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 I H H L P I A V T FA F F G S E V V I D P THHEEEAVVTGGRMT T T L N A $P$ I N T L V V Y V TVAAK $\quad$ GGE Y L V V D P T L V H HLPI AI TFGFFDS LLVI DPTHNEEAVMGGRMTTTVNA I H HL PI AV TFGFFSSELVI DPTHHEEAVMMGKMTATLNA





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

 E E QVADTRLVVAVSD


 $V$ H H MP I C V S F A F Y G K Y L L V D P K L L R E E K V M D G K M V I GMN K

P
P
 PLLD PI A A I S VGGI ID GHVCLDDLPYEEDSRAEVDLDVVMDA $P L R Q Q V A A L S V G I V Q G E V L V D L C Y E E D S Q A E V D M N I V M N E$



 $P V R D F V A A V S V G I A N G V P V L D D D Y I D E D S A C D T D M N V V M T G$
PLKHMVGSVSVGI YK GTPILDLLDYLEDSAAETDMNLVMDE

P

| 1 | $T$ |
| :--- | :--- |
| $V$ | $E$ |
| V | E |



LH HVASVSVGIFNGTPVLDLDYAEDSNAETDMNVVMND
 I RKHPVATSFAITFDDTIVVDPTAEEETLASGMATIVVDE

 $\begin{array}{r}P L R G L V S A V \\ N A P V \\ \hline\end{array}$ LD DWPV CLT T S K V DKWFVMDA T L E
 PVRHFVAAVSVGMVQDTAALDMDYAEDSACDTDMNVVMTE

PMK HMIA A I SVGGIYK GNAI A DLE Y TE DSEAET DMNVVMT D


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


PLHDF LAATSVGVVGEDSVLDLNYKEDSTATVDMNVVMTG
 1 R D TPVVAVTVVEIGGNLLVDPNVYEESAATSKLTVISNA PI T D Y LA SI SV GI A G GQALLDDNYEEDSKAKVDMNVVMTG $P$ I K G LVVSA A S V GIVD G Q A V CD L E Y VE D S A A E TD M NVV M M E

 $P L K G L V A A D S V G D Y Q D E V L L D L C Y E E D S N C Q T D L N V V M T Q$ $P \square R N F V S A T S V G I V N G E H I L D L C Y E E D S N A H V D M N V I M T D$ PLKHMIAAI SVGI YNGEAVTDLEYLEDSEAETDMNVIMTE
 P L K Q M I A A V S V GIVVD G QA V C D L E Y V E D S N A E T D M NVVVM G A PI S C A I A A V S V GVVVDGRVRLDDLP YE E DSRAEVDMNVVAT D PI KYKVAAI SAGIVNGEPLLDLAYEEDSQADVD DNIAMNE $P$ P $\quad$ Q K $\quad$ Q A A A $A$ S
 $P L K E P V A A V S V G G I I D G V A C L D L D P Y E E D S R A E V D M N V V M T A$

QUERY
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## 13

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H1

K S N I C S I Q K G GMN G LD A N TVV NQMINV A K QV S M K


DGKVCSVQKR H GTFTVEEVLNIVVVARSKWPELARIVRE



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\section*{S

## S <br> E

R
47076F2 47076F2

036383FA
4UT47 U82 T47

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## D

 $R$ GHVC GMQKNGDVGALDDKEMQAMVDVASKVSPEVGQAM

T G K M I E V Q G T A E GP F S I E E M H E M L A L A A K H G I R E L F D E Q K A






 R6 D GRMM I K G GFi $V$ VGTAEGPFSHE
$\qquad$ 4FTZ8 A G A
40CBA93


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 LH HAPFCFTFAFFSDTPLLDPSHLEETGSAGLLSVALNA $P L K Q M V A A T S V G I V D G R V L L D L A Y E E D S R A E V D M N V V M T A$ I L H QPLCVVTFSYF GELFLVDANLAEEQVRQGEDTI TMNK $P L T D S V A A I S V G I V A G Q P V L D L D Y P E D S T A E T D M N V V M T G$
 $P$ P L Q P V A A V S V GIVWQ G V P V L D L D Y E E D S T C D T D M NVV M T A

 L L H WP ICVVTFSFF GGEMI LD ATAQE EALDRVGDMTI TI NK


 $V$ R E V P
$V$ T N I P F S L T C A L H K D NI LAAD P TA E

$P F K Q L V A S V S V G L Y Q G Q P I \quad D L D Y E E D S K A E D M N V M N A$


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

 PLKHMIAAI SVGVYKGQVIADDLEYLEDSDAETDMNVVMAE PI R H QI A AVSVGGLE GVPFLDLNYQEDVAADIDFNVVMND

 LTTEPVTATVCKINGEMVEDTTREEQEAQEARLTVEIDQ
 $P$ I R S F L A A V S A G K I H G T V CLL D L C Y E E D S S A E V D C NVVVMN S PI T D MV A AV SVVGI G DEEML DLVYGEDSNAVVDMNVVMTS
 P L T D Y L A S V S P L T R M I A S I S S V Gl Y Q GE A V L D L D Y P E D S S A D TADMNIVVMA D
 $P$ L R T Q V A A V S V G I Y A G QPV L D L D Y A E D S N A D T D L N L V V D G $P L R Q L P A S T T F A D F D N Q L L I D P T E D E E K L A L S T L T I V V A E$

 $P V Q D Y L A A D S V G V L D G E E V V D L C Y E E D S N A E V D M N V V M T G$ PMKGHVAAVSVGLLGENALDDLEYVEDSAADTDMNVVMTE PFRMPVAAVSIGGKVDGQILGTDLDYSEDSRAEVDFNVVGNG LMHHPDCI TFSFYGETVLLDATLHEEQARDGEMVVTMNR

 IN S Y L DP LDS FAV I D E Y V L SSDP SLLE E E K L S N G S DS I V Y N E
 $P L R E F V A A V S V G M F Q G V P V L D L D Y A E D S G C D T D M N V V M T G$ $P L K K Q A I A A A D S V G D H K G Q A I L D D L D C N E D S D A E T N M N V V M T D$
 IH HS P M C L T F A F F G D D AV L D P S H L E S QL C T G T L T L A L N S
 LHHI PIS I S FCFLGGNDFMDPTDREERDTDARMSFTFNS PLREAVAAVSVGIVGGESLLDLDYDEDSSAEVDMNFVMTS

 PI RGFVAATSVGVWQGTPILDLCYLLEDSAEVDMNLVMTD PIVVHQVAA I SVGGMHGEPLLDLNYEEDVAADTDFNVVMNE PI TVDFLAATSVGIDKEHVVVVLNYEEDSTAAVDMNVVMTG PLKEAVAAVSVGIVDGTPLLDLNYVEDSSAEVDMNFVMTS $P V R D F V S A V S V G V H E G A P I L D L C Y E E D S Q A D V D M N V V M T G$ I H H H PVLSSTFALYGRVSLLDDPSREEEAVMDGKVVPGMNP

 L LHVPICVTESFYGEVCLVDATLQEEQLLRQGDMTITLNK
 I H H IP P T I S F GI T D G I P L M D P S D R E E T I C K S R L T I A I N K $P L V H M V A A V S V G I Y E G V P V L D D D Y P E D S N A E T D M N M V M T E$ I RKEPLAVVTMAKIGDSLIVVDPTADEEEVMDARLTISSLDE PI RKY LSAI SVGIVNNEKLLDLCYAEDSNASVDMNIAMT D PILDDQLAAVSVGVFESHPVLDLDYLEDSACGVDMNIVMTG
 $P \vee K D F L A A V S V G V T E N T T L L D L C Y E E D S Q A V V D M N V V M T G$



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| UniRef90_UPI0004781422 | A $L^{\text {L }}$ |
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| UniRef90-Q2VYM3 | A L G L |
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| UniRef90-K7RUS1 | ALGV |
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| UniRef90_UPI0002895338 | $\mathrm{C} \mid \mathrm{L}$ |




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| UniRef90-U5LE78 | V L G |
| UniRef90-Q92SK2 | A |
| UniRef90-A4CSY4 | A L |
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| UniRet90-R6P161 |  |
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P F H G P V G A V ${ }^{10} \mathrm{~V}$ V $\mathrm{L} \mid$ E GNF| 20 20 T Y A E R K ${ }^{30}$




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## पT K पP पS TTFNपYDE【IVLD


LDYPVAVTFGLYSEFEVMDPDAF PITDFLASVSVGIVKEQVCLDINYA

 PVKDVMAVAVGKADGVVLNTYSEIENGDLDLVVAGSP PVKDVIIAAVAVGKADGVVVLDLINEPEDMWGEADMPVAMLP $V T S C P M L L T V S K D G T A N L V D C S P E E E C C D R S Q L L I G V A K$ PLLPPVAAVSVGLVDGHVCLDLPYEEDVRAEVDLNVVMTE PFAGPVAAVRVGLVDDEFII NPTYAEIEAGDLDLVVAGTP PLKDDLAAISVGILPEDPVLDLEASEDQQALVDMNIVMTG PLTHEVAAVSVGVVRGETLLDLDFHEDAAAELDDLVVVATA MRDLVAGVAVGKVQGVLVLDIDQLEDEYGEADMPVAMAP PFKGPMAAVRVGLVGDDFI। NPTYEEISEGELDLVVAGSP $\square$ HKHPVATSMADFDDIIIVVATAEEEDLATGTVTMVMDE PFNGPMAAVRVGLVGDDFVINPTYKEVETGDLDLVVAGSP LTCKPDSTSFGMLDSQVLSDPTSFEEPLIMDTTVSVVVNE PFSGPVAGVTVGYVNGEYIINPDKEQRANMD YLSVAGTK PVRDFLAATSVGILEDDLILLDCYEEDA DGEPRILDLAYEEDVKAGTDMNVVCTG PSA $8{ }^{3} 4$

| $L$ | $P$ | $S$ | $L$ | $F$ | $G$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $D$ | $S$ | $L$ | $A$ | $D$ | $P$ |





 $P$ F E G P IAA G V T V G R V D N E F




 $P$ F D G P I A G V Y V G R V N G E Y V I N P T R D Q K A V S D I



 $P$ LI K D S V S A I S $V$ V G M S E G Q P V
 $P$ F D G P V A G V I V G L V D G K F V
 P F E H T I S ECRRVA RVVNGEYVI D P T F D Q M K D A D L D D I MV G C T K








 $L S C M P V A C T F G F L A G R L V T D T T A D E E R D A D G L I I T V V V S E$

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 PMRALVAGVADGKVDNVVVLDLNEPEDNFGEADMPVVAAP $P$ LK DF LAATSVG IAAEEAIL DLNYLE DSAAEVDMNIVVQTG PF A GPI A GVRVGRIDGNFI I NPTVEQSEKSDMDIVVAGTK P F E G P I $P$ VR DLIAA A VAV GKAD GVVVLDDLNEPEDMWGEADMPVAMMP


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DGVI MVEAGANQLPEADMDEADDFGYEAVRDLIQAQRK $K G D L L A V N E L G L G T M T T D L L K N C I E K S K L R V S N L V A C I$
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 G NK
$T K Q L L A V S Q L G E G L A G S D V V G K C D Q E A K R R$
 DGHFVEVQGTAEDPFNRDELCALLDLAAKG


E R $\backslash V M M D E A G G D E \square P E E T M \square K A \square E Y G F E K C Q D \square V A F Q E E$ S GAFVEDQGTAEGPFTRDD
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 $P W D G P T A S V V I G G Y I D G N Y V V N P T Q E Q R A V S E L L H L V V S G T K$



 PWNGPI G A V RVGGQID GHFVANPTIE E Q Y A S DLLDLIVYVGTE
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 K E P S $\square$ METFMTMVL NS P F F GPVAASRVGVVNGAFVLNPTDEQRAESKLDLVVAGTAA PFEYPI SEVRRVARVDGMFIVNPSREQLDASEDDIMI GASAA PFHGPI GSVRI GYI G GRYILNPSYE DLLESELDLIVSGTE PFQGPIGGVIVGLVDGEYVINPTLAQAEKSLMHLVVAGTR $P$ WD GP I GAVRIGGI D GQLLVNPTEP QMAESTDLDLLVAGHD P F E C P I S E V $V$ R V G RI D G Q Y I I N P S R A Q L E Q S D I D I MV G A


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 $\square S D \square P A C V R V G Q I D C G Q Y V V V N P T T E X Q L T R S R M D L V V A C T$
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 $P$ F G GP I A GVVRVGRVDGEFI A NPTDEQQEQSDDEIVV A G S K

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|  | UniRef90-EONM57 |
|  | UniRef90-12F059 |
|  | UniRef90_D2Z2P2 |
|  | UniRef90-UPIO002B44EFC |
|  | UniRet90_K4KV06 |
|  | UniRet90 C2KV15 |
|  | UniRet90-A6LSRO |
|  | UniRef90-B3EAF2 |
|  | UniRet90_U5D122 |
|  | UniRef90 BOTZO |
|  | iRef90_UPI00021A6B37 |

1
P
 PFAGPI GAVRVGRIDGEFVINPTFEQREDSDLDLIVVGNK
 PLYD VTASGAGIVNSKVVLDPCHKE EVYGDGKLLLAFMP


 $R V D G K F I \quad I N P T D A Q A E V S D M H L T V A G T K$ PFEGP $\square$ GGARVGFI DGKPVLNPTVDQLAASRLDLVVAGTR




 PFNGP IGAARVGYINDQYVLNPTQDEDKESKLDLVVAGTE $P F A G P V G S V Q V G G V D G N L V F N P N Q E$
 $P \mathrm{~F} L \mathrm{GP}$ T GA CR LGRIINGEFVINPTHK P F D GP TGSVEVGYI DGKYI I NPN

 P F E G P L A C V V R I G R S K G E F MVVNP S Y E E R A D S D L L D L
 PFNGPTGSVNVGYVDGEYVINPTIARREKS RLNITVSG
$V G C I N G Q L K L N P T I E E M K D S E L D L I V A G T Q$ PFMGPDAGVRI GRI DGGFVVNPTEAQREVSTLDLTVAGSH


 P F D GPCAA T Q I G M

 P F F G P V G A A R $l$ G K $\operatorname{ll}$
 PFHGPDSEVRVARI Q GEFVI NPTASADK EA DLDIVMVGATY PWNGPVGAVRIGIIDGECVVNPTRKEMSSSTLNLVVAGAP

 P F N G P I S E
 D GE F V V N P TVVA Q A E IS K K QL TTV A GT K
 $P F E G P D A G V K V G B V D G K L I A N P S A E Q L K L S D L E D V V A A G K$



[^0]



[^1]

| UniRef90 X0RY80 |  |
| :---: | :---: |
| UniRef90-UPI00037C34F9 | L VK M |
| UniRef90_D4S8K7 |  |
| UniRef90-LOPD05 |  |
| UniRef90-K3XAM5 |  |
| UniRef90-I1FLA8 | T 1 |
| UniRef90-U1NRR9 | 1 V |
| UniRef90-V5HZY0 |  |
| UniRef90-C1BN11 | V V |
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| UniRef90-D2R250 |  |
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| UniRef90-G4D5N8 |  |
| UniRef90-R5ZGR0 | F V A |
| UniRef90-M4BVL9 | A L |
| UniRef90-V2XFA1 | K |
| UniRef90-C4GBE9 | $\mathrm{M} V \mathrm{~A}$ |
| UniRef90_A6H185 |  |
| UniRef90-B0CUB2 | K L |
| UniRef90-C3SSR2 | A |
| UniRef90-X1EAS8UniRef90 F2JSZ4 |  |
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| UniRef90-Q4P345 | A |
| UniRef90-X1NJ78 |  |
| UniRef90-E4KYJ1 | $\square$ |
| UniRef90-Q9CLU1 |  |
| UniRef90-D1CD30 | L VA V |
| UniRef90-UPI0003C35310 |  |
| UniRef90-U2VNF3 | F $\square$ A |
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| UniRef90_F5TBA6UniRef90 J7QT13 |  |
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| UniRef90-S9URH4 | V I |
| UniRef90-15AW29 | 1 V A |
| UniRef90_E0S1P2 | 1 V A |
| UniRef90-V2XCT8 | AL |
| UniRef90-X0U9D7 | L V QV |
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| UniRef90-12F059 |  |
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| UniRef90-UPIO002B44EFC L V UniRef90 K 4 KV 06 |  |
|  |  |
| UniRef90-C2KV15 |  |
| UniRef90-A6LSR0 A V A |  |
| UniRef90_B3EAF2 |  |
| UniRef90-U5D122 N |  |
| UniRef90-B0TZ09 UniRef90_UPI00021A6B37 |  |
|  |  |
| lupas_21 |  |
| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
| conf | 7289 |
| sol25 |  |
| sol5 |  |
| sol0 |  |
| jhmm |  |
| jpssm |  |


[^0]:    lupas_21
    lupas_14
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