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UniRef90-A4VL35
UniRef90_UPI000378D38A
UniRef90-B5JVB9
UniRef90_UPI000364475A

PHAS G G $\underset{\text { L }}{L}$
SALSS PAANFLD

PANAAFPA

 | K |
| :--- |
| A |

$\qquad$ K K K S LQ G TEIDPI QVDANGKL

## $\mathrm{G} \mid \mathrm{L}_{\mathrm{L}}^{\mathrm{A}}$

VPASGGLL A PLA KSQQDTQVCQI R L
VA A P T T L P A EGL $\begin{array}{rl}\mathrm{L} & \mathrm{A} \\ \mathrm{A} \\ \mathrm{P} \\ \mathrm{M} \\ \mathrm{P}\end{array}$ $P$

| $R$ | $R$ |
| :--- | :--- |
| $A$ | $S$ |
| $P$ | $S$ |
| $P$ |  |
| $P$ |  |
| $P$ |  |
| $P$ |  |
| $P$ | $S$ |

LA D S P P
$S M$
$P R ~ S$ RSLP P A S QY D E $N$ E S A R

A FV

A R D K SLQ
$\qquad$ E S $\mathrm{S} P$ PT

G LAP R

| $E$ | $T$ | P |
| :---: | :---: | :---: |
| D | T | L |
| P |  |  | $V P D T L P$

A A A K $P$ P A S T
 A S SLLK LP E

| $A$ | $L$ | $P$ |
| :--- | :--- | :--- |
| $L$ | $P$ |  |
| $P$ |  |  | GFAP A LP $\begin{aligned} & V \\ & V\end{aligned} \left\lvert\, \begin{aligned} & \text { S } \\ & P\end{aligned}\right.$


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

RR
A A M P A
PDPYAP
LS S P T
$D G \square D$
P V S LR D T EVD G
VP E A
PAGAATWP
$P \square P \quad P \quad \perp \quad A$
GSLKDTE EDAVLVDAA GHLVPNADLRRRFNYY
 A NFARALA GTDD D D LR VDENGLLIMDDQVK DFFD YF NFARSLAGTDI DALKADGNGELILDLGVRDFFDYF $N L P R S L Q G T E \| D D L R V D D R G R L V L G P E V I R F F N Y F$


G

PTAAG
P
T P L P A I S L A G
AF
VT
$A K L P$
EAFAGSFK GTEVVDQFQLDAAA GNL: V GPEL R QLLF D Y F



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UniRef90－N9NY00 UniRef90－A0A031LWT7 UniRef90＿D6JPD5 UniRef90－N9MVV5
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UniRef90＿UPI00036D9237 UniRef90＿K2GWB3 UniRef90＿B4X477 UniRef90－W5YHX4 UniRef90＿UPI0003A45BE7 UniRef90＿G0ADA1 UniRef90＿R4YP06 UniRef90＿R8B4G1 UniRef90＿UPI000376D51F UniRef90＿A6F5I8 UniRef90＿H8MUE7 UniRef90＿UPI00037754A8
UniRef90＿Q1LGR1 UniRef90＿Q1LGR1
UniRef90＿Q2SEF7 UniRef90 U7NH14 UniRef90＿A0A017SU24 UniRef90＿A0A031GKZ3 UniRef90＿U7G2Y4 UniRef90＿W8QY71 UniRef90＿F4DM07
UniRef90＿U3QFC1 UniRef90＿L8MHT8 UniRef90＿Q0VN24 UniRef90＿UPI0003716AC9 UniRef90＿A4VL35

RA YFD ALAV ${ }^{90} G$
100
110
120
KLD PA M L A LID QRAA A DRTLGEWAEP MDYREKLGHLAAPNDAKYYQSIIFADMKNLRKQLFSNEDEG MD Y R A R L G S L Q A P S D P Q Y Y R S I Y N S T Q N L R K Q F F S D E I E G ID Y R I A L G DLLQ D R D S T Q Y Y R A







 L K Y R E Q L T Q I Q K Q Q D K N Y F Q K I F N S $⿴ 囗 十 ⺝ 刂$ Q D L R K R F F S A E I E G




 RAYFAELAKLDNKLDLPALQLALDRRAAIASRTLGDWSEP R A Y L A A L A S L P D KL D I A SVVQLA L D QREAI A S RTLGEWSAP R A Y FA E L A K L P D K F D L A V L Q L A L D Q R A S I A S R T L G D WA E P RTY LAA E L A K L P D K S D D G A V E L A L L D Q R A S I A R R A L G E WN E P

 I A Y N R DLA E YT TA NNVD YL K A Y Q A Y L A D TRMMRHFGEYS D L LAYMSGMAQFEQALDMGALRQRMERVRTLRMQYLSEVIAA







 LA Y K Q A L QV L Q T R L D PA A L GD A L A QL K E L R A S T F S P DA A A KR Y L K Gl G DL Q Q Kl DV A QV L NA L T QRE SL A T REM G DWAD A LA WRDNLSTIP QAGGVSAEQLDLNAVRAQQQAVAGTVCQA
 LT Y RKA L A GQQQQPE I DA T LDRQQDS A RAA L R R QY L G DVA Q A V D Y R K E L S K LQ A QE SYQ YFQ T DF N S M H DL K QRFF S NEDE G LA Y Q Q QLVDLESRFP LA DLFAREQAVQRLRATLFSEABEA

 L D Y K L A V GELETA GSLQQSAEQQLLQAIR DLRREYLGEVAEA
 L S Y K R Q L L EL L E A S Y DL L A A L R Q R L H A AV Q A L R A RVVLD P V H Q A



 I D Y K TELVELEQGFDDAALRAREDQVQRLRARLFSAQAHA I E Y K T A L V E L D K N N GL A A I R QRMEKM QE L RA RFF S P E S K G
 $V A C L L A E L A D A D G R L D A Q Q L R A L L A Q R N A A R Q R W L P E V A Q A$


 IS Y Q E R I G E LDD Y E Y Y A S VMMA N T F E Q LiK S L R R Q I F P DV V D A LA YK Q A A L Q L D P G Y Q L T A LIG D A L
 L S YRKA AEAMA SNESVDDVRRAAGQQHDLRREHLGDVAE G L D Y K R QLLLLE QQADMNAMRERLQAVRQLRSRIFDDEHQA L D Y K R A L AL MQQP LDD LQA LQQAAFTRLYEELRRA HFSAAA QA $V$ V Y L A E L D Y K R QLA QLEERD LPLLLA DLDA LRRQRQALRARIVFSDAHQA HYYRSRLANSDYAANSGD』RNKLERRQKLRNDTGGD』AAA

 L D Y R E Q Q S A L G N S A D L V G L R E S F S Q L K Q L R R E V F G A EA D A

## QUERY

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130
140
150
160
FF GDEQRRQRHD LER $\square R \square A N D T \square S Q K A A R L A A L D A Q L T P D$ LF GTEDTYHEYTLNRMSILDDTEAQKAEKLKNLFNQLPED L F G DC N T Y H V


L F G T E D T Y H E E Y T L L D R M A V M A A D S E A E K A Q K
L F G S E D T Y H E Y T L N R M A I LDD D S E S E K A K R L K A L F D Q L P Q D

$L$ F GTTE D A Y H E Y T L D R M S V LAA D T E T E K A Q K L K A L F Q Q L P Q D
L F G G DE D E Y Y H D Y T L A A R M S V V M E D D S E K K Q K A D


L F G N E R NILN Q F N L E E Q M R I HA N T T Q E K A T E


L F GTE DE Y Q Q Y A L D RMQQ L E N D T S T K A QL L L E E R F E QL

FF A QEESYDQYTI A QYAI NNDSTDQKAEKSAA LLNEQPED
$F F$ G A E Q Q R Q R Y D L E R L K I A D D T D E Q K K K R L VA L E Q K L P S K


$F F$ G A E Q Q R Q R Y D


FYGDEDAYDRYTLARLELMRNSPQARAQQLAELLERQLPDD
FFGTE D DYD DYSMEMVVRINQN T QLLS DA QKEAA K Q D Y Y I S R M



$L F G A G D A R D L D A V A R L E L G Q D S A E R K R E K L A A L E Q G M P R A$


FF GAE DEYDDYSMEMVVRINQNSSDAQK EATRQQDYDSRMPNA

FFARQTVRDDYAINRLAVLRDSADQKARRIAALTASLPAP
FF ATE E AVV QF QVE QL RI RTD SEKERE QALAEAEKALPEP




FFAREEA DDRFQVRRREI MDNSDAERKAQLAAAESELPES
L F G DE D R Y D D F T A R R L A A B A A N S A A D K Q R L V A A A L E S Q L L P P P A



F Y GMD DA Y DRYMADRQDI LDDNSDSQRQQQQQGL T Q S L P A A






 FF GLD E A Y S D Y A L A VMM V K A D S D S E K A S QV E A L R Q K L P A Q
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 LF GAE QAYARYTLDNLALQQRSDAQRTQMADQLRAHLPDA
WF G DE Q A Y D E A MLLA S L E L S A Q D E A E R Q R R L A A L D A A L P E P LFADEDRYDRVSLQRNQILRRSEKEKADALQELRKALPEA L F S A S D A Y D L D D A V A R R L
 FF GMEEAY A DYTLEKLAI QQNPDEQKQQWLTEKRQQLPRE $L F A S S K E A Y T R F N D$
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UniRef90_E4PQX5 UniRef90_R4X344 UniRef90_LOW8T8 UniRef90_A6F5R5 UniRef90_S9RZIO
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 WQ E N L Q Q TT K L WQENLE QLNTLLQDLRSSLTAAI KARGGSAAEIRRQMRLLNLVG

 WK E N L K QL S QL E D L R QL T A EII K A R G G S A E EII R Q M R L L S L V G L G P G V WK A NL E QL S T L D DL R QL TA S I K RKGGSA QEL HDMRT QLV G WK E NL QQI S QL E DL R K L T S EIIKARGGSAEELHMMRTNLVGG
 LLA D GVVRVVSNM Q F S E L L Q Q L ERAA QQRAEQQQAAVDQDAQLRKNGATPDAMRAQLTTQSLGG
 LQ E S L K A V N Q Y L N L K T L T D E WK Q H A G S A E E L Y Q IR M S L V G $L$ QK NL E DMSK L Q DL RALTQQQRQKNGSKAELQQMREQLVG LKASMMQPI LQQYN QLQEELTTEI NQRGGSASELYEMRKKLVGG
 R R A E L E R Q KE Q D N A DA Q D K KVQK S NATPDEMRAQLAA T L G
 ARAERQRRVAQQQAADAQIAQLQQS GAAPDAMRAQLDQT L G WQ D N L K S L T QLLEN LAA LT Q QI K D R N G S A QE L R EMR Q N LV G
 QQE II RNHERMNE FMSREQAWQDEGVS GEELGYDRRLAN YGG DQ D S L K A M N Q Y L N LMK T LTT D D WK QR G GS A E E L H Q
 AKANI EQQANLNELDNRTEQMKAKGATPEALYSMRRELVGG $\square K T N G L Q Q A N L N E L M D R T E R M K A A G A S P E A L Y N M R R E L V G$


 TKTNDAAQQANLDNELMTRRTE QMQAKGATP EALLYNMRRELVVG

 LRQARRETRKFTDYQRARSEF ADDPDALRAWRKERFG
 $M Q Q L L V P Q D H Q E L R Q Q T L A L R E A G A D E R Q V R E L R M E L L G$


 $L$ R A A R E E P V K H L A L A D A EAAR L R Q G G G D E Q Q L Y Q L R A GMV G

 L R NAREAPDQQVVRLQESADRMRAQGAGDDDVYRMRASALS $M R E A R E R M R A P V E V A Q Q V E A L R A Q G G S E A D V R R L R E Q T F G$ MQS MLA ETRGPA QLAARTAQALRERGASEADDRRRLREQQFG




 R R T E T R M M I E E S G DL L A R Q K A L L S E A D S P A D A G R R L R E L VRASREEAVRPGRQQAVEQELLLAA GATAEDLLHQHRLSTVVG LQQQRLNNQQN』NELDAETERLLKQQGATAEQIRALRRKYVS $V$ RAA REAEARPQAD SKT DA SMQTA GRSPQDI GA S LAA QA Y G $M R D A H R Q A A Q R E N L T R E A R R M Y R E G Y D A D S V R Q A L Q R G Q F S$ L R A T E QRLLQSEREHQAR LSSALENTESPEAA GRKLVVELGMD
 $S V E L R R R R S R T V V E T A M Q V Q Q L R E A Q G A S E A E V V R E L D R L D Q A Y G$ $L Q D A M V Q Q L Q S E L R E Q T R V L Q A S G A T S G E L H R L R Q Q L V G$

 LAKQHQRQYDLQQRLTAHEQSIKQQGANAADLYAFRQRQFG ARDERRDAPTKVLRRLEEAVVTKARA QGMGBNEEVYRLRSAASLS $E L Q D L D M P Q L Q T E L R E Q T T A L L A N G A G P Q Q L R Q L R Q Q L V G$


## QUERY

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UniRef90_UPIO003716AC9 UniRef90_A4VL35 UniRef90_UPI000378D38A UniRef90_B5JVB9 UniRef90_UPI000364475A

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P E A A A RA A QMQQD DEA WQTRY QAYAAERDR\AAQGLAPQD PEVT QRLETLDTERNDWKNKVNGYLNERDSVMKSGMSEDA PEATQRRLETLDDTQRADWKNTVVNSYL SERDSILLKS GLLS D DA P EATQRLERLDTERDDWKSRVNQYLSARDHI KTGGMSEAA AEATVRLEKLDQDRNNWKSRVNTYLEQRDSILNSNMSQDA P EATVQRLEQLDDVERSHWKTRVVTQYLNQRDQLLSAGLDNAA P E A T Q R L E K L D D E R A N WK S S V T R Y L G E R D N L L K S GLL S E NA A EAT QRL E S L D Q NRDVWK SRVVNQYLNNRDTVLNSGMS DAA P E A T QRLE QL DGQRSQWK SRVVEYL NARDQII QS GMNDQA H D A T A RLE LL DVERSNWK S NVTGQYLDERQTILNSNMSDTA A EATQRLEQLDVQRSDWKNRVTGYLDERDQI TQSGMSHTA P EATQRLLENLD GQRSNWKSKVN QYL SERDSIVKSNMSPSA
T E A A Q R L E K V PEATTRLLELDTQRTAWKATVTQYLDARQSILDSSMSDSA A EA T QR L E T L DVGRRSDWK S K V N Q Y LiA E R D T I MN S S M S D T A P E A A D R L E K V D QE EADVWQTQVVNQYL SARD QI LK S DAN D A S AEATQRLETLDTQRSAWQQRVTSYLSGRDEIIKSNMSDSA
 PEAAARVVQMQQDDASWQSRYADYSAQRAQQDGAGGSPSD PEA QRFENGDAQRSDWSNRVNQR LSARDN MQSSMS DSA
 H E A A A E R L A A V A D R L T Q V D D Q E S Q WQ K K V D S Y L A A R T Q I TA S QQADA A Q
PEATERLLEAMDRE EAEWKKRLT DFRARRETLLDQTEQDPTAA PEAAERVVKMQQADNAWRAKYDEYAAQRAQI DAQNLSTED PEAA QRVVQMEQEETDWRDRYASYAAQRARIDAQGLAP QV
 A A ATERLEALDQQQRSTWKQRVLSY L N A R K I V D S NL STVA REAADRLA ELLDQRRALDWQSRYQDYREQRRAIL ES GLLAP S D
 AEATARLEVLDQENASWDRRMGDWYAQRDELLKTGLSEED A P A A ARLA QVDQEDANFDQRFDQYQTQKQRLLSQNADKA Q A P A A A R L A QV DA E DA NF A QRF DQYQA QK QRL L S Q S A DK T Q
 A EATT R L E QL D R Q R S A WK GRLDD Y Y A EK S RI EN T GLLS EA D P E A A A RLA DLLDRDEAAWKSRIVDTYLAQRGALMAAALDAGA PEVAD RYQALTERRNAWNGKLDHY IQQRDEI TKQAFSDEE

S A A A E R L E A L D R Q R H T WQQ RV A A Y R R E R QRI EA S GLLD D S D AEATTRRLEALDDSQRQSWQRRLDDY DTAKTKIQNEGLLS S G D A P A A A R L A QVDQAADASFDKRFNQYQKQQLLKQSVNQS QTQ P D GVVESVVVK YLLK QRKRF D QRFDA FR DAM EREESSSGDT E A D P QATSRLET LDAKRQQFNQRVDQWLTQRAALLNTDLSEAA AEAARELEKV ESEQQA WEVKKWQAYSQDLDAKDDMGLLA GPE G I VA D RLVQAS REEAVWRGRYDAYAQQRDRINSPGLLSDAD EAATQRL EQLLDQQRSDWKQRVQAYLDERKTIVDSNMSTSA

 GEAT QRLE A L D QQRQ GWKQRUGAF QA EKARRI EN Q GLL S D G D AEDAQRLEDVEQAREDWQRRWAAYRSDLAALESAGLLAEPE

 E A A A D R L A R
P E A A A RMA E V E E Q K S W
SAAADRLEQLDRERAAWDQRYADWRAERQAI EQSGLA QED

PEVVT ERMESVVDKSRAAQFKNQAEDYMQKRGEI LQQRDLLNMLD PEAT GRLEQLDQERLQWQKRMDAFSAEREAILLYHGLAE ED PEAAARMAEVD Q GEAAWKSRISAY LAERSSKLISNAD
EE A A T A L A QL D Q Q R D Q WQQRL G A F N S E Y H S
 D A Q A R E VVVA YM K E R E QF D S H Y Q Q F Q Q A LLA S E D A V S R L D E M D R Q E N D F L A R I Q A F E Q Q K Q Q i V T Q Y G D T A Q P E VA QRYQQQA QAE QA WKQRYDDYAA QRSQUVSA GLLSEQD D E K A E K I I A Y Y Q REE T WR A R L D D Y Q R R K Q D I Q A A A R T D A E $P E S A E G V V S Y L K Q R E S F D Q Q F S E F E Q A V D A E D L E G L A G A D$ PEAAERLLRTMDQQRSDWEQRLDAFRAARAKVADATADPDA PAAAAR LAELDREESQWQQRIDDAYQADKAQKASDPGGAQD AEATERLVRLDQQRNQWQNRLGEYRQQKALINNEGULPAD NAATARLERLDLKRQEWQRRLLSSYQQEKSRIESS GLLGEAD
 A E A A ARLETLDR QRLQWQQRLQA Y L K EKGRI EAS GLLS S D D A A A L R L Q A DEQRTLWWQSQYQNYAR QRDQINS A A I D DA D
 S E A A D R L E A L D L Q R R Q WQ Q RV A S Y Q Q E R T R I E A R G L D E V E



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 VVMDG AKLPASFKGTEVDQFQLDAAGNLQI GPELRQLVDYF P P S F A G T A Vivar IG SVALYS DGSLEYT LIALRHLEDHF

LNYSTKDAFDRF

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MPAPSAFAPSLRQTAVDGLA
LP S SFAGTQVDRLRADAAGKLI
VGAA
FVHSMQDTVPDPAAAQAQSGPLPYAG RRVFDYF
PRSFNGTRIDRLQQDAAGNLI DDGDVRRLFDYF SADKASQNDTNVD IDS N GVMTRLQLKAMFDYY PGPAPELADTQPDGLQVDARGHLIVEAANRAVLDYF SSQLGDTQUGQLRMDAQGNLLLQADLLHLFDFY L NYT TKDAFEYS TSLAGTQVPGLMTDARGHLIVDSNSKADMDYF


TPFAPDAEGTEVKADAQLNTQDDKTSRDTFEYF
 ERLP TSQQDTDID TS S S D T TVPALT $\square$ NKAGRLVVDSNSKAVMDYF S LQ G T EVDQ GVKDNFDRF ESSRKVIDYF ASQQDTD DD LDVEDGELVINKK I QHLFDFY LS Y T TK DLIFDRF $\square D V N E L G E L V I N K K K$ TEELRA LLDDFY KDFFEYS KDFFEYS
KDFFEYS

TKLPSSFKGTQDDQFRLDNAGNLIVGAETRQ\|FDYF LLTPALLHTFEQM SSQTDTETCQLQFNASKKLIINEQTRNCFEYF $S \square R D T E V D A L R L D T G G Q P L P D R E \square R R L G D Y F$ TATTKDTFEYF NTSAKAF LDYS
S S $\square R G T Q V G G A P V D A E G R L V A H \square S \square K Q R F D Y F$

A NASVAPSQADVEDDQTT ATDTPVSSQDGTDID DSSD

S L R DTEVDAVNDSPAGRPRTDRDL PRSLDGTELDAFSYDRDGHFV PRSLDGTELDAFSYDRDGHFVLDEGAVQAFDYF ETLPAS $\square S D V P A P P \square N V T A E G A L V V D T Q L R D L L E H Y$

PSAPDAS LIAGTQTDGAD

S A S S LK A T S Q Q D T $\square$ D

L N E Q L QVKDFFEY Q

KAYYDFA
RHFFDF S
K
RDTFDFS KNYFDFS


GPGFVLDGALKDRFDYW QSELELNEEL RWKFDE L


SASS $\square$ K $V A S Q Q D T D \square D$
RDLLEYF
NASAKDMMEYF RDLLE YF
T DEPTDQVASQQDTKTDESSRDTFDYF NMPKSLNNTDPSSLHTDGDNQLLLNHDDKVLFDYF $L L L S Q A L R W D F D D I$
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UniRef90_H0C4G4
 LGYREAAGEARVEREADPAARLAALRADRRAWFGEAAAAR
 LD Y K R QL LA LIE QQA D $\square$ GAMRERLRAVKQLRAA IFDEQANA

 L E Y K R A L A L L Q Q P L N LTT T L Q QA FD S LA QL R RA HFSVVGA EA
 REYGK QF SRGDYAPDMDQVADK LIRRQQL RDDIVSDTAAA
LD YKRHLIQLEKD L P Q A M R QRE QAVQ N L L R S S I F S P EA QA MD Y L R A A E Q V E S S Y E A G D LLERRT F D L L F GL R R S L L G NLA DA





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2rb3

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FFKEDDEYDRYALER\|LULAQDGPSQKRELLTQHDEKLLPED LF GDEEREDEAAI E ESRVLDADSPEERDARIAEVVEEALPEA
 FF ALLE EAADDF TLERLAI RLDDPALDAAAKMDRLQNDLPPE FFGAE QWRQRYDLARRLKITTQDTDAQKAERLDRRSSSRCRP $F F S D D D A D S D Y N$ L A $A L Q Q I A Q D T Q S Q K Q Q A Q Q T Y D E Q Q P D S$ LF GAEEAYARYTLDSLAVHNRDDLVAQGKQERLLREQLPEA
 FF GEEDAYDRYTLARLELMRDSAQARAQQLAELERQLPE G FF A QEEAYNQFTLQRLLAMRHDNEQQKAEAMDRLLRATMLPE D FFSDDEAREQVII A QRRRI AT DSAAEREQRYE ELLEQSLLPPE MF GLLEDANDMDALARLEI ANDSASDKRSRLATLDQQMPRM LF S Q E A QVD E A A L A R L QVA HESTGLSRGERKALIVAS IVAG

 LF GHD DVLDRFVLLQRMQIM QRSAAE KQKQIA QLEAA GL PA Q

 L F G E E N L L R R E L A L T T K K A I K E Q T P E E Y Q Q R WE N E L LF S QEA QVVDEA A L A RLLVVA QEHTLLSKDERKALLIV ES IIKA G L F A DEDRYDQFSLNRHDIMDRSDEEKAAALRALRNTMPET


 L F S Q E A QVVD E A A L A R L S V A Q E N T L S R D E R K A L I V E S I K A G
 L FFMDEEAYGDYTI RNQSI GLLNSDLLEKQQQRQLAAQAQLPEH
 FFAAD DQVQDYNMAMLQIAQDSDAQKQQAQQAYIQKLPEA LF THDNRMRE DALEKKLLLKQE GDEEYQQRLESYLSEQP DY

 FF GQSDE YETYML SVASSINKNSELEK QSAKAELDTTAPA W





WY A QE ERYDRADARRKL WADRSPATRERRLLAELDADLDP Q

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 FFSHENRYDNQAI ERMAI LQDSSSLSTQQKQMLITHQQI S QM




QRELQAQSAQLDVAMQQSREFERNRTDASTRFVEREALYG MKESYQNAALLCEMNALSA PKY MQTAENNHQ MNAKDLSSLSA HLALQQPEYVQESDANRRLMSELLDGQQKHDAAVELVG LQSEENGEDLFVLQSQAFG IKTTEQNNNLVADLISM, $\operatorname{DGGLDEQQKLIVRTEAVG}$
 $\square Q Q A E K N N Q \quad L I T H L E L S D L E G G Q N G H L R R Q E L V G$ EQQ A Y K N A A L M G S LV N VKSAFEPS LQLQKLHQRVH DDEKDEGS QSYNTFAAQFG ERFAHSRAGRYLAARDSVQGLIDAGADDATVQAARAEHFD QEDY T RLSGNEAHQQLMAVLAVDEQLNADPQS DEQSRIEHLG
 $P P E V Q R A L G P S Q R L S R L L A T M E G A S R D Q L A A A E G$ DEEEREVYEPTLQVFNIVDNL DGNSNQ LDEFT LRAARQAYATPQAVAEQTAALDARQADDATRHAERSARYG QVTDEVRREQESAVTAETAELDRQQVDPETRHALRAQVWG $M K E S Y Q N A A L I S N L N T L S Q Q Q D G E M N D D K \square R A L R A G V G$ VQTSHQNQVLLQQLSS SEGLDQQDKYLQRNELVG



 QRKARKQTFILQN
 QREQRRAFTAQVDVQRQTDAMDARGASAQERFAERSTAYG HRAERSAATEHMAAAAQTAAFNASNADERTRYAARSAQYG $Y \square Q Q S E R N N A L T R Q L D Q T E L L D Q D K Y L A R V E L V G$

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UniRef90_B1KMSO UniRef90-FOQ4C0 UniRef90-H8L1A3 UniRef90-UPIO002E8B6D2 UniRef90_UPIo0030F6F53 UniRef90-O9X513 UniRef90_E5KC19 UniRet90_A5EYUO UniRef90_U4KYP0 UniRef90-L8JDP3 UniRef90_A6FBB4 UniRef90-Q07WD9 UniRef90-E6VOAG UniRef90_KOHZD1 UniRef90_LOHWT4
UniRef90_HOC4G4


左 PEAADRLAELDRQRAAWQQRLDAFAGARADIEATVADPDA GIVADRLDRGNREEADWRSRYDAYARERDRISAPGLAEAD NAATTRLEKLDGARQQWRNRLAAYRQDKARIENSGLSDAD CPRRRRASRRCSRRPAEPLRGLCGAAYADRVGAGGLSPQD
EDAAKRLAEMDAQNAEFEARFVKYQARDKILDDSASAQS PAAAARLADLDREEAAWNSR\|DAYVAQRNKLM GQPDGQ PPTVERLLVEQRNERAWQQHYAAYRQELASLQGNGLSPTD SEAATRLEALDRQREQWQQRVAVYRQERQRIEARGLDDVE AEATARLEALDQENDAWDRRMSEWFAQRDELLKTGLSRED AEATAREALDQRRQQWQQRLDAYRQEKARDEANSGLSEED NAAAERLAELDRSRAEWSQRVAAYEHERDALVATGTQTAE NAVAERFAKTWKKQAQWESKI AEYEKFRDNLLNQALAPGE NAAAARLEKLDEKRRAWQNRLTAYREEKARIESPGLSQAD NAATERETLDRQRQAWQQRLSEFEQEKRRTERSPGLGEAD PEAAERLAAVDRENQAWNARLAQWKAQRQVIESAALSPAQ SEAAMRLTNLDQKRESFKQQIDEYLIKREQI LNTNNNQDD
NLVADRLTGGREEADWHNRYDAYTRERDRINAAGLSDAD SAAADALADLDRQQAAWQQRLSDYAAERNRLRQSGLNDSQ EQGAQRLQDLDDKRAAFKASLDHYLAQRSDILNNPLGAEA IEVAERFSKTWEKQAQWQSKIADYEQYRNDLAQQTLTPGE EAAAMRLQKLEEQRLAWQNRYQNYTQQRDRMLNAALSSDD SDVADKMARVEREKQGWEQKKSAYLARKDVLLSSGISPQD A EVA ARYQQQAQADQSWQERYRDYARQRAQVEQPGLADAD EEAAQRLAQVKQRQEEWQQRLKDYRHYKQSPELQRLAPQD SEVAERFSKTWAQQAQWQNRIAEYKTFRDNLVQQSLDSNA

S AEEAENLVNHYKQEFQFKQRYAAYRQAIAALESQGFTQAQ PEATERI QQARQAEEAWQAQYADYAGQRTQI ETTGLSNDE EEVTQRLEALDKQRAAFEDSLEVYFAERDVLKDSFLSKTE DAAALRLQALDQQRQDWQQRLDDYHGQRQVIQSSGLSRQD EEAANRLADLDNQRAEFDSRIKSYLSQRDAI NQATSSSEE EKAALRLEALDKQRADFEGTLEMYLTERNELDDSALSALE PEVADRLAALEVKREQWQVKLAEYREELDVVKDNAGDEEQ DDAAQRLVAVNQSQNTWLNKI QDFQQRNGDLKHQGQNPTD EEGARRLQALDDKRLIAFNALLADFLQKRVELNNDLGEEE EEGAERLQALDEQRASFNASLNDYLEKRAELINNDLGEDE


REAAQRLAELDQRKARWNDRपRSYAAQRQRVLADDLSDAQ EEAALRLQAFEQEEAEFNNQFQQYLTERQSLLESYLSDTE EAGAERLEVLDQQRASFQANMDSYLQHRDELTTSDLSAQD EAGAQRLEVLDQNRAEFDRVFQHYLVQRSAILDDGLSDEQ DEAAQRLANVRGSRQVLKTKVLAFMDQKKAI QSSSLS DDL ENGAQRLAQLDQQRAQFQHTFDSYLEKRATLDGSDLSDQQ EAGAERLETLDQQRASFQTALDSYLLHRDELLNSGLAEQD SEGAARLADLDDQRQHFQSVLAGYFVERNELKSQQSNQD AEGAQRLAELDAKNEVFNADVDSYLNERQALMTDDLTMEE HDAAQRLAALDREHAQWQARLAAYNQRRQRLLARALDDTA EPAAERLDTLKKQRNQWQKRVLEYELKRASL KRQYSDER PGAAERLAALDAKRAAWNAKLASFRTERQSLRDSVASPAG EAGAQRLGELDNQRAQFQQTLTSYLAQRAQLLADNLSETQ EKGAKRLQDLENQQRDFQAALNGYLQQRADILEDGLSTE DAGAQRLQKLDEQRASFETGLATYLKQRQDLLNRDLGQDE PQVMERIEQLKADEQAWK LKVKEFQSFEDKSRGEFTDQQE AAAADALARLDGEERQWQQRLDQYQQARATQGDGP
DAAADRLADLDQRRQQWRQRVELYRQASHSDEADPLSSMQ DDAAQRLHELDVQETAFHQTFQRYLTERGDMLDQEFSDAE EEAAQRLEALDQQRAEFEDALEVYQVERNDVNAALSQVE DEATHELAKMETLHAEWERRYQLYRQERSLI DASAASPQD



QEVIERVQATQNTNLNWQHK TTLYQEYQQQD ANLSDTE YEAARQLAALDQENQDWNSRLDQYAN

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UniRef90- C3VIF2 UniRef90-C3VIF2
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UniRef90 H0C4G4

K QEQI QALKKEQFTAK EMRKLDVYLRN
 $R T A Q D T Q L R A Q T A A P N E L L R A Q A L D G L A$ RDAELAQWRQRAFANPAEAMRAAALD
$K R A A D A R L A A D R F D ~ E H E R Q R L P A A E ~$ RDAAQ A A LA
N

K

 RQQAEQALQQKDFSETEQRR



REEMLKKYQTAHFT DNEIDKRLKVLT

$$
\begin{aligned}
& Y K V S L D K L Y T Q H F S ~ Q G E Q L R A R A L T T V \\
& R D D L L Q T Y R D A H F T S L E Q K R I G A
\end{aligned}
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IOKALQEYQSAHFT DNEDK
IE KALQEYQSAHFT DNE!KRLKVLT
KKEKDRVYQENNFSUNEXRRGLDT
KAQS AS LRNQSFS ESEFRRVEALERD
FEEALADYQSQKFSVMNE!KRLKVL T
YSQA TQQLKQQMFEA NEQKRLQQYLAN
KKFEVAGLLREQSFDEKQWR RIE ALERII
KQQSANQLRNQSFGSKEDGLRAQSYE

$$
D E A T R A Q L Q A E L F T \text { PQEALLRLQA }
$$



QQQALAQYQQQQFT $\quad$ NEQKRLTVF
Q Q A QLRESLFN ERERLDRL


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\begin{aligned}
& \text { GAQAQQRLRERRLFAS EDRHRVETYDADA }
\end{aligned}
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UniRef90_U1KBK4 UniRef90 A8ZZG9 UniRef90-A0A023RP78 UniRef90-A0A023S223 UniRef90 A4SS07 UniRef90 F4DHE9 UniRef90-K1IRA1 UniRef90_UPIOOO2197AB4 UniRef90 R1GUK9 UniRef90-N9VLV8 UniRef90-IOHK26 UniRef90_B8FCZ4 UniRef90-B7KGM8 UniRef90-B7KGM8 UniRef90-U7G5N9 UniRef90 N6W819 UniRef90-A8ZT05
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UniRef90 C4FN27
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UniRef90_UPI0003692BC9 UniRef90_A8BQK9


S L R GVQPDGFR LDAQGRLLPDRAVRRRFDQL

$S \square R G A S V P D L R \square D E N G D L V K D Q D T Q L L F D F F$
 PSQQDTE $\square D E$ S S SRDLLDYA

D T RVEPFSALQLNTQLKWKFEDF VDAAGRLQPSDALRRRFDQL GLAMTDSHHLIVNDGLRDLIDFF II NKQHKHQUDDW IS VA T L A Y F N Y L
$D G R L V P S A A D R R R F D Y A$ VTVFTRKYFKYL

GLPVDEQGNLQPGRELRAVLDVF TALS R $\underbrace{L}_{1} K L D D D G Q U L V D R Q V R T V L E A A$
$\qquad$

GLADAENHELIVNAALLDLINSF
 GLAIGEGHRLILNGALLDLIDSF

[^0]UniRef90_V4HIY8 UniRef90_U0EPR8 UniRet90_Q12Q9 UniRef90-C5TAH4 UniRef90-F9S959
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$\square G G D A S L T \square A E L A W L Q Q Q V I A \quad V M P D T A G R Q A A D V M E R Y$ $F M Q P K T P V D E T R F E E L K T L I A G G L D G E A G Q Q A A A M A E R Y$ SREDHLA QVKDRIFSQFPAEEA GRLYATYQRY QAEAQRQAALQAEQQR LAQWSDEPSAEDLERLEWTLRDGLPAADAQQALAQV QGY ADKKQAVDKQLDEEEAAE IKKLTQQV ADKKQAVDKQLDEEEAAE IKLIQQV
 KTDDDRADQLRTY YKSELPSPAYGEAER\|VERY

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WF SEENNWHAHA|LTRWH|I LSDSKNDRDALLSAH $\quad$ S S QLLPQK LF GEEN RLLR QLAA D K LAA I A Q NLDAES QA QWLEETLA D QP D


FYGDEEA
FFAQDNAYDRQADARAA $\quad$ R R DTSSLSPA QKQQQLLVH H LS TG
 WF A A DEALD QETLTDLR SRVEGGTQSSAAATAYFS


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EEEAQRQAELDRQR REEEAQRQAELDRQR EEEAQRQAELDRQR REEEAQRQAELDRQR
LF A DEERMARVTLHNMRTQMNT DTEKAEQWQWL
L Y G E E E A L M R Y T L Q S M R I Q T D S P EQ K QVVQQE QL R KRVVP A L F GE QVKEKEYS L RRAA I VSD P DLLY A E EKQAAMDRLTTQEM

$L$ F GQDLLRHGRLLMEAA FVARDDPQAR QARLAALRA QLPEA L F D E H A R R CK $\quad$ E R QRRLLREDDEARMMNRRLQERRLARRTMK L F D E H

ERQRLLEDDEARMRNRLQERLARRTKH QRQA A ITKAEQERRIAA QAEAQRQAA IGAEQERDAAE QRQAALK AEQERIAAQQAEQQRDAAEQAEAQRQAA QRQA A L K A E Q E RI A A QQAEQQRI A A EQAEAQR QA A $\square F G D E E A E K E Y Q F G Y N Q F L S E T K D S G D Q K L A R Y E E Y R P K F$ HRQQE LQAHRQQELQAHRQEELQAHRQQELQAHRQQELQA
 YEAEAEARRQYEREQTRIAAEAEAEEEQVRLAAEAEAHRQ WY QND DA QLDQVLQE WRQRVEDDQAPELSAQQPRYPVPHW

I F GLLE
A Q R WY QNDDAQLDQVLQE WR $W Y Q N D D A Q L D Q Q V L Q E W R Q R L E D S E A P Q A P A Q A P R Y P D P H W$ AEQARRDEEARAAEQARRDEEARAAEQARRDEEARAA



LLGAPEQA
WLQPPTAYARYQDA $\square A \square Y Q K D \square D E \square A E E D D R R A A R N R Y D P$ LKAEQDRDAAQQAEQQRIAAEQAEAQRQAALQAEQQRIAA LKAEQDRIAAQQAEQQRIAAEQAEAQRQAALQAEQQRIAA LREAlA Q
DDYAVTREEEAVMHEQLQAED DTRRQQDQEEHT DDYAVTREEEAVMHEQLQQAEI DTRRQQUQEEHTT QAEAQRQAA $\square N$ IIAAEQAEAQRQAA $\square K A E Q E R \prod A A E Q A E A Q$ LKAEQDRDAAQQAEQQRDAAEQAEAQRQAALRAEQERDAA LKAEQDRIAAQQAEQQRIAAEQAEAQRQAALRAEQERIAA $\begin{array}{ll}L K A E Q D R I A A Q Q A E Q Q R I A A E Q A E A Q R Q A A & R A E Q E R V A A \\ N K Y E T E M F F K E S D L N K L S A S D R ~\end{array}$ HRQEELQAHRQEELQAHRQELQAHR QQELQAHRQQELQ $Y Q A E Q A R L S A E A E A H R Q Y E E E Q A R Q A A E A E A H R L Y E E E Q$
$Y Q A E Q A R L S A E A E A H R Q Y E E E Q A R I A A E A E A H R L Y E E Q$ RNKSDEERHRQYMLRVLDHAM
 PKFNKYETELFLR ETDMNKMAAAQKDPQ DRSGREKYFG SPAAVEQLRQQLLAHQQTERNNADQRTEQQQRQAAEQQFE

HDKQAEDHHRQYMLRVLEKA
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[^1]
## UniRef90_V4HIY8

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 DAAAQRLMQVRHNQSSWTQRVSEYKQRRSELLEKGASDD D R A
EQAAHALAQLDRDEQHWQNRLDELGQARAR

EQGAQRLTQLSEQREQFSQHLENYLQQRAVLENTRLSEDE





 PEAQGRLQQLAQDTQHFEHQLDGYLAELATMTSQDP PEAADRLDELKQSQLAFESQLQGYLKERATMDEEEQ AEFADERERLR
PEQVAADDEVDVMLAEKQT DENQLQAKEQEDESNPDTQEQ EEEAQRQAELDRQRQAEAKRQAKLERQRREEEAQRQAELD EEEAQRQAELDRQRQAEAKRQAKLERQRREEEAQRQAELD

PDADER DNAMEQQQAEEQQAEEAYAAEKGDAEDTTLSEDQ


RTSADKRRSLDEEETVLKQKLADRLKKRDRVKQVATSAVA RTSADKRRSLDEEETILKQKLADRLKKRDRVKQVATSAVA RQAADKAEQDRAAEQAETQRQAAIKAEQERI AAE QAEAQ QQAEQQRIDAEQAEA QRQAALKAERERILAQ

KDGADRIEKVYKElEATKAKEAETDREEQAKANPNAKADE AHRQQELQAHRQELQA HRQQELQAHRQELLSQHGPRQQ D R L A A

PVEAQRDEQQEQADAES DAKMDRFDAAEKEY DNPAKSDSE KDGADRI EKVYKDDEDQKTKESETEKEEQTKANPNAKPAE NAQAERLVKQDQERQTAEQDLKNRQQQERALVERQLDT

AEQARRDEEARAAEQARRDEEARAAEQARRDEEARAAEQA


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270

 A ALQQVRGQLFT PEEQLRLPA


QEDK AVYLKQNFSST E I K R L Q WVFLRN GILEDMRLYQQQKFSDNELKRLQVFLKN

GEAAAQA LRQQ $D F S A E E L Q R$
QDEDDRYVDEHFTLNEKRRLTVYVQN KNQQITQLRTQTFEVKQ $\square$ KRRVEALER
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$K Q Q Q I A V L R E Q R F D S V Q W R$ RVEADERD
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K DAALRAL
RAEQQRT L LARWFD PGQWRRVEALTR $\square$
RRAEQQPEI LARWFEPDQWRRVEALTR
 RTEQQQELLARWF EPGQWRRVEALAR RASQQPEILARWF EPGQWRRVEALTR QAHQQLLALWFPETQWR RVAALTR $R \square A Q G Q S L L E R W F P E S Q W R \quad R V E A L T R \square$
K D A A $\square E Q A A D E M \square G E D A$
RQRREEEDQKQR QAEAKRQAKLER RQRREEEIQKQR QAEAKRQAKLER

KAEQTESLRQEMLGDQAGAKRRQA $\square$ ENA
REAAIKAEQDRIAAQQAEMAR
REAAIKAEQDRIAA QQAEMAR
DQEADSELRADENAMDEKRKVLESTER
DQEADSELRAIENAMDEKRKVLESTER
RQA A DKAEQERIAAEQAEAQRQAA
QAEE
QAEE
QAE E
KEKA LSADRTR ILGAEEEQYRRKADE
QGVHSSVYLQQSASTTQKHRNLDV
YETEQRRLYEA EQHRLYQ!EQA
YETEQRRLYEA EQHRLYQLEQA
RQAA IEELRRKYLGQP
REKA SA MTRULGSQEEYGRRKALE
$R Q Q A E R Q L \stackrel{L}{L} Q R A A R Q$

RRDEEARAAEQ

[^2]


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

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^2]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

