRef90-K9XGZ7 UniRef90_W1IWB2 UniRef90-F4XNQ3 UniRef90_A7N878 UniRef90-A0YZI9 UniRef90-P0C6U5 UniRef90-F4QIL1 UniRef90-K9T5P3 UniRef90_K9PJ06 UniRef90-A0A058ZK54 UniRef90_14KYB3 UniRef90_UPI0003FD8434 UniRef90-B7RRK1 UniRef90-V8HBN8 UniRef90-K9ZQ87
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GDD\YRFAVGWGNDF IIDSTGSDSVQFTGVAPTDLLLRRD S LDSTLTGA GDDSLFGGQNDDGNDWLIKGDLGNDVLIGGDGEDRFIIVND NDNRIDGNAGNNA AALINGGTGNDHLIADAVSKFSQLNGG GDDRMDWNDGDGSDIMEGGAGFDVVEVNGADGAGDNFALN GEGDDHLTVAYSGSNTLDGGAGDDVLTVETPTSSG
$\square Y D F D T Y K A L L V F N D Y$ NDADFVSYGSSVTETYFK GSDFADVLQGNASANKLHGGGGDDRFVVSYGYD RENAA NGTGNALNNRIIGNDANNILSGGDGDD PDDDYF $\square G G L G G H T L Y L V V D A A T A$
 GDVTLAPGGGTEGNDNEVGTAGDDVLNGLGGNDIDDGLAG LT GAVSVNYTGAEAGTVTSGANSVSFS
$\frac{1}{F T A D T S N G T A A A F T R N T S G L A T D A Q D R D I Y E T D T G T V W Y D ~}$ RLISLLPSGE DRGNKWHDLNANGDKESSETGLSGWSVY DD GGDETDVLIGGSGSDRDYGGAGDDEDRGGADADTFFFSGA
 A GS GHDRLVGGDGSDVLEGEAGNDTLIGGEDD GEDEGDDVEGUIDAFSTIEGDMDDLSGLRGADGAVLTDDD TNVENGELYPDSAHHTLIGNSGDNTVVGNDGNNVLTSMGG DDANGSAQGDAAFHFQAQENAGFDALAWHYEDDHTVDQAD GADRMFGQDGHDVLDALFGGDGNDLLTGGASSDNFV

 EGDLTGGDVVTDFTPGLPGDAGLSDVSFVAGEDGLTVRFG
$G A L N G T G \square S V V G G E D E T T G D V L D F N G Q L L A G S V V L T D S D$ LLNNETADSLGEYLSFSDDGEGHAMLN【SSQGDGNLDQ

TGTAAFTGDGNTGNNDI LGGAGNDSLTGDAGNDT
ENSGENTTESNSGENTTEENSGENTTGGNSGENTT
GADTLIGGAGSDV YFVGGDSTDDCYYDDTEDYDGLAGG ASTPRAGDAGVEEAFVIHRPTGQDLWALVDGAGEDSLMGQ GEDTIVSGTGMDWV RGGNDSDLFTFDGAGSHQILGGE GSAGNNVLLGLGGNDRLLGLSGNDLIRGDAGAD LDDTSTTUTADVAAGAAVDVSAATTAAGDTDTATVTDGDI
 GNDSLAGSGGNDTFQFLS DYDRQDVITNFSADSGDTDTUV SNDPETFTDTANGTRVRFDGTGAAPFSDDDGTTENLVLHA QGSNVVNGKGNTLNNTLTGNAGVNILTGGLGDDTYFVQ RLTSUENLYGSAFNDTLIGNAGDNMITGGAGADSDT G NEGDDTLYGVSGSNDMRGGQGEDLIYGSDCND
$L I D \square A S T S A A D M S D V T \Pi S Q V A A D T V I D L G S N G A D T L L N T N$ DWGDDTLTGGGGSDRFILGFGKETIVDFTDGVDRLVLGNS TGAVAFAGTGNSLDNTIVGGAGADTLDGNAGADILIGAAG DRDDRFDGTSAANHFWGQGGGDYFNGGGGNDTLDGGNDGD $G N T T R$ GRREVDVLTGGDGLDRFVLGDGQGTYYDDGF AADDYLVTLNLNGEVVLDDGNGNTILVGSD

R $\square$ S D A N GANTFRVVDTRSGQDGADTLSH
ENDTLYGD SGND LLIGGTGNDIMYGGEGNDTYLDNAN

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NTGDTSD
SPDGIVD $\square$
NDGSV
AGNDTINDY
DGHDIVHD
A NRDGTVDQR $\quad$ VLD G VDDA
GNAGAN
D G DGAADFE $\square$ E LT GDLTADDFLI

T

| $V L D G \square$ |
| :--- | :--- |
| $V D F V D F D D G F D S A G S G \square Q G A F$ |

AAFDRVQDQL
$\square N G G G G D D F L I G G L G N N T L T$
EG $\begin{aligned} & \text { ADGRMA } \\ & \text { G }\end{aligned}$ H D
A D T $\square \mathrm{DGGD}$

TSAGGPAVQT DELEGVDLAT
F N

GS $\mathrm{S}_{\mathrm{D}} \mathrm{D} \square \mathrm{GDFT}$
AYSDGGND LLYGGDGNDTL
DGDD
P N G
V N G
PNGSGGQFAVLSNDPTLTASDFLI
$\square$ NNHGGAD $\square$ T
DDVINGGDGADRLIG
ADGTGSA
GNNNNQLD
HGDDQUKDFDVN
Y A GYGS

V V $G$
V D
LN GDGVHDFE $\square Q \mathrm{Q}$ QGHVQLG
TTGDGFADFVVNLLGN
GAVGGSELTI QFQNSLDDA
SEGSLLL QGDLDRDADVNAARNFV
GPGPGKSGTATLLDG

LD G GAGADTLIGGTGNDT
LS

T LGGADAAAVNTFAEWVEAAE VVL
YGKDTVTDFQ
FNTTGASAFT
GGGDDVIAASNGLAS LIS $\square T$
 ND
LY GEA GND T I IGGAGQ
SNLNGNLDYAl ITDLDVLEDR\|IL

EGRDAT
$D D \| L V G G A G K D Y \square T G G T G A D V F V L$

GNDT L VVGETYA SGGDGDDTLILGAQGAAGGSVLDGG DGWT GGD $\square \mathrm{NGSVVVVTSST}$ GGNDT $\Pi$ NAGGG DDRVYGDGNDGQRGDAGNDQLYGSAGAD $S T V P G N G V V S V A S A D G V L I G G N D A G N D Q L N G X A G A D$

D T 1 DGGDGNDT\QGQGSDDR\FGGSGVDT\LGAEGND GNDSIS GGDGNDT\|GGGVGSDTVDAGAGDDVVAGGA

GNDS $\square H$ GGE GQDQ $\square W G G G G S D T \square S$ GDAGNDT $\square F G D F V V G$ LT GGNGDDLYYVDSDDDRTVEATLGGTDTVESSVNWT
it TS DGDDTVNAGFGDDTVSTGAGADNDSARGGADVL GDDLYRVDSTGD LLRENAEAGSDRVETTVSFL GNDTLGGNDGED LLFGGKGEDADFGNTGNDLLFGNEGND

GDA $\square$ RFD $\square$ NGEQGVSA $\square$ Q N Y VAS Q

VGSSLLGDTVDHSGASVAPATGTVTN GADE $\square Y G E E G N D I T G D S G \square N A D L E E R T F T V \square T$ $N T \square T G G A G N D V L N G G T G A D T L I G G A G S D T Y Y V D N A G D$
 DGDGDTAAGSVSAH GDDVHNGGGGEDLLIASAGADTFNGGAG $\square$ DTYD $\square \mathrm{D} \square \mathrm{D}$ D D GANPNTGSGNTVYT $\square$ DDDTSYWLA $\square Y$ V $V G G T D T \square V N D S N T$

TYGKSFDEGSGWKFGE!LDAWIVDAVNH AGNDSYRVDSALDLVLEAVGAGTDTVFT\|LNTY SGNYYTTLNTRVEGNTUTGSANSTYGVQERNDG GDDTDNAGDEEVLAW $D G A D T L D G S N G G D L L V G G A G N D L L L G D S G L D$
NS $\square Y$ GTNDAD LLIGNS $L$ ANS $\square F G K A G D D S \square S$ TGEGNDQDF IGQNGGAKNTSVDAG
GND $\|$ I RGGAGNDT $\square D G G D G \Pi D L L D F S D A T G G \| V F T L M Q S$ $L T G G A G N D T L I G G T G S D V A V Y \square D V A S G V T U D L A V T K A$
GGNDTLNGDAGNDNLNGGAGDDWLNGG $\square$ GNDT $\square N G G A G G F$ TISTDSATTTMLNDDFSNEDNDSDDEGEER

 GVNNNTRSGDDVYSWEDNENFMQTDWDTGGNDTISAAKQS
 NDDLTGTPLHGGAGNDTLTGTSGEN
GGNDTLTGGDGNDTLNGGDGDDVLNGGQGDSVDGGAGSDR

[^0]|  |  |
| :---: | :---: |
| UniReo－${ }^{\text {a }}$ | ESNGDQAFSDP【D【S【NVTSNNRD凹DVSSETDNLLLGS |
| UniRef90＿K9XMD6 | GNGDDLVGSAPSSTGSN】】NGGRGNDELFARSNDTLLGGS |
| UniRef90－A0Z9Z8 | K GNDSLLVIEAAESNULLGAADNDNLQVAEGSGQMLFGGS |
| UniRef90－A8TNI3 | SGTASADVI TGSTGSDTVSGYAGDDTIWGESGNDVIYGNQ |
| UniRef90－UPI0004076B6B |  |
| UniRef90＿K8PNK9 | GGSDVLYGGGNTSFLS G G A G N K K Y S S P G G G P K M MLG G |
| UniRef90－D9SG11 | NTAGTTQTELI IGTA |
| UniRef90－R7Y0C8 |  |
| UniRef90－W4HHP6 | DADNLDGGAGDDTMGGSFADDTVTGGGGDDSLGGGF |
| UniRef90－H1KIB2 | DFLLA SSRLNATGT T A GADNLIGS DVGDTLD G Lid |
| UniRef90－H1XN36 | GLQFHGTDRIS GGAGMDWI NGQGGDDVI D G G D |
| UniRef90－UPI00040C | YGLEGNDILGGNQQADLIFGNDGNDSIYAGQDDDTLAGGQ |
| UniRef90－K2AJT1 | LTS FFENLTLTGAAAVNGVGNSLNNII IGNGAANLIQGGN |
| UniRef90－K1Q7D4 | DGGAGSDTINGGSAGDMIAGGADGDILFGAQGDDTLSGGE |
| UniRef90－V8H6P5 |  |
| UniRef90＿L8M494 | D LK GFESGTNRINGSSTGDSLS G G NLA DLLS GLA |
| UniRef90－D8FWA8 | A LGGKGDDAI F G G G G NDVLGGDRGNNTLDGGD |
| UniRef90－G6YI | DHAVLVAALGGDDRVSGTPFNDTLDGGA |
| UniRef90－UPIO | DLID GL G GNDQIQGNLGDDTLH G G S |
| UniRef90＿UPI | ENQVEFEQSRYYDQADT YGGA |
| UniRef90＿W1N7C |  |
| UniRef90＿A8FVS8 |  |
| UniRef90 V711Q8 | KVS GP |
| UniRef90－J0V8S9 | LVTEAADAGADTVRTNL－A SYTLAANVENLSFAGT |
| UniRef90－A3W1U2 | A HGGDGDDILRGAGGDDILNGDA |
| UniRef90＿UPIO00475D4DC | VITGTVGNDTLNGTT |
| UniRef90－A3SUD5 | $D \square A G P V S R \square E \square E Y N N H D P D D T G H A \square R V G D L K M S T I S A T D A$ |
| UniRef90－X5Z843 |  |
| UniRef90＿S6JC29 |  |
| UniRef90＿B6B0G5 | V |
| ef90＿X6L1D7 |  |
| UniRef90＿D0D301 | DLRAA SLLFEAGGGGFASAIDG\｜AGGFTIANGT |
| UniRef90－S3TH02 | GS EQQYLQS GKY VEDLELIG Y |
| UniRef90－W2DQ54 |  |
| UniRef90－F0C9V6 | A GLNAMAAANDR\VNGTFAGTVSDDLVWGGTGNDVVTGGA |
| UniRef90－W7WXE4 | D NLVFDGAGNFTGTGNG\｜ANSLTAGS |
| UniRef90－Q9ZFH0 | VGNT\NGVQEAAHLYYGNSTVSGTVSA PPQGT D |
| UniRef90－UPI0003B7ADFB | FLNGGNDSLDGSDGNDYVEGGAGNDTMTLRDGRDDAYGGD |
| UniRef90＿K1ZW16 | FLTGT DTI Y G DAGDDTALGDAGRDLIYGGLGTD WLD G GL |
| UniRef90－UPI00036FB829 | GNDYIAGGDGPNSIYGRDGDDTI 1 GGAGKDKLYGEG |
| UniRef90－L8M3Q4 | GHAGDDSLYGNAGNDSVLGGLGNDYLVGDRFSNETLDPEN |
| UniRef90＿AOZFH9 |  |
| UniRef90＿UPI00035DE253 | G N |
| UniRef90＿A0A022FSM5 | GSATT A GPGVTGLLGADSYSNMEGVIGSAFNDNIT GLA |
| UniRef90＿J2ZVA2 |  |
| UniRef90－UPI0003706AFF | DTLTGGS GNDQLT GNNGTDSLA GADGDDLLDGGG |
| UniRef90－F9ZEZ7 | D TADYSNATGSVNVNLFTGIATGSNTLTGNASSNQLVGGL |
| UniRef90＿UPI0002483DB1 | NENDSGDGEENTSSGKVLHGTHGHDKLVGMDGQDTI RGLG |
| UniRef90－A0A058ZLJ1 | DAGDTTTVADDITGTTTEDAI F GL |
| UniRef90－Q4C0E0 | NLNFSGTTADQQDIY S GE G D TVVGGS R D RIIRGED |
| UniRef90－D8N6W2 |  |
| UniRef90－Q05SA9 |  |
| UniRef90－UPI0004709DF2 | GSATTVNLGSVNLGTDNYRGMEGVI GSA |
| UniRef90－T2JLD4 | DLAA GYANIGLNNKTYKPARSNDQ $\square$ PVNVIIE G GQ |
| UniRef90－W0AGM6 | TVKLALTAQNTVGGGADTLSGFENVTGSAYNDTLSGNE |
| UniRef90－B4REV8 | GDAGDDRLVGGPLFDDLHGNIGNDTVYGGA G G DWVVGGQ |
| UniRef90＿B9NY14 | DGSDFISLGRGDDVALGGLGADIVKGGRSDDLISGGG |
| UniRef90＿V4PC7 | $L V I D L S D K L T V V T A D K N A G G G Y S \square T \quad W T G A G L T A A N \square$ |

[^1]

[^2]
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm



## GGTGGDDMTGGAGSNVMDGDHGT

VGTGTFTGTGNDLANTIRGAAGADTLDGKAGAD LLDAAG GDDIITGDDDSRVSTATGGADGSDTIFGGAGNDEIHTGSW GSVSNDTFVGNGTTDTFNGSTGTD■VDYSASAAAVNVGDG
$T \square V S A T A G A V D G A G D S V L T \square G G D T V E S H S V A N G \square A S F F G T$ LDANPLTATIDAFTFIGNSAFDPNNATGQLRFVDGILSGS TYSNDENVT TGSGDDNLFGNAADNQLQGNDGDDTIDGAAG MPDETGAD
SGAAVN $\square R \square G S S N N T G G D A E G D$ LLTDYAGDGSVTSLEKF
 YSDTYVFNKGDGHDTVVETSSYSGAVDRVSFGSGINLDDT LGDDAGSFAARVAVADAGTDTLVTVNGVDGGS ILLVGVAN GLSTAEGSTVVDGLDTLVGGDGNDRL
GNDK $\square$ DGGAGDDT\|DGGDGNDS $\quad$ HGSAGNDSVNGGLGNDL ERDFLQGG DGEDLLVGGRGNDTLVGGNQGDQFAFTGS DUDS G G I GVTQFDQLTLTQQGNDLLVQFENTQLAGLMGV



| 6 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 0 | 3 | 4 | 2 | 3 | 3 | 7 | 7 | 5 | 0 | 8 | 9 | 9 | 9 | 8 | 6 | 4 | 8 | 8 | 7 | 0 | 7 | 8 | 9 | 8 | 8 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |



[^3]| UniRef90 UPI0004708720 UniRef90-S3JGC3 |  |
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|  | GDGTGT |
| UniRef90-K9XMD6 |  |
| UniRef90_A0Z9Z8 |  |
| UniRef90-A8TNI3 |  |
| UniRef90-UPI0004076B6B D D T $\square$ S G G D GVD T $\square$ F G Q A |  |
| UniRef90-K8PNK9 | T T G TWQSVVT $\quad$ A D T G |
| UniRef90-D9SG11 G N <br> UniRef90-R7Y0C8  |  |
|  |  |
| UniRef90-W4HHP6 | G A A Q LS Y D G Q I V VEGVT A A D L V |
| UniRef90-H1KIB2 |  |
| UniRef90_H1XN36 <br> UniRef90 UPI00040CC765 | DGHDVVSGLGDFLAGSDT $Q$ A |
| UniRef90-K2AJT1 |  |
| UniRef90-K1Q7D4 |  |
| UniRef90_V8H6P5 |  |
| UniRef90-L8M494 |  |
| UniRef90-D8FWA8 |  |
| UniRef90-G6Y104 |  |
| UniRef90-UPI000469BD76 |  |
| UniRef90_UPI00046FB8DE V S Q D S T D T N L S $\square$ T K G S S T LD |  |
| UniRef90-W1N7Q3 UniRef90 A8FVS8 | $A D \sim$ |
| UniRef90_A8FVS8 G G G T F E Q H $\quad$ VLD GVDLK A A F |  |
| UniRef90_14FKY2 |  |
| UniRef90-V711 Q8 |  |
| UniRef90-J0V8S9 N D |  |
| UniRef90-A3W1U2 | S D G D G |
| UniRef90_UPI000475D4DC A A GVT T |  |
| UniRef90-A3SUD5 |  |
| UniRef90-X5Z843 | D L G G S |
| UniRef90_S6JC29 T N A A T P E F E F ELVGV |  |
| UniRef90-B6B0G5 N D |  |
| UniRef90-X6L1D7 |  |
| UniRef90-D0D301 |  |
| UniRef90_S3TH02 | R D GEASVENSVHLV |
| UniRef90-W2DQ54 | GAGADTFQYLVGGSGHDVIT DFAV |
| UniRef90-F0C9V6 | VFTRSGNDLFVTLK G |
| UniRef90-W7WXE4 | HLADVT QADFLL |
| UniRef90_Q9ZFH0 | LDGNHAATLS |
| UniRef90-UPI0003B7ADFB |  |
| UniRef90-K1ZW16 |  |
| UniRef90-UPI00036FB829 | 1 Y G D D G S D F L H G D E G D D T V A |
| UniRef90-L8M3Q4 | $\square F \mathrm{GTS}$ S |
| UniRef90_A0ZFH9 | T N T LT A N N F A |
| UniRef90_UPI00035DE253 |  |
| UniRef90_A0A022FSM5 |  |
| UniRef90-J2ZVA2 |  |
| UniRef90-UPI0003706AFF |  |
| UniRef90-F9ZEZ7 | T GGS GNDVFKFTTAGHID |
| UniRef90_UPI0002483DB1 | S TGDHLAFFA |
| UniRef90-A0A058ZLJ1 | FGYNNASSFVAD |
| UniRef90-Q4C0E0 | GEGND T |
| UniRef90-D8N6W2 | ANS $\square \mathrm{H} \square \mathrm{WD}$ |
| UniRef90-Q05SA9 | VD |
| UniRef90-UP10004709DF2 |  |
| UniRef90-T2JLD4 |  |
| UniRef90-W0AGM6 | GA G $\square$ D T V V Y A L V V A G |
| UniRef90-B4REV8 |  |
| UniRef90_V4PC71 |  |
|  | S G G S Y A N F E E $\square$ G VF G S VY A D S $\square$ |
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| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
| conf | 3788873588888820357874316 |
| sol25 |  |
| sol5 | $B \quad B \quad B$ |
| sol0 |  |
| jhmm |  |
| jpssm |  |


[^0]:    lupas_21
    lupas_14
    lupas_28
    jnet
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    sol25
    sol5
    sol0
    jhmm
    jpssm

[^1]:    lupas＿21
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    jpssm

[^2]:    lupas_21
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[^3]:    lupas_21
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