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K V T TVSGGEEGEWGP $\square E R C P D G F A \square G F Q T R N E \square$ YLK DLKSPRTTNWGDWKNWEDCPDGYAYAAKHKVED EGRQRNTHVVESQSGRWGKWSEPLWCPGGFLVAFSLRVEA EGREDTKSLSV QGGNWGTWGQVVYCPEGFADGYKMKIEP

VEP
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SEE $\square \mathrm{DVD}$ D GNWGDWQPAGNCPSGY $\square$ TAARMK LES SGDWGTWSTMSPVNGGYACGAA LKKSEP S WGD WQA WA S CPDGFAVAMQQRVEG CPVDGKWSSWVSWGACSVSCGGGTRQRTRP $T \square T V R V N G G F S E W M E W G S C S V S C G A G V Q R R \square R P$

Y $\|$ VTSTEGQS GTWSNTFRCMNGF LSS FCLRVSP NCPVDGKWSSWVSWGACSVSCGGGTRQRTRT ETRTCNNTDTCPVPGLWEEWGPWSLCSRTCGRGSRSRTRP
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 SQGDGDDTTAANNDLFRCSSQGTTQQGDGTNWGDWGTWSTCE N Q GDWD D T A L N GI A L Q C S K P T T I R T A E G S WG T WT Q N I WC P

 SQPGGQDDCTCS ITKKCFEWPVVKKT L GDH GHWS GVRWCP E Q G A G D D T ALLNGI RLYCTDGSVIE S TVG P
NQYGAD DTALLNGI RLICAK QYSVESHAGYF GDWSQPQYCP

ATPFFDDTALNT ILLTCNDENLITSTIGFSGBFQRVQLCP PQGKGDDTGLNAVALFCNPLNWILSGEGDWGDWKAVQYCP SVIP GDNTAANNVRFRCSDGAELEGPGLAWGEFGDWSNPC
 ( $P Q G P G D D T A L N G D R L H C T R G N V V E S S Q S G S W G S W S E P D W C P$ VE GE GDDTAANNLKFRCS $\quad$ KGHII E GHGGPWGGYGSWSLC S WQ G N S D D T A $\square$ N A IVMYCNNNQV L R S E E A GWGD WTA I VR C P LTAPAFFCERVELVRPRYTNFGNWHPWSRCRR
SQG $\square$ LD DTGANNLRMVCSDR LVHEGDGTDWGKWLTKS LCP RQHSGDDTALLNAI ALFCNKQNEIMS GEGAWGEWQGDNICP
 $N Q G T D F T S L N S I R L F C V D A S N V T S T E G F T G Q Y G P G R S C A$ WQGDDDDTAVVAIVMYCHDDVGLRSKEGGWGTFS GYRKCP





 NQGSADDSAANGLRLIDWNQNLVTAIDGLWGTWAPTVMCP
 QHGGRQCEGNDVQIDFCSDPCPISGNWGPWSSWGSCSKCN PQHGGRQCEGNDIHDFCNSEPPINGNWGPWSSWGSCSRCN ANGGRHCVGPDSESRSCKGKPPVDGQWSEWSAWEECSRCG PKRDD D DM LIANWKFRRCRDS LIELEGSGGQRGGYGPWSGKC PQHGGRQCEGNDI H DFCNNEPPI HGNWGPWNSWGSCSRCN $P Q H G G K T T K L C N L A B A C P G T V G Q G L E W G P W S R C D V V C A$

 QF GGHRCE GNNDQVDFCSDPCPUHGSWGPWGSWGTCS RCN
A S G GRACA GA DVQTQRCS S ELP VD G NWGQWQA WS P C S S C G AS GGRACAGA DVQUQRCSSELPV DGNWGQWQAWSPCSSCG AF GGRACA GADEQMQRCSSVSPVVGNWGSWQPWGQCSVCG $\begin{array}{ll}A F G G R A C A G A D E Q M Q R C S S V V S P & D G N W G S W Q P W G Q C S S V C G \\ C & S D P P A Q H G G R D M C S R Q C P V\end{array}$
 ANGGRPCQGPDTDDRSCQNKPPVDGNWSEWGSWEECSKCG



NGNTTDNTAVNNDRFKCSNDREDNGLGNTGGYWGDYSGEC QHGGRKCEGNDVHTDFCNDPCPINGNWGQWSSWGRCSKCN QHGGRKCEGNDVHTDFCNDPCPINGNWGQWSSWGRCSKCN S NGGRACAGPDTQVQRCTDDCPVDGSWGNWQNWSRCSVCG

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 TGTGI G DQ TKVVRPQ GS GDDTALNDVRFDCCD
S G N L N S F S L R V E K K QL A G D D T A A N N I R F S C E D G T V LT G H G



 D G GI C G I E S K M E A Y Q Y G L D D S T L N D V R F H C C S
 K GHLTTSFSLQVEPSRGADDDSAANNVRFGCTEGAVLTGEA
 GKGICGLKTRIVVPQGRDDDTSLNDVDMYCCD
$S G V L K S F Q L R V E S Y Q G F R D D T A A N N I R T T C T G G N V L E G S G$
 T GY L A S F ML RVVESAQGQGDDTSVNNI K F I CS G GA QL E GD G


 SAYMTSFAL RVQL P F NGGDRTAANNDR FLCSNDRE』N GVG E GVMDGFALRSEITRRGQDDVAADNFRGYCGTPHSFSGDT


 D G GI C GLQTKI ERP QKA GDDTALNDVRFYCC S
S GKAVGFQLKMEAHQGNGDDTAVDSVRDVCEGGQY】AAPY




A GAAIGGFETRVEDYQGDDDDTALNGMRMKC GS
A GALSAF QLRVQPNGVSADNTAANSVRFRCTEGVEVASAG A D Q V GF QL K ME PR Q G D G D D TA AVD SV R F V C E G G Q S I A A A Y D GT I R GFRTKVE P D Q GS G D DTAMNAMQVYC G
$N N N I \quad C G V R A K T E A S Q G S G D D T A L N N L E F Y C$




 GGQMRRYRTCDNPPAYGGRACAGADTQDRCSTKCPDDGTW GGQMRRYRTCENPPANGGRACAGADTEIKCSTESCPVD
 S DYICGDQTKV TKQGDV VID FRFYCCD GGQMRRYRTCDNPPANGGRACTGSDSQ■KCNTNCPVDGKW $N G T Q Q R S R R C S V T A H G W G E C R G A H A D A R E C S N P E C P A A D G$

 $G G Q V R R Y R G C D S P P S S G G R A C A G A D M Q Q R C G T G G D C T V V$ NRPLVATR L RVEPPRGLWDDTAANSLDVTCAGGTVLEGTG






 G GQMRRYRTCDNPPSHGGRACGGADSQMKCS TADC


LS WGRFGPWSKRCKDCGLOTKVESPQGDRDDTALNNVRFF
 LTWGEYDAWSNTCAICGLLQTKQEPYQG\｜GDDTALNDVRFF LSWGDFGNWSFPCPVCGLQTKDEGPDGSGDDTALNDVLFF
 MGWGDFGDWSNTCPACGLQTKIEPSRGLLDDTALNDVRITF MQWGDYGYWSEDCGDCGI ETKME EYQWALDDSSLNDVRLF LTWGKF GGWSEPCPLCGLQTKMQRPEGLLDDTALNDARFF

T D WGEF GQKSRLCPDCGLQTMVEEDKGKGDNTALNDVKFY GSFGDYGGWSNSCGICGUETKQEPYHNIIDDTALNDVRFF

GPYGEYASWSDACPDCGLQTKQEPYRGLWDDTADNDVRFF MS WGEYGHWSQECGICGปETKMEEYQYGLDDSTLNDVRFH

LD WGKFGEWSTSCGACGLQTKVEQPRGLRDDTVL
HNWGDFGAWSESCA $\square C G L Q T R V E L P Q G N G D D T A L N D V K F F$
GPFGEYSEWSTPCG $\square C G \square Q T K Q E P Y Q G \| I D D T A L N D V R F F$
MT WGS WGT WS SVCGDCGFQTKVEPPQGПWDDTSLNDVRFY LS WGDFGDWSEPCPVCGLQTKIEQPRGLLRDDTAVNDARFF LQWGE WGHWSRKCPI CGLRTRVEEPQGWGDDTALNDVQFF LTWGDFGNWSELDCPi CGLQTKLQQPQGLLDDTAINDALFF GTFGDYSEWSNTCGI CGMQTKQEPYQGVWDDTALLNDVRFF HSWGDFGPWSNRCGI CGLQTKVEESQGVGDDTALNDVKFF ADWGEYGFWSQECGI CGIIETKMEEYQYGVDDSSLNDVRFH TDWGDWGSWSKTCGl CGllKTLVEGPQGIWDDTALNDAVMY MNHGHWSG VRWCPADGFQLKTEPDQGAGDDTSVNNARFR NTDGVWGEYSESCG\CGMETRVQPYDGGDDNTALNDVRFT PGWGRWTE DKFCPVCG】NSQ】EGAQRRGDDTALNNLDLR
MMWGTYGPWSESCPVCGTQQKVEPYQSLGDDTELNNLKFY LDPWGRYGALSESCGICGUGTKVAKPQGFGDDTGLNDVYFS QQWGSWTDR RQCPLTSMRLRVEGRQGSGDDTAANNLDMR LNWGDYGEWSDSCPVCGLQTKIQKPRGLRDDTALNDVRDF

DT NYGVWTYRCPATGFETRVE $\square Y$ QGSDDDSALNGMRMR GLWGVWGYCQNTNVLIGFEDRSEPDQRGKDDVAADNFAGY GFLGDWQP IRECAAKSFRMRVSPDRNTTDNTADNNMRFM TPKERWEFVAHCDNTVGTETKVECEFESKDDT
$M S W G T W T G C P D G F A V C G \square Q T Q \square E R S Q G G G D D T A L N N V N \square E ~$

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NTGGMWGEFSDQCG】CGLETLVQP LGGLTDNTAVNDVVFD
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VF E GLWGNWSETVYDKDVTAKWQPAQGSCDDTALNG
AGWGGWSNCPAGKGICGFR $\square R \square E G Q G G G D D T A M N D \square E M K$ GSWQPWGECSSSCG GGQRTRVRDCDG GNWGLWQPWGECSASCG
GA WLP WSPCSETCG K GMQTR DR
$\square P C G E Y G A W S P S C G L C G \square Q T K Q E A \square R G L V D D S A L N D V R F \square$
S S WES WGECSASCG GGERTRVR
K WGPWNPWSLCSKTCGWQRRFRMCQGTG
GTWGSWQP WAECSASCGGRTRVRPSDGGGDSTQLSRCNTQ RALGS
RALGS
GNWGPWQA WRKCSASCGGQTR $\square R$
GNWGPWQTWSQCSASCGGQTR
GQRGQWGNWS GPCP VCGLRTRLEPPQRGGDDTGLNAMEML
RAKGS
RAKGS
KARGT
KARGT
S S WV SWGACSVSCG
S S WV SWGAC SVVSCG
K G T Q T R Q R P P Q AF G

K WATWSSWSACTVSCGGGSRQRS
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ETRACN VRPCPVDGVWGSWS $\square W S T C T V S C G G G Q Q T R T R T$ NIALCPVDGQWQEWSSWSQCSVTCSNGTQQRSRQ
 RQVCSKRRCPVDGKWA EWGOWSACSTVTCGQGSQVRTRT RQVCSKRRCPVDGKWAQWGSWSACTVSCGGGSSQRIRP N $\square A \square C P V D G Q W Q E W S S W S D C S V T C A N G T Q Q R T R Q$

H G G F S Q WS VWRSCSATCGRG $\square$ QKRSRP CPVDGKWASWASWSTCTVSCGGGARQRTRD T F $\square \mathrm{K}$
 CPV HGSWASWTSWSACSSVSCGGGGTRQRRTRD CPTHGHWSPWS GWGMCSRKCS GGQMRRYRP CPTHGHWSPWS GWGMCSRKCS GGQMRRYRP $N \square \mathrm{~A} \nabla \mathrm{C}$

CPVNGAWGNWSPWSHCSKSCGGGQRTRTRP ESRVCNNTAPCPVHGSWEEWSPWSLCSFTCGRGHRTRTRP


RWLQWEAWSQCSQTCGKGVRTRKRK CPVSGNWGPWSNWGSCSKTCNGGQMRRYRP | $C$ | $P$ |
| :--- | :--- |
| $C$ | $S$ |
| $C$ | V WG |
| D W W W |  |

 CGGGSRQRTRP $C P \square K G G W S S W G P W S S C S R T C G A G S T Q H R E$

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P Q H G GK Q T K L C N I A A
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 $P Q Y G G K P C E G K A V E V I C S V R P P V A G N W G S W L P W G P C S T C G$ P Q Y G G K P C E G K A V EV I C S V R P P V N G GK P CH GS D S EMR S C QHS P P V D GR WS E WGP WE ECRRS C G $V$ NGGKPCHGSDSEMRSCQHSPP V DGRWSEWGPWEECCRSCG CVSPY GTHCS GPGRRDVNNPCPVHGDWEEWSPWSLCSBCG
 $P Q Y G G K C E G N E H E N E M C A D L C P V H G N W G P W S H W G S C S R C N$ P Q H G G K CS GP LRESRVCNSTALC

 PTSAEDNSGNNS IRRLYCNKSDQILLSADGPWGSWSGTTHCP SHGGRACGGPDSQVQRCNANMPVDGSWGHWHRWSQCS SC G SHGGRACGGPDSQVQRCNANMPVDGSWGHWHRWSQCSSCG CNGGDDCEGDSTETRNCSTQSC
$P V V A T W S D W N A W S ~ G C$
V
R G P F GK WY D F Q Y C
CHGGQPCEGRSEQT $\quad$ R CAE Q CPDVH N WS DWDVWG $\square$ CSMCG CHGGSECRGPWAESRECYNPETANGQWNQWGHWSGCSKSC

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 CHGWAECKKGLH QESRECTNPS CSGGNWGSWNHWSLCCSKCD AF GGEECPATGYMEVSECQNNPDNGEWSNWSSWSACSRCG $P$ QHGGTQSKLCN $\square A L C D V D G Q W Q E W S P W S D C S V C A$
SHGGRACGGAES QDQRCTNMCPVDGSWGNWHSWSRCSSCG SHGGRACGGAESQI QRCTNMCPVDGSWGNWHSWSRCSSCG A NGGRACAGA DS QI QRCNDMCPVVDNWGNWQTWSRCSSSCG ANGGRACAGADSQUQRCNDMCPVDGNWGNWQTWSRCSSCG RFGGRFCPGSDSDLQPCGLQSPVDGQWSDWTSWGSCSTCG


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## 

 CSYGGDC GLHTEEALLCNTQPCP SHGGRFCQQGTNTQMK S C NLLQECVV $R H G G R V C V G Q N R E E R Y C N E$ $\qquad$ DGRWS ECS A A NDCSGSSLERQNCNENLCK
PHMFWT GWGP WERCT
E S G VV E E W S Q W S T C S $V$ V C
ANGGKA CAGGDTGTQRRCSTATMVADGSWGQWSGWSDWGTCS ANGGKACAGGDTQTQRCSTATPVDGSWGSWQLWGECSS C $P$ Q Y G GNCE GT GVQSDFCCSDPCPPTHGNWSPWS GWGTCCSRCN VN G GRPCE GWDV E S RMCATKPPVN GQWM GWS S WS V C TMMC QF G GHKCEGSDIQMDFCSDPCPVHGNWGPWSSWGTCSRCN RKCDMPPPANGGLLC $\square C E R K P P I N G S W G Q W S A W S H C S S C G$
 WRD GEWSKWGRFGPCSVCG WRD GE WSKWGRFGPCSSVCG
CTNPAPKYGGA HCTEENTEDRTDGEWGSWTPWSACT A Y G GEDCPPTGSTETSCSEPCPIHGDWSNWSSWSACSRCG


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 QGNKTRSRTCSSPSQHGGKLCDGHAVEVMCNKPCPVNGAW KGTQSRLRHCSNPPPHDGSYCPGPDAQVQVCNRCPVHGNW GPGSTQRRTRMPPPANGGRACNGPDSQVRACERKNCPDDG
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$G G E K T R R R L C D S P S Q G G R S C A G D A T Q V R C N S Q A C P G G P Q$


G
 RGSRTRTRKCMDGS GAVACGRPEVQTKLCNIAVCPVEG RGQRTRTRSCTPPQYGGRHCEGLEMQHKPCNIALCPVDG GGQARRYRGCDSPPSSGGRACAGADMQDRC GTDLCPVN GGQARRYRGCDSPPSSGGRACAGADMQURC GTDLCPVN

RGSRSRMRTCV | $R G S R S R M R T C V$ | $P P Q H G G K A C E G P E L Q T K C S M$ |
| :--- | :--- |
| $D G$ | $G G Q R R V R V C Q G V G Q Q C D G N G E E V R C S$ |

RGDRTRSRDCVVAPQHGGKGCDGQDVQTKPCNTCPVEGQW SGSDCGLQTRVEEPGGRGDNTAGNDARFFCCPP
RGNRTRTRTCSNPPQHGGRPCEGAAVEVVVCNPCPVHGAW GGQMRRYRTCDNPPSNGGRACGGPDSQI RCNDMCPVDGSW
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$N G T Q Q R K R Q C S A A A H G G S E C R G H W A E S R E C S N P E C A N G Q W$ GARATGFQLKDEDQQGAGDDTSANGDRMQCPSGH\|IDQHG GGEKSRKRLCSNPPSQNGRPCPGDATQVRCSVQACPGGPQ GGEKSRKRLCSNPPSQNGRPCPGDATQVRCSVQACPGGPQ
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## 

 AGFKERSRTCS TPQHGGQYCKGDELQRLCSLTPCSRLPG AGFKERSRTCS TPQHGGQYCKGDELQRLCSLTPCSRLPG $S G V Q V R A R Q C D L L F P M G S Q C S G N T T E R R P C$
$S G V Q V R A R Q C L L L F P M G S Q C S G N T T E R R P C$
GGEKTRRRTCTEPSPSYGGR
GGEKTRRRTCTEPSPSYGGR
QGSQVRTRTCVSPY GTHCSGPLRESRVCNNTALCPVH QGSQVRTRTCVSPY GTHCSGPLRESRVCNNTAACPVH $T T C G G G F K R R T R D C Q U H G T C N G P S K D S M P C M D K H C L S G T T$
$G G Q R S R L R L C N S P P S H S G R P C P G D S S Q L R C S T Q P C P G G P Q$ GGQRSRLRLCNSPPSHSGRPCPGDSSQLRCSTQPCPGGPQ
 GGQTRRYRSCDNPPASGGRACAGADVQIIRCS TDLCPVD


 ATCGVGLSQRSPPPSNGGRSCVGEAVEDVMCEGLPPCPVS

$V G L Q T R E R E C T Q P P Q F G G R L C$

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$D W S A W S P C S A S C S N G T M Q R T R E$


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 $N C L T S L T Q D R G G H W K L W S L W G E C T R D C G G G L Q T R T R T$ $N C L T S D T E Q R G G H W K L W S L W G E C T R D C G G G L Q Q R T R T$

 CPI D G GFSNWGSWGTCTVTC G G GTQQVRTR S
 D WT T W
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$P Q F G G E P T K F C N I A V$ AHGGKECVGDAKETRHCSEAACVNGVGWSDYSSWSSCCTKCA CS $\square$ NGQCEGSEDETEDCNACPSVLRTGNEWSTWTEWNSCG CTGGSDCDGSSTGSTSCNTHNPIVGNWAA WAA WGSCTVCG
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 CN G GK N C

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| :--- | :--- | :--- |
| $H$ | $G$ | $G$ | $H V V D G G W T D W S P W S A C S V C G$ HVVD G GWT DWS PWSACSVCG $H V V D G G W T D W S P W S A C S V C G$ $H V V D G G W T D W S P W S A C S V C G$

CSNGKQCVGSGSETVSCTPTNRVDGNWGSWGSYGACSVCA C S N GK Q CVVGSGS E TVVS CTPTNRVVGNWGSWGSYGACS V C A | $P$ | $G G R G D$ |
| :--- | :--- |
| $R$ | $E$ |
| $R$ | $Q$ | ENGGKKCFGGNDEVIECNDGPPVNGSWSAWS GWSECSECN P QHGGNCTGTMEELVTCDSGKPVDGKWSVWSSWSTCNDVG



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T P WT P WS PCSTTCGI
T P WT P WS P C S T T C GI

G F QVRQRSC
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GF QVVR Q R S C

S S WLS WGPCSETCG K GTQNR $\square R$
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N T
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A NWS SWSA WS E CVP DC
A NWS S WS A WS E CVPD C
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TP WT LWWSPCSSTS C G I GF QVRQRSC
TPWTLWSPCSTSCG凹GFQVRQRSC
E $\square \mathrm{CGE}$
NEWSSWSTCSASCSQ GRQQRTRECNG
VF WT GWGP WE RCTAQCGIQARRRTCENGPDCAGCN VEYQ
MF WT GWGVWERCTAQC GUQAR
$\begin{array}{ll}\text { A WDE WS P WS } \\ \text { A WD E WS P W S } & \text { L S T C G } \\ L & \text { C S T C G }\end{array}$
FWSDWS QWGSCN $\square$ TCG $\square R T R$ TVED K Y G G

R R N T P WS P W
$G L W S N W S P C P A L C G Q V G V Q L R Y R N C Q$
$G G F S L W G A W S S S T V S C G G G T$
GGFS L WGA WS S C TVV C G G G T

$R \square W S \stackrel{C}{P}$ WS WSKC SAA C GVVQTRT RAC


GKWGPWNHWSLCSKTCGWQRRYRMCQGTG
G GWS D WS P WS A C S V $T_{T} C$ G $V V_{V} T \quad R$

$G G W S D W S P W S A C D V V T C B V Q Q T R$

A SWGSYGACSVTCA
A SWGSYGACSVTCA
GAWGQWSEWSRCPARCG QTAVQM
$\square$ WT HWS H WS A CSASCGLQWRKRKCQ
G GWS P WT S WSNCSETCG
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| PVNGNWSAWTPWSDCTAKCNGGUQTRRRS |
| :--- |
| PVNGNWSAWTPWSDCTAKCNGGURTR |

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$G W T P W T K W T P C S E T C G F G R T L R W R P ~$ SVKFCPTDGGWTPWTKWTPCSETCGFGRTLRWRP
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SPSAGGWS पWSEWSSCSKDCGTGHQRRNRM SGGWAAWGPWSSCSRDCELGFRVRREP ETRPCNNSATCPVEGQWLEWGPWGPCSTSCANGTQQRSRK EDRERCSAQPCPVPGGWSA WQSWTPCTQSCGTGLRYRYRP

SPSLEDWSEWTSW FNVDH
TCTGVGVWASWTEWSTCSTSCGPGTMVRNRG EQRQCNNSADCPVHGTWDEWSPWSLCSSTCGRGYRDRTRT EQRPCNNTAVCPEHGAWGEWTPWSLCSSTCGRGYRERNRP EERYCNEHLQCPAHTFWSPWGSWERCTSQCGGGVQARRRT RSCVSSPLEGQWSDWGPWSKCSVTCDTGTEQRQRR


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$V D G N W G Q W T S Y G A C S V T C G G V G T K T R T$
NGG WS PWGLWSRCSTTCNPGQRSRQRT VGQWS GWS DWGTCSTTCGGGFKRRTRL VGQWS GWSDWGTCSTTCGGGFKRRTRL
$N G G$
$W S H S S P W S S C S V T C G Q G N Q T R D R L$
$W$ $\square L$ NAP $\square$ DGGWSTWSEWYKCKHGDADGNCMECNN

D GGWSHWSPWSSCSVTCGSGQ TTR DRL $\square A N C S R N G A W T P W S S W A L C S T S C G \square G F Q V R Q R P$
 GA WGS WGSYGTCSKTCGTGTKTRTRP
$D G G W S H W S P W S S C S I V T C G V G N V$
$G G N W G F W S P W S A C T T$
$C$ $R Q L C N T A K C P V Q G D W S T W L S W S V C S V T C G Q G V E T R Y R K$ $\square A N C S R N G A W T P W S S W A L C S T S C G Q G F Q V R Q R P$
$T$
T VRQDGGWSLWSPWSSCSVTCGEGQDTR\RP NGG WSVWGPWSQCSRDCSSGVRNRKRT TVSGGWAAWGPWSSCSRDCELGFRVRKEP TVSGGWAA WGPWSSCSRDCELGFRVRKEP TVSGGWAAWGPWSSCSRDCELGFRVRKEP WS D WS A WS DCSVTCCGVGTQTRSRP KFCN $\square A \square C P V D G N W N E W S S W S T C S A S C S Q G R Q Q R T R E$ WS PWSDWTPCSVTCGHGUQQRGRS MNGFQLKFEG



WAS WGS WSKCSSNCGGGVQSRRRA WAS WGSWSKCSSNCGGGVQSRRRA VLTAPVDGGWSAWSGWFRCAQSGGS LGSSAAGE GTWSEWSA WAKCPDVC KGYRDRQRS TVDGQFSPWSPWTPCTDGSAVGGCLCRT PQGARWGSWETWSSCSQQCSRGFRTRKRS

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C S VA GP A WA TCTGALT DTDCSSLEATDGKWGPWNAWS L C S P G GA G D Y E R L E A $\square R \mathrm{~F}$ Y C QRPMRI EAQTTD WVPAE QTQVVH PSNGGADCAGQAQETQQCNTGVLCPVNGGWSNWGPWSDCS PSNGGADCAGQAQETQQCNTGVLCPVNGGWSNWGPWSDCS CNSKCEGTS VQTRDCYCDKRFKQDGGWSHWSPWSSCSVCG $P$ QRGGQSCAINEWRM CNN EQK LTQWTPWSNDNQTA $P Q R G G Q S C A M N E W R M$ CNN EQKLTQWTPWSNINQTA $C N S P V P Q M G G K N C K G G C Q G T P P D D G R W S P W S P W S A C T V C A$




 PAFGGBCCLGLHTEEALCNTQPPCPES WSEWSRWSDCD
 $R N G G L P C A G D A A E Y Q D C N P Q A P V R G A W S C W T T W S Q C S S C G$ R NGGLD CAGDAA EYQDCNPQAPVVRGAWSCWT T WS QCSSSC G CSVAA GPA WATCTGALT DTDCSSSLEAT DGKWGPWNA WS LDC S AHGGATCPGSNEDRERCSAQPPVDGKWSTWADWTVCSRCG PGGDGDFESLAADRFYCPQPLALEARTTDWALPATVRVHS
 $R N G G K D C E G \square T$ TEVTNCT V H G GWTEWSAWSACCTCG $P$ QF G GNPTKFCNDAV C PVVDGVWNEWS GWS S CSSCCS CRNGK DCPGCNTTYQLLCNTNSSCPEKKTTPWTPWTPDVNDS D S G G GNWGS WNHWSLCS RTCPADGSGACDLRSGSASPHTLLSGGWAAWGPWSSCSBRCE CDDS S NTCSGPSIQTRCDRRVRQDGGWSLWSPWSACSVCG C LGPS DQTRSCSSLGRCDSRFRQDGGWSHWSPWSS CSTC G CNSPVP QLGGKS CKGS GREPCPPDDGRWSPWS PWSACTVVCA
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 $R S C D S P A P R C G G G K T C E G P T I E S R N G G W T P W S S W G Q C S$

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 C N S PVPPQLN GKQCECCKDPPINGQWGPWSLLWDTCTVCG
 QMGGKTCE GEARENMPCQKSPPDINGNWGPWSPWDACP TCG $\square G N G A A C P G S S S D D A D C N T Q P P I D G M W A D W G S W G T C S T C G$ CNSPVP QMGGRSCKGGCQGPPPVDGRWSPWSPWSACTVCA $P Q K G G K A C K G V A M E T Q P C K P I A G G W T A W S H W S E C S M T C$ PRGGGTCPEFPSEERKCNMKPCKNAQFGEWENWSHCS QPC RHGGRDCVGKSREERFCNENTPVPDFWASWGSWSKCSSCG
 CSNPKPKTCLGPA QEFCNTTPPVDGSWSCWSPWSKCSVGCG

 R N G G L P CVG D A A E Y Q D C N P Q A P V R GA WS CWT S WS P C S S C G ANGGADCEGDDEETQDCDS GVPVDGGWSDWSAWSDCSVVCG ANGGADCEGDDEETQDCDSGVVPVDGGWSDWSAWSDCSVGCG CNGPSYGGA ECQGHWVETRPVDGKWQAWASWGSCSSVCG

 P S C S GP SVV T R S CMMMKCDRKVRDGNWGLWSPWSACTTCG CGNPRPAHGGRMCEMYCSKPTAAIDGGGWGPWGEWSECSSQCG R H G GRDCVGGK SRE ERFCNENTPVVPIFWASWGSWTKCSSCG RHGGRICVVGKSREERFCNENTPVPIFWASWGSWTKCSSCG QLGGKNCKGSGRETKECEKAPPDNGRWSPWSPWSACSVVCA CENGNSCPGCGVQRFRCTGPHAVSGGWAAWGPWSSCSRCE CENGNSCPGCGVQRFRCTGPHAVSGGWAAWGPWSSCSRCE



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GGGRQVRRRFYQPPQYGGKLCEGRAVQLQECNAQHCPTDG IGNTTRIRLCNSPPQLGGKNCTGAGRETKQCEGIPCPING SGNITRIRLCNSPPQMGGKNCKGSGRETKGCQGVPCPIDG TGLITRIRLCNSPPQMGGKACEGEAREMPCQSPCPDNGNW VGVRSRKRTCDNPPKNGGRECEGENVELKCSSKSC SSGGTLRVRRCQCWGNNTEA LGGRVRRRTCTNPPRNGGLPCAGDAAEYQDCNPQACPGED NGHRSRTRFCANPPSQGGSQCSGSDFELNCFDPARCHLRD GGHYQRTRSCTSPAPSPGED GGHYQRTRSCTSPAPSPGED KTCDTGWQRRFRMCQATG
GGVQYRTRTCTSPPPSDGGR
NPTRGFWCLNREQPRGR RCSNYHVRFRC PLEAAW ATCGAGVKRRTRYCR SGSCPGNYKESADCND RECESRN NGTQQRTRECNGPSYGGAECQGHWVETRDCRQCPVDGKW MAVKTRRRTCSNPKPAFGGRTCVGSERMYCTNLPPCPDPD NGTMQRDRECNGPSYGGLECQGEWHETRDCFLRECPVD NGYEQRFRARLEDPNLL DVGRQRDEMRCSTGRTVDGAW KTCDSGWQRRLRMCEGTG PGVQKR $\square R L C N N P P A N G G R S C M E P D Y E \square R C Q S K C P V N G A W$ LGFRVR RRTCTNPPRNGGDPCAGDAAEYQDCNPQACPVRG EGVITRDRHCNSPPQRGGKDCEGEGRETQSCQAEPCPIEG GGDRERTRVCNSPPQHGGKACAGDTEQHMCNRKSCPVDPG AGHRLRRRSCSNPPQYGGSECKGSLEKWGKCQLQEHCPVD VACGGGDQSRRRTCENGNDCPG
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 $P G V S M R T R L C D N P P L N G G E S C E G N Q E E S D A C V D I P C P V D G$ PGVSIRTRLCDNPPLNGGESCEGNQEESDACVDIPCPVDG GGMRKRERRCDNPPPSNDGCPGSDQQDDCNKEECPVHG GGMRKRERRCDNPPPSNDGKCPGSDQQUDYCNKEECPVHG NPARGFWCLNREQPRGR RCSNYHVRFRC PTLEAAW GGRQYQSRTCSNPFPGHGDCVGVRSLSFTC NTQCCPVH ETCGRGVRKRVRKCYGTTRKCSGN
ETCGRGVRKRVRKCYGTTRKCSGN
GGTRERSRLCNNPPQYGGKDCVGDVKEHQMCNKQDCPTDG EGLDTRDRHCNAPPQRGGKDCEGEGRETQSCDPCPDDGGW $\square A V K T R R R T C G N P K P A H G G R T C V D H Q E M Y C C P T P K L Q A \square D$ GGMQKRERLCNNPPQYEGKDC
LGFRVRKRTCTNPPRNGGLPCVGDAAEYQDCNPCPVRGAW GGVQKRGRLCNNPPQYGGKDC
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GGVQSRRRACENGNSCLGCGVALVEDLLRSGSTSPHTGGW SSCGIGGEVRNPSPRHGGRDCVGQGREERLCNEKKDCPDP
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GGHYQRTRSCTSPAPSP
EGQTTRDRHCNAPPQDGGKDCEGSGRETQSCTAKPCPDDG GGHYQRTRSCTSPAPSPGEDLGDHTEEADCATQACPEG GGTQTRSRTCTNPPADGGADCEGDNEETQDCDSGVSCPVD GGTQRRERACDGPCQGPQDECGAQ ARTBEPHEIICDED RGSRSRMRTCVPPQHGGKACEGPEDQTKCSMAACVEGQW SGQDTR RLCNSPPQLNGKPCEGEGRENKCQDPCPINGQW EGNLTRVRLCNNPPQKGGKGCTGSAMETQPCNNTPIAGGW
 GGVQSRRRLCENGNSCPG GGURERSRVCNNPPQYGGKDCVGDVKEHQMCNRRSCPDDG LGFRVRKRTCTNPPRNGGLPCVGDAAEYQDCNPCPVRGAW LGFRVRKRTCTNPPRNGGLPCVGDAAEYQDCNPCPVRGAW QTCGTRRRTCGNPKPAHGGRVCVDRAEDYCSKQPPVDGGW NRCGVGNQTRSRRCQLTT DHGVTNAKRTCSDECTLHGAW $T T C G L G F Q V R Q R S P R H G G R V C V G Q N R E E R Y C N E H L$
$G G H Y Q R T R T C S S P P P A N G G D I G L H T E E A L C N D H A C$

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S S W \(\square\) S WGPCSETCG K GTQNR \(\square R\)
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D WT T W
FNDD H $N V L P C P V D G M W S C W S P W S K C S A T C G G G H Y M R T R S$ NVLPCPVDGMWSCWSPWSKCSATCGGGHYMRTRS CPVH G GWT S WE A WGACS QSCGAAVQQRVRS WA E WT PYSSCSSSCGY GVQQRYRS WAE WTPYSSSCSSSCGYGVVQQRYRS
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 $T V D G A L G P W S V W E T C Q H G E T G S S S C C L R R$
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E WT S W WS P WAE WTECSVTCGSGTQQRGRS G S G WS S WE T WS ACS QDCAK GYRSRKRT $V K K L T Q D G A F G P W T A W H Q C T D Q D A T G G Q C N C R S ~$
$W$ E WT S W $R$
$R T E T$


NGG WAE WSSWT DCSAPCGFAFQSRHRLL $\square A N C S R N G A W T P W S S W A L C S T S C G \square G F Q V R Q R P$ GTGWSSWEMWSACTQECAKGYRTRKRS
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E WS P WSVCSSTCGEGWQTRTR
VS G GWA A WGPWSSCSRDCELGFRTRKEP
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$N \nabla T V D G H F G P W S S W R P C S D G G S V G G L C Q C R T$
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F NVD H
S VD GA WGSWSSWSECPNACGFALQSRSRP WA S WGSWSKCSSNCGGGVQSRRRA E QRQCNNSA $\square C P$ VHGTWDEWSPWS LCSSTCGRGFRDRCRP WG P WT E WS PC FE Q P S VQ QLH Q Y QL

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$V T C G S G T Q Q R G R S C D V T S N T C V G P S T Q T R C S L G K C R D R Q D$
 $S G \| Q \vee R S R Q C V$

$\qquad$ PAPANGGD $\square$ G $\square$ HTEEA $\square C$ NTHTCDGGW RGTQQRTRVCL GQEGTGAPCEGPAVERRCNEPCPADGRW

 TS C G $\square G F Q V R S N P S P R H G G R V G Q N R E E R Y C \quad N E H L P C P P H$ $\square A V K T R R R T C G N P R P A H G G R M G P E H A E M Y C S P V A K P P P V D$ G GVQK R G R L C N N P P Q Y G GK E C Q G D A S E G Q L CN K E D C P D D G G GHYQRTRRSCNSPAPSNGGDDGLHTEEALCNTHPCDGGW EDGTESRSRHCEELAPGPNVCAGNNSQSR
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A NCGIG S K T R
A NCGI G S K T R
A NCGI GSKTR
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 S GVQVRARQCl
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 $G G A R Q E Q R F R Y T C R A Q L A D P \quad H N L Q F F C P N G H L I N G G W$ A GVQVR LDRHCDVLFP T GNQCAGN
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LGF H $\square R K R T C T N P P R N G G L P C V G D A T E Y Q D C N P C P V R G A W$ NGTQQRTREC NGPSYGGAECQGHWAETRDCRQCPVDGKW S S CGEGFSVRRR $\square$ CPVQNACAGLAEEVTYCK

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$F \mathrm{NVDH}$ K $\square$ K R C P VNGNFTSWSSWTECSRSCGKG $\square$ MSRYRE CPVD G GWTPWSNWTVCSEACGFGRSMRLRP WEQWQSWTACSASCGDGLRQRKRN CPT GAWA WQS WTACSASCGDGLRQRKRN G GWS TWEAWSPCTAVC GK GQK YR $\square R N$ E Q WS E WQE WS A C S VVSC GQ GVVI R ER V


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$P Q F G G P N D G G D S Q F M E C K N R V V D G G W S D W S Q W G C S A C T$ PSEGLACEGVLEEGRLCNRRYNSRGQSLRSTDWSPWS VCT CSGGKDCNGTSSETENCAPEAPTHGKNGAWTPWSSWALCS CSGGKDCNGTSSEIENCAPEAPIHGKWSDWAGWSPCSTCG SASNGGSQCPNDTGACNTPCPVDGDWGNWGDFSNCTKCG TFDGADCTNLGELTVLCPGNNVVNGAWAGWSSWTQCSVCG TFDGADCINLGELTVLCPGNNVVNGAWAGWSSWTQCSVCG
 CTGNCPDSDRSTDQRRCVLRPC PQWSAWGEWSECGTCD
CHLGTNCEGKDYESEQCSSGPC
CHE CHLGTNCEGKDYESEQCSSGPC PGEWSQWEDWGQCS PEGNGDYERLDA TRFYCQSPVKVEARTTEWIPAEE

VNGGWSS WAEWSPCSRCG CSAANSCFGSSLEQQNCNEDQCTTTAVGQWSGWSDWSACS PNEGLACEGVLEEGRLCNRKACNSDPAAEEWSPWSVCS CLGGGDCQGPKTEQRACDGGPC SLWSPWQEWSTCS CHGDTDGDGTDEEFQPCKTQTPVDGGWGAWTSYGPCSTCG PQHGGPVCAGGATRDHTCNTAVPCPVNGEWGPWEEWSTCA CSVKGRCDGAETETEQCSSSLCQSSHWT DWTEWNHCSVCG CQVGTLDSCVGGIMHYCS VINGNWANWGVWSECSSCN CQVGTLDSCVGGLMHYCS R VNGNWANWGVWSECSSCN RQCDSPSPSKGGLKLECVA PCLEGKTGAWSPWSEWTSCP
CGHPKICKGNNTEEEICNDCPRDGHWSEWSEWSSCSOTCD CTGGSDCTGFSTATQSCNTHNPMDGSWATWGSYGACTVCG俭
 AFGGKDCVGDAEVTVPCFETFPVNGGWSQWSGFDDCSSCG RRGGK ACEGPELQAKPCNPADSKWGPWNHWSLCSKCD PKCGGHCPGVAQEAEAC DTQQVCPTHGAWGAWGSWSACL PRHGGLPCAGDATRTHTCNTAPVNGEWEAWGKWSSCTRCD PRHGGLPCAGDATRIHICNTAPVNGEWEAWGKWSSCTRCD PQHGGLFCVGDATRTHICNTAVPCPVNGEWGPWGEWSTCT QHGGSDCSGDQGVQLQRQDCPPVDGGWSSWGPWSPCDAC QHGGSDCSGDQGVQLQRQDCPPVDGGWSSWGPWSPCDAC PKCGGHCPGEAQQSQACDTQKICPTHGAWASWGPWSACS CQCSGDTEDDTECFGLLCD GGWSPWNQYTPCC CNGPSYGGA ECQGHWVETRPVDGRWQAWAPWGSCSVCG CSGGRVCVGQSREERFCNENSPLPVFWSSWAPWSECSAEC SAGGKDCVGGSDYEMQPCFGAACVDGHWGDWMCWTDPCSECS CTNPAPLNGCDGQAFQKVACTTMCPVDGAWTEWSKWSACS RFCPNDDSAVNNETLVCGEEPCIECEISQWSDWTECAVCG PANDGQPCGGSSVAVNCT VHGGWSDWSAWSACSTCG CSNPKPKHGGRVCQIYCSSNPTRQSSWSEWGAWSECSQCG CQTGRNCEGPSVNGLLCEERPCDKGPCPHWSSWGQWEKCS AHGGRFCEGNLYQSEMCKQRPAVDGGWTQWGAWSACSVCS C NSPDPQLGGKGCKCERDPPVNGRWGLWSPWSACTVCG CVSSSYSTQCSGLREQCNNSAVVHGAWDEWSPWSLCSSCG $P Q N G G E A F G A G R E E R L C Q R D P P V D G A W G E W S L D W T A C T S C D$
$P Q H G G A A C E G I A T V V N C T Q H G G W T D W S A W S P C Q T C G$
PQHGG AACEGGATEVTNCTQH GGWTDWSAWSPCQTCG
SQGGQPCFGSDFELQPCANEACRNSVNGGWGKWSAWSECP PQCGGSCAGAASESQAC DTQQMCPTHGGWSAWGSWDDCS
 CRAGGDCEGKDSDMLNSC TRMPVDGGLSQWSPWSQCTSCG RHGGRVCVGKSREERFCNENTPVPIFWASWGSWNKCSSNC CTGGSFCEGQSGQKTACASLCPVDGGWTEWSKWSACALC PKCGGHCPGVAQESEACDTQQVTHGAWGPWGPWSSCSSCH DVSALSTMQDKEESRLCQDGSCHRLDEDSWSEWSPWSTCS
PGGEGDYSDEAVRFYCARPVSIQARTTEWELPEDVHYSP CSGGKNCSHIGSARVHCNPQNPIHGNWGAWKMWSFCSSCG RHGGLSCQGPESEVRDCKQQECVDGGWSAWGPWTRCSSCG CLGVGECDGS SDLEACDMGAC AAWADWNAWGRCS HQPPGKPCLGSAYEHRGCSGLPPCPVPGGWGPWSPVSPCS

 C GPFQCPGEWDQTEDCNTQNPVDGSWKPWSAWSSCSVCG
$C L G$ $\left.\begin{array}{lllllllllllllll}C & P & G & E & W & D & Q & T & E & D & C & N & T & Q & N \\ C & V \\ C & T & C & A & A & G & E & M & L & C & G & Q & E & P & C \\ C & V \\ C & T & C & A & A & G & E & M & L & C & G & Q & E & P & C \\ C & P & V \\ C & C & A & A & G & E & M & L & C & G & Q & E & P & C & P\end{array}\right)$

## UniRef90 K1PYZ9

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90
100
NGTQSRNRSCEGPYFGGKNCTGDWGQTKDCNTPCPIVIDGFW ${ }^{120}$
120 NGTQSRNRSCEGPYFGGKNCTGDWGQTKDCNTPCPVDGFW NGTQSRNRSCEGPYFGGKNCTGDWGQTKDCNTPCPVDGFW TGEVVHSSLCINKEQPYGRVCSNYHDRFQCP PVQSYW TTCGEGWQTRTRFCVSYSYSTQCSGPQRQCNNSAVCPVHG STCGRGFRDRTRPPQFGGNPCEG
A QCGGGDQARRRTCENGPDCVGCNVEYQPCNTNPCPEKKT ASCGVGVRTRTRECDGPESCSGPRLVREACEMPSCES LLG RGDRSRKRVCNNPPKFGGMPCLGPALEYQCPEASPVHAPG VSPKKGFRINKEQPQGKT CSNYHI RFLCPDEH I CDC GGYQVRSRACRNPPKFGGKFCRGQLIESRDCRGCPVDGDW TTCGEGWQTRTRFCVSSSYSTQCSGPQRQCNNSAVCPVHG VGN $\bar{T}$ T $\quad$ R R LCNSPPQLGGRNCKGGGRETKACRGPPCPVDG TSCGIGFQVRSNPAPRHGGRVGKSREERFCNENTPCPVP
 NGTWTRQRLCDNPSPAHGGETCDGNQTETEACAEDPCPSVD A Glil ERRTR A GTi CNIVTCSNPAPLRSGSTGLNGVLALNQNEKTTCFVG
 ATCGQGVAVRQRTCLGGGD
ATCGQGVAVRQRTCLGGGD
TGEMVHFSLCLNNEQPGRRNCSNYSVRFLCPGPKTEQGPC RGWQKRTRTATNAPDNGGACEGQAFRFLCSSAVVMGLW VTCGRGFKRRDRTCQGPF DDSSSCMDKHCKTTVCPVDGAW TTCGEGWQTRTRFCVSSSYSTQCSGPQRQCNNSAG DCPVH ASCGSGMKRRQRVCQFGTDCQGPNEESQFCYGPPCAE
RGVETRTRQCDNPAPSHGGR
RPKMKGQQ $\square R S R S C K G R G Q R C A G Q Q Q D \square R H C Y N \square Q K C L W K$ RGSQARYRKCVTTQHT\SFDCPDTNDEVRACDTGSCNGVG EGVT FRDRTCTDPPQGNGTQC
EGVTFRDRTCTDPPQGNGTQC NG $\square$ MKR $\square$ RKCSPPPQNGGKEC $\square$ GSDHE ILCNDRKCEEPG GGTQERQRTCTNPPQYGGASCPGSTVSSQSCNTCPDDGVW GGPHAPMERRSRTCSSPGKFCPGSEYEQRGCSSLPPCPVA GGPHAPMERRSRTCSSPGKFCPGSEYEQRGCSSLPPCPPVA TGGWQRRFRMC
GSCSTRSRTCSAPEPSPGKPCSGPANEQRLCSGLPPCPVA EIPGQQSRMR\|RGRKFDGQRCPGDPQD\|RHCYDIHNCILK E IPGQQSRMRIRGRKFDGQRCPGDPQDIRHCYDIHNCILK $R$ PS $\square K G Q Q \square R S R S C K G R G Q R C V G Q Q Q D I R H C Y N I Q R C L W K$ GGESTRSRDCSSPPARFGG
GGESTRSRDCSSPPARFGG
ANFRDRTRMCSGRAHDGKRCEGKDRDEMRSCYDDHDCSMK GSCLTRSRSCSAPHQPPGKPCSGTAYEHRGCSGLPPCPVA D G $\|$ KERRRLCDNPPQGNGEKC $\square G \square A \square E T R D C D E D R C D G K N$ GGTQRRERVCSGPFFGG
GGGMHSRQRSCE NGNACPGCAMEHRCNDPCPEVRRN VSCGSGVRTRTRECDGPESCEGPRLVRETCEMPSCESLLG SGMKTRARMCTNPSQGGKDCVGSPYEMQQCF E IICPVD TECTHRSRECTPPPQNGGRDCSG
$K G K V S R R Q \| V N A P$ IV RGFRTRKRTCTNPPKNGGLPCIGSAMEYQDCNPHPCPVKG TAVKTRFRTCTNPAPAFGGRVGQDRTEAFCTENPPCQPTH GGFQWRRRQCHSPKGRDGDYRACNTFRFTCRDAAYLSNDD KECGAGHTYRTRECDDGVSCEGASEEKVLC NQQPCPDW VGRRVRRRSCTNPPRYSGRQCAGHNPECYGADKESLGAVN GGDRERSRLCNSPPQYGGMACAGDVIQRDMCNKQDCP DDG RGYRSRTRTCT PPQFGGDPCEG
DGQRSRSRSCTNPPPGGGADC $\square G \operatorname{V}$ S QE $\square E D C N R R S C E G \square G$ GGNQERYRFCDSPPAHGGRNCSG
GAVKTRRRTCGNPKPAYGGRTCVGSEQMYCCPVAKPPS DD DGCGFA DQSRHRACNNPTPSSGGHGLAHQCGTESCNESTD
 GGLQSRTRACDNPPQYNGADCGALDEQAEC NEQECPKDG TKCGDGQRTRRRRCQGLGDD
GGGVQSRRRACE NGNSCPGCSVEFKTCNP EGCPEV EGWQSRSRLCA TSSFTTQCTGALLRENRPC NNSVVCPVN GGPETRSRTCSAPEPSPGNPCPGTAYEQQSCAGLPPCPDA ADCGGGVQVRTRTCEGPLDNCEGQTTFTRPCNTQQCKGEW

## EGFW

C $\square$ NREQPGGRTCSNYHVRFDCPADA
GKRERIRRKDNPAPGGAGCPGSDRQIMPCSSDCPVDGNW T GVKSRKRYCNNPPKAGGKMCAGENAE!RCRNDALLRT
ASCGGGQRLRERNCVGLGDEC G VEIAESESCSDGDC
ASCGGGQRLRERNCVGLGDEC $V$ VGEIAESESCSDGDC VTCGLGQTLERRTPRHGGLFCAGDATRTHICNTATPCPVN NG DQ RKRSCSDAQNDQGNSCKGSTKE $\square K C S N N C F D N G M W$


GGERERQRECDEALHGGENCTGPGWQNQTC NTHHCPVD | N T H HCP | V | $D$ |
| :--- | :--- | :--- | :--- |
| N TH H C P | V | D |





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UniRef90-K1PYZ9
UniRef90-K1PYZ9
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UniRef90 E3M2F3
UniRef90-E3M2F3
UniRef90-H3BAU3
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T CN

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UniRef90 K1RB93
UniRef90_UPIooo2B44BFo UniRef90-M3W3E9 UniRef90_A5WZG3 UniRef90 E1FTH8 UniRef90-UPIo003F07ECA UniRef90-W5KYX5 UniRef90-G3H7K1 UniRef90-GON545 UniRef90-GON545 UniRef90-UPI0003C109C7 UniRef90-UPI00034F9F8B UniRef90-G3PXD8 UniRef90-UPIIOOO4409D2A UniRet90_UPI0004409D2A UniRef90_H2Y1T3 UniRef90-UPIO001D564AC UniRef90_D7EII6 UniRef90 K1QX39 UniRef90-UPIO003B3B44A UniRef90-F1KT17 UniRef90 F1KT17 UniRet90_G1U9S1 UniRef90-C3ZX93 UniRef90-W4WV88 UniRef90_UPI00038C1359 UniRef90-01PQ688
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 CPVNGNFSQWSEYSPCSNTCGS GUAQRKRP G GWS GWGRWA ECTS E C G G G DQTR H S P RWS P WS A WGPCSVT CTKGSQLRHRR GVWA T WT E WS TCSTSCGPGTMIRTRG

SCPVD GHWSEWSPWSMCTETCAGVKERワRP NCPID GKWNAWNQWTTCSATCNGGTQTRIEP $V H G D V W S W L D W S P C T V S C G S G V R T R R R P$ EQRQCNNSAVCPVHGAWDEWSPWSLCSSTCGRGYR DRCRP

FSEWLLE WS FCSETCGGGSS F
GGWGKWSA WSECPDGCGFA DQSRHRP VDGNWASWGPWSNCPVTCGDSTVSRSRT V D G N WA S WGPWS NCPVTCGDSTVSRSRT QS QACDTQKTCPTHGAWASWGPWSPCSGSCLGGAQEPKET

Y WN D WT T WSRCSSSCGGGVSTRMRN
YWNDWT TWSRCSSSCGGGVSTRMRN
 VDGNWSPWSFWSSCDVTCASGVQFRNRP

TS $\square$ R $\square$ I NGG WS FWGGWSSCTRDCELGFRTRKEP NGG WANWGSWGACSVTCGPGTHTRSRP E QRPCNNSAVCPVHGAWDEWSPWSLCSSTCGRGYRSRTRP


E QRGCS GLPP CPVAGGWGPWGQVSPCSVTCGLGQTLEKRK



WS P WS DWT P C S VT C G H Gl Q QR GR P
GPWSDWTPWSPCSKTCFYGVRKRFRH GPWSDWTPWSPCSKTCFYGVRKRFRH E QRACAGLPPCPVAGGWGPWSPVSPCSVTCGLGQTQERRT E QRACA GLLP PCPVA G GWGPWSPVVPCSVTCGLGQTQERRT NCPINGGWTSWGSYGSCTVTCGGGTQQRSRT
 CPE EGGWSEWA P WG P C S V T C S K G $\quad$ EQ T R R K R A

ESETCDTQQVCPVHGAWAVWGPWSACSGSCHGGPSAPAES WG QWE S WS YCSVT C GT G $\square K R R T R \square$ RSTTATVVVYVNGGWSSWAEWSPCSNRCGRGWQKRTRT H WN K WGP WNQCSNS C GVGGVS $\square K R R V$ T T T S GS RWNSWT Q
VLT DPVDGGWSAWSSWSPCQHGTAQTRDCNNPP



WS T WT
IEVCNVE
 CPVD G GWE P W W GRWS QCTM S C G G G NKTR S R V
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C DTDEN DEDNCA GNSLESKTWTWADWTNWSQCP $C \| V G G D C D G N S T E F D T C A G N S L E S K T W T W A D W T N W S Q C P$ QHGGKDCPGVGLESRKC $\square$ GCPGGK TLTPWTAWGQCSVCG AGSGANCTGLSDDF QVCNTSQPVNGSWSAWGPWTGCDVCG KNGGVPCDGSAMEYQDCNPHPPVKGSWSCWTPWSQCSTCG QGSGSTCAGSSTSSQACQDMVCIPD IDGNWGSWTSYSACP PQF GGDPTKFCNIAVCPVDGVWNEWSSWS PRHGGASCAGDATRTQVCNTAVPCPVDGQWEPWGCSASCS PRHGGASCAGDATRTQVCNTAVPCPVDGQWEPWGPWSPCR
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$C S T N$ NCQGADYETETCNMGPC
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$P Q H G G P S A G D A I R T H V N S A V P C P V N G E W G P W G E W S P C V$ | $P Q H G G P S C A G D A Z R T H V C N S A V P C P V N G E W G P W G E W S P C V$ |
| :--- |
| $C T G G A N C P W S S T S S Q S C N T H N P I D G Q W T S W G S W G S C S V C G$ | CTGGANCPWSSTSSQSCNTHNPIDGQWTSWGSWGSCSVCG PQHGGARCAGGATRGLCNTGKPVNGHWGPWGAWEPCTRCQ $P K C G G H C P G E A Q E S K P C D T Q K V T H G A W A A W G P W S P C S T C H ~$

$P G G N G D Y E R D E A D R F Y C A Y P T A$ PGGNGDYERLEAIRFYCAYPTATEARTTEWVRAKEVHYRP REHGRALRPIDDQWQE WSSWSQCSVCS RSPGKPCPGSEREKRPCSPPCPVAGGWGAWGPVSPCPVCG CNGDK CTNPAPLNGCEGQAFQKTACTTVCPVDGAWTEWSKWSACG CT DRGRCMGESDKYKTCSSAPC CPVGAWSEWSPYSPCS CTTGRDCDGPNQQLLSCNRRPC $P$ P P PNWNSWRQWGSCS PQHGG APCTGARVRVTNC TVHGEWTAWSAWSACTTCG C IY G GVT HNGCEGPAQDQSSCPSRPPSWSDWSEWSECS

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PGTYTRSRTCSAPPANLGRQCDGQSFQAPCNREDCRQCVD PGTYTRSRTCSAPPANLGRQCDGQSFQAPCNREDCRQCVD LGQTLEQRTCDHPPRHGGPFCAGDATRNQMCNKAVPCPVN RGWQKRTRTCTNPPLNGGAFCEGQAFQKTAC TTVCPVD
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NCAEDGSWGAWAPFRPCSVSCGAGLQLSERP

 QWSSWSECSKTCGRGTKSKFRQ


WGEWSEYGPCDATCGAGRRRSTRV C P VD G QLS D WGS WS QCSATC E GLLK S R C S H $C P V D G G W G P W Q A A G D C S V T C G Q G L Q P T E R P$ A RRRSTTATVVNGG WS A WS PW WGPCDRSCGS GVRARTR S $C P \square N G G L T E W S D F S P C S H T C G \square G N Q V S T R P$

P $\square$ D GR WS D WGE WS $\square$ LTNATNPET $\square R R R R P$ CPEMGGWSNWEHWTPCSVTCSKGTRTRQRT EWTSW $F N D D H$
ETERCTAQNTCPVHGGWSSWFGWSHCSATC\|IPSRDRHRS FS P WS S WS E C S VTC GIGS QAR GR S C P E M G G WS D W GP WGP C S V T C S K Gll R T R QR A CP EMGGWSDWGPWAACSVTCSRGIKIIRRRT $\square$ EVV T D G $\square$ WS RWS DWSKCPNSCAKAFRTRAAP
 G GWSVVA QWADCSSQCGGGIQTRTRP
 WS A WS SWGPCDRSCGSGVRARFRS
UniRef90_C3YC75
UniRef90_C3YC75
UniRef90_E5SS77
UniRef90_UPIO0034F30E4
UniRef90_G5B0C5
UniRef90_G5B0C5
UniRef90_Q966Q0
UniRef90_UPI0002B4CFB1
UniRef90_E4YK42
UniRef90_U6L9G0
UniRef90_U6L9G0
UniRef90_G6DG65
UniRef90_G6DG65
UniRef90_UPI000329A7EB
UniRef90_UPI000329A7EB
UniRef90_M4A015
UniRef90_F1RWWV1
UniRef90_A0A044SPT6
UniRef90_F7CIH0
UniRef90_S4RH13
UniRef90_UP10

C MVVNPNVEQANSTECHVAD CAE
NGNWA A WS SWSDCTTCG CMVNPNVVQANSIECHVADCAE NGNWAAWSSWSDCTTCG
 R S P GK P CP G VA Y E QR GCPP P CPVA G GWGPWGPVSPCPVCG PQHGGPFCTGDDTRTHICNTAVPCPVDGEWEAWGDWSTCT

 HTCGEPVLAFRQRGQTCSDKTCIAPRCAYWSQWGDWGTCS
 $V V L A F P K D A S G R V M Q H C Q G P P P V D C Q V T A W G A W S S C T T C G$ KHGGRVCVGLDVQDVYCADLPPIDGSWSPWGPWSAGCGVG

 CSPGVGBTWLQGECKQCTCTPEVDGAWTPWSVWSDCSTCG

 PKCGGSCPGRETETEPCCPTHGVWAAWGPWGPCSA S C L L CGAAGPGTPTEFQECNLQACPAVDGGWSCWDSWSACSTCG CNDVY E CPGNKVVEYFKCYSNKTVPGAWQE WNE WS S CTTC G CTPFHTQSACDGDSEEQEPCNTVPGGWSAWSAWSQCSRCD DQCVGGKAEEDSECQVEC QEVVWAGWSFWSRCD CT NPTPLLNGGAFQKTACTTLCPVDGGAWSEWSKWSECG VRD G GWS $\square$ WS D WS P CS S C G RYGGKVCEGPSTQSRDCESPCPVDGFWSGWSSWGECS S CP CTGGTFCEGQSSQK】ACTTLCPVD GRWTAWSKWSTCG P K CG GT C $\square G P$ RE ERSGCDTGVPTH G G WSEWAS WGPCAMCS CQK TE DCP GEVVRESE』CD TVQP CQKTEDCRPLDSSGGGWTEWSAWS QCS CEDGNPQRGCFGDYKVKASCNTREPAWESWADWSECSSC G CS $\quad$ S Q QCDGPSMS IEACN VE KCAQWTAWGSWEVCS C G G N R CVE V T LEEKK A CK QLP C P S WS DWEA WS T C S V C G CTNGSPCPNSASSTQAANTHHPDDDGGLSSWGSWGTACTVCG CHGGKLCS GTTTETVTCSDGPPVDGGWSLWGSYSSCSVCG CHGGKLCSGTTTETVTCSDGPPVDGGWSLWGSYSSCSVCG PQHGGPFCAGDATRTHICNTAVPCPVDGEWDSWGEWSPCI A G A G L P C T G A H R D D RVVCA STP CR D G G W S D WS S WT D C S K S C CHGGLPCSGSNKGTQQCNTKNPVDGQWSQWGTWEECKSNR
 $P K C G G H C P G E A Q E S E A C D T Q Q V I H G A W A K W G P W G S C S S C H$ PKHGGPFCAGDATRTHTCNTAPVNGEWGPWGEWDECKRCQ PQHGGGLPCAGENTRTHDCNTADVSCPVVDGEWTSWEEWSPCT

 C GVSG N CRGSSTESSGRCSDSNCDDDGHWAE CLG G $\square$ T C LG P S T $\square P C N V P$ E C SV C NAPID ELD GEECLGGDRRTKDCREGGWGTWSPWKRCS AHGGADCGGLAQETQACDTGVSVDGGWSDWSEWSACSVCG A H G GA DCGGLA QETQACDTGVSVVGGWSDWS E WSAC SVVCG

 CVSSSYSTQQCSGEQRQCNNSAPVHGTWDEWSPWSLDCS S C G
 CNGGK T CVGKS S E TRRCTTKRC P V NGGWSAF GN Y GP CN K C G D H GGADCE G D D T D L L S C T K L P C I H G G WS E WS A W S T C S L S C CP CLGPS $L Q T R A C S$ Q CPPGQQCDGSTMETRTCAPCPVVE RHGGRVCVGPSRE ERFCNDGQPI FWS PWAS S V V ${ }_{\text {G C S S }}$ P QHGGPS CAGDAT RTH $\square$ CNPCPVDGEWDLWGQWSTCVVRCE R DGFGPWS
VLAFPTDACPESERFEACQGPPVDCQVTAWGAWSSCTY PQY G GPCT GQT T Q TAKC GTVNPGEGRLGDWTSWGQCSATC QHGGMQCMGSSSFRQPCDEGPPDDGEWSPWSGFSACNDCG PSN PPAAAGGVACHAACGTEVLG WTPWMPWSRCN CTNPAP LNGCDGQSVQRDACTTMCPVDGGWTAWSKWSTCG

 PKCGGHCPGEPRESEACDTQQVIHGAWATWGPWGSCSSCH P GGEGDYETVEAVRFYCAKP\ALEARTTEWASPEDMEVVH CSNPSPSPPGNGCVQHCSELPNCABEDGWGAWSPFRPCS
 PKCGGQCPGEARESEPC DTQQVCPTHGAWASWGSWGPCP
 HNGGKECDGEKRE ERDCANECPDDGGWSNWSKWSECSAKC HSHNENAESDDTCQCQCNNPTPRHGGEGGWTAWSAWSACS
 NSLDNDDEACNIQE CDDNNNVDEDIGEWSDWSSCSKTC CT
$P S$ GGA ${ }^{\mathrm{P}}$ LN G K E C G DA LTEQLUNELLS
TVNNGGWSTWTTWSSCSVCG

| UniRef90_C3YC75 <br> UniRef90_C3YC75 UniRef90 E5SS77 <br> UniRef90_UPI00034F30E4 <br> UniRef90-G5BOC5 <br> UniRef90_G5B0C5 UniRef90-Q966Q0 <br> UniRef90-UPIO002B4CFB1 <br> UniRef90_E4YK42 <br> UniRef90_U6L9GO UniRef90 U6L9G0 <br> UniRef90_G6DG65 <br> UniRef90_G6DG65 <br> UniRef90-UPIO00329A7EB <br> UniRef90-UPIO00329A7EB UniRef90-M4A015 <br> UniRef90-F1RWV1 <br> UniRef90-A0A044SPT6 <br> UniRef90-F7CIHO |
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|  |  | UniRef90-S4RH13 UniRef90_UPIO002B43199 UniRef90-UPI0003EBC70B UniRet90_W4Y245 UniRef9O-UPIIOOO3955DB9 UniRef90-A8WMA1 UniRef90-UPI0003EC16F8 UniRef90-V8PC92 UniRef90-W5KJX1 UniRef90-UPIO003FOEE5C UniRet90_E4WZE3 UniRef90 B4H906

UniRef90 E4X7W2 UniRef90-UPIO00161D6F1 UniRef90-A8PPN4 UniRef90-K1QZA1 UniRef90-K1PRG5 UniRef90_K1PRG5 UniRef90-P27918 UniRef90 F1OSL88 UniRef90-A8YQG5 UniRef90_C3Y007 UniRef90-A0A016TUK4 UniRef90-UPIOO045D9207 UniRef90-UPI00046B7CC2 UniRef90-M3YPN8 UniRef90-U6MU46 UniRef90-U6MU46 UniRef90_UPIO00158200F UniRef90-A7TZ39 UniRef90-K7H8E5 UniRef90_- 55 VH 52 UniRef90-C3YBD3
UniRef90-C3YBD3 UniRef90-UPI0002B48F5F UniRef90-UPI00038EA78D UniRef9O-UPIIOOO45D83EB UniRef90-G3USV1 UniRef90-13JZ32 UniRef90-A3EOP7 UniRef90-W4XPT9 UniRef90-UPI0003BB793C UniRef90_H3FRP9 UniRef90-UPIO0029905CA UniRef90-G7Q2L6

DGVRTRDRTCTDPAPY
DGVRTRDRTCTDPAPY
TGERTRQRTCS
GDGOECDVEH ${ }^{110}$
120 HPHLSGQQMRTRSCKGR NGTSKRVRHCNNPPAIDNGKECSGN TSCGMGFRERLRRCQGDDADCLNLFGERRETQSCEGGTGR GGQQQRQRSVVRQPANGGRECPVLTETQVCGSYPCPTDCE $G G Q Q Q R Q R S V V R Q P A N G G R E C P V L T E T Q V C G S Y P C P T D C E$
$G G T R E R R R V C G S P P R H G G A D C E G P R F R Q S C D D R P C E V R K A$ GGTRERRRVCGSPPRHGGADCEGPRFRQSCDLRPCEVRKA
 SGVITRDRLCNSPPQLGGRDC
KGGPSRKRTCTAPEPSPGNPCSGSNDQRMCSGPPCPATVAA KGQRDSCDRTR CDCYNGDCTGDRKEHEDCVRNSC PEW GGPQARMRTCSSPAQPPGRPCSGQAYEKQGCEGLPPCPVD GGHRQRSRACTHPPPAHGGDLGLHTEEALCNTQSCPDG
 NRCGGGNQTRSRPCGSNPTETADHPVNHFCNGSSEEKKMC AECTHRSRECSEPPRNGGRDC
FGVQTRDRTCSSPEPRGGQCTGLAHQTSLCDLPACDHESD PGRA $\square R R R S C S N P A P S P G Q N C Q G D S H Q T E S C D H L P F C P V N$ $T E C T H R R R D C T A P P K N G G R D C E G L V L Q S K C T D G L C M Q T$

$P P E Q L R H R T C T N P P P S P G N D C K G P I T D T Q L C H S L P F C P V N$ GGVERRSRTCSAPEPSPGKPCSGATYEQRGCAGLPPCPVA | TGCRRKARRRFRRCQNGDDDCKGDSFETEECKKIPDCAFW |
| :--- |
| QTCGDAVKDRRRPAHGGRTCVGSEQSEMYCRPVPKPPSVD | QTCGDAVKDRRRPAHGGRTCVGSEQSEMYCRPVPKPPSVD

QGREHRYRYCNHEGECEGDETESNN

 VGIQKRERTCTEPSQYGGTDC VGIUQKRERTCTEPSQYGGTDC RRNMKS DSCQEDPGQFDGHRCAGQQQD RHCYS DQHCPDK GGGVKSRRRDCDRP DRDGDQCEGLDTEVTMCNTQHCAVSH
$G G G Q Q R R Q R W C E H T G F G G L T C E G K D T D Y R P C F D I K S C Y F D$ RDCWRRRECNDPPPQFGGRYC GGDNMETRNCTGGLCRG ASCGNGMKRRVRTCQYGTDCPGPAEEAEPCYGPPCAM
GGPQVPMERRSRTCSAPGPSTTGPAYEQRSCSGLPPCPVA $E \square Q G Q Q \square R \square R C K G R K L T G \square R C A G N Q E D \square R Y C Y N I H R C L L D$ $P G Q Q S R S R S C K G R D F G G R R C P G E Q Q D D R H C Y D D Q R C R L K G$ $\begin{array}{lll}G G K Q T R Q R S V L S A P V A E G Q R C S C N T & F S C D G G C N L \\ G G K Q T R Q R S V L S A P V A E G Q R C S C N T & F S C D G G C N L\end{array}$ RPGS $\square N F Q R R S R S C R G R G Q P C A G K Q H D F R Y C Y D D E N C D L K$ TGSKTRFRSCSNPDPRYGGKPCAGLDRENLKCFTKHCALD ATCGVGE DQRNRVCQT GRNCEGPSVNGLLCPGSPPCPHW VSCGTGFRTRKRKCNNPKPRYGGKA CPGDKKEVGQC VGEQTRDRTCTNPPAHGGADC
VGEQTRDRTCTNPPAHGGADC
SGFSQRNRS IIQQPKCNGKDCESLFESKTCSYNSNQDCVV GGTMTR QRQCHPPQNGGRACA
AQCGGGDQARRRTCE NGPDCAGCNVEYQPCNTSPCPKKT
$R G Y R D R T R T C K P P Q F G G N P C E G P E K Q T K F C N D A L C P G K A$ KTCGMRRRFRSCTPFNHTQSACDGDSEEQEPCNTEHCPVP GGDQKKMRYCSNPPKYGGKGCPGLNTMDRACNLHKCPVDG GGVGTTARNRSPSPAHGGDSCPA
AGNITRDRLCNSPPQMGGKGCKGSGRETKGCQGAPCPDDG $V S C G D G F Q L R E R D C N G V L$ CATNNKQARTCNEQTCPAKD
VGHYQRTRSCNSPPPANGGDLGLHTEEALDCNTHPCDGGW EGQQSRWRTCKGRKFDGHRCTGQQQDIRHCYSDQHCPGKG GSCLCRRSACDSPPRCGGLDCLGPADHDACS NCSRNGAW $G G Q Q Q R Q R S V V R Q P A N G G R Q C P V L N E T Q E C G S Y P C P T D C E$
$E G L K S R T R T C N$ GGGQLRTRLCDNPPPQHGGDNCVGDDDVTCNNPCPVDGGW RSCLT GWRRRSRDCSSPGHSCTGEDTQEEACSPPMCPGVP TECMHRRRECTAPPKNGGKDC
KGGLQRRSRQCNSPAFGGMNCPGSNFEDQACNDCPVNGAW VGTQRRYRAASQPPAFGGRECPGPSVEVAFCSLQPCKGAG
 GGPSAPTQRRSRKCSPPGKPCPGDDHETRPCSGLPPCPVA SSPEKGF WCNNKEQKEGKLCSNYHVRFKCC PRLEGYW VS CGVGLQLSSPAPRYGGKVCEGPSTQSKCESPCPVDGFW VTCGKGRKTRDREPEFDGDTCLGADRQTRDCKSSPCPVNG
GSCQTRSRTCSSPEPSPGKPCPGDAYEKRACTGDPPCPVA GSCQTRSRTCSSPEPSPGKPCPGLAYEKRACTGLPPCPDVAA GGPSAAVERRSRTCQPPGNPCSGSPYEQRVCTGLPPCCPVAA VQKHERSCIR PKPENGGDECSGDGDEDPCQGGNC
QTCGTRRRTCTNPAPAFGGRVCVDHDDVVCDDPPPQNGQW
GGTQTSTRTCNTFGQAGATCVGRASRSQ』CND VICPSW STCGRGFRSRTRPRQFGGEPC

SDCTHRSRDCTQPAPRNGG
PGGGPGRRSRTRDCSSPGDSCPGEATEEEPCSPAMCPGMP D GKQSRQRICNNPPRCGGNDCS
$R G W Q K R S R S C T N P P D N G G S S C E G Q N Q Q S V C D A T C P V D G G W$
$G Q S H R S R V C S W P T E G G R P C G G H R Q S R P C Q D N S T R C T D C$


EWTSW FNVDH
$P$ VDGQWADWAQWTACSVTCFSGSRSRERT CPV ${ }^{\prime}$ GE WA T WS P WSECEVTCGKGLIVRSRE $S W D N W G S W S S C S V T C G T G T R T Q V R V$
$F S Q W Q E W G P C T R T C G Q G D Q R T R P$
$D G G F G P W A P W Q P C N N$ YGEWSPFRECDATCGVGRQRSMRA YGEWSPFRECDATCGVGRQRSMRA WNFWTQWSDCSVTCGNGAKTRSRS D GA WS PWS EWTSCPESCSTSRSCNMPP VDGGWGQWA A WTQCS SCGTGLQSRCDN

 WSAWSPWAPCDQSCGLGVKARFRS

WPEYTAWTTCSQSCGGGTQTRCDT WS A WS S WAPCDRSCGSGVRARFRS WGS WME WT KCSKTCDLLGERVRYRP E WDT WSPCSVSCGTGTRSRERY
WAE WSSCSTSCFMGTRTRSHS WAE WSSCSTSCFMGTRTRSHS
WAE WS SCSTSCFMGTRTRSHS

NWSKWSEFYSCSQSCGGGVQKRYRS WS LWS SWS QCSITCGSGLRTRFRT WSLWS SWS QCSI TCGSGLRTRFRT VDGGWGQWAAWTQCSLSCGTGLQSRCDN $V D G G W G Q W A A W T Q C S L S C G T G L Q S R C D N$

AAVIVYVNGG WSTWTEWSVCSASCGRGWQKRSRS EAARCVSVVDCDVDGAWSDWSPWTPCSAPCGLGVQRRYRP TVYVKGGWSAWSAWSECHSRCAKGGQKRTRT RSTTATVVVYVNGGWSTWSEWSSCNERCCGRAMSKRERK GSWSEWSKCTEQCANGTRTRSRA GGWCEWSEWTPCSKTCGYEMMSRYRT
 C P V P WS SWTPWSPCSRQSCFHGRRHRFRH WAS WS SWTKCTA DCGFMESTRFRP TSNQGFYSEWSMWSSCSASCGGGMQTRRKT RSATATVIVFVNGGWSLWTEWSACNAPCGRGVQKRSRT

GYWS EWT PWSECSASCGDGLQNRY WT P WAD WSRCNAECGPGEKTRFRQ WTPWADWSRCNAECGPGEKTRFRQ
RSTTATIIVYVNGGWSTWSEWSPCSNRCGRGWQNRTRT WSE WT RWGECSVSCTEGVSQRRRS CPVSGGWCKWSSWTPCSRTCGAEWVTRYEP CPVSGGWCKWSSWTPCSRTCGAEWVTRYEP

s VT | $N G G$ | $W S V W G Q W A Q C S S E C G G G 1 Q T R Q R T$ |
| :--- | :--- |
| $E D G$ | $W S$ | $E D G W S P W S D W T H C S V T C G R G I Q Q R G R S$

$V$ VDGE WC E WS SWS Q C SVVSCTEGVTQRRRRE WS A WGLLWS TCSKTCGSGTRSKQRT

GTWGA WEPWSPCSHTCGTGTQRRRRH

VSCNVDGQWSSWTPWSRCSVSCGAGLQSRYRR S S PALE D WS E WT S W EWS FNVDH VQSPVDGFT E W VQS PVDGGFTDWAAWSSCSKTCGGGTSERVRP WGAWSSCTTTCGGGQQQRVRQ ATVIVYVNGG WSTWATWSSCSAVCGRGWQKRSRS $L Q V P \square D G G W S D W S P W S D C S V T C G V G T Q T R D E P$ GA WS S WGP WEQCSQTCGPGVQGRSRH CPMNGQWSEWSPWSMCSDTCGSGIKKRIRP WS A WS SWSPCDVTCGLGLQQRYRS WSAWSSWSPCDVTCGL GLQQRYRS ERRDCSGLPLCPVAGGWGPWGPASPCSVTCGLGQ1LQQHG PI D GDWGAWSSWDNCSVTCGGGVHYRNRT RSTTAT IVYVNGGWSTWSEWSPCSNRCGRGWQKRTRT WSA WTSWGPCDHSCGSGVRARFRS WS PWS PWSKCSVSCLEGVRQRRRR DGNWSQWSPWSSCNATCGDGITVRTRP VDGNWSPWTAWGECTETCGGGQQARSRE ECPDDGG WT S WA PWSA C SR S C LI A L R SRSRLL WS T WT E WSVCSASCGRGWQKRSRS WSAWSSWAPCDRSCGSGVRARFRS VLD Y PVHGGWSEWSDWDVCRQVGLDRMQCLCRS WA QWADWTPCSATCDGGRRRKSRG

UniRef90 UPIO002C68E5D UniRef90_UPI000440AD0D UniRef90_G3SC68 UniRef90_K1PPW7 UniRef90_UPI0003F0AD2B UniRef90-H2YGT5 UniRef90_UPIO0034F75F0 UniRef90_UPI0003EBFE55 UniRef90-UPI000186C81C UniRef90-UPI000186C81C UniRef90-E4X1P1 UniRef90 UPI0002B42C3E UniRef90-UPI0002A4A912 UniRef90-UPIO002A4A912 UniRef90-F6PUV1 UniRef90-UPIO00161E446 UniRef90-F7BBB2 UniRef90-HOVSR4
UniRef90-M3ZSU5
UniRef90-G3W3P2 UniRef90-UPIOOO2247892 UniRef90-UPI00046B3E92 UniRef90-E4WVR9 UniRef90-M3ZXT5 UniRef90-E4YDU9 UniRef90-E4YDU9 UniRef90_J9KU90 UniRef90-E4XXM7 UniRef90-UPI000441DF3E UniRef90-UPI000441DF3E UniRef90-H2LGR4 UniRef90-H2LGR4 UniRef90-UPIO003EA8E25 UniRef90-UPIOOO3EA8E25 UniRef90-G3H185 UniRef90-S4R6T3 UniRef90-UPI0003DE9F93 UniRef90-Q0WYJg UniRef90-UPIOOO2240481 UniRef90-E5SHV8 UniRef90-UPIO003C14B73 UniRef90-UPIO003C14B73 UniRef90-UPIOOO3C14B73 UniRef90-UPIO00462541E UniRef90-F1NEP2 UniRef90-H2KSW2 UniRef90-E4YEX4 UniRef90-l3KGP8 UniRef90-H9GNM8 UniRef90-F1KVZ4 UniRef90-F1KVZ4 UniRef90-UPIIOOO2738C18 UniRef90- $x 51$ Y94 UniRef90-W5MQB1 UniRef90 ${ }^{-}$W5MQB1 UniRef90-UPIOOO3298854 UniRef90-G3NRJ0 UniRef90-A9C4A2 UniRef90-UPI0002B4C200 UniRef90-H2XUR5 UniRef90- S4R6U1 UniRef90_UPI0003C81857 UniRef90_W5MOD1
UniRef90-C3ZFW5 UniRef90-C3ZFW7 UniRef90-UPIO00444349D UniRef90_UPIO003442126 UniRef90-UPIo004548925 UniRef90-K1PX19 UniRef90-U6M816 UniRef90-F1QLD2 UniRef90-C3ZFX1 UniRef90-G3HB89 UniRef90_Q4SOW9 UniRef90-UPI000388F727 UniRef90-G3N7U1 UniRef90-G3N7U1 UniRef90-UP100038EC05B UniRef90-W4Y5L6 UniRef90-UPIO00441C35F UniRef90-UPIO00328B4BB UniRef90-UPI000328B4BB UniRef90-W5NAH4
UniRef90-B3LF41

## UniRef90 C3YETO

UniRef90-UP10003AFDE9C UniRef90-UPIOOO265147E UniRef90-UPIooo33152DC UniRef90-A2VEC9
UniRef90-UPIOOO359A653
UniRef90_E4XMC6

CTCPAPQHGV0 ${ }^{50}$ QHQRETCPNPTTVIDGAWSP ${ }^{60}$ WGPWSPCDTCC ${ }^{80}$ WSQWS SCSVCG PGGDGDFES LAADRFYCARP LA LEARTTDWALPSAVERVH CQCVGDPTACSITNVYC PVDGAWTSWENWGSCTVCG CENPDPNSSLNGDRKLCKDCPVI AEWSPWSPWSECSITC CLNGNPCMGPSSAQQNCNTQNC OPSWSEWSPFAPCP ANGGRPCDGPDVEVRACKLPLPVDGGWTGWSRWAPCSSCG DQGIIIEKLLLLIFFF HRNGGWTPWSSWGQCS PSSPFDPEGTETDRFQMCHGPPVDCQVTAWGAWSSCSVCG PSSPFDPEGTETDRFQMCHGPPVDCQVTAWGAWSSCSVCG CEGQNGCSGETNTEMFCAT NDRCPSFTSWSQWTDCQSCL PAAGGSGCPGNASEDSCYDSCPIHGGFGSWSSFSECQTCG PAAQGSGRGCVGAAEQCNTQTCKDSVEPWWSQWSQCSVCG PAAQGSGRGCVGAAEQCNTQTCKDSVEPWWSQWSQCSVCG CQGGNPCEGPGIESQACGREVCPEPAWAPWSSWSDCSW CDGSLCASGQKQARTTCNEKDCSNGGTQLWSDWSDWLPCS
CDVTSNTCLGSUQTRCSKDTR RQQGWSHWSPWSSCS PSGGTPCEGDSQELQACTECGTEALGWTPWTPWSPCSQSC

VNGGWSSWSDWSACNVCG PPCDGP TTETRA CNTKPCRETPEGQWSCWSDWTECS PSGGAPCEGLQACHTKC GTEVLG WTPWMSWSSCS
 WTC DYKADVVQTEACNAGDVPCGDVGDWMAWSAWSGCS

VNGGWSPWSQWSECSRCG
CEGGDDCDGKSMESNSCNENSC PTSGGQEASLGSTWLYCLDTTVHGGWTPWSPWSDCPVCG PTSGGQEASLGSTWLYCLDITTVHGGWTPWSPWSDCPVCG PAAQGSGRGCVGAAEQCNTQTCKDSVEPWWSQWSQCSVCG PAAQGSGRGCVGAAEQCNTQTCKDSVEPWWSQWSQCSVCG ALPEGECGGTVFDSRACFTRACVHGQWSEWTQWSNCAQCS
 CTGGQTCMGPSTQKMDCTNTLVVDGGWSRWSAWS VCG GPYTGEKHGNSCDEGGSRPCPIVEGCNDDCGDFGEWSQCS CTGGTFCEGPSFQKVACTTMCPVDGAWTEWSKWSACSTEC

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 C S$C$
$C$
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S GS GLP CLGPHRED QVCDVP $P G G D G D F E S$ LA A DRFYC RPLALEARTTDWALPSTVRVHLL AHGGKNCTGDSSESKDCNTQACVDGSWGTWGOWASCSSKCG PANGGRECPVLDTETQQVCGSYPPKDCEMSPWSEWSTCASADC CTNPTP LT S CE GQS LQQK SACTATCCPVDGGWSEWSKWSPCCG EHGGAECDGDTQETQQCDTGVPVDGGLSDWSAWS GCSVCG

 P L N P A P CA GD S S E A R RCS G S C F P DVLP D GVVWGK WT S WS E C S $P L N P A P C A G D S S E A R R C S G S C F P V L P D G V W G K W T S W S E C S$ PFC C G D DT RTH CTGGSDCSSGASSEVQSCSNNNPIDGALSDWYDVTNCSVTC

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A E WGEWGGCSVECG
GA WAQWS A WT TC

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G P
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## C C P

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\(R \square C N A G V C C P V R G A\) WS SWNEWT E C VT CGK AAVIVYVNGG WG T WTEW VCSASCGRGWQKRSRS DWSDWSACSRSCGGGTRSQSRG
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CP $\square$ N G GFSKWGKYGVCSVKCGGGMQSRRRT SWT TWGSWT PCASCSGSSSRDRFCA EGRLNCTELPCPVPGGWSAWGPWSSCSVTCAEGVRKRVRA RSLSATLVVCVNGGWSSWTEWSSCNARCGRGWQKRSRT ALLTVVVNGGWSSWSTWSECS CAGGGRRRERT GLWSPCSATCEKGIQHREVT GTWSGWSNVGTCSANCGGGTQQQTRT ARRRSATATVVNGG WSLDTEWSACNVPCGRGDQRRSRT

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WS A WS S WAPCDRSCGSGVRARFRS EGRDNCTD DPCPVPGGWCPWSEWTACSQPCRGQTRSRSRP

> TSVLE $\square$ A $\square \mathrm{MP}$ Q WGS WGA WDECSETCEGGTKSRQRW SN GDGQYNEWSFWTPCPATCGGADQSRHRS WVSSAGCNDTCGSGVVETRKRK
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$C R I T N S D C T S V Q T R S C H C D K R F K Q D G S W S Y W S P W S S C S V C G$ RHCLAN CTSLLCTATLLCCPGPGCPGGNCSWT EWA W WTPC S ANGGAPCEGNSQDTRDCHTGTPVDGSWSDWSPWSACNVCG CNSNCDGTSVQTRDCYTQECDKRFKQDGSWSHWSPWSSCG PVCDGDDEEHEPCN TDHCPVHGGWSDWSRWSPCSSCD $Y N G G D P C E G E Q Q Q S V T C G Q Y C A V D G Q W T R W S A W S S C S D C$
$C E G A H D G P G S E S V A C Q T G Q I C P T H G A W G S W L S W G E C S K C R$ CEGAHDGPGSESVACQTGQDCPTHGAWGSWLSWGECSKCR
$C T N P A P L N G C E G Q N V Q K T A C A T L C P V D G S W S P W S K W S A C G$ CF LGQTRTRSNT IVENCNVQPC VKMPPADGSDCGAEVLCPVCHTDP
$C T G G V F C E G M S M Q K I T C N S L C P V D$ CTGGVFCEGMSMQKIVCNSMCPVD ANGGRECVGPEDDRKYCSVPECVNGEEDGWSPWSEWTECT Y LDDGRCTDLSSIEYRACPVTEECNEWTPWSEWSECSTCN SNEQFKLTGCN CRFRCSNGSSECNDVGDFGEWSQCSSCG AAGRGDDDQADSCQLFCNDDAEICEEVGEWGEWSACSKAC CTNPAP TNGGTF TVDGNWSPWSPWTNCTVCG
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$C T G G A F C E G M S V Q K I T C T S D C P V D G S W E V W S E W S V C S P E C$
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$Q G Y D D P P A S G G G L S C S E Q N P V Q Q Q P G P W G D W S E C S A T C$ CGNGKQCSGPSTETTVCTRSPCVKEDDGGFSDWSDFSTCG PSGGAPCEG NRQELQQACHRECGTEALGG WTPWTSWSSCS CPGQAGEAGAQHQREACPSSAPVDGAWGPWGPWSSCDTCD CLVRKPSTSKCAGEFQCATQTPVDGSWANWGAWMTCSSCG HTCLRD VDHDSRPCASTPC CQYGCACTGDDTSTDTCATSVCLFPRTS FF TQWT PWSQCS VGQFVDYDPVNE IASVCS I DAKASEWSEWSECSVCG PPGGSQCSGSSKEQVDCELPCPVDGSWSEWSRWTDCQTNC

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GGQSLRSRSCSSPPPKNGG
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ADCGKG $\square$ QKRTVTCTNSQGKCAATRPR DEEECEDHT GGTQQQTRTCNGGTAGSGGCPGLTTQT $\square \mathrm{DCNDQACPQGSW}$ NSPAPRHRGRV CNGSGEDTEN CTDGLC VGLRRRFRAGTAPPAFGGAECEGPSVEAEFCSLQPCRGPG VAVKTRKRTCSNPKPAFGGRTCVGQDRMYCTNVPKPPTDD THWRRRECTAPAPKNGGKDCDGI ILQSKNCTDGLCMQGKG VGNDTR $\square R L C N S P P Q M G G K G C K G S G R E T K G C Q G A P C P T S$
 G GVQTRTRECDNPPQNGGKDCDGVKIETQCKNNFCPGPDG GGSLAA DRFYYGP RGRRCSNYHVRFRC PREAAW QSCLAGWRSRSRDCPSPRDSCPGEATQEEPCSPPVCPEP
GSHR $H$ RACSRPPTPEGGRPCPGGHTQSRSCQDNSTRCADC GSHRDRACSRPPTPEGGRPCPGGHTQSRSCQDNSTRCADC
PARRHKHRFCTRPPGGAPSSMALSSVQPDLCPGPEAEEEPC E GVMRRDR STCFQGVQTRSRDCQGSVGQTGCDGETDQTKDCAPDSGGNW NGFIVNDTGRTFYCGPVATEPAFNPEQT TCCDPEK NGDW LGVKIRYRSLMQKEEGHGKS DEEDGDKMDDKVDCMLCAKD NRVRRRFCDNPAPRYGGANCFGPEQQLRCTDGLCTPG NTTALSRRERSPPPRNGGKPCAGERVELRNC GTEPCPVD AGGGSGDQTRYRTCEGNGNTVASVNCAGHYSTRPCSASNC
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A WGGWS GWS GCSVTCGLGTRV
$G \stackrel{A}{P}$
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MS DWTEWSECNKSCG $\square R T R \square M E P Q F G G D$
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GE WGP WAPCSVPCG
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$G P G P W S F W S A C S A \square C G \square G T K T R T R Q$

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T T WT DS GTCSVTC
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AP HAGSWDQ
GE WTAFTECSRPCG
VT
GAWGPWGPCSGSCG
S $\square$ WG $\square W T A W S T C S A P C G \square Q T R$
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$G G W G P W G P W S S C S R S C G G G \square R S R P P Q G \square G D$
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AFWSTWSTCSATC
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A GCG $\square$ FGQWSECKQSCGPE $\square R R R K R T F F D D P P A S N G$
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