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ID D GPN ${ }^{\circ}$ MPRFWTEK G DD $H \square S G G T$ $P F L L G D L D$

T Q Le

 QYEECVQI MSUCILLDRDDLLARLIDDNAGY QF QLAA L R M EYEECVQVISLCILLHRTDLLQRLDDNAGY
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 GLALALD 1 PD DWKRLVALIGN CHYPHD AWKVNDHYDA FQVSLCLLQRSDLLPRVADRAGY HAWKVNDHYDACFWLVGLALSLNDDDLWWRLLA LI GN DLD HY I WC F WL V GLA ALALELPDDWLRLVTLI GA DDEYPYQYEEFAQVVGLCILLHRRDVLERLLDRAGY WEQDAYQYLL WMFALSILYGQDEMLPELVRYISK
$\qquad$ D GYC P Cl G L I

VA L L P L F G DYETCVWLVSLCTLLQRSDLLPRLEDRAGY SPMPWCDV咅

WHSNSGYEQMVWAL DDYLEVVWL
WQGNSGYEQMVWALS GI MLEDDETLLSRVQKMAY
WQGNSGY GILLDIDEDFNQLVDLVKK
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 PVWFSNSGYDEMIYAGSUGI LLEDDETFDKLVDLVKK A HFS LIS DNSYEKVNRMIC FAILLGWENDIAE I I PI I D F WEPDAYQYLLWLYSLAVMTGESQQIVSITRWLAK
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A Y WEADGYQY L Y WL L S L AVLTGNRDAVLLVI RMTAK APDFSTLSD YENTLQLLSI ALLLRDQRSVKRII H LLRH MP $\square A W N K D N G Y Q L M V N M L S$ G G I L DAYNENLKMLSLAVLFELEENLTALTKRKMK HIGKKEVGYLNLI WMISLGI LLETEKKLVSLAKLVEK PHAALRTEEYWVALRLTCFGLLSGYAHTMPRVMAFLDY TQUEAYVYVTWLLALCKLLGHAESVPKVLAWLDS A WKKDNGYI LMVNMLSI GILLLDVEDTIFNKLAMIVQ
$T Q L D N Y V Y V F W L L A A C K L L R H E T L V Q E V V R W V D N$ D HYI TCFWVVGALALVLETPDEWQRLVRLVGN WT P Y GYY QQML WLL S I GI ML DYEDDULHVMLTLIE VWNSDSGYVEMVWMLS G GUMLN MSKDKMAVL E EMVK MP LYWNGNS GY DDMLWMMALAILFDVSREKFGQLSDLQY VAPLNLDDVEEHHECMQVISLCILLGRHDLLERFVALMDY

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 WGEDTL YE DLI GYALP DRYDVDHWHHCDAYRDI NSAYGDA

 C N E D $\quad$ GL L E R R L V





E GE D AL L D R I I A T R QP D R R I G E K LLCHMPKP Y Q R L R E A T S E K A GDDTLYE DLL SK VLPGRHDVDQWYHEVYSLLVQSIYAKT

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 A N A D GL L E R L VAA P YV S G R P P P D T A T R H L P Y C K L F K V F A A Q A G D D T L L Y E DLL LTT K V L P P GR H D D D Q W Y H D A Y T P L L V Q A I Y V E T


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 K E E LL K K K C CQQWYPAFK QAPWHDTHLL Q GEEGDYVVGYWA $K E K L L S E Y C K Q W Y P A F K Q A P W H D T H L G Q G E E G N Y V G Y W A$ K $\square E A V$ K R L E K Y L K K E WY R GH S D L S WY N D HK Y G $\square$ NH D GY WC KEEAL QKYCNDWYPAFEQASWHDSHK QGDEGSYFGYWA

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 D NKE L Q K F L K R WY K D L A A A P WH DTHKS S SQA G Y Y Y Y WS RAEAL E E Y CN QWY P A FTGAP WF DSH GQQVD DSEYVGGYWA QASLLSAGVKHWYAESYRHPYWYTYGDENFEGGAYFGRWC DNEAALKF LGRWYRDLAAGPWHNTHKSKGQAG Y F GY WS QLEE ELNA YL K DWYREMVGMSDEYQSHLDDPEQNG YC GY WA E EKK K K E Y L D GWYK S F E GAPWHD GHEL GVE GQYYY G Y WS
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 D E S NL K K Y L K E WY S G H N D T G WY D T HK S S D A QEAKKALK DY IEK KY N LINKDAPWYNNHLKKNCYRGYWA
 QLK ELL N DF LKR WYK DLAGCA WHDSHKAEGGYYGY WS DHKKLK DYLE $\square H W$ WY D GHEDTGWHDSHHHWDA 1 Y T GYWS
 P S D QL R QFV E NWYA E L Y D R P Y WY G F DE LI E G GA YF GF WC DKEAASKRLEKYMKEWFKGHYDFGWRNAHKEPGYY GFWS DKE EK L Y L L EKY WY T GHS D S G WY D SHK H R K E D G Y Y S G F WS D A QEAK KVLE DY $\square$ GK WY N L N K N A P WY N SH H K K N CY R G Y WA KTEALKKYCQQWYPAFKQAPWHDTHH QGDGGNYVGYWA D $\square$ QQLAS Y LKK D WY K GHKY A WWYE T H L
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 F A GAl A F L Y GI D D S KIWE A A A A V $V$ A Y $W$ L $L$ Y L D
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FEAA AVAFLY
WE A A A V T WL L N I
WE A A A V T WL L D I
F E A A A V CVL HG I
$\begin{array}{llll}F E A & G A & 1 & A \\ F & Y & Y & N \\ F & G A & V & L \\ L & G\end{array}$
F
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V E A V A A V K A F G I D G S L C L G H P N Y P G D L L H
$V$ E A V A A $V$ V
FEAAA V Y L Y GLDDGAVR H M I Y P R DMLQYAR

$\square E A$ G A I A F L Y N I D D S K I
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FEA GAAVL L L G D D T S L H S FPYYP K DLI V WAKAN

WFAAA TY LLD DDDRSFRDAQFYPKDLVDFARN

F E VAA A A Y
FEAAA AYLDDLD D

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$F E S G A L C K$ K L D Y K ELE GLLP YFP
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I E AVAT AKAF GLDDSLCLGHPNYPGDLL
LES GAAT LLF DLLD DSEYRKS LYYYPKDWVDFAREQ
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FE S GALVVKVLGLD D S S L K GLLP YY P Y D MV H W
LE A A LVVTVL WNV D D S S YR DHP HYP S D L V D WY R
V E A A A A V K V F GLD D QLCLGHEHYPQAFLH
FES A AFI KI LNLDDDSII EKQE YYPYDLVVHW
FES GALVVKVLGLND SSLKGLP Y Y P Y D MVV H W
FESGAI AKI LKKLDDEVLK QVVPYYP Y DMTH Y
WEVAAVAKI MNI D D S ELLK DNP Y Y P Y DMV H WK DAEV
FEAGAI AKI LNLDDDSNLKDVPYYPYELVHYKSN
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YESGAVAKI L GLDDDSSLKDVPYYPFEMVHYK
FE A GAVAK I L Q L D D K DL R NEP Y Y P Y D MVV H Y K
VE A V A A V K V FQQL D D S L L C L G L LP H Y P G D L L
FEA GAAVYL LEI D D S S L H QYL Y Y P K DLVVQFAK
F D T A A LA KI L GLLDDSALKDNNHYPYDLAHYKNG
F E S G A V A K I L G L L D D S S L K D V P P Y Y P Y D L V
WEVAA V A K I M N I D D S D L K D N P Y Y P Y D M V H W
FEAGAI AFLYNI DDSKI
FES GAI VKII LGLDD S S L K DVVP Y Y P Y D MVV Y K

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| :---: | :---: |
| UniRef90 D9RRE5 5 |  |
| A3DGZ5 F2CKP0 |  |
| UniRet90 ${ }^{-}$AOA |  |
| UniRef90-D8J | ELLLDDYCLYY WLIS CYYLKKRNDLLVSVAK |
| UniRef90 B1TBN7 | FLFDQLRDYERAVQL GLCYL HRRDLLPRILQDPSY |
| UniRef90-18AFR5 |  |
| UniRef90 J8S519 |  |
| UniRef90-M7F | RVVLSVCVMLELED D |
| 17CB | AYQFAL WLLSLAVLLNMPGRD |
| UniRef90-O6HH64 |  |
| UniRef90 B4U3V2 |  |
| UniRef90_UPI0003B34F4D <br> UniRef90-E1WS07 | YMQAVALLSUALLLHVEDVFRRLADAIGV |
| UniRef90-131G40 | N |
| Unif | EYELVLNLISLGILLN |
| M5CKW8 | RQDHFVQWL WWL AFALSLDMREY |
| UniRef90-K5CLA6 | NETLNGLSLAFLLRRNDLFLRUHSLVNG |
| UniRe |  |
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| iRef90 H1C | GLVEL NAVALAVLYGVDD |
| UniRef90-A0AO24DR | YRYVDLLWVLS: GldMLDVVSKD |
| UniRef90-T5L | QPRTTHYEYALQLLS GVLLDAQD |
| UniRe |  |
| UniRef90 UPIO002892362 | Q |
| UniRef90- R6RB03 UniRef90- R6R5CC |  |
| UniRef90-E9SF14 | EDNL WFASLA Y |
|  | L NRVALGILLKIP NELVEYV |
| UniRet90-UPIIOOO395AF20 | NPASNSYPAAVQ |
| UniRef90 U1K2T | REDYUEDHLKWLS |
| UniRet90- UPIOOO3B37174 |  |
| UniRef90-F9DLQ4 | NYVSLGVLLNIPDQLIDYVK |
| - | M |
|  | NTMLWM |
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|  |  |
| 6UCB5 | - M |
| UniRef90-FOQ 30 | MMAFARAL HFNSEMQR |
| $\begin{aligned} & \text { niRef90_N8ZRC6 } \\ & \text { niRe90_M5H5N } \end{aligned}$ | NET K WLS |
| UniRef90-UPI00029B3BCC | IY TL WWLALLQACDVPA |
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| UniRet90 G3Z5R7 | A |
| UniRef90-131G41 | ERLDTYKETFSWI SFALAADASDYF |
|  |  |
| UniF | DMRRT |
| UniRef90-R9F | L KWL SFAYCLNMQTYYQEVLDLI GN |
| UniReef90 NgQAN2 | AI AL SM |
| UniRef90 UPIOOO4783864 | Y |
| UniRef90 UPIO0042693 | D LM L WMIS |
| Refo- R9PFKO | NRYVYALL WWL ALL |
| UPI0004797A15 | GYINLLYLISYGVLLQKEDSLIKKAKKMDD |
| UniRef90-R9M | EGYFDVI DAVSLCVLLKAKECLPDLKIILQQ |
| UniRef90-M5GZ36 | NDNRYDYTLWWLSLLKACDVESHI NDALNIVGE |
| UniRef90 M7NJD6 | FQDCVLLLSLAALLEVDEDLFGR1 SQFAY |
| G7EJ | Y Y T WWL SLLVACDAPEHISKTLDVI GE |
|  | VSDEYRLAL WLLSLAVLCGYP |
|  |  |
| UniRet90-W6SCT6 | NDSTYDIID ILSIGVLFIKKKNFDEYLR |
| UniRet90-UPIO0037788D8 |  |
| UniRee90-COFRMS |  |
| UniRef90_COFYT9 |  |
|  | ( ${ }^{\text {a }}$ |
| UniRef90-R9L | DSAYDVIDALSSLGVLFQAAKSLPGLESVTEK |
| UniRei90-R9MOU1 | YLSiGl LFHRSKEFLSALEDMAE |
| UniRef90--178C88 | VADEYRVALWLLSLAVLCGYPDRVGQVL |
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| ef90 B3JEH4 | WT DNGF |
| UniRef90 A1WEJ4 UniRefo- 08 XRO1 |  |
| UniRet90-FOE | WEADAYAYTLWLLGLAVLSNHKESLNRISP |
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| RRef90-UP1000366 | - |
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60
70
QAEDLLLWFMLNSRMGEDEKANK $\square$ AFPK $\square Y K G L L F K L T Q \square S$ KQEDALI DFLLKACDGWYHNTSEYERKNPYAKTAEI DQDK
 EACMAQL FRLFNHGIPDSTEEALVFPDSYQHLYNALKTGE EGKDWUVEEFLAFSDDNRFDCSDVLFPQPYFELSNAFVSQ R A H D T L L Y E D LL A Y Y G L D G R V D DV D T WF H E L Y R D C I I N S V Y G N S K HND F L Y N F I I H Y R NE E N Y Q N S I WWL F EKP FK S L V NVI M C K
















 NRCDCLLD YL SAVACEKDEASA QVFCPKPYADLMAFFEQS




 A DNYDS LLEF LTGGNKDNFDASK K S FPKPYKNLVKS IEA E F G E D A LI D E A A R ALDD A K R A V A E A CK K P K V Y D P L L E V WR S D
 R GK D T L L D N I A L G D N D R P I S P T L Y Y P E D Y Q N L F T V P N E Q
 QGLDDVLFDSI L K MGDTERAVSNDLLLFKKRFKKLVDVDAA D LDGGDTSFNALI NMVIPMDFDPKAKFRRGGYPLLQAIMAES
 APHDALID FLLNARDVSWKPRQASFVYGYPYNRLLDPVI E GE Q G Q D GL LD NIV A M G DT TREVVAQSTLFKKRFGKLVKVVEGS Q GRD A L F D N I VK LGGDTEREVAESVLGKRRFNKLYKVI EAE
 Y E R D L I Y E T I I C A K L AAGGADDPVLGTLLGVEPVRDTVWHKRPFQNLDTAATGT

 R G K D K L L D D Y $\quad L$ D L L G D V QEKDALIDDFLLNGGDQKPARRD,FLFKRPYRHLERVLFAK QGKDAL FDAIVVKGGDSQRPMAKTLYYPDVYQCLFDAFKNT
 $R T P D D L L D F L L S H K D G R T V C Q E R I R G N L Y K G L A S S L Q Q K G$ F $\square E D G L I D C L F Q Y L E N G K D Q K E R S Q F D$ YFNDLDCVTE RDK DKMI DFMMLDPRYP ER SEELK E ESSYPKLYYKKLVNNVAY D Q






 EGEDELLLDRVI A S R QAGRQDGGTRLCYPRPYRRRLLEAVNAE
 Y Y D D WL L H F L A SKGAEK DF S K MA Q S L K K Y D T L K L F E T K





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 EK E K T K K A L R E Y L D K WY D LiN K NA P WH NT H L R S N G Y T G Y WA ETEPLQAYLDENYSS QLHPALAADGRLIGMGEHHPRWA ENDRMKKFVEGWYRSMKPAAW HGNDKSYEGVYYGYWC DKNKAKEMLEEYTKEYLKGHADLGWPKAAETWEPYNGLWS NAAAAKDALNKYLDRWYNLNSDAPWYNSHLKDNCYRGYWA DEKLTKNYLKHWFKTFKNWGGWQTTDVSGLDNSDFVGFWA DKEELKYYL ENEWYKDYDDTGWHESHNHYEK DKRKAT QLI K E WY SNHKEFGWYES HK ENS EAYT GY WS
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 K P DLLNQFAQNWY IKLEGLADWHDNHNEFEYTDYYIGYWC NKELLKSYLDNQWYD』HKECAWHDSHKSTKT
KTQATKRLEKYQK REWYRGHSDCAWHDDHKYGDIHDGY W WC
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 PAQRMLAYLEAWYKL EGSPDGSPLMHLMDTDTYKGYWC DKAHALEVLDSYDSDWYGDHKWYNSHLDLDNGFSYVGYWA VSDLLKNYVSS KWLKGHSDYGW VK SVKSKDFRGLWS NDDYGKERAKDWYPRHKGFSFHDAHKSKH NAYYGYWS PDRALNRYVQAWQKNFDWWAPAAKAVQGDNFETYFGYWA QAEHLNVFI RQWYDSLEDADWYDNHLCDFEYTDYYVGYWC KKEDTSTLLSSY DNNKWDRGHSDLGWPKNDSQKGYRGDWA REKFLKTYIKKWYRAHKDASWYNSHKS TANDYVGYWS KNELLNRFMINWYDGLEAADWHDNHKCDDEYTDYYIGYWG DKHQLKVYLKFWYEEHDEAAWHDLHLHRDE QAQKLNQFISQWYAQLDDADWHGNHECDFEYTDYYDGYWC DKERASKRLQQYEKEWIGKGHNDLDWKNAHKKPG Y VGGLWS K DADI KKYLKQWHKDYDRTGNMYTH TEYFHVGYWS KEMVLINELNKWYHEHYDAYWYNSHKSVNDT YCGYWC DEQAILETENFDKKEWDK DPKKYY $\square N L N L K D \square S N Y V G L W A$ K 1 ELLKKY LNNDWYNEDCGCYEA $H$ K K K QNDYYGYWS QLEHLQHYVRTWHPALVQ EDWFNGHLRAQGLGGYYGLWA NREAANDRLKKYEKEWLEGHASYGWKTAHKKVGYVGLWS DRKAASKRLKQYKKEWFQGHYDYEWRTAHKRHG Y

 QHDVLLRYLERWYAKAHGCYWHERHARAREGGDHLGYWA KAEAVKRDEKY LKKEWYRGHSDLSWHDDHKYG INHDGY RSAALADHMNNWHRLMRPGGWKPNRDPALEKDGLFCDF QAEPLFAFVNNWYVELDGC
K NRLLRDYLKGWYKTNKDTYWYDYHKVR DGELFFGYWA ESDYFKTYLKQWYSKSRGDAWWGDHK YPDERLVYSGYWN QQQAMANYLKRWYGGMKDCYWFDDHKERTDAGFFGY WA DASAMSDYLQQLEHDQQQGKYWEKKFFHKDA QLGKWR DADSVIEAQKFWYYAHSEASWYDTHKTDD A AYYGYWS LEDFLK DY LKNWYQNLKGTGSYNDHKQAPEH PTFPGYWA NTDLLKYYLEKEWYQGQRGNGW SYESVVVKAQGFWYYSHSDEPWYNSHQYEHC GYYGYWS D A D S V I E A QK F WY Y A H S E A S WY D T H K $\quad$ T E D A Y Y G Y WS


FETA $\square F T L L L D M E G Q P L K A M G F Y P K D Y \square E Y A R E H$ Y E GAAVLK L GVDK E E FKGYKYFPY DLI
FEAGLVTLLWGI DDGSYREMRFYPKDLADFGREQA
FEALII CKLYGI EDGEMKKFESFP
F DTAA L CKMRGUYDERFKDLDFFPYDL
$T Q L E A Y$ VY VM WLLAACKKLGHAE LVPKVLS WLDS



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