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## E

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 | $L$ | $W$ | $L$ | $P$ | $L$ | $V$ | $S$ | $Y$ | $A$ | $Q$ | $W$ | $T$ | $Q$ | $H$ | $Y$ | $D$ | $V$ | $F$ | $G$ | $A$ | $T$ | $S$ | $S$ | $D$ | $L$ | $V$ | $L$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $S$ | $S$ | $Y$ | $R$ | $D$ | $R$ | $L$ | $G$ | $L$ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $W$ | $P$ | $A$ | $L$ | $N$ | $M$ | $Y$ | $G$ | $M$ | $K$ | $E$ | $G$ | $S$ | $E$ | $K$ | $V$ | $F$ | $G$ | $K$ | $G$ | $Y$ | $N$ | $V$ | $L$ | $P$ | $F$ | $F$ | $R$ |
| $L$ | $N$ | $A$ | $K$ | $T$ | $L$ | $T$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



## QUERY <br> UniRef90_UPI00045E6FEE UniRef90-A8H5R2 UniRef90- TPIOKO3

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 TPNNNTPYTWFWLDLRK GPLVMEVPPGKVLGLINDMWF N TGNTDTVYASAFLDLERDGPTVVEIPPGMGPTTVNDAFFR TPNDNTIYSFDWLDTKDGPLVVEVPPGKVLGLI DDAWYK TGNTDTVYALGLLDDLERDGPTVVEVVPAGAGPGTVNDAYFR

TANTDTVYYCSVGLDDLE D G | $P$ | $T$ | $V$ | $V$ | $V$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $A$ | $K$ | $C$ |  |  |

 VLGLVNDAYFR

 G VLGPVDDAYFR |  |
| :--- | :--- |
| $G P A V G L I D D F W Q R$ |

 TGNTESVYNLAWLD TKAGPLVI ETPP NILGFI DSHWFE TGNTSTLYALTYLDLKTDGPLVVELPPGMLDGFLDDAWFR
 TANNNTPYTWFWDDL HDGPIVVEAPPGEVLGLADDMWYN TGNTDTVYGSTFFNLKNTGPLVI EDPAGLGPGTINDAFFR TANTSTLYAYTYTDLAEDGPTVI EVPPGML GFLNDAWQR
TGNTDTVYASAVLDLQRNGPTVVEVPPNAGPGTVNDAFFR
TANSTTVYVTHCFDLAENGPVVLEASPG LLGBPDDAYFR

TPNTTSIYQTAVLRLS DEPMVVETPPNNVLGFI NNAWFK

TPNST TVVVFMCLD K
TYNNTSLYTWGFLDLEKDGPTVIVVPA DVLGDLDDGDMR
TANATTPY LLSF FNLAAKTGPMVI EMPPGAI A GGLTDDCWQR

TGNTS TMYAVGFLDLLKDGPTVVDLPQGMLGGLLDDMAFQ


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## T


 TPNATTPY ILGFVDLAKTGPVEMDIPAGADAGSTLDAWQR
 TGNTDTVYAGAMLDLEKDGVTVVEIPPGAGPGTLNDAFFR


TPNTETTYGTTFLDLKAWGPTVIEAPPQSLCVVIDDFWFR TANTSTMYAMSTLDLKEWGPTVVEVPQGMLGAFNDAWFH
TPNADTVYYMGVVDLTN GPMVVEQPP KGVGTDNDMWFG
TANADTIVTVATLDLTK GPLVVEVPP KALGTLNDMWFG TANNDTFYSTAWVDMGADGPVVVELPED
$V Y N T S T S Y S Y A W L D L$
$T G N N N T S Y S T M L M D L$
$H$

TGNNNTSYSTMLMDL HDGPLVLESPP SVVLGMINDAWQR TGNNITVYFAS DLKVDGPTVVEDPPGMY GNANDAAFK

 TPNTETTYGLAFLNLRDWGPTVI EAPPQSLCV VDDFWFR
 TGNADTVYYLSYDDLS DGPVVIEQP TDGGGTINDMWFS TPNTTTVYVLACLNLNNGPVVLQVPPR VLGPVDDADFR TANATTPY $\operatorname{T}$ L NFFDLGATGPLVIEEPPPGPTAGGIADFWQR TANADTVYA $\square G V L D L S K$ GPMVLEVPP SFLGGTIDDYWFR TANADTVYYMAYIDLS DGPVVIDQPTDGLGTLNDMWFQ
TGNTDSIYAWMTLDLKADGPTVMEDPP NLMGPLDDANFR
TGNTESI YAMVLFDLKADGPTVFEAPAG LMGPVNDANFL


TA NA S T P Y A V V F A D D S R T G P LV F E VPA G P S A G VI N D M WQ R
 TPN S DVIV A L G Y L D L K Q D G P M V I E V P P G L L G G I L D D F W Q R


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 FVVDMGAPGPDRGKGGKYLIVP PDYTGKLPKDYYDSRS FVTDMG $\quad$ PGPDKGKGGKYLILPPDYSGDGDPPVGYFVSKS FVVDMGVPGPDRGSGGKYLILPPD WVGDVGITGEDRGKGGKYLVLP YVTDMGNAGPDKGKGGKYLFVP YVTDVGLIGPDRGKGGKYLFVP AISDVGLPGPDKGKGGKYLLLPPG FVIDMGAPGPDQGKGGKYLIVPA WVIDVGITGPDHGAGGKYLLLP YVADFGNAGPDKGKGGKFLILPPG YVGDIGNAGPDKGKGGKYLLLPPG FIANLGVIGPDMGKGGKYLLLPPG FVADTGAPGPDRGKGGKYLILGPSD WNGDDGLTGPDRGKGGKYLFLPPG FVADTGAPGPDKGKGGKYLILGP FVVDMGAPGLDRGAGGKYMI LPPDYEKEPENTDGYFVFRS FVGNMGVTGPDRGKGGKYLVVPPG FVVDMGAPGPDHKKGGTYLILPPDYDGPGGKPAKYFLIKP YI ADIGAAGADKGQGGKYLVLPPG YEGDVPEGYFVVRS HVTDVGFTGPDKGKGGKYLIFVPPG AITDMGQTGPDQGKGGKYLVLPPGH FVTDMGAPGPDRGAGGKYLIIPPDDPSDPSDADQYYLAKS YVMDFGNLGPDEGRGGKFLILPPG YEGKVPDGYFVARS YVADFGRLGPDOGOGGKFLI YIADGGRLGPDOGQGGKFLILPPGP WVTDVGLTGPDKGEGGKYLFVPPG YLSDMGAAGPDKGKGGKYLVLPPG EIIADGEAGPDKGNGGKFIFYPPG YSADI GLPPGPDKGKGGKYLILP YMVDLGVAGPDKGKGGKYLVLPPG WT GLGA GPNQGKGGKF FVGPDYKGTLPDGYRVIRT WTGDVGLAGPDKGKGGTYVLLPPGEPPKGSLPKGAFVYRS FFGDVGLFGPDEGKGGKFLLLPPG WAGDVGLPGPDKGKGGKYLILP YVADLGNAGPDKGRGGKYLLLPPG FVVDFGATGPDKGKGGKYLLLPPG YVTDIGNAGPDRGKGGKYLILPPG YI GDMGMMGPDKGEGGKFLILPPG QI AG\|GPTADDKGRGGKFLLVPPG FIIDMGAPGPDRGKGGHYLILP PDYKGEVPPGYFVLRP

## PDYKGTLPSGYFIIKS

 DYKGDLPKDYYVARS$P D Y G N V P P G Y \| V V R P$ YKGEVPEGYHVART YDGEVPDGYFVLRS DQAPSEEP PDYKGEVPSGYFVSKS YTGALPKGYHVATP YEGDVPE VADKL GYFNVT DYSGDIAKNYFVYNS YKGDVPEGYFVVPS PDYEGEIPDGYYTFRS YEGEVPEGYFTYRS YEGDVPEGYFVTQS YEGK: PEGYYVMQS
YDGPI
PEGYVVGHA DYQGPI TPDYYVARS YFGDVGLPGPDGGAGGKFLILPPG YVTDLGVVGPDQGKGGKYLLVPPGD FIVDMGGPGPDKGKGGKYLIVPE PLSDLGLTGPDQGKGAKYVFVGPGQE PIGDVGLPGPDGGKGGKFLLLPPG PLDVGFVGPDKGEGGNYLILPPG FVVDMGAPGPDEKKGGTYVILPPDYK PIEDVGFAGPDRGNGGKFLVLPPG WVVDVGLT GPDKGRGGAYLLLPPG EI GAMGEMGPDRGEGGKYLVLAPGVD YVADMGDPGPDKGAGGKYLIFLPRG YLGDTGPFGMDKGQGGKYLLLPPG WI 1 DI GYPGPDRGEGGKYLLVPPG WI IDIUGPGPDRGEGGKYLILP WVTDFGPTGPDKGKGGKYLFLPPG WVTDFGLPGPDRGAGGRF
 PDYEGE YDGEVPGGYFVVRT YDGERPDGYFTYES YEGDVASGYHVYES YDGPLPEGYFVARS YAEDIGNSGPDKGRGGKYLVLP WVIDVGRPGPDRGMGGKHLIVPPG GRGVPDGVYVQHA WV WVTDVGLTGPDKGHGGKYLFVPPGH KGKLPEGYHVAKP
 WVTDLGLPGSDRGEGGKYLVLPPGYDGPLPDGFAVAHA WV DDGKPGPDRGLGGKYLIV GPDYDGPLPEGYFVAHA FVVDFGATGPDKGKGGKYLILP PDYEGDVPDGYFVARS FLCDIGPTGMDKGKGGKYLILPPG PIEDVGRDGPDLGKGGKYLIVPPG PIEDVGFAGPDRGMGGKFLVLPPG YVTDI GALGADKGEGGKYLLLHNDDETQGVVPEGYFELRT WVVD GFPGPDRGEGGKYLVVPPPAYDGPLPEGFFVARS AIFDFGVSGPDAGKGARYLILAPGMGPDGDDEDNY IVVNN EFAVIGEMGPDQGHGGKHLIVPPGHDAP EGHSGYFVQQA WAGDVGLPGPDHGKGGKYLILP PDYKGPVPSGYFTYRS FVVDMGAPGPDAQKGGTYI ILP

QUERY
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 PTFSLWSPWRSFDGDPKPGVDLVGQHTRVYRLADAANPPB TSSYTVNWF $\square$ A R GF D G K T D S A A V Q A A F K Q H L L TSSRDVFAGFRLLDDADKEKA IA EMDP QI KTYSWTGLE GT GEP TSYVNWLILRGFNGKTDVSSKMYRDGLRDYPDKDKDNQPA

 P TYVNWVPLR GFDGKT DAAVAMWTKGLKI YPLA QKENPPK P S Y V N FVVVLR GF DGKPDAASKMFREGFKKVYSSLSRAKNPPK T S Y Y V N WL I L R G F D G K P D D A A T R R M F E G G V K V Y P P L S Q K D N P P E TS WV N WV I L R GF DGKPDASAEMFRNGLKVYPLSKKSNPPA STYGNWFVFRAFDGSTKPGVESVKK HLKKI YHLSEAANPPA
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 PTYSNWLI MRAFNGSPDKAVQS YK S DL HI YPYHLK DS QPE P S YVNWLI LRRGFDGKPDAAAAMFRNGLRIYPLAEATNPPA NS F S V W W T A WR S F N G DP K P GVVDA V K K F T K i Y P L K Q A A K P P K
 P T N N N F L F L R S $\square$ A K G L D D P A V RS Y T NWL IL L R GFD GK PD A A S K M WR T G L K I Y P L K D A K N P R K

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 TSYVVWNFMRTNPADVKKSADNVKANLKVYPLAKKDNPPK

 K T S G V WVVF M R GY LD K S MP $\square$ A E A V R S T L K V P TYRNWMF LRRA IVVQEAEAATE GL RTK FRVVYPLSKDSNPPK
 RTYGVFVVFWRGFFKDPKQAPVAVMEQTRIYPLGKQATAKA ATNNVFVFLRGFYKDPKNLTPAVLEQTKIYPLNGAAGAKP



 K T F GVVVLGMRGFLV E GK P E AVVALMK STRR Y P L S QA S S P P Q


 P T F GVVLLFYRTLDP DQAKGEALLARRMRVYPNAQRDNPPA



 S GVNDMFGFRTVDPDPERS DALVRADRDYPYADRA HPAP PTHANWVVLRTLGGVP AMKQTRI YPLAEADAPRE

 P H N N FF $\operatorname{l}$ A L R L F DE D D A A KLE TT K K I K I YPFSERNNAPE
 $P G Y R \| W A M M R G F G G N G D Q A V K W F K D R L K V Y P L A T \quad G P R E$ ATTRRATALGRSTELDPKPTVVELIRKTLLKVYRYVPGGPQDP
 P T Y S NWV L L R A L G GVVP RS Y R V WVVFMRSSPSNQD DEAVVQSVVKD K L R I Y P L S G M N I MF G F R T L D P D P A R A Q H L V E Q V R I Y P F A D R A A P P A S T N TVLYADRAFGNDPKPTVENIKANDK YPYAPEPBDPE



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 SGMNI MFGFRTLDPDP QRSRALVDAVKVYPYAERDNPT R $G T Y G V F V F W R G F F K D P K Q L S E K V M E Q T R I$ Y P $\operatorname{CRGQEATARS}$ UniRef90_D9XPG5

## QUERY

UniRef90_UPI00045E6FEE UniRef90-A8H5R2 UniRef90_UPI00037D38A8 UniRef90 T2KKA5 UniRef90_HOPUR8 UniRef90_A7MW10 UniRef90_V4JCG3 UniRef90_A0Z8C1 UniRef90_R7X474 UniRef90_UPI00047D07C2 UniRef90_M5S6H6 UniRef90_D5SXA7 UniRef90_UPI000474E2D2 UniRef90_W8IHP7 UniRef90_M5FDF7 UniRef90-F6BZ77 UniRef90_I2Q5F0 UniRef90_UPI000372E2B1 UniRef90_B8KVP1 UniRef90_Q7V5N1 UniRef90_V4JQX8 UniRef90-D6V5M5
UniRef90-A4CW28 UniRef90-M5FAV8 UniRef90_B8KVP0 UniRef90-W0TQ35 UniRef90-V4JQP3
UniRef90-A3YX10 UniRef90_Q4KCS3 UniRef90_R4Z6B1 UniRef90-E2CGA1 UniRef90_L8MAS4 UniRef90-H1SDY3 UniRef90_UPIO004776C8E UniRef90_M5TAI0 UniRef90_H8KU17
UniRef90_A3HVX5 UniRef90_M5TQT3 UniRef90_A3YX09 UniRef90-Q1LDB5 UniRef90_W2DKN4 UniRef90_J2SL13 UniRef90-UPI00040FBD70 UniRef90-M2XWZ4 UniRef90_B8KM67 UniRef90_V4KXJ8 UniRef90-AOYUI4 UniRef90-UPIO0035C432F UniRef90_E1SV00 UniRef90_B2T961 UniRef90_M5FDZ9 UniRef90_Q7V5N0 UniRef90_UPI00037E4AE3 UniRef90_F6BM80 UniRef90_V4J5N1 UniRef90_UPI0002E1E424 UniRef90_A0A059MHQ1 UniRef90_UPI0002FC9E05 UniRef90_UPI0003821444 UniRef90_F9S843 UniRef90_Q6W1E9 UniRef90_J3GEU4 UniRef90_V4KX17 UniRef90_UPI00047801DC UniRef90_UPI000299F90E UniRef90_M5TAH5 UniRef90_UPI00036FBCC9
UniRef90 A0Z7P2 UniRef90- L0J6A7 UniRef90_UPIO0047D64DC UniRef90_UPI000378A742 UniRef90_J9SCS7 UniRef90_A0P1V9 UniRef90_UPI00037D8642 UniRef90_C3JVF0 UniRef90_B8KM76 UniRef90_A0A011NIM9 UniRef90_A0P154 UniRef90_B8KM75 UniRef90_M5TKM1 UniRef90-J3HJF5
UniRef90 E8YKD5 UniRef90_UPI0002379A43 UniRef90_UPI00037A62DD UniRef90_UPI00047282A7
UniRef90-UPI0003B2FE12 UniRef90_UPI0003B2FE12
UniRef90_UPI000476A36B UniRef90_UPI0003803651 UniRef90_D9XPG5

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 MAFTS GSGKAFNTIHANDEHFYDEIVKVIDDKEPDDFIDPE VKFANASGMPSNFVFPGDYRFWEMLNEVVQEEPAAGSDPT

 MK F V DGS GVPANFVAPGDYTFWEMLNQVI QEEPAGGSDPT
T K F I N L S G K V M N TVV H A N N F K F F E E V NKVI SMS GPKMD TII P P D G DE Y WA R L S A FI NN N P V H ERRDRE
 MQFVDLSGKYFNTVAPADDAFWGLL NQVVQEEPSQSDDPV


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##  <br> UniRef90_UPI00045E6FEE UniRef90_A8H5R2 UniRef90 T2KKA5 UniRef90-HOPUR8 UniRef90-A7MW10 UniRef90_V4JCG3 UniRef90_A0Z8C1 UniRef90-R7X474 UniRef90_UPI00047D07C2 UniRef90_M5S6H6

 UniRef90_D5SXA7 UniRef90_UPIO00474E2D2 UniRef90_W8IHP7 UniRef90_M5FDF7 UniRef90_F6BZ77 UniRef90_I2Q5F0UniRef90_M5U9D2 UniRef90_UPIO00372E2B1 UniRef90_B8KVP1 UniRef90-Q7V5N1 UniRef90_V4JQX8 UniRef90_D6V5M5 UniRef90-A4CW28 UniRef90-M5FAV8 UniRef90-B8KVP0
UniRef90 W0TQ35 UniRef90_V4JQP3 UniRef90_A3YX10 UniRef90_Q4KCS3 UniRef90_R4Z6B1 UniRef90_E2CGA1 UniRef90_L8MAS4 UniRef90_H1SDY3 UniRef90_UPIO004776C8E UniRef90_M5TAI0 UniRef90_H8KU17
UniRef90 A3HVX5 UniRef90_M5TQT3 UniRef90_A3YX09 UniRef90-Q1LDB5 UniRef90_W2DKN4 UniRef90 J2SL13 UniRef90_UPIO0040FBD70 UniRef90-M2XWZ4 UniRef90_B8KM67 UniRef90_V4KXJ8 UniRef90-AOYUI4 UniRef90-UPIO0035C432F UniRef90_E1SV00 UniRef90_B2T961 UniRef90-M5FDZ9 UniRef90_Q7V5N0 UniRef90_UPIO0037E4AE3 UniRef90_F6BM80 UniRef90_V4J5N1 UniRef90_UPIO002E1E424 UniRef90_UPI0004299331 UniRef90_A0A059MHQ1 UniRef90_UPI0002FC9E05 UniRef90-UPIO003821444 UniRef90_F9S843 UniRef90_Q6W1E9 UniRef90_J3GEU4 UniRef90-V4KX17
UniRef90_UPIO0047801DC UniRef90_UPI000299F90E UniRef90-M5TAH5 UniRef90_UPI00036FBCC9 UniRef90_A0Z7P2 UniRef90_LOJ6A7 UniRef90-UPI00047D64DC UniRef90_UPIO00378A742 UniRef90_J9SCS7 UniRef90_A0P1V9 UniRef90_UPIO0037D8642 UniRef90_C3JVF0 UniRef90-B8KM76 UniRef90-A0AO11NIM9 UniRef90-AOP154 UniRef90_B8KM75 UniRef90_M5TKM1 UniRef90_J3HJF5
UniRef90_E8YKD5 UniRef90_UPI0002379A43 UniRef90_UPI00037A62DD UniRef90-UPI00047282A7 UniRef90-UPIO003B2FE12 UniRef90_UPI000476A36B
UniRef90 UPI0003803651 UniRef90_D9XPG5

D Y T K R F Q 29
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320 DYTKRFTQPYWKGTNWKDA ITSVSLDQRSENYDELDERAAW AFRMRQQEAYYEGSSWQDPFVGGYQFETQPGRNLDGY DLY $M F Q P H D D T A Y Y P G R D W K T A F I G G D Y R W G E G G R N L D A R T Y F$
$T H T K R V E P P F W E G T N W K H A V V A T D Q K A N T V Q L D E R A A W$ AFKTRDLASVFKTGHWESGFIGGDYKWGRGGRYLDARTRF NSRDRDKESYYPNSAWRSGFHGGYKFEENGARVLDAYSAF MFNPRTENAYWDDRNWKTAFDGKDYQWGKGGRNLDARTYF A Y Q $\square R D T D A F Y P D S T W R K P F F G G Y K F E L A P G S N L D G A D F F$
 VFRPRMQDVYYPDSAWATAFVGGSYQWGRGGRYLDARTLF VFRPRLTGKYYPGSAWMTAFIGGDYQWGQGGRNLDARTLF AFKDRDKDAYYPDSTWR LDPFGGGYKFESAPGTNMDGY I FY DFRNRDKASLFPDRRWTTPFDGGSYEWLNNGRNFDARTLF LFNADQRDSGATGKNWHWVVLMKADQETDTYTQLDERLHY AFHNRDPRPLYPNSQWRSGFVGSDYRWGVSGRNKDARTNF AFKMRKADYYYENSAWRDPFLGGYKFETQPGLNDDGADMF TARPRDQRLYVYPRDWTNPFI QGRYDF LLD GRLI DSRIYM TFRTRDEEAYYPDSAWFTGFVGGSYEFEPGVRFLDARTLF TYQPRIDGVFDTNSAWTMAYANNTSFEADGAMGMDARPAF W $\square H$ SRDEEAYFDDSRWYTGFVGGNHEFGAGGRNLDARVLF MYKWRGADGYYSKSNWRDGFIGGYKFEEKGARQLNGYAGF MGKPRNPEVYYEGKQWFTPFGGGSYEWGKGGRNLDARNNF VFRPRLADAVYPGSAWTYTFVGGSHEWDQGSRNQDARSLF S LRPRDPNAYFKGKQWYTGFVGGDYRWGKNGRNLDARILIF TVFPRDPDHYGPDSEWVMAFAGDTYFDEDGARRMDSRLWM IFAQRDKRGYYPDRQWKTNFGGSSEFYDNGERMKDSRVLF TFAKRFADAYWPDRQWDKVLNDDPSQRVAYYDQLWERSAW
SFRPRDESSYYPNSGWYYPAPGGSYE WGDGGRNMDARTDM ISKPRAKEAYWYPSNWQNAFPGGAYTFTDDGDKH HDDRSAF MSKPRDEMFYFYPSNWLNPFPGGSYEWVNEGAKLDARAGF AYGGKDPDAVYPGKHWQWAFGGSYDFDSQGYDNMDRRGAF
VFAPRDERVFYPDRQWGTSFGGSYAFLDNGERMLDARTQF TVYPRDPGHRYTDSEWVMAFPDKDFFLKDGDRRIDARDWM SFKKRFNARHWSDREWDYPMVIDPSQRAQNYDEFFQRTSY AFNTWETLPWYSDRQWNSHDRDGGETFGKAYDDFDARGHM TFRPREERDYFYPDQWYSPFTGGSSEFMNNGRVLIDDRIITF DADMVVKEPYYADRQWVNVFAGTSFQSSRTYTNFEQRSGY GFSDKANGRVYPDRQWLNPFADGTPAGAYPYDALDARDWM AYGPTSDKKYYEDRQWLNPFATNAEFAGDSYNQLDARASF
VYRPRDPQAYLYGRDWKTAFVGGSSEFGHDGRLLDARTLF
 $\square W R N R N E K I W P D S K S W E D G F A G G S H A F D H D G R G I N E R T R F$
$M W D Y G D D K W I Y K D R K W W N P G V G Y T F D P A G Y F N Y D A C A L E$
 WLKPRDANARYPDSGWYTVFVGGDYRWGEGGRNDDARAAF GLQADKD DRVYNDRQWVNPVNNVTARWSSGYRDLDARVWF
 TFLPRDPNTF $L Q T G G W K T G F L G G S Y E W G Q G G R F I D A R S L Y$
$T F D M R F R D R Y R P D A L W Q Y F L I L D P M Q D L S N Y S Q L D Q R A A Y ~$
 AFKSRDKNAYFEGKQWFTGFNVDVTFMEPTFRNVDAQVGM MYAQRPGGLIYPDRHYVTPTRNFDTDWEWMFLDLDARSAA TYRFRQPEAYYPGSTWRAFFLGGHRFEEDGVALLDAAAQF VYKPRDPGAYWEGNSWKNAFGGSYEFDQGGARNLDARTQF VWYPRTEGPDDANSNWDMAWVNRDVFFDSGGDNSDARVMF NWRANEVPAYYPGSGWSNMLWEGGANFETPARTDNSKTAF NWRAAEYPAYYPNSMWANMLWQGGFNFETPARTLDSRTAF QGARRMPQAVYEGSRWEVATTANPNQRTEYYDQIDGRAAW TYRYRAPEAYYPGSAWRLGILGGYSCTENGVLLLDSATALD VYASRDPEKYWPNRHWEKMFIRNTEFVADGHNDIDARTLDW NWNPRKAEGYYPDSAWMNMLFAGGYTFETPYRTLNSRTAM VFRPRNEAVYFYKRQWYSPLAGGSHEFLNNGRVLDDRLTF
SFASDDARLVYPDRRWEWAFIGGDSATWDSQYVNTDRRAGF AYEPRDPEAVLYGSWRRGFVGGSYEFDRNGARMDDARTQF VWYPRTDKSLGTDSAWVMAFPGKNDFGDGKT DNSDARVSY
THAKRFPGSYWPDRHWDLVLALDSSQRARFHDQLLERAAW QWNFADAHPEWEDSQWALMLWEGGAFFETPARTLDSRTAF LIFASRDPRR DFSDRQWLTPFGGSYQFDDGAERLLDARMMF AFVKRFPGSYWPDRQWDLA IVLDSAQRGDNYDEFYERASW QWNARDEAAYPGSKTWEPGFAGGSHEFLLRDGRLINERERF FMNPRERSWYYPNSSWVNMLFVSGYFPPTGYRQLDARSAF FAQKQPDWAYYEGSSWGNMLFQGGAFFETPARTLDSRTAF TFASRDPDPGTD LS WETPFIGGSSEFTKNGYRNLDART LIF ALLESRQPAAVYPNRKWESPFIGDSTFDPDGYFNLEARTTF EFNPRKPRRI FKGTQWHNGTGVHYSQERGALTEVDERAAD MYEKRSGGLIYPDRRYVTPTRNFVTDWE WH FLLDLDARSAA
TYASRDPGFFYDDRQWNSPFQRSYLDFLEDGARILD DRSYA NWRPNEAHGYYPGSSWTNMLWQGGANFSTGARTLDSKTAF TFEKRFNTDRYGETQWDQLLVVDFDDRDKYFDQLYRRASF TFAKRFTDAWWPDRNWFLALDLDNPQRATHHDELDERASW AYQPSAMVPYYANRHW\|NPFPTNATFTADTYNVI DARTGF S LRPRDENAYFEGKQWYTGFVGKDYQWGMGGRNL DARTX
AFKPRDPGFYYPDRSWKTPFPTGSYEFAEGARLLDS RAVIV

## QUERY <br> UniRef90_UPI00045E6FEE UniRef90-A8H5R2 UniRef90-T2KKA5

 UniRef90-HOPUR8 UniRef90-A7MW10 UniRef90_V4JCG3 UniRef90_A0Z8C1 UniRef90-R7X474 UniRef90_UPI00047D07C2 UniRef90_M5S6H6 UniRef90_D5SXA7 UniRef90_UPI000474E2D2 UniRef90-W8IHP7 UniRef90-M5FDF7 UniRef90-F6BZ77UniRef90-1205F0 UniRef90-M5U9D2 UniRef90-UPI000372E2B1 UniRef90_B8KVP1 UniRef90 Q7V5N1 UniRef90_V4JQX8 UniRef90-D6V5M5 UniRef90-A4CW28 UniRef90-B8KVP0 UniRef90-W0TQ35 UniRef90_V4JQP3 UniRef90_A3YX10
UniRef90_Q4KCS3 UniRef90-R4Z6B1 UniRef90-E2CGA1 UniRef90_L8MAS4 UniRef90-H1SDY3 UniRef90_UPI0004776C8E UniRef90_M5TAIO UniRef90-H8KU17 UniRef90-A3HVX5 UniRef90-M5TQT3 UniRef90-A3YX09 UniRef90-Q1LDB5 UniRef90-W2DKN4 UniRef90- J2SL13 UniRef90_UPL00040FBD70 UniRef90-M2XWZ4 UniRef90-B8KM67 UniRef90_V4KXJ8 UniRef90-A0YUI4 UniRef90_UPIO0035C432F UniRef90-E1SV00 UniRef90-B2T961 UniRef90_M5FDZ9 UniRef90-Q7V5N0 UniRef90_UPIO0037E4AE3 UniRef90-F6BM80 UniRef90_V4J5N1 UniRef90-UPI0002E1E424 UniRef90_UPIO004299331 UniRef90-A0A059MHQ1 UniRef90_UPI0002FC9E05 UniRef90_UPI0003821444 UniRef90-F9S843 UniRef90-Q6W1E9 UniRef90-J3GEU4 UniRef90_V4KX17 UniRef90_UPIO0047801DC UniRef90_UPI000299F90E UniRef90-M5TAH5 UniRef90_UPIO0036FBCC9 UniRef90-A0Z7P2 UniRef90-LOJ6A7 UniRef90_UPIO0047D64DC UniRef90_UPI000378A742 UniRef90_J9SCS7 UniRef90-A0P1V9 UniRef90_UPI00037D8642 UniRef90-C3JVFO UniRef90_B8KM76 UniRef90-A0A011NIM9 UniRef90-A0P154 UniRef90-B8KM75 UniRef90-M5TKM1 UniRef90-J3HJF5 UniRef90-E8YKD5 UniRef90_UPI0002379A43 UniRef90_UPIO0037A62DD UniRef90-UPIO0047282A7 UniRef90_UPIO003B2FE12 UniRef90-UPIO00476A36B UniRef90_UPI0003803651 UniRef90_D9XPG5

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FYEA $\operatorname{T}$ TVSRGMKST\PGFGQRYLVTYQDSDGNWLSGEHTY YFMATGVTPAMESKMVGQGSQYAWTAKDAKGKPLDGGKHY FYMATVNTPAMALKLI GKGSQYAMLDKSKDSAYLNGSNTY
$F Y E A V V I S K A M L T Q T V G V G Q R Y I A S Y K D A D G A W L S G E N T Y$ FYFATVNTPAMVLKMVGKGSQYADCMDDSEGDYLDGNKNY FFYATGVTPAMDSKVI GMGSQYMAAFVDSKGQPLDGSKNY FYMATVNTPAMADKMIGKGSQYA IVDKTAEGEFFDGGKNY FYi ATVNTPAMVLEMI GAGSQYALAA QDSADQYLDGAKNY FYVATVNTPAMAAKLVGKGSQYAIASTDAAGKPLDGAKHY FYQATVNTPAMVLKMVGRGSQYAYATRDGNGDYLDGSKTY YYFATGVTPAMEMKMVGKGSQYPWSVQDSNGRYLDGGKNY FYAATIDTPAMAVAMPGDGSQYAASNLDAAGNPFDGGKTY HYAATGDTPAMADAKPGTGSAYAFAVRDSTGTYLDGSKTY
 YFAATGVTPAMEEKMVGRGSQYAWAVEGADGKPDDGGRSY HFYATGI TPAMSVKNVGKGSQYLIDAYLDKDGNALDGSKTY HYYATGITPAMALKRVGVGSQYAAATMDGDKKPFDGGSTY
 HYMATVITPAMVNKMVGAGSQYALLNVDKNDDYMDGSKTY FFYATGVTPAMDSKAVGEGSQYMAAFVDSKGDADDGGKSY F WGYTVNTPAMVLKMEGVGSQYGVVATDSTGAYLDGSKTY FYQATVNTPAMVKKM\|GLGSQYMYSAKDSHGDFLDGAKNY YFNAGGVTPAMATTKAGAGSDYALAFDDANQQAFDGAKTY FYSATVNTPAMA DQ DPGVGSNYAFATTDRNGQDLYGEKNY HYNAVVVTPAMALTKPGAGSDYGDAGLDGEGRVLDGGKTY HYYATGITTAMAAPAVGTGSVYGYAERDANGDYLDGGKTY FYEAVTNTKGMVSKTPGLGQTYLGAYTDHNGQWLDGGKHY FYQATLNTPAMMMKMVGVGSQYAGVATDSAGNPFDGGKDY H F Y A T GI T HYYATGITTPAMAKEIIGKGS AYAATGNTPAMASKVVGAGSQYDWSARDADGNPLDGSKTY HYYATGIT PAMADAKPGTGSAYAYAARDSKGEYLDGGKTY HFNAVCVTPAMAGDKPGVGSDYG\|VGMDSKHQPLDGAKTY FYEAVGYSKAMDSKTPNFGQAYLATYADKDGNWLDGAKSY $F L N A Y S V S P G M G S T T P G V G A K Y L E A A K D S D G N F L D G G E T Y$
$H$
$H$ HYYATGIITPAMARAQVGTGSAYAlGAHDSEGNYLDGGKTY FTSAYSASPGMVKNVVNAGAKYPVTSRDKDGNFLDGGQSY FTNAYSASPGMAVNMENVGAKYPATFVDAKGQFLSGSNSY FTNYYS $\square$ SPGMMSQTPGKGAKYM $\square$ SFTDSGGTPLSGDTSY FTYAYSTSPGMA $\square$ NMENVGAKYPNAFKDADGDYLSGDQSY HYVATVVTPAMATPMVGVGSQYAYTAEDAEGEWLDGGRTY
 A AYATAVTPAMASKTVGGGSQYLCSHQDKDGNPLNGDKNY A YVAVGMSPAMVDKVVGQGSQYLSTMRDSEGRHLDGSKNY FYSATVNTPAMALDIVGVGSQYAFNATDAEGRYLDGGETY FTDYYSISPGMVSMTPGKGAFYMDAFNDASGQPLTGDHNY $H Y Y A T G V T P A M T A A K P G T G S T Y A D A A R D S Q G R Y F D G G K D Y$
$F Y L A T V N T P A M Q L E D P G D G S Q Y A Y T A S D A D G N Y D D G S S T Y$
FYA
 FYI ATVNTPAMALNMPGVGSKYYAMTTGDNNGDYLSGGASY YSVIFGTSPAMGSAVPGQGARYLTTFKDADAAFLRGERNY $N F$ SVTGVVPAEDVERDGTGSQYVVACVDADGAPFDGGRTY FYEAVSFSEAMKSTTPGVGQAYLGSYTDGAGEWLDGGRDY HYFATVITPAMAHAQVGAGSAYAYTAEDADGHVLDGSATY HYPYTAVTPAMAKAMPGKGSDYADAYEDSSDQLFDGAKTY
$Y Y A Y T L D S P G M I M R V P K V G S Q Y L M S F V D A D K N Y F D G G K T Y$ YYGYTMDSPGMLMRLPNVGSQYLMGFSDADKNPFDGAKTY LYEAILNNEAMRSTKPGNTQVYLATYKDADGDWLDGGKNY $Y F \operatorname{V} A G T S P S W D Q K M V G T G S Q Y A V A N V D A T G A P F D G A R N Y$
$Y F V G A P I S P A L E V E M V G A A S Q Y A F A F V D S E G A H F D G G R T Y$ HYQADCVSPNLLSTTAGVGTAYLTAFRDKEGAYLLGDKNY FFYATGITPAMIMRLTGVGSQYLGAFVDSNGEYLDGSKTY
 HYLATVVTPAMAHAQVGAGSAYAYT IHDSQGALLDGARTY FYPYTGVSPAMTADEPGKGSDYADAFVDENKEPFDGARKY FYEAVSFSAAMKSTTPGLGQAYLSCYTDSDDQWLDGGQDY YYAYTLDSPAMDMNDPGVGSQYVIAFRDADGDLFDGAKTY FYYATGDTPAMSEAKPGTGSAYAGLFRDSAGNYLDGGRTY FYEAVSFSEAMKSTTPGLGQAYLGSYADAEGHWLDGGKSY HYGDT G T A MVKPPVGLGSQYL EGLRDSEGRRFDGSKTY YYA YTGDSPGMDMRIPGVVGSQYLMGFVDADKNTLDGAKTY HYNA IVITPAMAAPMPGRGSKYTSTYLDENEEYLDGGKNY HFTADGITPSMAAQMPGLGSRYQTTYKDKDGKYLDGNKVY YRFGFAMHKF LIFKPIVGKGAAYATAYRDAGGKFLDGSKTY YS I IYATSPSMGSQVPGQGARFDTTFKDANGGFLDGGRSY FYMATGDTPAMTSPPVGTGSVYAMTARDSNGQYLDGSKTY YYAYTLDSPGM\|MRDPRVGSQYLDGFDDADKKDLDGAKTY TYEAVSRGKAYY FYEAVSFSAAMKSQTPGLGQAYDGGYTDADGNWLDGGRDY FYSATVNTPAMALEDPGVGSNYAFATADENGDDLYGEKNY

QUERY UPI00045E6FE UniRef90-A8H5R2 UniRef90 UPI00037D38A8 UniRef90 T2KKA5 UniRef90 ${ }^{-}$H0PUR8 UniRef90_A7MW10 UniRef90_V4JCG3 UniRef90_A0Z8C1 UniRef90_R7X474 UniRef90 UPI00047D07C2 UniRef90_M5S6H6 UniRef90_D5SXA7 UniRef90_UPI000474E2D2 UniRef90_W8IHP7 UniRef90_M5FDF7 UniRef90_F6BZ77 UniRef90-M5U9D2 UniRef90-UPI000372E2B1 UniRef90_B8KVP1 UniRef90_Q7V5N1 UniRef90_V4JQX8 UniRef90_D6V5M5 UniRef90-A4CW28 UniRef90_M5FAV8
UniRef90_B8KVP0 UniRef90_W0TQ35 UniRef90_V4JQP3 UniRef90_A3YX10 UniRef90_Q4KCS3
UniRef90_R4Z6B1
UniRef90_E2CGA1 UniRef90-L8MAS4 UniRef90_H1SDY3 UniRef90_UPI0004776C8E UniRef90_M5TAI0 UniRef90_H8KU17 UniRef90_A3HVX5 UniRef90_M5TQT3 UniRef90_A3YX09 UniRef90-Q1LDB5 UniRef90-J2SL13 UniRef90_UPI00040FBD70 UniRef90-M2XWZ4
UniRef90_B8KM67
UniRef90_V4KXJ8
UniRef90-AOYUI4 UniRef90_UPIO0035C432F UniRef90_E1SV00 UniRef90_B2T961 UniRef90_M5FDZ9 UniRef90_Q7V5N0 UniRef90_UPI00037E4AE3 UniRef90_F6BM80 UniRef90_V4J5N1 UniRef90_UPI0002E1E424 UniRef90_UPI0004299331 UniRef90_A0A059MHQ1 UniRef90_UPI0002FC9E05 UniRef90_UPI0003821444 UniRef90_F9S843 UniRef90_Q6W1E9 UniRef90_J3GEU4 UniRef90_UPIO0047801DC UniRef90_UPI000299F90E UniRef90 M5TAH5 UniRef90_UPI00036FBCC9 UniRef90_A0Z7P2 UniRef90_L0J6A7 UniRef90_UPI00047D64DC UniRef90_UPI000378A742 UniRef90_J9SCS7 UniRef90_A0P1V9 UniRef90_UPI00037D8642 UniRef90_C3JVF0 UniRef90_B8KM76 UniRef90_A0A011NIM9 UniRef90_A0P154 UniRef90_B8KM75 UniRef90_M5TKM1 UniRef90_J3HJF5

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K L H VP A NVVPA S N F WS T TVVYDENNRLMDIDNDAGSPDDS SRK K L HLPP N I P DK N F W S VI LY D N Q T R S M L Q T D Q Q F P S I S S N T
 K L HV P A NPPAKNFWSVTAYDEATRQMPVTEQGRPDISSRE SLNI PADAPAKEFWSLVMYDPQTRSELQTSQALPSVSSRT

 K L H L P P N I P V K D F WS V I V Y D T Q T R S M L Q T D Q R F P S V S S Q D KLTI P A DVVPAKDFWSLVVYDPQTRSMLQTNQPYPSKNNNR

 $R$ M R L P P N V P V K K D F W S V I V Y D N Q T R S M I Q T D Q K A P S V S S Q D $R M H V P A N V P A K D F W S V V V Y D T Q T R S M L Q T D Q Q F P S L S S E K$ $K I T L P A P V P V G Q F W S F T V Y D N Q T R S M L E T D Q K L A G I D D S N Q$ R L H V P A NV P ALLA F WS LTV Y DTETRRSMIQNAGNDSARS GNE R L $\mathrm{N} V \mathrm{~V}$ P S S N P P A K D F W W S V V L Y D P Q T R S E L TL HLP P G I P VK D F WSV I V Y S N Q T R S ML Q T D Q Q F P S VG S Q T K I H L P P NVVPAK DFWS FTI Y DT QTRRSMLQTMDQQFPGDNN QE R L H L L P P N I P P A K D F W S L V V Y D N Q T R S M L Q T D H P F P S
 KLNI PADVPAKDFWSIVAYDPQTRSQLQTSQPFPGKNNRH
 K FTVVEADVPAKDFWSMVVYDPQTRSELQTDQLLPSKNSNQ $K L N I P A N A P A K D F W S I V V Y D P Q T$ K L T L P K DVVPVK DFWAVTLYDTETRS


 RL T L P T D IP A K D F WS I VVYYDP Q T R S | $K$ | $L$ | $N$ | $V$ | $P$ | $A$ | $N$ | $V$ | $P$ | $A$ | $K$ | $D$ | $F$ | $W$ | $S$ | $F$ | $T$ | $L$ | $Y$ | $D$ | $N$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |$T_{1}$ K L R $\quad$ I P A N PPDVK D F W S V T V Y D A K S R K I TLLPAPDPAANFWSFMVYDGQTRS KLHLP P NVP AK DNWSVT Y DT QHRSMLETDQKLA GIID S TQ MLQ T D QPFAGVNSLS HL RMPANPPAANFWSVTIY DAATARCI DNPQKNADLESSRK $K L T M P A N D P A K N F W S I T A Y D P D T A A A G L D N G Q A F P S L G G R D$

 TVVLPAPPIPAKDFWSFVVYDNQTRSVLETDQKSAGDSNSP T L H L P P N I P A K N F WS A TVVY D GTTTA S GLLDN GQS HP S L N Q M D
 HLS L P A NI PAAALFWSVT LYDAANASGLDNGQPFPSLLGSRD

 KL HI PANVPAKRFWELTVYDNQTRSMLQTDQRLPGVVSMA QL HI P A GI PA K N F W S L I V Y D S A S R S MI QVA K PMP T I S S Y T
 RLRLPAPVPAKNFWSVVVYDPQTRSELQTQQRYPSKNNRD K V T L P P P D I P A A K L F F W S V T T L Y D A S N A S G L D N G Q P F P S L G K L N


 R L H L P P DV P A E N F W SVV T L Y D A E TAAS GL D N G QP YP S I G S N D KVTLPADAPAKDFWSMVAYDPQTRSELQVPGGSSKNNKRD
 R L R V P A NVVPA GNFWS I L A Y D T Q T R SMMLQT GQE WP SVVT S Q D TLUV P A DVVPARLLFWSATVYDATTRCLIDNPQQRGDRGSRD SLRIIPADPPAKNFWSVDLYDTQTRSLLQSTPYPALSS LEGG




 $R L R V P A K P P V K R F W A V T A Y D P \square S R S L L G S G G N \square N V G S T G$ KMTLPQNIPAEKFWSLTMYDNQTRSMLDTPQRYPRAGSQT


 KV T L P K D DPA ELLFWSFTLYDNQTRSMLQTPQKYPRA GSQS K V D L P G P I P A K D F W S F T V Y $\operatorname{P}$ D N Q T R S L L T L
 K V T L P K GI P A G K F W S L T L Y D T M T R S ML DTP QRYPRACS Q S
 K L N I P A K V P V A LF WS I VVY D S WTRCELQ S QPYPS I S S Q S
 R L H L P P DVVPAANFWS AT LY D A ETAAGGLDN GQP LP S I G S R D $K V T L P A P V P A K N F A S F M L Y S G Q T R S D L E T D Q Q S G G D S N R P$ KVTLPPNIPAAAFWSFTLYDNQTRSMLQTPQRYPRAGSQS





## QUERY <br> UniRef90_UPI00045E6FEE UniRef90-A8H5R2

 UniRef90- TPIOKO3 UniRef90-HOPUR8 UniRef90-A7MW10 UniRef90_V4JCG3 UniRef90_A0Z8C1 UniRef90-R7X474 UniRef90_UPI00047D07C2 UniRef90-M5S6H6 UniRef90-D5SXA7 UniRef90_UPI000474E2D2 UniRef90-W8IHP7 UniRef90-M5FDF7 UniRef90-F6BZ777 UniRef90-12Q5FO UniRef90_UPIO00372E2B1 UniRef90-B8KVP1 UniRef90_Q7V5N1 UniRef90_V4JQX8 UniRef90-D6V5M5UniRef90-A4CW28 UniRef90-M5FAV8 UniRef90-B8KVP0 UniRef90-W0TQ35 UniRef90-V4JQP3 UniRef90-A3YX10 UniRef90_Q4KCS3
UniRef90 R4Z6B1
UniRef90-E2CGA1 UniRef90_L8MAS4 UniRef90-H1SDY3 UniRef90_UPI0004776C8E UniRef90_M5TAIO UniRef90-H8KU17
UniRef90-A3HVX5 UniRef90-M5TQT3 UniRef90-A3YX09 UniRef90-Q1LDB5 UniRef90-W2DKN4 UniRef90- J2SL13 UniRef90_UPL00040FBD70 UniRef90-M2XWZ4 UniRef90-B8KM67 UniRef90_V4KXJ8 UniRef90-A0YUI4 UniRef90_UPIOOO35C432F UniRet90_E1SV00 UniRef90_M5FDZ9 UniRef90-Q7V5N0 UniRef90_UPIO0037E4AE3 UniRef90-F6BM80 UniRef90-V4J5N1 UniRef90_UPI0002E1E424 UniRef90_UPI0004299331
UniRef90-A0A059MHQ1
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UniRef90-J3GEU4
UniRef90_V4KX17
UniRef90_UPIO0047801DC UniRef90_UPI000299F90E UniRef90- M5TAH5 UniRef90-UPIO0036FBCC9 UniRef90-A0Z7P2
UniRef90_LOJ6A7
UniRef90_UP100047D64DC UniRef90_UPI000378A742 UniRef90-J9SCS7 UniRef90-A0P1V9 UniRef90_UPIO0037D8642 UniRef90-C3JVFO UniRef90_B8KM76 UniRef90-A0A011NIM9 UniRef90-A0P154 UniRef90-B8KM75 UniRef90-M5TKM1 UniRef90-J3HJF5

## UniRef90-E8YKD5

 UniRef90_UPIO002379A43 UniRef90_UPIO0037A62DD UniRef90-UPIO0047282A7 UniRef90-UPIO003B2FE12 UniRef90_UPIO003803651 UniRef90_D9XPG5 DLVVNADGSVDIYFGPKAPPGKVNWLQTIPGKGWNTILR DLTQNADGSVDVYFGPEAPKGKESNWIQTVPNKGWFDLLR
 NFQVNPDGSVDIYFGPKAPAGKENNWIQQTVPGKGWNTLLR
 NLQTNADGSVDVWFAPEAPKGKENNWIQTIPGKGWFMILR DLVKNADGSTTVWFGPNSPEGKEANWIETVPGKGWF ICLR
 NLQTNPDGSVDLYFAPESPAGKESNWIQTVSGKGWYTLLR KLKKNPDGSVDVFFGPKAPAGFENNWVQTIPGKGWFMLLR
 KLKANADGSVDLYFGPSAPAGSESNWIETVPGKGFYPFFR KLVANADGSVDLYFGPKAPAGKDSNWI ETVPGKGWFSLLR KLLVNADGSVDVSFGPKAPAGKEQNWVQTVPGKGWNVILR GLKKNADGSYDVYFSPKPPEGMKNNWIQSVPGKGWH TVR

 ELDVVNEDGSVVDLYFAPKAPSGREANWIQTVPGKGWFVGLR
 KLIAANADGSVDLFFGPTAPDGKETNWIQTVPGKGWWTYFR NMTANADGSYDVYFGPKAPEGKEGNWLQSVPGKSWFTVLR K LIY N EDGSVTLYYGPKAPEGKEANWTQTVPGKAWFVLDR PLVANDDGSYT WF GPEAPEGKEGNWVQTMPNKGWNTLIR

 GIVQNSDGSYDIYFGPEAPQGQENNWVQTIPGRGWNTIFR SPDKNPDGSIDIYFGPKAPAGKEKNWIRTLPDRGWFPILR D DKNPDGSVTI WFAPKPPAGHETNWVQTVSGKSWNSLLR ELKPNADGSYDI YFAPNAPKGKESNWIQTVPEKSWFILLR DLLKNNDGSVDLYFGPTAPAGKEKNWVQTIPGKHWFTYVR
 DIKANADGSYTVWFAPMPPAGKEGNWVQTMPGKSYNALLR K PVVNPDGSTNLYFGPTAPAGKEKNWLRTVPGKGYFVILR


 DIVQNSDGSYDVYFGPEKPEGEVNWIQTIPNKGWNVLWR
 T LRYNDDGSVDLFFGPKAPKGWESNWTETLPGKGWFTVLR HPKENDDGSTTLYDGSKTPKGKEGNWLATPPNRGFFSILR
 DLAKNADDSVDVYFGPTSPKGFEKNWIQTVPGRAWFVGFR KPAQNEDGSTDIY ${ }^{2}$ GPKAPAGKEGNWLATVPGRGFFAILR DLAYNGDGSVDLYFGPELPDGPETNFLRTVPEKGWFTLMR K PLANADGSTDVYFGPQAPAGKKRNWRRTVPGQGFFVMMLR RFTTNEDGSVDVHFGPEQPEDGH NWDQTVPGKSWWAMFR ELVRNADGSVDLHFGPAEPAEGERNWVQTIPGKHWFSYFR SVQAEEDGSHVLWF GPTAPAGKDSNWIPTIPGKAFFPMDR ELRANQDGSYTIYFAPKAPAGYEKNWVETIPGKSWFVAHR AVEAAADGTTTIYFGPEQPKGARGNWI QTVPGKGWFALLR A AVENADGSMT YFGPSKPADKAGNWI QTMPDKGWFMLLR
 DLAPNDDGSVDIRFGPDRPEDSR NWI QTLPGKSWFVAFR KPEVNADGSVDI YFGPKMPEGKK NWIKTDPDKGFFVVFR A AVAGSDGSTTVYFGPTKPDGSDGNWIQTVPGKGWNTLLR
 ALQPNDDGSHDLYFGPVPPKGRETNWVETLPGKAWFQLFR KIKKNTDGSYDIFFGPVAPKGFENNWLETVPGKGFFVIDR DLDYNDDGSVDLCFGPHAPAGRESNWI QTVPGQHWFSYFR A A EA A EDGSTTVYFSPEQPDGDRGNWIQTDPEKGWFNILR $E M K K N P D G G A T V W F G P K P P P G E E A N W V Q T M S G K G Y N V L L R$
$P L V V N E D G S V D L Y Y G P T A P V G K E P N W V Q T I A G Q H W F S Y F R$ KSVQNADGSFDVYFSPEKPEGKNVNNWLQTVAGQHWFSYFR AAEAGADGSTDVYFGPTQPQGQRGNWIQTMPGKGFFAMLR
 DPTVNKDGSI DLYFSNEKPADSAANWVKTLPDQGFFVYMR
 GIKPNEDGSTSUYFGPEAPEGWENNWAQTMPGQSFNVMMR YPTAEDDGSTIVYYGPKKPEGKDGNWVQTMPGKGYFTILR ELTENEDGSVTIYFGPTQPEGADENWI ETNAGESWFAYVR KPVQNSDGSTDVYFGPKSP GAGKNWIATVPDKGWFTLFR A LVYNDDGSVDLYFGPSDPKGPKANWTQTTPDKAWFVLLR


UniRef90 J2RJ29
UniRef90- M7XCS8 UniRef90-UPI00036AD260 UniRef90-W5TNN3 UniRef90 UPI00037AE778 UniRef90-Q4KB30 UniRef90-UPI00037FF970 UniRef90 B9NR81 UniRef90 ${ }^{-}$W81A47 UniRef90-A9VZD2 UniRef90 V4LCH7 UniRef90- 14 CLC 3 UniRef90-UPIO0035D4570 UniRef90 B1WVL5 UniRef90-AOYZX9 UniRef90-B8KM72 UniRef90 A3HVX4 UniRef90 UPlO0037904BE UniRef90-I4YYR4 UniRef90-Q3AL58 UniRef90 M5TQS6 UniRef90-UPIO002D8CCE7 UniRef90-A0A038G1G4 UniRef90_UPI0003F9003B UniRef90_UPIO0034AAA48 UniRef90-A0A059MP11 UniRet90_T1VHG2 UniRef90 ${ }^{-}$KoVHP9 UniRef90-A7ICV5 UniRef90-K0PP91 UniRef90-W6M7C1 UniRef90-A5FES6 UniRef90-B4WZ13 UniRef90 X0QB53 UniRef90 W8IID1 UniRef90-UPIOO04650C79 UniRef90-V4JS52 UniRef90_G4FK01 UniRef90 W9HCJ2 UniRef90-UPIooo3807246 UniRef90-W6LXD1 UniRef90 F7XBR8 UniRef90-U5EPE2 UniRef90-UPIOOO2F44583 UniRef90 LOI3F7 UniRef90-UPI00035FC39B UniRef90_UPIOOO3730591 UniRef90_UPIO0036506E3 UniRef90- UPIOO02557193 UniRef90-COZOH3 UniRef90-O8KUW8 UniRef90 V4IW80 UniRef90-K9NKN8 UniRef90-10G7V0 UniRe990 UPI00045EBF1F UniRef90-D8KBC8 UniRef90-D8JV83 UniRef90_UPIO0045EAA71 UniRef90 UPI0003699907 UniRef90-A0A052JOT1 UniRef90-UPIOOO4018945 UniRef90 Q1QJ57 UniRef90-UPIOO034C8320 UniRef90-R4UFQ2 UniRet90_A7ICV6 UniRet90_B9XCM5 UniRef90-HOHY88
UniRef90 D2R823 UniRef90- Q98BQ4 UniRef90 U7FL15 UniRef90-A7ICD8 UniRef90-UPIO00364393F UniRef90 UPIO0041FOB3F UniRef90_UPIOO04638BAC UniRef90-UPIO003749172 UniRef90 UPI00037F9ED8 UniRef90 K1L8B6 UniRef90-B3QAEO UniRef90-A0A024F5C3 UniRe990 UPI0002FED723 UniRef90_UPIO00315AE11 UniRef90-H1RUV2 UniRef90 F8KV15 UniRef90 UPI00047883DB UniRef90_UPIO00406DC2B UniRef90_UPIO003812777 UniRef90 FOSG24 UniRef90_UPI0003611D57 UniRef90_14Z3M7 V $V$ T R G G $V N T R F G T F E F K D G A P S$


| Q | Q | $T$ | $R$ | I | G | $A$ | L | E | F | K | D |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| V | G | A | P |  |  |  |  |  |  |  |  |

$\square K T$ T F GT LK F DEAFPTEET T K K
D E T
1 T T T P Y G E GELT T DAA AKVES
$V \square R T R \square G T F R Y F D G F P D D$
TETRLGALEFVDGFPTEATAEKVWDH

T A LLA LP AF GQSPASSSADS
T Q S L S T P YGPMA DD N S YP T D GT DE LLLDQRSDRQRASE AV
$V R T R L G T L R S F D G V P D D E T T R T L D F D N L D G Q R A V Q A Y$


 T R V N A L A F T D G A P S R E T V E KVYY D H L D F L H GVNNV A Q T S PNDAD

 LA ALLAFVLAAPAHA QVEDLDKRQDHRRAVEAV

SAP S L T P E Q A KV I A E E A Y A D L E F D L G I P T P D TVEK L Y D TMDF QRAVQGY LA

ES S LVQQQWE GNWPT
VESSLVQQQWE GNWPTQNEAEKLV

$V$ E THIGPLD F K DGAPS KA TLGGKVYDAMAFANAQAA F
E DFW WA S DA Y DET TQTP ${ }^{\text {DGN } \square E L Q D S Y F D D D A S \square R L F D E M D Y Q R A S Q A Y ~}$ TETVSTPFGEFDFRNGYPTRESAHALHERLRYNRAVEVY

ET $\square E T$ RF GRLEFP GGYPTEETAQKVYDELDLQRATQLY
A Q A PS AD D S L V L

DEVVIQTP $\square$ GN $\square E L I D S$ YF D D DASRRLIFDQMDYQRAA Q S Y $T A A E D V K A R L L Q S R A V E A V V$
 TS $\backslash$ A $\square A M A A F G \square A G G G Q A R A E T \square S P A E A R T \square A E E A Y$

 VQS RS GTLLKFEN GYP TVA TVAPSADDSVVRSRAVEAV VQSRSGTLKFENGYPTAETVNLGYY T D EAK S GA M DA Y E V IK T P $\square$ GE $\square T$ TTTDTYFDAATSKRLL DEMDYQRAA QA Y D Y T F K GGYP TSEAAQKAHENADFQRAVTAY | F GLA | V | E | $A$ |
| ---: | :--- | :--- | :--- |
| $A$ | $Y$ |  |  |
| E | A | $Y$ |  |

P QK A SAED IVGRS $\square E R R A V E A V$ S A Q A A ERV SVEDAKRIA E EA Y PSAASAWDVE GVVEFK IA S DAY TETLKTRFGDFTFENGYPAGDTAERLRELTLLNRAMEVY $T \square G G L S L L A G A S T S A S K A A W G D F E D F W L A T D A Y$

## P S K DVVQRTTE

 D F WL A C E A Y APARS EQAPVVSEEALLS LGGVDAY

T T A S V K T A S P D E $\square$ Q K L A E E V Y GAPSASAQQMVSADEAREMARETF

LGELRFF DGMPLPETAERLYDYLDFHRGVETF ETTVVADTTGTAKFKP E N F E E Q L L V Y N R A l VP A K D S A D D L K T RLI E R R A F E A V VDS $\square L G P$ L H F E Q GVP DEP T T QKLMDHLDRTYAYRTTF STK QSRENLAY S LGGQA Y

UniRef90_J2RJ29 UniRef90-M7XCS8 UniRef90_UPI00036AD260 UniRef90-W5TNN3 UniRef90-UPI00037AE778 UniRef90_Q4KB30 UniRef90_UPI00037FF97C UniRef90-B9NR81 UniRef90-W8IA47 UniRef90-A9VZD2 UniRef90-V4LCH7 UniRef90-V4JFW4 UniRef90-14C4C3 UniRef90_UPI00035D4570 UniRef90-B1WVL5 UniRef90_AOYZX9 UniRef90-B8KM72 UniRef90_A3HVX4 UniRef90-B8KM74 UniRef90_UPIO0037904BE UniRef90-I4YYR4 UniRef90_-Q3AL58 UniRef90-M5TQS6 UniRef90-UPI0002D8CCE7 UniRef90_A0A038G1G4 UniRef90_UPI0003F9003B UniRef90_UPI00034AAA48 UniRef90-A0A059MP11 UniRef90-T1VHG2 UniRef90-KOVHP9 UniRef90-A7ICV5 UniRef90_K0PP91 UniRef90-W6M7C1 UniRef90-A5FES6 UniRef90-B4WZ13 UniRef90-X0QB53 UniRef90-W8IID1 UniRef90_UPIO004650C79 UniRef90_V4JS52 UniRef90-G4FK01 UniRef90 W9HCJ2 UniRef90-UPIOOO3807246 UniRef90-W6LXD1 UniRef90_F7XBR8 UniRef90-U5EPE2 UniRef90_UPIOOO2F44583 UniRef90-LOI3F7 UniRef90_UPIO0035FC39B UniRef90-UPI0003730591
UniRef90-UPI00036506E3 UniRef90-UPIO002557193 UniRef90-COZQH3 UniRef90-Q8KUW8 UniRef90-W7D2F9 UniRef90_V4IW80 UniRef90-K9NKN8 UniRef90-10G7V0 UniRef90_UPI00045EBF1F UniRef90-D8KBC8 UniRef90-D8JV83 UniRef90_UPI00045EAA71 UniRef90_UPI0003699907 UniRef90-A0A052JOT1 UniRef90_UPIO004018945 UniRef90-Q1QJ57
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UniRef90-A7ICV6
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UniRef90 I4Z3M7
UniRef90_I4Z3M7


L N S Y G GASAl A A L E R G F Q S $\|$ G A K D N DVV VIF P E L M D S K S L





 $\square$ MTTPAASLA GFRRG DRELGPDNETMMYWHGRLDS K GLLLL








 $L L A Q H P V S W A A W R R G G L D W G P A ~ N T T M A L W E D D C H P C T V V G$ MDNMRGVSUHA LRNAMQD DGMKENEVLVFSEEMDAK S L F L L WAMP LI N TLGGMKFGSDKEFGTGYNVLPIWKRLDPKTGVTV


 I WGMPA VNYD LMMLQEMLTTKTKGKVNEEVVYS RLDDWQNQTL



 L WAVP VVGME GARRMLVDNAEARSGDVVLVAGYRDVSVML
 YQMQPAMNVI GMRDGSESKFGKGYNVLPDWDRMDSRT LVVP




## L

 Y F Y P L L
I S M D V T R K Q F T N I E P G K E F G K G P M N M F V S V V P Q Y P I Y GYPLVTMEFTRRVMTNVATAPMGQFARLRAYPDAR DVT I WS T P L V S DT T WR D NQ GK AF GVE NA T F VVL K S LKK EKR GI


 IDWGMPAANYD LMLLQPALKKSGAKENEIIDYWSRPVVWHNQTL

 RFWYP TV S CES $\square F$ NGNRANGFKDNESFIILSAGPRQVGF











## UniRef90 J2RJ29 UniRef90-M7XCS8 UniRef90_UPI00036AD260 UniRef90-W5TNN3

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UniRef90 B8KM74
UniRef90_UPI00037904BE
UniRef90_I4YYY
UniRef90_Q3AL58
UniRef90-M5TQS6
UniRef90_UPIO002D8CCE7
UniRef90_A0A038G1G4
UniRef90_UPI0003F9003B
UniRef90_UPI00034AAA48
UniRef90_A0A059MP11
UniRef90-T1VHG2
UniRef90-K0VHP9
UniRef90_A7ICV5
UniRef90_KOPP91
UniRef90-W6M7C1
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UniRef90_G4FK01
UniRef90-W9HCJ2
UniRef90_UPIOOO3807246
UniRef90-W6LXD1
UniRef90-F7XBR8
UniRef90-U5EPE2
UniRef90_UPIOOO2F44583
UniRef90-LOI3F7
UniRef90_UPIO0035FC39B
UniRef90-UPIO003730591
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UniRef90-Q8KUW8
UniRef90-W7D2F9
UniRef90_V4IW80
UniRef90-K9NKN8
UniRef90-IOG7V0
UniRef90_UPI00045EBF1F
UniRef90-D8KBC8
UniRef90-D8JV83
UniRef90_UPI00045EAA71
UniRef90_UPI0003699907
UniRef90-A0A052JOT1
UniRef90_UPIOOO4018945
UniRef90-Q1QJ57
UniRef90-UPIO0034C8320
UniRef90-R4UFQ2
UniRef90-A7ICV6
UniRef90 B9XCM5
UniRef90-H0HY88
UniRef90-D2R823
UniRef90-Q988BQ4
UniRef90_U7FL15
UniRef90-A7ICD8
UniRef90_UPI000364393F
UniRef90-UPIO0041F0B3F
UniRef90_UPIO004638BAC
UniRef90_UPIO003749172
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UniRef90-K1L8B6
UniRef90_B3QAE0
UniRef90_A0A024F5C3
UniRef90-UPIO002FED723
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90
100
110
120
TANADTVYY LIAVIDDLSK GPVVI|EQPP KG|L|GTINDMWFQ TPNTDVVYFTPYFDTREVGPIVLEVPPADIVGTIMDAWQM TPNTESVYGMQFLDGKRDGPTVVEAPPG LLGGGFSTMWQMQ TANTETVYALAHLRLKTDGPTVI EAPPA VLGFVQDGLQR TANADTI YVMGTLDLSK GPVVLETPP KFLGALQDAWFR
 TANATTPYTLNFI DLAQTGPLVVELPPGPTAGGLSDFWQR TANTTTDYVTSDVDSSSNGPVVIEVPPGEDLACMDDAEFT

 TGNADTIYYVAABDLTK GPMVIEQPPM GLGTINDMWFT

 TGNNSTVYADASLDLKVDGPTVVDIPPGMY GTANDGLFK RANVDTGYSSAFLDLS



$\qquad$ A E DGPYVVV KDGPMVMETPPGTGPGTVNDAFFR GEEPWVLSVPDMKDRYFLDPMLDG TPNPDVIYFMVFFN TKEGPIVLDVPRAKGRGNVVNVWQM TGNATTPYI I SLLDLSETGAIVVDFPAGMFAGGVLDWWEH PAMHTTVVYFYMWIDLHDGPLVLDAPPGDVYGLIDDDSWGR $T P N F D V V Y A M G Y$
$T$ TPNSDVLYAMSYI DMSETGPIVVMAPPG LQGILDDFWQR APNADTLYTTSWLDVGK EPYVLSVPDMKGRYFLLPMLDG TANADTVYYLAVFDLTK GPMVIEQPPKSVGGTINDMWFS
 TANADTVYYVS IDDLT SGPMVVETPPMALGGFDDMWFH TPNPDAI YLMTFTDTRDVGPVVIEVPPAEGNGNIVDVWQM TPNPDSIVYMPFDNTKAVGPVVIE:PPADVNGTIMDGWQM
 TPNPTTDYLMPFDDMKDVGPVVVEVPGGSDTGTVGDAWQV
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 A TANTETVYAMGFLYLAAD

T G N T E S
$P$ Y A A F V V F EPMII SAVPNTNGRYYLLPMLDM GPMVIEIPKGHIAGGFSDFWQR GPTVFEVPPG VMGPDDDHNFL GTGPMVLEDPPASGTGTIMDAWQA

 EPWIVSIPDMKGRYYLFPMLDG
 RANADTVYYLT GLDLSK

$\qquad$
T PNPDALYFMIVFFNTKEA
TSNMNTPYMMAFPNLKET


$T L N S D T P Y G S A A D D L$
$A P N A D T L Y T T A F F D V$
$A$
APNADTLYSSAWLDLSK

A
P

TPNPDSGYFMPFFNTKKV
D
Y G


A
 GPVVVIELLPP GPY! GPIVI DVPAADDGSFIDTVWQM GPLILEVPAGPTGGDLNDUEHR EPWIVSLPDMNDRYALFPMLDG

 K S GAYVVEVPAPGPF SPNADTLYY SAFLDDLI S R TLDNSDTPYAGGVIDLS GPVIV SAP NTHGRYYL $\operatorname{LPPMDDM}$ TPNADTLYSIAWLDLSK TPNPDVI YMNPGYD TRQQ EPYI LHVPEEGNRYYLMPMLSA GPVVMEVPPG VLGMVNDAYFR QGPVVLEPAVEGTGSVDDGWQT TANCDTI Y AMGSLDLTK SPNHDTLYSAAYLDLTQ

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 YLGDI GMLGGPDQGRGGNYLVLPPG YDGEVPDGYFVMRS WVIDLGGPGPDRGEGGKYLIVVGPNYTGPLPQGFFVAHA WRGDV G LIA GPDK GK G GTYVLLPP PDYK GPEPTE GYVYRS E CG GLGEMGPDQGRGGRHLIVPPGQEAP DVDDSYFVHRA YVADF GP LG $V$ P DK GKGGKY L L L P P P K Y E GEI P D GYHVLR S WV S D F GA P GP D R GLGGGKY L L L P P P D Y A GPVVPEGF Y V A H S WV T D F G L P G P D R GL L G G K Y L I L P P GY D A Y L T DF GAT GPDNGEGGKY L F L P P P G Y D G DV $P$ D GY F V $\stackrel{A}{L} R S$ YV T DF GNAGPDRGKGGKYMLVPPG WV DD 1 GF P GPDRGKGGKY LIVP T F V E N I T G GK Y L F L P P G

D Y GALPE GY VVRHS G Y E G E V P P GYTVVLR P WTNVFASPGKRTTGTGKGDFAIVAP GWTGEKMPE GVVQK Q S
 $P V A D L G L T G P D Q G K G G K Y I V G B E D D L S K Y K K D G V F L F Q S$ $Y \vee G D I G L G N Q D G G K G G K Y L V V \quad G E D Y K G E \| P N G Y I V L K T$

 YVCDF GNAGDDEGKGGKFLLVPPG YKGEDPDGYEVKKS WTNVF QVPGKRTTTGTGAQTFADTGPGWSGRLDDGMMEYKS $A D E D A G P E G A D Q G K G G K Y$ LI LP P P D Y N S NPP VGYYVLP S $P L E D A G L L G A D K G A G G K Y L L L P P G B Y Q G K V P A G Y I A L H S$
 WK GDVGGAGPDAGSGATYVLLPPG YSGPEPAEGYYYRS WVVDL G GPGPDRGEGGKYLIVPBPDYDGPLPEGYYVTRA

 WV ADMG!PGPDAGNGGKHLLLPBDPYKGVVAGYHVWKS
 WI DDFGLPGPDRGEGGRFLLAPPG PLEDAGPS GADQGEGGKYLVLPPG $P$ P V D DVGP A GVD K G A G G K Y L $F V V D F G A T G P D K G E G G K Y L I L P$ GIIHDFGMS GPDK GNGAKLLI LAPKPDYEGDVPDGYFVARS ALEDVGP AGADKGKGKYL LAP WS DVFAVVPGKRTSSTKAANFAVVLKGWNGKMLP EGAAERIES WT DVF QV P GKRTT GT GPQKYAIVTGPGWK GTLPE GVKE Y Q S $P L I D V G V S G P D G G K G A K F V V V G P A H E A P E N P P A G A K L L R S$ $P I G D V G M V G P D A G Q G G K Y V L L P P G F D \quad G P E P S D G F V Y R S$
 WSDVFAVVPGKRTSGTAAADFAVVPQGWKGQLPKGDRRDDA
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 $W T N D F Q V P G T R T T G T G A Q T Y A D T G P G W K G T L P A G V V Q Y K S$ $P V F D L G L T G P D K G K G G T Y V V V G P E D N L E K Y K Q D G V N V Y Q S$ $P$ L E D A G R L G DD K GK GMK F LI L QP G P Y A GE IP D G YA P L K P
 $W V Q D L G L P G P D A G K G G K H D V V P B M D Y Q G N I P B E G Y H V V G R S$
 PLEDAGPYGADKGAGGKYLILPPG YNDTPPDGYIVVRS
 $P I T V L G L T G P D Q G K G A T Y V V V G P Q D D P A K Y Q K D G V Y V V Q S$ WVMDMGIPGPDAGKGGKHIVLPPG YDGIIPDEYHIGRS
 $P L E D V G P A G V D K G A G G K Y D I L P P B D Y K D T A P E G Y V V L P S$
 Y L A DVA P L G A D K G K G GKF LV L P P P D Y K G K V P K GY F V S R S
 WT NVF QVP GKRTTTGTEA QTYAI T GP GWT GTMPDQGMREYK S
 $P I A D L G L T G P D R G E G G T Y I \quad 1 V G P E D D P K K Y E K R G V F V V Q S$ WTDVFA SPGWRTTTGTQAQKFLVVTAP GWS GAVPAGMQRI E S WT DVVFASPGTRTTGSYKGDFAITGPGWTGDLPTGVTEIKA WS DVFTVPGTRTT GNEAQTFALTGPNWKGKLPA GVVQYRS W L L D I GLP GP DK GK G GK H L IMPP G Y V G K V P E GYY YV A A
 $Y V V D L G K A G P D A G A G G A Y L F L P P G H$ $H$
$P N Y G D T P$
$Y$
 Y D A A V P A D Y I P L WV DDLG LDPGPDRGEGGKYLIVPB PDYDGALPEGTFVAHA
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 NGHRIWAMMRGFGGTGEQALDWFSQRLKVYPLDAPDPPA DTYGHWLADRGFMEEADPVVDNMKSHFRLYPMGEE PQE RTNRVIYGARAFDNDPKPTVDLIKRSMKIYPYTPGGAVPE ETYRLWVFLRKSPEDVAAAAQFVRDGLKVYPLSKASNPPE PTSMVWI GRTNGKADYEAVHAI QDGYQLTPLSQWEKQPP PTSLVWIIGRTNGKADYQAVHAIQTQYKLTPLSQWGKQPP PSYRIWVMMRGFGEVGEQAVDWFRQNLKVYPLAT GPRQ ATNNILIATR』INPDPAFSKKFQSELGMT QQGGTKAD NTYRQWMLTRPFQSPTETLEEKFKKGIKIYPLAEADNPQP PTNMVWVLGRTNGPRDYPAVHKDQSGYKLTPLSAFGKPYT
 KTYGHWL AMRGFMTDPVPVVKNMKEHFRLYPLGSE PKE

 PTNK LLLGTRVLTPG ADALEVFKQSLKVYPLGGSTPQP RSYGMCLVSRGFHGDPHPAADMIKAKTRAYPGAQADDPPP
RTNNVFLFWRAFDPADLSPAVNRIESTVIYPMGQKDGADP RTNTI LWFGRSFHDDPKPVVETIRKFTKVYPFEPGGPPPP GTNNLFIF LDRGYEDPNNLTPAVLEKTRLYPGNPEAERKP PTNDVWLLGR DYCPEDYAAVHKLQDEFKLVPLSAYGKDYT SSNNLTVGIRSSPGGDVNAA!TR\KTVKVYPLNKPANWKE VSNFLVIALR ILDPDPEYAMKTFKSEFKMGRVGE TVKP GTNQALMLGRSFLQDDDPTVAVDKDRLKDYPYVPGGYSPE NTYGGYALLRSNLASHADASVAYAKRLKVYPLSQAASPPE VTYRAYALLRS LLKSDVAKAAAYGRRIKVYPLSQAASPPP NSYRNWGLLRANVGTGDAAMAYYRDNLRVYPLATAGPRE GTNMAGALLRSNVAAD DAKAVAYSKQDKLYPLSSAVNPPP
 RTNKVLMFCRGLDDSDLKKVEAVFSKTQVYPGGATGNVTA RTNNVFLFWRSFFADPDDLTETVDEATRIYPLGNRAGAAP PTNMAWLDGRTNGKQDYAAVHHLQDQFRLVPLSAWRKGSR STNNVFLGFRTVMGADPSDAVKIAEQTRMYPGWDEKNDQP PTAYVWVIGRTNGSKDYEAVHKVQDGYRII TPLSRWRKKPR
$P T N F V M W F A R S F H G D P K P V A D T M R K F T K I V P Y E P G G L G S P$ QTNDVWLLGRDYCPEDYAAVHKLQDECKLVPLSAYGKPYT TTNNVLVGVRILDPDPAYYDKYVDS LRMGRVGHATEP PSYSVWGARGFLVDGSPAPAVELDKQFKVYSLGEETSTPP PTPFVWIIGRTNGPADYDAVNKI QAGYKVTPLSQWGKTVP KMMNAFFGLRTLDPDPNVCKALVEKVKIYPYAKKDADPP PTYMNFSFIRANAAEGESALAYYRENAKVYPLATGGPKA
 PTALVWLLGRTYCPEDYAAVHAGLDACKVYPLSAYGKDYT ATNNILIGLRILGQDPG YFGKFTAAYKMGRVGEDAP DSFGSYVLLRSNGDADVARSAAYAKQAKVYPLSQASNPPP KTNLALYAARAYDNDPKPAVENDRKTMKVYPYAPEPKDPE PTPSVWIIGRTNGPADYDAVHAIQAGYTITPLEDWGKEPK PS $\square K N L L A 1 R A L P G G D A A K A L Q A L R A V K D H P W S E N G A A A P$ SSNNLTVGIRSLPEGDVTGAMERIKTVKFYPWNSPASASS
 PTALVWLLGRIYCPEDYTAVHKLQDADSLVPLSSYGKPYT ATNNIFI GVRILSEEPGYFDDTTSEFRM GPAGGEMKP KSLKNLVAIRALPEGDVQGAMNADRAVKDHPFSD ANPRP PTSUVWLAGRIVYCEDYAEVHKLQDEVNLYPGSAWGKEWT

 $P$ TSLLVWLLGRIVYCPEDYAAVHALQQDQFKLYPLSAYGKWTP PTYSVTPGLRGFQVDGKDAAVALMKSDKVYPLARKSSPPK PTPFVWI I GRTDGPPDYDAVHKI QDGYKVTPLSEWGKTPP PTNTVWLLGRTYCPEDYKAVHELQDQCKLVPLSAYGKPYA PTSLVWLLGRIYCPEDYKAVHELQQECKLVPLSSYGKWKP $V N Y Q G Y A L G R S N S E A D V A A A V A Y G K R V K I Y P F S Q A A H P P E$
 PTNTVWI GRTNGPKDFAAVREIQKKKYRATTMSSWWNTDT PTGMGLLI GRTNGKADYAAVRMFQDGIKAAPLSAYGKYTP
 PTNLVWVLGRTYTPEDYKLVHAIQDQYSVKPLSYFGKDYT QTNFHEFFFRVTDGDTAAAAQAIKDAFRQYRLAEADAPGE STYTGFA LIRSNDPSDDKRAVEYGKKVKDYPLSEADNPPA ANYQGYALLRSDPKSDVDAAVAYGKRIKLYPFSQASNPPE KTNTVVWFGRSYGSDPKPVVKTDRETLKVYPYTPGGQPPA


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 P P A GK V P S V D M K T A V R E G V E Y F K L L A E LLMM T N P P V P A D A P SNF ITTGKDVEWSATAPRGLE Y WKKL SAMI I NEEPVREDDKP
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UniRef90_J2RJ29
UniRef90-M7XCS8 UniRef90_UPI00036AD260 UniRef90-W5TNN3 UniRef90-UPI00037AE778 UniRef90_Q4KB30 UniRef90_UPI00037FF97C UniRef90-B9NR81 UniRef90-W8IA47 UniRef90-A9VZD2 UniRef90_V4LCH7 UniRef90-V4JFW4 UniRef90-14C4C3 UniRef90_UPI00035D4570 UniRef90_B1WVL5 UniRef90_AOYZX9 UniRef90-B8KM72 UniRef90-A3HVX4 UniRef90-B8KM74 UniRef90_UPIO0037904BE UniRef90-I4YYR4
UniRef90-M5TQS6 UniRef90_UPI0002D8CCE7 UniRef90_A0A038G1G4 UniRef90_UPI0003F9003B UniRef90_UPI00034AAA48 UniRef90-A0A059MP11 UniRef90-T1VHG2 UniRef90-KOVHP9 UniRef90-A7ICV5 UniRef90_KOPP91 UniRef90-W6M7C1 UniRef90-A5FES6 UniRef90_B4WZ13 UniRef90-X0QB53 UniRef90-W8IID1
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UniRef90_H1RUV2 UniRef90 F8KVI5 UniRef90_UPI00047883DB UniRef90_UPIO00406DC2B UniRef90_UPI0003812777 UniRef90-FOSG24
UniRef90_UPI0003611D57


UniRef90 J2RJ29
UniRef90-M7XCS8 UniRef90_UP100036AD260 UniRef90-W5TNN3 UniRef90-UPIO0037AE778 UniRef90-Q4KB30 UniRef90_UPI00037FF97C UniRef90-B9NR81 UniRef90-W81A47 UniRef90-A9VZD2 UniRef90_V4LCH7 UniRef90 V4JFW4 UniRef90-14C4C3 UniRef90-UPI00035D4570 UniRef90_B1WVL5 UniRet90-AOYZX9 UniRef90_B8KM72 UniRef90-A3HVX4 UniRef90-B8KM74 UniRef90-UPIO0037904BE UniRef90-I4YYR4 UniRef90_Q3AL58 UniRef90-M5TQS6 UniRef90-UPIO002D8CCE7 UniRef90-A0A038G1G4 UniRef90 UPI0003F9003B UniRef90-UPI00034AAA48 UniRef90-A0A059MP11 UniRef90-T1VHG2 UniRef90 ${ }^{-}$KoVHP9 UniRef90-A7ICV5 UniRef90-K0PP91 UniRef90-W6M7C1 UniRef90-A5FES6 UniRef90-B4WZ13 UniRef90-X0QB53 UniRef90 W8IID1 UniRef90_UPIO004650C79 UniRef90_V4JS52 UniRef90-G4FK01 UniRef90 ${ }^{-}$W9HCJ2 UniRef90-UPIooo3807246 UniRef90-W6LXD1 UniRet90-F7XBR8 UniRef90-U5EPE2 UniRef90_UPIO002F44583 UniRef90-LOI3F7 UniRef90-UPI00035FC39B UniRef90-UPIO003730591 UniRef90_UPIO0036506E3 UniRef90-UPI0002557193 UniRef90-COZOH3 UniRef90-Q8KUW8 UniRef90-W7D2F9 UniRef90_V4IW80 UniRef90-K9NKN8 UniRef90-10G7V0 UniRef90-D8KBC8 UniRef90-D8JV83 UniRef90-UPIO0045EAA71 UniRef90-UPI0003699907 UniRef90-A0A052JOT1 UniRef90-UPIOOO4018945 UniRef90 Q1QJ57 UniRef90_UPIOOO34C8320 UniRef90-R4UFQ2 UniRef90-A7ICV6 UniRef90-B9XCM5 UniRef90-HOHY88
UniRef90 D2R823 UniRef90-Q98BQ4 UniRef90_U7FL15 UniRef90-A7ICD8 UniRef90_UPI000364393F UniRef90-UPI00041FOB3F UniRef90-UPIO004638BAC UniRef90-UP10003749172 UniRef90-UPI00037F9ED8 UniRef90-K1L8B6 UniRef90_B3QAE0 UniRef90-A0A024F5C3 UniRef90-UPIO002FED723 UniRef90-UPIO00315AE11 UniRef90-H1RUV2 UniRef90-F8KV15 UniRef90-UPIO0047883DB UniRet90-UPIO00406DC2B UniRef90_UPIOOO3812777 UniRef90-FOSG24 UniRef90_UPIO003611D57

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FLNPRDKNWYYPGAWMNFLFTGYFATGYRQLDARTAF FLNPRDKNWYYPGSAWMNFLFVTGYFPATGYRQLDARTAF I WASREDNQWPDSKSWEKMFARNTEFIRDSGADUDARTLIW NFRYGMAHPYYPNSQWGTMLWQGGYFPRTGARTLDSRTAF VWYPRVDMNMDTGSAWNMGYPVHFSGKDGVTMNTDARVSF VKAGQTPKAEVKN
VAAGQSPKAEIKN
NWLMTYDLGSYGTDY VYASRDPDKYWSNRHWEKMFDHNTTFERNGVNDIDARTDW QUNPRFTKPYWEGTYWYKSFDFTTAQETVTKVQLDERATW MFKPRNPDVYYPDRKWFSPLSSGSYQFLSKTRLIDDRVGF LAASKETGAPVNGWRVPSMVLGNY AGGDRDMGSQNGW LFAPEDAKNYIYSGFWQTGFPGGSHEYGNVATSLGRYGTD FRNRDTEALWPGSKWETGFAGGSYEFGNDGVSMNGTDF FKDNKDVQ YDT VFPPYFEGTYWRVPAAEAVQGQSTRYASREAYADD KYDAGMPPFFSPRSRWTYAGPLEVIKAQENFADVNTYPVD TVEAFTKPYWESTFWYRLIDFPLAQEDETRGYLDERSAW
 FMSPRDPSWYYPNSSWFNFLAGLGGYFPATGYRTMDARTAF GFLPGLDGHVWKDRQWDNPVNNMSEPGAEKSLDLDFRNWF FKIN SQVK NWRFGKMHPYYENSMWGNMLWEGGYDFETPARTGDSRTAF SFADREDRVVWKDRQWEWVAFEDGDFNTPDYVDLDGRETW QDTPRYTKPWWDGTYWYKSYDFSVPQETETRVELDERTTW KYDAGLKPFYDKGRWNFPADPEGGKAAGASYDEPDAYPVD Y EGGFHPFFQSSRWALPALPDYIKAAPSYTDPDSYPLD

## MAHFKDAGEATNGWV

| LPPLAELTGLSNNFAKSGVYPTD |
| :--- |
| $T T L Q V N G W Q M N T D T M G V G N Y$ |

AFSKRTPGRYREDTHWETPQDFVNEQDGPDGTLLDQRTAF DTD LLPLEPYFPARPWLNVFAGTEFQASGTFTNLEQRAGY KAAGRQSAAGHTGWRVQ RLLGRKDERYYKDRQYERAWAGTSEYMQESY(LDIDQRAAF MKEKAPT $L A R V V N G W Q M N T D T M G V Y G N Y$ FMNPRDPDWYYPGSTWFNPLFVSGYQFETPYRQLEARRWY FKVNKAVK
QVTPRYTEVYWPGTSWYKSFDFHVEQEAADRAEGDERTDW AFASEDSDTYYQGRQWQGVGNVPYTFVDHAGVTMIDRLVF V $\operatorname{SFAKRTAGRHWEDKHWDYTLASIVNGWSMNTTTMGVYGTY}$ AFESRQPDAVYPGLRWESPFGNSSTFDPDGYFNLEARTTF TWK
YEGLFKPPFYEGGQWALPVAHDVTGLANLFAKPNVYPVD VDRVMLHMVTSGDFKNVNGWRYSTKT QTNPRYTEPYWKGTHWYKSFDFHPEQETDTDQEDDQRGTW YDAG MPPFYEGTHWTYPGHPEFDKAVGEGLDPNDYPVD NWRYAMKHPYYKDSRWGSMLWQGGAFFETPARTLDSRTAF DGLILMREKVPTI ARVANGWQDNSDTMGVYGNY FDSDRSDRRAWPDRQWEWVVPGSAQFETPAGMDMEARDRW SFADRRPDRVWNDRQWEWVGPENGDFDAPFYVDDDAREVW YDAGFPPFFASSRWAVPAFPALVKAGSSGYAETDMYPVD SAADRFTGRFYDDGTKWTVHGGG\|SNSDHDNENDDGLVSY QVYPRYTEPYWPGTNWFKSVDFVIPQETADDQQ DQQATW FASARPDRMTWPDRKWEWIVPGSAQFETPSGMDLEARDRW F

FSDGDVKDVDGWGFTTKTGIYGANY SEVPKDAQA KDMGHFKSAGTEKNGWVFTTGTGRYGTDY ALKDVPKDSLVKIMGHFKESGKNINGWTFTTNTGLYGTDY FKFSDGDDQLING TYDAASSGVYYPDRKWQDAEGMTYTFSRDGAPQDDARNNV $\stackrel{\rightharpoonup}{F} K N K D V Q$
F K KKTSYFPPPYYPGGH

FSDGDTK H NGWNFTTKTGLYGTDY YETSYFPPPYYPGGHWFDPASPVVRGMSTFFADPNSYPVD Q $\square N P R F T E P Y W P G T Q W Y K S \square D F S L P Q \square N Y D K V E \square D E R T V W$ SWKMPTMARVTNG NQAP $P$ GVEVSAGWVYSYHMGAYGADY NSAPTVADPQDKEAWRK AGVLANGWRTNMTAMGTYGTD FDTARTDKLA WKDHKWEWIVPESAQFETSNGDDLEARDRW FLMPRVPPRYYPGRQWFFPAEPGVSESHGTFELGDRYLTD NFAPRALRFFYEDRQWWSPFAGGSHFLDGAVRMDDDRDMF KYENDFTPPFYDDTNWADPASPDVVKADMNYLAPNDYPVD YET TFAPYYEGRQWVFPDAPDUKGLQTQYADPDSYSVD FTRPRHADWYYPDSGWYNWLFVTGYQFETPYRKMDARTTF UniRef90_14Z3M7

UniRef90_J2RJ29 UniRef90-M7XCS8 UniRef90_UPI00036AD260 UniRef90-W5TNN3 UniRef90-UPI00037AE778 UniRef90_Q4KB30 UniRef90_UPI00037FF97C UniRef90-B9NR81 UniRef90_W8IA47 UniRef90-A9VZD2 UniRef90-V4LCH7 UniRef90 V4JFW4 UniRef90-14C4C3 UniRef90_UPI00035D4570 UniRef90-B1WVL5 UniRef90_AOYZX9 UniRef90-B8KM72 UniRef90_A3HVX4 UniRef90-B8KM74 UniRef90-UPIO0037904BE UniRef90-I4YYR4
UniRef90-M5TQS6 UniRef90-UPI0002D8CCE7 UniRef90_A0A038G1G4 UniRef90_UPI0003F9003B UniRef90_UPI00034AAA48 UniRef90-A0A059MP11 UniRef90-T1VHG2 UniRef90-KOVHP9 UniRef90-A7ICV5 UniRef90_K0PP91 UniRef90-W6M7C1 UniRef90-A5FES6 UniRef90-B4WZ13 UniRef90-X0QB53 UniRef90-W8IID1 UniRef90-UPIO004650C79 UniRef90_V4JS52 UniRef90_G4FK01 UniRef90 W9HCJ2 UniRef90_UPIO003807246 UniRef90-W6LXD1 UniRef90-F7XBR8 UniRef90-U5EPE2 UniRef90_UPIO002F44583 UniRef90-LOI3F7 UniRef90_UPI00035FC39B UniRef90-UPI0003730591 UniRef90-UPI00036506E3
UniRef90_UPI0002557193 UniRef90_COZQH3 UniRef90-Q8KUW8 UniRef90-W7D2F9 UniRef90_V4IW80 UniRef90-K9NKN8 UniRef90-I0G7V0 UniRef90_UPI00045EBF1F UniRef90-D8KBC8 UniRef90-D8JV83 UniRef90_UPI00045EAA71 UniRef90_UPI0003699907 UniRef90-A0A052JOT1 UniRef90_UPIOO04018945 UniRef90-Q1QJ57 UniRef90-UPIO0034C8320 UniRef90-R4UFQ2 UniRef90-A7ICV6 UniRef90-B9XCM5 UniRef90-HOHY88
UniRef90-D2R823
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$F Y L A T V N T P A M A L E L P G V G S Q Y A F S A R D S S G A Y L D V S K T Y$ HFYATGITPAMVKPPVGAGSQYVMGLRDSEGNALDGSKTY

 FYEADTTSKGMKTETPGVGQVYLSTKRDKDGQVLRGGETY $G F D G S G S S P A Y M T E M V G A G S Q Y V T A F V D A T D A H F D G G R T Y$
$F T A A Y S N S P G M V V N V V D K G A K Y P A T M K D S E G N W L D G G N S Y$ FYGVTGITPAMAMRLPGDGSQYLLAMTDADKNHFDGAKTY FTNYYSISPGMVSQIPGRGAAYAIAFNDAMGKPDDGKDTY LMRALVTADGLGANRPGDAVYPTSQKDAHERTYDGRKNY YYAYTLDSPGMDMRVPKVGSQYLMGFLDANMNPFDGGKTY FYQAlGASPSMFRRKEGGGSLYWLGLKDNTGKYVDGSKTY $F Y E A V Y S S K G M V N P P V G A G Q V Y M T T K R D S E G N L L R A D K T Y$
$F F G Y T G D S P A M C M R L T G D G S Q Y L V A F R D T D D A Y F D G A K T Y$
 SRGLVFTFAFFSPKHLGEGQFYLMTIKKDKDGDHFDGGKTY
 TRGVFFSMAFSSVKHLGTGQFYLVALHDRTGQPFDGGQSY Y LKRA VAMMGLGANQPQDA IYPLNVGDADGKPMDGANKY YLQRALVTAI GLGANRPQDAVYPTSEKDVEGQPYTGANKY FYEVTGTSAAVLTKTPGTGSAYDTAYSDPDGHAFDGAKSY FTSAYSDSPAMVVNLVDKGAKYPVTMRDDNGDVLDGARSY YGRRAVVAMFGLGANLPQDSLYPTARADATGRPFDGGSRY YQKA SSA AMGMANAAGSKY $F Y G V T G 1 / P A M A M R V P G \square G S Q Y D F A T L D A D K N Y F D G G K T Y$ LMRALVTADGLGANRP QDAVYPTSQKDADDRKYNGANKY F Y EAVASTKGMVNPQPGAGQIYMTTKRDSKGRLLRADKNY YYDGL GNSPAMMAKNVGVGSQYLWSYRDQEGDFLDGDQTY
 HFTADGDTPAMAMQMPGTGSRYQTTYKDATGAYLDGGQTY Y $\square K R A G V T Q V G L G A N L P E D A Q Y P D N I G G D S N G K P L D G G Q N K Y$
 FYEAVSSTKGMLDPQPGSGQVYMTAKRDSDGNLIRADNKY RRGLTYTYAY GGIKRMGAGQFYLINDKDKNGESYDGAKTF YYGYTLDSPGMIMRMPGDGSQYLMSFLDPEGNPFDGAKTY Y LKRAI VAMVGLGANQPEDAIYPLVVADSTGEALTGEHKY FAQAlVTSPAMFRRDPGAGSLYWLGARDAKGTYLDGGRQY FYQAI GASPAMFRRQAGFGSLYWL GLRDNTGAYVDGAKTY ARA LTYS $\square G Y \square G \square K R \ G T A Q T Y \amalg I A G K D R D G K A L G G N K T Y$ SWEAISMSDGMMKELVGVGSKYLAAYADADGNWFDGSHTY SQRALDTADGMGANRPGQDAVYPTSEAVDNTGKPYDGANKY FARALVTSPAMFRRSPGAGSLYWLGLRDSSGAYLDGDRTY I QRALVTAMGLGANRPGQDAIYPTSLKSGGGRKYDGSEKY $L Q R A L I T A L G L G A N L P Q Q D A V Y P T S E V D S T G K P Y D G T Q N Y$
$S R G L V F S F A F F T P K H L L G Q G Q F Y D M T V K D K T G Q T F D G R S T Y$ LQRAVITADGLGANRP QDAVYPTSELDLEGKPYTGESKY
 Y LKRAIDAQAGLGANLPEDAIYP $\square N L G D E T G K P L D G A N S Y$ LMRALVTATGLGANRP QDAVYPTSLKDAHDDAYDGANKY
 FYEAVTSSEGMVNPYVGKGGAYYMTTFTDKDGDKLDGSTTY Y LK RAIVAQFGLGANVPEDAIVPVNVADETGKPLDGTSNY ENRAYVAKYFLGANLP QDAVYPRASVDANGMPLKGDNRY YLHRAGVAYGGYGANADEDALYPTAFADANGQPFSSDRRY FAQA VTSPAMFRRKEGAGSLYWLGHRDTSGAFVDGGKTY $\begin{array}{ll}\text { FAQA } & \text { VTSPAMFRRKEGAGSLYWLGHRDTSGAFVVDGGKTY } \\ \text { ARGTUYYGFSNQKNPGTGQYYLLTTKDSGGRFLDGGTTY }\end{array}$ LQRAFIAAVGLGANLP EDADYPSTHVDSRGQQLDGTYKY $H Y Y A T G D T P A M V L P K P G T G S A Y E V A N T D A A G D Y L H G G R S Y$
$E R A D S Y S M A Y F S A K K D G T G Q F Y L M S I K D D N D Q S F D G S K D Y$



UniRef90 J2RJ29 UniRef90-M7XCS8 UniRef90-UPIO0036AD260 UniRef90-W5TNN3 UniRef90-UPI00037AE778 UniRef90_Q4KB30 UniRef90_UPI00037FF97C UniRef90_B9NR81 UniRef90 W8IA4 UniRef90_A9VZD2 UniRef90_V4LCH7 UniRef90 V4JFW4 UniRef90-14C4C3 UniRef90_UPI00035D4570 UniRef90_B1WVL5 UniRef90_AOYZX9 UniRef90-B8KM72 UniRef90_A3HVX4 UniRef90-B8KM74 UniRef90_UPIO0037904BE UniRef90-I4YYR4
UniRef90-M5TQS6 UniRef90_UPI0002D8CCE7 UniRef90_A0A038G1G4 UniRef90_UPI0003F9003B UniRef90_UPI00034AAA48 UniRef90-A0A059MP11 UniRef90-T1VHG2 UniRef90-K0VHP9 UniRef90-A7ICV5 UniRef90_KOPP91 UniRef90-W6M7C1 UniRef90-A5FES6
UniRef90-B4WZ13 UniRef90-X0QB53 UniRef90-W8IID1
UniRef90_UPI0004650C79 UniRef90-V4JS52
UniRef90-G4FK01 UniRef90-W9HCJ2 UniRef90-UPIOO03807246 UniRef90-W6LXD1 UniRef90-F7XBR8 UniRef90-U5EPE2 UniRef90_UPI0002F44583 UniRef90-LOI3F7 UniRef90-UPI00035FC39B UniRef90_UPIO003730591 UniRef90-UPI00036506E3 UniRef90-UPI0002557193 UniRef90-COZQH3 UniRef90-Q8KUW8 UniRef90_W7D2F9 UniRef90_V4IW80 UniRef90-K9NKN8 UniRef90-I0G7V0 UniRef90-UPI00045EBF1F UniRef90-D8KBC8 UniRef90_D8JV83 UniRef90_UPI00045EAA71 UniRef90_UPI0003699907 UniRef90-A0A052JOT1 UniRef90_UPIO004018945 UniRef90-Q1QJ57 UniRef90-UPIO0034C8320 UniRef90-R4UFQ2 UniRef90-A7ICV6 UniRef90-B9XCM5 UniRef90-H0HY88
UniRef90-D2R823 UniRef90-Q98BQ4 UniRef90_U7FL15 UniRef90-A7ICD8 UniRef90_UPI000364393F UniRef90_UPI00041F0B3F UniRef90_UPIO004638BAC UniRef90-UPIO003749172 UniRef90_K1L8B6 UniRef90-B3QAE0 UniRef90_A0A024F5C3 UniRef90_UPIO002FED723 UniRef90-H1RUV2 UniRef90-F8KVI5 UniRef90-UPI00047883DB UniRef90_UPI000406DC2B UniRef90-UPI0003812777 UniRef90-FOSG24 UniRef90_UPI0003611D57

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 KLTVPANPPVARFWAVTAYDPATRGLLASDGADTVGSQT RVHVPANVPARRFWDITVYDNMTRSMLQVDDPYPAVTS IDD KVTLPKGIPAARFWSFTLYDNQTRSMLQTPQKYPRAGSQS

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 KCTDPKGDPAEAFWSFTVYDNQSRSMLDTPQRYPRAGSQS KLTIPTPVPAKLFWSVTIYDAKTRSQVITDQNKAADRSLF
 RLTVPANVPVEQYWSLTAYDRQTHALI RNMPHASRSSQVA RLTV PANAPVKGYWSATVYDRVTHALI RDQSRASRSSQNV RLRVPPDVPVREFWSVTVYDPATRSQLQTGQPDPSDSSQQQ KLTMPPNAPAEVFWSUVVYDVNSRTDILNNEGRPALSSRT
 VMHFPKDQPVDGFWSLTLYNAE YFFVANPLNRYTLSARN
 VLHFDQLPPAKAFWSLTMYNDKQAFGVSNPQQRYAAGSRD KL HLDPANPPAKLLFWAVTLYNVVDGTMPETSQLLPSKNGFD RLHFKKEPPVDAFWSVTLYDGDG FQVANPDNRFA DGDRD
 KLHVPKDVPVEQFWALTLYSENTRRAYNNDLRSVNIDSRK RLRIPADVPI NNFWSVVAYDSLSRSELQNGDPFPSTSQYS KLHFNKQPPVGAFWSVTAYDPEG FQVANSDNRFAVSSWM KLTMPPDVPVALFWSVTLYDPWTRSLLQQSPYPSDSSQQTP VLHFGETPPVNAFWSITLYDPQG FQVGNSDNRFAVSSWM RLTVPANAPVSLYWSGTVYDRETHGLI RGTKWSSRGSNTP KLLHVPQLPPPVKGFWS LTMMYD DKYFFVANPDNRYSISARQ RLHVPR NVVPVDQYWSVTAYDRETHABIDNVVDRASRASNAA KVVLPPHIPAAAFWSLTLYDNQTRSMLQTPQSYPRAGSQP

 KLHVPANVPVEQFWSLTLYSEDTRTTYDNPDDASIDDSRMK KLTVPQPVPAKLLFWSVTVYDAQTRSEVQTDQDKAALRSMF VLTFKNTPPVSGFWSLTMYD ENYFFVDNPQNRYSISARQ

 RLH LLPQ DP IKNFWSVVVYDA LSRSELGQNGDPLPSISQYS ALHFDDMPPANAFWSVTLYDPEG FQITNTDNRFAVSSWM VI HFDQTPPVEGFWSI TMYDAQ YFFVANPI NRYSISPRQ VLTFPKTPPVKGFWSITMYNEK YFFVENPLNRYSISARQ R NVPANAPVRQYWSATVYDRDAHALI RNAPWPSRSSQTP



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 VI RFDNLPPVDAFWSLTLYGGADYYFMVANRQKFPRAGSQS UniRef90_14Z3M7

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AAEAAADGSTTYFGPDQPKGKRGNWVIQTVIPGKGWFTTLIR GLQVNADGSVDLYFGPQAPEGKESNWTPTDPNGQFEILFR
 F P E A A A D G S T T V Y F G P T Q P D G A R G N W I KPVQNSDGSTDIVFGPKSP GEGKNWIVTVPDKGFLVIVR DLVHNDDGSVDLWFGPTAPEGRESNWVQTIPGQHWFSYFR QIJKANEDGGYSVFVGPKAPEGWENNWVQTIPGKSFNMMFR A AEADADGSTTVYLSPTQPAGKRGNWI QTDPKKGWFA L LR AAEAGSDSVTEVYFSPTQPAGKRGNWIQTDPKKGWFTILR KAVQNDDGSWDVYFGPERPDGADNWIQTDPGKGWNMLWR AAEPDADGSTTVYFGPKQPDGKRGNWIQTMPGKGWFTILR GLRYNKDGSDDIVFAPKAPPGFEKNWVQTDPGKSWFTILR SLTFNPDGSLD YI QHEPGKNQESNWLPS PQDGFNLTMR K PVENADGSVDVFGPKAPKGKEKNWVRTNGEKGFFVVFR DLVVNEDGSIDI GMKKSEDGSVTI PLKKNKDGSLDLYVQHDPGKDKEANWLPAN DKDFSATLR
 KAVKNADGSYDVY门GPKKPEGKV NWIQTDPSKGWNMLWR DLKYNADGS LDLYLQDSPGADKESNWLPAPAGK FYLMLR ELAKNPDGTVDLYFGPKADAGKETNWVPTRPDGEFELMER QLQTNADGSVDIYFGPKDPTGGESNWWIATNPDEGWFPYFR DMISNADGSVDVHFGPERPEGSR NWI QTLPGKSWFAVVR AAEAAADGSTTVWFAPEQPQGPRGNWIQTDPKKGWFTILR KPVQNADGSTDLYVGPRAPEGKEANWLPTAPERGFFALLR DLKYNADGSDDLFLQHEPGKGKESNWLPAPAGK F ILMLR A AVASADGSTTVYFSPEQPKGERGNWI QTMPGKGWFTILR
 AADAEADGSTT ELQKNADGSVDI
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 ALKENADGSLDL A AEVAADGTTY V
 GPEQNDDGTVDV
 APEANADGSVDL
PFKHNADGSLD GLQ $\square$ NPDGSAD NLKANADGS1D ELRKNEDGSVD AAEAAADGTTT
 ELKFENDPSVD EVQKNADGSVD

GLNFNTDGSID
ELKDVAGAPVDLYFGPTPLAGQKGRWIKTVPGRGWFAYFR PLKANADGSI DILIQHEPGADKESNWLPAPEGK F LIMMR ELKYNADGSLDLYUQNSPGKDKESNWLPTPAGK F LLMMR DLHKNADGSVDVYFGPEAPAGKDANWVPTNPARQFEVLFR
 $N$ PVI NA D G S I D E F G S GTP K D K G N WI R T A P GK G WF P I F R PFKYNGDGSLDLYFQNESPADKQANWLPAPKG PFNLTMR NLKSNPDGSADIVVQSPGADKESNWLPAPAGK FILMLR NLKSNADGSIDIYUQNKPGADKEANWLPAPKGKGFLMMR QI K R NPDGSVDLY $\operatorname{V}$ GAKAPAGYESNYMKTVGTDGWFVYFR
 K L R Y GK D G S L E I Y Q S D R P EAKVA NWLPAPAGQDFNLLMR KLAFNADGSLDLYIQREPGKEKESNWLPAPESGSFTMNLR K L TPNAD GT I DL Y F GP KAPVGKE GQWI QTTP GR GWF S YFR GL Q K N S D G S V D Y F G P K A P A R R A E N WI P T K S G G T F E V M F R PKK N S D G S L D GVAPNADGSY GLQKNADGSVDI $G L A T G V D G A V D I$ WF GPEAPE GREGNWI QTMPDKSYSVILR YF GATAPAGKESNWVPTTDPKRKFELLAR



|  | $450 \quad 460$ |
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| UniRef90_J2RJ29 | L Y S P L E P F F T K E WR P T El \| EL V |
| UniRef90-M7XCS8 | F Y G PLP SLI D K T WVLP D |
| UniRef90_UPI00036AD260 | FYS P TEAFFEKS WKPDD |
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| niRef90-Q4KB30 | LY GPKQAFFDQSWKPS DL |
| UniRef90_UPI00037FF97C | FYGP LA P Y F D R S WK LG DITPV |
| UniRef90_B9NR81 | LY GP L E P WF D K S WR P G D FVLV |
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| UniRef90-V4LCH7 | FY GP T E G Y $\square$ E K |
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| niRef90-B1WVL5 | LYY S P K P V L EK $\square$ WS P P PVVK GV |
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| UniRef90-A7ICV5 | L Y GP TEAA ${ }^{\text {P }}$ N Y S WTPGDFEK |
| UniRef90-K0PP91 | L Y WP DP S I D A T WT $\square$ P P VE |
| UniRef90-W6M7C1 | L Y S P LET T F T K EWRA GE |
| UniRef90-A5FES6 | 1 Y GPEKDAFNGSWKPGDFEEV |
| UniRef90-B4WZ13 | LYAPLQP FFDKT FQL |
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| UniRef90_G4FK01 | FYGP TQAYFDQTYPLQD |
| UniRef90-W9HCJ2 | FY GP Q P P LF D K T WRLP DVER |
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| niRef90_W6LXD1 | L Y WP KP SII D G T WKIP AV QKV |
| niRef90_F7XBR8 | L F GP L E P Y F D K SWRLP DI E |
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| UniRef90_LOI3F7 | LY G T G $~$ E F F D |
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| UniRef90-V4IW80 | YYGPLDNAFNEK T WVP NDVVM |
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| UniRef90-Q98BQ4 | L Y GP EK SL FEK T WKLP DI E RI |
| UniRef90_U7FL15 | L Y WP S P S I L D G T WEI PVI K K V |
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| UniRef90_UPI0003812777 | FYGPEK PVFD K S WML |
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| UniRef90-UPI0003611D57 | L Y L P K P \ V L E G N Y E $\square$ P TVVQKV |
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| niRef90_14Z3M8 |  |
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|  | A3ZXZO | D Y K F K G GYP T A A A TVR K A Y D S Lid M M N R A V D A Y $\square P T S$ AQHAFEHSFPTPDTARSDYDEQQRQRAVVTY LA DAEFDRGYPTEAASKTLTTEELYFQRAT QSYY NAATMAAS QGISS QEAQEDAR R DA Y

 DK S T Q QVV DK E $\square E R K A V Q A V$ E D G G LA A A A Y $\square G$ S A A F QVQA TA GA $\square$ A A PPSAA DAREEAATAAY $\begin{array}{llllllllll}A & D & G & L & A & E & E & A & R & S \\ K & A & M & D & A & Y \\ L & G & V & E & A & Y\end{array}$ A QAKEN I F DA $\square$ P

S A A D A S N $\square$ D LKE $\square R E I$ T K E A Y
F DK GFPTATTTEKVREDALGQRADTAY SADDI A A RNI QRRAVEAM A QEAI SEQEAHNIGVDAY QPVT S A E A K II A K N V Y $A Q A \square N P Q E A H D L A V N A Y$
A A T S S GQVVERA $\quad$ Y $\mathrm{R} R \mathrm{RAVEAV}$ $M \square S G P P A D Q A V A D L D Q R M V H R R A V E A A$
 GF P A A D DVQRAYDEA DLNRAVQAY

E A R A A S LT E E EARA I GIIEAY LM A T GA Y A Q T G S L D E L S A R Q V Q R R A V

A GAAPSALSPADAQELAAAEAY
QQEAES L R DEFYY QNAVQA Y
TA QA Q T T LTPDEAHADGVDAY
QPPTPASPLVQQLNNGNWLDPKEAETLRDELYYQRAI HAY



P T LINETAAYETGDEAY
 RFEGGYPTEET $\square R R A Y E D A D L V R A \| Q C Y$ D E Q FALA TEAY

T GNMP RDRADDATQALVFSRADETV DYTFD G GWPT GDTAQRAYEQQAYEVGIEAY SAVQPPSNQAMKALDSEVF A WA S R R R Q MEN RAVEAL

$\begin{array}{llllllllllll}A & T & T & E & R & N M S & P & E & Q & K & S & L \\ E & A & R & D & A & Y \\ V & A & V & S & I & L & S & D & D & L & R & T \\ L & Y & E & G & T\end{array}$ RSGTARF

VK A Q E A R Qi A T D A Y


LGELSSYTDGAPSADTTLKANRFVDVADAVRVF
S L D N IT E Q Q A YEDGI E A Y
A Q A GQP L P A D E A R E I A H E A Y
AATSVQAKENEALPL A VEAY
$\square D G V T A Q Q A R G I D A R A Y$
VSA AQA QT L A KEAY
ARYTFERGYPAGDTAQKAYEDND DNRADEAY
TAVQAAPASEE EAYE IGGLDAY $\square A L L P S F R S A L A R A Q A A$ V S P P TEARAADAKEAY

GNWLS QSEAEAMRDELYY QRAVQVVY
GGFPTAEAAALAFDEADLVRALDHAY
ATGAAT $\square P L I G G F P R A S A Q N A A Q D A D L L D E A T D A Y$
D GNWLAEDEA QS LLAA EVYYQRAVYAY
$V$ STE EARADA KEA Y
VM T E A G T L E F P L G VP T VE S A DAAY GVA DR I NA Y Q A Y
PAEPGQLTPAEAKTIDALDAY
A A K A Q D L T Q A E A N E I A V E A Y
F A A F A PVIARAAEVTPADARAAIAKEA Y
RTLSYEAY
VLDREI ERKAVDA
S PK ELLERRVI ERRAVEAA
V S A A D Q D EL L Q IAA K D A Y
A P S S DVAA P S DE E T K A 1 LE E G Y

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UniRef90 H5YF44 UniRef90-D8JQT7 UniRef90_A6SW31 UniRef90-A0A022H141 UniRef90-U3CHZ5 UniRef90-UPIIO002F154FA UniRef90 UPIOOO36CD7E6 UniRef90-J2BOS1 UniRef90-A0A023XF01 UniRef90-A819F7 UniRef90_UPIo002E7681F UniRef90_S3HLE5 UniRef90-UPIOOO36ED59F UniRef90-A0A058WB89 UniRef90-Q1QNW7 UniRef90-UPIO003FACA37 UniRef90 ${ }^{-}$B8IPDO UniRef90-UPIO0037BC06F UniRef90-H8KU18 UniRef90-B8HY34 UniRef90_UPIOOO4679510 UniRef90-M7X5F3 UniRef90-l2QEY0 UniRef90-C1B211 UniRef90-E3HL74 UniRef90-H8KU15 UniRef90-A1UL55 UniRef90-UPIOOOS351811 UniRef90-A3YY87 UniRef90-J2W7R3 UniRef90-Q46TD4 UniRef90-K5CZ91 UniRef90-UPIO00364E31F UniRef90-14C617 UniRef90-AOAO111OPC0 UniRef90-D8K8SO UniRef90-Q5YVS5 UniRef90-A0A023NSP5 UniRef90-Q021M8 UniRef90-C7RKB8 UniRef90-A0A024HIN7 UniRef90-M7YBC7 UniRef90-UPIO0034B4017 UniRef90-W81Q82 UniRef90-UPIO00366CEB4 UniRef90 UPIOOO3452159 UniRef90-A0A024HHI8 UniRef90_TODJ99 UniRef90-C4XIK6 UniRef90-E3HH2
UniRef90-QOW2E3 UniRef90-J2PMJ4 UniRef90-UP100036C45C0 UniRef90-N9W337 UniRef90-Q89RV3 UniRef90-A0A023XFYO UniRef90-UP100036DC565 Uniinefol-U2RVF9 UniRef90-B8IXC9 UniRef90-W1N4Y2 UniRef90-M41SC5 UniRef90-F1Y104 UniRef90 A0AO24LZV7 UniRef90-AONZW7
UniRef9O_J3BUU2 UniRef90-Z5XBK0 UniRef9O-UPIIOOO3636E8C UniRef90-J5MD12 UniRef90 Il4Z3M8 UniRef90 S6AQCO UniRef90_A3ZXZ 141
 VYFYPLLSMDISRKTFTNVGKGPMNVFTNVPEYPPAKGVV RUFYPTVSGYAMLKGNEKIGDFPNKVSGTLDTQPKH1GY RFFYPSVSMEGDFNGNREAGLEDGKALMVLAAGPRHLAF L WSLLPAVNMFAMKKGLGEVAGAGYNVMVYEKKLKPNTVITT
 I YFYPLLSMEMSRQTFTNVAPGKVFGKGPMNTFADFKGVV VWGLPVVNYDLMRQEMLAKEPGKKVGQVIYWGRLDWRNGVL LYAYPMVLMEVTRRVSTNVEAAPMNQFVHAAAFPDDKMVV VYGYPLVTMEMTRRVMTNSAEAPRAPMGQLMRMREYRDVTT
$V Y G Y P L V T M E M T R R V M T N V A R A P M G Q F V R M R E Y P S A R D V T ~$ VYGYPLVTMEMTRRVMTNVARAPMGQFVRMREYPSARDVT
I YAYPMVLMEVTRRVSTVVDAAPIVQAAHVAEFPDEKFDV IYGFPDVDNSRDQYAYFVDYKAPWNKDRNVPRVSEDKAVQ RFWYPTVSVEGIFNGNRVAGIKDNEGLGAAAAGPRQVGF VYGMPAVNAELMLQAMLRTTSAKVNEMVYWSREVNWKNQTV I YAYPLVMMRVSSRVNENVTAAPINQWGHAKAFPDPTVVV FGYPLVTMEMTRRMITNVARAPMGQUIDKLRKYPDARDVT I WGMPAVNYERMLQAASENGAKPNQVVYWSRPVNWKNQTL LWGVPAVNFERLRDGLADAGG DWNQUVYWSRLPWKNQTL KFFYPTVSGAAIVKGNEEIGVVPNKVFGULDCAPEQLVF QYAYPTVLMDVTMRQSTAVGRAPDNQFAYFRTYPDAKDVV I WGMPIVNYDLMLEEMLTTTPGRVNQVIYWKPLDWKNQTL LYFYPLVTMDVTRKQLTNLPGGPANSFVNVPAFPSARAVV
 VYFYPLVSMEISRQTFTNDAPGKELGKGPMNTFADFKGVV
 VYFYPLVTMDLTRKQLTNLEPGRVPGRGPMNMFADDRTVV LFAYPIVSMDVTMRQATNVPRAPVNQFAHARAYPDEKDVV
 VYAYPIVTMEVSMRQSTNVPRAPDNQFAHARNYPEDRDVV
 RFFYPTVSLDEATWRGNLSGGVVPNEVFALLEGTPQQQFVF TYAYPLVTMEMTRRVITNVARAPMGHLIKLRQYPDARDVT VFSVPLVLMDTTRRKMNNKDAAADNSFFHKSSFPDARDVV IWAMPAVNLQLMYEAFAHSLGGRYNEVLFWSRLPDWRNQL TYGYPLVVMDATRRQAVNVEAGKAFGRGPMNTFTHVRDVV RTFYPTVSCWAMFHGNAEUGVFPNRTWGSMSTLPRHVGF VWGMPAVNFE LMYLAAVEAGGDWNQIIYWSKLTWKNQTL YGFPLVDSYRIQYSYFVDYKAPWNTIFNNARVPDDKA Q LYFYSLVTMDITRKQSTNIGKGPMNMFVNTPEYPPATMVV I YGLPLVLMDLTRQLSTNVPSPQANAHAPINQFASDHSIV LYAGPLVLMDDTMHQATNVPRAPVNQFAHFREYPDANDVV
 IFGYP LVTMEMTRRVMTNTAKAPMGQFANARTYPDSRDVT VYAYPLVTMEMTRRIMTNVEAPQRAPMGHFVRMRSYRDVT 1 YGNPLVDHYRDFYSYFVDFKAHFNQDKNTPKVSEDRAI Q I YGYPLVTVEMTRRVLTNVTAAPMGQFANLREYPDARAVT YG PLVMI YAVMQEFAVDFKAPFNETNNMHHVPADTAVI LSGIPVASIQGLLAGHESVGMVPNQTIA ISEQLNAKSLWL HYFYSLTTMDFTRRVCTNPGFGPVNTFHHLRQFPPARAVV
 LYGTPMVASYQTMHAFSDDYKGPFNTVNNVARVPEDSAFV

 MSMLPALNT GMRDGSEAMFGKGYNVLPDWKRMDARTWVP VMAYPMVLMDLSTA
 MTMLPALNVIGMRDGSQETFGEGYNVLPDWDRMDSRAWVP


UniRef90_UPIOOO39A061C C UniRef90-UPIO0046D5403 UniRef90-A6SW30 UniRef90-L7U647 UniRef90_UPIO004277D5D UniRef90-A0A024LU37 UniRef90-UPIOOO37EBFD2 UniRef90-HOTYZ3 UniRef90-B2IDM2 UniRef90-B3IJG3 UniRef90-A0A022GP39 UniRef90-A0A022G414 UniRef90-E5XPP9 UniRef90_UPIOOO463D628 UniRet90_Q476B9 UniRet90-J1KMN4 UniRef90 S3HBH7 UniRef90_UPIOOO37E1668 UniRef90-Q1MK83 UniRef90-D8K8R9 UniRef90-H5YF44 UniRef90-A6SW31 UniRef90-A0A022H141 UniRef90-U3CHZ5 UniRef90-UPI0002F154FA UniRef90-UPIOOO36CD7E6 UniRef90-J2BOS1 UniRef90_A0A023XF01 UniRef90-A819F7
UniRef90_UPI0002E7681F UniRef90_S3HLE5 UniRef90-UPI00036ED59F UniRef90-AOA058WBB9 UniRef90-Q1QNW7 UniRef90-UPIO003FACA37 UniRef90 ${ }^{-}$B8IPDO
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UniRef90 H8KU15 UniRef90-A1UL55 UniRef90-UPIOOOS351811 UniRef90-A3YY87 UniRef90-J2W7R3 UniRef90-Q46TD4 UniRef90-K5CZ91 UniRef90-UPI000364E31F UniRef90-14C617 UniRef90-AOAO11OPC0 UniRef90-D8K8S0 UniRef90-Q5YVS5 UniRef90-A0A023NSP5 UniRef90-Q021M8 UniRef90-C7RKB8 UniRef90-A0A024HIN7 UniRef90 M M YBC7 UniRef90-UPIOOO34B4017 UniRef90-W81082 UniRef90-UP1000366CEB4 UniRef90-UP10003452159 UniRef90-A0A024HHI8 UniRef90_TODJ99 UniRef90-C4XIK6 UniRef90 E3HH2
UniRef90
QOW2E3 UniRef90-J2PMJ4 UniRef90-UP100036C45C0 UniRef90-N9W337 UniRef90-Q89RV3 UniRef90-A0A023XFYO UniRef90-UP100036DC565
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WVVDMGIPGPDAGKGGKYLVLPPG FSGATPPGHHVARA WSDVFASPGSRTTGAGNFLIVPPNWRPDGKLPKETQVARA YLGGDIGIPGPDKGNGGKYLVVSAGQNVAGIDPAEYFVYEC
 WTNVFQVPGKRTTGTKAQUYAVTGGGGKGTLPAGVKEYKS
WTDAFASPGWRTGTQAGTFLVTPPGWRPDLPKETQRIEA
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WTDVFTSPGTRTTGNGSQQITAVGPRWHGKLPAGVTPYVS YTFNFAY四GSRTTGNNGGVYMLSGPNWKGEKPKGIKVIPC WVLDMGDPGPDGGKGGKHLILP PDVKGKVPKGYYVGKS WTDVAGPDGADKGQGGKGOFVPGPGWTGEVPAGHIDALQS WSDVFAAPGTRTTGNGALTFAIVGPSWHGKLPAGVREYRS WTTVFQVPGKRTTGTGAQTCAITGPGWKGELPAGATEYKS WIDVFASPGWRTTGTQAHNFTPPGGWKGELPHDAQRIDA ALADVGPAGMDKGKGAKYLITPPG YKEKAPDGYVLPS ALEDVGPAGVDKGKGGKYLILPPGSYQGKPPAGF:PLTS WVADMGLPGPDAGKGGKHLLLP PAYKGKPPEGYFVHQA WTDVFSSIGSRTTGTKAGNFAYCLDGWKGKLPAGVQRIDA PLEDAGLLGVDKGTGVKLLMLPPG YGGQVPTGFEPLQP WTDVFASPGSRTTGTKAGNFLVTPPGWTGTAPEGVTRIGA WTDVFMSPGTRTSGNGAQQFAIVGPNWRGKLPAGMRAYVS TLTDVGADGPDRARGGLYLLLP PDYDGEUPKGYFAFKS促 WTDVFASPGSRTTGTEAANFLVAPPGWNGSVPEGVTVINA WTDVFASPGWRTTGTQAVNFLVTPPGWRPELPEGTQLI EA WTDVFASPGWRTTKAGEFLVMPAGWRPDपRLPNGTQRIEA WTDVFSVVGSRTTGTKAANYAIVGPDWRGALPAGVEKIVGA ADEDVGPAGVDKGKGGKYLILPPG YKDKVPAGYFPMPS WTDVFSVVGSRTTGTKAGDFALVGPGWSGSLPDGMTKIVA
 WVMDIGRPGPAKAAGGKHLVDPPG YDGVVPDDVYSGRS WTTVFDVPGKRTTGTGPQTFVVTGPGWEGTVPNGMTQYKS YTNVFTSPGSRTTGTKANTFLITGPGWNGTVPSQMKQTKA WTDVFDVPGSRTTGEKAQTYLVSGPGWKGKVPAGVKHVAS WSDVFACPGKRTTGTGAGRFAVVPPGWQGRLPEGVQRIDA WVADLGDPGPDAGKGGKHDFVPPG YQGEIPDGYYLCHS WTNVFASPGKRTTGTQRGNFVDTGPGWEGPLPKGMKQIKS AVEDVGPAGADKGKGGSYLILPPG YVEAVPDGFIPLRP YTFDFAYVGSRATGNGAGSYLDAGPTWKGQKPKGDRVIRC WTDVFASPGWRTTGTQAFLVVPSCWRPDDKLPKNTQLI DA WTNVFASPGKRTSGTQAGNFVITGPDWSGTLPEGVEEIKA
 YTFNFSYVGSRATGNDSGAFLLAGPGWKGATPKGПKVIRS FSNVFQSPGKRTTGTKAQRYALTSPGWKGRLPAGITQYKS
 FTHNFHYDGSRTNKGGKYDFV GPDWKGEKPEGFEVIQA WTNVFAVPGKRTSGTGPQTYFIAGPGWSGSVPSGAKLIQA
NTYNYGYGTRATGTEPGDYLVVGPDWKGETPSGMKVFQS FVSRVGVTHPDKGKGGKYFILYH SSYTGE DPEGMIPVES WSNVFAVPGKRTTGTEAQQYAHVPQGWTGELSEGMEKVES FTDSYAVLGSRTTGHEKQDVFVVGPNFNGEVPEGYTLVKS YTYNFAY IGSRSTGNGGGRFLVAGPRWKGKTPAGITVIRS
 WVADAGLPGPAAGKGDRVVFLPPG YKDKPPAGYRPAYS WTEVFATLGTRTTGNDGGTVALVGPHWQGKDPQGMRMVRS
YTFNFDYIGSRSGNNGGSLIAGPNWQGSTPKGVTVLRA
 WTEVYASPGSRTTGDDAFTFAIVGPGWQGKLPDGVRAYQS WTNVFSVPGKRTTGTGPQTYFITAGPGWSGSVPSGAKLIDA TDTDVGALGPDRARGGLYLLLPPGPYEGHVPSSYMAFES WDTDFGVPGPDRGHGGLYDFA GPDYDGPDPSGYHVFRS WTDVFASPGSRTTGTKAGTFLVTGPGWAPELPEETQLIAS YTFNFAYDGSRATGNDGGSFIVAGPAWKGKTPKGVKVIRS WTNVFAVPGKRTTGTGPQTYFLAGPGWNGSVPSGAKLI QA
 WMT DFHSPGARTTGGKAANYLLTGPGWKGEVPEGMVQIKS UniRef90_UPI00036CA141


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UniRef90_H5YF44 UniRef90-D8JQT7 UniRef90-A6SW31 UniRef90-A0A022H141 UniRef90-U3CHZ5 UniRef90_UPI0002F154FA UniRef90_UPI00036CD7E6 UniRef90-J2B0S1 UniRef90-A0A023XF01 UniRef90-A819F7 UniRef90_UPIO002E7681F UniRef90-S3HLE5 UniRef90_UPI00036ED59F UniRef90-A0A058WB89 UniRef90_Q1QNW7 UniRef90-UPI0003FACA37 UniRef90-B8IPD0 UniRef90_UPIO0037BC06F UniRef90-H8KU18 UniRef90-B8HY34 UniRef90_UPIO004679510 UniRef90-M7X5F3 UniRef90-I2QEYO UniRef90_C1B211 UniRef90-E3HL74 UniRef90-H8KU15 UniRef90-A1UL55 UniRef90-UPIOOO3051811 UniRef90-A3YY87 UniRef90-J2W7R3 UniRef90-Q46TD4 UniRef90-K5CZ91 UniRef90_UPI000364E31F UniRef90_14C617 UniRef90_A0A011QPC0 UniRef90-D8K8S0 UniRef90_Q5YVS5 UniRef90_A0A023NSP5 UniRef90-Q021M8 UniRef90-C7RKB8 UniRef90-A0A024HIN7 UniRef90_M7YBC7 UniRef90-UPI00034B4017 UniRef90-W8IQ82 UniRef90_UPIO00366CEB4 UniRef90_AOA024HHI8 UniRef90_T0DJ99 UniRef90_C4XIK6 UniRef90-E3HIH2
UniRef90_QOW2E3 UniRef90_J2PMJ4 UniRef90_UPIO0036C45C0 UniRef90-N9W337 UniRef90-Q89RV3 UniRef90-A0A023XFYO UniRef90_UPIO0036DC565 UniRef90-U2RVF9 UniRef90-B81XC9 UniRef90-W1N4Y2 UniRef90-M4ISC5 UniRef90-F1YIO4 UniRef90-A0A024LZV7 UniRef90_AONZW7
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UniRef90-J5MD12 UniRef90-J5MD12 UniRef90_I4Z3M8 UniRef90-S6AQC0 UniRef90_A3ZXZ0
 VEVKIDPSVDMKTPPMDAGKYFAYAAELLKVEPPHLTDQP

 MDFKHVSDIPANADFPRDGAYFDMLNELIQSERDDTVDPY PPKGRVPNQDMSVPPMDAATFFGMFAELMKDNPPHANDYP

 PPSGKVPTLDMVTNRMDAVSYFTLLCELMKTNPPSSADAT VPPKDMAAPVEQVAKMDADTYFATFARLLKANPPHANDFP PPAGTVPGIDMKTPVREAQEYFGLLAALMKDNPPAQADKP PPAGKVPSUDMKTAVREQYDYFSLLAKKLMKDNPPSPADKP PKPDDF ITKPLSPEEQKKSLEFFNNLNFALQFCPVNASEKD MADIDTTEKAMDSKWEDNIQFWEVLKRIIDDEPRVEKFTP TN FTDAYD LDFDSTDPYDASFYRSLDRVVQNEPWLDRDRA VTAKIDPSVDMKTPPMSAATYFTYAAELLKLDPPHMTDQP PKGKVDPNLDMSAPPMSAATFFGMFAELMKTNPPHANDYP PPAGTVTAVREQVNRMGAVAYFTLLCEGMKSNPPTTADAP IVEAKIDPSVDVTTPPKTAGKFFAYAAELL

 PK WLDDVT GKT QDTTTPRDNFKFWEVLDHQTVDAEP T YK GY H N ATAAVDAKVDAKTPPMTGVEDFTRFAELMQKFPPHPNDYP AEVKIDPSVDMKTPPKTQADYFAYAAELLKDHPPHSTDQP TVFTDVKDI LFDSTDRYDDSFFVNDDRAVQSEPWDTRDRA PEPKTPAKIQVDTMP GPAFFAYAAELLKDHPPHATDQP | VPPKAAFDPKLDMSAPDAATYFATFARFLKDNPPHANDYP |
| :--- |
| $M Q F P D A S G K R V N M M Y P T G N T Y W T K L K A F V D Y E P V A S D D P V$ |

 MEFPDGSGKHDNMMYPVDQEYWTKLKEFVDYEPVSADDPE


 TSAPTNPTLDNKTPPMDGVTVLSRFAELAMKNPPHSNDYP
PKAANFPKPLTPETQRTSLEFFSLLNFYLQFCPTHPSEKD $P K A A N F P K P L T P E T Q R T S L E F F S L L N F Y L Q F C P T H P S E K D$
$V$
$V$ PTWDDLSRQATPVRWEDNLQYWQVLHDII DAEPAYEGYRS PQGKVDPADDMKASVMDAIEYFTLFAKLLKRNPPSAADAP PPKATPDGPNEDVQAMPADEFFNYSNQLMVKNPPSAADKP PRAGDAAEADFDSLVPYDARFFELLNTVVQNEPWLVRDKAA VRATIDPTVDMKTPPMDAGKYFGYAAELLKVNPPHDTDQP
 TTFVDAADKLYDSTDRYDAGFFQAGDRVVQREPWLERDRVV





 PA A $\square E F L K P L G R E E Q R S S L L F F N Q L N F W L Q F C T V H A S E K E$ PPA GRDPGVDMKTNRMDATTTYFNLLABSLMKDNPPALDADGV
PPAAATDEFLPATTAGDKDNFFQYLDAALQFVPETARD KE





 TMPTVVDSSVDMMTPPMTPGAFFARFA EVMKRNPPHATXYA ASASSDF DKPLTS DTEKTSLEFFNDVNFLLQFCPTNPSEKE MQFPDASGK R DNMMYPVDNTYWTKLKAFVDYEPDVADDPE APKGTVVAAQDMTSPVDGPAFFKRFAELMKKNPPHANDES
 MEFPNASGQRDDMMYPT DMEYWTKLLKEFVVDYEPDVEADTPE










310
320
D WK
VP
tiARVA N N WS MNTDTMGVYGNY
 GFASRPDRVVWEDRRWEWDGLIDANFETPEYLDLQARDRW EWK

VP TLLARVVNGWSMNTDTMGVYGNY
HFDQEQNALWWSDRHWVAHART DLDDFWHTFTDVEAKAHM $\square K$ DA WSKA

GVEANGWRTNLSVI GTYGTD
F K V N K A 1 R
NMNGWAFDGEAGVYGTNY
A WKLLR
$T \operatorname{L} A R V A N G W A M N T$
$P$
$T$

YMTLKDE
VA A L P R
AHFR
EK $\square M$ L WMKE G $\square$ VA G DMK L
S G TV
$N G W R$

IA EALPRA
LEDAFDKKR\|VTGEDSSGGVVSNGWRTIGNPIGTYGTD AF D DR PDRIA WP DRKWE WVAFGIREFLIKNNYLFRMS GAF L RYDAGFPVI NP GDRWF PA AV A EMVKA AS G GYADPNA YP DD A WKMA
$\square K$ T A WS K A G M L Q N TLLAREN GWAFTTKTG@YGTD Y KYEGGFVPPFFDGTHWSVPVPRVANGWSMNTDTMGVYGNY


 - A
$\square A$
GVKTAGNHVNGWNDTTDNGGTYGTS
GWK L K
T L A R RVV NGWSMNT DTMGVVYGNY
YDAG L LP P F F E GTHWTY

L WK L P
$S H S G S V A N G W R M D S N P I G T Y G T B$

R Q L G
$T L A R V A N G W S M N T D T M G V V Y N Y$
$R A W A G A T A E W Q D S Y D D V Q R A T$
EDAPA QGHKLMAWKVPT LAARVANYWSMNTDTMGVYGTY A WK
E WKVR S LA R VT NG
$V P T L A R V A N N W S V N T D T M G V Y G N Y$

| WS MNT D TM GVVYGNY |
| :--- |
| WN | KYEAVVF DPP F Y E GTHWA $\quad$ PPAKPEMDKMSENYADPNNYPVD L

N
GI GLHVNGWFYQTSTVGTYGTA
 SFADRRPDRVWE GRHWEWAVPENGTFETANYVDDYAREKW
F K S S G G D $\square Q$
$D V D G W G F T T K T G 1 Y G T N Y$
F TKPK
Y A S LF TPPYFPGAAWAVPAPAA
F K
FSDGDMTSVNGWGYTTKTAGLYGTVD
RAK $\quad \square P T$ L A R VV NGWQMNTDTMGVVYGNY
SFADRRPDRVWPDRQWQWAGLRNGSFDTENYTDTYAREKW
1 AA TARKGNADAGNGWV
YEAAFV PFYEGTGWGLPVSTDVIGMSTNFASPESYPVT KETK I DT GKSSSADGFGTREYLKND
LH A A A $\quad$ K H A G K P V $V$ V G W Y
$V A K G K L$ HAA
FADFKATQ
GVTKNGWNYA NLGNGTD
$\square$ VA HR D A $\square$ GYMKN
VT

AGAPKPA QD LIMDWMKA G VVAGDMNGWLLFT TKTGLGYGTNY LD N A AKDA QNDVIQA VR S GS $\square G \square L R N G W N W N D S L G S Y G T Q$ NNEE $\square$ K T

MGHLKATGSHVNGWTVVTGMR
D K VDK WLASGNKD $\square \mathrm{NG}$ G WNV
GSFFGDEAFYNGD
Y Y AP TKE QMVY D D RKWFTPLVSGHEFKDENGVDAEMRATG K A VM D GLK $\quad$ MMMEK LDPTLAR $\square E N G W Q M N T D T M G V Y G N Y$ KSAFRSSGTQANGWRTNLTAVGTY
MKEAKPK $\quad$ LAN $\square V N G W Q M N T T S M G T Y G N F$
 I DKNREALNGKTEG LEGDRNTLKND $V$ VGER IVVQE A WANQRGGEGTTVWMNTKTGSYGSD Y QA DERGVA E GRQAVHDEEAKLGKRVNGWNLTRDMGRYGTQ SFGDRRPDRVWPDRKWEWAALRDGDFNTANYADLYARDKW $M L D R R K R$
A QLQKRMDA
$L A L T R N N W V A L G N A L G V Y G N D$
RQLQKRMDA GEVVTSADTFGSRAYLKNN
RQLGRPD RYYNDRYLNTWAAGTAEWQDGYLDVAQQASY SFADRSPR QVWP GT QWE WAVS DNGTF DAPDYT DLLYAREKW M G H MK T T GRHIN G
A QLGREDGRYYEDRQWERAWAAGTAEWQESY DARGARSRF FENYKKS D $\quad \square D T G K V S S A D G F G T R A F L D G R Y L D R M A S A$ AFRPREAEGFGTGLHWTSPLFAGGYSFQTPPPLITARASF
 K SPRI
TE L E K L E K Q K $\square$ D

Y $\quad$ ME H $\square$ K T A GEHVNGWTFTINGGDYGKDY

GA

EKVQK YLEGALKDVNGWKIASPFGDRKFFAGNWLLRAAGA
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UniRef90_JBBUU2 UniRef90-Z5XBK0 UniRef90-UPIOOO3636E8C
UniRef90-J5MD12 UniRet90-J5MD12 UniRet90-I4Z3M8 UniRef90-S6AQC0 UniRef90_A3ZXZZ 14
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 YLKRAlVAQVGLGANVPQDAVYPMALLDGQNQPLDGVNAY YLRRAVIJYAGLGANTVEDAFYPLALVDADGKPLDSAAKY YQKA SSAPAMVMRTLDAGSKYPFTARDADGNFLNGSNAY FQIIAYSSAPAMVMRTTGAGSKYPFTARDANGEFLNGSATY YQKARIVAQMGLGANLPEDAMYPVSIGDENGKPLNGANKY YLKRAIVAQLGLGANLPEDAIYPLNLADESGRPLDGAYKY YLKRAIVAQLGLGANLPEDAIYPLNLADDTGRPLDGGNKY Y QWRALIALGGLGANLPEDAVYPTAFTDGEGKPLNGANKY GKAVAYTMAYFSVKHLGSGQFYLLTMKDSNGKSFDGSKQY YLKRAIVAMIGLGANQPQDADYPLCLADADGNPVSGSNNY YKLRGMATLGGGVNLPEDA:YPASFVDGEGKPYSGANRY YLLKRA VAQLGLGANLPEDALYPLNGGDATGKPLDGANKY TQRALITADGLGANRPGADAVYPTSLKSDTGRVYNGSNS YSSRAFIAGGGLGANLPEDALYPSTFSDGQGNSLNGANNY DRGVMFSFGFFSAKHLGGGQFY口MTTSDSAGEKLAGARSY DQRALVTATGLGANRP QDAVYPTSLKPSFFESYDGSKKW YLKRAIVALVGLGANLPEDAVYPLNIGDADGNPGNGANQY
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 DLRAVVALIGLGANIPA DAI YPNAFTDGDGKPLNGAQRY YQLIRAMVAMAGLGANLGKDAIYYNAFADADGNPTTGEHDY YMRRMASAALGUGNSK LLRATFAYFGLGANRP LDAIYPMAETDADGGAFNGAKKY LQRALVTAMGLGANRP EDAVYPTSTGPDDAAKYNGEKKY YLRRFAGAVLG!YGNSKEEALYPDYQTDADGQRLDATNKY LQRALVTAVGLGCNDP QDAVYPLTTVDAAGRKLNGASKY WVMRAGAAKGGLLGNDAVEAMYPYTRTDAAGAPLDGSHNY HFMATG川TPDMVASTPGQGSDYLLATDDSEGQVLDGNKHY YLKRAIVAMVGLGANQPEDAIYPMNVFDANGKPMEGKNNY
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 FQUAYSTASAMVMRTDNSGSKYPFAVRDANGEFDNGSNTY YMHRAGVAFGGLGANKPVDAVYPSAFVDADGNPFDSSNNY FYQAQVESPAMFARAPGAGSLYWLGLRDADGEYRYGENAY LQRALVTAVGLGCNLPGQDAVYPLTTVDAAGRRLAGTSKY FQYAYSSAPAMVMRTTGAGSKYPFTDRDADGDLLEGGQTY

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 TI AFEKMPPVNAFWSITLYDAAG FQVGNSLERFALSSWM
 KLVVPQPVPAKMFWSVTAYDARTRSQVQTPQDKAVLGSQT T NFDKMPPVNGFWSFTLYDPDGAFQVANTLNRFAVSSWM $T$
$V L H P D A D P P A N L L W S$
$V$ VMRFPQLPPVGGFWSTTMYD ENYFFVANPI NRQSIISARQ TITFEKMPPVNAFWSTTLYDSAG FQI GNSLNRFAVSSWM
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 MI HFEKTPPVNAFWSTTLYDTDGEQVASVLNRFAVSSWM VLHFAQTPPVNGFWSLAMYN ERQLFAPNSINRYALGDRD
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$V$
$V$
 RI RFEKVPPVDAFWSITGYDKDGFQVANPLNRFAVSSWM VI HFDKEQPARAFWSLTMYN DRQFFAANSIHRFAIGDRD KLHLPPNPPAALFWAVTAYNVTDGSMPETKQLLPSINGFY KMRFDKSPAVNAFWSITLYDEAG FQVGNVLERFAVSSWM KLRMPPDAPAALLF WAVTAYNVTDGTMPETDQLMPSTNGYY
 RLHFGQTPPANAFWSITMYDKDGFQVPNPIDRYAIGSYD
 TLHFDKGPHADAFWSVTMYDKDG FQAPNALNRFALGDRD TLTMDEMPPVNAFWSYTMYELPARDMTENPLNRYLINSAM TLTVPQPVPAKLEWSVTVYYAETRSEVRTEQNRAALRSWF VLSFKKTPPVSGFWSLLMYDADGFFVDNPGNRYS:SARQ RLHVPPHVPVTLYWSATAYDRNTHGLIRGMTRASRASNSH VMRFGQLPPARGFWSLTMYD DAYFFVANPDNRYSMSMRT RLKVPLPDPARLFWSVTVYDTETRSQDDTEQGKAALRSGF VLHFDQLPPARAFWSLSSLYNGRQAFVDNPDGRYAIGSRD RLTIPPNAPVEGYWSVTAYDRETHALIKGAERSSRASNAN TMHFDKGPPVSAFWSSITMYQQPASLLYANPLNRYLVNSPM VI HFDQTPPANAFWSLTMYDAQSFF VDNPVNRYNVASWM AI HFDNGPPANAFWSLTMYDMDG FQVPNPINRFAIGDRD VLHFDKSPPVAAFWSVTMYDEQGFQVANELNRFALGDRD VMHFDRGPPVNAFWSLTMYNGEMFFVANPLNRYTLSQRD VLRFGQLIPPVNGFWSTMYDAD YFFVDNKLNRYTLSQRN VLRFDQQPPVGAFWSLTDYDKEGFQVANPLDRFALGSHD TLKMDELPPVNSFWSVTMYELDASLLVANPLNRYMINSPM TLTFPQLPPVNAFWSVTMYDGKSQLLVKNPINRYLINSPM


 VIRFGNLPPVDAFWSLTAYNSTTYMLVPNPYYRYSIGDRT VLHFEQLPPVNAFWSLTMYDKESYGVPNTGNRYALGDRS VLHFDKDQPADAFWSLTMYGED QFFVDNPIGRYA) GDRD TVRFGQLPP VNAF WSLTMYELPSSLLSANPLNRYLLNSPM KLHLPPNPPAALFWAVTAYNDTGTMVEAPQLMPSNGYN

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420
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 SVQKNADGSTDDYFGPVAPAGKKSNWVPTDPKGQFELLFR


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 $P$ FKYNAD GS L DL F F Q S DPGDD KESNWLPA PNGPFNLLMR
 SLVVYNND G S L DI Y I Q HE P GM D K E S N WL P S P A E GLLLGL TMR
 $P$ FKYNAD GS L D F F Q N DPGK DK DANWLPAPKGA FN LTMR ELDLDP QAPIVLHFGPDSPASEEARWIQTLPGQGWFVYFR PLKAK A D G S I DL LI Q HEPGP GLESN WLPAPK GE F IL MMR
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 $P$ LRYNRDGSLDVFIQKEPGKGKEANWLPAASGD FSVVMR E L K F N N D G S L D I Y i Q H S S P G K D K E S N WL P A P E G P F Q V M L R PL S Y NA D G S L DL Y L Q H TPGA DRESNWL




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 H L T F D D D G S L T L T Y I Q D S P G G DK K A N W L E L K $\ddagger$ S T T Q P TEELY FGP TAPA GHENQ WI K T $\square P N K G W F V Y F R$
 KVATNSDGSI DVWFATEKPADPASNFIQTVSARNF LVVLR

 DI P K N D D G S I D L Y F GPE QPE GEDAAFI K TVPGRNFVVAL R
 AFVTNPDGSVDLY LQ HDPGP QKEANWLPAPAGK FN LMLR PMQKNPDGSLDDLYFQHEPGKDREANWLPA PDGPFNVTMR
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$V W S M P V N Y Q L M Y Q E M A T K L K G D F N Q I V I W K L L D W K N Q T L$ VFGMPLVY 1) YGFPMVDNYRDQHAYFVDYKGPWNQLVNDPRVPADTAVQ WA PRASMAQWQYAHTEQLGAENGQAVFLESYKDRLGGL LDAYSGVSLWAARRGFLEAGIQDHDVLLFSEFMDPKTLVL EGYPLIMELTRGOLSADA TYAYPLVLMDVTREVMTADFRTPANELANMMRGFPDATDVV WWAMPMVGMYQSYNALFDDQEGDAPDIGDHEGYDGVYPFL YGYPMVLMEVTRRQMTNMPAGPMNSFVH1RSFPDAREVV IYGFPLVDNYRIQYSYFVDYKAPWNTVNNVARVPDDKAIVQ LWGSALVRMEQLSRQYTDDYRAPDNEFGHARRLPADKDMP IFGFPLVDNYRVQHSYFVDKGGPWNTLVNNARVPDDKATQ IYGYPVVEAYKTLYAQAVDFKAPFNQUGNTANVPNDTAII VYAYPLMLTNATLQQLSNFAEPPGNTFGPPNQFHHARAFP
 LYGFPVVEMYKTLYTQAVDFKAPFNRIGGTAQVPKDTAFV RFWYPTVSAEGDFNGNREAGDPDNTAMGDASTGPRQVGF YAFPMI AAYKAMYEFNIDYKGPFNQI DNEGRVPKDTAFV IYGFPLVDSYRTQYSYFVDFKAPWNTLSNVARVPDDKAIQ FYGFAPVMVQLABR RQTDAGQAPVNQMGHARRLPADKFVV
$\square$
$\square$ TWGMPAVNFQLMLDAFLKVGGQPNQVAYWSRPLNWKNQTLL VYGFPMVDNYRVQYSYFVDYKGGWNEVHNTARVPEDTAI Q VYGFPLVMMDVTNGVITAEYKAPDNQFGRMKGYPDFKDVV VYSYPLVПMEVSRRQQTARESSGKPGFGAANAFHHMRAFV 1 YSFPMVMGYGILYEYAVDYKAAFNQTYNTARVPEDTAVV IWGRPDISEDALBQAYFRDGKANYGDIDWWKNNDWMNQSL LWGSTLVMNYAVMYEYAVDYKAPFNKLTNEARVYEDTSVV
 LTMLPALNVIGMRDGSEGAFGAGYHVLPVWDRMDSRTWVP
TYAYPMLYNYKTMYGQAKEYVGGFGKFRHYSQTPENREVV VYAYPLVLMDVTREGMTA RVPANSFSHKRSFPDATDVV VYGFPLVQSYRIQYKYFVDASAPWNTGSNTADVVDCKAGQ I WGMPLVNYDRMLQSFIAAGGGPNQVAYWSRLLDGQNQTL II YGFPIVEAYKTLYAQAVDYKAPFNQIGNTANVPKDTAII I WGMPAVNFELLRQASAGIGASDNQVVFWSRLLNWKNQTL IWGMPAVNFELLREAAAGVGAGDNQVVFWSRLPDWKNQTL TYAYPLVTMEYTRRSLTNAVAAPMGQFVRMREYPNARAVT LYGFPVVEMYKTLYAQAKDFKAPFNDIGNTAMVPKDSAFV
$V Y G V P M G E Y K T G Y A Q A V D F K A P F N R I G N T A Q T P R D T A G I V$
LWAMPMLGEYQTMHTFSIDYKGPFNTHLNFARTVABKHAFAV
TWGFPAVDSYRIQYAYFVDDKNPEYK APWNHLPADTA
IWA WPLMGFYAWLEVM DAQGVERGQTAFYETYDSKQGGL

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## UniRef90 B3RAU2 UniRef90_J4Z0M8 UniRef90-LOJ5K5 UniRef90 B7VOM5 UniRef90-E3G7DD3 UniRef90-KTYSA2

 UniRef90-A0A022GDF8 UniRef90_V6S312 UniRef90-UPIO004642EEB UniRef90-JobBL8 UniRef90-V4LFH9 UniRef90- J2IXA6 UniRef90-D9XPG6 UniRef90-W6VRU9 UniRef90-UPI000464AA04 UniRef90-B3RC43 UniRef90-B7RV93 UniRef90-UPIO00367DOAD UniRef90_T5KV96 UniRef90-HOHY90UniRef90-UPIOOO377A6FF UniRef90-Q47YR7 UniRef90-K9NKB9 UniRef90-W0TPY2 UniRefefo-F8JCU9 UniRef90-A8GOHO UniRef90-O1M9L3 UniRef90-Q1LCP1
UniRef90 UPIOOO372B2EF UniRef90-UPIO0036BC34F UniRef90-C8XJYO UniRef90-Q4KCS4 UniRef90-G9ZYU1 UniRef90-UPIo00289E467 UniRef90-UP1000467D8C0 UniRef90- B2IC07
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UniRef90-UPIOOO2F73C7F

WTNIVIFAAPGKRTTGTRRGNFAlITGPDWRGTILPKGMQE\|IR YTYNFAYDGSRSTGNGGGNFLDAGPRWTGKVPPGDTVIKS A 1 EDFGPAGVDAGAGGKYLILPPPNYQGQIPDGYLGLPA GI SQMTEPGV TITDVGA TGPDRARGGLYLLLP PD WVVDMGDPGPDAGKGGKYLIVPDG ALEDVGPAGVDKGKGGKYLILPPG YEGPVPQGYFTFKS ALEDVGPGGVDKGKGGKYLFLPPDYDYKDTVPDGYMALPS WNNVPHAPGSRTVGGTGGTFAIVGPKWSGTLPPGLTE R YTFNFDY回GSRATGNGGSFLIAGPNWKGETPKGUTKVRS AD TRMTEPGKYLFVGPGQDVPTDAQAGYTVAKS FFGDVGLFGPDAGKGGKFLILPPG YKGEVPQGYFVYRS WVADPGLAGPDRGAGGKYLFVPPGHE GPVPEGFFTFRT YTFNFAYIGSRTTGNSGGSFLDAGPAWKGQTPKGVKVIRS YTFNFGYVGSTGREAGDYLLA AGVPDWKGETPSG\|RVLRS WTNVFATVGKRSYGTAAGSYLITGPNWEGEVPRELITVKS WTNVVSSPGTRTDGTGARDFLVVGPTWQGEVPAGMQPI RV NTYNFGYDGSRATGSDSGSYLVAGPDWKGEKPAGDKVFSS WTNVFASPGKRTTGTRKAVFAITGPRWTGTLPPGVKEIRA P ПKEDGSGNKET DLFVGPGQEY
 WTDTFAVIGTYANGTEPGEYALCTPEWTGKDPDGVRRINV YTHNFAYVGSRATGNEAGSFLLAGPRWTGEAPKGVKVIRS YTHNFGYVGSRTTGNGGGTFLLVGPDWKGTVPPG\RVFRS WHNLFQYVGTRETGSLAKEFLIVPPGWKGEAPRNTKVTEA YTFNFAYVGNRATGNEAGDYLLAGPEWKGETPAGDKIIRC YTHNFAYLGTRTSGNQGGNYMIVGPDWSGEKPANVKVIRS WSDVFDVPGTRTTKNTARDFLVVDPQWRGDAPAGLEVVIRS WTDVFANPGKRTTGTGAQTFVVTAPGYTGDLPAGATPIAA
$Y T Q N F D Y L G T S N G N G G H Y I D G P D W Q G T P A G D K V L H S$ WVMDVGLPGPNEGRGGKHLVLPPG YGGEVPSGYQVGRA YTQNFGYLGTRGNNGGHYMUA GPNWKGQQPPNVRVVYS YSFNYGYVGSRATGNAAGCYMDAGPNWSGEMPNGVKI FKS YSRAVEDIGIGTLGAQGGTFAIVGPGWKGTLPPEMVRIDS PLEDVGPAGVDKGKGGKYLILPPGGYKDNVPAGYIPMPS FTHNFAYVGTRSTGSEAGDYLFVGPDYKGEIPKGVFNVES YTYNFAYVGSRTAGNGGGRYLLAGPGWQGEKPEGUEVIRS YTQNFGYLGTRSTGNNGGHYMIVGPNWQGQQPVDIDRVRS WTDVFAVPGSRTTGDSERRDMLIGPGFDGDVPNDALILEA YTCNYGYIGGRATGNGAGTYMISGPGWNGPTPEGUKVFQC NTFNYGYIGSRATGNGPGDYLVVGPEWKGETPAGYKVFRS
 YTHNFAYVGSRATGNEAGSFLDAGPRWKGDAPKGLKVIRS TDTDVGAIIGPDRARGGLYLLLPPG YDGHVPNGYFTFRS YTYNFAYAGVRATGFGAGNYLIAGPRWDGGKPKGITKVQS WTNVFASPGKRTTGTRKAVYAVTGPMWNGVDPPGVTEIRS YADNFAYVGSRATGNAGAFLGGPNWKGEAPANVVM R A YTHNFAYDGTRATGNKGGNYIDAGPGWTGETPAGVIRTES ALEDVGPAGVDKGKGGKYLILP PDHRGDVPDGYVALPS ALEDVGPAGVDKGKGGKYLILPPGPYDGAVPDGHIPLQS YTHNFAYVGSTGRDAGNYLTA GPDWQGHTPDGVTVLRS YTQNFAYLGSRTTGNKGGNFLIVGPGWQGEKPAGI EVIPS
 YTHNFDYLGSRTTGNDGGNFAVAGPNWQGETPAR||KVIVC NTYNYGYMGSRATGGEAGDYMIVGPEWRGTAPSGVKVFRS
 WTNIFASFGKRTTGTKAQRYVITGPKWQGKLPKGIEEVKA WTDVFATPGKRVSGTYAGVWAVVPPGWSGDLPAGVERIDA WTDVFASPGTRTTGTGPQDYLLVGPGYRGDPPPDIPVIHA YTYNFAYIGSRTTGNEGGHYLIAGPDWQGAVPDGITVIRS TIADVGPAGADKGKGGKYLITPPG YDKAIPKGYIHVES
 GITQL TEPGKYLFVGPGQKTPANLAQDVKVFHS

 Y TYNMA YVGSRTTGNGGGKYLLTGPNWRGVKPEGDEVI TS WTNVFKSFGKRTTGTKAQTYVITGPKWKGILPAGUEEIKS WHNLFKYVGTRATGESAKEVMI VPPNWQGEAPKGMTVIKA YTYNFAYVGSRTTGNGGGKYLLAGPNWQGEKPEGDDVIRS WMPVIHSPGTRTTGGAAEKFLLTGPGWKGEVPSGMTEIKS TMADVGPAGLDRGKGGKYGFTAPDYKGEVPKGYDHVAS TIADVGPSGVDKGKGGKLLFTPPG YDGKIPEGYIHIPS WGEDFSCPGTRTTGNAAIDVAVCPPGWNGQLDAGGVRYEA
NVYNFGYIGSAATASEPGNYLVVGPDWKGETPPGUKKFS $N V Y N F G Y$ GSRATASEPGNYLVVGPDWKGETPPG|VKFSS
$N T F N Y G Y G S R S T G N A G D F L V V G P R W T G E T P P G U R V F R A$ WVADMGLPGPDAGKGGSYLLLPPGHD GEVPEGYFVARS

## UniRef90 B3RAU2 UniRef90-J4ZOM8 UniRef90 LoJsK5 UniRef90-B7VQM5 UniRet90-E3G7D3 UniRef90 KTYSA2 UniRef90 A0AO22G

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UPIOOO3 UniRef90- Q47YR7 UniRef90-K9NKB9 UniRef90-W0TPY2 UniRef90-F8JCUY UniRe90-_6ARV5 Unii effo_-a1M9L3 UniRef90-O1LCP1
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UniRef90 14 BKS UniRef90-14BKS3 UniRef90_G8RWV7 UniRef90-E4T4V6 UniRef90-UPIO002D376F3 UniRet90-UPIIOOO46646A3 UniRef90-F8J6F7
UniRef90-BOKFK6 UniRef90-HOQXAO UniRef90-S6BHZ2
UniRef90-F4CUE0 UniRef90-UP100035CBB25 UniRef90-A71LS9
UniRef90-UPIOOO46971D0
UniRefooUniRef90_UPIOOO2F73C7F

PTSMVIWLTGRTNGKQDFPAIVHRLQDQYRLITPLISAWGGGRR ETELVVMVGRTFNPADLENVKRIQARYKIQPLSAFAKRPA NTCATFALLRSNLDDDLARAVAYGKRVKLYPLGQADKPPP DTNYVF GVRLMADSDQQRMKDGEALKITDLNGKPGSSK PTYNVFLFFRT\MPDPПPAVKNAETTRIYPLWNVEKEKP ATNKVFVVARIIPGNDLNKAQALLSGDKIYPLATAKNQKP
 PTAQGMALGRSYGKSGSAAAIEYSKRYKLYPLSQASQSPQ ETELALAAYRTFNLGDLDNVKKIQAGYKAEPLSKFLGQPA GTNNVFI GLRGFYEDPKNGTPAALEKTRIYPLNGESGAKA
 ETQAMVLGRTRDANDLPAVRALQQQYRLRPLHEFAGSAA ESSLAYALLYRTFNPKDLARVQAIQKGYKVRTLSAF GLSQ PTPYVWLIGRTNGPSDVQNVARLQEQFALTQQQQQUGSGVS PTQMAWMIGRTKGPQDYAEVHALQQRFQLMPLSAWQGQAP TTPFVFANFRTQNDEDLPNVEKMQAGYNVQPLSTFLKKPA PTEMVWLIGGRNGKKDYAAVRRLQSQYRLMPLSAWQGGGK DTNQLLYFYRVLGVG AEAEKLKTAVTAYKLSDVANPPQ TTPFTVAGYRTFNPKDMPNVVKVQSGYKAQPLSAFLKGPA
 PTDKVWLWGRTLGEQDYANVHAVQDKYEVTPRSEYLGRPA ETEFAFILYRTFGPDDDDNVKKIVEGYAVQTLSRFLGEPA PTRNVWII GRTNGAADYANVHKVQDGMKLTPLSAWGKYVP PTPYVWII ARTNGPADYAAVNADQDGFTLTPLGVPVEHIP
 LSNKLLFAVRALPGGDLSAALEALRQDRFYPLAAAANPPA

 ETEFAYVYGRTGVDSDEDAAHAVQDQYRLVALLSAFGAPSA ATFQGYALLRSNMKDGSDAAVAYGKRVKFYPYSKGGGVGE DTELAFVLYRTFGPSDIEEVRKLQAGYQAAPLSVVGNRPP ESNTAYALYRTFDEKDLAKVKQUQKGYKVEPLSRYVKQKA PTPYVWA GRINGPSDYDAVGKFQDGFTITPLGGPTRPES ETEFSLVLYRTFGPDDUNNVKQUQAGYKVQTLSSYMNKST
 PTTK TWLWGRTFGEKDYQNVHDIQNQYTLTPLSKYLAHDS ASNRFLICLRAVVKGTGKEAFDLLKKVK YPLKEKNAPEA STFNVFLFFRTDGGPDPSVGAATAERTRIYP WEEEKDVP ETDFIGLLGRTNGPSDVKNVQALQAKYRLRPLSEFHPPPA RTPHALVFGRTFVEDDVAAVNKLQDQYQVVPVSLWGKSGA ETEFAFVLYRTFDAADIDKVKAIQAGYKVETLSGQPAPPA DTWQGYALRSNVPEDVATAVGYGRQIGFYPLSQAASPPR
NTAYALYRTQLHDKKDLANVRRIGRGYKVKGSAFGKAP $N D A Y A L Y R T Q L H D K K D L A N V R R D Q R G Y K V K T L S A F G T K A P$
$A T Y T G F G A L R N V A S S A A D V T A A A D Y R I Q F Y P L S Q P A Q P$ ATYTGFGALRANIASSDNADVAAAAAYGNRIKCHPLSEPE PTALVWLLGRAYCPQDYAAVHALAQDQUNAVPKSAYGKYTP ESEUAYGLYRTFDEKDLPRVKEIQRGYIVQPLSQFLGQPA
 STEFSLAGYRTFGPDDLDNVKKVQAGYKVQMLSAYGKQPA NAQFAMALFRTFNPADMENVLKFQTGYAVKPLSAFLGQTP PTNTVWILGRILGEDDLDNARATQKQFTLTSLYGEKTPSM PTDLVWIIGRI QVNSPEDFVSKLQDGLKLTPLSQLGKKEP PTPYVWI GRIQSNGDYDAVHKVQDEFQISRLPGPRTTNG PTHNVWIIARTNGPADYATVNAFQDGGRUDEIGERAPFEP ESRIAYALYRTQLIFDDADLVRETQKGYTVQTLSAFQQRQA ETQLVSLVGRTFNPADLDNVKRIQAGYKVQPLSAYPAPPA ETDLVIGAYRTENTDDLDNVKKDQDGYKAEPLSSFLGKPA
 DTNHVFFGVRLTNDTHEKRMEDMKKIKLTNFTTGKPSSE DTDLAMVLYRTFGPSDDDEVKKDQSGYQVAPLSVFLNQPP DTDLALVLYRTFGPSDDDQVKKIQAGYQVTPLGNQPGPPP
 DTELAFVLYRTFGPSDLGEVEKIQSGYQVAPLSVFLNQPP PTRYMLILGRTYADGDYKAVNALQAEYDLRPLSAVGADYA PNYR ALAFRSVPPAGKTAAYEYAKRDRMYFLAEAKSPPQ PNYR A AFRSVPAPGKSYADAYOQKLHMYYLADAANAPK PTPWVWVIGRTESPATYAAVHEFQAGMTITPLSAWGGAAP TTPFALVGYRTFNPADMPNVVKVQAGYKVEPLSAFLKQPE STDFALTIFRTFDAADMDNVKKVQAGYQLRPLSAFLGKAA STFHVVGGVRATPDGDVPAALRLDTTVKVHPLDPSTPWEE

## UniRef90_B3RAU2 UniRef90-J4ZOM8 UniRef90-LOJ5K5 UniRef90-B7VQM5 UniRef90_E3G7D3 UniRef90-K7YSA2

 UniRef90-A0A022GDF8 UniRef90_V6S312 UniRef90_UPIO004642EEB UniRef90-JOBBL8 UniRef90-V4LFH9 UniRef90-J2IXA6 UniRef90-D9XPG6 UniRef90_W6VRU9 UniRef90-UPI000464AA04 UniRef90-B3RC43 UniRef90-B7RV93 UniRef90_UPI000367D0AD UniRef90-T5KV96 UniRef90-H0HY90 UniRef90_UPI000377A6FF UniRef90-Q47YR7 UniRef90-K9NKB9 UniRef90-WOTPY2 UniRef90-F8JCU9 UniRef90_S6ARV5 UniRef90_A8GM1UniRef90_Q1M9L3 UniRef90-Q1LCP1 UniRef90_UPI000372B2EF UniRef90_UPIO0036BC34F UniRef90-C8XJY0 UniRef90-Q4KCS4 UniRef90_G9ZYU1 UniRef90_UPI000289E467 UniRef90_UPI000467D8C0 UniRef90-B2IC07 UniRef90_UPIO00306703B UniRef90_UPI0002E5597E UniRef90_J0RTF6 UniRef90_A1TAS1 UniRef90-Q89RU8 UniRef90-J3FHK3 UniRef90-D5SW15 UniRef90_UPI00037CAC78 UniRef90_UPIO00465838B UniRef90-B5ESY6 UniRef90_AOAFE6
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210
220
230
240
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 PPADVP LKVGVDTKTPVPEAFFSRLNAMMVANPPDPADPAQ PPA D DF IKPLTPAEQKTSPEFFN LNF LQQFCPTDPSETE RGYI RPEGKSWMAA
MKFPDASDDPANMLPMSDGSVFEQLKRLVDTEGDNLAGPD PRFVEGSGLPVNTVPPGDTTYFDFASELVHDQPAEALDPE APA D F I K PLTPAQEKTS LQFFNVLNFVLGFCPTNPSETE PATPPAVNWLPWEFTRDGPGFDPHLNQILAFCPVDPSEVE PAPAAAASIDWPKPGADALAFFRYLNFMLQFASTVPSEQD

 PPAAPK DEFDPATTQGDKDNFFDYDDAALEFVPATEEDRA ARSQAAPAVDTETPPMDAQAFFTRFAALLEANPPAPADAA
VKFVIYKPKASDADQPRGMAYWEVNQYIQNEPMADRDRF VK F VIYKPKASDADQPRGMAYWEVVNQYI QNEPMADRDRF
APASPVINFPPSTTKGDKENFFEYLDAALQYVPPTPEDRE APFKKDPNVDDKTAPMDTRTFFNTAMALMKKHPPHDTDQV NAVPD IVFVKPGTEQRTSPAFFN ILSFVLQFCPTHPSETA PPAVDFPVPLSAEAERTSLAFFNQLNFVLGFCPDHPSERA
 PAPASPIDWPKPADATDSLAFFRYLNFMLQFAPTVPSEQD PKGVVDPGDDMKAQPPDTAAYFARFAELLKDNPPNQVDYP
 DESVDTTTEPLRVDAMSAAEFFTLAARTMAVNPPHRSDFS LTFQDTSQTRMDSRWEADVQYWEVLHRVLREEPQVEKYGP VKPPK IA WPKPTPTMSDSUHLFRYLNFMLGYAAPQDSEKD PPALPLPNFPPFSDDAFKQEAFSYLNFDLQFAPTVPAETE PVELGHKDASAKMGFPEGLDFFALLDDRAIRTNP LDPEDAP THYVDAYDKMFDSTDPYDSRYFEALNRFVQVEPWLVRDMA KKASEANWKAFNPKDDEDANF DKYMNVYLDLVPFNKEDVAE
 SAAAPKUDWPKPTPETPDLFRYLNFMLAFTPAQDVEKD PPELQWPA DDKKLAEADP FAFAYLNFILQFCPTTEVERP

 NTFQDFSHKKAAATPDGKFSYWEELKKALDCDALDKEYYQ KTVPDVAKPLTAEEQRTSPEFFNLLNFVLQGCPTHASEDD MQFPNASGVRVNMMYPTDFSYWTILKEFVDFEPVGAIVPE AAPADVDWLPWDEQRATSVEFDAYLNQLLAFQPQPAAEQD VRAPEAVPVDVETPPMDAQAFFSRFAELLPANPPAAADAA TLPENRDVQVPVDSKSDP DADWKTDNQAMADNPPAAKDKQ PPSVNFIKPLTPEAEKTSPEFFNVLDFALQFAPDNPAETE


 TPGVVNPAVDTKTAVRDGPGFFSVFANLLKANPPATADAP VAAPVIDWQPWDSKTGLGLEFDPVLNQLLSLCPTQPSEQA PPDSAAIDWPAPMNMSDSPELFNYLNFMLAFAEPQPGETA
 PDPADFPKPLTPEAQRTSUEFFDLLNFYLQFCPTHPSEVE PTPAAADNFPK DKQLIKTNFFEYLDFALQFDPAEANEVE PPALDPMPFPNGGQDFVKPEFFDYLAFALQFAPAGPEETS VASNTVSIVTYTVESTEAAEEYFTYLNELLVKNPAFEADKA AMPTADQNIDMTAPPLDGADFFARAAELMKLHPPHITDWS DPTVESSVEPLHVVESSATDFFRRGAAALAVDPPHLTDFS

 PPDHDEHGMD TKQPRGMAYWEILHRAITIEPVQERDRM REPL FQEKGLDLMQKRGMAFWKSLHKAI NLTPVREQDRUM APADDFVPPGTSEQQRTSPQFFKDLAFALRFAPTLPEEKE APA DDFVPPLTRDQQKTSPQFFDQLNFALKFAPPLPDEQE
 APALDFVPPLAADQQKTSPQFFELLGAGALRFAPTLPEEEA PPVDPNPGFSMTDKPQDTEGYFNMMARLMKDAPPAAEEEA QKFDDPAHERYPTDPFYDERHFEDMHADMSVEPVREHDKV QRFVDPLKERYPTLPGYDERYFEDLHAVVSVEPVKPQDKV TVGEDPSVDDETPPLDAAAFFGRAAELI AEHPPHQADYP
$P$ QAAPTDDFLPATYAGDKANFFEYLDAALRYVPPGPESSD PQAAPTDDFLPATTAGIKANFFEYLDAALRYVPPGPESSD PTWDDLTGKPQDTTPERSDEFWRVLHDFDSTEPALEEARA

## UniRef90 B3RAU2 UniRef90-J4Z0M8 UniRef90-LOJ5K5 UniRef90 B7VQM5 UniRef90-E3G7D3 UniRef90-K7YSA2 UniRef90-A0A022GDF8 UniRef90 V6S312

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UniRef90_S6ARV5
UniRef90_A8GOH0
UniRef90_Q1M9L3
UniRef90-Q1LCP1
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280
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MMARLA
WIGMIAA G VKGOPF
IAGALAAVGIVKGRPFEPA MREAD
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MRAKLARDGVGPGKSFDFKDLP
MRAKLAR GVGPGKSFDFKDLP RAVAHKLELGLGMKDGD FYAWLKDLGI EKGKAFNPTPYQKEILDEGVNTGMAMAQSLL TRARIAKi GUGPGKSF YK KQDLSLE
LMARFAKLGGGGGKKFDVQALAPDI RQAVQDGMADA WK LFGQFEK GLTKGQGFDATKLSP
KKERFAKLGGTGKPFDVTTLKPEIV DALSAGMADAWAE VMARFAKI GVGRGLPFDKNSLSPAI QEAMAGGMADGKSQ
 QLAR AGMG IPGKPFDPSPQNAAALDAGAKDALAAMQQA
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 MMGMLSSLGIEHGKPFAPDATSKRAMRQAADDAWYFLQNW LLDRLAR GFVPGEPFDLAAADPAV A 1 RAQLATIGVGAGKSFDFKTLS GEDKAEMLLGLLGEGQ AYGDLAALGAEKGTPFDPDERLQRDLAAAAEDGNDQLRVQ

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Y $L T$ V
VPP YES MPRYYDDAHWFFPATEETHQUINDFKVPDSYPVD
A A LHKRDEA T $\square R G K N V N G W E D T L D M G R Y G T N$ DFSKRLEDAHYDGSQWEFATVSPPDQRREYYDELDGRAAW GFDEKVSGNMYSDRRWVNPFPDGTPAGTYPY DDLDARDWM ACRPRPAEGYGASSRWLNGLLVSGHEFDDGARKLNLRSWW FAGLKKE VATLRSSAGL KKKQlDTRKVSSG
LEKQPATENGWSVRR
A WKVKT L A DVKNG
ALIFGTREHLQNNYMYRYAGAAL RKVVARLDDSQQLLGKRTTFNGWSMNTSTMGVYGNY EKVAKFAASGNKDINGWSV GSFF AKRAADTGAEWTVRR AFNKTKKKFYGSDSGWEGVLAGMDPKDDDTYDLGNYGTAY ( A L EKANAQSHEVMKKYVPRDGYNANGWQMVTKSDGVYGND DFAKFKKTAMDTGKRPSSDAFGTREFLKNDYMVRMSGAVL KDFDALGQQVARGEVSTTRFLGSREFLANNYLYRMR $\begin{array}{ll}V Q A M T D A Q Q I D S A Q V A N P N T L E V K D G W F Y A F E L D D F G D D N ~ \\ V & \text { VREKETE }\end{array}$

## $\stackrel{F}{V}$ E $F$

 KS QLDTRKDTSGDLFGTREHLKNN
## VA E G

 RKA G G $\|$ G GK G W $\quad$ K T T R S GA Y GVD Y $K K E Q V D T H K D T S G \quad D L F G S R Q H L Q D N Y L Y R Y A G A N M$ AFADRPDRLNWPDRHWEWAVPGSAQFETPAGLDLEARDRW KKDKDDTHQVASG D EA DVKQKDE GGKSENGWRVGSAFGDRAFYHGD
FKEFK ENQLDTGKKASADSFGTRAFLNGN

 K K NEMD T GNVT S A QLLFGSRQELGDNYLFRMA GAA Y
 KK TKVDTHEVSSG LG D R V N G WQ I S R S VGVVYGN D $V$ A T L GK D ENGWR VGGAQ G G D RAFYNAD
 I GAATDLGSTTNGWA】ASAFG ASNPVTLK TKDGWFYSFVLDQFGDDN AF AS DVPE RVWD GKK WE WVVYGGDSGYYENHLSSLAVRRERW ADAWRDFAEFKK NEIDTGKRPSSDAFGTREFLKND A QLGRDDQRYYT DRQWEQAWGGTAEWMQASYLD INARSRF EKQTRSSVGL FGSRAELGND VAMAR SAAGVANKPV R G G GE GD GK WTVHRDLGSYGTA Y VN GWHSRKNGGRAGLEDDF $F K T V$ V D TGKQSSADGFGTRQFLNGN Y Q DVVFDPPFYPGSHWQLPMPEVVEGMPDFFADPDSYPTD K K T K V V D T S E V S S G NYPRFFASPYFEGTHWAVPASPDVRGMQTGFADPDSYPVD YPRFFTSPYFE GTHWALPASPEVQGMQTGFADPAGYPVD M
 $K K E Q V D T H K D S S G \quad D L F G S R E H L K N N Y L Y R Y A G T N M$ K K V S EK VA S L G K T $\square$ N G WH $\square$ K K ANVD T
RKVDKAVADAGKA VNGWRVSGLGKLTAADGFGTREFLHNN $R K V D E A V A L A G G K I N G W R V G \quad G S Q Y G D S K F Y S$ G D DAAVTRPGlRVNGWKMSSPFGNREYFHG
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 FA QA VMMSPAMLRRDATAGS LYYWGAFKDSNNKALDDGGKSY

 YPYRASWTFFGVGGNLPEDADYPVAKTDGDGKLLDGANKY Y L Y R M A A A VL G G Y G N SKE EAAMY P V Y A LDD S E GK K L D GA A K Y $F Y E A V T N D P A M H G Q K T$ GKGQVY LAAAYKDKD GDWLD G GRN Y FTNYYS ID P GMDSK SP GAAAMYVDAFTDSE GTPLVGGSSY WY LGVGGISPAFTAPLPGVGSQYVFSDADQE GRALDGGRHY Y
$Y$
L
S R A A A A A $Y L S R A A A A A S G I Y G N S V E E A I Y F G T R S D S S Q Q P L V G G Q R Y$ G F GNS E EALYSSYYVDKDGKPLDASKRY
 QQRALVAKLGLGANSP EDAIYPNLHSDSQGRPLSGEHRY WLKRAAAAKAGLYGNDAVEAMYPFTRTDATGETLDASHNY GKRALVA WVGLGANLPA DAVYPATRVDSAGKPLDGSKRY TYEAVTTSAGMIVENPGHGSAYDGSYYDADGNALMGGKNY WLKRAAAAKGGI YGNDAVEATYPITRTTATGEPLDGSHNY


A TVTGLY ALRSLVAGPY LG YI DRMSGAVLGGIYGNSSKEALYPDTY GKGKPLNGGQ GY
 LYRAA DA QCCLGENLP QDAVYPA LSTDSDGRALDGANKY
 Y F R R AV I TLVGGLGANPAQDAVVPLLVADAD GKPTVGADDY FAQA IVTSPAMFRRSAGAGSLYWLSARDSGGTYLDGGQNY

 YLDRMAAAVLGI FGNSKDEADYPVYFVDDGKKALNGSNHY $L L R S A D A Y K Q L G L N K A D R A L Y P N R Y L D A N D Q P L N G Q H A Y$
 NTRAGYGNTAAEAIYPNFSNDAAGQPLTGANRY $N T R A L I D W L G G G B A T S D D A V Y P S A F V D G D G N V L D G A A R Y$ LY R Y A GANMGI F GNS A E E A NY F GY FVVDK D GK P V D A S K T Y YF QRA Q $\square$ A LVGLGANPPEDA IVPVALVDDDGQPLDGHNDY WT LRAAAAAMAGIVYGNDEVEALYP LLLSTDSEGNKPDSSKRY GRGDAFSTFFVPPAK LGAGSFY LGTFFDGNSQLLDGSNNY WLLRAAAAKAGIYGNDAVEAVYPMTRNDGDGELLDDGSHDY $A L R S L V A H P Y L G G G Q G A K E A M Y P D A Y T D V N N Q F L S G E K D Y$ $F Y$ QA TLE T P KMFMRRE GS G S I Y WL G DR DKD GNF L D GEK S Y
 $F Q Y A Y S S A P A M V V H S T G A G S K Y P Y S A R D A D G A F L E G A K T Y$ Y TKRAVAAAMGIVGNSSEEAVYLGYEEDSQGHPLEGSKSY GKRALVA WVGRGANLPA DALYPSTRDVDAA GKP L N GAANRY
 YMARMSGAVLGLYGNSKDEALYPAYFVDAAMKPATGTNSY GRGVTYSMAYFSAKNDSAGQFY LDMADRDRDGNRLDGAGTY $Y$ LYRYTGAALG $\quad$ GFGNSADEANYPAYFVDA DGQPLDA SNRY D R G Y Y S F Y F S A K H L G Q G Q F Y VMA I A D RE GSPFD GS A TY
 LNRAVAANVGIYGNSV
 LKRAVAAQAGIVGNDPA WL K R A A A A R A GIIY ANDAV IE A LKRA Y I AF S G L G A NVVD QKRAAVAYFGLG ALGP Y A K R A IVAMMGLGANPA Y LT R A A A K A GL G A N P P E $Y M Y R Y$ A GA A L $G I \quad Y G N T A$

 $F Y E A V S N D I$ AMGMKNGGWGQVYLDNYRSANGNGLDGGKHY F Y E AVVTNDIA MHGK D E G WG QVVYLDN N Y R D D E H K G L N G S S F H Y $Y L L R A M V T L V G L G A N P P E D A B Y P D L L V D A D G D Q P V G E T D Y$ YLVRMAAAVVGIGYGNSKDEAI YVGAFNDATGAPDTGANNY
 LYRMA GAVLPG GGGQGAKEAMYP@TYTDSK GKLLLS G DT QY YMKRALVAAFGWPANLQADAVYPYTEVDNAGQPLSGADKY Y FWCTYMPKVLSA
F VNHYSISTGMMS S
Y FWCTYMPKALSAT FWCTYMPKALSAT PATQYMMAMADKDGKLLAA GKDY
 LR AV G A Q A GLYGND A V EA TYP M T R L L D A D G Q T L D G S H NY FFQAIATSPAMFRRQAGFGSLYWFGARDDQGDYLDGSRAY NAFRSILVSHPY LGGQGAKEAMYP@AYTD\|KGKPLSGQNDY

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UniRef90_UPI00046971D0
UniRef90_UPI0002F73C7F $V$ HF DKE QPARAFWSLLTLYNERQAF VIPNP|IQRYA\|IGSR D TLRFAPRPPVNAFWSMTMYRLPEQLLAPNPINRYLINSPM
 K L H L P P N P P A A L F WAV T A Y NI T D GTMPET D QLLLP S TN GYY

 K L NVPANAPVS QYWSMTVYNRDTHTFI RNAKWMGRSS QTP EVVRFAKMP P A GAFWS LT A Y D A D S Y L I P N S I N R Y A L G D R S TV H F D K LDP P V D A F WS L T M Y E LP Q S L L V A N P I D R Y L L N S P M KLKVP A DAPAETEWSSVTAYEVVSTTLIINNKYEVADRSSRM $R L N L P A N D P A R L F W S V T L Y E A E N A S G L A N G Q P F P S L G G S K D$
 RL HF P A DP P A K E F WS S T L Y D L P D R QL V A N P I QRYCLL S S R D
 $V L H F D Q L P P A R A F W S L T L Y N$ DARFSSANPLNRYALGDRD TI T F P Q L P P V N S F W S V T I Y D G K S QLLLI K N P I N R Y L I N S P M

 V M H F E DIDP P V D A F W S I T M Y D A E G F P V A N GI N R FA A G D R D

 T L R L G E LP P V N A F W S L T L Y E LDP S S L L S A N D L N R Y L I N S A M TL H F DK DPPADAFWS LTMMYDGQSKLLLVANPLNRYLI NASM $V L H F D K G P P V D A F W S V T A Y D D E G Y F \quad I P N P I K R Q A I G D R D$

V

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 RLK K D GKVVPV RAFWSLTMM DAK DLFMVENPIKRYSIGDRT
 V L H F D F P P S A S GVWS V S P Y R E N T HF DKDPPVDAFWSLTMYDGKNKLLVANPLNRYLINSRM T T F P HLPPVDAFWSVTMYDAEGY QVANELNRFALGDRD TLLTFGQLLP P TN A F WS V T MY D GK T QLLI A N P L N R Y LI NTPM H L HVVP A NVPPVS Q F WS L T V Y N S K T S GL F L N MN R P S L D S LT E SI HFD N QP P V A A F WS I T V Y D A Q T K M L V A N D I H R F Nill N D Q T
 $R L H L X P N P P A D L F W A V T A Y N I T D G T M P E T E Q L L P S T N S Y Y$ VIRF GQLP P VEFFWSMTMYDLPGRHLVDNPIKRYAIGDRT
 $T L H F G P G Q P V N A F W S L T L Y E L D P S S L L Y A N A L D R Y L I D N S S M$
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 TLHFDKNPPANAFWSLTMYDGKSKLLVDNPLDRYLINSRM

 T L T F D Q L L P P
 VIHFEPNPPARAFWSITLYDKAGYL AENAIRRYAI GDRS V L H F E K N P P V S A F WS SVTMY D E H GF Q F A N DL NRFA L G D R D
 V L R F GK D P P V N A F WS L T M Y D L P G QL LVVA NP DDRYLI NA A M



 TYRFD QLP PVVNAFWSLTMYELPQSLLVENSMKRYLI NSPM
 VYRFP QLP PVNAFWSLTMYQLPASQLVENPIQRYLVNSAM TLTFGQEPPVNGFWSITMYQDQGWWFVPNALNKFTVSPRN

 KVDIPAKMPVKQFWALTVYDRATMSFIYSDSNRTTLSSYD V W H F D A M P P V R A F W S T L T $\quad$ F P P H G Q P

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UniRef90-Q4KCS4 UniRef90_G9ZYU1 UniRef90_UPI000289E467 UniRef90_UPI000467D8C0 UniRef90- B2IC07
UniRef90_UPI000306703B UniRef90_UPI0002E5597E UniRef90_JORTF6 UniRef90-A1TAS1 UniRef90_Q89RU8 UniRef90-J3FHK3 UniRef90-D5SW15 UniRef90_UPI00037CAC78 UniRef90_UPI000465838B UniRef90-B5ESY6 UniRef90-AOAFE6
UniRef90 R7X3N1 UniRef90-C7QDE4 UniRef90-J4PI90 UniRef90-H1RYW4 UniRef90_J2XQB3 UniRef90_UPI000477DB09 UniRef90-J2P1F3 UniRef90-A0A022H4R9 UniRef90-X5LHI1
UniRef90-A0A024M5J7
UniRef90-W9ASZ7
UniRef90-K9NHA2
UniRef90-M5QU16
UniRef90_C7RKI4
UniRef90_UPI0003000B6F
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R|L R Y NRDGS ${ }^{410}$
420
430
440
RYNDGSLI YI QHERPAGRAANWLPAPP D GLNMMLR SLKKDADGGLTLYI QASPGKAKESNWLPAPEGPFMVTMR DLHTKADGSVDLNFGPKPLDDQQTNWVPAKPEGQFMVTMR GTVKDAQGNYTFHFSPTKPASNEANWVQTREDENWFVYFR NIPKNSDGSIDLWFGPSKPDGADSAFIKTVANRNFLVALR
 GUKTNDDGSVDVFGPTPPPSGESNWIPTDSKGQFEVLAR
 D DDLDPDGSVDDYFGPDEPEGDKANWIPTEAGRAWFPYFR KPAQNADGSTDI F LGPRHPKANKATGAPPCRAED
A AVAGADGTTTVHFGPERPDGPVGNWDQTMPGRGWFVVLR QFKRDADDGLTLITQNEPGKDKEANWLPAPKGA FSMIMR HLARDADGGVTLYLQADPGQALEANWLPSTRQGPFNVIR
 PFVRNADGSLDLYGNEPGADKEANWLPAPKGPFNLTMR DLHYNADGSLDLYTQHEQPTDQRRNWLPA PEGRFNLELR GMKKNEDGSLTVYI QDSPGADKEANWLPA PNDTVYLVMR RLRYNRDGSLDIAUQARPPGSQVANWLPAPP DGFNLMLR SLVMNSDGSVDLYFGPEAPEGKEGNWIQSNDGESYFMYLR GMKKNADGSLTLY TQNSPGKADESNWLPAPD GP DYLVMR
 LPKLDNADGGVTLYI QHERPKEREANWLPA PDGPFYI AGR DLDKNADGSFDVHLQUHNPAGKSANWLPTAPEGNFYVLAR QLKRDRDGGLTLYVQDNPGKDKASNWLPAPADGSFYADLR KLDTNADGSLDLYLQADPGKDKEANWLPVGKA PFTLLMR PLTYNPDGSLDLYSTSPGPDRESNWLPAGPG PDGVTMR PLVFNPDGSLDIMMQHDPGPHRRANWLPAPTGPVGITMR SLKTDADGGLTLHVQHQPPKELQSNWLPA PDGPFYGVLR ELKDVAAGPVDLFFGPQAPAGQEQRWIRTAPGRGWFAYFR
 DLKRDADGGITLYVQHDPGKEREANWLPA PNGPFFTVMR KLKTEADGSLTLYIQAKPGPHRESNWLPA PDGDFFLQMR GLQKNADGSVD YFGATAPQGKESNWIPTDAKRTFELMFR ELVYDKDGGLTUYTQNQKPDKSEANWLPAPAEEFYLMTR SVVPDPDGGYTFYI QNEPGDDKEANWLPAPKG PFALVLR
 ELRFDDDGSLVLHLQHEPGGEKTDNWLPAPRAA LGVTMR DLKRNADGSLTIYIQDSPGKDKESNWIPAPDGPIYVAMR


 DI PK NDDESVVDVWF GPRKPDGADHAFIQTVPDRNFVVALR RLKRGQDGSLTLYVQHNPGKDKESNWLPAPEGRFNIVAR
 SLKRDPDGGVTLYVQHEPGPEKEANWLPAPSGPFFAIMR GI EAEPNGSVDVWFGPVVAEGKAANWVPTRDDRGFEVLFR RLQRDADGGLTFYVQHDPGKAKESNWLPAPAG PFYAIMR

 D LKRDADGGVTLYLQPQPPAGDQNNWLPAPPDGPFYGVLR





 QLKKDAD G G V T L Y L Q H DP GP DKQ SNWL PA PNGPFMAAMR
 GTVTNGEGGYTFHFSPEKPKDADANWVQTNTGENWFVYFR GTKKNERGNFEFHFSPEKPDGADANWVQTKPNENWFVYFR








| $S G K R$ | $P$ | $D$ | $A$ | $I$ | $R$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $E$ | $G V$ | $F$ | $N$ | $L$ | $C$ |


 NLKRNADGSVTLLI QNKPGPDKESNWLPA






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| UniRef90 B3RAU2 |  |
| :---: | :---: |
| UniRef90－J4ZOM8 | YYWPKPELLEGKWVSPEIERV |
| UniRef90＿LOJ5K5 | FYGPGKPLLDKTWTLPDVAP |
| UniRef90－B7V | AYSPSKAFVAQQPELPNFKRV |
| UniRef90 E3G7D3 | LYGTEDS |
| UniRef90－K7YSA2 | I YGPEKAAFDNTWKPGDFVQ】 |
| UniRef90－AOA022 | AYGPEKPLEDKTWQLPDTVK |
| UniRet90 | FYGPKKALYDKSWKLGDIEEV |
| UniRef90－UPIO004642EEB | DGT WAPPPVKRV |
| UniRef90＿Jobil8 | NPKPEALDGTWK |
| UniRef90－V41 | LYSPKPAFLDRSWVLP |
| UniRet90－D9XPG6 |  |
| UniRef90－W6VRU9 |  |
| UniRef90－UPI000464AA04 | I YGPEPAVVGGEWKMPGVERV |
| UniRef90－B3RC43 | LYLPRPEAISGQWRQPPMV |
| UniRef90－B7RV93 | 1 Y LPDQSFLQGNWRLPPVERV |
| UniRef90－UP1000367DOAD | YAPQSAALTGRWNP |
| UniRef90－T5KV96 | YWPQPEVLERRWL |
| UniRef90－HOHY90 | G |
| UniRef90＿UPI000377A6FF | VYWPGQSVLDGT WVAPPVERT |
| Ref90－K9NKB9 | LYWPKEPAGEGTWK |
| UniRefto WotP | LYAPKQRVLDGDWA |
| 8A | YWPKSEALDGSWKAPRVQRV |
| UniRef90－S6ARV5 |  |
| UniRef90－Q1M9L3 | LYWPKPEALDGRWKAPA |
| UniRet90－Q1LC | VYLPKQEMLSGQWRQP |
| UniRef90 UPIOOO372B2EF | YYSPREEFLQGKWTP |
|  |  |
| UniRef90－Q4KCS4 | Y可PKPDVSNGQWK |
| UniRef90－G9ZYU1 | 1 YGPEQAAFDRSW |
| UniRef90－UPIO00289E467 | I Y $\square P K P E V G S G Q W K$ LPPLTPT |
| UniReef90－UPIO000467D8C0 | LYWPKEEALNGTWKPAPLVRV |
| UniReef90 YP1000306703B | Y PMA |
| UniRef90－UPI0002E5597E | GPEKALFEKTWKLADMEVV |
| UniRef90－JORT |  |
| UniRet90＿A1TAS1 | DALNGSWRSPQPERV |
|  | KPLDGTYKIPPVRRV |
| UniRet90－J3F |  |
| UniRef90－D5SW15 | WPKEEALNGSWKPPALVP－ |
| UniRef90＿UPI00037CAC78 | FYGPEQALFNKSWKMPDIEKV |
| UniRef90＿UP10004 | LYWPKAQGLS STWKPPVVEK |
| B5ES |  |
| UniRef90＿AOAFE6 | 1 YGPSKAAFDGNWQLADFER■ |
| UniRef90 R7＞ | E |
| UniRef90－C7QDE4 | APAFYDQTW |
| UniRef90 H1RYW4 | 俍 |
| UniRef90－J2XQB3 | VPDEAVLNQTWQPPTIKAV |
| UniRef90－UPI000477DB09 | WPEEAALDGA WKAPA |
| UniRef90－J2P1F3 | EKAFFDKTWVLPD |
|  | KPEVASG |
|  | LYGPKQALFDKTW |
| UniRef90－A0AO24M5J7 | GPKPALFDKTWT |
| UniRef90－W9ASZ7 | YWPQPSV |
| UniRef90 M5QU16 | YMPKPELADGQWKMPLLTPV |
| UniRef90 ${ }^{\text {C }}$－7RK | LYWPKEPAGEGTWQPPA |
| UniRef90－UPIO003000B6F | LYWPKEEALNGTWKDPPMQRV |
| UniReef90－J3E | LYWPKTEAPSGTWRPPAVV |
| UniRet90 A0A023XJ71 | YWP |
| UniRet90－U5RYB3 | MYQPASKVLNGTYEDPGIJSV |
| UniRef90－UPI0004001774 | TYWASDEYLTGNWKKPPIKKV |
| UniRef90－UPI00035C114E | LYGPDTSVLRGAWSPPPVRKV |
| UniRef90－H6F | LYAPHPAALDRTW |
| UniRef90 UPIO002F94E13 | V |
| UniRei90 UPIO002F6BA14 | YGPNKEFLSKSFVMPDVELVV |
| UniRef90－C6E | LYWPKDEALDGTWKHPPMAK |
| UniRef90－UPIO |  |
| UniRef90＿UPIO0036288EC | YSPTKEFVDGKIQLPNFKRV |
| Unil | WPKPDALNGT WKASPPQKV |
| UniRef90－M7AUQ66 | L YAPHAAALDGRWQPPALVKK |
| UniRe990－E4T4V6 | I Y LPP TDDFLEGSWVKPLLKK |
| UniRef90－UPI0002D376F3 | LYUPSQD【LDMTW |
| UniRef90 UPIO0046646A3 |  |
| iRef90 |  |
| UniRef90 B0KFK6 | GPTEAFNNKT |
| UniRef90－HoQXA0 |  |
| UniRet90＿S6BHZ2 | V |
| Ret90－－4C |  |
| UniRef90 UP1000 | YWPKEPAGEGTWQPPPVV |
| ef90＿A7ILS9 | G T WQ |
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UniRef90_C0ZLP1 UniRef90_J3HGN7 UniRef90_UPI0003656034 UniRef90_M5TAI4 UniRef90_I0G334 UniRef90-A5FC47
UniRef90-X0PZ19 UniRef90-X0PZ19 UniRef90-UPI0002557197
UniRef90_Q5E117 UniRef90-U5E7I4 UniRef90_14C9H3 UniRef90_A6ALM3
UniRef90 A0PSQ7 UniRef90-B5IK55 UniRef90- X5L360 UniRef90_UPI00030222E9 UniRef90_R1DRJ9 UniRef90 A1UHU9 UniRef90_A0A023XJJ77 UniRef90-R7Y3N8 UniRef90_G7GYZ8 UniRef90_UPI00037BDBFE UniRef90_J2X466 UniRef90-14F139 UniRef90_UPI00046D7D13 UniRef90-N0CMS0 UniRef90-A6UL46 UniRef90_I7G4J4 UniRef90_UPI0002E1FE5B UniRef90_B5FDE9 UniRef90-L2EPR8 UniRef90_X4ZH33 UniRef90_J3F447 UniRef90_F0SGV6 UniRef90-T5KNL3
UniRef90 J5XIF2 UniRef90-14MYW5 UniRef90 A4XT14 UniRef90_A0A014QVT3 UniRef90_D6KFN7 UniRef90_N1JTY2
UniRef90_UPI00047A96E4 UniRef90_F5JD72 UniRef90 UPI0003B2E8D6 UniRef90-Q132T3 UniRef90_B5FDF0 UniRef90_U1SQA2 UniRef90 C4XLN6 UniRef90_LOJ0D8 UniRef90_S5LLC6 UniRef90_UPI000364204F UniRef90 H0FDU0 UniRef90_J4QKYO UniRef90_E2XRV0 UniRef90 L2EPI6 UniRef90_M2WRM2 UniRef90-I2BMW4 UniRef90_UPI0002E63DEC UniRef90 H0QTS3 UniRef90_UPI0003815A96 UniRef90-N1JQ73 UniRef90 UPI0003775F06 UniRef90-A3Z288 UniRef90_N0B6T6 UniRef90_A8G0G7 UniRef90 A6G185 UniRef90_A0A010SIY3 UniRef90_UPI00035F30C4 UniRef90 S3HAK9 UniRef90_A9HY31 UniRef90-H1Y5A8 UniRef90_T0DID8 UniRef90 A6SVU7 UniRef90_IOG338 UniRef90_H0G7E6 UniRef90_X5KJZ0 UniRef90- Q8TNG2 UniRef90_UPI0004634070
UniRef90_G2JTT7 UniRef90 J2G4I0 UniRef90_W8HAU5 UniRef90_J6I1K1 UniRef90_Q1MK60 UniRef90 I2F5R2 UniRef90_V4JXY0 UniRef90_G7GY52 UniRef90 F7RKB9 UniRef90_U3QME1 UniRef90_A0A022GV80

GLE S A T A K D RLA A GEVVKIAAE EAF STLAANLEMNGGFPTETSQKTLQNESYFQRASMLY

D RLDF A QVRAI AEEGF
A AVTP PE QARAIAAKDAY ESKDEA LRKEGF LDNAVEA Y $R$ VS E Q E LR DIIA IDAY YPASAAAPQMSEQDDLDTAADAY TATPS EARVI AKQAY T P E NVA K GEEY D A Y QL G LS A Y

EAY
PSAPSAQAVSPAEART\|AREAY E QVR A I A K S A Y
TLDPAEAKSI AK EAY
T V V VT T T S W G K P F D P S V QAAMPDLGDTEVKAlAAEKGF T TASA Q S L T P A EARRI A E D A Y SAVTANTIDEELAYNLGDQAF AQARII A AKAY

G G Q P A K G S T P S VR DQQ K Y QRA FEAV MRLVSETPTAASSPAMTAEELRDDAVDAY
$R$ L S K N E E V V V S L L L GQ A Y Y S P E VVA K G L E T D G Y QL A V S A Y

TK $\square$ A S VVGA L A F VA G VS A QE A P G K $\square R E$ Q Y A Y S $L G V Q A Y$ GEAPADPNAAPTPQQDREIAKEAY D WQEEYAYSLGLQAF ATQKNLVD EAREL $\begin{aligned} & \text { L S Q A Y } \\ & A\end{aligned}$ RLLA Y S L G I Q A Y A T AVAVEAY T P DVIK K G LDDVD GY S SA V S A W D DAREAAAYF LGMESY DEAREI AK Q AY


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| :---: | :---: |
|  |  |
| UniRet90-UPIOOO3656034 | VYGLPi VM |
| UniRef90-M5TAI4 | 1 YGYPI VESYRTMHAFADDFKAP |
| UniRef90-10G334 | $V Y G F P L V M M D A T R A V M T A A Y K A P ~$ |
|  | YGPVEYN |
| UniRef90-X0PZ | PMVDSYRVQYSYFVDFKAPWNQIRND |
| UniRet90 B7KQ04 | CSLTTEVTRVQMSNVPAGPMGQFINVKRYP |
| UniRet90-UP10002557197 |  |
| UniRef90_Q5E114 | $\checkmark Y$ YlyPLVTMDATRRQQ |
| UniRef90-14C9H3 | VMY YNG |
| Unil | AMQEGHA |
|  | VMMDVTRLLALL |
|  | 1 YGLPPVMMYAVMVEYAV |
| UniRef90-X | IYGFPMVDSYRIQHAYFVDKANPQYK |
| UniRef90-UP1000302، | VRMERVVRSYSDVS |
| UniRef90-R1DRJ9 | P IVDNYRVQYAYYVEYKGGWN |
| UniRef90-A0A023XJJ7 | WN |
| UniRef90-R7Y3N8 | KFFYPTVS MKEGSERQFGAGYHVLP WEEQUDAATLVT |
|  |  |
| UniRef90 UPI00037BDBFE |  |
|  | VWGMPLVNFDAMRQAYFRDAGAQYND |
| Ref90-14F | RWGMPAVNYQMMYEASARAGGPGDNQI |
|  |  |
| NOC | I YGYPLVSMVGTRDGFGALAAAP |
| UniRefot-A6L | NWGIPVVNFDRMLQAFKEKGGGDFNQ |
| UniRef90-17G4 |  |
| UniRef90-UPIO0022 | VYAYP |
| B5FD |  |
|  |  |
| 3 F | VYGLPPVMNYAVMNEFVGQYKA |
| UniRet90-FOSGV6 | IYGYPIVTNYKRMAAAIDAEAGQYEGDFNTLVHRNFVV |
|  | FYPTVSMVLNFESIIE EL |
|  | YN |
| UniRef90 14MYW5 | YGFPVVEMYKTLYAQAVDYKAPFNKVGNTARVPKDTA |
| ef90-A0A014QVT3 |  |
| UniRef90-D61 | LYGYPLLTAEATKAVMTAVPKAPVN |
| UniRef90 NIJTY2 |  |
| UniRef90-F5JD72 | QFKA |
| RRef90-UPI0003B2 | V |
| UniRet90-Q132T3 |  |
|  | QWALPIVNMKAMQEGHAEMNGTAYNK\ADYDRLKPNSLIT |
| UniF | LYGYPVVEMYKTGYTQAVDFKTP |
| UniRef90-C4XLN6 | YPMVM M A |
| UniRef90 S5LLC6 | RFFYPTVSNVSNFKALND |
| UniRef90-UPIO00364204F | V |
|  |  |
| UniRef90 J4QKY0 | VYAYPMVLME |
| -L2 | WGYPLVRMERVAREYTDVYRAPGNR\GWARELPSALD |
|  |  |

पYGFPVVQMYKT TYTQAVDFKAPFNRDDNGAQVPKDNAVT AFGYPLVIMELTKQYQLGRGETAVNQLNHRTRFPDYRFNV DYGFPMGDGYRIMHAYFVDFKAPWNQLKNDPRVPEDTAVQ TYGFPMVDNYRVQYSYFADKAGPWNQUHNVARVPEDKAIQQ VYGLPMVMYYTSAYELFVDFKAPDGTLTNEARVYKDTAVI
 1 YGAGPLTTSQVRKTSTTTSVP VYGFPLVLNERTRQVFTAVPGAPMNQLSHAVGLPDARTVV
 YGGTLVEMARTMQQFTE KTPDNTFHHDKVLADAKDFV Y Y YPAVLMEATRRAATQVGKAPMNQFGHRTVYPDPTDIA YAYPVVETDFTRQVA QVGAANNTFSHGHQFPDHRWVV LWGSTLVRMENDARDYTDVFRAPLNEFGHSRRLPTDTDMP MNYAVMYEYA DDYKAPFNQIHNEARVYKDTAVI DFGFPYVYLWVTRPKAANELPAPGNHFSHVRTLADYRGGGG
TYGFPMVDNYR TYGFPYVYNALTRYKWTNLPQDPKRPYAPVNHFWHYRDGG C
 NWGYP V RMEQVAREYTNVYRAPLNQUGWATELPAAKDMP VFGYPLVMMDVTRDVLTAAPAPNAGTAAPDNQLAKMPTYV



UniRef90 COZLP1 UniRef90-J3HGN7 UniRef90_UPIOOO3656034 UniRef90-M5TAI4 UniRef90-10G334 UniRef90-A5FC47
UniRef90- $\mathrm{XOPZ19}$ UniRef90-B7KQ04 UniRef90-UPI0002557197 UniRef90_Q5E117 UniRef90-U5E714 UniRef90-14C9H3 UniRef90-A6ALM3 UniRef90-A0PSQ7 UniRef90-B5IK55 UniRef90-X5L360 UniRef90_UPIO0030222E9 UniRef90_R1DRJ9 UniRef90-A1UHU9 UniRef90-A0A023XJJ7 UniRef90-R7Y3N8 UniRef90-G7GYZ8 UniRef90-A0A03810X9 UniRef90_UPI00037BDBFE UniRef90-J2X466 UniRef90_-14F139 UniRef90_UPIO0046D7D13 UniRef90-NOCMS0 UniRef90-M7XVQ5 UniRef90-A6UL46 UniRef90-17G4J4 UniRef90_UPI0002E1FE5B UniRef90-B5FDE9 UniRef90-L2EPR8 UniRef90-X4ZH33 UniRef90-J3F447 UniRef90_FOSGV6 UniRef90-T5KNL3
UniRef90- J5XIF2 UniRef90-J5XIF2
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UniRef90-S5LLC6 UniRef90-S5LLC6
UniRef90-UPI000364204F UniRef90-HOFDU0 UniRef90-J4QKYO
UniRef90 E2XRVO UniRef90-E2XRV0 UniRef90_L2EPI6 UniRef90-M2WRM2 UniRef90-12BMW4 UniRef90-UPI0002E63DEC UniRef90-H0QTS3 UniRef90_UPIO003815A96 UniRef90_N1JQ73 UniRef90_UPI0003775F06 UniRef90_A3Z288 UniRef90-NOB6T6
UniRef90 A8G0G7 UniRef90-A6G185 UniRef90-A0A010SIY3 UniRef90_UPI00035F30C4 UniRef90-S3HAK9 UniRef90_A9HY31 UniRef90-H1Y5A8 UniRef90-TODID8 UniRef90_A6SVU7 UniRef90_IOG338
UniRef90-H0G7E6 UniRef90-X5KJZ0 UniRef90-Q8TNG2 UniRef90_UPIOOO4634070 UniRef90_G2JTT7 UniRef90-J2G4IO UniRef90-W8HAU5 UniRef90-J611K1 UniRef90-Q1MK60 UniRef90-12F5R2
UniRef90_V4JXY0 UniRet90-VGJXY0 UniRef90-F7RKB9 UniRef90-U3QME1 UniRef90_A0A022GV80
130
140
150
160 WS DVVFTVPGSRTVGRTGGPY LVAGPNWKGNVPKGLTLLLRS

 WTDDFASAGSRTTGTRAGDFLIVGPKWSGVAPNGI KQFRS

 PVIDVI PQVSKNGKYLIVPPG WNGKEPNGFVVVRP Y SEAVGNLIEDGQDGGKYLLVNKGWKGEGGIPDGIDVI ES WTDVFANPGARTTGTAAQDYLLVGPGYTGDVPAGLPVIQA YTDNYGY $\square$ GSRTTGNGAGCYLVAGPDWKGETPPGIHVFRS
 WTDVFANPGKRTSGTGP DDLVTAGPGYQGEQPRPTTVVAA
$N T F N Y G Y \square G S R A T G N G A G D Y M V V G P S W E G T T P P G D K V I F R S$ YTYNFAYVGSRTTGNGGGKY LL AGPSWK GDKPAGITVIRS

 YTFNFDYIGSRTTGNDGGSFLVAGPNWKGEKPKGIVKVFS WKGDVGLAGPDAGAGGTYVLLP WTDAYAS RGTRTTGGGAQTFAIVGB
TIADVGPSGLDKGKGGKYILFVPPGH $P L L N V G N K G Q D Q G K G G K Y L M L P P G$

$\qquad$ NQ GT LIP YTFNFAYVGSRATGNDAGSYLLAGPNWKGETPPGDKVIRS WTNNFAYVGRRATGTGEGEWLIVPPGWSGSVPDGVRVI DA FTHNFFYIGTTGNLAGNY LIALEG WNGKVPEGUTVVRS A TYNVGYAGVDQGKGGKYLILPABPDYKEKPPEGFIVVLPS WSDVFAVPGTRTTGARNFLVVAPEWRGGGAPAGLEVI KS GKEQM
TKPGKYVIVKAEDAA
Tl ${ }^{1} \mathrm{~A} D \mathrm{~V}$ GPGGDKGKGGKYLFTPPG TDADVGPSGLDKGKGGKYLFTPPG YKGADPKGYVHVAS
WTDSFATRGTRANGRGPQTFAVVGPSWQGTLDAGVVDVRS NTYNFGYDGSRATGTEPGAYLVVGPDWEGSIPAGI EVFHS LSQNFAYLGTRATGNKAGKYLVAGPDWTGDAPAGITV TRC FVTNMGVVGEDEGKGAKY LFVPPG YDGPDPEGYIVKHP

 WITVVGATGPDGANGGLYLLLPPG YDQQVPGGYFSFRS

 YTF TNFA Y VG S R A T GNEA GN F L L A G P GWK GE T P P G DM V I H S

 Y S Q N I A Y LG T R S T GN N G G H Y MV A G P D WK G Q Q P V D V R V I M S $N T F N F G Y \operatorname{G}, ~ G P R A T G D A P G D Y L V V G P D W K G E T P A G I Q V Q R S$
 WSDDVFAVVPGK R T T G T S A Q K Y V LTPP P G Y S G A V P D G L P V I K A






 Y T H N L D Y I GA R T T GP GP T T F M V A GP NW E G E V P S G I K V V F S NTF N Y G Y I G S R A T G TA A G D Y M V V G P D WK G E T P P H I M V F H S
 Y T E S V E N LIDT E G T Q G GK F L L V N K G $\quad$ WQ G D V WTNATAAPGTRTNDNQATTYAIVGPDYDGPIPDELIPIRA


 WTNVFA SFGKRRTTGTKA QKY LI S GPRRWE G S V P Q G L T Q V K A WH N L I K Y V G T R G T N A Q K Y L I V A P P G L Y K N D K R L L S E F T I I E A $Y$ Q E L E H Y $\quad$ G R R T T G T K A G R Y A $\quad$ V V P P G WQ G T L P NCYMNY GY I G S R A T G S E P G D Y M V V V G P N WQ G E TPP R G I K V F R S


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




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





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A K E A E 290
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GNPKNGWTMHRGLIGHYGTH
A QVEDGDKNDGTK\NGWNDAGAGGDSAFYNGDWLKRAA

LETGPYTAPTVNGWQGA L
I EAKKEDESGVTN
FADLEKTK
EALRDLPQRGLAVIGAGRSVNTGEVTAGDVFGTRGFLDNN AFHGKIPGRHWPDRQYAEAFMGGSPSFETDGRNLDERTDF QYASRD LGTKNNGWAMMYEGGRYGNDF AKIEQTADS
 LKSATK

LGANVDGWDS LTESMGVYGNN SKVDQY LESGQKD\NGWTVGSLFGDRAFYNGDWDKRAA V NAFKKDK V S S LG S TATVRNGWNWATG
RMAYAA $\square G A K R A E N N G W S M A \square S P W V F G S F$
EFDEFKTSEVETGKVGSAQFFGTAEDLKGNYLYRMAGAVF
$E F A E F V K A S V D T G K V T S G D V F G T R A F L K N N Y M Y R M A G A V L$
$\square T S L L A L E P Y Y P D R P W D N T F A G T E F Q S S G T F T N L E Q R T G F$
$\square T S L A L E P Y Y P D R P W D N T F A G T E F Q S S G T F T N L E Q R T G F$
$A F A S D S P D R V W P D R Q W E W T V S G D Q G Y Y E T G Y L R L A A R E R W$ ADAAGRLGTPANGWNTALHG FDHMPADKFYWPDRHYASLLMTDFTFTYDDR DDLDGRAAE
 FKEHK SRAGTGGGARPGSWNTNPHLFDYNLDHFGVGWRDADREAS $\square K$ ANSTDPLGSTK $\square$ G GTRDFLEQSAKKNYGFDN
FRYETTFAPYFKDTHWAVPASPELMEVSDFYESPDSYADD FDRFKQDK
VAAEGDKAAG ${ }^{\text {V }}$ G GKGWVYTTRSGTYGTDYVY
DFNKTGAEYGPKGNPWEIATASTPNQDRNNGMDLDGRAAW FDTEMVKRVYWPDRHYVSLLQSDANRKFTF TYDDRDDL R $\square A D G V G R L S T Q A N N W N T V S G G G T Y G T D$ EKVSKYLSQDMKRINGWTVGSLFGDEAFYNGNWLKRAA EEGDAAIAAAAEKLKVTEVIGS READGGD AFADDAPERVWPDRNWEWVVYSEGDFYEKNF LN LSVRERW FDNFPKEKLFWPDRHYASLLNNTFSFVYSDRGDLINRAAE KKAK $\square \mathrm{DTHQVESG}$ DFFGTRKHLKNN NDSQRLMGERKTYQGWRDGYELGEYGTRY RQLGRPDH LYYPDRQYQNTWAATAEWMQDGYLDVAQRASY MARAES
 AD A V VARMGTPLNGWNTVLHG

DGSYGTD
LDAFKAK
VVDTGDRTSADGFGTREFDKND
A WK $\quad$ VPTLARIVNGWSMNTDTMGVYGNY
KAT $\square D T \square G R V E N G W R V$ ATSAFGDRAMYGAD
A $\square N F D E K S S K T T G D T W F W \square S D P Y Y H N \square K T G Y T N V D A D T H M$
KKDKDDTHQVTSG
ELHGSRDRLKNN
AKVVQAVADLGKEDDGWR\AGAFGDRAFYHGDWL
LD NLKKTK
SFNTDDPAAVWPGKNWEWAVGENNDFYEKTYLNLPVRERW
D $\square E A G W N A A L K D M M A A \square P T L A T P V H G W T M L T E T M G V Y G D S$
T DA QP LA GRR $\square$ A DGVSR LGTP INGWNTVLSGlGTYGTD ADGVSRLGTPDNGWNTVLSG I GTYGTD
KKDK DDTRQVA RSDLYGSRDRLQNN
NDGPFDPVSAVSQ ASQVRQGWNYVRGMDSFGYD
VYFPREPASFTEGSSWKQAFGGSYEF LDHDHARLLDARTQF
KKAKVDTHQV
KKAKVDTHQV
AEELRDKMP
A E LK
KKDKFDT
ETKDGTDQDGW
AVNGWKVSYDLGDYADRY
DVDKY SLDERAGGNRERMQGLY
GVVINGWNIGSFFGDRAFYNGD
EKISTFLASGLTDDNGWQVGSLPGDEAHYNGDWL
EANKESLGGVVNGWVVTKG
SYAGRD
D L A K A DV
KKDKIDTHQVSNG
LGVKNNGWSMMYEG GGTYGTD

KNS $\square S \| L Q R P N N G N W R V N N E R V G \square Y D$
FDHTPDSMRYWPDRHYVSLLQATFSF DYDDY DDLIPRAAE
ADA VARDGKPMNGWNTVLHG IGTYGTD
ADA VARLGKPMNGWNTVLHG
DAAGLSLENVKPLSGSK\|G
VASFASTASKRNGWDWVTG
DYKTDY
RA ASASDSFGFN RKVDEYLAKAGTDVDGWRVASYFGDSAFYNGNWLDRAAGA DD SG QQLGRQVNNWNDP T S GQLF GTHAQLGNN GVG $\square P L L R Q Q F M S G V W A K F V N G W R Y P P S N E G R F G D E$ DGREKDRAATERFAAPVNGWQNSPDNDGHYGND
TTNFKSENGWQHLFDYNADFFEDGTKKSDDWVIEDREEAY QDAPS IVQNGFPG YATFRNGWGSFSPIGTYGNQF
$L A A R R T K$
$V$
STVSTSVRDGWSYVRGLD SERAWDYNLELGTYGTN
IKMAEGVTKLKNVNGWINMV NDGRYGTD RNPGEMVGISKNGWNLTKRIFGSREEMQGKYEVRAAAAYL DDSG LLGKRTNNWS DP TEVDEF L AVTDGMDDAWKAFTQYKEVIDTGKKSSADGFGTRKFLDND LAELARPMPSELGGGWTLPVEDGASFGSR


Unipergocozpl



PATGVVMHPEYAKA TARMAY LAADAY TSAVPANATAANHVDPEQVQGMKNAY EEAREVARQAY A LLRDAV TATPSEARAI AKEAY D DGLRTLAEEAV | $A$ | $A V Q T Y$ |  |
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| $V$ | $A$ | $A Q A Y$ |

PEEGASMSESYARVVAAQAY PANAQSUSPTEAQQDAEDAY RAVAREAY
E E La Y NL GVQAF
EYARTIGRDAY PTNYERAEMTDTSRTELAAQAY

D $V$ QESVVRARAFQAV PSQAQEARLDETKATAEEAY LS KEYVQAVGGMAY PSGDSAVGMSAQELVRTAMDAY KMENEMKI ERIERAF
MADEDLSALAAAAY SNQTDGNAADERGUHRRAVETA

AEAVSSSEDVWTIEEAY
F D QLT QPAAGVNMPESYVKA MEGY
RDAV
EEMKHDRARSLIRQAF MPEGAGMANHDTSLDALARDAV

EKARADEGYWLGMAAF NMYDEALHRRATEVA

T $\square$ D S VEAETLGTWAY 1 Y D A Y EAKAFYLGLDAV $\square A G T \square A T \square A L \square G S V P \square P D V Q R D \square D E R \square A Y H I G V Q A Y$ HVAQAY A QA A S LT DTQ D DEELA A RGY PDTPDTETVWE MVKDAF READA Y S L A A I A Q A Y HEASVQSY Y A QVI E L A A A M A Y A Y
GGQPPEGARPSHTDQVKYQRAFEAV GSASLAAQEASEDAEVKAVVEEAY PEADVKVTQTYVRMMAREAY $L E T V Q N A Y$
$Q R T A L D A Y$ A HGQPAPAAV QASDEAQRMALDAY $R \square A T \square A M A T S M A S A S L A A Q G E G D L A E L E R A E E A Y Y$ DSETDENDWETV V $N M P S A E V T P H P E Y \square K A \square A R T A Y$
 ATDAY

EARA $\square$ AKDAY ASEVPGPASGTAMTTAYVQSVGRMAY A E $\square K D \square E Y$ Q MMVQRATRAA

AASHADDASDREMARDAY PDAAT $\square \mathrm{DGV}$ G A P E ARR $\square$ AK EA Y ERAQENWAYSLGLQAY
 TATPSEARAI AKDAY QMHPAYAQVI ARMAY
 $V$ FAYATVVEHDKVLSA $V A A K L P F N R L Y S E P R L L G P Q D N K V V$

UniRef90_UPI0002557194 UniRef90_K9NJ21 UniRef90_A0P0Y7 UniRef90_UPI000466EC1E UniRef90 W7DA41 UniRef90-G7GY51 UniRef90_H0I2X5 UniRef90 I2F7T9 UniRef90_S4BWP1 UniRef90_Q46UC9 UniRef90_V7EE41 UniRef90 UPI00037F4755 UniRef90-G7CI92 UniRef90-B4X277 UniRef90_G7D6G8 UniRef90_D5EJW9 UniRef90-M4INP2
UniRef90_A3XSU3
UniRef90 H6LJR1 UniRef90_A0A038IE17 UniRef90_C0ZST3 UniRef90 B5GLV6 UniRef90 A0A011P8K6 UniRef90_UPI0003FA2A07 UniRef90_E5U7W4 UniRef90_E4WDY9 UniRef90_U1W7C7 UniRef90_D3EZ43 UniRef90_C3JMD2 UniRef90-R7IAG7 UniRef90_R7IAG7
UniRef90 F7T0J3
UniRef90_E3G7D4
UniRef90-H0F9V2 UniRef90_UPI00030A949F UniRef90_X8IUQ4 UniRef90_B3R8L0 UniRef90_E3HT51 UniRef90_G0Q2C5 UniRef90 UPI00037CF01E UniRef90_A8SLV0 UniRef90_J6LC47 UniRef90_UPI000382C716 UniRef90 UPI00047CD023 UniRef90_UPI0001745308 UniRef90_N6XHC9 UniRef90_UPI0004788395 UniRef90_UPI0003735C15 UniRef90_Q2G5G5 UniRef90_U9VPH2 UniRef90_D4KK55 UniRef90_A8KXS2 UniRef90_UPI0003B7994E UniRef90_UPI000469B545 UniRef90_UPI00037364F1 UniRef90_Q1LDB4 UniRef90_C1B9U6 UniRef90_E3ZY98 UniRef90_E0TES3 UniRef90_UPI00037F689B UniRef90-A0A011P2C5 UniRef90_Q4KB29 UniRef90-T3D9L6 UniRef90_A0A058YPC8

LW G WPMVNMLNRNDTDTKAPVAPRGQLGMLHDYPAETFVT $I$ Y GFPLLFNLEQMKRYVEEGI GANLAAPFNHFSHAKTLA



 $V$ YAFPLYEMSRMRAATTDTAGEAPRPHRWCNVFTHARQVV $V Y T Y P L V A V E V T R R Q S T N V G A A P M N Q L A H L G F L P T A T G V V$ $V$ WA WP MV N Q A NR RAAGDT Q A P K A P Q G H I A M L $V$ Y G Y S LITT T E VT RVQQMSNVP KVP T G Q F V NVVPR YP D Y R GV S

 $V Y C L P L V L V N E T M V A M T N T V A A P \square N Q L I H A K G L A T A A D I V$
 $V W G M P A V N Y R L M Y D A A V G A G M G G E N Q 1 L W W G L M D W R N Q S L$ LYGFPMIVGYAALYKFFIDFKAPDNTLSNEARVPKATAMS I WGWP LV NMHN V Y A Y P M V LME LARRKA TADGKAPMNQFGHKAAFPDPRDTP

 $V$ WGMAAVNYEIMRSKMAPEGKNEF LFWSGLLDWKNQTL TWGLPVVIMHNLRYNDALRPGAKSRPNSDWRSLSEQAGYV DYAFPLVLMDATMTSATNTGKAPVNQFMHGVALANA QNVV LYF YPLLTLDDLTRRQFTHADGAPANTTQHTRTLPRPAATP L WG WP MVNQFNRRAT DTNGGMVPVAPMGQLSMLTD YTEVT L Y F Y P LVVMDLTRRRFDHAKGAPANTEDHGRALPQAAAAP
 RY T LP L YEMARMRAATTFAGDGPDSTLRWDNTVTHHRQVV LY F Y P L VTMDLTTRRQFTHAEGAPANTERHGRALPQPAATP
 I F SFPLVLMD DT KEVVSTNTVKPPVNQFLHAK DLATSRRVV
$\mathrm{M} \mid \mathrm{V}$
D
M
VYGYPVVKNLIVRSEATDPYAPPNAFHHHREGARPAFTDM V Y AFPLVLVNATMEKMTNTTQAPPNQLFHSHNLASAKDVV
 V Y G Y P A V D L M HVVMGRETRRRADGVVQRVVYA PVVNTMFNYRTMLA





I

L Y A F P L V F N L LD Q V A R Y V S E Gll A VYGLP MVDLYKLMA DQADDFKAGANPAAPWNTFS







 I A TLP LFEMARMRASNTAAGDSPASRMRWVNQFPDDKEVV


LY G WP LS E N Y N T $\square Y$ A Y S $\square$ D Y K A P F N Q $\quad$ F N D S K VP A D T A V V LWGWPLVNMANRGNAFSKAPAFNRNAMLTGYVSPDQTF IVA

[^1]UniRef90＿UPIO002257194
UniRet90＿K9N21 UniRef90＿K9NJ21
UniRef90＿AOPOY7 UniRef90－UPIO00466EC1E UniRef90 W7DA41 UniRef90－G7GY51
UniRet90 HOI2X5 UniRef90－HOI2X5 UniRef90＿S4BWP1 UniRef90－Q46UC9 UniRef90＿V7EE41 UniRef90－UPI00037F4755 UniRef90－G7C192 UniRef 90 － － $4 \times 277$ UniRef90－G7D6G8 UniRef90－D5EJW9 UniRef90－M4INP2 UniRef90－A3XSU3 UniRef90＿H6LJR1 UniRef90－AOAOS8IE17 UniRef90－COZST3 UniRef90 B5GLV6 UniRef90－A0A011 P8K6 UniRef90－UPIOOO3FA2A07 UniRef90－E5UTW4 UniRef90－E4WDY9 UniRef90－U1W7C7 UniRef90－D3EZ43 UniRef90－D3HN42 UniRef90－R7IAG7
UniRef90－F7TOJ3
UniRef90－E3G7D4 UniRef90－HoF9V2 UniRef90－UPIOOO30A949F UniRef90＿X8IUQ4 UniRef90＿B3R8L0 UniRef90－E3HT51
UniRef90 GOQ2C5 UniRef90－UPI00037CF01E UniRef90＿A8SLVO UniRef90－J6LC47 UniRef90＿UPIO00382C716 UniRef90＿UPIO0047CD023 UniRef90＿UPIOOO1745308 UniRef90－N6XHC9 UniRef90－UPIOOO4788395 UniRef90＿UPlooo3735C15 UniRef90－Q2G5G55
UniRef90 UniRef90－U9VPH2 UniRef90 A8KXS2 UniRef90－UPI0003B7994E UniRef90－UPIO00469B545 UniRef90－UPI00037364F1 UniRef90－Q1LDB4 UniRef90－C1B9U6 UniRef90－E3ZY98 UniRef90－EOTES3 UniRef90－UPI00037F689B UniRef90－A0A011P2C5 UniRef90－Q4KB29 UniRef90－T3D9L6 UniRef90－A0A058YPC8

TPNVDTPYSYAWVDLL SPNNDTFYSRALLDL

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RAEPWVLTLIPETDKRYYTSQWDDL
RSEPMVLDVPAVQGRYYSFQLVDM
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VGPIVL HVPDVGDRYYVDQFVDA

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RNEPVI I EMPS LICRYFSVQLI DM



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TPNSDTPYSFIVFDL

 EQPVVI QVPDFGDRFWVYA LYDQ ENGPVVVELPPSEGFGTLLDAWQR LS GPMVIDDPRTDNRYYDVQLLDA DTEPVIAQVPDFGDRFWVYALYDH ENGPVVLEIPPADDTGSVMNYWQA RAEPMVLCMPEDKARYYDVQLIDL SPNQDVVYGLSFLNFTKDPAVVVQIPDFGDRFWVYQVVDQ
 TPNVDTLYSQAFEDLS $S^{K}$ S A GP
DA
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G | Q |
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| $M$ |
|  | AgrvV QVP

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TPNTNVIYGFGFMDLS WANPDML RSAAWLDL
CPNODVVYGLGFFEL


[^2]


| P N S D | FWWMD |  |
| :---: | :---: | :---: |
| $P \mathrm{~N}, \mathrm{D}$ | $P$ Y S L A WVDV | S |
| L N T D | LY S Q A F L D | S |
| $P$ N N D | L Y S Q A F CDV | S |
| P N N D T | $Y$ F S A WLD L | S |
| N N D T | $V Y$ S M A Q L D L | S |
| V D T | $\mathrm{L} Y \mathrm{~S} \mathrm{~V} \text { A WL D }$ |  |

L L H V P D S D G R Y Y V L. Q F

 Yvipet dreckvovida $\begin{array}{llllllll}S & H & R & L & Y & T & L & T \\ L & L & D & M \\ F & D & R & F & W & V & Y & A \\ I & Y & D & A\end{array}$
 $\begin{array}{lllllllllll}D & F & K & G & Y & Y & V & L & G & L & D \\ Y & A & D & Y & L & T & F & Q & M & D & A\end{array}$
 S ${ }^{T}$






 $R P N V D T L Y S S A F L D L D$




 $\begin{array}{ll}R & P \\ S & V \\ T & P \\ C & P \\ T & P \\ C & P \\ R & V\end{array}$

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T P N S D T P Y S F $\square$ T A D L
TPNNDTLYTLS Y LAA L
TANDVTAYAWSSM T TPNNDTPYSYAWVDL RTEPWVLTLPAVKERYYTSQWDDG A P N LDDVATSSAVLDL
 TPNNNTPYSWAWVDL $A P N V D A P A S S A V L D L$ $P \square S$ PD T S S S F L WWM D L
 $R P N L D T Y Y S V I V Y A D G E S$



 D GP ML L R L P DMGERYYSI ALLDD





 E S RAEP WVVL H I P P A TEE R Y Y L L M P I L


UniRef90_UPIOOO2557194 UniRef90-K9NJ21
UniRef90 AOPOY7 UniRef90_UPIO00466EC1E UniRef90 W7DA41 UniRef90-G7GY51 UniRef90-H012X5 UniRef90-12F7T9 UniRef90-S4BWP1 UniRef90-Q46UC9 UniRef90_V7EE41 UniRef90-UPI00037F4755 UniRef90-G7C192 UniRef 90 - - $4 \times 277$ UniRef90-G7D6G8 UniRef90-D5EJW9 UniRef90-M4INP2 UniRef90-A3XSU3 UniRef90_H6LJR1 UniRef90-AOAOS8IE17 UniRef90-COZSTT3 UniRet90_B5GLV6 UniRef90_A0A011P8K6 UniRef90-UPIOOO3FA2A07 UniRef90-E5UTW4 UniRef90-E4WDY9 UniRef90-U1W7C7 UniRef90-D3EZ43 UniRef90-C3JMD2
UniRef90 D3HN42 UniRef90-R7IAG7
UniRef90-F7TOJ3
UniRef90-E3G7D4 UniRef90-HoF9V2 UniRef90-UPIO0030A949F UniRef90_X8IUQ4 UniRef90-B3R8L0 UniRef90-E3HT51
UniRef90 GOO2C5 UniRef90-G0Q2C5
UniRef90 UPIOOO37CF01E UniRef90-A8SLV0 UniRef90-J6LC47 UniRef90_UPIo00382C716 UniRef90-UPIO0047CD023 UniRef90-UPI0001745308 UniRef90-N6XHC9 UniRef90-UPIO004788395 UniRef90_UPIO003735C15 UniRef90-Q2G5G5 UniRet90-U9VPH2 UniRef90-D4KK55 UniRef90-A8KXS2 UniRef90-UPI0003B7994E UniRef90_UPIO00469B545 UniRef90-UPI00037364F1 UniRef90-Q1LDB4 UniRef90-C1B9U6 UniRef90-E3ZY98 UniRef90-EOTES3 UniRef90-UPI00037F689B UniRef90-A0A011P2C5 UniRef90-Q4KB29 UniRef90-T3D9L6 UniRef90-AOA058YPC8

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WGHVLDNPGS员EDGNGGGSYLLAGPDWKGQAPAGVRVI|HG
 RTDQVGELGPYGSKPGFYLLV GPNWKGEKPEGVEIIRS WTNNFAYVGKRGTGTKAGDFYLTPPGWSGTVPENMKQIKV YTYDYEMLGSRTTGNGGGKYLLVGPNWQGEKPAGVKVI RA YTHNVDYGGTRVDGNDGGDFLITGPGWKGDVPPGIRVVAM YTHNFAYAGTRTTGCRKLTVMISGPSCFVEEIPNEIEVVFS YTNPFGGUGSRTTGTGAGRYLKHGPRWQGEIPSGMQAVVC YTQNFGYLGTRSTGNNGGHYMI A GPGWKGQQPTDDRVVYS

 $P L D D V G A K G R D R G L G A K Y L L V P P G G Y D G K L L P K A L V Y E Q$
 Y S D S I E DLGVVK NVG D Q G S K VL L V N K G WA GEVVPE GI R IV E S Y T NAVS LLGSGGDTQEQQTYL FTGPNYKGPVPDKMKQVSL
 WTNNFA YVGHRATGTKS GDFL LVPP TWTGTPTAQTT V I R F
 RSNSFATVVGSMMGTKPGFYMFVVGGPDWKGEKPAGUEVVYK WS DVFAS RGTRTNGPGAQSFAIVGPNWQGADPPGMDVIHS WT N NFA Y IGKRAT GTKA GRYVLVVP P GWP GEELPSSDATA V H C WSNTVVA $P L E D V G K F G A D E G R G A R Y L V L P P G$ Y T N SFA YVGGGVST GYKGGTYALVGPNWQGKLPNLITRRKA WT NTVAVL WN DAFATLGKRSTGTARGNTAlVP S TWK G D L P D N NV T R I D V RTNQIGNVGPY GTKPGFYLLV GPDWKGETPKGFNVI HS



 $P L T D Y G N T G E D G G R G A K Y D I V P E H Y Q G Q L P N G G G Y H V I \quad K Q$
 Y $\square E T F A N P G T R E T A G V G G D Y V I X P P G W D G K L P A G T T R I I D A$ YTNAVK $\square$ TG G GS DNPDQTAFLI TGPDYRGEVPDNLT QVAM $N G D T V G Y V G T R T T G R E V G H Y G L V G P G W K G E L P A G V K R I D C$ YAETE H I GRRTTTGTGAGRFLFVMP GWQGALPAGMQLI E N WT DNFAYVGHRAT GTAEGDFLLVPPGWAGDLPAGHTLI R F Y S NVFANVGTRLDGSQPGTYLI TPPGWSGTVPADTTAI AA
 WTNTAAVL DKAGAYA IALD

 WTDNFAY IGHRATGSGPGRFLLVPADWE GTAPE GATVVVRV

 WT NNFAYVGTRATGHKTGTFFLTPPNWTGVVPDGMRQIKV WSNNFA GPGSASTGGKAAKYVIVGPDWEGELPARMEPVYA
 YTDNYAY $D G G R A T G N D A G C Y V V A G P D W K G T A P A T V R T F R S$

 YTDNYGYI GSRSTGSDAGCY LVAGPDWNGTAPASDKTRRS

$\qquad$ GPNWD WTNPWAYAGRRTTGGAAQRLFVHGPGWRGAVPAGMHPIVA RTDSFA QLGSMGTRPGFYLLVGGPDWRGDVPKGDTVFRA
 Y T Y N $N$ S S Y I G T R GN G G G H F L L A GP S WE S G G D R S D F A G I M Y S
 FTNNFACIGNRTTGTRAAEFLLAGPDWAGDAPAGARLVRC $P I V D V G P D G F D K G E G G K Y L M L P P G Y D D Q S L E A A G Y M P F E T$ WTNNFAYVGHRATGTAAADFLLVPPGWNAGEPGDATVIT F $E V V G D G P T G A D H G K G G K V L L L P P G \quad Y T G T V P K G Y I A A K A$ WGYVLDNPGSVLDGNDGVSVLLAGPDWTGDLPAGLRVVKG


 Y S QNFA YL GTRGNNGGHYMDA GPD DWKGQQPDVDRVVYS RTNQF GHVGKP YKTRRGFYLLVGPNWKGNKPAGIITIVRC FTNNFACLGGPRTYGPGAHVFVVAGPAAARVLPEGAALVRA



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 P S RLVV F L L GRTEGEAD QKDAA QVLK GYA L Q P L S TV V G GA A
 P TRRLASVVGRDGEADIPNVSALQDLTTLTVVNA



 P T R WL WWVI GR I L GP G DVVPAVNALQDGFVVRTG GDWQA GKA

 ATNFGWAALRP ILDGGGLAKATALTKK IKIYPLAQADNPPK
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 P T S T G WL WT Q T S GP Q D Y A GVVN QI Q A N MTA Y P Q T G P G V G S A P T S I G WL I GRTVYGPE D I A N I Y K L Q N E ME TK TL L S V WLLT G GE
 P TPWI L I QPRVIVNNADLPAAQKVLNEITVTGMAQYLGQTP P T A M A WA ITTRT S GEA DLPNVVYAI QA QMQLLDPLSVVYLSGEA
 STEMAN VI PR DQMND DRMAI QA P I I K E V M T Y P L R E F GKMK S P T A HVWAKIQAD GAPDYPAVNA LQDGFVLTPLAQWNLPA Q

 P T DAVWI I GR ILLGDADLPGAHALQDGDRLRRPDGTAAASV PTAHIWAKIQTGGPADYPAVVGLQD GFVLTPLAQWNLPQA
 K N N L G WTL

 $P T N M A W I L C R V L G E A D L D N V Y A D Q N K M Q L Q P L Q N Y L S G E V$ P Y N GFWGRTGVNGPEDVPNARAIQDQLLL TPLSRFGKA GA



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 $P$ T A QVVRAQVQTGGSSE YPGVMA VQD GF IL TP LA E WNQQA Q


 KTNTAFVVPRVVFMDDDREAVQPLDAGDDIVPDPEFDGKAK





 RTYKLVFGVRGFLVDGKPDATALMKRARIYPLARAANAPA ES GIL GTLTRTQVEGGMPRVEEI QHEYRLEPLSAYGTSAP








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220
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P DKPPK ITAWPKPTNMSDSVHLFFRYLNFMLAYAAPQDSEKD SMPKHFDPACDPKAPLSAEHFAAQVNRALRENPPPARDAG PPGNADDRPDWPRHDLSPQQYWDLFYSGLSHDQPRPGDEV
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 PNPGADSANAGETRWVVPEEFFNQFGQVLDMVPPDPGEEA LIPVPDGDDRPYDEVSQDLLFLEKKRGWSQAFPPAPRDRE PPAAPASDWPKLTPEMFTTGFAAYLDFLLQFGPPAAVEKP TDWSQLKDDDGETAWVVPEKFFDQLPVVLEEVPALDGEEA PDGSDVPMPMPVNLPMDAASFFTLFFDVLRNNPPHANDTP GLPEPDPAV GEELAFWERLRLYLQAFPPAPRDDA MPDPDKEGLPMLAMK पS SNAYFEMVNRLLSDNPAYSEDGE GGGVPTAGEGLD PEAVAFFERLRVWMAAFPPSAPEQA TARRDLRGQLVDTRDPYDIRYWEALDRTVQAEPWLSRDRA TPLPTYDFIKPVLANPDPLQFWQULSAAINENPPPKDQSA YQPPKGSYREENSYVPDPVTFFNKANTKMEDNPPSAADAE
SQRTKADPVREQVDMPTEAFFVRAAELKRRPPHATDQP YEYSKDPSIAGETKWVVPETFFDQFANVLDKVPPDPGEEA AARTKPDAVREQVDSMPTEAFFTYAAELLRRHPPHATDQP FDVGMHPG EHLGDARRFAEVVNRALGENPPPAGEAR YDASKDGVP LT DAMNLSPTEYFGRFNRLLMDNPAYPEDNE DDAGMHAG ERPGDPDRYAA TVGRMLAENPPPATEAD QRVKSDPS DNDRDPVREQVAYFEYAAELLRKNPPHPTDQP QPSANPPARDWRGEGGDPLDFYRMLADCLSASPPPAADAGG MPDPDKEGVPIAGMKLTPDAYFERVNKLLIDNPAYSEDCK PPAAPALAFPKFEKDLVRSEFFAYLDFALSLDABAPEDRW ATDDSTPTPEPPAEVVDSLAFFAALNRGMTQNPPPARDDG Y TPAKGSYNESNNFIPSPADFFNTANQLMVANPPASADQA PVVPDESTFSVPEDLDEELLFFFKLARALRFTPPKAQDDV RDFPDREDLQR
LARPDPAAPP
PPARPASPPDPQTPELAFLEQLRVWSQQFPPAERDKA TPAA A P TPALAADQRELAHGPPPELVFFHRLASVLQDWVVRPEDRA YAAPQGAYKEENDFVPTPAEFFNTANALMQVNPPADADKE TARAVDPDDDMTTPPLDGEEFFRRAAELMKLHPPHVTDWS EVEPAIPAPVERETFEGPFAHFHQMAVLLAENPPPPQHAA QRPTGLPEVA AEETDAETFWAKFRAWSAAFPPAPRDRE APALDWPEIDDQSAKENPGGYLAFLDQFAPATGPAAVEQP ADWARAPEIPGPTKWVIPEKFFDQFAQVADTVPPAAPGEEA

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QKFVDPDEDRYPTLPCYDERFFDDLADVVEDEPVKPDDKQ PKFPAEASGDEETRWVLPEKFFDELPALKDARPLPGEEA HHDNYDTKYLPRYKNSNYYEFFETLNSGLLLHPYLKTRTN PD
 LSRIDVLLDNRDTGVPDAGEYGRVLGSMLERNPPAAA THDPGGGDNAAETKWVFPETFFDQLPEVMEDAPPLPGEEA PAPAPDGPVELPEPPVDAREFFQRMCDLMEDNPPAPEDAP
TRIVSPNGRAWTGDQPGGLDYWRLLHAFYQSEVVDERDRF QALDITSWPLPDTGDKSKTPEVFGVINFMLQFCPTNPTEVG KEWSKLPHFPTPASWVNPETFFDELPAVMKSVPPLPGEEA PTAAPEDAFVPATTAGDKDNFFQYLDAALQFVPETLRDNA ADGSDGGLLKTVPDEADPARYLDLVNEVLGRNPVPADERD NTYHEASEVPYDSLPYYNHTYFQDLNDYVQNNPIRPQDKD GLPSPDPTV MVFVNGSGKQ DDT TFPDTAQYFHSLNDVVQTEPAETRSRA PAAPQDDWPSWKEGAEQKLEFWDYVAFLLQFVTRNPVDQP PAPVAWDAPEAPAQMRSSLEFYNQLAFLLQFAPREHSEKT DGFGKVTTVKMSRKEYSDLALFERMVDLLNENPPRSEQRA

PAKAAKIDWPKPTTMSDSPQLFGYLNFMLSFTAPQDSEKE DDWASAPADQGPTKWVIPEQFFDQFEQVLDTVPPLPGEEA VNPKGDINPDYDNKVPMDETYLNEVMQLMIDNPGYATDKP AGAPPVDWDP WNEQRASSEGFGAYLNQLLAHQPQPESEAD


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UniRef90 H6LJR1 UniRef90－A0A038IE17
UniRef90＿C0ZST3 UniRef90 B5GLV6 UniRef90－A0A011P8K6 UniRef90＿UPI0003FA2A07 UniRef90－E5U7W4 UniRef90－E4WDY9 UniRef90－U1W7C7 UniRef90－D3EZ43 UniRef90－D3HN42 UniRef90＿R7IAG7
UniRef90－F7T0J3
UniRef90－E3G7D4 UniRef90－H0F9V2 UniRef90－UPIO0030A949F UniRef90＿X8IUQ4 UniRef90＿B3R8L0 UniRef90＿E3HT51 UniRef90－G0Q2C5 UniRef90＿UPI00037CF01E UniRef90＿A8SLV0 UniRef90－J6LC47 UniRef90＿UPI000382C716 UniRef90－UPIO0047CD023 UniRef90＿UPI0001745308 UniRef90－N6XHC9 UniRef90－UPIOOO4788395 UniRef90－UPI0003735C15 UniRef90－Q2G5G5 UniRef90＿U9VPH2 UniRef90 D4KK55 UniRef90－A8KXS2 UniRef90＿UPI0003B7994E UniRef90＿UPI000469B545 UniRef90－UPI00037364F1 UniRef90＿Q1LDB4 UniRef90－C1B9U6 UniRef90－E3ZY98 UniRef90 EOTES3 UniRef90＿UPIO0037F689B UniRef90－A0A011P2C5 UniRef90 Q4KB29 UniRef90＿T3D9L6 UniRef90－A0A058YPC8 UniRef90＿A0A011NX51 UniRef90＿UPIO00374F00D UniRef90－D4M2E1 UniRef90＿W1N502 UniRef90＿A9ISQ2 UniRef90＿UPI00047D1E6B UniRef90－H6RA31 UniRef90－U2T0V7 UniRef90＿Q1CZA0 UniRef90－J3AAC1 UniRef90－F7XB47 UniRef90 V2JELO UniRef90－B9NR80 UniRef90－K8X884 UniRef90 UPIO0047644FD UniRef90＿UPI00046AE2E2 UniRef90－M1HIG9 UniRef90 A4VG29 UniRef90－A0A024FIS0 UniRef90－E5U4V9 UniRef90＿A0A023CGW2 UniRef90 UPI000476909C UniRef90－H1SAY2 UniRef90－A0A024FJ68 UniRef90 A0A038IKK4 UniRef90＿V6SKZ0

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S S QLLVEQQGW
DSGKLFGDRERIGT

TAVESEKEI DKPFFEWKHNGRPA GNGWNRSTNNAQF GLIDY $\square K K T L L S G V A D S E N G W R L T F H S F D Y N A D F F E W I I A D R K V A$
RETSW
DGFVKGDLAT
FRPSEKMGVTKNGWNLTKRDFG
 RKLKPTVKSKITNGWNSLVHAADYNNTYFEKGTIDDRQQA R K ALLSA ALLA ALLDAELAAAPIPS DDGGGWSLP VGELLSTAFGER KKDK】DTHQ V S S A DLFGNRDHLQN N Y LDAVLPRLRHAQSGATSSTGWVQMPVVEGSFGDD $S Q \square E V D L G \quad K W E N N G E E V N G W L L A R T G L G D Y G T D$
FF K WENNGKPAGNGWNRSVNNAEWGVD Y
EANKEN
Y HRS G $\square$ N P WMWE GKKWS S LVPPGSRETEWSYEFPSYYDYY R DEAA RLT DSSK $\square F$ GTPEFMMGRFMV
Q Y A GRS $\quad \square G D V N N G W S M M Y E G G R Y G N D Y$ NMVSNLTSVLATESAK FSVALGSWSYFGEPDAEFGTA FF
 DEGVKKA FAK $\square$ AA TA D G VGTTVNGWQ】GSAA GSREFYKGN MFEFR D A QP LA GR R $\square A D G V S R L A T P \square N G W N T V L T G \square G T Y G T D$ LK S G S DA TVVNGWHQAFHIFDYNDDFFSPEWRIEDRRKA EMK D R L L P KL DE ET S CFMVRNGNFKFY G DPISRFGTQ LEEASHGGGSEPVNGWSTLGHMFDYNADWFEWKIADRERA YEREPSFFESRQWFFPAGRDF $\quad$ SEGQNNFANGEVYPYT

EAAAGATLK $S V N G W Q L E T A S L G V Y G N A$
F F
D A A A GQTLR
K WK N N G V P
$A G N G W N R S K N N A Q F G V D Y$
LA DLLA EPQPSDMGGGW
L LP K L I K A T L K
K A S A L
TAAAG GTVRSGGGWFLPVEIRTSFGAB
 Y H GQEMDPVYYKDKKWGP V VPPSYYTHRFDWDYASH LD Y D $R K$ LIPK LI K KTTNFMVRNGSFKFYGEPDSRFGTQ $R K V E A A V A S F G R D V N G W R V G S P F G D A A F F H G D W L$
$D L I$ A R QAREVR LVNNWEVPTS G WTEMDNELST TLFNDS QDF LVQMNNWRFFGEPVAEFGTE
 ELAAR ERVEPGWDVLRDLGTYGYN LHHALVSGHSPEVNGWKLTFHAFDYNLDFFFKISDPELRD A EGVLVPS GT WL GS F A LA RGFVVRAREAVRLASLRLGGVERNGWTTNYRGPRFGSDL KKNKLVTQEV
AADGAK
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EY L R R NRGQRFP

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 ANA】KSMGK IDENGWSVSTG\｜QG NRDGYAGN FFE WRRNGLSAGNGWNRSTNNAQT GLDY LKSGA GAAVVNGWQLMYHAFDYNDDGFEVGTWRDDDRSKA SQVENGWHLVFHAFDYNASFFEVGTDNDSKWIIADRKKAD DFSFKLLGGR TVGWSPDPTMVSLGEYDTN
 HK I GQTAESDGKDVNGWHIGAAAGSRDFYN GNWADRAA KADSEVVKPLLQPRNYGQQLPP H HWSTDSNGAAFGTDY NE G GLAA GESHNFWR AARKG G NYGED
$R D S L P A T G S L A N G$ WQANADGIGAYGNA AK $\square$ GHTAESVGTVVNGWNDGAAAGDRAFYNGNWALRAA AS RTS GS REPGAWLMDPH LFDYNLDHFGVGTMDDRTAS
 TELRDVAQPSELGGGWTTAVAVRTSF GAD K A E K D L D D P L L Q F R NWG $Y$ LGPE T RAVVNGWVIDST D DGRYGTNY TFAKRFDQPYWPDRRWEQA VLDSAQRGDGYDELLERAS W AFEEG $\square$ AD A WKEFEDLDKEVATGEADSNDFFGARESNNNN P F L R WSNNGRAAGNGWNSPVNNAQWGTDY
 LPALRKELAR TPGF GNGSESGPWQS GPDHLGNF GK D FVEP GDENGELKNQWLVWDFAEGQPEAGFPYTDTEVLVDD



L F A D R R T FKND
V S A A V Q $\square \mathrm{P}$ K $\square \mathrm{N}$ G WG $I \mathrm{~V}$ K $\square \mathrm{KA}$ G M D L K R A L A D S Q DL M T WK V KY R G T P Y P T R WN NL L E GSYG F H
 $\square D K H R V A D A G R T V T$ KK D Q ID THQV $S \square G D L Y G G N R D R K N N Y$ DVIGPFFEWRRNGLPAGNGWNRSTNNAQTGLDY
 $K K V P S D V Q G L F S K M T A N P P S E N L Q N G W N V I T S G L G E Y G T E$ EQGARHAAAPATP

| $L V$ | $S$ | $L$ |
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UniRet90 GOO2C5 UniRef90-G0Q2C5
UniRef90 UPIOOO37CF01E UniRef90-A8SLVO UniRef90-J6LC47 UniRef90_UPIO00382C716 UniRef90_UPIO0047CD023 UniRef90-UPI0001745308 UniRef90-N6XHC9 UniRef90-UPIO004788395 UniRet90_UPIOOO3735C15 UniRef90-Q2G5G5 UniRef90_UgVPH2 UniRef90-D4KK55 UniRef90-A8KXS2 UniRef90_UPI0003B7994E UniRef90_UPIO00469B545 UniRef90-UPI00037364F1 UniRef90-Q1LDB4 UniRef90-C1B9U6 UniRef90-E3ZY98 UniRef90-EOTES3 UniRef90 UPIOOO37F689B UniRef90-A0A011P2C5 UniRef90-Q4KB29 UniRef90-T3D9L6 UniRef90-A0A058YPC8 UniRef90-A0A011 NX51 UniRef90 UPIOOOO374FOOD UniRef90-D4M2E1 UniRef90-W1N502 UniRef90-A9ISQ2 UniRef90-UPIOOO47D1E6B UniRef90_H6RA31 UniRef90-U2T0V7 UniRef90-Q1CZA0 UniRef90-J3AAC1 UniRef90-F7XB47 UniRef90_V2JELO UniRef90-B9NR80 Uniinefoc K8x874 UniRef90-UPI00047644FD UniRef90-UPIo0046AE2E2 UniRef90-M1 HIG9 UniRef90-A4VG29 UniRef90-A0A024FISO UniRef90-E5U4V9 UniRef90-AоA023CGW2 UniRef90-UPIO00476909C UniRef90-H1SAY2 UniRef90-A0A024FJ68 UniRef90-A0A038IKK4 UniRef90-V6SKZO

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A WRYUYA FGNVREQ NADVALYPMALHDAQGQMLSGQHAY FNRATGVTQAMAATTVGQGSDYALAYLDADKKPLDGSKTY IVERATAAMGGRDNPTETQYFYTDFDKTGAPLNGAHSY YLYRMAGAVVGUGDPGYEAAYVATWTDADEKTLNGANDY YMDRAAAALGGUGGNGVEALLYVIVGGADKGGAPLDSKKKY Y ORAVAAF GLYGNDLEEAYYPTSYVDADNEAYDGSKDY YLQRAVAAFETLWLNNGYEAVYPSCWVDSEGDPLDGKNDY LYRYAGANLHLFGNSGDETA YLRYSVDSEGKPANGAHSY HPARALVALKYIGMLESREATYPLAWHDASGRKLDGSGRY YATRAVVAHGGLGANLPSDAVYPTVRVDDTGAQLNAANDY TMRTGTARSNMFDNRPNETQ YFYTDNDGNDQQLTGDNDY YMKRAVVAAFGWPANQERDAVYPNTEKDSAGQKLTGANKY ARGALYYAIITSVKNYGTATFYLDLAETQEGEWLDGSKNY RAAAAQGGUYGSVQEALYVIYAFDAQKAPLDGKTRY ASTNMRAAGLNVP YEFRALDAINGILNNPATVALYPKAYKDSNGETLNGNNAY FNRTGTAKSNMFDNRPNETQ YFYTDFDSTGAVLDGGKRY DERAAAAKGGLWGNHPYEAA Y M M YVDDQGTQLNGNRTY WALLAAAAAKLGITGNSEAEAVYPFTRSDANGQGLDGTKNY FQRTATAKGNMFSNDPFETAMYFGADFDMNKGRLTGGNKY YTRRAADAYAGLGAPTPEDVLYPVTVADNKGRALNSNEDY GVRAAAAM GGLWGNHGYEAAYSQIYTDATGAQLTGEHTY YGYRCLVA IAGFGANPVDVAVY苗KAEEDNKGEKLDAKNRY HVLRAVAARVGLWGNHAYEAFYAQVFDDADGERLDGGRRY DRAVVYHMAFIGLKRLGVGQFYLVNIRDRAGNLFHSDRTY YYLRAI IARVGLTANIPREA IYFMTKRDSKAHSLVSNKKY YAYRALVA DAGLGANTVEDALYPKTEKDADGNPLTGEKSY YLRRALATQAQPGSGLPEDLTALLLAADSQGRPLDGAHRY FNRTGTAKSNMFDNKP DETQYFYTDNDAANSQLSGEHDY YLRRALTAQAQPGAGLPEDLSVLLLAADSQGALLDGAHRY YLQRALVARNYDGALGVQEAMYVIADRCGDGAPLDGRHAY YEYRCLVADAGFGANPVETAVYLKAEEDDSGEKLNAKNKY YALRAEVARNYПGALGIEEAMYLMADCDADGLPLDGTHQY Y LRRALTAQAQPGAGLPEDLSVLLLAADSQGAPLDGAHGY YFSRLEDAQVGLLANSAKEAYY GADLDGDGDPLSGEHRY RRGAFSYATFSSVKNYGPGNFFLDTSMDSDGQWLEGEHNY YEYRCLVADAGFGANPVDTAVYLKAEEDADGEKLDAKNKY MRAAAAQAGILGNDGVEAMYPMAKVDADGQPLDCSKSY F DQRARVAKYGYAGNVPQETVYANT LVDGGVPLDGTGSY YDYRALIALNGLLANPVSVAIYPNASTDSAGGTFDGTNNY LFRAAWAKWFTGGNAPEEAI YMDGRNDDTGQPFDGKKRY YLRRAGVVRTGTGANRAEENLYPANLFSADGKLLHGGQRY VERAAAAI GGLIWGNHPYEAA YDMTYLDDRGEQLNGQHAY YLLRSGVGVVGLGANVPQESDYYWSGPDVDGEPLTGGHTY YLYRMAGA LLGWGNSTEEAMYPSYYNDSDGNELNGDVCY YTYRAMVALVGLGANTVDVAlYPKTAVDETGAALTGEKKY YMKRAAVAMI GLGANPAEEAVYPLLLTDADGDPLDGSVDY YAARAA SLVGLLGNDPEEALYFYTFFDSENAPLDGSESY ARRRAGAALGGLWGNQSFEAAYVATYVDAAGEPLSGEHDY WGLRAAVAVAGLLANDTAEAVYPITNIDDDHNRLDGSKSY FDRTGTAKSNMFDNRPHETQ YFYTDFDAAGAALNGASNY LGLRAAAAMAGLWGNHGYEAAYAPIYHDSDGNELSGEHTY VERAVAAM GGLWGNHAYEAAYDMVWNDSDGAPLDGSNSY IGRAAQFMWCIYVPNVNTDA OYDMAMADDDGDPLSGDTSY FRRTAVAKLGIYGNSEAEAVYPFTRHDANGIVADGSHTY保 YLQRSIVWHKGALANQPEESLYPSTEQDSTGQFLDGNFDY YLRRAVTAQARLGAGLPEDVTAMLLDADAAGRPLEGGQRY AAKLGYGNSEAEAVYPFTRNDIINGIIVLDGAHSY Y WWRAVAARVGLWGNHGYEAVYAHTFTDSDNARLTGAHSY YDRTGTARSNMFDNRPNETQYFYTDYDASGEQLVGSNSY FLTRARVARNWIGTLGDDEAMYDMAEVDAQGEPLTGARRY LLRASTADRGLGANLAAEDVMYPTGDLSADGKRLNGANGY FYEAVSFSEAMKSRTPGVGQAY DGAYTDGAGDWLDGGADY LNRTATAKSNMYDNRSK RRAGAAKAGLYGNDA YTYRAHMSLGGADERAEAMYPFRDATGELDGSHKY RAGGSYFWITYLPKNLGGGTFYLTGLRDSAGEMYDHNATY DERAAAAKGGLWGNHPYEAA YIMTYLDDQGRQLTGSNTY SYGADGMSPAMVAKVVGQGSQYLWATRAADGSYLDGGKNY YLNRALGVYAGI FGDVAEQAMYFSLIADDQGKPLDGSASY YLARALGAQVDLGGSSREEALDAPAIDQDSAGQPLDGARAY
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390
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 TVTFPKIPPASALLWSSLAAYDGQGHLPMANPLDRYALGOR T RLDF GNLPDVGAFWSLTMYDKGDCMLVPNDIARYSLGSRD LLHFMSNPPVHGFWSVTAYGDDD FLISNPLDRYAISNRS ELVFPAQPQVGAFWSLTMYRKSDCMLAENPLQRYSLGDRS TLHFGQLDPAAALWSLAAYDAQGMPFANPLSRYALGDRD KLTVPANVPVKQFWAVTAYDMETAFLIVEMPRQGLGGTTT LLHFKADPPVHGFWSVTAYGDDD FLI SNPDERYAITSNRS TLTFPKGPPVEAFWSVTMYDGKTQLLVENPIGRYLINSPM RMQFGQLPPVQAFWSLTMYAWPQARLVDNPINRYA GDRT
 RMRFAPPVEADAFW
TLRFEQGPPVDAFW
TLHFETLPPTLEFWSVTAYGEDDQLV VLHFERDPPVSAFWSITMYDERGFQVANRLNRFALGDRD RMHFPEDDPEDTFWSVTMYDGETFLLVDNPDDRYSVGSRH TITFKPGPPASAFWSVTMYDGKTQHLVPNPDDRYLINAPM EVVFQEPPVNGFWSLTLYNDKHLLFHPNNLKRYSLGTKNT TLTAAPTPPVDAFWS TMYDRPEFFLAGNPLDRYSGGDRT TLTLNPPPPVGAFWSVMYNVPEYYMVDNP NRYS GDRT KLDIPATMPVRQFWATVYYDRATFAFVYADPPRTTLSSYD QMTFGQLPPVNAFWSITMYDGRTQLLIANPTKRYLINSPM SVTFPKGPPVKGFWSLTLYN QQHFFAENPLGRYSLGTNK ELKFNKNPPVSQFWSTMMYFKNAFLVDNE DRRYSIGDRT VLRFDQLPPAGALWSLSAYDAQGY PVGNGFNRYALGDRD TLRFPEPPPVGAFWSLTMYDAPDYYLVDNPLARHSIGSPM ILHFESYPQVLEFWSVTAYGDDDFLLDNPINRYC|NDRS VLRFPPQPRVGAFWSTTLYRRSDCLLAANPIGRHSIGDRT TVTFPKTPPVDGFWSTLYDAQ HFFVPNALNRFSLGTNK RFAPGQTPPVDAFWSLTAYGPEGHLVANPAGDYSGGHQV TITLDEMPPAQAFWSTTMYDAKTQLLIINNPTKRYLVNSAM AVTFGQLIPPVKGFWSLTLYN DVHLFHPNALKRNSLGTNK RLHTPPAMPVDAFWSLSMYEDGRRFFTENPIGRYTIGDRT KLNVPADTPARDFWSVIVYSMETKSFTRNDPVGLSSRDAD TLRLDPTPPVDAFWSLTMYSVPDFFLVSNPINRYSIGDRT RLRIPANVPVKNFWSLVVYDAQSRSMLRNEQRFPSVSQYT TVTFPQQPPTKYFWSMTMYSLPSRFLVTNSVDRYSIGNRT TLRFAPKPPVNAYWSVTLYQLPGQALVANAAKRYTINTGS
 STTFDQLPKSDYFWSFTMYDLPNRFLVENSINRYSGGSQT TLRFAPRPPVNAFWSVTLYRLPGQSVVANPLQRYVIDSTM EIVFGQEPPVDGFWSLTLYN DKHLFHPNDLKRYSLGTNK RLHVPADMPVDAFWSLSMYEFERRFFTANPIGRYAGGDRT VLHFDHMPPVNGFWSLTMYDKKG FLVDNAI DRYNLGGMK ELRFGRQPPVRFFWSISVYADPARGLAENPIDRYAI GSRT TVTFDQMPPVKGFWSLTMY SKEHFFVPNQLNRYSLGTNK

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## 420

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$G V Q K N A D G S Y D V Y F A P E A P G G K E G N W L Q T D P G K S W F T I K R ~$ DLKRNADGSTI HTGPTPGKDQESNWL
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NFKLDADGLTLVAHEPPKAEQSNWL NFKLDADGGLTLLVAHEPPKAEQSNWL PLRRDPDGGLTLHIQHARPDDEQANWLPAPAGDPFYALLR R DLKRNDDGSVDVYVRHEPPGDREANWLPTPETGDFNLMLR NPKFDADGSLTLYFQNEPGADKEANWLPAPKGD FVLMLR EVTKNADGSVDIYFGPNPKEGKEGNWLKTVEGRRFF SR GLKKSNKGEIVLYLQREPGAEDESNWLPA PSEDFYVVMR ELKYAEDGTLPLCUYVKPSDPTCNWLPA PQDDFYLHMR GFTLNQDGSLDLVQSKAPDSQRSNWL NLVRGPDGSLTHVGPTPGKDKEANWLP PVVHDADGALT TISHEEPKDAKANWL DMKKNPAAPVDLYGIGPDAPAGPETHWL DMKKNPDGSLTLFI QDSPGTDKESNWLPA GTASFEVMFR

DF VYDDNGSLTLTLSATEPADPRANWL
RLRLNDDNSLDLILQTEEPNENRENWLP VGERGFHLYLR RLVRAADGSLTLVLQHEQPDERRANWLPTPAGGFRPLMR
GVKVNDDGSI QMKLNADGSLTVYTQNTPGKDKEANWLPSGKGQPFYLILR GLKRNDDGSVNVTLSKDAPADTTNWL PLQYNADGSLDLVISHAAPPGAQANWL DLKYNSDGSLLTLYISKTPGGDKVNNWL
 SFKLLNEDNSLYLILQTEEPNENKENWL PLRYNADGSLDLRLSHAPPPEEQSNWL
NFKLNEDNSLDVVLQTEEPDKNDENWL
TMKTGADGSLTVYGQKPGPDRESNWL


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NLQFNDDGSLDLYi QPEAPGGEDANWLPSPEGRPFRVTFR PLVFEDDGALVITISAAEPSDRRANWLPA PAERFRPVLR ELTKNADGSLTLYIQKDAPPAKKANWLPA PDGPFYVAMR TVKRNADGSLTMYAGAKPGAERESNWLPA PNGAFSLYMR R EIKYADDGSLTINMSHEEPLNEKANWLPAPTGK FRPILR GLVADENGTVTVHFATKQPEGPEANWLP VPDGPFEVTLR TMSRNPDGTVTLYVGPTAPPGGESNWUPTAGGKPLPALR ALKKNADGSITVYVQDSPGKDKEANWLPAPAG PMF VMR ALKSNADGSLTLYVQSDPGADKESNWLPAPQGADFSLYYVR PVRYNPDGSLELYLQRDPPPDDQANWLPTGEGAPGVILR GLKKNADGSLTVYI QDSPGKDKEANWLPA PNGPMFIVMR
 DLQMNDDGSLTI HVGATKPEDPESNWLPAPEENFSLYMR PLQYDADGGLSISIQADDPGAAKNWLPAPAGEGFYLTLR
 EKKTGEDGSLTFYGQPRKEDGEKKNWLPAPPAAPFYAVMR NLKYNPDGSLTHYAGATPGKDKESNWLPAPSGGFSLYIR GMKTEPDGSVY WL QDNPGAGKEANWLPAPAGGPGYMR TMQVNDDGSYDI YFGPEAPERKESNWIPTT EPYFLDR PIVRDEEGSLT TDSHTKPDAAVANWLPSPAAD FRPVLR GPAKNADGSVDI FFWPERTAGQGEELGTNGGGEG PLREDPNGTLTVVLDPGGERSANWLPAPDGPLW VVLR SLKRDRDGGVTLTM QPTPGKGQEANWLPTPPGPPFRVAMR PLTYNPDGSLTLYUQHQPPTGLESNWLPSPDKGLFRLNYR KLKKHKDGSMT YFQDSPGKDREGNWLPDPEGPFYTVLR ALKRDRDGGLTLRDQHQAPKGQANWLPAPAGPFMLALR NKLDADGGLT ALQHEPPKNEQPNWLPAPPGPFYAVLR NLKRNADGSLTVYASAKPGGKEPNWLPAPGGSFSLYMR R




| UniRef90_UPI0002557194 | $\text { N Y GP D Q S V }{ }^{450} \mathrm{DH}_{\mathrm{D}} \text { S Y KA P S }!\mathrm{V}^{460}$ |
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| UniRef90-A0A011P | Y WPKDDAPSGT WKPPAI VP V |
| UniRef90_UPI0003FA2A07 | A Y GPKKPIIFEGTWT P P Q I K K V |
| UniRef90-E5U7W4 | LYYWPQDVALD G L WAPPPV |
| UniRef90-E4WDY9 |  |
| UniRef90-U1W7C7 | 1 Y RPGNSVLNGTWKAPKITKI |
| UniRef90-D3EZ43 | LY QPRPEVLE GRYELPPVVRV |
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| UniRef90-X8IUQ4 | 1 Y RPDNSVL NGTWEAPKI TK ${ }^{\text {P }}$ |
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| UniRef90-E3HT51 | $V Y$ APEPALLDGLLWTPPALLR |
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| UniRef90_UPI00037CF01E | FYGNEKEVFTKEWQLNDVE |
| UniRef90_A8SLV0 | TY RPDGSVLDGTWEAPTI TK |
| UniRef90-J6LC47 | LYWPKPSILEGTWQPPGI R K |
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| UniRef90-UPI00047CD023 | 1 Y LPQDSVFDGTWQP |
| UniRef90-UPI0001745308 | LYGPDDSLQTGVWAPPPVTPV |
| UniRef90-N6XHC9 | LYQPRQEALT GAYVLPPLWPV |
| UniRef90-UPI0004788395 | MYEPESSVLDRTYEF |
| UniRef90-UPI0003735C15 |  |
| UniRef90-Q2G5G5 | LYRPQGSALE QVWVP P A I R R V |
| UniRef90-U9VPH2 | LYLPQQEAI NGTWQNPPLKQV |
| UniRef90-D4KK55 | $1 \mathrm{Y} V \mathrm{PDMTALD}$ S WQPPVIRE |

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UniRef90_E5U4V9 Une UniRet90_UPI000476909C UniRef90-H1SAY2 UniRef90_A0A024FJ68 UniRef90 A0A038IKK4 UniRef90_V6SKZO


TYGPDKAlLDGTWKPPVVVRV YYWPKPALLDGGWQTPSLQRV LYYPKEKATSGHWRP
I Y LPDEKTRNKTLQ YYGPDDSVLNGAYKLPEI
YY WPKPGLLDGSWQTPQVQR AYWGKQGILDDGWRPPAIRKV YYHPRRDLIEHRFVMSDTERV MYYPKENVIDRSYKMPGVKKV FYGPQPALRDGAWVMPALVP CYWPDERVLNDS WNPPAVMKV
UniRef90 S6AJJ1
UniRef90_UPI0002E6F929
UniRef90_S9T348
UniRef90 UPI00037B67AA
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UniRef90_Q161X5
UniRef90_UPI0002D60D2E
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UniRef90_A0A024LT84
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UniRef90 B7WWV3
UniRef90_A0A052J5K2
UniRef90_H1RY93

Q Q $V Q \square \mathrm{P}$ T T A A Q

VPGPPS $V P$ GP | Q S | $V$ | $G R M A Y$ |
| :--- | :--- | :--- |
| L | M A Q A F |  |

E A DRQTIIQAY
E DPRTIVSDAY TE A YVK E I GK M S Y


E QMAELASEAY EKDRAALLRTTAFEAT GERPAQKVLYRARQLDAYS IGVQA Y RKLLA A Q A Y
$R$ VT E P Y V R MMAREA Y Y T L A A VRA T
PATG $\triangle$ VMS P DYARTVA QMAY PTSAYSTSREGPSDSALDEEAY P P A A P T T RLT DAAA I AKDAY

IT E GYA K A I A N Y A Y
RAARD
VQS R $\square$ GN L $\quad$ R F T N GYPAPDT LVK LIF DERDF QRACQA Y E L A R S DA F D GV

| $D$ | $P$ |
| :--- | :--- |
| $A$ | $D R Q T V$ | TTSFNNLAPASSDVV,MHPEYAKSDARMAF Y MLLA VRA T

E WARALPSPDARVKVTEAYAAHVARDAY AADGF
TAQAADTEQDLIR EAF LSIE E Q A Y
AADATPEMLAAEAH K A $\square E T$ WT Y T L A V Q A A

EA QAFY Y LA LDAV
GALGFAPGF AARSALAAGDPDAARDAY Y A R A $\square A Q M A Y$ P NPAAANELRLPQAEAQVRSAY


AET TEQDFESMDYVLALRAT PANAS KNLTDAEKADLLERAY Y A K T $\perp$ A Q M A Y Y T R T FGQTAY LELAIDAY EGDAKAARDAY D DHRF GLAAEAY RATAAEGW KEAF
$R L T E E Y V R M L G R L A Y$ ERTAVDVATTDGY A A D AY P A P DS A VK $\square$ TE A Y A R MVAR D A Y

M T P E Y VA T I A R F A Y ALAEEAV
$K$ QAEKA F
E ER $\square$ K QAEKAF
R A D L L R T T A F D A T K RMT E E T F A R Q L A A R D V Y YEIGLEAY
LE P D A VT A L A A D A Y
D Sy
AVDAY
MRAEVAD S Y
A Q T P A A TEEQALDSLIREAM
I AFDAY

## UniRef90 T2H7M8 UniRef90-FOSSW1 UniRef90-H1RX17 UniRef90-UPI00037D1293

 UniRef90_M7Y5N8 UniRef90-X5M949UniRef90-B2T962 UniRef90-S3HCE9 UniRef90-M1I2Z8 UniRef90-E1T994
UniRef90-M1H738 UniRef90-M1H738
UniRef90- UPI000371148F UniRef90-S2ESP5 UniRef90_UPI00036A1EEA UniRef90-UPI000369A172 UniRef90-KOCHE3 UniRef90_UPI00046D0ACB UniRef90-J2PEE8 UniRef90 W2UED5 UniRef90-J3BLW1 UniRef90_UPI00035D4E95 UniRef90-A0A022L9H3 UniRef90-Q5Z0Q6 UniRef90-D1AQ35 UniRef90_UPIO0047C22E4 UniRef90-J3B5U6 UniRef90_I8TAM2 UniRef90-U2RVA3 UniRef90-Q1NAB5 UniRef90_S6AFE6
UniRef90_W9BUX3 UniRef90-J2X8C9 UniRef90-W9BUY4 UniRef90_T0IPP5 UniRef90-D0J7R5 UniRef90-K0EWP7 UniRef90-B5EVK4
UniRef90 F6IL97 UniRef90-F6IL97 UniRef90-J3A3R4
UniRef90-E9UQZ7 UniRef90_UPIOOO3646BA8 UniRef90-M5SCK1 UniRef90-S6AJJ1 UniRef90_UPIO002E6F929 UniRef90_S9T348 UniRef90_UPIO0037B67AA UniRef90-M2WCGO UniRef90-S6AN29 UniRef90-S4BWN7
UniRef90 E4NDF5 UniRef90_A0A011Q7U9 UniRef90_UPI0003B78747 UniRef90_Q161X5 UniRef90_UPI0002D60D2E UniRef90-R0E4R2 UniRef90-A0A014P696 UniRef90_S9RRH0 UniRef90_W8AQG9 UniRef90_UPIO00371BE22 UniRef90-F6IL78 UniRef90-D5EZ12 UniRef90_UPI00041D31E2 UniRef90-A0A024LT84 UniRef90-Q2FPM8 UniRef90-H1KSM2 UniRef90-Q9A5D2 UniRef90-Q0RPN8 UniRef90_UPIO0037BF965 UniRef90-F9ZAG4 UniRef90_Q467H6 UniRef90-A0A059MH46 UniRef90_UPIO0036C5F08 UniRef90-BOUFM4 UniRef90-D5WEK1 UniRef90_A9BSL3 UniRef90-R2QAW6 UniRef90-C9QE30 UniRef90_WOABG9
UniRef90_UPIO004679F0B UniRef90_C3X7D5 UniRef90-A716A1 UniRef90-M9TW39 UniRef90-G3A3RO UniRef90_W6X4U8 UniRef9O-Q2KUA9 UniRef90-A4JK46 UniRef90-B7WWV3 UniRef90_A0A052J5K2 UniRef90_H1RY93

FWGWTMAN $\square$ YNRRQKFKDGG\|VPDAP VWGWP LVNQHNRRAKDTQAPVAPAGRLAMLHDYPEQRFVA TWAYPLYEMRRMRAATTEAGLAAPEGMRWCNDFA MARQVV
$V Y G F P Y M Y N A Q L R R N P A T V P Y A P V N H F W H A E R L A T Y R D G G$ VYGFPYMYNAQDRRNPATVPYAPVNHFWHAERLATYRDGG DYAYP VVVMKKSQDVMFTVPFREPNHFDHFKRDPQNRAVV LWGWPLI N ERHRRATFNGGVLPVAPT GYDTMLPEERFVV
 FWAWPMVNNYNRRMAFKQAPRAPGNNRLAMLHNDPEQRWVAA
 FWAWPMVNMYNRRLAYAKAPGGGTLANAPHNRDPDQRSIAA IVTFA LHDLARTRWRFTQTHGRPANQLHHNRDLDRARQVT
 FWA WPMVNMFNRRDAFSKDPQRGAAPMAPDNSLPDERLVA I YAFAPMESYQTWRGQAVDPNSPSGGFGKFRHYPDNKDIV LWGWPLVNSVNRSIAFSKAPQPGFNGNAMLTGYPDQTIIA DYAYPLVAMGRLRAASLGAGTDASPSPAWQHRDPARREVTV $V F G Y P L V L M D A T R R V A R A S T P D N Q F R H A A G L P T P R R R G P V$ FWGWPMVNMHNRY IISGQGGTVPTAPDNYGSMFHDYRVVA MTTLDPGEMARMRASNTARKHAAANQFTHTRRGPQDKEVV FWA WPMAN IGFNRRQAFKDLPGAG VVPVAP INRLPAQRLVA
 $V Y G M S A Y L Q Y E Q L Y R Q A I D R G T G F N R F A H D R N L P D Y A T F K$ VYGWPAVENYRVCSRLLD PAFRHHAPLNSFRHETGFV IWGYPGI RSAQLRQNMTTYAGAP RNRLGHARAGPETRQGV FWGWPMANDFNRRQAFKDVPVAPINRLAMLSDYPAERGVA
 VWGWPMVNMDNRRAADTQAPAAPRGQUAMLNDYPSETFVT



 LWGYPMVNMMNRQSALTQDPAAPMNRVGMLNDYPGQRSVA TWGWPAVSLHNRRLAMRQVPKPPVAPIVRLSMLTDYRYVL
 DYAFPLVAMMRRLRAMDTDAKPGRLQLGQWSHGPEDRWVTT VY GYAPVALARTRANMTCLL P P NQLYNQSQMP HYSYP LYKLSDYRWTAANDPGARTATEVVNRFA VYGSPLVAGLVVRHGLGSIGPTPWNTFGHAAEDGHATHFV TFAAPLVAMYNLRSTVAVGPKAKAAPNTIDWRKAAASSHV 11 YGYPLVLSDVTRQAFLARAETPAANTLYHRRTRPEDRTVV
I WGYPVVFFEDLMRGAEEKTGNPGSQVNELARVPEYTQI A



 TWGWPMI NMDNRRAAMTQAPKAPRGRLAMLSDYVDPTFVA VWGYPLVRAAQLRVKATQPATAPLNRLGRARALADPRIGV






 1 F GYP LVL M D VT R E Q S $\quad$ G

 I HT C P L Y E MARRMARA A T S A A GEEAAAPA P LAR WC N Q F V H A R Q V V

 $V$ WG WP $I V V$ N A F H R RA SFA S A P A A P V G H V A M L S R Y P S Q R WV A
 $T Y G G P L I A A T N T T F E T M T N V S N G P Y G P V N Q F N M V R T S T A V V$ $V$ V G S P L V R Q L S A V Q A C L H E G S G MLLA P AP F N D FA H A D GPA









## UniRef90_T2H7M8 UniRef90-FOSSW1 UniRet90 H1RX17 UniRef90_UPI00037D1293 UniRef90 M7Y5N8 UniRef90-X5M949 UniRef90-B2T962 UniRef90-S3HCE9 UniRef90-M112Z8 UniRef90 E1T994 UniRef90-M1 H738 UniRef90_UPI000371148F UniRef90-S2ESP5 UniRef90-UPIOOO36A1EEA UniRef90_UPI000369A172 UniRef90-KOCHE3 <br> UniRef90-UPIO0046DOACB UniRef90 J2PEE8 UniRef90-W2UED5 UniRef90-J3BLW1 UniRef90-UPLOOO35D4E95 UniRef90-A0А022L9H3 UniRef90_Q5Z0Q6

 UniRef90-D1AQ35 UniRef90-UP100047C22E4 UniRef90-J3B5U6 UniRef90_-18TAM2 UniRef90-U2RVA3 UniRef90-Q1NAB5 UniRef90-S6AFE6 UniRef90_W9BUX3UniRef90 J2X8C9 UniRef90-W9BUY4 UniRef90-TolPP5 UniRef90-F7X067 UniRef90-DOJTR5 UniRef90-KOEWP7 UniRef90-B5EVK4 UniRef90-F6IL97 UniRef90_J3A3R4 UniRef90-E9UQZ7
UniRef90
UP10003
UniRef90-UPIOOO3646BA8 UniRef90-M5SCK1 UniRef90-S6AJJ1 UniRef90_UPIOOO2E6F929 UniRef90-s9T348

RSDSFAELGKMGSKPGFYLLV RTDQFSRI GPYGSKPGFYLVV GPNWKGEAPEGITVVRS YTNPFAHVGPRGTGTQARSFLVTPPGWSGALPAGFDHMQA TSDNFDYVGQRTTGPAAGHFALV WTNTFKSGGSRTTGQDAQKYFLV
RNNSGGLGQGTKPGIVMVV RNNSFGGLGQYGTKPGDYMVVVGPNWKGTVPKGITVFHS FTYNFGYVGVRSTGFDAGNYMDAGPAWKGEKPDGUKVFQA
 NTYNYGY GSRTTGDKPGDYMISFGKIPDKLPHGVKVYKS YSNTFADLGTRQNGSQPGTYLITPPGWTGTAPAGTTVVAA RTESTNGLGVMGTKPGFYLVV GPNWQGTVPKGDTVIRT FTNNFACLGLRNGPGAHVFVDAGPAAPAGLPNGAVLARA YTNNFAYLGTRGGEGGEFLLLPPDDEAAPDTSGGLDPAVRF RTDSFAQLGKMGTQPGFYLLV GPNWQGEVPKGDTVFRA FTQNFGY GVRSTGSGAGSYLTAGPKWDGATPKGITVGRS YSDVFGYVSPHLHDGKADTYLLLGPKWDGADPEGQFVLRS RTDEFSEI G RQYGTKPGFYLMVGPDWKGETPAGDTVVRS VGNNFAMLGRRLNGTRSSRHVLVGPDWPGPMPKAARVIRA WTNNFAYVGHRATGTRAGTFLLVPPSWDGETGDAVLVIRF
 WTNPWAYAGRRTTGGDAQRLFVHGPGWRGQAPAGTHVISA RSDSFAELGKMNTQPGFYLLV GPDWNGKVPPG隹RVRS YTHNVLNRGTRTHGNAARRYLFAGPGWSGETPAGVEVLVF FGNPSNLSNTIGFEGGRFLLVPRG YTETVANISKRSVGNRAGDYALVGPGWKGELPKGVTAVPV DTSTDLALSQSTHGPQLPPVFGLGPGQDYPVPPGMIGVRA
RSDSFAELGKMYDQPGFYLLA GPDWKGEVPAGGKVFRA Y GNPGNLGTRTVGSAGGRFLLTPPGWQGDVPEGLTRVEM DSETRQSYGQSSHGGRLPPIFIVGPDYRGEIPKGVKVVRS FSGTFKYVGSRNTGTAAQKHLVVGPDWTGSIPDGVQVVRS WT NTVHNPSSVRPQAKPHTYAVVGPGWSGPLPDDVTPLPM
 A 㕷 GA A
FGNASNDSHRTVGHARQTWLVSPT WTNPWAYARTVGHARQDRVEDPDAVRLRV WTNPWAYAGRRTTGGDAQRLFVHGPAWTGDAPADMHCLSA
RTDQVGHLGPYNSPAFYLL YTEVFAAPSSRITKAGFYMVVGGDWQGEKPANVVVLRA DSSTLTSFGQSSHGSKDPPIFIVGPDYRGHVPKGAQIVRS ATNNFELGGRANGTRSGTFVIVGPDSTQPLPPNAQVIRA YSNVFANVGTMETGSAAGSLVVVPPGWSGEAPKGAEVIMA YSNTFFYAGTRATGTAAQALWLVGPDWRGDAPAGTRLVRA WTNNFAYLGQRTNNGGKFMLLTSSQQFEGEYTD YRBVDS WTNNFAYVGRRSSGTAEQSWLVAPPGWRGTAPEGVPVISS YTNAFAYPGASGYKGGKFAVV GPGWKGELPADVKRIDS WTDVAGAPSRRLNGPGPQDVLILGPDQPRPDDTSMAVMTV
$N G D T F D Y V G T V T T G T D A G A Y A L V G P N W T G T L P D G L P R I D S ~$ RTDTLGGAGMYGTKPGFYMVV GPNWKGKTPKGIQVYRS FTNNNVVLGTTTDGGGTFTLVGPGHASTGPNP RTDQFGQLGPYNTKPGFYLLV
WTDVFESLGNRTTGTRAANYA T GPRWSGLKPDGVRVI R C WSNTVADPSSTDPQPPPFTYVITGPEWSGPLPGNVTRLSV
 WSNCTAAPVATDDEGEYGYYCFTGPKYMGPDPRGALVVRS RTDQFGHIVPYGTKPGFYLLVFGGKRWNGDVPANMTHI AS RTDQFGELGPYGSKPGFYLLA GPNWKGDKPDGVEVLRA YTNDVVGSGSKTDNPEDEVIC TGGDYEGDVPDGMKHIVI FTNNVLSTRTVGGEGGTFTLVGPGQASSGPNPDTRIAT DTTYVGFVGARTTGQDAGNYLIAGPGWAGDVPDGVAVLRA WTN TTKLITDGGTYVFAKKGQ TVTVPSGATLVEM RTDGFTR GKMGTEPGFYMLV GPEWKGDLPKGVKVFRS YTDVFANVGTRATGSAAGAHVVVPPGWDGPLPAGAAVTAS
 VA WSTGPAGTGTAKGRAQTVAFVAPGWNGELPKGAKRVEV FTNPFAHLGQRITGTAARSFLVTPPGWQGALPPPFDHIAA WTENFSYUGKRSVAGRGGKYLLVPPDHQATIPDTAEIIHC
FGNPSNLSNTVGKEGGRFLLVPRG WQGTAAEGVTVYHA RSEEFSNLGQYGTAPGNYLIVGGPNWDGDVPAGITVLRC FGNDFDYFSSGKDGSRGGRLLIVAPGWKGDKPEG\|RVVES YTTNIQNFGSANTPPGDYVIAGPG QYNLSTPAGTHRVDV WGNAFAYMGPRATGTGEGDWLVVPPGWAGTVPDGLSVIDA WTDRFDTLGSRTTGARAQQVAUTPPGWTGALPAGVRAIAA WTNVLQQGGSRVSGDKAQTVAFAKPDWKGDLPKGVKRIDA WGDAFAVLGKRSTGTGRGNYAVVPPGWTAPLPPAMQRVEA VLWSSSSVAVHGARGRSQTIAFVAKDWQGTLPKGAVRVDV WSNAFAYVGSRATGTGEGDWLVVPPGWAGTVPDGVAVVDA DLNTFSYVGRRDGGTKARKVALVGPRWSGKIPVVDQLVRA

## UniRef90 T2H7M8 UniRef90-FOSSW1 UniRef90-H1RX17 UniRef90-UPI00037D1293 UniRef90 M7Y5N8 UniRef90-X5M949 UniRef90-B2T962 UniRef90-S3HCE9 UniRef90-M112Z8 UniRef90 E1T994 UniRef90-M1 H738 UniRef90_UPI000371148F UniRef90-S2ESP5 UniRef90-UPIOOO36A1EEA UniRef90_UPI000369A172 UniRef90-KOCHE3 UniRef90-UP100046DOACB UniRef90 J2PEE8 UniRef90_W2UED5 UniRef90-J3BLW1 <br> UniRef90-UPLOOO35D4E95 UniRef90-A0A022L9H3

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UniRef90_F7X067 UniRef90-DoJ7R5 UniRef90-KOEWP7 UniRef90-B5EVK4 UniRef90-F6IL97 UniRef90-J3A3R4
UniRef90 EgUQZ7 UniRef90-E9UQZ7
UniRef90-UPI0003646BA8 UniRef90-M5SCK1 UniRef90-S6AJJ1 UniRef90_UPIOOO2E6F929 UniRef90-s9T348 UniRef90-UPIO0037B67AA UniRef90 M2WCGO UniRef90-S6AN29 UniRef90-S4BWN7
UniRef90_E4NDF5 UniRef90-A0A011Q7U9 UniRef90-UPIO003B78747 UniRef90-Q161X5 UniRef90-UP10002D60D2E UniRef90-ROE4R2 UniRef90-A0A014P696 UniRef90-S9RRHO UniRef90-W8AQG9
UniRef90-UPIO00371BE22 UniRef90-F61L78 UniRef90-D5EZ12 UniRef90-UP100041D31E2 UniRef90-A0A024LT84 UniRef90-Q2FPM8 UniRef90-H1KSM2 UniRef90-Q9A5D2 UniRef90-QORPN8 UniRef90-UPI00037BF965 UniRef90-F9ZAG4 UniRef90-Q467H6 UniRef90-A0A059MH46 UniRef90-UPIIOOO36C5F08 UniRef90-BOUFM4 UniRef90-D5WEK1
 STEFGMVVPRVFQDDDRQAMQPFIDQVLMYPLSEYGTMKT


 $P T D L I G M G P R I F M D D T D E D R K A: Q N Q V M L Y P L S R Y W S K V P ~$
 PSWDVWALGRTLGDGDLAAARAVQAGYTVTDLGESGTVPP QSNAAFVGPRVFQDDDRQAVQEVDQGПNVYPVAEYDGTMK PCNDVWLLARVLGPSDLPQVHALQEQMRL
PRVAVGRVDGADDLPAVHALQDALMLTPLLRQTLVPPQ PTPRVWALLARILGPDDLPAACAVQDGLFVHDGAAPEDVAP


 PTPMVWLLGRIQGPEDVPAVRAIQERMRLVPLADWPAGRD

 PTRASVVGRVDGEEDLPAVHALQDALTLTPLRRSLTPPD ATHTGFILLRTFFEDRQDLEKRVQRQFTLEPLSAYVSGKD KQRYFMMAGRILVRDDLAEAWQLQDRIRLRGWADYQAGRP RTNTGFVIPRVFQDDDRSADQA SLSGVDMYPLSQYGKVKH TSRHVWLLMRVFAQTRRELEQAYRFQDAVKLRPRGDLAST AQRYLMVAGRVLGPQDLSNVMRLQDARRLRQWSGGGRLTE
$P T S L A N A I P R V F T P E D R K A V Q E V I U Q V V A Y P L K K F G E M K T$ $P T N D V Y$ NLRI DGPDDQVAANATQDGFLLKQSGAGVSRRP PTSTVWLLGRINGEADLLPAVHATQQQLTLTPLSGDAGPQP STDLAVVIPRVFMDDDREALQPVVNQLGAYPLSEFGVMKV SSVRVWLLMRVFAQSELKLARDFQDRVGDGSAPPTGQDPA GSQLIWVLMRI QVLGDEAEVHRLQDAVMLRCAGDARRD
 PTNLAWLVPRIGMDDDREABQPLVNQMNAYPLSAFGKAKP TQRYLMVAGRVLGPQDLQKVHRLQDQDRLRQWLGPNRLVQ PANDVLVLARILGEADMPAVTALQDQFKVEGUGTGKTPPR PTWDSWV GRTLVEDDLPAAQAAQKQYSMRVLGPAPATAP
$P$ PNDVYNLRVGQA DLAAAHGVQDGFR VLEAQAAAPAPT PTTVFSVVGRIDGEKDIPNVTNIQSKDKLTELGTQLTGDP Pavilgrcagodolprvrelogalitipvoga PTRWIELQPRVMNEADLAAAKKVMQGITLQTLSQYSGGPA PTHTAWLTGRIAPGEDLAPDHALQDAVRLTGEAP
PYDNA WGRIGVKGPGDVARANEVQDGMWLTPLSAYPSDSE PTNDAY IIPRAF LDDDRQADQPVISQVMAYPLSEYGKVKT

 PTPTAWLIGRTNGEDDLPAVHTLQQQLRLVPLSAWIDAGTR PTALANAVPRIFMDDDRTALOPVINGVNGPLREFGTVKT PTDHVWMLLRTVGKEDLSNVHALQDEMRTYMLNDFLTTGA PTALANALPRIFTPEDKKATQSAIDQVVFYPLKDFGEMKK STALAAA PRVFMPEDRAATQPVINQINIYPLTEFGQMKT PTNLIWILGRTYCPEDYTAVHELQDRYRLIPASATGKYT PHAWLLI RTLTDGGEDLVAAHKAQDGFSLKG
PTRLLTVIGRFGLDDPADAVHRLQDELRLRSLDPDARRAE DTYLVGCLGRTLADADVEKLRAI QEQYALRPLSSFTETRA PTTMGWCI VRELGEGDYENVKKVQDAMKAYPLSAYGNKGT
$P T N G V I P R V F M P D R K K I Q P L I S Q I M A Y P L S Q D W S K T$ PTNDGVI PRVFMPDDRKKIQPLISQDMAYPLSQFDWSKT
$P$ TWDAWMI GRTLVEADLEAARAVQRQYSLTVLTAPVADAP PTATAWLI GRTNGPDDLDAVHALQDRIVLAPASAWTAGRV KTGTAFVLPRVFMPEDRRAVQSA1JSG1DAYPGAQFGTMKR
 PTPWL WVIGRILVDGD BPAVHALQDGFAVRPLADWQAGTP PTKLISUVGRACEPEEIETVRKLQKKLKVTSLTNDSDQFC
ATPQLWLLMRVEAQSEKEVARAFQDAVR\DPPADDAAETK PTELLGMGPRVFDDDTEADRAA LSHVVLYPRSTYTGEPK PSAFVFVMFRLQTGDMTGAEKKI MNQYKIEPLSQYAHTTP DYNRIWIMGSTQLDGDIANVTRUQDGYTLTPLSGYGNFRQ PTSVVSVVGRCDGPEDLPRVRALQQELTLTHLGDRAHRTG PTSLVWVVARVQGPHDEAAARRLQDRFRLTPLEDFNQPPA PTRNI WLDVRINGGRDLTAVRKLQRGDRVVPLSVYTGDPR PTSQVWVQGLLQAGADSAA LQEGFILTPLQDWNRSQA PSANAWLEVRTSGGRDLTNVRKLQRADRVVPLSVHAGSAP PTSVASLVGR AGBDDLPRVRALQQELTLTHLGDRAHRTG PTRDVYLNLRVLGEDDLKSAHAVQDGFRMEPVLRTGADRP UniRef90 H1RY93

UniRef90 T2H7M8 UniRef90-FOSSW1
UniRef90-H1RX17 UniRef90_UPI00037D1293 UniRet90-M7Y5N8 UniRef90-X5M949
UniRef90-
B2T962 UniRef90 S3HCE9 UniRef90-M112Z8
 UniRef90-UPlooo371148F UniRef90-S2ESP5 UniRef90-UPIO0036A1EEA UniRef90_UPI000369A172 UniRef90-KоСНЕЗ UniRef90_UP100046D0ACB UniRef90-J2PEE8 UniRef90-W2UED5 UniRef90-J3BLW1 UniRef90-UPI00035D4E95 UniRef90-А0АО22L9H3 UniRef90- Q5Z0Q6 UniRef90-D1AQ35 UniRet90-UPIOO047C22E4 UniRef90-J3B5U6 UniRef90-18TAM2 UniRef90_U2RVA3 UniRef90-Q1NAB5 UniRet90-S6AFE6 UniRef90-W9BUX3 UniRef90- J2X8C9
UniRet90 W9BUY4 UniRef90-ToIPP5 UniRef90-F7X067 UniRet90_DOJTR5 UniRef90_KOEWP7 UniRef90-B5EVK4
UniRet90 F6IL97 UniRef90-F6IL.L97 UniRef90-J3A3R4
UniRef90 EgUQZ7 UniRef90-UPIOOO3646BA8 UniRef90_M5SCK1 UniRef90-S6AJJ1 UniRef90_UPIOOO2E6F929 UniRef90-S9T348 UniRef90-UPIo0037B67AA UniRef90-M2WCG0 UniRef90-S6AN29 UniRef90-S4BWN7 UniRef90-E4NDF5 UniRef90-A0A011Q7U9 UniRef90_UP10003B78747 UniRef90-Q161×5 UniRef90-UPI0002D60D2E UniRef90-ROE4R2 UniRef90-A0A014P696 UniRef90 S9RRHO UniRef90_W8AQG9 UniRef90-UPIO00371BE22 UniRef90-F61L78 UniRef90-D5EZ12 UniRef90-UPI00041D31E2 UniRef90-A0A024LT84 UniRef90-Q2FPM8 UniRef90-H1KSM2 UniRef90-Q9A5D2 UniRef90-Q0RPN8 UniRef90-UPI00037BF965 UniRef90-F9ZAG4 UniRef90-Q467H6 UniRef90-A0A059MH46 UniRef90-UPIIOOO36C5F08 UniRef90-BOUFM4 UniRef90-D5WEK1 UniRef90-UPIO004773CCB UniRef90-A9BSL3 UniRef90-R2QAW6 UniRef90-C9QE30 UniRef90-W0ABG9 UniRef90_UPIO004679F0B UniRef90_C3X7D5 UniRef90-A716A1 UniRef90_M9TW39 UniRef90-G3A330 UniRef90_W6X4U8 UniRef90-O2KUA9 UniRef90-A4JK46
UniRet90
G2NB36 UniRef90-B7WWV3 UniRef90-A0А052J5K2

PKFPAQAAGDEETRWVFPEKFFDELUATLIADAKP|L|PGEEA KDWSQLSS LDDLETKWVVPEQFFDELKGLLEDVPPLPGEEA AVAPAPHAFAPDCDPATAAHFAAQVNAALRENPPPAAQRE HVPESRDVLKPVTAKEDPDGPWKTLNAMLAENPPPAHHEV KSAPKLNWIPLNPEEFGDARFTKYTNFYLSSEPFHPQDTA PFADYVPAYEATKVRMPANAYFNGFLDVWADNASPADDAD TFPAPTDQGAGETKWVDPETFFDELPDVLREVAPPLPGEEA PSPAPAUDFERVTADDAKSDFGRCLDIAMNYVPVTKMNED ■KSPTGDDSSGETKWVLPEKFFDELPLVLKDSPPLPGEEA APDKRKPFVMVGNDDHKN FFEKLDVAMEYDPVDKYSDY TLPAVDCANPPDPQTPDDAAFFDELAAVLAADPPPAADAP PVFPKRDDARGETRWVRPDVFFDQLPAVLDDAPAVAGEAA TSAVPPARLQTTPDETRPAAYLAGVNEALARNGVPAHEQE GVPAVDGG QGEALDFFEKLRVWSQAFPPALRDRP GDPVQRSA DWPEYLATANRLLRREPPPVTDGL VDWSTVKKVPASTQWVVPEKFIDELPLVLADAPPLPGEEA SPAPTITFPQYDRAKAGTRDF TY YNFFLQFEPPFKDEVA VPSTRRDVRDPFSDANDPLADFRTMNAAMNENPPPPRDAA HFPAPKSTGKGETKWVNPETFFDELPEVMKQVPPMPGEEA WDAAPPLG
PDAVPAGLARPDPVVPESALFLEKLRVWSQQFPPAPRDRP PGPGRTDTGDGDVPPMDPAEFFERLCALMAVNPPAPADGP RSWADLPDLSAPAKWVDPAKFADELPVILQDVPPLAGEEN LLARLDVLLDNRETGVPDADEYLRVLDVMLARNPSPTALDH
 EETANVSGYASPPPPASALGYLRVLDYVLRTNGWQPGEAA WKAPELPADDRRRAVPADEEFFRLLNRAMADAGPRPGEEA PDTVQEPDERRDPPSDDPAAFDTMLGTVLKDWRPAGPDRP AAPGHVPPAPGD SAAD
APTSQRPLAGDRKDVPEGLKL
DEWAKVPDIPGPTKWVVPDKLLVDLLGTVLEDWRVSKEDTD PSDKPIPG DLENYFSDVNQAIAFNPAPDRDKE APQADSTPPAEQVTAMDARTFFDRLCAVLATTPPAPDDAP TNWKSLPNDPSEKKWVNPNTFFNQLGKVLEEVPPAPGEEA PEAGAAG
TQVLPAADRPWSGTPPRGLA GVLVDPDEVMTDWRAWQLDGLLQNETLGERDHF पARDDTLIDDPGTGTPTAAEYDRVLQSMLARNPSPR VDWSNAPSFGGETKWVKPQKYFDQLEIVLATVAPQPGEEA VNWRELPKFPAPAQWVKDENFWADLAAVLAENKPRPGEVG APDASQRLLASEADVPKGLALLADLGTVLEDWRVSKEDAG WQAAPPVEQ PRVAPGPEQEEETRWVLPQARFDMANLMLARNPAPRYEDA PALPPTDNPAPQAVGAAGPAFYDELSAVLAANPAPEADAP R P VVEGTTS QPLRDDAERYLQVVNQMLADDPPPADQAP

LD
AATGLPEPDPGVPGDLLFLERLRLWAAAFPPAAADVE PKPVAYPGVATSHMQDDPLQFWSTFSAAMNENPPPASQEA RPAPADSGPPEYVNALSADAFFTRMAEVMSASDPADDD
 SGPAGGPVAAYAARDAKPEDYFATARALLASDPAPATDLR DDWA MVEDIPGPTKWVVPQKFFDQLPDVLNTVEPDPGEEA TPSESLPRPQGDPPAMDAKTFFNRLCAVLAVNPPAPADDP AEWAKLPTLEGPTKWVVPERFIDQFGEVLDTVGPLPGEEA APVAQRVLPGGLVADPEPFDFLSDLGAVLQDWLPMPQDAK EYTGKGTNPDYDFKAPVDYKFFARANELMLTNPPAKEDAE KKWAAAKEDPVPTKWVVPEKFFDQFGDV AKVDPAPGEEA VEWAKDPSLPGPTRWVVPEQFFDQDGTVLGTVTPLPGEEA YVPEKGTNPAEYVFNMSAEEFFTTANALLMIKNPPSPDDTE APGRVDPSTDTKTNRMDAATYFNLLASLMKDNPPALADGV GPPEHSKSV
 SGQNIEFFTVLDFLLGFFPVLPGSKN YDAAKDVNPVMKCMSMPLEEYFAKANSLMEKNSPLSFDTE
 VPAAAGTPPPKVVAGMNSRTFFDRMCTVLAANPPAAADDV HDWRQLPKLGSPTKWVLPEKFFDELPLVLRDAPPAPGEEA PAVPPASGVAGPSRTPDASAFFGRLADALPDNPPTPADPH SQARAFDPDCDPQAPPNAEHYAAQVNAALRDNPPPAGHAA WQ MEFTSGSGKEFNTDHANDE EPMDAPP乌PG THFPAGESTSGETRWAGAAAFLGALDYRRNNGCAGEEA PPSPQPLNFPYNSAKAKTPEFFTYLNFMLQFCTIDKEENG SNLTDPNATPIIYQAPGGLAFYDMLGQQMALIPPPAADQP LPATEPG VMPGELRFFEELRVWMADFPPASADRA REAREMDKPDAHVTALDANAYFTRFAALLKDNPPHPADST TMPADASVSGTPAEQVDAKGFFDRLARLLPDNPPSPADPH $M Q V R S D P G L D T V T P V A Q Q \| A F F T Y G A E L L R K H P P R V G D Q A$ SEAASGGTPAEQVAALDPKAFFTRFAQALQDNPPPADDAH VPAPD QlKPQA SDVPGAGSFYERMRVWMADFPPAAADLA MQVKSDPGLDGATPVARQVAFFAYGAELLRKNPAHDTDQP UniRef90_H1RY93

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UniRef90-B2T962 UniRef90-S3HCE9 UniRef90-M1I2Z8
UniRef90-E1T994 UniRef90-M1H738
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UniRef9- J2X8C9 UniRef90-J2X8C9
UniRef90 W9BUY4 UniRef90-TOIPP5 UniRef90-F7X067 UniRef90-DOJ7R5 UniRef90-KOEWP7 UniRef90-B5EVK4
UniRef90 F6IL97 UniRef90-F6IL97 UniRef90-J3A3R4
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RYA QLS N L
250
260

<br>280

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

LVVERFA AVGLGGSGCT
$L L K Q F A Q I G V G P G L D \square E A Q P A V K R S L V R A A A V G L P M D K Q Q$ ALKKFEKI GIVSGGSFDSASYSPDVLNADNEGIKEAQMED
 LMAKFAKLCIAPGAPWDASKVDPTTLAA DDKGVGDAKAEM




 $A L E S Y A P L G L V S P Y T D A E Q P E V R Q A L A A G Y A D G K D A D E S A$ $I L E Q V R A M G I G P D Q M F D A D A F D Q E Q A E A D E R G V E E A R N W L$
$R Y A Q V A V A E A A$
$V$ LRESFERI GDEPGKPWNPGRFD LMREFGRVGLGPGATVALDDLTRRGLQRALADGNGLLQKLL LYNWDGSVLEAAAK DPQDKQTLKDTAVAAASEM

 LYATMKSVGEVVG $\square K N N P K L K E A F T Q G A V E A$

## $R Y A Q M T A L A A D A K A D P Q L R A A M$

LMQRYAAI GIAPGADFDASALSAS QRAAMQAGDDASRA
ALATYAGLGLTGDVPVDAPAEVQAALETGYAVGKEALEAS
$L V S Q F R S L G M G D K A F D P D A L T P A A A Q A A I E S G Y T E A L G M$ L WAMFR R GVGPGLPFDPDSATREALQKAVADGWQLVQDR



 AMKRFA TLGUTPGGGMVTGDSAAELTAADATAK MYA QFKEL LVQAKENKGLQEILNN




LTESFRRVVLEQAGN NPAVQRGLDRALADGSRLLDAG
 R Y A Q V L A i M M A AK D L L A E L A E L G V T P G A T P S A D P Q D DVE A L A S G VV L G S E R L D D L



 LYA WF QSSILDAAAKDPA DA DTLTAQAA LDDADKEMMTPMMHQY L $L Y G Q F R L L L D S A A K$ DPELKKVVVATAVEAEHTDIBP $M V A S L R N L G D P G A P F D A K A V D S T S L V V M D A G V N A A R E T L$






 LRERLAALGVGGSGTADPAAPAPEVRAAMEEGDSEGRERL 1 D L YE Q I R AV L G K A A DENTTLKNVLQQASIEA $L$ LD E L A GL GVGP GA RPSA GPADVAALA T GVI R GERRDR DL


 RVA RFA AVVGLGAGLGAPDAQQQAALQRALDDSVLPRRDAA


 ELARFAGVGI GPGMEPSHNTSLSRDTLRGLNDAVAAGPAB






UniRef90 T2H7M8 UniRef90-FOSSW1
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UniRef90-M1H738
UniRef90 UPIO00371148F
UniRef90 S2ESP5
UniRef90-UPIOOO36A1EEA UniRef90-UPI000369A172
UniRef90- ${ }^{-}$으를
UniRef90_UPIO0046DOACB UniRef90-J2PEE8
UniRef90-W2UED5
UniRef90-J3BLW1
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UniRef90- Q5Z0Q6
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UniRef90-UPI00041D31E2 UniRef90-A0A024LT84 UniRef90-Q2FPM8 UniRet90-H1KSM2 UniRef90-Q9A5D2 UniRef90-Q0RPN8 UniRef90-UPI00037BF965 UniRef90-F9ZAG4 UniRef90-Q467H6 UniRef90 A0A059MH46 UniRef90_UPIOOO36C5F08 UniRef90-B0UFM4 UniRef90-D5WEK1 UniRef90-UPI0004773CCB UniRef90-A9BSL3 UniRef90-R2QAW6 UniRef90-C9QE30 UniRef90-W0ABG9 UniRef90_UPI0004679F0B UniRef90-C3X7D5 UniRef90 A716A1 UniRef90-M9TW39 UniRef90-G3A330 UniRef90_W6X4U8 UniRef90-Q2KUA9 UniRef90-A4JK46
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T पs
GD WA HVVHGWRYPPPQMGRFGD D
KNKAENDAERVNGWNMLNAFG
TREFYKED VKA DADRNLVGPLFEFRNNGDPVGNGWTTAPNGGR FGFDY GKVAKTTLSS
TVDNAAVDSTPT DNNWS $\square G C G$
KTEHELI DP LLQFRNWGRPAGNH
KVIDQWL LNRPKVNNWSTMSA
AEDVLTPSGTWLGS
YGNVDPYAGD
KADRELIDPLLQFRNWGDEDP HHWST DTNGAHFGTDY PADRHELEHPPKGSRRNGPRGS WLSGMDHDGNFGTD LRTSGTLTDHWAVNLHVFDYNLDFFELGPEWKLNDPRTRY VQПQRARRSATDG WTYPSMRNGDYGQN
 AEAGGDTK

VVNNWFFGDKNWGRMAESGDF IDPFLLIWRNNGRPAGNGWNSPVNGAEWGTDY QWTQS DPTLLAGLKTAAFSAGRTVNGWRYGQANLGQFGTD VDP

DKELVTPLFQFSNYGIKLKNNWTTTNNGADFGTDY TDLREVAQPSELGGGWTTAVTVRTNF DEAKKADREVIDPLLQFRNFGLQLPDHWSTVSNGAAFGTD RVHARVAHLDDPTNGWVYPLDLDERGPRSLVAGSDDAF LTRAKAQLGEPTGTGWMKV NKAVYGFN SATART KVVNGWGVPQPDQPVGAFGY EQRSREDDPLDFRNYGLPLLPNVNGWTVNYRGAEFGSDLL LLNARSQLGQPTGTGWTVVS IREK TAVETEDKVIQPFFQWKHNGRPAGNGWNRSTNNAQFGVDY QFDQVLNRPLKGSPNWDNYAPPGSKMGSPERKDFKMRARE QQDPVYLDPQ AVHENGWTFDPSDGAYGTNY VANQAETNIVEPLFRDENVGKEDNNYWTRPQDNGRFGTDY
 DACRPQLGELIPGGWTAKTVGDKGAHGLNH AELRDVAHPSELGGGWTTAVSVRRNF FL F SYSDQPNKFGNHWAADL TAGAFGTD TRHLGTMSGGW K K DKLVTPLFQFRNYGQQLPHNWSTISNESAFGTDY GGLSAAGPKSDGWSYSKADLGDFGTD

 AATAGADDATGEWAANLHDFDYNLDHQGPGTRDLADRRDK LA LGGMPGAGTLKNGWVIPPANT GFGGAD LEEGLRDRPY
$\qquad$ GPTHWRTपREGVGEYGED
SYA GVPVGNGWVASM
VFTG
$\qquad$ MGTDY
FF GWKHYPRPTLGDYGQD
SMAAK QPQDTQNQWKHNGRPAGNGWNRSTNNAQFGVDY

SVITPF $\quad$ R WVHNGRPA GNGWNRSINSAQWGYD
TANLGELSRGWSTSFAGSRFGGD
$\square T$ TPRSQQFVKPNGSW
QFYGEP $\square$ AEFGT
SKTKEYMNA DKAPREA
 EAAK
 VDSGEQSGAVW
HDPKGKNENGW
 VATPPSNLLSANGWSW FGDAVGNYGPD L F EFHNNGRPVGNGWNSPSNGANWGYDYLS

LQHGKAVHAFDYNTEFFELGTVNSPEWLLPHKTNSELDQQLD ITKSRSRLGEPTGTGW MKVNKG $\square Y G Y N$
$L F N F R T N G C V L P G G W N S P P N V A R W G F$
$S K T V K A P V F G T S S N L L K E ~$
I K NDTMA LY $\square$ QSFDQHNGYL $\square G G$
FGQYGNY
GKNDTMALYLQSFDQHNGYLLGG
$G G P P G A W R T V P H L R D Y N L D H F G V G T D R G P E W T D A D R E A S Y$
$A D A V R Q P$
VATPPTNMLTANGWSW
NAAAE
$F G E G V G N Y G P D Y A L R A Y$
RGWVAEREAMGAYGSA
LAAPPSNLLGANGWSW
SALDARSPGAWPHLHDYNDDHFGAGVLRSSQWRVPDREAAY
LKNRLNAD RKTAEPGRRNGWTPYRLPDGFGNN
ARARQPDARGWVAEREAMG
$F \square A A Y M A A G A A H G W \square E Y N P A G S K \square G T T Q M$

## UniRef90 T2H7M8 UniRef90-FOSSW1 UniRef90-H1RX17 UniRef90_UPI00037D1293

 UniRef90 M7Y5N8 UniRef90-X5M949UniRef90-B2T962 UniRef90-S3HCE9 UniRef90-M112Z8
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UniRef90-J2X8C9 UniRef90-W9BUY4 UniRef90-TOIPP5 UniRef90-F7X067 UniRef90-DOJ7R5 UniRef9O KOEWP7 UniRef90-B5EVK4
UniRef90 F6IL97 UniRef90-F6IL97 UniRef90-J3A3R4
UniRef90-E9UQZ7 UniRef90_UPIO003646BA8 UniRef90-M5SCK1 UniRef90-S6AJJ1 UniRef90_UPIO002E6F929 UniRef90_S9T348 UniRef90_UPIO0037B67AA UniRef90_M2WCG0 UniRef90-S6AN29
UniRef90 S4BWN7 UniRef90-E4NDF5 UniRef90_A0A011Q7U9 UniRef90_UPI0003B78747 UniRef90-Q161X5 UniRef90_UPI0002D60D2E UniRef90-R0E4R2 UniRef90-A0A014P696 UniRef90_S9RRH0 UniRef90-W8AQG9 UniRef90_UPIO00371BE22 UniRef90-F6IL78 UniRef90_D5EZ12 UniRef90_UPI00041D31E2 UniRef90-A0A024LT84 UniRef90_Q2FPM8 UniRef90-H1KSM2 UniRef90-Q9A5D2 UniRef90_Q0RPN8 UniRef90_UPIO0037BF965 UniRef90_F9ZAG4
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UniRef90_UPIO004679F0B UniRef90_C3X7D5 UniRef90_A7I6A1 UniRef90-M9TW39
UniRef90- G3A3R0 UniRef90-W6X4U8 UniRef9O-Q2KUA9 UniRef90-A4JK46 UniRef90-G2NB36 UniRef90-A0A052J5K2
UniRef90_H1RY93
 FDRTGTARSNIYDNKD DETRYYYTDHDSSGHQLNGKGSY YATRAQVALKYVGMLDGREAVYPMAWTDARGQPLDGGSRY WLLDRAA AVMVGIYGNDKVEAFYPVAYVDLDDEVLDGSHRY

 LKRA\VAKAGIYANN AEEAVYPVTRNDKDGNPLDGTNKY FTRTAVAKSNLLVNAPTETAKYLYQQDLDANGQRLSGTNRY WLKRAAVARGGlVANDAD LPRSAVAVVGLGANVP FTRTAVAKSNI LVNAPNE
 AHRAAAA GGLWGNHAYEAAYDMTYEDADGEPLSGEHVY YTLAAVVSVGGLGALPLEEADYMRAEGDAEEGLFDGNQNY

## GLYGNSL

GIE HWV

DRERAAAALGGLLWGNA Y
YLRRASTAAKGLGANRPE
YTRTAAAKSNIMFINK A A
YTRTAAAKSNGFINKAAEAAYPYAAADDDGMPGNGSTRY
YETRARVARNWI GTLGDDEAMYDMAEVDANGAPLNGASRY
YFSRTAVARSNIFVNRQKETKYFYQDLDENGLDRLNGRYSY

YVRRSVINIAGGLGANVREENASYTTFVDGKGAATTGEHAY LQRAGLAHRGGYSNTADEYAA MAGDADTEARPLDGNQRY
 Y LRRAINNLAGLGANVREENASFNTFVDAGGEPLDGAKAY $L L R A A V A M D Q Q Y V L E K G E A L Y P V A H L D A Q G R Q L D G R N N Y$
$F N R T G T A K S N M F D N R P N E T Q Y F T D H D G A G G E L S G S G S Y$ DSRGLAMLGLAPAEAAYSAAGYGT L

 $Y V R R S V T N A A G L G A N V R E E N S S Y T T F V D G T G K R L D A S A S Y$ FYEAYSAAADMSPNRPGPSSAYDGAYRDSRGDWLDGAGTY LSRAVMSHVGLGANVVEENTS FNTYADVDGRPLDGSSSY ILARARVARNWIGTLGTEEAMYDMAEVDADGQALTGARRY Y $\square R R A W V A K A Y \square A T N K P D D A L Y \square G T D Y D G Q G M R L Q G Q Q R Y$ AMDQDYV LDDKDEALYPVAHLDAQGRQLDGRNTY YAYRAQVADGGLLALKTVEAMYPITFVDQQQGRLSGAHRY FTRTAVAKSNILVNSPNETKYFYQDLDSSGARLNDTNRY LHRAMVAKIGLUANVP EESMYHVTREGTDGEALRGSTGH TQRAYALAIGMGMGLRREEANYWITLRDEHGQPLRGDGRY KWARTRAAVAGLWGNHAYEAVYYPTYVDTEGNTLDGENTY YLSRAVAARAGLWGNHAYEAAYATTYHDADGVELTGAHAY YLSRLDVAVFGLTANTATQAIYYSGVLDGNNQPMTGAKKY YA $\square R A G V A L D G L G A N R A E D A I Y P N T D I D S E G A P L T G D H A Y$ LF RAT WAK WF TGGNRP DEAIYMDGRIDTNGAAFDGANSY YYSRAAAAKANTFVNPRREAAYFGQEYDSNKARLNGASAY Y | YRA |
| :--- |
| $F D V A G Q Q G L G A L P V A E A M Y L K A A G D D G A G V F T G D G P Y$ | YAQRAIVSWSGGGTDVPQDMLI ATADTADANSGELLDGSASY Y L L R A NVADTA LGGATLSRDALYPTVSENADDRGTPRRFRL FNRTGTAKSNIFENRPTETQYFYTDNDSAGAPLEGARSY LLRAAVAMDQIYVND KDEALYPVAHFDGDGAALDGRKDY YYYRALDAVAALAANPVSVAVYPRANVDADGQHLNGNHRY FNRTGTSKSNMFDNRPNETQ YFYTDFDSAGKQLVGSGSY FNRTATSKSNMFENRPNETQ YFYTDRDATGAALHGDRTY YAYRGLDADKGLGANPTYVADYPEADSDSDGQLLTGAHTY

 RLARAMAARQPIGATHGYESDEATCLVDVEGRRLTGAHRY LARGIGADKGL YGLPPAEAWYGGWVNDSEGNPNASDRDY DYRAAVADVGLGANTNEDADYPRADYDSNNEVLNGANSY FTRTAVAKSNIGVNQPDETVKYYQDLDAAGERLNGGHYY YLQRAVVATI GLGANVPEESTYHVARTAADGSALRGEAGY
 YGLRAYAASAQLGDGTKDDEVRAVVTQDSDGNTLNGANRY

RAATAKSNMYDNAPQET RY YYTDDSTNQRLSGKHLY AFKY 1 GM $\quad$ LESREA $\quad$ YY PLAWHDARGRPLDGSRRY ILTRATAAMGGLWGNHGYEAVYLPIYVDSNGDRLVGEKEY FY $\square A T V N T P A M A L K L D D K G S Q Y A L V D T S K D G E F L D G S K T Y$ LRRSVINMAGLGANVREENASY TTFVDGSGAPLDGASRY
 YPLDRVISQUGLGAFTPDQAIYAISWADHNKNPLNGSNNY LVRAVAARQGRRLPH GYEAVYAHTACDSRGHPLDGDHPY
 YLKRARMARLQPGAEDPEEVLTLRLTTDADGSPVDPGSRY YALDRYAAYTQFGTATRDDETLALVRVDSDGQPLNGANRY LVRAVAARRALWEPH GYEAVAASTDRDSRGRPFDGAHRY YAMRAAAMSGGLLGGLAAAEATYFAASVDGNHQALGEGRAY

360
 A WY

A S A RLD G K N S Y
G G V G G G $\quad$ D MA AK LR SFADADGE L N GKNN Y ETKY IYTDNDNQGAQLNGQNNY ETKYYYT DNDNQGAQLNGQNNY $S V Y P S T G V D A Q G L A L S G A H R Y$
$A$
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SVIT F A K DPP $\stackrel{370}{V}$
GFWSLTLY QQHFFAENALGRYSLGTNK EIT F GQEPPVDGFWSLTLYD KAHFFAPNELNRFSLGTNK

 R L H F D D L P P T S A F W S V T L Y D E E G Y L E A N A HN R Y S L G S Q H



 $T V T F G Q L P P V K G F W S L T A Y D S A \quad H F F V P N P L N R Y S L C T N Q$ RLHVPA RMPVNAFWSLSMYE DGRRFFTANPIQRYAIGGDRT $R L R L N P T P P V G A F W S L T M Y D L P H Y Y L V A N P I D R Y S V G D R T$ RLHFPAMPPLNSFWSLTLYDDGQFFFADTPLRRYAVGDRS
 VL H F S K S P Q A K F F WS AT L Y T LDP D R F LY A N S L K R Y S I G D R T TI TFGQ TPPVKGFWSLTLYN DVHFFNPNPDRRYSLGTNK



<os VLHFD R P P P V V K GF W S Y T L Y D A R T R R L V V D H P S G R Y K L R L R LLA P T P P $V$ V GA F WS TLLRL Q T P P P V V N S F W S V T L Y Y D S K T F A A L Y P P N P L L R R Y L V S D D T $V L R F D E L P P A D A F W S L T V Y Y A K G M F L A A N P L G R Y S I M G D R T$
 TLCFRK QP PVVGFWSITLYYEKG FLAANPI DRYSI GDRT
 $\mathrm{K} L \underset{R}{H} \square P \mathrm{G} G \square \mathrm{D}$ S N VF WS V T L Y E N D S Q F L T P N P I I N R H R V S S S T RLIHFPP TPP VA A F WS
 $\mathrm{R} L \mathrm{R} V \mathrm{P}$

 KI Y F GELLP PVV GF WS L T L Y D K E HF F H D N DLLERY S L G T N K SLT F P QL P P AN A F WS L S S Y D GE HFFEPNPINRFSIGGTNK




 TLTLLKPPMAPP GFWSVTMMYDKATYSTTPNPINRYHLLADYD

 R L T L P A Q L P P L D G F W S
 KFP A GQLPP AD AF WSLTTAYTAESY L VQNDAD DYSVGBAV
 RL H $\square$ T P E TKPY GFWSVT LYGEDNF LY DNEQNRYNITTDRD
 RI TFGQEPPVQGFWSLLTLYN EHHFFNPNPLRRYSLGTNK


 TVVFD QLPRPRFFWSATLYR LPERLLVDNPIDRYSIGDRT T L HF S S L P P V E E F WS DT A Y GD DN Y L


 TVV F G Q T P P V D GF WS LT LY N K E HLL F SPNARGRYSLGTS K RLRFAPGPPVQAFWSLGTYGAHDCMLVDNPIDRHABIGDRT QLTFEHTPPTNAFWSLTMYTFPEYYLVANELDRYSUGDRT KLNDPANDPAKNFWSVVAYDPQTRSELQTSQPFPSKNNRD



 $V L H F D H D Q P E N A G W A L A A V G T$ TARTPAPA GHRDLLSEAD $V$ MHFEPNQPVRGFWSIAAYTKDGALGDSTPA RASTVGKA VLRFEADPPGDAFWTLAAYDGQGQPDLSNPYRYSLGDRD
 A L R LID P P P P V G A F W S V S A Y E V VP G D H L V V A G P E E R R Y S L G S R T



S LVVDDDGSVT VIQPEDEADRVRNWLPSPKG RFFLVLR HLRADADGGLSIYIQTEDPAGPEKNWLPAPAGAGFYLTLR TLKYGDDGSLVYAGSKPGADKKSNWLPAPDDVFSLYLR DLKKNPDGSLTLYVQQSPGADKEANWLPSPKGD FSLLLR PGVYGRDGSLGLLIQNEPGADKRSNWLPAPREPFMLLMMR GLKVGADGALDLLIQRDAPADQRANWLPAPAGD FAALVRR
 ELQYNEDGSLT TVSKNKPNNSSNWLPAPAGK FRPLFR NLKKNADGSIT YMQASPGPDKESNWLPTPKGGPFYLMFR GLVRDADGGLTLTFSAEPPPTRDSNWLPVRAGEPFAITAR PLVYDDDGSLTITTQNAAPDGATSNWLPAPEGGFYMNGR DLVYNADGSLTLYVQNKKPADKDANWLPAPTGDFELFVR GLKRNADGGLD WIGADPGGDKTANWLPAPKSGPFALYGR

 PIRYGADGSLRIYVQSEPGPGREANWLPA PREGFMLMMR NWKRNDDGSLDIYVSHEPDTDHPDNWLPA PADDFHLIFR
 NVTFNEDGSLDLLQADKPAEMMNNWLP VGTADFHIYLR
$K$ KQRNADGSLDDWTGSDPGGDKTANWLPAPAAGPFALYLR RLRRGPDGSVRVLI QSDPPEAEQANWLPAATGD FRPTLR
 EYKLNVDGSLDVTLSANAPQD GSYWLPT GNKAFHLFMR
 $P V A P G P D G R V T I$ AVQHEDPDVAPGHWLPDPAAGTFSLSMR
 GARRNRDGSLDVVVSSTR
 K GLVYQGDQLTVYLSTEKPAEQQKNWLPAPKG YYRPLLR
 SFKDNEDGTLTLYLQQKPGEEKLSNWMP VPEGRFFLLLQQ QLTQNTDGSVDFYLQPSPPSDPAGNWLPTADGQGFEVMWR $P L V H G A D G S L$
$H$
$H R L L N R D G S L L$
$D$ GVRRNRDGSIDVTVSSAKPRKASNWLPAPRGD FQLVLR PLHYNADGSLDLFLQSEPPGEDRANWLPLDSGEAVNLLLR
 KMKFNADGSLDVWLQPDPGPEKRANWLPTPEKNGFYLMAR UniRef90-H1RY93

| UniRef90-T2H7M8 | A Y WP E A S A M M |
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P A QIA QA H A WT T R A IA S Q A Y F A P MASA Q N VP QK M S VE Q $\square E E E K A Y A A G \square Q A A$ QS DVELAKNAY LA E DAY
Y P V IE F A E K H A Y D L G G Q A Y

$G L S A L G A Q P A L A D T A N S E$ LAAKDA Y MRSEVA DSY
$A R R S \square A R A V A Q Q A V$
APATHASPQQALDVAGAAAFPALA
Y A QSVGLQA
$V Q A A R N A F$
A NPATAPLTPKEARADAREVF
E V N A E M $\square$ K E S Y
GSAPKSEPAAGMVPDQDVN QVA A Y $\square R \square S T$ A A Q A W A Q D A Y AQDAF MAQDAY
QSAPSKMPPERVREERAYAAGVQTA

G A P A ATRQAK VS D
$D D Q R V G L A C E A F$
$D Q R V G D A A B A F$
ALVMA GSAAKA QTLQQDENPQLFVVDAVESY
K DWRQQYAYSKGVDA L
QLGRAGHPD V VAEAA WRRRWVESLSLDQAV

P A P VA A VA PR S P Q A P A L A R S V V
SEDSRDSGTDTSVAADAEEAY
P D P A A VSE
QTATEAV
QD $D N D A Y$


PARATAPAWQENYAYS LGMQAY ARDTPA ADEA TARAY APTEKSTGWVKDEV G

EQAKALGY
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VWGFPWIYYAQLRWLWTTKEGAPVNSFHRSQQLASPKSGG FWGLQQTGFYELRYVFTQAQQMPANRLAQTRQLARERFAT VFGYPLVVMDDARDAAVGSGQAAVNTLRHAQALPPAANPTV WIMPPQVMYERMAQVAFDTFGNENNTIYFYERMTSEAAMV I FGYPMIMLDMMRAAS G GPTNTDHSVLPDPDRGVA VYGFPGYEVAKTRHRDRTGWMGAPNTVCHDRRLADNRWIT LYAYPLVMMEVARQAATDPGAAGPGQAPANTLRDDASLP YWGYPAVSWDVMKEAMGLFPGAPKNRMGYLDDYPAQRKVV MYGLPSVYQFAMCAACAPEGGRGAWRLNLLNHERDYQPFR


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SPNCDTLYATAWLDVTHD PTVISVPAVTDRFYCTEMVCM TPNASTLYSGGFFDLSRQPVVVTSPKVDDGRYWS: QALDQ MPSADTFDSTGWDDVA DEPVIVSBPDSRGRYVALDMWTN KMNNDTDYSTAWTQLARTPYLVHIPKDTERYYLFPDLDA TGNNNSPYVHTYHNI A DGPVVVEIPPATDSGTFLTSWHE RLSHDMVYSQAWLDLT DEPLVLQIPGMEDRYWIFQLVDG TPNNDTLYSRAWLDLSGGPVTVAVAA DPPDRYWSIA FMDA PAGADTLDASGWLDV GTEPLI LSLPDTRGRYRVLDMWTN
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 YONT FK
 VVWSTGSL GTNT $\square G Q K G G N F$ YTENF WTNPFAYVGRRTTANRGERTVVVGPGWSGQVPAGHRLVHC DTAYVGFVGSRATGPGAGRYLVAGPGHRANPPEGFDVLRA




 WVTNTNERNYPEHPFGKFAFIKKGTNP PMDDVGSKGADEGKGGKY LIFLP P N Y Y D GK D ELLKA KA Y I I V I P WRNNFAYVGRRTTGGRGGRYLLVPPGWTGSAPASLARI EA WTNVLWSTGSSANPSRSRAVAFVGAGWEGPLPEGVARVDV Y S R WWH M YFSNVAVL $\mathrm{V} \mathrm{V} \mathrm{Y} N \mathrm{~V}$
 $G L Q D G L T T A K T S F I M V$ WHNII ANVR RQHYPQGGGQQVALV $Y T D S M F G S R T R G K Q G G Q F M Y A \quad S P$ $W D D D G F P G P D R G E G G K Y L L L P P G G$
$Y T N A A F S S R T R G T E G G Q F M F A A N$

 WTNPFAYVGRRTTGNRRQRTLVHGPQWRGEVPADVNVIAA HTNNFENLGPRNVAAEGGE\|ELTGP GQQASGKHAVQC

 WTNPFA YVVGRRTTGGNRPGRTMVVHGPAGWRGV VVTNDNERNYPEHPYGKFAFIXKGTNPS TVANI NERNYPGHPGGNFAMCLLKG ATAPDVPNAVVI E L A


 Y T T S MI GSRTRGTEGGNFMFA ATDWKGEVPDEVVRVDS Y T TS S MVGSRLRGNEGGHFMFA ARSWKGDVPDEVI YVVS GHYTTSMDGSRTHGTKGGHFMFASRSWKGETPAEVIPRVD | $V V Y N D G$ | $G S K G A E P G$ |
| :--- | :--- |
| $H$ | $L$ |
| $H$ | $L$ |

$W L N V F A Y$ L G T R GDDGGD ILLLLPPGTADASSTADASRVVEA WGETLANDNDRTFPSGDFAVCLRGANVABABAVTRVDL
 $D S D N F A Y \square S K R L H G N G G G N Y A G V P P N W Q G D L P D D V F F V A M N$

 WT D $\square F D T L G S R T T G A R A L Q V A D T P P G W T G V L P A G V R A B A A$ WVANINE RTYPK HPY GK FAIVLKGSNPK NI P K D A L K K V E V Y G $\square F P L Y$ A G NQFNGTGARSSLILDPD DYE GEIIPGDFDVVVQA WTNPFAYVGRRTTGNRPQRTLVMAPGWHGEVPQGDTHVAA TVANDNERNYPDHPSGEFAMCLKG ATAALSPNARRDDL $Y$ TNNFA DRGTSADNGVAKDFWVVGPNWQGTAPAGVTVLRS



DADNFAYVGTRSTGTQAGNYLIAGPGWTGAVPDDVLDVRS YAD WF FMVGSQFTGNAAQRYLIVGPDWKGTLPAGFRVVRA
 YTNDVES $\square$ GT RTP E GDY LLLYQDTPVPAGYESYRVIRLQD $P \square M D V G P G G E D K G K G G K Y L I V P K G Y Q G D \quad$ G $\quad$ G $\quad$ G G Y V V V Q WGNTVVHDLTRSTVVDGPPYTYVLTGPAWSGQVPADTTRLHM



 VITN IINERTEPEHPYGKFALVI R GTNPS WI YNVNERNFPDHPYGKYVI ALKGSNV.

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 DTNLVGVVGRTSGPADVPEVERUQAGYVLKPLSEHDGTPR PTYNVFVFWRAFLDGDATEAVALMEQTRIYPLAEKDNPPE TTPFTWILLRVLVGDDVRMAYALQDRFRLHPVGHGAGAVN DTRAAVVIPRVFLDDDREABTPLIDRDSMYPLSDWSQAPS PTNLVWLI GRILAGDDWPAARALQAEIRLEPAPGTQPGRP PTHLVWLI GRILAGDDWPAARALQSEIRLEPAPGTVPHWC PTHEVWLIGRILVGDDWPAARALQSELQLSPAPGTVGQGR DSNLVKLMGRIMAVNDEDAALNYMDQWNIRTLSEYLGKNG PAEKVKLLLRVEQKGDPEGAVKDQKQFKLDAPTGIEDQEP PTRLLLTLINRFDGPADTAAVSRLQEELDLSPLDSEARRAE PARNVWLDVRTSGGRDLTAVKKLQRAI RVVPESHAGATSA DSDFAVALLRDALTDDLKTVNATMDRVTLMPLSQWVPLMR TTNQSWLIVRTQVEDDLNNVHAVQDQYDLRPLSAFGKPFT PVATLFQRVRARNEADLAAARSVQDTDRLAPLDRWGPDRS RTKLAVVANRVFGEADLPNARAAQKGFNLDPLSVFQNFKL ESNVKLMGRIMGKEDEKVALGYMDQWTLRTLSEY LGENG ESNLVKLMGRIMGPEDQKKALAYMDDWNVRTLSAYLGEPG PTNTVALLGRIRVPEDVAKAQS\|LDAVQLAPLSATMQVAE
 NLVKLMGRDMALGGEDTK DALDYMDQWT RTLSEYLGQNG PARNVWLDVRTSGGRDLAAAKRLQRADRVEPLSARADAGA ATPVMWLLLRDQYFDDLHVVHQI QDDVAV PGLDIWVI GRVLVNDDLEQVRGLQTQITARRLDGSDAALR PSSLVWLLGRVLGPQDLPAARAFEQGFALTRTPGAARPRC ATDTNWMLGRVLAQDTADEAEARAMAQKIQLDGQRG PTGHAFLLCRIRALDAADAAEAGALAAGIDLRALAGDTGG PSDFAVALGRLALTDDLKADNAFMDRTTLMPLSQWLLASGK PTNHVWALARILGPHDLEAAREVQAGLSMQG PGDDVWLI GRHLVEDDGEDAARVRETQSKMRLVRDDGSDA PSEKVKLLLRVEQKDDPAGAVALQKAFK DASKNDQTKEP
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 PSRVVSIIARFGGPADLPAVRALQDTLTLRPDRDAANPPS PARYTRVLSRVEGGADWKQADALQHQFRMR RVFS\|VAHFAYRGPDDLLAVRALQDQLTLRPVDPNARQRE PTNTMWIIGRTYTNGTQEVVQFIYPGLTLTPLSRFRRGPY PTPWFYAMARINDPSDQAAVAAIQSQMQIVGLSDWGKENP PAHEAWVRIRTSGGRDLNEARRWQRAVRIVPLSAFDETAA PTAVTWLLMRTQVGGDVSTVHELQNAVTI PTRNAWVSVRINGTRDLTAVRKLQRALRVAPLSVYTGDTR PTPMVWVVARVQGPRDEAVARRLQDRFRLTPLEDLNKPPA PFNKVKMLARVEGKGTPDEAVRLQKRFTLEAPAGIKIEEVV GGSDVWLIGRLLVEDDGADAQRVRASQAALRIVRPDGSDA STNAVWALARTYVSDDYPAAWAVQNQLVVSRPAGTG DLQKMMGRIMATGKEDEKKALNYMDQWNIRTRSEYLGEAG QSNDAWLLVRVVVNGEEDLAAA ADGLTRYTLSAVAGDTP RQRYLMVAGRILGAADEPRVHGLQDRIRRTKWLAPGHLVE PSAKSRILARUELGADPSQAVALQKQUKLYSTGTPVIAKP


 SUNAVLLR1ETRGEADYPVVNQUQDSIT:RPGYYPERVR
PSAMATVVGRINGTADAPAVNRFQQQ1RLVPLSAWQRSRV PGNDVWLRWIVNGEDDLPAAHAMQECLSVTPCAPVK
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 GRA LDPCVSAWHETGNDGLDFFQNLFNALREFPPAEREMG PPVEKPDAFVPHSSETGALGGFDELGQAMMAFASADSDDE SRYGNPKDQMDPDFSNDPLHFFELLNGUINENPPPDDQKQ PKQYDGARFQFTPAAPEPLRLFETLGFGMKSFLSLSDDDP
SFDDTPAGQSAAVASLDANAFFSRLADALQDNPPSPNDAH A AVANWVGPPVDAMAAAAPRFFTNLCHALAEAPGRKEDQG F DTRLDGGPRDAATPSAARYDETVAHALERNPPPEGE $P$ VAAEPDWPVWREEVLGTVEFFS LLDELLLGFFPTDPADAE MRFPNGSGKPANMVYPRD FPDGRDTS YGGGDATGDQAETQWVDPETYFSVLPEVLREVPPDPGEEA A AVEHWSGEPDDAMAAAAPRFFTNLCHALAEAPGRVEDRG GDPVDAMAAAFENGEPAAPRFFTNLCQALAEAPGRIEDRG PAAIDEQWAGPHEDAMAAAPRFFTNVCHALAEAPGRMEDRG AHKAADPRPQMESDAPEG $\square R Y F D E L G D A M T K R D P A S A D D F$ PKPVQRTYPD LE IPPFTNAAF LM M Y
TEYLDATDLAYDCLPYYNMTF FEDIVDVVQNNPDREKDRA GPP EHSKRVCDDLRFWEELRDWLRAYPPSRAEAE DPASEAAAPVAQVAALDPPGFFSRFARALQDNPPPAADAH ASYPTFPGMENMREPGRGTDFDRWVSLILNDPSFTKQEDA QPAGTVPGPSPQANALDGEAFLKKAAEWFNKVPFPDEDKA FPRIETSAVDGEALHRDPLRFLEVVSDYTALNPPPPPYRA PEKVDYERFVFTPTAPEALRLYEQI GFGMRMFLSASDDDP PKPVERKYPDV NN NSWLERVNFMLCDGSMADADKM $P K A K Q R T Y P D \quad P A K T N W L Q R V N F V L C D G N M G Q A D K K$

NAVPGQSYELIDPNARQTLG\|FDNYREI LIRRNPPYGKDAY
PRIRHYPD
TRFVVASGKPFNT $\square$ P PEKASWLETTNFVLCEGSLAKADKQ PKHSTWLERVNFVLCDGTMGDADKQ ASAEPASGVASPVASPDPPGFFSRVARALQDNPPPAADAH TGTRRWPVVDQGTVETSPDEFLVALNASLRDNGVPHTDAA VDTR $\square N G R S G A T T A P S V A L Y R A L V E E A L E R N P V$
VAQWRDSGRP ALDFFHNLFNALREFPPAAEEDG PEPVSASAVN PHQSI QYFAVLNEALKAMPVPPSAEG TP LPPPAGRAHDTG RNGIGFFDELCAALPANPPTAEQRR KDVRAEDVVPGKAEYPTGTEFLQWVSLILNDPSFTKQELQQ PPCAAPGPYPPRQAPWPEYFAGAAALLAANPPPVTDLA AMRVDTWMEGRDAGDPPADLYDSVVSAALRRNPPLAVER LS $\ P H F T N A D F L L$ PATPAFSNDTLP GVEAFDSAADALDSEPDNPGMGD NGAKQPAVPPLPNAPSDANAFFARLARSLDDNPAATDDSH AARD AEAGDYFAAARALLAADPPPATDQK
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PKPKERTYPD
PAKTDWLQRVNFVLCDGNMGQADK $\square$
PKPKERTYPD
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PKATEHQWPD PASTNWLQRVNFVLCQGDMGTADKH
$P K Q Y E Y A R F E F K P T A P E A L R L F D T I G F G M K T F L S R S D D D A ~$ ASVTQWQESGDEGI DLFQNLIFRAMRDF TEYVNVSGRSFNTVFPNDLQYFETLNA IIQQREPDGADGPE GP P
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TVPRMAELTEQQVENQTAADFFTFLNLVLNDPSMSLDDAA A MRVDTWLDGLDTRVPEPSRFRAVVDEALRRNPPPAGE
PATPAFSNDKLP GVEAFDSAVVALRSEPDNPGMEP VAAWDSVDTQKPPGYANWPSYFQYVNRLLKKSPPTPQDAE $\stackrel{\rightharpoonup}{P}$ QKERNYPNPENTSWLERVNFMLCEGTMAEADKK D D L K VP AKPNGKAFLDATVNAALERSGDTLLVNRA
VA ADPRRLPDGPAGDPLRWLARLGTVLRDWRTEPDDAA $V A$ Q! T NKNLP GITAFDNASAVLASE
VE IV I DPSDDMKTPPKVAAKYFALGAELMK DHPPHDT DQP PPSHVLVDGFDYNHTAGAWRTMNAAMTQDLPPGIAQDQ
 PAPAATVNPVARAAALDANGFFSRLA QALPDNPPAPDDPH
RQAPELSPAAYVETVVSPKEFFTLFAALSAENPI RNEA TEFVTLDDVQYDGHIKWDMSFWESANKAIQEERIKKDEKA HP DDRGPEPPVKRDAADGRTYFDRMCRLMVENPPAPADAP SPVVEPTDSMDPANFLAVVAEQLERNPPPHEDAS RGANAAGAAAADANADNDAAFFSRFANALPDNPPPQPDPH TFDCEASARNKVYPAGVTAEMLERDPDLLRIRPVDARFWD VVSQHEVESAWKP
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I A I P EFTNT E LI R


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 $A Q Q L L D D D G G V S A G N P V Q W T G D R L T A A T A G V A G G R A R L A A A P$
 L RARLAR I GIIEAGRRFDPPAPDQSAVVDGMREALGQMQQR



 A L A A L A D L G V V $L L A$
 $M R G L M A S L G I E K G K P F K P D A R M K E I L S A G A E V G M K M A E T L$ LLHRRFRSIGIVGKRTVDEVLT DARMQAGDEQGFTEA QE L LYA WFRS LAAAADRD LLA WLRHAGLLADAAFSWDALDEPTRKGLIQGFA DGVQVV $L L A W L G Q A G L V P G V P F S W D D P T R A G L D E G F A D G V Q T V A A M$
 $L V S S F K Q D G L S V G G G F Q W D E S T K K G L E R A I K T G E$ WL D K Y Q S I G V E P C K T $\quad$ D F T P E Q L K L A A K I G EK K G M E H L V E L
 Y ARHFTSLGI DPSPYVDPNPGLAWSLRTGLRAGRDKLERV. A QE IL LA DI GVTA GAPVQWKDDKLIAAENGAAEARARLAA






 $L L T L L R K D G \square R L E D E T D L A A B L A R P A V V A G L E S A Y A Q A M A V$


 VRAKVRAVGAVAGNPAERARVDKVIREKTL
AMS QL A DL GVVKPGEPVQFKKTDAPMLDS GLADARERLAT LLRRTAAFLG AGPFDAG AARTGAQEAQMI $W L D Q F T S V G L K P C K E \quad D F T Q D Q L A A A Q K G E E D G M K H \square K A L$ WL DLFK DIGGLVPCKE DLTAAQIAAAKVGETLGGMMHII WLA Q Y K ETGGLAPCNT KLLSAA QMAAA K Q GEKGQGLA Y L N AL DVAAAHPDGLSVANGFDWDEPTRRGGARAAVTAEAII EDT



 Y L K D WA E L H I GP D Q D V S Q A E E N E Q A G L A KA VLDG MMDMRA



 $\square$ Q A K VRAV $S L D W P P P T A M L E A A L P A$ S A AVA S S P A E R A AT N A L DVI G I GPA Q T F N A S S A DVA S $\square$ D A GA A RA L A S L WVS QYKAMGIAPCN YKFTMEQLAAAKVGEKLGMQHLKDL
 VA A D DNPGMEEMQAKVVGIQSAAKGSSET
 $T L R A L A P L G L R K G Q Q F D P Q R L T P$ $A L K V L S D L G V T P G Q P V A D P A A A S D A V A A G F S D G R D R D V T A$ $Y \bigvee Q Q F E Q F G Y D R T T G D D L T A E Q Q Q A L T E G S R L G G A E I Q Q A G$ F Y GMMK T I G I EKGQSFEPGASEKEMFH TAIIDELQDEMK H

 DLE KMLDANPVVGPDDAPMAEQARALLALRKSSDQWRTLL



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## D K R

290
300 310

320
DKR HLLALDGKADTLFGDRRTLLGND DDKLVKPLFQFRNYGQQLPQHWSTISNESAFGTDY D D P D A TL S L A VK Q P P IT Q N GWF I P VVIN GWKYPPPALGRAGDK GEY $\square D T D Q V V K E L F E F R N \square G I P V D$ HRWTTQRNDAAFGTDY $P P N L L S A N G W S W \square G D T A G K Y G Q D$ TMFAKGRQTFTGGWAYPRPNLGDYGQD ALRVRSSSELFGSREFLKQ
 EAHTR

SQGRK SWGYS LK L GVYY G D W
$P G N M L T A N G W S F F G E G A G N Y G P D$
D S K WAAAGNTVDGWKYTFAGG
T Y H A
DDTYAHAAEIVS GWRYTMGGG
$\square A T A P N N A L S V N G W \square W L$
PT $\square L$ N GWT $\square P$ P K E M G
RA GY D AATAPNNALSVNGWDWL GDGDGHAGFD AAMGRNRRPRP WTMTPSTGRYGSE E G L R E R D QPRQL G G GWS LQ LEVRTH WGEDVLTRARVARN T D GAATGTTLLFGTREQLGTR RFGDKLPD QYWPDRQWHNVLNVDVEFKTDSY\|NVDARIGM $\square \quad R V$ V M S Q N GPRVGGWSEPVDVGRYGFNY


PRPWTMTTNTGRYGSHF
GAA GRNRRPKP
$\square V D S K W A A T G E \square T N G W K Y T F A G G$
WSMTPATGRYGNE A
 A HA GRALTNGWVSTA HADDFNLDRLGMGTIDDDPA WRI SD LPP PNVLTANGWSWLGDSAGSY GQD
$\square A K$
E K L A A D P A S $\square G N \square R G$
A
ANTYANAAETVNGWRYTMSGGG S Y GPFREGWLI P D P HLLGNYGT D

QLAPK IVDSRKLLGTRESLGTGARDEFAEGTLI
DLAPKMTDAGK LLGTREQLVDGPRDLFAEGTY
TSPMASRLRGWSMTPPEVSTPDWS
$S K T T T D A R L I L G T R K S D G D A D R G V F S V G T Y V G Q$
NWRVN DVVAYYP GS GWSNMLWWEGGANTETPARTLDSKTAF $E L A P K V T D A R Q \square L G T$ R $\quad$ T T L G DTPREVFAEGTYLGQ $L K E S R P L L G R K T A S G W T A V L$
$L$ EELRREKDQPHALGGGGWALPVAVRSHW $\square$

## 

G T R D THGGLRERAMVARY LKA QLAK GTGKPMNGWSLATDIGYQDTDWM
E I E A GVAEARKAVRKGGLGGMDF GE GWSYPSARLGDPDQD ERLRTSNQPHDLGGGWAIPVMVKTHW GDD E VKN LI ILKEA IPPYFTK GAKGFGTQKGGWSVTYVAGAF GND PEFDKSFSTAGTIRNGWNRPGTIGKYGDD

VP S N A $\square$ S K N G W $\square W F$ G D GVGVVYGTD
TRFAKGRQTFTDG
WAYPRANLGDYGQD
A
E L A P K M T N A GK PKMTDSTRLLGTREQLGDGARDLEAEGTY
 $\frac{L}{Y} \bigvee N A A E T V A G W$
T R S Q W
GHKAWGYSLRLGTYGDDW
 A A A GRRAHQGWAGTLHEADYNDDRFGPGVLDDRHWE PDR AKASRTDGPGTVRNGWARAAVSG A YGS D A DAGRRAHQGWVSTLHEADFNLDRAGPGVLDDRAWEMPDR AF LDN $\square A P T P P Q T A T K W T M S L G V G T Y G D S$
 $L A V P P S N L L A A D G W R W L \quad G G D A G H Y G Q D$ LKSARRQLGADTGTRWTRVLDKGAHGHGGDGVGNY N
 I Q TKT IPEFMKK T TSY GVEKDGWVATYG A GNF GD GFES GFERVVATVVEGNSDVVVVDMNGWNIVQNTADFRTDW ERDRHAGQPHDLGGGWA $\square P V M V R T H W$ $R$ VDK II REKTDPAFFQSFSTAGTVRNGWNRPATIGKYGSD L

A AKTRADGAVKNG
$Q Q A A A Q T S$
$L S N S S N L L$
$R G G L T A G$
R G GLT A GD GVVD
 A WKLLP TLLARVVNGWSMNTNTMGVYGNY AK GHGKQINGWTYPPLDLGRAGDY $A \mathrm{~V}$ QR GFDAARAEARTAFSAAQVDMNGWKLQSSLFYDPNDY KRNPKYTVQH RGWLSVNLGGSANGWSWASDNAGAYGSD DF TYYAPGLWGEASQWTIPVNQEMMTTNATYVDANWNDYS $\square R N$ D !R N A F VGLR R K VD GWWVLDVF E D P
LSTP PSNLLFAAD GWRWL
GGDA GRYGQD
$D R V A L A A D A E L H A A A R Y D Q V G V D A G N G W Q R Q E N S G V W G S D$ I E Q S R P L L G R RLLPVG WTRVL
I E ANTRSHARKSWT
ARAD
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Y Y A Y T LDD S P G M\square
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 $V L T R A R V A R N F I G A L$ GMEEAMYPTAEVDAE GQALHGSNTY $\mathrm{Y} L \mathrm{~L}$
$\mathrm{~F} W \mathrm{G}$
$R R A D A G Y D A V L G P V P V R S H$ TAARMYNDAAGQPLNGKNRY Y L Y R A A VA L S GL A AL PPA EAMYMRAQAPD GRS LFD GT KA W

 YT LRA A LARRQTATSTKDGEVKPVARVDSEGHALN GANQY

 V Y L K E EK GDD GKNLNGSNKY
 YFNAGGVTPSMAVTTAGAGSDYAMASDDAAKKPLDDGSKTY AQARDARAMAARRPLGAYESTSACCSVVDAD GRHLDTGAHSY Y L S RTLFNHGG $\square$ WVVNTFDEANYFRGAVDSAGAPLDSSHTY AQAR I AR A MAARRPLGLVHAYEATAAVDVDGHRLTGAHNY
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 IVLRDSINFGGIIWANTTNEAI YFGGTKDASNQLLNGNNTY LTRADVMADFGWAGPDSPASHVAGFKFTDAS GEQLDGSNRY
 Y QTR T RI D L G GI WANSTDEVVVFKTNDTDGTGTKLDGGNVYY
 D D L R A RVA L G G L A A L P R
 Y L K R A V V T Q Q GL G A NVP E D A I Y P L N L G DEA GK L L D G A S K Y $1 T^{\prime} R G A L Q S L A G L C A N D P A E A V Y D N A F S D S L G Q Q L N G N S Y Y$

 GRGTTETYYFAPPASLAESTTYIVKGVLDSEGRPLSGDHNY $L R R A A L T M R S P G L A \quad P \square R D V L Y A T \square W T D D A G T P \quad A R Y$ YEWRA ALA LDA GLGA LDPASEATYDGRTTDDD GQLLHGSRNY WF GRALAAVIY IVVNDYHEA IVF I RGTDADGALLQGRYRY LARAVVMNFVGL GANVVEEN CSY NTYVDSTGGAALDGS GVY WMQRAVTAMKGLGALVRADEAVYAAADYDADGELLHGRHAY YPYRAYMADRYPF GRSSEEMLADVYETEAGRKKLVGRNRY UniRef90_UPI00035C7348

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 VMRFK APNVSEFWSVTMYGNDNRLMAKNDGKRYSRGDRT KI HFTPEKLVNSFWSITMYSVPDYHVIPNKLNKFSGNNYS KLNVPADVPAKDFWSAIVYNMETKNFNRGDRVGASTKDLD VI RFAPQPPARAFWSLAPYTPDGALDPDLGRARRSIGERD TLTFDDMPPVTEFWELPDYDREGYF VDNPDNRYSLNSYM TTTFPQLPPAGAFWSVTNY QEHFLIPGTTK FSVVNWM TLTFPQLPPVGQFWSLTMYRASDGRLVENPLGRYLVGPET VLHFDKDPPVSVFWNMSMYDDKEFF IIENDKKYSIIGSTT VMRFK APNTSEFWSVTTYANDTRLMEKNAMNRHSRGDRT AMHFKAPE VSQFWSFTVYASDNRLMAHNADNRHSRGDRT EGRRLASPPPVKEFWSVTLYDMATAQLDANDWDKFRПGDNT TMRFK APDVSEFWSVTVYGADNRLMAKNGLNRHSRGDRT , MRFKPNVSEFSVTIYGSDNRLMAKNALNRHSRGDRS VRFAPNPPARAFWSLAPYTPDGAVPELGRARRSIGERD R GLSTPPPAHAFWS TRYDADTGLLYDAPGGRHSVGTAV ELRFGMLPPAQAFWSVSLYGEDRYFS ANEIGRYAVGDRT QLRFGELPPVDAFWSITAYDAKTSQLTKNSLGRYSIGDRT RVRFPKDPPVDAFWSLTAYGPD MFLVPNRFGRYSISGDD TITFDDMPPVTEFWELPLYDQEGFF VDNPDDRYSLNSYM RLHFPAHDPVDAFWSLSLYEATQFFFADNPLDRYAI GDRT ELRFAPGKKVGAFWSLTMYRRSDCLFVANP:CRYS:GDRT K HFPPTKLVNAFWSVTLYSVPDYHVIPNKLNKFCI NDHS ALHFDQLIPPVRGFWTITAYTKDGALVADAKLPRLSI SDRD RLSLPADMPLDGFWSLSMYEATQFFFTDNPLNRYAGGDT LMHFKAPE VSQFWSFTVYGSDNRLMAHNEINRHSRGDRT RMHFKAPE VSQFWSFTVYGTDNKLMAHNTINRHSRGDRT VLRFDQDPPVSVFWN NMYDEKEFF DENDFKRYSUGSTD ELRFGMQPPADAFWSVSLYGEDRYFTANEMGRYAVGDRT RLHRPPNVPNDFWAVTLYDTQTRSQLQTSQKFPTLGSQD LFRLPPPA VDAFWTVAMYDEPEGYLVDNPGHRYACDSRD SLTFPKEQQARYFWSVLAVDSRHFRVLPNPMNRFLLNNQS KIHFAPPPPVNGFWSVTMYNADGTLVANDAATNAGVNYNH ELHFPQTPPARYFWSLTVYDQDANLML NDYDRYATGNSE VLHFAPRPPVRAFWSTPYTADGALDEVGRGRRADGSFD VIHFAVNPPNGAFWSVTLYHVETGRVFDNPLGRHCVGSAN VLHFDPGQPENAGWALAAVGПARRPSQPGGRRDLLSAAD K VFSKDEMADAFWSITLYNTPDYHVAKNALNKYNVNNMT TITFDNDPPVTEFWEDPIYDAQGYF VENELDRYSINSYM ELRFGRGPQVDAFWSLTMYRRSDCLFVANPDDRYSIGDRT TITFPKGEHVKYFWSVIAVDSRNFRVIPNAKNRFLINKQS QMTFPQDPPARAFWSLTLYNQAQAFFYPNPDGDYALSYAS K H VKAPE VSQF WSFTVYGSDNKLMAHNEMNRHSRGDRT RVKLPGNLPVGAFWSLTMYEPDGRFFVPNEDNRFAVGDRQ TICFRRQPPVNAFWSITLYYAKGFLVPNARRRYSIGDRT TMTFPPQSLVRYFWSVIVVDGEKFQVVPNSLKRYNLNNQS TLHFDKVPPVNAFWSITLYDPEG FQVPNALNRFAVSSWM RIMFPCDVTRHGFWSITMYNADYNLVEGSA HYTINGYC TMTLDMNPPVTEFWELPVYDDNGYFVVNPDDRYSVTSYQ RLHTPGYPHASVFWSUTDYGEPSKYLVSNPDGRYKVNTYD RVHIEDSVPAKQFYSFLTYSMDTGAYLKGAGSKIGUSNQN RLRFGPGQPTHAFASLTAYDPQGFLIPNADDVYTVGVP CLTGREGDPVDAFWSGSAYEPTERFFVENADDRYSVGDRT AI RFPVDPARGGFWSLTMYDRDYYMLARSPNGRNNIGDAN RIEDTEPPPAKAFWSTTLYEADSGWLYDAPEHKHSVGSAT ALHFPHDPPAQAFWSVSLYGAD RFFTDNADGRYALGDRS ELRFEKDPPVDAFWTLTVYSSGKKPSLKPNSAYILNSASQ EI RFPPDGHVNAFWSVTMYSLPDYRVVPNPGKRYNINNQS
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$N$ PLAPARDGSDTVTFAAERPAGPEGNWLPAPPRDAFLVTMR

 $P$ LK K E A D G S

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PLRSEAD GTLLA $K M K Q N A D G S Y D V Y F S P E A P K G K E G N W L Q T V S D K S W F P L L E R$
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 $R L S Y G T D D S L T L Y F G P A R P K D P D G N W L P T P K G K N Y N L T M R$ $N F$ Q F A S D G S L V L T T S HVRR A GPA S N WL PAPA GA F N L T L R
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$P$ PAVAPD G S V

ELK F A D D G S L T


|  | $450$ |
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| UniRef90-A9BSL4 | M Y HPQA GA HQWPVPPL Q |
| UniRef90_A0A024IG | LY Q P Q A EHLDHRYAYPAL T |
| UniRef90-E4NDF6 | A Y GPKPELLD GSWQLP T |
| niRef90 V4IH |  |
| UniRef90- Q2G5G6 | A Q GPDAA ITTNGEWRPPA\QK |
| UniRef90-UPI00046779E4 | A Y WP D H T L D G T WKPP TV T |
| UniRef90-UPI0004183E11 | M Y H PREGV P P WR\P A L Q P |
| UniRef90-H1RX16 | MYYPRDGV Q W WRI PALQ |
| UniRef90-T1XH34 | M Y CPREGV Q W WRIP PL Q |
| UniRef90-A6UL47 | F Y GPET TVVLD GS Y RLP AVR S V |
| UniRef90_S5JP41 | FYGADDAI QS GEYQMPEI KVV |
| UniRef90_G2Z9G4 | L Y VA K Q EV Le G K VF LP P L E R |
| UniRef90-A6DQF1 | L Y RPETKDWFKTWIL N DVEEN |
| UniRef90_Q2JDW6 | I Y E P G A DVLD G T Y V L P P I R R I |
| UniRef90_UPI00016A | LY APKRQAADGT WQPPAVIR |
| UniRef90-J2X8A7 | FYGPRGPLID A S Y A M P G AVRV |
| UniRef90_UPI000360D43B | LY WPSAAALD GSWT P P P AI EV |
| UniRef90-UPI000360560B | TY L P E $\square$ A I R D G L WFPP A |
| UniRef90-UPI0003697ECF | LY G S Q T AI L N G S Y R L P GVKR |
| UniRef90_U4ZMG9 | LYG P D A DI Q S G K Y Q M P A TVK |
| UniRef90_B0KFK7 | L Y G P S K A V Q G G |
| UniRef90_A0A059FE | 1 Y GP T DEI L S K E WF P E N WK R |
| UniRef90_B5EVK5 | LY GAS E AV |
| G9 |  |
| UniRef90_K5UF54 | FYGAD |
| UniRef90_Q2T395 | LY A PKRQAAD GNWQPPAVV |
| UniRef90_J9STM4 | I Y Q P A R S A L R E EWT P P P V EK |
| UniRef90_A0A016XG91 | LY Q P R S E HLD Y R Y A Y P AL R R |
| UniRef90_A0A022GU91 | L Y HPARSFL D GQY T IP AVRRI |
| UniRef90_F3LOI1 | L Y L P K P EAL S G $\quad$ YVLP VI T RI |
| UniRef90_UPI00035 | L Y L P R R P VL D GA Y A Y P PVV |
| UniRef90-J2PMJ9 | F Y GPR GPLI D G S Y A M P GVVKV |
| UniRef90-B4RHE7 | $A Y L P R T E L L D G G Y R L P P V$ |
| UniRef90-T1XMU3 | LY QPHADHLELRFEY |
| UniRef90-A0AEY7 | LYVPPEQEVLD GKV |
| UniRef90-A0A022G0M1 | L Y GPDQAILLS GEW |
| UniRef90-R4X198 | LY APKPQASDGSWA |
| UniRef90_B0T709 | TY LP RAELLLDGRFRFKPVEKV |
| UniRef90_UPI000255709F | M Y GP S K DV Q K G S Y K F P P L Q V V |
| UniRef90-A0KZJ5 | MYGPNKEI Q E GKYPFPKI QVV |
| UniRef90_UPI0002198948 | LYGPNKAI REGKYPMPVLEVV |
| UniRef90-K8PNA7 | LY G A Q T P L L G S Y R L P GVR K |
| UniRef90_UPI00021 | LY HPSAAFRA GQYTIPAVHRI |
| UniRef90_UPI0003728DDD | MYGPLLEPWID K T WR P NEI E L V |
| UniRef90_A8L217 | MY LP GKEVLS GTYAPPPI HR |
| UniRef90-A0A022 | F Y GPK D GEA |
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| UniRef90-A0Z225 | V Y GPEKA MLLERS WKP P Q L K R |
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| UniRef90-UPI000383187E | 1 Y S PGDAVPR G D W L P T P VRR |
| UniRef90-K0DVZ6 | LYAPKPQATD G S WQP P AVVR |
| UniRef90-Q8Y2T1 | L A WPKEAALDDGSWLPPVVQR |
| UniRef90-D1AQR7 | LYVVPKEVVRNGSWTPPAI QK |
| UniRef90-M0CRY2 | FY GP R WSVVVD GS Y D M P EVVVP |
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| UniRef90_C5B6A9 | LYAPKS DALT GRWNP P AVTR |
| UniRef90_H0S495 | V Y VP DP QVVTQ T WAPPEIVR |
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| UniRef90-U5E483 | LY A PKEPAMDGT WEPPPLTR |
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| UniRef90_V8D315 | 1 Y Q P REEAL S E A WTPPPVRPV |
| UniRef90-Q0K2Q6 | L Y H P T D GF M A G G Y V IPP P L R R L |
| UniRef90_T5LPH7 | L Y QPREEA L K G $\square$ WSPPQL R |
| UniRef90_UPI0003713FA5 | MYRPK Q DVLD G NWFPPPIK |
|  |  |

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Y UYSRLLVARQQQLDFKDG VR MQWNTLSHHKDWP LYAYS DEAYKFLFETTDEPGRAVNEFQLLDDLADDTYTA LDNGGAVSDNSDLDGFAREGADAPNKDAVFEQMDSATLVV YWGLNDAGYYELRHVETELEGQPNRVQPQLNNFDAKRYAT LYLLGRVLVLRQQRLDFEREGFQWNHLVY REPGGVTWA 1 YLLGRLLVMRQQQLDFQDGMTWNQLVH RKPGAVDWP VF GYAL MME MTRRLQTNATQAPVNQFCQHTTLPTPKDVV $Y Y G G Q Q V$ VYVTRFNYTQDVFVGVNRGYYPNETADFTAVV
VYLLGRLLVLRQEQVDFQKERFRWNEMRH
V EYAYSTDEAYKYFYQTVITKEEYPLNRFQNTRILADDTYHP

VYLLGRLLVLRQEQDDFQKEGFRWNEMDH RDTGGTAWG LYAYSMDKAYGFLHETTVAPGVRLNAFQKLRDLADDTYHP amparme

DWGHP LVSTWS DMEGMGLFPGSPKNRMGYVDDYAAQRKVV I YLLGRLYVTRQQQLDFQDGFRWNSFVHRRKPGAVDWP I Y GYPLVTMDLTKQVMTNAGRGP $\square G Q F I N \square R R F P D A Q D \square P$ LYLLGRAFVLRQQRLDFEKEGFQWNKIQY RAPGGVNWA $V Y L L G R A L T V R Q E H M D R A G P G F A Y N A I K Y$ NPAGSADFV YWGLLDAGFYELRYVYTQFEGQPANRVQAYDNLMDARYAT DFKEGFRWNELVHRKPGAVDWP VYGTPAALQYAQFSEQDLAPGAPGAEFVHERTPPEFRGFR I YLLG RLLVLRQQQLDDFKEGGFKWNQLVMH $\quad$ RKPGAVEAWP
$F Y \square Y P L V S M D L A R R Q A A A A A A T G Q P G A A A P N A D G T P Q D D Q$ VYGYA PVALARTRALTLCATGVNTMLNLPVTANPLFRAVV. SFGYPVVEEALADAAKRAGDTNVNRHIVVRDLADERSVT





$\square W G \square P \square T S F A N L Q Y Y T D H V F K V R Q G E L V K T T N R E Q K L G D L$ LISEEALADAAQRAGGADVNRHIHVRDLADERSVT LYFYPLLTLDLTRRQFTHPSGTPANAFLHTRALPRPSATP $M T M D P A L N T I G M R D G S E K E F G E G Y N V L P M W D R M D A R A W V P$ $V Y L L G R F L V I R Q E T \square D R A A D G F A Y N R I T Y N P L G S A D F V$
YWGYPAVNMWE $\square$ MDGKTGDPGAAKNYTGA $\square T$ DYPAQRWVV VYA YPMVLMEMTRRASTNVGRAPMNQFGHRTAFPDPRDVA

VWAYPLDFAQRVRपNFVQSAGAP【NAFGHQRRपSDPTपTV YGYP $\square$ PEFARAAVP $\square L N E$ VNSTRFDHMRQLASQSVV


VYGAPLVRGLETVGLLTQDGLGPATAFNHFAHADPATGWP
TYAYPLVLTDVTRDVMAARAAGAAGQTAVNTFVHQRGAP $\square R F Y P R W F S H A Q A R T A H M A N P G G N V L F G P D R V S P D Y G A V V$ NWALPAVSMLSMRDANFSLGGGYNT $\square Y$ WLSQVPTALQEA

VPNLLF GPDRMSPDFRSVV VAMYNVNNKFAMDENSPVTTHGWNNVFRAVKSIA QTQFDVAPHNRLIGPDT 1 SPYQGVV QY $\quad \square A \square F N T \square N N F A V N P Q N P F A A G G W N R T H A S \square R A L P$ $\square A \square Y G G P S Q A \square W A D T Q V G R F P D S F Y H \square A D P F \square A N G G Q$ LYGTPMVASYQA $\square$ HASS $\square D R N G P Q Y K$ GPFNT■ HP

FA L A QGGWNTLQS D T Q $\square \mathrm{K}$ D H T D $\prod \mathrm{A}$ MYGFPLYAFGD $\square$ ARPLLAAGVPNDNLASPEPNEPGAVGVV

YG $\square P L L A Y E K A V G S \square F K A S \quad V G A N R \square I A S S T L P Q S T A V V$ $\square$ AFFPAV G $\square$ ASSFKPGSTFS

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UniRef90_UPIOOO3615384 UniRef90-J3IPI7 UniRef90 V2H979 UniRef90 $\mathrm{X1L9R9}$ UniRef90-UPI00036CE2AE UniRef90-X0V7Q7 UniRef90 UPIO00262BEF8 UniRef90_UPI00036B6DBC UniRef90_UPI00031F1F5E UniRef90-K6WD59 UniRef90_A6UMU4 UniRef90-M5T4Y7 UniRef90_Q946Y6 UniRef90_HOFON3 UniRef90_Q946Y5 UniRef90-I3BUP1 UniRef90-UPI000375602F UniRef90-A0A016PAG9 UniRef90-XOYOM9 UniRef90-W9XVU6 UniRef90_UPIO0016A2913 UniRef90-A8JE80


## F R

NPNDDVAYSEAWDAVDERTCVVFSVPRTKGRYYTVQF DNG $T \square N N D T L H L Q G W F D V A A E P V V V T V P D V D G D R Y W D L H T M D M$

TPNNDTDYGACFADDGVEPVVVQTPDDDGHYWTDQUVDA NPNDDVAYSEAWVAVDETSCTIVTVPEVKDRYYVVQFLNG APNADTLYSFAWLDLSK EPYLLHVPNQNGRYYIMPLLS G NPNLDVVYMEAWI AVDENNYVI LEI PKDEGRYYTWHMLNG NPNFDVAY




TWPHAGMQRVSGWLDLQDGPVVLEMPATEGRQHLVTLYDL APNTETLYTNSFLDLRK GPVTVSYPPTGGRYMVFQFLDM APNNDTLYTSAVLELSKT PVRLTLPDSGDRYLSVALMDM GPNPDVLFSMAQVDLGP GPVVLRVPPAPDRYHVLAFYDP SANSDTLYTVTWYDVGK EPYLLHKPDTKGRYYTFQFDDA APNVDTLYSLAFLDLDQGE FELRLPDFADRYYSVQIGEA
 TVNASTLYSGGAFDVSREPVVVEIPATDKRYWSVQAGDQ $T V N A S T L Y S G G M F D V S$ D GPAVL ETPAVDGRYWSVQALDP


TANATTPY $\| L A T V N L S E T G P F V V D L P A G A \square A G M D D D F W Q R$ APNNDTLYTSAVLELSQT PVRLIVSEHGERYLSIALMDM WANPDMLRSSAWLDLS A GPVVLSVPDSQGRLYTLTLLDLD TPNAD MYSMSYLDLKETGPLVVAAPPGQVGMFTDFFQR NPNFDVAYLEAWFAVDDATAVLLDVPE $\square T G R Y Y T A Q V L D E$

SPNNDTDYGAGFADLT DEAAVTTEVPDGH YWT\QTVDV WPSTDTLSSSLWYDVSR EPLIVQVPAAGERYYLLSLLDM

APNVDTLYSVAWDDVRNE FELRLPDFGGRYASFQLADP RPNVDTLYSTAVIDLSHND VVVDTPVAEDRYWVFPFYDV $V L D L K K D G P S V I E \| P P G T G P G T V N D A F F R$
APNVDT LYS $L$ A WLDD DAGAYEVTLPDPGERY LSSLQAGCA APNDDTLYTSAVIGVGRHEPADLVIPETTATYGVLDVLDV

GDEGTLCS LAHDDLS EGPLVLQVPPSGPRYAVYQFVDA
RPGADTLTS $\square$ A W $\square D \square S R \quad G P V V L S V P D T Q G R Y Y T \square Q L L D A$ $A \square N V D T D Y A S A D V E G S E P V I F T D^{T} P P T S V S Y S L L T A$ TANNQTPYASIFIN TKEGPVILDVPPATARGSAIDVWQV

APNDDT DYTSAALGV RNEPAVLEDPDTMATYGVL $\quad$ TTD
 RPNNDTLYVLSLLDLRK EPVIIHYPAFGSKYVSLEAFDH
TPNGVS $\square Y S Y S A Y T L V N G P L L L E V P P Y N G G Y W L!P F Y D V$ AANPDTQYVFAALDL RAEPVVVTVPGMERRRFVLQLMDL $N G G A V Y S K A F T T L K D G P L L L T T P P F E Y N D W T V N F Y D V$
RPNNDTFYTSALLDL RDDAMILKYPGFDSKYVMDTAYDH RPNADTMYS $\quad L$ FMDLSSSDLKVTVPE $\square$ PDNRYWVFPFCSP
$K P N R D T V Y A S V W Y D L S Q Q D \quad L V V D V P Q V D N R Y F A D S F Y T P$ LP GVDTLDSTGWLDVA AEPVIVTLPDTRGRYWALDMWTN SFNGGTHYSS LDWY S A E GPVAITTMDFTAENFWTINFYD

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WVHNTNERNPDHPGRFATGLAGSP YVVKAKGSSPSNLPKGAKVFES FTTVTHQLGSSGTPAGKFLLV GPQWQGDVPQGVDVMRS WGETLANINERDFPGRPFDFAVCLSGAQVSLPDDTLRIDLD WTDVFAAPGSRTTGTEAQDFVIVGPYWKGTVPEGLVELKS WGENINERTFPQKPYGKYALCLKGSNQK I PGDALRVDL WGEVITNTNERVFPSGKFALIKPGSNAK AI PADATPIML WGENTNERGFPOKPYGDFAVCRGANVGA PAGFRSTES
 WGENLNERLYPQHPYGEFAVCLRGADVK LIPAAALLRVDV
WSEAFAVLSKRSAPASAARYATTPPGWNGALPAGMQRLEA YSNVIGNAGTRVDGPAGHSVTI VPPGYHGPV RGQRQI RS FTDQT MVGHAEKGGKGGTYLIVGPD STVRDGPDVIRM WLNVFAYLGTRTGRGHEVLLVPPGGDADLDAAGTVIEAPA WTNNFYYASTRTMGSQEQAYALVAPGWT GKDPANVTRVNC DSSTTAVLGQRNVGPTDPRLFIRRYNAGAHDSAAGEDI EC
 NVNWFMKVGSQFTGNDPQRYVIVGPRWRGMLPPEFQIYRA HVDWFFMAGSQFTGNSAQKYVIVGPRWRGSLPDGFTIVRA


PVTDLGLPGPDEGKGAKYLITPPG YSGEKPSGYAVEES FT DQRMVGAHGRKGAPGEYLIIGPD SPREDGPFVIRM WNEAFATI GKRSTGTARGNTAIVPPGWTGTLPSGMPRIDA TITDVGAI GPDRARGGLYLLLP PDYQGHVPSGYFTFTS WGEVVFNINDRTTPSKPYTFALVKPGTAPPIPDGATRVELD DTNVTHQLGSTMYGTAPGLYLLAPASWEGEVPEGDTVYRF WTDAYASRGTRTTGGGAQTFAIVGPYWQGTLPPGVDMVRS
$V P P G \| T A V R S$
D T T S P $\square$ A $\square$ S R T T S G GP $\square \mathrm{P}$ T $\square \mathrm{R} \square \mathrm{GN}$ GPAR $\square \mathrm{DEDT} \mathrm{DEVR} \mathrm{\square RT}$ A T GP GWTGKLPE GVREYKS YGNNYVNLGSENSKAGKYILRFNPDEKQSEKRDGLQYVNS FVTDTGAPGPDRGKGGKYLILPPDYKGDLNPPVGYFVCKS YTNAMIGSRTQGTKGGRYMFA SQSWQGEVPASVKVIRV

 WT NDFAYAGLRAGGADGGSWLLAPPGWEGQVPGSVRVIEA YGTQPGFYMMV GPNWKGETPAGDTVVRS WSNVFSALGKRTTGTQRGNYA\|VGPDWTGADPAGVREIRS


VYGN DK TD DSTTS GGRYAF TGPGWS GTLPPE TTE DP L YVNPLSS LDNGDKEATKVMFYTERTNMPTELPQGVQKFEM YCEPLAASKGDFKKPTS ILYYYARTEYSGEVVEGVRVMEM
Y G LT Y HVLGSTHNGGGKWLLAHKDWE WA GEDPED $\square T 1 \square R S$ YSYRFGYI GTRATGNGGGSFLVAGPSWNGKVPAGITVFRS YGQVYHT GGKQHGSNGGAKDYIVPPGWDGELPDEFELVRS Y VN $\square$ PLSTGNGNFGEGA LLIYSDHTNYDGEKDEG $\square$ HYFKA Y GDDLVNGGNGGSKPGDYLVRYNSKSYTDNVPEGYVVVNF
Y GDNYMN LGPGGNPTGEYLLT LPSSSVMGTDSDGYMGVYS WS SNAAARGPRG GPRSQTAAFAAKDWQGTLPKGVTRVDA YTNAYHTAGSPYGNNDASTFW■VPPGWDDTAPEGTLVVRS

UniRef90 UPI0003B50023 UniRef90－UPIO0047D9787 UniRef90－A0P4C8 UniRef90－UPIOOO3669847 UniRef90 ${ }^{-}$XoW174 UniRef90－S2FGK7 UniRef90－COZQD7 UniRef90－HOHZ14 UniRef90－E9T634 UniRef90－X1HY888 UniRef90－Q46PX4
UniRef90 S2EZ UniRef90－E4N771
UniRef90－L9XJB6
UniRef90＿Q46VIO UniRe99OUPIO002DD674E UniRef90－UPIO002379A42 UniRef90－J3AB18 UniRef90－xoVKS3 UniRef90－UPIO002D7F6A5 UniRef90－UPIO00468216F UniRef90＿UPI0003B402BB UniRef90 UPI00030EF8A4 UniRef90－J2D8E3
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UniRef90－HOFON3 UniRef90－Q946Y5 UniRef90－I3BUP1 UniRef90＿UPI000375602F UniRef90－A0A016PAG9 UniRef90－хоY0M9 UniRef90＿W9xvU6 UniRef90＿UPIo0016A2913 UniRef90＿A8JE80
UniRef90＿R7QTG9

DTAVGVVI PRVVFMDDDRDA $18 A A L V D Q \square C M Y P J L A D W S A V P S$ YTDKIKMLARVELQDDLEAAVALVKQFQMSVIGTPVIAPT PTLTAYGVVRMAVETGSAAANGYQDQVTITPLADWLANGH PTELVA GPRVFTPEDLEAVVQLLNQLVIHPLSTHTGSPK PTNNIIFIGTRMLEADPKMAA ALQAKFRTYAYKDRAKPPK PTRTARVLTRVELGSDWSEAERLQLEFKMR ESDLVMARIMTTGGDDLEAARNLQDQWKLETLSVFLG STNRNFLFLRGSTEDGEPAVENITSGLKIYPLKDASNPPP SSNSFTLAVRVAVTTRDEQDMAAARQTVTGVLAAPLAQWE TTYRHWLLMRVFVKDGDASTKALREGFRCYPLAQANKPPK
 PTDTVWLIGRIELHDTSDAVTGYQDQMRLLPDDVWADGGD GTKTLLTELRYALRDPTDEVNDLQEQTTVPLSEWEDNDR PGVKMMGRAMDLGGDDSATAQKLMDQWNGRTLSEYLGQKG

NTYGNWVIWRGYDGTTAQAVNATKEKFRTYPLSQMENPPE PARTARVIARVELGKDKRQAALLQHQFQI R\｜TGVPR臬 DSNLIKVMGRIMGGDDLEVARGLQDQWLLQTLSEHLGRPA PSSKAKILTRVQIGDDVDAAVELQHGFT LASTGTPTV DTNYVFFGVRLMAESDKQRMKDLGEALKTDLNGKPLSD PTN IAVLMARSFAAEGKAAARAVLNQMGATPLHEDQPGRR PVKYARLLARVALGKDTDGAVTLQHKF SLKATGTPKD PTNMVWILGRTYCAEDYRLVHSLQDKYSLKPLSYYGKFYT PVKTSRVLARLEGGNDQEAVILEKQFKLDESGKPQTRPF HGSKAKLLGRVELKGDPDGAVKLQNQFKLASMGQPVIAAP FTLAVRVAVTTRDDADMQAARSVVHGVAAAPLSLWTAHPP PVKSARMLARVALGTDRDGAVALQHEFRL


PTVHVRLQGLAPGGADAAAGWLRADRDTPWQAWHQGST GTWDVWMLGRTLLGTTTPDARTLQSSYRMSVDNENVGPTP PSNDVWLLARTFVADDLDAARAVQSGIVVEPVDTKSKPLL RVFSUVARFAFRGPRDLPAVRALQDQLTLSPLDPGARRPE PTPTGFIPGRTEVEKDVAAVNALQKQVTMTPLSSYGKKYS PVKYSRMLTRVALGSDVEGAVALQHQFRLTTTGSPALPPV DSDUIKVMGRIMAVDDEQDARNYMDLWNLRTGSAYLGHAP TSDSFTLAVRVAVTDRSDADMAAARKLWSAAGGVIPPLAQ
PSDTFSLTVRTRTAEDMAGARAAVCGVRASPGALWVKGGY HSGKAKMLARTETKGDTDGALLALQRAFKVTTLGTPEAAPP RSRYVMVA

| D WLLARTFVAGVEDLEAABQVQSGRSVEPVDPEVQR NVFLFFRTVMPGGEAPAVEVAEQTRIYPLWEEKNVK KAKMLARDELRGDPDGAIALQHGFTATPLGEWEVAE VAGVFPRSFSEASKQQARSVLDQI GMYPFSEDRPGP |
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|  |  |

NWRYVMVVGRTLVDADLERAHQLQDATELKTTPRGAPPVA PTNLVWMFGRIVTPEDYQAVHEIQDQVGLVPLSSYGKPYT PTPNGLIVVRTNAAGDLQKIHALQNQSRLHTVKKDGRRAT TS WVNWFIIARGFDGKPDYSSKLFREGLKVYSLAKKADPPK ESNLVKLMGRGMGKEDEKVALNYMDQWTLRTLSEYLGENG PERWVMVVGRTGVDPDDADDLADQDKTGLTLDPDAGVGAA PVTSATLIDRTDGENQIADAEEFRRSLRMGPLLAYLRGSLL PTQEG\｜LGRTSFNGTGAANWTVTWNFRWGPNPRGDDVPD
DSNLVKLMGRDMGPADEKVALAYMDDWNVRTVSAY LGVSG PTADATLVVRYACAEDVAAVRE贝RGGLALHP\TAPGDGRG DDLPLAQAVQNAFSLTDLSSYPTFTP STSLAFVVPRTF DDEDQKAVQPVISQ\｜VYYPLSEFGKMKS PTAMAWAA $\square Q V D G K H D Q A A A Q R L R N G Y R L T P L A A W P N G P A$ DTPEDKRAVQQVLGEDAAYPLSEFGKFKT


PVTNPLMDRSNRFSPDALAEEFRRSLRMGPLLAYERGVL TGDFVSSVIRVMPERMDKIIDAMQEVTVSTLFEYNGEQAK PHPFMILIFRAFSKNVDQTAQAFRQSLLMQTYSAWQANPA SGDFAVAFLRVMPEANDKANMAAVNAVKLQTLSEFQGKPA PTLEGNDLGRTSFNGTGAAQWNLAWALGPWAPAARPDPVS ETSLATLSGRTLSAADMSNVNRIQSRYKVQPGSAF RKK
 TGDFVSAVFRVMPHASEPEREKVVAQUQSIELSHENGYQG PMPYGLVNSRIRTDEDVA【VATLQKGFRVRPVPRSGKPVA

UniRef90 UPIO003B50023 UniRef90-UPI00047D9787 UniRef90-A0P4C8 UniRef90-UPI0003669847 UniRef90 XoW 174 UniRef90-S2FGK7 UniRef90-COZQD7 UniRef90-HOHZ14 UniRef90-E9T634 UniRefofo- -1 1HY88 UniRef90-Q46PX4
UniRef90 S2EZN3 UniRef90-E4N771 UniRef90-L9XJB6 UniRef90_Q46VIO UniRef90-UPI0002DD674E UniRef90_UPI0002379A42 UniRef90-J3AB18
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UniRef90-_X1A617
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UniRef90-A3UCJO UniRef90-E5U9E5 UniRef90-XoURJ7 UniRet90-M2WIS4 UniRef90-B5GVS3 UniRef90-M2X956 UniRef90_V9C381 UniRef90-J2PMI8
UniRef90 H7CR58 UniRef90-H7CR58
UniRef90
M5RT74 UniRef90 UPIO00383162F UniRef90-X0V5K1 UniRef90-G7XYS1 UniRef90 XoUZW9 UniRef90-D2YD61 UniRef90-E9UQZ8

YGDADDSDGEJVETRWVDPGAFVTDपSAVLDEVPPRPGETA TDFPN FTNQAPPQSNLFEYTEVFLQSSDEKMENDS KGMAQADRKKAKVDKQTAEQYFTLLSVTLNDPTMPTMEAE SVVPHFPGGDTSAQWVDPGTFFDELPGL DRVPPDPGEES NLYPQPSA NYFFGPPRGMAFWERLHELLNREVVAERDRF RPPETAQTLMFQGQQLPGVEVFDSATVALQEPDLNPGMEP TEYVNVSGKSFNTVFPNDLKYFEILDAI QREPIDAIGPE ANGGKVPP QKDYDLSGKKFNTIHANDEHFYEEDNAVVQYEPADAFNPE TEVPVFTNKSLP GAEVFDWTDALLRGEPINPGMAP ELPSTPHGPVFELYRDPTVEAFDAAAAALEEPDLNPGMQT YTPPAGSYDPTLPTTPTGPEFFDELAALLTHTPLDPPDDR SGVPSVVAGDYETVPRTAADFFTLLSLVLNDPSMPLIDAA PKPLEREYPD PENVEAFDSAALALDSEMMKHGDQR NNYLEASEVPYDSLPYYNETFFQDLNDYVQNNPMRPQDKV MTFVNASGOFMNTTHRMDAYWERLAADEREPLAERDH DPVPVTPPFDNSRLPGVEAFDSAAVALDSEPINPGMMP PAPVSRDFPD PAATTWLHRVDFLLADGSMAAADAE VPPAALPEFDNAHDPGAWM
NGVNFPERGEDAKHPRGMAFWNTLNEATQAEPVAERDRM TFDCEASARNKVYPPDLNAQULAADPDLLRRRSVQDSFWD PEDPKTPDFDLETFPGVEAFDAADAALSSDPDINPGGEP YKLAHFTNDKLP GAELFDDASGUNSEPADUNKG PALRMFDNKDL MMGADFDDVEPKLLSADDVAPNAGE KLPVIPKALMFEPEKLPGVEAFDSARTALDSEPLNPGFQS
 VPPKVPHTVMFD IGELPGVEAFESAQAALDSE ADDNPG QSVQLRADPQLDVRTPPAEAFFTYGAELLRKHPPHAADQP $P P L R Q Q T V S S Q N L V S A Q A G F F D E L A D V I A A D P P P P A D A A$ FTTLAPSE MEPHSFLALTNEVLGRSPSHPQVAR GPP DRSKQVCDDLRFWEELRTWMRAFPLPPMERE PPKVKVDPAKKYTG DLAFFEQLGDTLADNGAPAVDAG ADAVRLASRDREAEVSEPESFVHSVGHAID PKTLIFGLENFPAGGEAFDSAAAALDSDPDRNPGDE PPP QPVVKGTYRNMPRMKMTAI DYLQLLSLAINDPTMTAKELA ASFARMDADTD\GKSMTGVDYLQLLSLVLVDPTMTLRRDS PRLPMFGNQDLVGV ELDFDDADAKLASALDVAPNSAE QAFVALVHRSRDEEVLSPEGF DDS LDSAMAGLPMADDPPW NTFPAPSAQYFFGPPRGMAYWERLHELLNREVVAERDRL RRFDTRAPADM EPESFDALTNEVLGRSPGHPQ VE SRVKAAPSLDLKTPVREQVAFFTYAAELLRRNPPHATDQP MVFPNASGRRVNMMYPTDFEYWTKLKAFVDYESVEADTPE PA $\square$ PHFDNATLL GADIFDNLDAVLAS LPPFGGDGGDSETHWVDPTDFFDDLPALLTEVPAKPGEQA
 MTGSAAVNPAWSAGQMDAASYFNLFADLLRSNPPHANDYP THFPAPEGSGGETKWVRPASYYEDLADVLKRVPPLPGEEA MERTKKALDDDAVDKEYYQ PRDAELARYTRQAEDTDPTAFAMALAQVLDDADPDAVTDA PPDGNVPSMDMKTPVRDQVEYFTLLAQLMKTNPPASEDAP MEFYNGSTKAFNTUHSTDYKFYEELATVIEREP $\square E M \square E P Q$ PKPDERKYPDV NNTSWLERVNFMLCDGSMAEADKM PTSRAVDELSRQDETLEPSTFATALSVVLDDGGPGQVPES RETLIVPVFFY GRSFKRDADTLIATNPDRFLE

PPVAAPADDWQPWDSKGPEF AAALNQULSDCPTQPSEQA GLLPGGDPLAEPALDQPALVRWERLRVWAGDFPPSGADRA KDWSKLPHFPTPASWVNPETFFDELPAVMKSVPPDPGEEA NPWTPPAAVDLETPPMDAQAFFNRFASLLPANPPTAAEEG
 AETLVVPVSFW MPYYDERAFKDIYDVINAEPVREQDKV TTDDEFPAFSQTDTDTYATNFTDVMQFAVNFDNNSDYDNE GGATAVRSVAEFALPTAPVVFLQQLQRAVRVPPLSRADRA KAPDPLAMPAYSNDQNVFASNFQEAMQFVFNHTTYEMDRE VNWVNTAMKDFNTLHAQDETFFDEVNDTVQEEPNSAGEPE AAPAAPVQVDWLTPAPRALEFYEELAFLLQFAPTPATEKW ADRFAYPETSLWQTPEDPLDF WKLVGEVYRRNGAWHDEDP
 PRLDLSMFVQPEYTAQNQSLYQAVMNTAAALTPHDPSDRK QKFVLDGDRDFSQDWPRDAEAFEWLLGEVFTMDRAPAAGAA AEAAMGATPAEQVAALVDMELNARFGPVSPYNATGGTSPL FAYPEASGAASDVDAADPLQFWRWAGEVFRRNGAPYVSDP
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UniRef90 UPI0003B50023 UniRef90_UPI00047D9787 UniRef90-A0P4C8 UniRef90-UPIOOO3669847 UniRef90 XoW 174 UniRef90-S2FGK7 UniRef90-COZQD7 UniRef90_HOHZ14 UniRef90_E9T634 UniRef90-X1HY888 UniRef90-Q46PX4
UniRef90 S2EZN3 UniRef90-E4N771 UniRef90-L9XJB6 UniRef90-Q46VIO UniRef90-UPIO002DD674E UniRef90_UPI0002379A42 UniRef90-J3ABI8 UniRef90-XoVKS3 UniRef90-UPIOOO2D7F6A5 UniRef90-UPIO00468216F UniRef90_UPI0003B402BB UniRef90 UPI00030EF8A4 UniRef90-J2D8E3
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LLYDWFRT ${ }^{250}{ }^{250} A A V D P R V D_{D}^{260}$ VVEAAKEA
IQTLTREIGYLADHPESSSRIDSVITKEA
MLK QLEAFNUGKGLSFEWSKLTAE
RYAM
TRALLAAAAADPAVATAVKEAAAETEATVQTAP FMALLRRVGDEKGKPFNPTPRQRKDLEEAAFVGEAMAKAN LQVKVRADAAAVADPDERARDDKSIHSHGEQGMAFADL
 L DRLAK G GREGTDFEPSAEQKAADEDGFTRARREAKDA VGLFASVGIKKGEP LQAQVRA:AEQDK TSALLAELGLGGHPYDADRLPDAETDDDAKAAGDDADEH LQARVRQI AADVAADPAQRERIDRVIR
LQQQFGQLGLGNEDYVFNDEQLKLIELGEKKGAARDKNAG
 LLGHLAAGGVKGQPFEPDERMRAILKAAAKAGSVTVKTV LQARVRQIAADVAASPAQRKRVDRLIREKADPQLVTE WLDGLAEVGLEPGRTFTADQLD LTAALAP GLADSCGRADELHALVHA DAAYVGDESSRVA MHDMLRPDGDEKDEAFAPSAQQRDILEQAVVMGEAMVKNI DLDEALDANPMVSLDDTPMADQARALISLRATTPAWRALL

 TLARLAKLGVRAGVLFDPDALTPAQKAAAQAGFDGARRTA MQQLTRRVAEAATQPAERARIDRVVRTRAMEEF
HVRPFAALGLLGPGPWDPAALD EATADALADSFAAAQAV VQAKVRTIASRLADPAERARIDQVIDTRAFAD MENMQASTRMIALAVKDPAERQRVDQ VVRRKAFADL MRGMLAGMGVKGKPFKPDANTKELLDKAGKVGFKMAAN
 $\frac{1}{A V}$ ASLSSLGGVRPGATPSAGPDAAALSAGVVNGNAVVDNS

SMGSLVRR
WLSKYKSTGLEACKTDDFTKEQL
MIERLADLGLRDGVDFEPERLTD VQRGATERGFS MQQKVRAVSAYAASSAGARAEVDAKLRDVIRRFREDALTK VVE ARLRLRKSLIADDATGDGRALVARGLAAGLDRIA LLGRLASVGIVQGQPFEPDARMQKI FEQAAQEGVAMSRVI RSAHFVRKGUVPGRPFDNEWEDLSLGARAFAVGEAMAKAN VLAKLRRVGLIPGRPFDFDKLDHPVKQGLRRGLREARERM LRGVLAAIGIIKGQPFAPTAAQQEQLERAVLRAPKMLLAQ LYD WMGSLD MLDRLRRLGLGD
LYGWU RSV WEAAAS NPEVRKQDDETFAKANAELVDP MYGLLAELGTEKEKTFEPDEEMKQLLTEAAVAADEQMAIN FMYWLKNLGDEKGKPFNPTERQKEILIDGAKTGELMAKTL
 ALARFARMGLVAGQDFDASKDNADFAKRIPEMGFDRILAQ LRGVFAS GIQKGKPFAPDERMKGILTKAAEVANATARTM WVEQYKSUGUEACKY Y FTEKQLELAKDGEKAGMDHLRTM LMSYV LQRAVKSTRTPPGENRILSERFDRGFSRGRVFAEATQDAH LVKELGK GDYRDFGFVSYGLDVNTADALALAP LRARFARIGIVPGQAFDVTALPRQALLAGIQDAQAQLQ YQERFQSLGEGATPYAEPAAELRWALEEGEAAGRAQVEAA FVSSLEQLGIGAGKKPEASSKIQQULAQAA ADAHADIH LYNWI GSVLDAAAK MMQKVRGLGIVPGAPYSTTVLEPETARA
RYAQV LAVVEAAKTDP FLRQLQTAVNDPETAPLTRQDKAVAEEFDKDFGKGRNLPS MGGMLASHGIRKGAPFSP MMGMLKTLGUEKSKPYNPDEET पKAMRQGADDAYYYMEHW LRELQRGVMDIRTPPLTGDNR ALIAEEFDRLFATGRFE ALKTFAK GDRPGQSQPKQAKFADDSEQLSEKAREHYQAQ LSDAFNRVFAGGG ALAALKAVGVEPGGVFDQSNAPEDDGKRLAEVAAKDAAEQ
 RERFAS GLQPGEPYDTAALNPARRRALQEGMHDAQND LKRLLPTHGLWEEYGFVQASVSPDALDALKDAPYYANRD RKAMVSUGUGSGSFDFDSLPR SVAKLKKAGFKDGKFDQPAGTNLT HMGNMRRLGMQSGKVVFPDDRAKADLERAAATGEANALSM
 AQQQLAEDGVMAGYPVLWTGDRDTAATAGVAEARARLAAP

UniRef90 UPI0003B50023 UniRef90-UPI00047D9787 UniRef90-A0P4C8 UniRef90-UPI0003669847 UniRef90_XOW174 UniRef90-S2FGK7 UniRef90-COZQD7
UniRef90- HOHZI4
UniRef90 E9T634
UniRef90-X1HY88 UniRef90-Q46PX4
UniRef90_S2EZN3
UniRef90_E4N771
UniRef90_L9XJB6
UniRef90 Q46VIO UniRef90-UPI0002DD674E UniRef90_UPIO002379A42 UniRef90-J3AB18 UniRef90 XOVKS3 UniRef90-UPI0002D7F6A5 UniRef90-UPI000468216F UniRef90 UPI0003B402BB UniRef90 UPI00030EF8A4 UniRef90-J2D8E3 UniRef90-UPI00047D9418 UniRef90 UPI0003825F4C UniRef90- J1KW68 UniRef90-A0A023XJ49 UniRef90-UPI000248BBA3 UniRef90 B2TAF3 UniRef90_UPI000376B575 UniRef90-J2YSZ9 UniRef90-UPI0004699312 UniRef90- X0W2R5 UniRef90_UPI00046FA9A0 UniRef90 UPI00036646F3
UniRef90 UPI0001DD10A4 UniRef90-D3D1B0
UniRef90-X1A617
UniRef90 V8D1T3 UniRef90_UPI00046F2968 UniRef90_UPI0002D317EB UniRef90_U2YJG8 UniRef90 UPIOOO4672070 UniRef90-BOUFM5 UniRef90-J9SS29 UniRef90-V4IQB9 UniRef90_XOYNJ1
UniRef90_A3UCJO UniRef90 E5U9E5 UniRef90 ${ }^{-}$XOURJ7 UniRef90-M2WIS4 UniRef90-B5GVS3 UniRef90-M2X956 UniRef90_V9C381 UniRef90-J2PM18 UniRef90-H7CR58 UniRef90 M5RT74 UniRef90-UPI000383162F UniRef90-X0V5K1 UniRef90-G7XYS1 UniRef90-X0UZW9 UniRef90-D2YD61 UniRef90-E9UQZ8 UniRef90-A8M714 UniRef90-A8J4L0 UniRef90-J3IWK7 UniRef90-J2SIB9 UniRef90_F3ZFF0
UniRef90_UPIOOO3615384 UniRef90-J3IPI7 UniRef90 V2H979 UniRef90 X1L9R9 UniRef90-UPI00036CE2AE UniRef90_X0V7Q7 UniRef90 UPIO00262BEF8 UniRef90_UPI00036B6DBC UniRef90_UPI00031F1F5E UniRef90-K6WD59 UniRef90_A6UMU4 UniRef90-M5T4Y7 UniRef90_Q946Y6 UniRef90_HOFON3 UniRef90_Q946Y5 UniRef90-I3BUP1 UniRef90_UPI000375602F UniRef90-A0A016PAG9 UniRef90-X0Y0M9 UniRef90-W9XVU6 UniRef90_UPI00016A2913 UniRef90_A8JE80 UniRef90_R7QTG9
 $L P K F D N Y A D T E A G K F E N G W L A T L L A G N Y D S N$ ALETGFKAGFDNVRKTLKTNMINMNGWGVVRNDGGFETRW LFDFRTNGTRVTGGWNTPLNVARWGFDH
DLAKRSTDPYWKGANWKIALGLDPSQRQESYDEFDERAEW AKASPDMGHGTVKNGWGRPSTSGT Q D $\square A P E M T N A G K$ LLGTRADLQDGPRDLFAEGTY SAHRRGPD
FESSQVDMNGW R LQS S LIFFDD LDYVA $\frac{\mathrm{V}}{\mathrm{F}} \mathrm{F}$ RPRNKSVYYPDRQWYTSFAGGH GTIRNGWVRPS VGNYGDD T F A A $\square$ ASAAAT $\square G P G T V R N G W V R P A V S G A Y G E D$ $H Q G P T P V N G W T F M T T G \emptyset G T Y G T D$
A VEANGD VMVDMNGWNVLQNTGDFRTDW FDDSRDV
$\qquad$ ElG FDDSRDV FVTPGWVDDSGEMRSQWLIWDFADGQPEAGFPYEEMTKVA TYDRRFPNKYRAGADWDHALNLDADDPAEYWDRLDERA SW $\square S K P R D E R F Y W Y P S N W Q T A F P G R A Y T W E L D G V T L D D R A A F$ GGTTRNGWTRPALI GQYGND $T L A T R H L A E L A P T D T S S K G V L G T R E E L Q H A P R D V F D \square G T M$ ELDELIRSAAIPAFMDFVVHFGNVTNGWSSTAAYPKFGDD DFNKTERILPHAEGNSWEI ATASTPNQDRDYGMDLDGRAAW DRAALAADTELFESARYEQVGSDAGHGWQRQTNGGRWGTD KAALEASLVDMNGWRLQSSL GKA GA II GHGT $\square$ HD GWARPDVVGEYGLD LRASRPQLGESTGTGWTRV R DKGAHGHN AKAGPKIGPGTLVNGWVRPAVAG NYGSD NQAMLTIAGSPKHNGWVLPKISGSYGSDWLMRTLIND DYNYYPNDK $\square$ YPDRVWEQTF GGSPVFEAKTYHNEDASVAF DDMPGETA

GPLGWVAERDAMGAYGSA
EGVLPARGP WRTTDTAGHWGTD
DMLLRGLSRSQDKPGWNAPPLI LGDYGNND ADAGRRTNLGWSSTLHEADYNLDRFGPGVLDDRAWE DPDR SASMGKNVNGWQLS S $\square$ AS G $\square A Q G M S D I A S H V K T \square G R A V N G W A \square N D V G T A F G E N Y$ APTDT DSRVALGTRADLQNADRTPFDVGTYL AAQTGFDAARKKAKQALEASLIDMNGWRLQSSLFHDDLDY ASRDAFDKTQDDMNGWRL QSSLFYDDLDYRS SAPYR NHWLCGTGSG NYGGD AFDSRQPDAVYPGLKWESPFGRTVNGWA DNESGTDFGDDH $P R V R Q G \square S R T Q S R M G W N T P$ QAAAG VS LS SVNGWQRETA SVVGVGNA

FDTYLRSTFVPEFREFSLTKSAPYVNRWVGGKPTGNYGAD TADAADKDLIDPDFQFRNIGVPAGNHWTTQHNGAQFGTDY $D R A A L R A D V A L H Q S A S Y V Q A G V D A G N G W Q R Q R N S G L W G T D$
$\square \mathrm{L}$ HFRYNGRP
GHGWTAPANASQWGTDY AFSSDVPERVWEGKNWEWVVGGDSGYYLDDYLSLSVRERW VFNER LA GVLDRQNNWRMILGGARTQRTKYYDI FDPRARY RADAEGLRRGYDD\DRHVRSFGRLTNGWAVNDVGTAFGGD YKINKEVK VASKPQNVRSLGNGWKELAPTVQGDYGENYVMREYVTYT LWYERDKSAFYEGSNWKRGFVGGSYEFGMGGRNLDARAQF QLAPK KVDSRKLLGTRES LGTGARDEFAEGTQI
SFAAGLRTGHQDURRRVEHLGRTVNGWSDNDRGPDFGDDL AA RNYLSNDENNWIFRNIG FWGRNYLDRSS口TQF
 $T A V S Q V R T T L G L G G T R E A L N G N Y$ A WRWSRDGGSVAGGGWEGAAHDFDFNLDHLGWRVGDRSEA GRGGWLIDTRNVNGWMVSYGDTSFDKDP PF L LRWSNNGRAAGNGWNSPVNNAQWGTDY

A A A EANNQLVKP LFDFHNYGLT LP HNWTTTSNNAAFGTDY ELRDQFARGVRQGR\IRNYLGHTTENNWVNFRNDGNWARD

FDHMPKDKYYWPDRHYASLLMTDENKTFTWV YDDYDDL DEFARATQDAQADDISNYLNNTDRNNWDNFRNDGFWGTNY $\square A \square M G T S D A E \square L G R \| F P V M F Q P K G \square T T A E A D Q F V S V V G P \square$ YQNHRD

RNNWIHFTNMGKWGTN VAKYTF GSPATNYWRLPVYDGDW EFEHDGVALNSRARF II DKTLGTLGGKTDTVFGD
 EEVDNYPDR $M K K S V D E D F R K K V S K M F Q P K G K T D L E T L L N V S U L G P \square G$ SFASRPDVSKDVGNGWSLIAD RYIGKFDSY AFQNRVSKP $\quad$ Y PGKRQWEPYANNRSPVF $\square P Y$ YEVEERAGA TAVQTFPLANGSVLNMGNGWTDNNPEYS GLYGTN $P P N L L N A N G W S W \square G D T A G K Y G Q D$
WTEVGGADKNYWNAPWNWGHYGSD

UniRef90 UPI0003B50023 UniRef90_UPIOOO47D9787 UniRef90-A0Р4C8 UniRef90_UPIO003669847 UniRet90-XoW174 UniRef90-S2FGK7
UniRef90-COZQD7
UniRef90-HOHZ14
UniRef90-E9T634
UniRefofo- -1 1HY88
UniRef90-Q46PX4
UniRef90-S2EZN3
UniRef90-E4N771
UniRef90-L9XJB6
UniRef90 ${ }^{\text {Q46VIO }}$ UniRef90-UPIO002DD674E UniRef90_UPIO002379A42 UniRef90-J3AB18 UniRef90-X0VKS3 UniRef90_UPIO002D7F6A5 UniRef90-UPIO00468216F UniRef90-UPI0003B402BB UniRef90-UPIOOO30EF8A4 UniRef90-J2D8E3
UniRef90_UPIOOO47D9418 UniRef90-UPI0003825F4C UniRef90-J1KW68 UniRef90-A0A023XJ49 UniRef90-UPIO00248BBA3 UniRef90_B2TAF3
UniRef90_UPIOOO376B575 UniRef90-J2YSZ9 UniRef90-UPIo004699312 UniRef90-XoW2R5 UniRef90-UPIO0046FA9A0 UniRef90-UPIO0036646F3 UniRef90 UPI0001DD10A4 UniRef90-D3D1B0
UniRef90-_X1A617
UniRef90_V8D1T3
UniRef90-UPIO0046F2968
UniRef90-UPIO002D317EB UniRef90-U2YJG8 UniRef90_UPIOO04672070 UniRef90_BOUFM5 UniRef90-jgss29 UniRef90-V4IQB9 UniRef90-XOYNJ1
UniRef90-A3UCJO UniRef90-E5U9E5 UniRef90-XoURJ7 UniRet90-M2WIS4 UniRef90-B5GVS3 UniRef90-M2X956 UniRet90_V9C381 UniRef90-J2PMI8 UniRef90-H7CR58 UniRef90-UPIOOO383162F UniRef90-X0V5K1 UniRef90-G7XYS1 UniRef90-X0UZW9 UniRef90-D2YD61 UniRef90-E9UOZ8 UniRef90-A8M714 UniRef90_A8J4L0 UniRef90-J3IWK7 UniRef90-J2SIB9 UniRef90-F3ZFFO UniRef90-UPIOOO3615384 UniRef90-J31PI7 UniRef90_V2H979 UniRef90- X1L9R9 UniRef90-UPIO0036CE2AE UniRef90-X0V7Q7 UniRef90-UPI000262BEF8 UniRef90-UP100036B6DBC UniRef90-UPIO0031F1F5E UniRef90_K6WD59 UniRef90-A6UMU4 UniRef90_M5T4Y7 UniRef90-Q946Y6 UniRet90-HOFON3 UniRef90-Q946Y5
UniRef90 I3BUP1 UniRef90-UPIO00375602F UniRef90-A0A016PAG9 UniRef90-хоY0м9 UniRef90_W9xvU6 UniRef90-UPIO0016A2913 UniRef90_A8JE80 UniRef90_R7QTG9
 YWTRTAANFVGIWANTSEEVIYFIASKDANGEALGSGKSY MDRADIADAAWAAPDKNDSHGGAFAFTDSEGKPLDGKNNY MYEAVTTSAGMVTTTPGLGSTY四A SYADKDGDWLEGGESY YLTRTLVNYGGIWANTQKEVVYYRGWLDENSKPLESTQSY

KAGADDVAWGTPVPYESHT $\square$ AY $\square$ FDDSEGRP $\square E G K Y D Y$
YKTRTAVNLVGWWANNSAEVTYFG NRGLDGGQAY YLTRTLIDLGGIWANTSAEVNYYRGARDADGQVLDGGKSY YPQRAYVASDGLGANDPQDALYPMTATDGDGTPL G AY LTRAAMADFGFAGPDSPASHAAGFKFDDANGDPLDGSNRY YKARTRTNFAG\|WANTAQEVVYFQGVTDGEGGRLNGANTY SYQHAYGTLMGQWGLPAKHTMYSGDFFDSEGAALDGGKDY VDARAGGSYFWDTYLPGGGGFY GGGRDSDGEMYDHNQTY FYEAYSAAADMSPNKPGASSAYLGAYRDSAGDWLDGACTY HFYATGDTPAMALKLVGKGSQYAFTYGDSNGNPLDGSKTY YKARTRANLAGNWANVVQEVAYFDSDADRDGNKLNAANTY Y WFRAGQGLPPVESVY LKIETGSDGSPUNGSAGR FYEAVTNDFGGIUWWNSKEAVYELLHVDANGTPTTGDTVY WLGRAQAAVVYIYVNDFEEAAYFIVRGDATGALLQGRYRY LTRTLVNYRGLWANDKPEVLYYRGGNDASGAELNGDSVY

FKTRTVVNLGGTWANNLQEATYFTRTGNADGSAVY FWARTSINFVGIWGNNPGEVIYFGATRDADEKLLNGSNSY KAGADDVAWGTPVPYQSHTIAYNFRDSEGRPLDGNRRY YLARTLVNYGG\|WANIKPEVLYYRCSIDANGAPLSGDHVY FLARAVMNHVGLEANLTAENTSFNTHVDATGDRLRGRRPY YLTRTLVNYGGUWGNTRPEVNYYRAAVDAQGATLSGERTY FHSKYSTSKAMVWANVGKGVQYLMALVD SDEQRLSGD YLKRARMARQRPGTELPQEVLSFRLMADAMGQPITDPGGY YL DRAFLTKVGLGDNELAESRYFRATVDSAGATLTGARSY LVRAAIALIGGGALKTQDARYFRTETDAAGDALSGDAAY AQARIARALAARRPLGVHAYETAAVDLEGHHLTGAHDY LIFAADAYQAFGVNTPIEAYYPSVFKDVDGKVLDGSAKY L LRAAVAYSQMFINPAAEALYPVCEVDDTQSQLNGAHAY VTRTLVNYRGIWANLKPEVLYYRGAKDSTGQELNGDNVY VTKAGSDDVAWGTPVPFESHTlAYVFRDSSGQVLDGDRRY KAGANDVAWGTPVPYQSHTIGYLFEDSDGRPFDGADSY FRRRTAANYAGПWANTSNEVVYFVATRDAEEKPLDGSGGY HFTADGATPAMAMQMPGKGSRYQTTYKDRNGNYLDGSKTY

VVRAATALIG FGALRTEDARYFRTETDEAGEELNGAKTY YLRRALSAQAQPGAGLPEDLSALLLAADSQGRPLDGAHRY

YTTRTVVDLHGTWANTSEEVVYFVASRGADGALLDGGKNH LSRTAMAKANIFVNSPNETAYFYLDLDEAGERLDGDRTY
WFGRALAAVIVIVVNDFHEAVYLIRGTDHDGALLHGRERY

पNRTADSKSSMYQNTP EETQYQFKETDSQGQPDDGNHQY FYQATLETPKMFMRREGSGSIYCDGIDRKEGRFLDGEKTY TYEADTTSPAMTVPKPGKAQAY GKFEDENGQRLQGGNHY HLLRAAVAHSQTFINPVSEALYPVCEVDGAGEPLDGERNY RMRALITADGLGANRPQDAVYPTSLKDVNRSDYHGSNNY FYFATVNTPAMTWKLDGKGSQ GQWGLPPVEASYRQAVVDSDGDLLDGSHDY LLRAAVAH AQDYVNPVAEAVYPVCQTDADGEGLDGRNPY CQYC NDIEKSAYYDVFLDKNGRRLNGASGY YVLAAA $\square K G F W \square S N R L D D A A Y Y Y N Y L D S N G Q P L V G N N T Y$ LNRAVAANVGTYGNSVPEEAFYTGTRMDNQGQPLQGGRSY YLRRAVAARVGLWGPHGYEATTTQTYRDAAGERLDGAYAY LDRAVVAKLGPGCLVPEEG DYFSMLEGPDNKPLTGDKNY LNRTASAKSNMYDNRPEETKYDYTDNDSQGEQLNGNNTY

FTRTAVAKSNTRVNAPNET KYFYQDFDEKGKRLNGKDSF YLDRSSUAEFLQWGNSLPTAAYWHTFKDTSGTALNGSKGY
TPRAV QSFWCTNVPKKATQYMMAMADREGNPLQAGKDY LDRSSUTEFCQYCNDIESSAYY DVFRDSNDQQLNAASGY GQPIQEASYP PLVTQDGEAFTAQHDY VLDRASLNEYTQFGNGISTAAYYHTFRDGTGAPLDGANTY $L D T M V I Q S V V G P V G V P A S E A M Y P G T A T D T D G A P M N A E H D Y$
$H$
$H F Y A T G I D P A M V K P P V G A G S Q Y V I G L R D A E G K A L D E S K T Y$ YVLGAAUMKGFWUSNFLKDAAYYYLYVDSSAQPFNGSADY

YVNLAAQQKFWNDPNKQTDAVYYWGFVDSDGVPYTGANEY WLKRAYGTKAGDYGNDTAEAVYPSMRTCGD EVLDGSHNY MPEAEAIIYPQपKT ADGDPMNAMNDY YNMRYQTGLTAYDALAQSECAYPYGSFDET\|SVKEGESDW WHQLVGNFATYTPAEPGTGQFSMGSYKDGDGNLLNGSNLY WVARAFDAQFGYGMLQPDQADYPTF SGNLSLMANESY


UniRef90_UPI0003B50023 UniRef90-UPI00047D978 UniRef90_A0P4C8 UniRef90-UPI0003669847 UniRef90_XOW174 UniRef90-S2FGK7 UniRef90_COZQD7
UniRef90-H0HZ14
UniRef90-E9T634
UniRef90 X1HY88
UniRef90-Q46PX4
UniRef90-S2EZN3
UniRef90_E4N771
UniRef90-L9XJB6
UniRef90 Q46VIO UniRef90_UPI0002DD674E UniRef90-UPI0002379A42 UniRef90-JЗАВі8
UniRef90-X0VKS3
UniRef90-UPIO002D7F6A5 UniRef90-UPI000468216F UniRef90_UPI0003B402BB UniRef90 UPI00030EF8A4 UniRef90-J2D8E3
UniRef90_UPI00047D9418 UniRef90_UPI0003825F4C UniRef90-J1KW68 UniRef90_A0A023XJ49 UniRef90_UPIO00248BBA3 UniRef90-B2TAF3
UniRef90_UPI000376B575
UniRef90-J2YSZ9
UniRef90-UPIOO04699312
UniRef90- X0W2R5
UniRef90_UPI00046FA9A0 UniRef90-UPI00036646F3 UniRef90 UPI0001DD10A4 UniRef90-D3D1B0
UniRef90-X1A617
UniRef90 V8D1T3
UniRef90-UPIO0046F2968
UniRef90_UPI0002D317EB UniRef90-U2YJG8 UniRef90_UPIOOO4672070 UniRef90-BOUFM5 UniRef90-J9SS29 UniRef90-V4IQB9 UniRef90- XOYNJ1
UniRef90_A3UCJ0 UniRef90-E5U9E5 UniRef90- XOURJ7 UniRef90-M2WIS4 UniRef90-B5GVS3 UniRef90_M2X956 UniRef90_V9C381 UniRef90-J2PMI8 UniRef90-H7CR58 UniRef90_UPIOOO383162F UniRef90-X0V5K1 UniRef90-G7XYS1 UniRef90_XOUZW9 UniRef90-D2YD61 UniRef90-E9UQZ8 UniRef90-A8M714 UniRef90-A8J4L0 UniRef90-J3IWK7 UniRef90-J2SIB9 UniRef90_F3ZFF0
UniRef90_UPIOOO3615384 UniRef90-J3IPI7 UniRef90-V2H979 UniRef90-X1L9R9 UniRef90_UPIO0036CE2AE UniRef90-X0V7Q7 UniRef90 UPI000262BEF8 UniRef90_UPI00036B6DBC UniRef90_UPI00031F1F5E UniRef90_K6WD59 UniRef90-A6UMU4 UniRef90-M5T4Y7 UniRef90-Q946Y6 UniRef90_HOFON3 UniRet90_Q946Y5 UniRef90_UPI000375602F UniRef90-A0A016PAG9 UniRef90-X0Y0M9 UniRef90_W9XVU6 UniRef90-UPIO0016A2913 UniRef90-A8JE80
 SLTFPKESQVNGFWSVILVDFPNYRVVENELNRFNFNNYS
 T T FP Q VP PVNGFWSLTLYNPE HFFAPNELGRYSUGTSR Did NEQKRSAQSSRQ


T $\square T$ F D VNPPTTEFWE $\square P$ VYDSAGYF $\square D N P V N R Y S A T S E$
SQTFPPSKHARYFWSVIAVDAQDFKVIRNPDSRFLLNKES S LTFPREQLARYFWSVTATNSKTFRVLPNALDRFLLNNQS

 TVTFAPPDEDGGFWSYTAYSGKTRLMEKNDLNRHSRGDRT
 KVNVPADVPAKDFWSFTLYDNQTR
TMTFPPSEHVRYFWALGAVDSVDSCVMGNPAKRYLLNNQS EYRARFRAPVSEFWSFTVYGDDDRLMAHNS DNRHSRGDRT RMTFSPSTVVDAFWSLTVYGKPDYLLVPNAAGRFTVGSGQ T LT DDGDVNADLFWTITVYNVENRAI IDDD DERADVGSNE $T M R F E K G P P V D R F W S L T M Y D K D Y Y M M P T S P N G R H N I G D A N$
$T M T F P K D A L A K Y F W S V I M V D S T R F R V L P N P M K R Y L L N E A T$

TQTFAPQSKVKYFWSVICVDGKEFKVIPNPLKRYLLNNQS VIHFPADKAVEGYWSVI LVGVPDYRVVPNALKRYNFNNHS TI SFDDMPPVTEFWELPVYDSAGYF VI PNPINRYSVTSYQ KLTFPKDALARYFWSVIAVDDKRFRVLNNPQQKYLLNDAQ RLAFDTPPPADAFWSLTLDHVETGRLYANVLDRYGLGSAS TLTFTPDKQVEYYWSVTATDAKTFRVLPNPLDRFVLNSHS TLHFSKEQLATYFWSVIDVDGVHRRVLPNSLKRYLISKES HLHMPT GDPAANYWSFVVYDAETRALLDNGQPFPSVASNQ
 RMVI P P GVVVVKA WSLLSVYDADGRFFFKVPI DRHS I N S S S R LRLR P PPVDSFWTLTMYDEPDGYLVDNPLDRYSLSSLD TiRFP
TLTFGDRPPAAFFWSLTVYHSKG LLYENETCRYADTDRT TLTFPKEALANYFWSVIAVDSTRFRVLPNPLNKYLLNEAS EYTMK FKAPVSEFWSSLTVYANDNRLMAHNELVRHSRGDRT




## QMVIPSEVPVEAFWS $\square S$ S $\square$ Y DADGRFFYETP $\square D R H S \square N S S S$ T L H

VLHFPPDSVVNSYWS I L LVS I P D FRVIP NPEHRYNFNNHS TVTFPQQPPARGFWSLTLYN QHHFFAPNDGNRYSLGTNK
$T V T F G Q T P P V K G F W S D T \square Y N A E H F F H$ ANP $\square Q R F S D G T N K$ TLKVPAPVPANLYWSVTGYDLDTRSEDVCDGKDPVISSDK VI HLQKDVPAELFWSIVIYDADTRCLIDNRAGAAGGSATE EITFDALPPVHAFWSLTMYHAQG LLVDDNEDDRYADGDRT


VMRFK APNTSEFWSVTTYANDTRLMEKNAMNRHSRGDRT VIEFGELPPVQAFWSLTMYHREG LLVDNPDGRYAVGDRT T TFDQUPQAEQFWSVTSYDAGT SSLVPNPKDKWVVASYT
 RLRFGQLPPASEFWSLTLYDLPDRQLVANPINRYCLSSRD TLRDPPPPPAYG WALSAHEVP RSPGPEPRAVSDRTP


TVTFPKDPAVNGFWSLT LYN QHHFFEPND DKRYS LGTNK VLTFPKLPETSRFWSLTAYTPHAVTLIPNAADTYAVASYT
 VLTFDQDPQAREFWSVTSYDPET DT LHRNPEDKYVVAGYT VLRMDQLPPMVAAFWSVTGYDEENGFFIDENEHNKYSVGENA
 T I T FPSTPPATSFWSLQALDLDEWTLVPN LLN $\square A G S S A T P$

D $\square$ E F A S A P P VY S F WS $\ V A N R H P D V L L P G S P P G Q P A W S S \square Y$ VMTFEMDQPVNAFWSVTMYDGNTQFLVDNPDDRYLINSSM V I RMDEDPPARAFWSI T L Y D LDENGFFI PNDRKKYSVGENA TFTAPPKILEGGFWSLTAYGPNQDL I PNDQEKYMVGDRS $R F T M P A D V P V K Q F W Q F P V Y S T T N R S F V Q T D Q G D A T R S S T D$
$I L L R F S G R P P L T K F W S A T M Y N V A G Y F ~ V E N P G N R Y S L G D R D$ LLRFSGRPPLTKFWSATMYNVAGYFMVENPDNRY
DISFPAAPPANSFWSLTAVGATTGTLAGLPPPGVVNPSAG

UniRef90 UPI0003B50023 UniRef90-UPI00047D9787 UniRef90-A0P4C8 UniRef90-UPI0003669847 UniRef90 X0W174 UniRef90-S2FGK7 UniRef90_COZQD7
UniRef90- HOHZl 4
UniRef90-E9T634
UniRef90-X1HY88 UniRef90-Q46PX4 UniRef90 S2EZN3 UniRef90_E4N771
UniRef90-L9XJB6
UniRef90 Q46VIO UniRef90-UPI0002DD674E UniRef90_UPI0002379A42 UniRef90-J3AB18
UniRef90-X0VKS3
UniRef90-UPI0002D7F6A5 UniRef90-UPI000468216F UniRef90-UPI0003B402BB UniRef90-UPI00030EF8A4 UniRef90-J2D8E3
UniRef90_UPI00047D9418 UniRef90_UPI0003825F4C UniRef90-J1KW68 UniRef90-A0A023XJ49 UniRef90_UPI000248BBA3 UniRef90-B2TAF3 UniRef90_UPI000376B575 UniRef90-J2YSZ9 UniRef90-UPIO004699312 UniRef90- X0W2R5 UniRef90_UPI00046FA9A0 UniRef90 UPI00036646F3 UniRef90 UPI0001DD10A4 UniRef90-D3D1B0 UniRef90-X1A617 UniRef90 V8D1T3 UniRef90_UPIO0046F2968 UniRef90_UPI0002D317EB UniRef90_U2YJG8 UniRef90_UPIO004672070 UniRef90-B0UFM5 UniRef90-J9SS29 UniRef90-V4IQB9 UniRef90_XOYNJ1
UniRef90_A3UCJO UniRef90-E5U9E5 UniRef90-X0URJ7 UniRef90-M2WIS4 UniRef90-B5GVS3 UniRef90-M2X956 UniRef90_V9C381 UniRef90-J2PMI8 UniRef90-H7CR58 UniRef90-M5RT74 UniRef90-UPI000383162F UniRef90-X0V5K1 UniRef90-G7XYS1 UniRef90_XOUZW9 UniRef90-D2YD61
UniRef90-E9UQZ8 UniRef90-A8M714 UniRef90-A8J4L0 UniRef90-J3IWK7 UniRef90-J2SIB9 UniRef90_UPIO003615384 UniRef90-J3IPI7 UniRef90_V2H979 UniRef90- X1L9R9 UniRef90-UPIO0036CE2AE UniRef90-X0V7Q7 UniRef90 UPI000262BEF8 UniRef90_UPI00036B6DBC UniRef90_UPI00031F1F5E UniRef90-K6WD59 UniRef90_A6UMU4 UniRef90_M5T4Y7
UniRef90 Q946Y6 UniRef90-HOFON3 UniRef90-Q946Y5 UniRef90-I3BUP1 UniRef90_UPI000375602F UniRef90-A0A016PAG9 UniRef90-XOYOM9 UniRef90-W9XVU6 UniRef90-UPIO0016A2913 UniRef90-A8JE80 UniRet90_A8JE80
UniRef90-R7QTG9
 EFTYHPDGSLTLYDAPEDQSDPKSNWLPSPKEGLFNLTLR $E F T Y H P D G S L T$ ELVKNA
PLTYNKDGS LT LHFAPTKPQDADGNWLPTSPGQNYRLIFR
 $L L K A G D D G K \square T F Y \square Q P E R P T D P E Q N W \square P T A P S D G F Q L A A R$ ALKYNADGSLT VVYPTLPS GPRSNWLPTPAGSRYNLTFR DLHYNADGSLTLYFGPQLPQGAENNWLPTVAGEPFRLMLR TPLTGTDGATTLHVQAEAPADQAANWLPDPTSGTFTVTLR GLLRTDANELVIYVQNEEPPEQATNWLPAPPEGGMRFAAR RLQYGSDGSLTLYFAPAKPSGPDGNWLPTPGRQDYHLTFR AMTPNADGSYTVYMSSDKGHEDEPNFLDPDPDDHQWYSVLR

$K L Q Y G G D G S L T L Y F A P E R P A G P D G N W L P T A G Q Q D Y K L T F R$

 GTVKDAQGNYTFHFSPTKPAGNEANWVQTREDENWFVYFR | $E L Q F D E D G S$ |
| :--- | :--- |
| $N$ |

PLKFNNDGSLT I IVYS PKKPQNPESNWDPTPEGKKYNLTFR PLQKDPDGSLK GIGPKPVGGPESNWLPSAEGKPFMLTFR VAAAVRDGRVTFYLQPDKPPEQARNWLPTARGDTFQFAAR GLT Y GADGSLTLYFAAEKPADAPANWLPTPRGTQYRLTFR

 KMTKNPDGSVDVYFGPKAPKDKNANWIRTVPSKGWFGADR
 DLVRRADGSIVLHLSRERPEEKDVVWVPT PEGPFEAIFR DLVHEPDGSIPVVIQSEPPGRKHC
PLQ $\square G P D G S L T \square H \square Q N K A P E G R S S N W L P C P P G D F R L M D R$ GLTYGDDGSLTLYFAAKPLNAPEGNWLPTPRGSKYRLTFR LTPDKDGYYHMTLSDVKGKEDDPNDLPDMPKKPFYLMMR GLYA KTEGGQLTFYLQADRPPKDAEQNWLPTAKGDSFQLAAR
 PPVVNADGTIDDIFSNEKPKNSDSNWIPTBPDQGFFVYUR

## 

PLTYEPDGSLK TG TGPAPVPGPETNRLPSAPGKPFSLTFR DLKSNPDGSLTLTVQATRPDNADANWLPAPAGEPFSLYLR LDAGDRDGKLTLHLSHDEPPDARANWLPAPHDE FRLIIRR
$N L K D N P D G S L T L Y G G A K P G A D K E T N W L P A P T G P F S L L L R$ DFEPDADSNITLFFGPNAPSDVSLPWIQTVPEHDWFVYFR GLRKNNDGSYSMLLGPDPPPGWEANHVQTLPGRGWFPYMR DLRDGDDGSLT RIIQASRPA HDVNWLPAPSGPFRLMLR HLKPNPDGSVDL
$N L T Y N G D R S F Q L L V Q P E P P K N W T S N W \square P A P K G G G \square S L T L R$
LK P DADGYYT $\square Y M S S D K G R E N D S N F D P \square$ PNKPFYNVLR PLRYGADGGLRMSLSVSEPDSGPANWLPAPDGPFRLMLR PLERNRDGSITMYATPTPPRGSKANWLPDPKGD FSMMLR GL $\begin{gathered}Y \\ L\end{gathered}$ $R L Q V D A D G G L T L E L Q N T A P P E Q S N W L P T P A S G A F T L V L / R$ GLVREPDGAVFLRLAARPPRAAAANWVPVPAGBFRAVLR ELKFEPDGSLK FIGHQQPTEGTFNWLPTPKEGWFHLFLR NLKYNTDGSLTLYAGTKPGKDKESNWLPAPSGMFSLY

SLKYNADGSLTVYVQAKPPAEEHRNWLPAPREGDFSLY贝R PLKKNPDGSLSIYLSRTRPTGVNPNWIPVGNGE FNVMLR

K MK K N S D G S VT TYVGPKAPGGDESNWDP TV GKRPDPAVR PLETNEDGSISIYATPAPPPGSDANWLPVPDGPFSMMLR GYEDNEQGGVDYYAAQKPEGPAANWLPDNRGKRDSSVMR
 K
G $\square \mathrm{Y} \square \mathrm{APNGS} \square \mathrm{P} \square \mathrm{R} \square$ S PRDPPARGWNWVKAYPG HYHLLLR
KDAYSNNGTWRFRLSATPPPARGWNWVSLPPGTFYLTDR VEGMKTNGNLPDYI QSHPGLDKETNWLPAPDGPDYLVMR GMRLNEAGGIEIVASEKPEGPEENWLPDERKDNLSPTLR

$A D P V W A D N A P D A Y S G S V P P A N R G W N A V V S P P S G A Y Y T T D R$ DFCFNADGSLDDI VGPKKPEDEFANWIDSPYEEDFTLLMR


A Y GPTTA\| LID Q T WTPAPVDP
S Y VP K ENVL RGDWFP
FYGPYAPLVDGTYNMPKVDKV
A Y WAKPE TEGKWTPPPVHRV

F Y GP TAGLIDGGYAMPR VR
YYGPDAEVANGNAYPPALVR
YYGGKGPVASGEYFPPALV/R $L Y A P Q T A D L L P D W P P A L T P V$
$F Y G P H W S L I D G S Y D M P E V V P V$ TYGPDAAVSGGNWYPPPMVR MYTPGEEVITDKWKSTPFTTV


| $A Y G P D P S V A S S G N W Y P P P V V P$ |
| :--- |
| $L Y G P S E A$ |





Y Y GP S QD $\square D G S Y S P P D L$
TVVPKDVVRQGQWQPAAVTMV
$Y Y G P M A P L V D G S Y R M P K I V R$
YYGP $\square D G V A N G T Y Y P P P M T R V$

| $L Y A P G A A A R D G R W L P T P V T P$ |
| :--- |
| $Y Y G A K D K V S S G N Y F P P A$ |

YYGAKDKVSSGNYFPPAL
FYRGQGAVAQRTYFPPALLR

QY $\square P T N T A \quad W A P P P I I P V$ TYRPEEPVIDGSWSVPPL AK

TYEPQEAVIVGSWSVPP $\square E R \square$

CYVPKSFVGGGGWAPPALTE
A YWPEDAI LDDGTWTPPAAVP
SYVPDKSVLDETYRFPDVVR
NYWPEAT I ID GS WTPPDVVK
$\square Y G P L Q A A F N G N W Q L E D F E R V$ AYGAKAEFFNDEYKFPTVNRV

FYAPTEQLRNGSWPYPVVQKV
LYGPDAD DQS GKYQMPATVK
LYWPDGA EAWEPPCVVR


LYGPGQ


A Y WPRSEVVDGSWTPPAVV
AYGPQGGTLSGSYVPPGLTP
FYGPTQDFNNKTFKDPDFELV VYGPEGSVAEGTYVPPAVRKI $L Y N P D G Q K L$
$F$ FYGPGSSVANNTYVPPPVWR VYEPDLEKM KTWVAPKAE
VYAGDASVQSNTYVPPPVSK
LYSPGAAPLADTY $\square P P P V V R V$ L Y WPKDPVGDGSWNPPPVMQV IY QA DDDAM K WYVP E P GLS N GS Y VYP LVTK
$\square Y \nabla P \square P$ EA A S D A Y VP P P V
I YGPSEELLEKKWEFPTVLPV

AKATNVSISYNSAAQDATAAII S S A T II NVDD AVD G T LIE A T A W

E E L Q L VDACHAV
S SAT I IVNDDAVDGTLEATAW


UniRef90_X4Z400 UniRef90-H5WCG8 UniRef90-W6Y8D3 UniRef90-B2VRA4 UniRef90 N1M3H2 UniRef90_UPI0001F2ADAB UniRef90-H1VQG2 UniRef90- W3WMW5 UniRef90 K0UPU9 UniRef90-C8X7M1 UniRef90-Q0CB89 UniRef90_A0A022GPF6 UniRef90-D9UHX9
UniRef90-N1Q123
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UniRef90-A5GK31
UniRef90-G9MGA4
UniRef90-UPI000371D002
UniRef90 ${ }^{-}$W2RR88
UniRef90_UPI00036D7449 UniRef90-UPI0003603385 UniRef90 W6ZM04 UniRef90-L2GCP1 UniRef90-A2CB86 UniRef90 X0YBF1
UniRef90-UPI00037FA08E
UniRef90-N1Q473
UniRef90-Q0UK96 UniRef90 Q05X30 UniRef90-L2FD10 UniRef90-T0LUNO UniRef90_B7RZZ9

YAYP VSQWQQAVRNDLDAVNKTNTLWPYHTDPLNRTVV YAYPI SQWQQAVTNLLDAVNEPNTLLWPYRTLPLNRTIV
 $Y G \square P L \square A F Y S T Q Q E G A D A P V V N Q L V A N T E \square T T P N D T A V \square$

VYGAP LVRGLETVGLLTQDGLGPATAFNHFAHADPATGWP TYGYPLLAF QK LATPFVSGNITNY LYHMPKLATAADRTVV

VWGDPDQQF WEVTQSAPNGVGKPDNEVYNSPGDDQSNTVV Y GFPLLGFAQVS LLAFENGGVNQLQRSPGDANASTTSVV $M K D Q A V Q S G G T N E K F E H T R Q L P T E D N V V$ NEFFHQRNLATPNDPL
 1 FTAA PVSQTA LLRILSQS SPANQYLHTREFPTPNSUV LWGYPLAETYRYRQLGTKVQAKENMLFKPSSVASWKNSAP
$\square \mathrm{Y}$ T Y P VF $\square$ FANWAGNVLRNYS VNS $\square$ FHQRC $\square$ ASPDDPGV $\square W G Y P \square E E T Y R \square R V L N T \quad A \square Q A P \square N T \square F Y A A N W L N K S S S P$



UniRef90_X4Z400 UniRef90 H5WCG8 UniRef90-W6Y8D3 UniRef90-B2VRA4 UniRef90 N1M3H2
UniRef90-UPI0001F2ADAB
UniRef90-H1VQG2 UniRef90-W3WMW5
UniRef90 K0UPU9
UniRef90-C8X7M1
UniRef90-Q0CB89
UniRef90 A0A022GPF6
UniRef90-D9UHX9
UniRef90-N1Q123
UniRef90 B8NU38
UniRef90 UPI0004679CFC
UniRef90-A5GK31
UniRef90-G9MGA4
UniRef90 UPI000371D002
UniRef90 ${ }^{-}$W2RR88
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UniRef90 W6ZM04
UniRef90-L2GCP1
UniRef90-A2CB88
UniRef90 XOYBF1
UniRef90-UPI00037FA08E
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UniRef90-Q0UK96
UniRef90 Q05X30
UniRef90-L2FD10
UniRef90-T0LUNC
UniRef90_B7RZZ9

GPNADTDY TWAA DDLSHED LVLTDPNDDGRNWDWPFYD GPNADTLYIWVAVDLS QED LVLTIPNIDGRNWIWPCYDV RPNVDT LYSASVIDDSHHDVIVDVPVVDE RFWVFPFYDV K P NVDTLYSRAFLDVSASD $\square L V D N I P E D A D R Y W V W P F Y D F$ $S P N V D T L Y S V V I Y D I S H Q E L V V G D V P A$ DRYYSVALYTP
 GDEGTLCSLAHLDLS EGPLVLQVPPSGPRYAVYQFVDA

 T P A L D H Y Y S KA AV I DL
 KPNDDTVYSRAVLDLSEHD VELTVPN APDSSVLYVTGWLDLAEE QVLHTPNASDHYYVWADLDS

lupas 21
lupas_14
lupas_28
jnet
conf sol25 sol5 sol0 jhmm

7777751376677537886
$\square$

UniRef90_X4Z400 UniRef90_H5WCG8 UniRef90-W6Y8D3 UniRef90-B2VRA4 UniRef90 N 1 M 3 H 2
UniRef90_UPIO001F2ADAB
UniRef90-H1VQG2 UniRef90- W3WMW5
UniRef90 K0UPU9
UniRef90_C8X7M1
UniRef90_Q0CB89 UniRef90 A0A022GPF6
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UniRef90-N1Q123
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UniRef90-A5GK31
UniRef90-G9MGA4
UniRef90 UPI000371D002
UniRef90 ${ }^{-}$W2RR88
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UniRef90 W6ZM04
UniRef90-L2GCP1
UniRef90-A2CB86
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UniRef90-UPI00037FA08E
UniRef90-N1Q473
UniRef90-Q0UK96
UniRef90 Q05X30
UniRef90-L2FD10
UniRef90-T0LUNC
UniRef90_B7RZZ9

[^3]WSDAFATVGKRSTGTGRGNYAVVPPGWMTPLPAGMQR\|GA YGNNFAGDS $\quad$ NTNPPGDY LVQPGDRYTTPAEKGVISYAT YGNNFGMSINDDSPPGDYLIVQPGIEYTTPESSRYKGVVS

YGNNYANLGVFNSSAGKY LLVQLCDETQSEEYEDCRGLRA YGNNTANLGILSSSPAGEYLVRFDSNNPGLHPSPDTRYQA YGENYVTFGALTDSAGTYLLTPASFNTSGTVQADSTIIHV


WT NDFAYAGLRAGGADGGSWLLAPPGWEGQVPGSVRVIEA YGDNYANAGTGNFNSGQY LI QAPPVEGQSEVNSTVASVHS YGNNYANLGSTTKPPGKYRITYCGGKSERPECDGYQLINA PDNFIRAET $Y T N V Q F S S G S A H S E A T S S Q D F Y V E S N Y N G E N Q P S A L A L Q S$
$Y G T N F V T L G S E P V P P G N Y L L R R G S K T W E Q S N N K D Y Q Y I D S$ YGTNFVTLGSEPVPPGNY LLRRGSKTWEQSNNKDYQYIDS FGNNLAE $\square G V N D N K P G D Y L I \quad G G S N D T S T F D S S A Y Q V V T L$
YVNPMSTRLGDFQKAEKMLVYRTGGYKEGEKDEGVDRYEV F GNNFAG\|SINTNPPGDYLIVQPG\|RYTTPAEKGVISYA YGNADAEIVVNGNTAGTYRLKRDAVSEVGLANGNLINDST Y $\square N T V G S I G P R T Q S P N Y Y L L A G P S P Y Y S G N D N R T V R I I R V$ WAYVLDNVGSVKDGNDGTTVLLPSPSWKGKLPEGUDRVRG $F G G V V A E \square G V N N N T A G K Y L I A V A G Y Q W L G P R Y Q G V I V N V V_{T}^{R}$
N $\square \mathrm{NTVGSDGPRTQDGAYYLLCGPSADWTTT} \mathrm{\prod ADGVR} \mathrm{\ IKV}$ Y GDNL $\quad$ NI GNLGSKPGEYLI QYDPDNYTENIPDGFAVIKY YGNAIAENVNGNTAGTYRLKRDADSEVGLANGNLINIST RIQPMSYGPGTFELLATH

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45566777777677777448888871436777777777 3 5 8 9 8 5 0
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UniRef90 B2VRA4 UniRef90- N 1 M 3 H 2 UniRef90-UPI0001F2ADAB UniRef90-H1VQG2 UniRef90-W3WMW5
UniRef90-K0UPU9
UniRef90-C8X7M1
UniRef90-Q0CB89 UniRef90_A0A022GPF6 UniRef90-D9UHX9 UniRef90-N1Q123 UniRef90-B8NU38 UniRef90 UPI0004679CFC UniRef90-A5GK31 UniRef90-G9MGA4 UniRef90-UPI000371D002
UniRef90 ${ }^{-}$W2RR88 UniRef90_UPI00036D7449 UniRef90-UPI0003603385 UniRef90 W6ZM04 UniRef90-L2GCP1 UniRef90-A2CB86 UniRef90 X0YBF1 UniRef90-UPI00037FA08E UniRef90-N1Q473 UniRef90_Q0UK96 UniRef90 Q05X30 UniRef90-L2FD10 UniRef90-TOLUNO UniRef90_B7RZZ9
 $M W V V A R V L V G G P R D E A A A R Q L Q D R F R L T P L E D F G R P Q A$ TYGULLGRILVNTMSDIETDRSYQDQTFLRTVSRTMSQAQ T TYGIMLGRRQNTTED IATIRNYQDQDFLKKIPRTQSQPQ

PTPYGAILARLNNGTDLDK\HA\QDQDHTYTVPRKRTQK PTPYGUSATRILVDTDVEAANRIQDELSUTPVNRESSRIA PNTFGTAMIRILLEGDIAVVNEIQDGFSAALVNRTGEPVG $D L Y F G N V V R R D F G P L D N Q L V V R Q Q R D T L Y S V G V F D L D A G$ $P M D Q M D L I F R V D G M N M T T E A T T F R H D D A L D G V G T A V K P V A$
$P T P Y G T F V G R L V K D D L Q R V Y M D Q N Q T A L Y P A P R H G N S A H$

PTAVATLVVRYGCAEDVAAVRELRAGLALHPLTAPGLGRG PTTYIILVRWLVKSGNEDDIRRYQNATRLQPVQRDQRGDA PTPYGAVDARILVQNDLEMVHTFQNHTLLYTVPGGYQAKP DQYFAFLHFRDFGP DDDQLVVRQQNRDTLYSAAVFDLDAG P QAWMLGRVENPDPSLALDTDQSDNDDFTDNVKKSWSD PTGNGVFLTRIEVKNDISVVEGYLNGTNLSPIPREDSLPE DYPHLFIRTQVYNQADI ANVLP IQDATQFTRNP
PGTHATMLIRLLTTDNLETVHGYQNESSLTADAKDDTDPT
T G DF T S A VF R VMPH $\square$ NDPERYHRMNDFKMYTLSAYQTGEP TTYGILLGRRQNTTSDDTTIRNYQDQTFLKT AYASVAIRDGDNSNTTEDRLHSLQDASTVGTTDDSAETTV DTPYAWVTARTLSESALANTHDFDNGTSIDHFQRTGSVPY ESEFLGTLTRAQGEEDMARVKQUQQSYKLQPGSDYLGTEA


 TGTHIYVIVRLDATFSEEEAARYQDQMSUSAASDMMLSTE

[^4]|  | 210220230 |
| :---: | :---: |
| UniRef90_X4 | , |
| UniRef90-H5WCG8 |  |
| UniRef90-W6Y8D3 | A LRLLSRALIDTSNAPNRVTGYLDLLAKI GQFNQPDVADRY |
| UniRef90-B2VRA4 | A PRLSRELINTSNATDRVTGYLDLLAKI GQFNQPDVISDR |
| UniRef90-N1M3H2 | MNTVNPNDSSFYQFASDLVSDQPAEALDA |
| UniRef90-UPI0001F2 | PPLTVPMLNSSLSSDPATRDMQMTARFAPHNPPRNISDF |
| UniRef90-H1VQG2 | PPLNLTMFTDSELVPGSKNTLEEGVLKLLAHEPVVAADRG |
| UniRef90-W3WMW5 | PQFSNSSSSQPEYLMDLTARFAHMVPKTLGGEDVPVQTTA |
| UniRef90-K0UPU9 | TVTLPDAGNRFCSLQVIT QDHYVPEVI Y T A GRHTFDRD |
| UniRef90-C8X7M1 | APVKTLADLLIRTAPIDFLTQLQTAVASDWTPADTQQ |
| UniRef90-Q0CB | $\square \mathrm{L}$ T S L V V SLSAD\\|PNR\|MQMTAR |
| UniRef90-A0A022GP |  |
| UniRef90_D9UHX9 | GLPGGDPLAEP ALRFWERLRVWAGDFPPSGADRA |
| UniRef90-N1Q123 | $P A L T S L S I M N T T S S T P A K L A F W N Q P Q L A N Q T N$ S |
| UniRef90-B8NU38 | CAPKLTTAMLNASLARDPMRDMQMTARFTPHNPP R WVS |
| UniRef90_UPI0004679CFC | PVS |
| UniRef90-A5GK31 | GPSTST $\square$ T NNNASTNYTDFFTQLS QAVNSNTTYVYYYS |
| UniRef90-G9MGA4 | GLLK G L S T PLQ T Le L TA R L Q A A |
| UniRef90-UPI000371 | VSNULEFDNALAWVSTTHD |
| UniRef90-W2RR88 |  |
| UniRef90-UPI00036D |  |
| UniRef90_UPI0003603385 | QVGKTDVDVYANNLLEVMQFI FNFDPENELDQK |
| UniRef90-W6ZM04 | RILSQPFAA QAPRLSRELIDTSNAPNRVIG |
| UniRef90-L2GCP1 | VLQFAASLLPYNPPTVSDRE |
| UniRef90-A2CB86 | KWGSIPSTAKGFFDQLGTALQDSPVPAQTKA |
| UniRef90_X0YBF1 | APA $\mathrm{D}^{\text {D WPA WVENDEKYWS YVAFMLP }}$ |
| UniRef90-UPI00037FA08E |  |
| UniRef90-N1Q473 |  |
| UniRef90-Q0UK96 | SHELI DTSNATNRVTGYLNLLAKIGQFNQPDLSDRY |
| UniRef90_Q05X30 | QKSGSVDYTAPPTLARVFFEQLGQSLLDNPDPAVDRP |
| UniRef90-L2FD10 | APPLDLPEYNDGNDS S CHEAVMKVAAALAPYNPPYTSDRD |
| UniRef90-TOLUN0 | LARII TPN |
| UniRef90_B7RZZ9 |  |

[^5]

UniRef90_X4Z400 UniRef90-H5WCG8 UniRef90-W6Y8D3 UniRef90-B2VRA4 UniRef90 N1M3H2 UniRef90-UPI0001F2ADAB UniRef90-H1VQG2 UniRef90-W3WMW5
UniRef90-K0UPU9
UniRef90_C8X7M1 UniRef90_Q0CB89 UniRef90_A0A022GPF6 UniRef90-D9UHX9 UniRef90-N1Q123 UniRef90-B8NU38
UniRef90 UPI0004679CFC UniRef90-A5GK31 UniRef90-G9MGA4 UniRef90-UPI000371D002 UniRef90 ${ }^{-}$W2RR88 UniRef90-UPI00036D7449 UniRef90 UPI0003603385 UniRef90 W6ZM04 UniRef90-L2GCP1 UniRef90-A2CB86 UniRef90 XOYBF1 UniRef90-UPI00037FA08E UniRef90-N1Q473 UniRef90_Q0UK96 UniRef90 Q05X30 UniRef90-L2FD10 UniRef90-TOLUN0 UniRef90-B7RZZ9
$M L A R \square R R|V| G \mid V \square P G Q Q F D F A R A R T M A$
270
MLENVRALGI APGMPFDSTRYAEAGAQADEQGAMAARHS L RVAKLGLAGI A DGVYTPPPGDNLTAATVAANASDSAAYSQ YRSKL GLAGIIADGIYSPPSGINLTAATIAANASISAAYSQ $\square A G E L A A \square G I V K G K A F E P D A R M R E \square L T E A A A D G N A D A R T L$ ARSNLKAAGIHDGTY RPQVRNLTAAAVTAAATV WVATLQGAGVSNGAFVQP ENTNLTAASAAANSSVVQE TL MAA GVDPKSGTYAKPACVNLTQAYTSSQGAMMSAGES RIGMLARILVDPNDPADLAA VHADQDGDAVEQESAGAF EAKLSDDFDALFGDGMGLTASERQQFADGAKSAHDAIINN HVERMDRKAGYKGRYTPT KGSNLTAGAERAEAAVFSH F V A DiRTLVDPADKKD DERVHALQDADRVSSQKAGEF YQERFQSLGEGATPYAEPAAELRWALEEGEAAGRAQVEAA
 $R 1 G T M V A L R T L V N P N D P T D L D A V H A A L Q D G V V V E Q A G K G T F$ QADMFTNFGGSGSYSDGDTESGFSGSSDSUENGFDDAQKA F $\square$ ATLLFAAGDRNGTYHQPAG』D $\qquad$
 LEKANTDADAEAGDY TVASL KGYSQFDYK DDSVKVGAAFMQGKI EV QRRVFQ LDDAGLSQGNFTRVEGVNLTEAAVIANASITAD LQRGVRD RTPPGDNRELADEFDKLLATGRFDEEFARATQ L LA LYYEPLGVVPGQAFDTNKVVKDDSEKFRDDAQRDTDEE YLDLLAKIGQSIQPDVYADRRSLYPTAWRQSNRCHAANAS RVNTLA QAGUGNGTY TANPDVD ILNAAS DARYS DEAD

 RVGS RVAKLGLAGGADGDYTHPRTVNDTAATGAANASDAAAYSQ IPDRAVWLGNDPESDYQPSMPTDWSARDVLVFQKAYAFSQ




[^6]

|  | UniRef90_X4Z400 |
| :---: | :---: |
|  | UniRef90-H5WC |
|  | UniRef90 W6Y8D3 |
|  | UniRef90_B2VRA4 |
|  | UniRef90-N1M3H2 |
|  | UniRef90-UPI0001F2ADAB |
|  | UniRef90-H1VQG |
|  | UniRef90- W3WMW5 |
|  | UniRef90-KOUPU9 |
|  | UniRef90_C8X7M1 |
|  | UniRef90-Q0CB89 |
|  | UniRef90-A0A022GPF6 |
|  | UniRef90-D9UHX9 |
|  | UniRef90-N1Q123 |
|  | UniRef90-B8NU38 |
|  | UniRef90_UPI0004679CFC |
|  | UniRef90-A5GK31 |
|  | UniRef90-G9MGA4 |
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|  | UniRef90-W2RR88 |
|  | UniRef90-UPI00036D7449 |
|  | UniRef90_UPI0003603385 |
|  | UniRef90-W6ZM04 |
|  | UniRef90-L2GCP1 |
|  | UniRef90-A2CB86 |
|  | UniRef90_X0YBF1 |
|  | UniRef90 UPI00037FA08E |
|  | UniRef90-N1Q473 |
|  | UniRef90-Q0UK96 |
|  | UniRef90_Q05X30 |
|  | UniRef90-L2FD10 |
|  | UniRef90-TOLUN0 |
|  | UniRef90_B7RZZ9 | $N L I D V G N N W V I P K M K C Q G I F G L E Y G C R$

TFRPRTEDGYGEASQWVNGLLAGGYDFSDGARKDHDRTQF SKAFALPANHIDFDNGWQSVSDTAQGDFN TN YEMRAFV
 Y I GTYGTH
SAGEVDPV

 $\frac{V I D}{} \mathrm{~A}$ PKWDQASQKKVRDALLVLASTLPDYNQAFG ARGSVD


 VQDPEHIRPQSND WQLSTPTYNNIGLYNGIEDATTDH DAQSAlIANY LDNTDQNNWINRNTGFWGREYGDRSSIAEF MAKADKLAASTGLFQPKGEI SLDLLLFQSVFGPDGQ
ISAAYYRNLLDVGNNWVIPKVICQGIFGDEYGCRAYRALH
LADP AHIVQLGNNWTVPIPSYQGNYGTHY
SKATTTDASGAKATNYWHUGNYNMGVYPNTWHN W
SQGKVEPSKFAGARNTLNPT
SELDFPEKWDKESMLTLRAEYEKEFQKFDQYDWMGARGEV TVEAENLRRESNNRVLQRPEGQGDYGLNYA DRAY DA DAGY NLDDVGNNWVIPK $\square$ KCQGDFGLE
ALLSEATNAIASGDKNTNYWHISNDN $\square G V Y P N$ A WENW AFMDKPGVRQDVGNDWFIVSEGY GGKDSHYEARYQDATT LADP AHIVQLGNNWTVP $\square P S Y Q G N Y G T H$
DKY QDMAAGGWGGAQWKD


UniRef90_X4Z400 UniRef90-H5WCG8 UniRef90-B2VRA4 UniRef90 ${ }^{-} \mathrm{N} 1 \mathrm{M} 3 \mathrm{H} 2$ UniRef90-UPI0001F2ADAB
UniRef90-H1VQG2 UniRef90_W3WMW5
UniRef90-K0UPU9
UniRef90_C8X7M1
UniRef90_Q0CB89 UniRef90_A0A022GPF6
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UniRef90_A5GK31
UniRef90-G9MGA4
UniRef90-UPI000371D002
UniRef90 W2RR88
UniRef90_UPI00036D7449
UniRef90-UPI0003603385
UniRef90-W6ZM04 UniRef90-L2GCP1
UniRef90-A2CB86 UniRef90 XOYBF1
UniRef90-UPIO0037FA08E
UniRef90-N1Q473
UniRef90_Q0UK96
UniRef90- Q05X30 UniRef90_L2FD10 UniRef90-TOLUNO UniRef90_B7RZZ9


[^7]| UniRef90 X4Z400 |  |
| :---: | :---: |
| UniRef90-H5WCG8 | VLHFDRDQPQNAGWALAAVGT TRRTPAPAGRRDLLSEAD |
| UniRef90_W6Y8D3 | LFTFFGKPPIKSFWSLTVYGADQYL VPNKLGRYVI GDRS |
| UniRef90-B2VRA4 | LFTFSGRPPIKSFWSLTVYGADQYL VPNELGRYVIGDRS |
| UniRef90-N1M3H2 | TVS LP LiASRPPGSGSLTAWDNQTRSMLDTPQRFSKVGSRR |
| UniRef90-UPI0001F2ADAB | VFTFNRKPAENGFWSLTLYNAD KFLI KNSLNRSSLGDRS |
| UniRef90-H1VQG2 | TFTSRPVMKTFGFWSLTVYDFQAYLGVPNDLDRYAVGDRS |
| UniRef90-W3WMW | QFSGKPQLEDVGFWSVTMYSAEGYLF ENAIDRYTI GDRS |
| UniRef90-K0UPU9 | RLTV HDVPVDGFWSVTVYNAEGYFT P NPADAYSVNSVT |
| UniRef90-C8X7M1 | VLTFPPTPEASRFWSLTAYTPDADQP\PNPDDKYLVASYT |
| UniRef90-Q0CB89 | MLTFQSKPPETGFWSLTGYNAQQYL IA A PLDRYAVGDRS |
| UniRef90_A0A022GPF6 |  |
| UniRef90_D9UHX9 <br> UniRef90 N1Q123 |  |
| UniRef90-B8NU38 | MITFVGKPPKQGFWSITVYNEEQYL VANPLERYALGDRS |
| UniRef90_UPI0004679 |  |
| UniRef90-A5GK31 | TID FSNSPPVGS LTWSVTVYGDDNYLVPPDDANYYITSSSY |
| UniRef90-G9MGA4 | VGGKPPTDSPGGFWSVTMYDAE HFLDDNSLNVYALGDRS |
| UniRef90-UPI000371D002 | TLTLDP $\operatorname{DAKVEHFWSVTRYDADTRNTYPNTIDLY~}$ |
| UniRef90-W2RR88 | KL NEAKYGFWSLSVYGEDEYL DPNELNRFEVGDRT |
| UniRef90-UPI00036D7449 | VLT F D Q $\square$ PQS RDFWSVTSY $\square$ SET $\square$ NLHRNPEDKYVVASYT |
| UniRef90_UPIO003603385 | VIS MEEMPPANAFWSFTLYDTENGFFLPNERKKYNVSENT |
| UniRef90-W6ZM04 | LFTFFGKPPIKSFWSLTVYGADQYL VPNELGRYVIGDRT |
| UniRef90-L2GCP1 | $V P$ GFWNIGSYDALLRL V P N GI SRYSIGSTS |
| UniRef90-A2CB86 |  |
| UniRef90-X0YBF1 | T EMSKD |
| UniRef90-UPI00037FA08E | KATY QVPENDAFWS\\|SVYGKDGFTKSDN NTDNDQ |
| UniRef90-N1Q473 | SFS GKPKVYGFWSYSVYGSDQYL IANDLFRFEIGDRS |
| UniRef90-Q0UK96 | LFTFSGKPPIKSFWSLTVYGADQYL VPNELGRYVVGDRS |
| UniRef90_Q05X30 | T ITLPPYAPANGFWSYTIYQPDPGNAYQPFLIENAI S NQH |
| UniRef90_L2FD10 | WS L V Y GPDQDL VPNDMEK Y MVGDRS |
| UniRef90-TOLUN0 UniRef90-B7RZ79 |  |
| UniRef90_B7RZZ9 | QATFD DPKNDAFWSFTVYDKAGFMFDD VANVSSD |

[^8]

UniRef90 X4Z400 UniRef90-H5WCG8 UniRef90-W6Y8D3 UniRef90- N 1 M 3 H 2
UniRef90-UPI0001F2ADAB
UniRef90-H1VQG2 UniRef90- W3WMW5
UniRef90 KOUPU9
UniRef90_C8X7M1
UniRef90-Q0CB89 UniRef90 A0A022GPF6
UniRef90-D9UHX9
UniRef90-N1Q123
UniRef90-B8NU38
UniRef90 UPI0004679CFC
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UniRef90 W6ZM04
UniRef90-L2GCP1
UniRef90-A2CB88
UniRef90 XOYBF1
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UniRef90-N1Q473
UniRef90_Q0UK96
UniRef90 Q05X30
UniRef90-L2FD10
UniRef90-T0LUNC
UniRef90_B7RZZ9

HPRPNRDGSLD TY LQRDPPPGRRANWLPL PTGPF\|VRMT TQLKTADGRFQVLLQPADPDNWTSNWLPAPVGGGKLLYMR $K Q L K N P D G R F Q V L L Q P A P P D N W T S N W L P A P A G G G K L L Y I I R$ AATADPDGSTTVVHFAPEDPDGPDGTWIQTTPDRG
 $N L T Y P D G T L V L V Q G A T P P D E Y D S N W L P S P P N G D F D M L L / R$ AVRDADGAVTIQFG GADQATNHLPVTPG WNYLVR EAQTNADGSISIY LSRTQPDGATANWLP VGDREFNLMLR GLTY PDGSLV

$$
\text { AE KNANGS } \square D \square \text { QF G G } \quad \text { CD G K } \square \text { A N C } \square P \square M P G \quad W N Y T V R
$$

$N L T F A T D G T F Q V L V Q A T P P A T W T S N W L P G P A G G G M T A L L R$ $N L T Y$ ADGSFQULLQPEPPKNWTSNWLPAPPGGGDSUSLR $A V K D D D G S V T V Q F G G \quad C D G S A R N C L P D T P G G W N Y L V R$ PDLT A A SGVYTLNLSQAAPTNQQF WIPTPSGDTFNVVLR NLTY PDGTFQULIQAAPPQNWTNNWLPAPSNG
S DADGNDT TFSSVDPQDGGYWMPVHHNKGFYYVVR YNLT YEDGQFQLVVPTPPGNWTNNWLPASSKFSWLCSLR PLETNEDGSTSIVATPTPPPGSTANWLP VPDGPFSMLLR GMKLNEEGGIVF QLKFESGG LVYGNDSNAGKGT EDGRFQVLLQ TLQYGQDETFQVLLQSAPPANWTGNWLPVANNASGRILVGC RATLTANGWLRTAKMDNW

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T A T P NGDGTYTVSFGCGQGA SNNLPTNESGEFTLADR

[^9]Ref90 X4Z400
UniRef90-H5WCG8
UniRef90-W6Y8D3
UniRef90-B2VRA4 UniRef90 N1M3H2

UniRef90_C8X7M1
UniRef90-Q0CB89
UniRef90 A0A022GPF6
UniRef90-D9UHX9
UniRef90-N1Q123
UniRef90-B8NU38
UniRef90 UPI0004679CFC
UniRef90-A5GK31
UniRef90-G9MGA4
UniRef90 UPI000371D002
UniRef90 ${ }^{-}$W2RR88
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UniRef90-L2GCP1
UniRef90-A2CB86
UniRef90 XOYBF1
UniRef90 UPI00037FA08E
UniRef90-N1Q473
UniRef90 Q0UK96
UniRef90 Q05X30
UniRef90-L2FD10
UniRef90-T0LUN
UniRef90-B7RZZ9


[^0]:    

[^1]:    ITY T FPAHDLAQVRWQDT QNPQVPVNGLLHYRRLDHRARTV I WGMPAAGMID F LKGG RRDFDGDYNDVIVLNKFDSKHGFL I Y GFP LVVNLDDQVHRYVHEG VGANPAAGFNTFSHARAFV $M P T V S W Y H V W K G V G S A E T G A P G Q F V I D W S L M D A T L L L$ IIF S YP LVMNYRTMYR QAIA GGAEFGK WL NLGGATPQDTDIV
    
    
    
    
    
     GKGPMNQWGNMHK FPKATEVVV IY A Y P MLY HYRSMYE QA DDT A S P A G GFGVFRQH T P Q S VDV A
    

[^2]:     ．
    
    

[^3]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf sol25 sol5 sol0 jhmm
    jhmm
    jpssm

[^4]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^5]:    lupas_21
    lupas_14
    lupas_28
    jnet
    onf
    sol25
    sol5
    ol0
    jhmm
    jpssm

[^6]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^7]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf sol25 sol5 sol0 jhmm jpssm

[^8]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^9]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf sol25
    sol5
    sol0
    jhmm
    jpssm

