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UniRef90_UPI0003597616 UniRef90-Q01514
UniRef90-UPIOOO2C65DCC UniRef90_L5MJU5 UniRef90-Q9H0R5-4 UniRef90-UPIO003F174AD UniRef90-UPIO0046BDDD0 UniRef90_UPI00038BFB1D UniRef90_UPIO003288308 UniRef90-F1S4E0 UniRef90-HOWNQ3 UniRef90_UPIO0038BCFAA UniRef90_UPIO0046B5418
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A TEVF TR SSFKDVDHLF QKELAA A QLEKKRDDFCKQNQEAS A I K I F M K H S F K DVV E HVVF QK S L T T QL E EKCCDNFCK QN K Q A S


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| $A$ | $C D$ | $N$ | $F$ | $C$ | $E$ | $Q$ | $N$ | $K$ | $K$ | $A$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |
| $A$ | $F$ | $I$ | $R$ | $S$ | $S$ | $F$ | $K$ | $D$ | $I$ | $D$ | $H$ | $L$ | $F$ | $Q$ | $K$ | $K$ | $L$ | $A$ | $A$ | $Q L$ | $E$ | $K$ | $K$ |
| $R$ | $D$ | $D$ | $F$ | $C$ | $K$ | $Q$ | $N$ | $L$ | $E$ | $A$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |

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 AI EVFMKNSFKDVDHKFQRKLGAQLEARRDDFCKQNSKAS



 ATEVFMKNSFKDEDQGYQKKLEMQLAAK QNDFHKRNLLAS

 A I EVVMKSSFKDVVDQKF QKELQRDQLQAK QDDYCKQNTKAS

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 SI AIIF LEHESFKDENHEFCKKLMETVVKMREDFVLQNDEAS A I A V FME MS FK DENQQQFQKEEVIII EKMKEDFLLQNEEAS
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 A IT L F MEHSFK DED GKF LKKE LVK TVI K DKKE DF LLLKNENE S A I EVV F M K N S F K DVV HK F QRKL GA QL EARRDDFCEQNS KA S AI QI F MKHSFKDVGQEF QRKLAA QL K DNCKTFCERNKKAS
 A MEI FTKNSFKDEDQSF QKELQTLLDAKQTDDCKQNKEAS

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 A A I TV F ME H SFK DEN QKFYK QLVSVI EKKKD DFVQQN E E A S
 A L E V F M A R A F K D E D HL L F Q H S L K E QL D V E L S K L C A A N E Q A S A MEVFMKNSFEDIDQGF QEKLETLLE AKQNDFCKRNLEAS ATKIIFMENCFKDVNQVFKMELGTKLATKQDEFLKKNLQAS
 A IIA I F MENSFKD DNQAF QKKL MGTME EKK GVF LLLQNEKAS AI DIFKKNSFK DVDQKF QKELLEASSLEAK QE GI CK Q NLKVVS AL RAFMARAFKDDDRRFQGELMRRLEKQKQELCQRNEVAS A I AVF MEHSFSDDQWKF QKKLVATIVDKRKEDFIDRQNEEAS AI EVVMKNSFKDVDQKFQEELGAQLEAKRDAFVKKNMDMS
 QL KKRDDFCKQNQEAS
A $\square E \square F \square K N S F K D V D H L H Q K E L A A Q L E K K R D D F Y K Q N M K A S$
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UniRef90_UPI00032AFE87

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EKEKETEVERVKAESAQASAKMLHEMQRKNEQMMEQKERS

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 DGCKAlAAEEQAK
EKEKKFEVERVKAESEEAAAKMQEERQKRNQEMREQKEKS VK QK E I EVVRAKAESA QATVRI
V K Q K E I E V E R A KA E SAAQA TV R I
TQEKASAAERTQNEDAEKEEKLKEEQKTDLEQMRKS QER】 EKEKE DEVER DKAEVAEADVTVLKEMQENYELMTEEKDKS


 DGQKAMAAEQSKKEAAEKELLELMRQHQMEQEEAREAHMRT D GEKA
TEREKEMEGVKAEVLKAEEQRMWVAVLRQYQQMMEQRERL EKEKEDEVERMKSEA
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 VCQ K A L E A E QA K R QAMEKE QQLVVTQTQ K MEDQEK KKEREKEVVRVVKGEAAQAEARRVVELERQNQQRMQQRERQ EKEKEMAAERARAEAAEQEQQVLVQKEAELQQKLEVVQRS D GQKA MA AE QAKKEKAEMGLLELMRQQQKEQEEAREA
EKEK Q $\square E M E R \square K A E A A E A A N R A L A E M Q K K H E M L M E Q K E Q S$ EGEKA
D GEKAMAAERAKKEAAEKEQELMKQKLQEQQQQMEAQKRS
EKEKEDEVECVKAESAQASAKMVEEMQDKYQQMMEEKEKS EKEKDI EVQRV
WEKALAAERAKKEELEREEKLLIQTLKEKQQQTEAQERS A GEEVI AEERAQREAAEKEQELLVRQKQEEQQQLMEAQERS DGEKAI
DGDKA AVECAKTQAAEREQVLLREKQKEEDQKMEAQQRS TGEKAI
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E K E K D I E VER DK A E A A E K A K E M L E E N Q K R N E Q L L E K A K S

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UniRef90_UPI00027FBD0E UniRef90-F1S4D7
UniRef90_UPI0003ACBF57 UniRef90 F6PPP4
UniRef90-L5LLE8
UniRef90 F6Q015
UniRef90_UPI0003C11D7C UniRef90-UPI0003C11D70 UniRef90-UPIO00328E8C4 UniRef90-UPI0003C81E7F UniRef90-UPI00038C0408 UniRef90 UPI0003F11B1B UniRef90_UPI00038ED2E3 UniRef90-K9K310
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Y QEH TK O $\square 250$ 260 280 HQEHVRQLNMKMQQDRVQMLKEHQVTLALKLQQQDKLL
 HQEHI RQLTMKMEEESAQWKKEHQETLAALKLQEQASLLRE YQEHVRQLAEKMERDRAQWLKKDERTIAALKLQ
YQEHVRQLTEKLEKDRAQMLEEQKRAMALKKLQEQEKLL YQEHMKQLTEKMERDRAQLLEEQERTLALKLQEQAKLLKE

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## L

 LQQENVKGQTEKMEKDKVQMRVEQERTLALKKLQEQQQLLK LKENME HLEKKLLKLESEN RLRREQKMMLEEKLHKGUKMDLKNE Y QYQEHVKRLE
YQENLSQLQQKMVKEQENLLREQERRLEHKLKVQESLLNE FKENI EQLKEKMEKDREALLREQERVLAHKLKVQEQLLTE HQEHVHQLKEKDEREKEDFLREQDRVLEHKMRVQREML
HQE
FQENDAQLKEKMEREQEDLMREHERTLEHKDQLQEQLLNE YQEHVRQLTRKMEEEWQHMLAEQEKAISLKLKEQTKLVQE

$\square D A H H S E D M S K M E Q D R V Q L V Q E H K A D L D K L Q E Q A N L L$
YKENDCQLKEKMEREKDEQLREQEMVLEHRLKMQNEILTE FSEIMTQLQKKMEMERENQLRDKERVLDHKLKALRDLLLE HQQQVRQ ME DERANFLAQQQREQERRLQV
FHEHMKQLAEKMEKERAQLLAEQERVLTLKFQEKERLLEQ
HQEH पNQ $\square$ TKTKAKERAQLLKEQMET पDVK $\square Q E Q A K \square L R E$
FWKVIDLLQEDHEKNTENRVRDLKWILDHKDQVQEQLCAE VLE HVK QL S QKMQKEWEQLKLEQHKIVSLKHKEKDRLFRE FKENLA QVQEKMDRERENLGREQETMLAEHKLKMQKELLTE LQENI A QL TEKLARRREKLLREHNMMLEHKLKVQEALLKE TSENMVQLQRKMEMERDNLLEEQERMLDHKLKTDQSLTEK


## LQEQVRQ

MERNRMFQHPLQKRALD LRHHCQ LLW
QAGHVQQ $\square E A R \square E T E R Q Q L L A E H Q R A L D H K \square K V$
HWEQVRQME $\mathrm{D}^{\mathrm{K}}$
YQEQLKNLTEKMEKAQAQLRKEHQRATEHK $\square Q E Q E R L L$ YQESKR
H LEQVRQ ME DERQRQ DAEANRAM
$F Q E \square L V Q \square K K \square T T E D S Q L R D Q K R M L K \quad Q N M E D T M A S$


$\square E E N \square L Q L K E K M E R D R E N \square I R E Q N M M L E H K \square K \square Q E D L L$ YQEH

FQETMAHMEKKMKREME QQQRELQS LLKH DEKEYA $\square S$ LD K HKENHEQLR\KLIQERDQLIEDHK】ILENQLQHQKNWLEE
LQEN $\square \mathrm{DQQKEKMDKERESHLRQQETMLEHKLKMQEELL}$


GF Q NESR LLHMEMERLKDT $\square$

GF QEESRRDHNEDETVRKK】

GFKKKYEEMNAE $\square$ S QFKRMD

GFQNERRKLGQEMQA TRMR
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E THMPAPKCLIE
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GFRKKADEMNAE $\square$ NG $\square \mathrm{K}$ K M $\square$
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GFKKKSEAMNKELKHLKKRV

GFRKKSEEMDEE $\square$ RQ Q K H T $\square$
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GFRKKSEEMDAEINYLKN GFNMKAEADSEELKHLQS IGKRMNELLHRD

GFKRKSEAMSAETHQLQKVI GFKKKSEKLNHVIVKLRKNI

GFQKKSQELNKETYQLKKQM GLHNESKQUQVQUHCLQSN

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GFPQKSEK T N KE T N R L L K S $\square$
GFHNESKKLLEEI DKI NS
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 I S G A V P CLLENA V T T L L A L L E









 N S G K V P C L E N A V T IL A QR E
 NS G AV PCLLE NAVTTLA ERE



 GSKANGSHLERVVLTYVKA | $G$ | $G$ | $Q$ | $V$ | $N$ | $G$ | $H$ | $C$ | $L$ | $V$ | $L$ | $V$ | $D$ | $A$ |
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| $G$ | $Y$ | $I$ | $T$ | $A$ |  |  |  |  |  |  |  |  |  |
| $G$ | $V$ | $N$ | $G P$ | $Y$ | $L$ | $E$ | $S$ | $L$ | $V$ | $L$ | $T$ | $Y$ | $V$ |
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GI QV NGPDL GNLVLT Y I RA


| $P$ | $R$ | $L$ | $E$ | $N$ | $L$ | $V$ | $L$ | $T$ |
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| $P$ | $G$ | $L$ | $G$ | $T$ | $L$ | $A$ | $K$ | $T$ |
| $P$ | $G$ | $L$ | $G$ | $T$ | $L$ | $A$ | $K$ | $T$ | $Y$ V D A



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


| $G$ | $V$ | $T$ | $G$ | $N$ | $R$ | $L$ | $G$ | $T$ | $L$ | $T$ | $K$ | $A$ | $Y$ | $V$ | $D$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ |  | $V$ | $T$ | $G$ | $N$ | $R$ | $L$ | $G$ | $T$ | $L$ | $T$ | $K$ | $A$ | $Y$ | $V$ | $D$ |

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| $G$ | $I$ | $T$ | $V$ | $T$ | $G$ | $N$ | $G$ | $L$ | $G$ | $S$ | $L$ | $V$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $T$ | $Y$ | $V$ | $D$ | $T$ |  |  |  |  |  |  |  |  |
| $G$ | $I$ | $T$ | $V$ | $N$ | $G$ | $P$ | $R$ | $L$ | $E$ | $S$ | $L$ | $V$ | $L$ |

G G I K V $V$ N G P R L

| $G G G Q$ | $V$ | $T$ | $G$ | $R$ | $L$ | $F$ | $G$ | $S$ | $L$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $Q$ | $S$ | $Y$ | $V$ | $D$ | $T$ |  |  |  |  |
| $G$ | $Q$ | $N$ | $G$ | $R$ | $L$ | $E$ | $S$ | $L$ | $V$ | $L$ |

 $G I T V T G K R L G P L V E A Y V N A$

| $L$ | $G$ | $T$ | $L$ | $V$ | $Q$ | $T$ | $Y$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $A$ |  |  |  |  |  |  |  |
| $R$ | $T$ | $L$ | $V$ | $V$ | $T$ | $Y$ | $V$ | $D$ |


GDI K V NGPRLESLMLTYVNA




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## 解-F1N7S8

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UniRef90-L5M3A7
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UniRef90_UPI0003F173A9 UniRef90_UPIO0032B0FCD UniRef90_F1S4E2
UniRef90_L5LES2 UniRef90-HOUXU7 UniRef90-F7GXD4 UniRef90-F7E8X1 UniRef90-M3Y076 UniRef90_UPI00038C3EBE UniRef90_UPIO003340B3E UniRef90_UPIO002C452F2 UniRef90_UP100042AC9BC UniRef90_Q8CFB4 UniRef90-Q8BTS3 UniRef90-W5NTV9 UniRef90_UP10003AFB7DA UniRef90_UPIO0046B0F7F UniRef90 G3UIH9
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 NSVVAVQK A A D H Y S K E M A Q C L R L P T D T L Q E L L DVV H A A C E R K

 NA A A V Q K A DA HY D Q Q M S Q M L K L P T E T L Q E L L D L H R T $\square E K E$ $S S A A V Q A A A D H Y S Q Q M A Q R V T F P T N T L Q E L L D A D E A C E K E$


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 $N L V A V Q K A A D H Y S K Q M V Q C T T L P T D T L Q E L L D D H A D C E K E$ NSAAVQKADTHYDQQMSQRVQLPTETLQELLDDHHRTCERE $N S A A V Q K A I T H Y D Q Q M S Q R V Q L P T E T L Q E L L D D H B R T C E R E$


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NSVA V Q K A A D HYSKK Q M A QRVVT LP T
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N S A A VQKA A D HY S E Q M A Q R V R $\operatorname{F}$ P
 N S A A V Q K A $H Y N Q Q M S Q R V K L P$ N S VAMMKAAD HYSQQMAQRVSFP $\begin{array}{llllllllllllllllll}N & L & T & A & V & K & K & A & A & H & Y & D & Q & Q & M & G & Q & K \\ N & L & T & A & V & K & K & A & A & A & H & Y & D & Q & Q & M & G & Q \\ N & V & Q & L & P\end{array}$ N S A A V QKAAD L NSAAVQRASDYYSQQMAQRVKFP $\begin{array}{lllllllllllllllll}N & S & A & A & V & K & V & I & A & H & Y & D & Q & W & M & Q & K \\ N & S & V & A & V & Q & K & A & A & D & Y & Y & S & D & Q & M & A \\ L & R & T \\ N & F & P\end{array}$ NSAAVQKALAHYDQHMGQKVQLP NAAAMEKAAAHYSEQMAQRLQLP
 N S VA V E K A AA H Y S E Q MA Q H L S L P
 NTAAVQKALABYD QQMGLKVQLP


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 NPA AVVKK A S D HY S E Q M T Q EVVK FP T E T V Q E L L A V H A T C E K E
 NSEAVQQKATDHYTQQQMQKVKLPTETSQELLDLHRACEKE
 NAAAVQKADDHYEQQMSQKVQLPTETLLELLDLHRADEKE
 $X X X G M Q K A A D H Y S Q Q M A Q R V S F P T D T L Q E L L D L H A G C E K E$
 NAAAVEKAAAHYMAQMAERVMLPSDTLQELLDVHTVCEKE $T Q Q P C R R Q P H H Y S E Q M S Q R L D L$
NSAAMQKAADHYSEQMADRVSFPTDTLQELLDLHAACEKE
 $N L A A V Q K A L A H Y D Q Q M G Q K V Q L P T D T L Q E L L D D L H R A C E R E$


 NSAAVQKALAHYDQQMDQKVQLPTDTLQELLDLHGACERE NTEAVRRKAADHYSQQMAQRVQFPTDTLQELLDDLHTACEKE NSAA $\operatorname{S}$ V Q K A I A H Y D K Q M S Q K V Q L P T E A H Q E L L A L H R A S E R R



NSAAMQKAADHYSEQMAQRLSLDT
$\begin{array}{llllll}N & S & A & A & Q & A \\ N & \text { S A A } & V & Q K A & A\end{array}$
N S A A V QK A A


| $N$ |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ | $S$ | $A$ | $A$ | $Q$ | $K$ | $A$ | $A$ | $H$ |
| $M$ | $D$ | $Q$ | $Q$ | $M$ | $G Q$ | $K$ | $V$ | $Q$ |


| $N$ | $S$ | $A$ | $A$ | $Q$ | $K$ | $A$ | $A$ | $D$ | $H$ | $Y$ | $S$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ | $S$ | $M$ | $M$ | $T$ | $K$ | $R$ | $L$ | $S$ | $L$ | $P$ |  |  |

NP MA V Q K A V D H Y S E QMA Q Q V Q FP T E


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UniRef90_F1LVN3
UniRef90_M3WEK9
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UniRef90 L5LVE2
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 A I A L F M E H S FK D DKREF QKNLL DI I GEKME DFVVLQNE EA S A I A V F ME CSFK DENQEFQK QLVVKI I LDDEKK DFLSSKNE E E S
 A I A V F M E R S FK D EN QEF QR K L V E II T S K KM D F LiRQNQE S S
 AI AVVMELLSFKDEDQEFQNQLVK II ENKKADF LLLNNEKES AI AVFMERSCKDDNQVVGQKFVETLKAMSTKFMIDNDRAK
 A I A V F M E H SFK DEN QQF QK KL LE SI V DK R A DF LL L K NE E A S A I A I F F M E R S F F K D D K C K F Q Q Q K L M Gill A I EI F $\quad$ F LIRTS S F K D K D H S F F K K E L L A Q L

 AI SVF I DEHSFKDENQLF L K LVVKLIGEKK GLFVLKNE EAS A
 A L GVF MK H S F K D D K Q E F Q K T L V E L I M D K K E H F LQQQ N E E A S

 A I A I F M E H S F K D D N QVVF QK KL LDGTI K K K K K D FLLL Q N E E A S
 ATVVVMNQS A KV F M E W S AI AVFMEYSFKDKSQEFGKKLVDTMEKKKE DFVLQNE E AS AVAV FMEHSFK D DEQE F QR K L VVVA I E ERK QAFMLLQNEAA S A I EII F L R T S F K D E D H S F Q K EL L A QL E K S WK GTCNK N MK L S A I AI F MEHSFKD DNQAF QK KL EGGI KKKKENLLLKNEEES

 AI AI FMEHSFKDENQEFQKKFMETTMNKKGDFLLQNEESS
 A AIIMVFMENSFKDEDGKFQKKLVETIVKEKQDFLLKNEFEAS A M E I F F LIK H S S F K D D N Q C F Q K E L L E T L L A I EVVIGRSSFKDVDHLF QKELAA QLEKKRDDFCKQNQEAS AI AVFMEHSFKDDKREFQKKLVGTIQKKREEFLVQNEEAS
 A FE $V$ V F K K S
 A 1 EVV F I K N S FKDVDRTF A $\begin{array}{llllll}\text { A } & \text { A } & \text { I } & \text { F M K K H S }\end{array}$ A I SI F MKY S ALEVF LKNSFK FLKNSFKDEDQNFQKKLEMQLQAKLDDFCKQNLKAS
 AI EII FMKYSFKDVDQTFQKK L GTQLDVRRDDYCKQNMKAS
 A I A I F M M E N S F K D D N QV F A I E V F MK S S

 A I ALFMEHS | A | $A$ | A | M E R S |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| A | A | I | F | M E R S |

| $A$ | $L$ | $E$ | $I$ | $F$ | $T$ | $K$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $S$ |  |  |  |  |  |  |
| $A$ | $I$ | $A$ | $V$ | $F$ | $M$ | $E$ | $H$ |
| $S$ |  |  |  |  |  |  |  |

EVF $\quad$ I
A 1
A 1 E $L$ R TSFKDEDHAF
A ITVV F M E N S
A I EVVFMKSSFK DVVDQK F
A TKI FMENSFKDI DQVF AL QL F MQRSFKDEGYTY HKR A A MAVVFMEHSFK DENQQE LKK KLVEII SEK DA F FWWLKNE EAS AI AVF MERSFKDENQDFQTKL AIMMIMKEKDDFLLQNEEAS
 A I A I F LIE R S F K D D QRE F QK K L T E II K NK K E NLLLL K N E E V S A $\mathcal{A}$ EVFMKSSFKDVDRKF QK DLVTQLEAK QEDFCK QNLQAS A I $\quad$ DV V F M K N S F K D E D Q K F Q K G L E T L L V A K H D D F Y K R N L E A S



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VK Y C V L 130
140



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220
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DAEKADAVEQAKKEAAEKEQELLKHKNQEQQQKMEAQQRT D GEKA I A A EMAKEEAAERKQE LLNQEKQEEEQKKAA QERS DGEKA LAA ERAQKEAAEQEAELLARQKQKEQQQQLMERERS D GEK A A E E WTKKKEAA E K NQEELLDE L KLLQE QQQQEMMA QE R D GQKA MEAERAQKKEAAE QEQELLLVRKQQAEMQQQVMEA QERT D GEKAMAAEKAKKEAAEKEQE LLQRQEVVQEQEQKDAA QERT A GEKALAAAERAKNWEAEKEQELLRQNRRNSR
DGERA
ARKEKMKKARRQAEVARAEAERLKA $\square$ Q WENQRLMEEQERR A GEKA
GWEKA L E A E R A K TEE E L K R EA D L L $\square Q T \square T E K Q Q Q M E \square Q E R \square$ ERQKAI EVVERAKMEAAKKENELLQQRQEEQHQKMEAQEGS VKQKEI EAEQAKAKSAQAAVVKILEEMEEKHMQMMKEKERC $V K Q K E I E A E Q A K A K S A Q A A V K I L E E M E E K H M Q M M K E K E R C$ DGEKTVAEERARNEDAEKERELLKQKLQEQQQEMEAQKKS D A DKAMAAECA
AGEKAIT EERTQKEAAEKEQVLLRQKQREQQELMEVQEKS VR QKVI E EARVKKA EAAR DEA QRLDEADQRYNQQQVMEQRQRDL TKEKDI EVVARVKAEAAEAAAKQLEEMQKKNEEMMEQRERS DGEKAlAEER
D R E K
EREKT L A E ERTRRER $\square E K E Q E L S E Q K H Q E Q Q Q L I E A E K K S$ D Q E K A

D A AKA
D G E K
AGEKA
 A WEKDLKAEKAKTEASEREQELLRKKLNDKQQQMEAQETS

D G Q K A
D R EKAV
EKEK DCNDEC $\square K$ S K $\square A E A A N K M L E E M Q K K N D Q M M Q E R E N S$ AGEKAQADERAKREASERQDKLRRQTQNEMKQQMEAQERS

K R D R E $\square$ A A EKAK K E A A E M D Q K $\square$ LA A R R QE E M Q K LE A LQRT AKESQRRAEQARAEAARVEARRLEVIRDQEEQKRAEQERL EKEKEDEVERVKAESAQASAKMLQEMQRKNEQMMEQKERS D A EKAV
A GEK
QREKEMEEARDQAEAVNFKVQVLAA ILTQQHQMMEQRQRF ENEKE DEVQRVKAECAEATMKMLEEI QRKT
AREKEME EASI KAEAAKAEAQRLGEIQRQNEQMMQQRERLL
EAAKE $\square E \square E R$ VKA E
D GEKA
EKEKERKEAYLKAEAAKAK
EKEKQ I E VERAKAEAAEASNRLLEEMHEKNQQLMEQKEKS EREKVLAEERTRRENTEDE
DQQKA
ARQRQDE E ERARA QA A QA EA DRRAA $\square$ QREKQKR $\square E E V E Q A$ EKEKE IVAERVKAEAAEAAAKMVEEMQKKKEQMMEQKEKS AKERKREAEQ
EKEKE I E VER $\square K$ A E S AE A A Q QMLE EMQK K TEQMME QKEK S

A KEKELE E ERLLKAEAA QAEARRLLAA DQRQNELRMKETERLL DGQKA
VREKT T A V VE Q A K
DGQKAARKEAAEKAQERLKQELLNQKLQEQEQQLAAQKGS GWEKALEAERAKTEELKREADLLIQTLTEKQQQMEVQERD GWEKA L E A E R A K T E E L K R R E A D L L I Q T
TKKEKEMK EA QRKA EAERAAEAERRLAADARENQRQMEEKERR
 Y Q E K A L A A E LAALLK EA A E K E VVE LL S Q KY K E QQQQKLEA Q ER S EKEKELIEVERKRAESALAAAAKLLEETQKKNEKLMEQKEKS T R ERE
DEMKAKAAEQAKREAAEQEQELLKQKLEEQQQKTEAQNRT
QK EKA
EAEKDLDATQKQTAELLEQQRKVAEEKRLQTERLMKDQERS DKE $\square Q$ SKAE QE RAEAAR LAEAQRLLEA $\square R \square Q E E Q R K A E M E R Q$ AGEKA
GEDFCETEERTKRQAAEMKQDLLTQELNDKKQKLEAQERS EKEK LI E E ERMMKAECARATAKMLEQMMDKNQQMME QKEKS TEKKALEVVRAEKEKAEREREQLRRKEEEQKQKMKAQERS

AKEKELEEARMKAEAAQAEAQKLEEDRRQNQLMMEQRERLL A R

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LQE H I VQLME K L V R E RENLLREQNKMLAEHQLKV
FQEHTAQLEMK\KKERENLLREDERDLEHNLKDQEELL LKENVVQLAKKLKVEKENILGDQKKILHQRLQLQRDFHEE HRENIEQLKAKLIDREREELLRDQAKMMDHKMAEQRALLEE YWE
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HQKEVWQ
MEMNRARMLQEQQR
FQETKAQMEEKMKREAELHQREDQR\LKHMEEVDKQ\L FKENMEQLKEKMNKERENLLREQEKI LEHKLKVQEELL HQERVRQLTEKMEQERTQVVEEQGRILABKMQEQGQLL

NKENLDQLRAK LVQERKQLIKEYKMVLEKQDKDQKAYLEE $H$ LEQVRQ MEMFQEYQLRQQQRVLQLRFQEQ
YQEHIK QVTEKMEAERKLLLEEQKNAMALKLKEQENLL
 F QENL

HQERVRQपTEKMERERAQ【VEEQEK ILADK $\square$ QEQERLLKE FQE

YQGHVKEDTEKMEKERAQLMAEQERVLADNFREQEXLLLE FQETMAQMKEKMGREREIQQSELQRILKHMEKEQE

QRENMEQ LKKK LISERENLLKEQKMMLEQQMK DQMEY LKE HQEKLRQ
YQEHLKQLTEKMENDRVQLLKGQERTDALKDQEQEQLLKE
YQEQVR RME $\square$ NR $\square H Q Q V L Q Q R A Q E R Y \square Q$
HQEQVRQ
ME $\square \mathrm{Y}$ RANF $\square \mathrm{A}$ Q Q Q R D $\square \mathrm{DRRLQEKAQ}$

YHDH $\square K Q L T E K M Q E E R E Q M Q V E Q D K M \square T \square K \square Q Q Q E K L L R E$

HQEHLRQMK DKNALEDEEQRKAQERAHAHML
YQEHUKQLTEK $\square Q \| E R Q Q L L M E Q E L V L A D K L Q K Q A$
Y Q E HVR Q $\square$ T E K MERDRA QLLE E QER $\square 1$ A $\square K \square Q E Q E R L L$
HQEQ
 FQETKAQMEEKM
FQETKAQMEEKM
HQEQVRQ ME DQRANF
FQENMAQLKKKMEWERENYMRELRKMLSHKDKV
HQEQ VRRQMERDRQNWLAELQRREEQRMQEQAARLRA FKENDEQLRDKLERERESLQMEQEKMLNHKLKDQEELLNE YQEHMRQLTQK $\downarrow E N D R \square Q L K A E Q E R T L A D K L Q E Q K Q L L$

$H Q E \square V K Q \square E A K V V E E A A N A R Q E A A R A L E S K \square K E Q E A M L Q Q$ HQEQLRQ $I A L E K A R V A Q E Q Q W \square L K Q R$

HQENMAQLKEKFKTERENLLREQEAVLAHKLK DQKEML Y Q
HQENDAH LREKFKKDQENFVDMLKSMLEHY $\square K V Q D E L L$
HQEQVRQ MERDRANWLAEQQRAQERKDQV
QQRRHQEEVRQMELNRARMREKQQREVQRRLQEEAARLNE HKES $\square A K G K E K F M L E R E N L L R E Q E E L L E H K L K V Q R E L L N D V$

UniRef90 I3LWB1
UniRef90 UPI00046C024D
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GLMGK
GFKKK
GFRKK
GCTKQPEMLNEQ $\square$ NE L R E E $\square$
GFRNK
GFENESEKMRKE $\square$ NQ $\square K K$

GFREKSE $\square$ MSAE $\square$ N Q $\square K N M \square$
GFKKKAEEM

GFRKR
$\mathrm{G} \square \mathrm{KEES} \square \mathrm{R} \square \mathrm{QNE} \square \mathrm{Q} \square \mathrm{MEKR}$

GFQKESKKLLKEMNA $\square$ QMR

GFKKKSEEMNDVVKSMNNRL
GF QKESR $\square$ MKNE $\square \mathrm{QD} \square \mathrm{Q}$ TKM

GFQEESKK LQRE $\square Q \square L K M$

VFERRSEKMNAE $\square$ DH L R N $\|$ I

TFEAENRRLHHELQYVQRNV GF LDQKSEDLDTEIELLKKEL

GFKEMAQMLGEE $\square$ A D $\square$ RKE $\square$

VHQAEQQRLQAEDRRLQ
DFQKKSDELC DE $\|$ QLGRQ
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${ }^{1} \mathrm{G}|\mathrm{I}| \mathrm{M}|\mathrm{V}| \mathrm{T}$ G N R|L|RT|LV|ETY|V|K A|I|NSRA|V|PC|L|ENA|V|TT|L|A QRE




G G
QVSEEDGLGTLAKTDVDT
 $G G V K V N G P R L G E S V V Q T Y V Q A$ V $V$ G $N R$ R G T L A K A Y V D A
 $G G \square K V N G P C L E N L V V T Y V N A$

N S GVVVP Y L E N A V I T T L A QRE $\begin{array}{llllllllllllll}R & S & G & N & V & C & L & E & N & A & V & L & V & L \\ N & A & Q & \square E \\ N & G & A & V & P & C & L & E & N & A & V & I & T & A \\ A & Q & R\end{array}$

 | N S G A | $V$ | $P$ | $C$ | $L$ | $E$ | $N$ | $A$ | $V$ | $I$ | $T$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $A$ | $Q$ | $S$ | $E$ |  |  |  |  |  |  |  |
| S | A | $V$ | $P$ | $C$ | $I$ | $E$ | $N$ | $A$ | $V$ | $L$ | $A$ |
| $L$ | $A$ | $Q$ | 1 | $E$ |  |  |  |  |  |  |  |

 S G GL P CL L NVFL ALA QRE
$G L K V T G R L L G N L A E T Y V S A D R S G Q D P C L D N A V L A L A Q D E$
 G G Q A V T G A M L A N L A K A Y V G A

 G

VK TT GNQLGTLVVTFTDVINSEEVLCLENVMTTL G GI K V N G S CLLKNLVI DYVNA NS GNLPSMENTVLTMLAQDE GIVVTGNREGVLI CSYINAGLSGSVPCLENAVTTLAQRE GIVINGNRLGTLVETYVDTINSGAVPCLEDTVTTLAQCE

 G G $\quad 1 . K$ GLIVTGNRESPLLQHVLLHFSSCDEAQKPGSWLSTAVVE




## 

## G

 GGHVVVTV $N$
$K$ GLLE S MVQ T Y V V D A GNMFGN AE
 $G G 1 Q V N G P R L E S L V L T Y V N A$ $G I 1 V T G N W L G S L A K A Y V D A$
 G GI P V N GKR F G S L V Q S Y V G T G GHVV TGAMLGNLAVTYVDA

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

G



G GHCVTGRMLGNLAVTYVES GRHCVNGRMFS SLVQNYVK T G GUQV N G A R L E K L V L T Y I S A

GRHCVTGRMLGNLAVTYVES



 | A | V | P |
| :--- | :--- | :--- |
| S | L | P |
| S | V | P |
| K | L | P |
| Y | V | P |
| K | P |  |
| K | P |  |
| K | P | P |
| G | V | P |
| D | L | L |
| S | V | P |
| N | V | P |
| D | L | P |
| K | V | P |
| S | l | P |
| F | L | P |
| S | V | P |
| A | V | P |
| S | V | P |
| K | V | P |
| D | L | P |
| H | L | P |
| K | V | P |
| S | V | P |
| A | V | P |

 SMMEN
$C M M K N$
$C M E N$
$C M E S$
$C M E N$
$C$
$C L$
$C$
$C$
$L$

 ME N

## UniRef90 G5BGF4 UniRef90-UPIO00359829F UniRef90_F6XDZ9 UniRef90_UPI0003F0EFD5 UniRef90_UPI000273BC6A UniRef90_H3B0D3 UniRef90-I3MBY5 UniRef90_UPI00045481E8 UniRef90_S7MUQ2 UniRef90_F6ZTR1 UniRef90_UPI0003C449D9 UniRef90_HOWSS1 UniRef90_UPI0003C4A7BB UniRef90_UPI000441E562 UniRef90 UPI000441F090 UniRef90-I3N671 <br> UniRef90_UPI000443F9D0 UniRef90_UPI000443F9D0 UniRef90_C0H966 UniRef90-W5NXK7 UniRef90_UPI000462529E UniRef90_G3X313 UniRef90_UPI000441FE59 UniRef90_Q9Z0E6 UniRef90_UPI00027FBE0E UniRef90_UPI00029D95B5 UniRef90_UPI00046B3E20 UniRef90_H0XE57 UniRef90-I3MP91 UniRef90_UPI0002C469B7 UniRef90_C0PU99 <br> UniRef90_UPI000273B324 UniRef90 L5LGN0 UniRef90_UPI00042ABDF8 UniRef90_G1Q6J6 UniRef90_G1QCX5

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UniRef90-E9QF26 UniRef90_UPI00035A1566 UniRef90_H9GC03 UniRef90_L5LIG5 UniRef90_UPI0003C29CE2 UniRef90_S7NS67 UniRef90-F6RGE2 UniRef90_Q6GN80 UniRef90_G3IM59 UniRef90_UPI0003ADB1FC UniRef90_UPI000454886A UniRef90_H3B0S3 UniRef90_G1Q2L8 UniRef90_UPI0003C275AA UniRef90_L9LC56 UniRef90_UPIO003C15490 UniRef90_UPI0003C15490 UniRef90_F6XE08
UniRef90-H0WQ07
UniRef90_UPI000383A9A8 UniRef90_Q6YLY1 UniRef90_UPI00042CD80B UniRef90_UPIO00388DD4A UniRef90_A2VD69

 NEAALQKADAHYDQKMSKKLQLPTETLQELMNLHRTSEKE
 $N T A A V Q K A V A H Y D Q Q M G Q K M Q L P T E T D Q E L L D L H M S V E R E$ NS A AVVQKAFTVVEKMMRQGDQFPTETMQELLDLHDDCERE

 N S VA $V$ V NAAAVKAASTHYATLMEQRVQLPTGTMLELLDEAHGLCERE NSAAMQKAADHYSQQMAQRVSFPTDTMQELLDLHATCEKK
 NSAAMQKAADHYSEQMAQRVSFPTDTDQELLDDLHTACEKE
 NA A A I K R A L A H Y D Q L M G Q K V QL P T E T LQ ELLLDLHRA DERE

NS SADERARAHYQKGMADWVAYPTET QEELSEVHAVMEKE NSAAVQQADAHYDQQMSQKLQLPTET LQELLDDLHRASEKE N A A A V R E AL S R Y E E EMQRRVVALP T G S V E E L L R THAAECERE NPAAVQKAAQHYVEQMADKVDFPTETLQDLLSVHTLCEKE

 NSAAVQRAADHYS QQMTQRVRFPTDTLQELLDLHTACEERE
$D L A A V Q K A A D H Y S Q Q M V Q Q V R F P T D T V Q E L L D V H V A C E R E$ NSAAVQKAMAYYDQEMGQKAQLPMETLQELLDLHHKATEKK NSAAVQKAADHYSEQMAQWVQFPTDTLQELLEAHVACEKE NSVAV QKAADHYSK QMA QCMRFPTDT L Q ELLLDVVAAACERE


 $N$ LAA A M Q K A A NHF S E QMA QRVN F P T D TL L E L L D L L T T A C E R E

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 N S A A V Q K A I A H Y E Q Q M G Q K V Q QL P T E S L Q E L L D L H R D S E R E NEAAL REALA HYAAGMGGLARLPAELAELSAAHGTHEAD
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 NA A A V E E A L A R Y G G L M G G Q R L C L P T E S V P E L L GVV A A E C E K E

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NS A A V Q K A I E H Y E E Q M N Q K V H LiP T E T L Q E E L L

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100


120 S
 A A EVFTKNSFKDVDQKFQKELE $\square Q Q K E K Q K E F S E Q N L K A S$ A V NVIF MKDSFKDVDQKFQKALENQLKAKLDEEFCKQNERES A I K I F MKNSFKDINQQVFLTEELATKLERKQGEFYKKNLQQAS


 AIEIFKKNSFKDEDQSFQKELQTLLDAKQND DCKQNEKAS
A VA $\square$ F $\square$ NNSFKDEDQKYQ ATEVFMKSSFKD DDQLFQKELVAQLDKKRDDFCNQNLKAS
 ALQI FMDRSFKDDTCHFQDELMKTMNEKKENYCQKNELAS
 A A EVFMKNSFKDVDQDFQRKLGAQLEARRDDFCKQNSKAS
 A 1 ALLFMEHSFKDDKREFQKNLMETIEKKKEDFMIQNEEAS
 AI AVFMENSFKDNNQ GII EKKEYFLLQNEDAS
 AVA $\downarrow$ FMEHSFKDDS QVFQKKLQG』IKKKKKNFLLKNEEES

ETKKDGF I CQNEEES
 AV DI FMARSFKDKDYHFQKELMGRI QKKKNEFLKKNEDAS AL RAFMARAFKDDDRSFQGELMRRLEEQKQELCQRNELAS AI KVFIDRSSFKDVDHLFQKE
A IAA F MEHSFKDDNQVFQKK LMGT IEKKKEDFLLQNEEAS ATKI FMKRSFKDENQEFHQDLMRSVLQSYEEYCRKNEQAS A 1 EV F IRSSFKDVDHLDFQKELAAQLEKKRDHFCKQNQEAS AL RAFMARAFKDDEQQYQRHLKDKLDSKRTELCRRNEQAS A VKMF DNHSFKDEDQKYQDELMKSLQNEYESLCCMKNEEAS FXEAFSSXHFSVLFLLPIFTLKAQLEKRRDDFYKENMEAS FXKVFLASS A I K I F RETSFKD
 AI S I FMKHSFKDDTHKFQKKLVEILETKKNEFIHQNEEES

 ALQVFMARAFKDDAQRFQVKLMKTLDDRKEEFCRRNEQES
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 AVDIFITRSFKDKDHHFQKELMGRIQKKKNEFDKKNEDAS ALKVFLKRSFNDENQNFQREFKHLLDGKMKEFSERNERES AVKVFMDRSFKDDKREYQGKLMVSFLRHQDHFAKRNEEAS A 1 EVVFMKNSFKDVDQKFQKKGGDQUVAKRDAF DKKNMDVS A I KI FMENSFKDVNQVFLTQFVTELETKQEEFLKKNEQAS A 1 A I FMKRSFKDDDQKHQSAFKECVIESSYEFLLWKNEEVS A A EVFMKNSFKDVDHLGQKELAA HLEKRRDDFYKENMKAS ALGVF MDRSFRDEGQKYLQKLK DGI K E NYGKLLGKNEVAS

 A $I$ EI F $\square R D S F K D V D Q L D Q K E L M A Q L D K K W D N F N E Q N L K A S$ A I AVFMEHSFKDEKKDFQKKFLVNVKKKKEDCLLQDEEAS ATKAFMKRSFKDDNGEFLKALAEAIVNHSDDLLFKNKDAS A IEVFMKNSFKDEDQGYQKKLEMQLAAKQNDFHKRNLEAS $\begin{array}{ll}A L Q L & F M Q R S F K D E D Q K H Q E Q L A F E E I N E H Y G T V L N K N K M T S \\ A\end{array}$ A 1 QV FMKSSFKDMDQKFLETLEIQLEAKLEYFCKQNLLQAS AL EVFLKRSFNDENQDFQKEFKVSLLNSLPVYDDRFPRSS A A A V M EHSFKDDKREFQKKLVGTVQKKKEEF LVQNEEAS ALKAFMGRSFKDDKREYQGQLMRDLHHKNEDFAKRNEEAS



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 A GEKALKGNKNKTKKRES $\square R N M L E G \square Q K K N E Q M \square E E E K K \square$ A QEKVLEVEQ IKREAAEKEKKLLKQQQVEMQQKMEAQQRS AQEKVLEVEQUKREAAEKEKKLLKQQQVEMQQKMEAQQRS

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EKEKE $\square E \operatorname{V}$ ERVKAESAQASAKMDQEMQRKNEQMMEQKERS

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AGEKA
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ENERIKE GUYVAF LINKAVSHNSYY DSQRQTNKVIGHNKKP AKEKE $\square$ AESQAQAEEAERQRLVLEEKERSLQKSMEDQRKS KQQKEMEEEKMKKEAAEKKLQEEKENARQLERTRKEQTQR EAAREDEVER $\square$ KAEAAEAT NRD LAEKQKKYELMMAEKEKS Y Q E

ES DKELAAEREK
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DKNKKL
K K EK Q $\$ QAEKKK T A E L $\quad$ E Q K A A F REQQAEMERT $\square E N N R \square S$
$D V Q K R L A A E Q A R D E R L E Q Q H K A E E E R S L Q L E Q R M R D E E C S$ IKKEKEIEDQRVRTEAAEREKQ\LEEHNRRLEVDMENQKKS

AKEKE $\square$ A ES QAETAEAERQRQ $\square L E E N K K Y \square Q E S M E N Q K K S$
K R D $\square E A Q E E R \square K K E A \square E R K \square Q E E K E N A D Q L M Q T K K E Q N R R$ EAEKH V VDEKQKAESRRRQRRRRGCRWMTKRMLMKDQERS EKEKEIVEVERMKSEA

ENDKK $\square$ QE EKERNA $L$ MQQKCEEEQEKR $\square E S E R M M A A E K V R$ K R D $\square E A P$

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GFSKEVNLQKDQYKALQ

GFPEKSEKVK
GFPEKSEKVK
GFDDK
GFYQKAKDMEDE $\square R K \square K$
QFSACASLLQTE $\square$ NYFKYK

GFENESKRLQKD $\square W D \square Q M R$

G F T E K

GCARQ

GF VEEAR $\square$ MEDE $\square$ S G $L$ R QE $\square$
GFRDR

GFHREVSR $\square$ Q GE $\square$ QG $\square$ RHQ $\square$

GFHKESEMLKNQ $\square E D \square K R K$

GCAWQAK【YAAQTSDLEKE
GFQGKVNALQREI DDLKGR GLHNKAGMLGEQVNALQHQ GFQNESRKLHQEIESIKK

GFREKSMDMEQE $\square$ ST $\square$ KRE $\square$

GHKEKAE $\square$ MRQE $\square \mathrm{LE} \square \mathrm{KKR}$
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GF Q GRVNA $\square$ QSE $\square D E \square Y R R$
GFHNK
GFTKQME【MQEE $\square \mathrm{EE}$

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 G GQQVTGRMFASLAKTYVETINSGLVPCLENAVISMATDE

G GCKMTEGMLGTLAVTYVDADQSGTVPCLESAVTALAELH TIIT GKKF G GL V Q S Y V E M I R S G T L P C L E N A V DS L A K I E
 G GRQVTGTMLASLVEKYVDTIVKGKVPCVESAVTALARTR L E N L V LLT Y V N D I S S G G D L P C M E N A V MA SA H DE G GHVVT GHLLAAKVVEYVETIVSSGKVPCMESAVLADAEME
 $L G T L A V T Y V D A \| R S G A V P W A A L P T E S V Q E L E$
$G G \square L V N G Q R F S S L V Q S Y V G T \square R S G Q V P C L D N A V T A M A A D E$ GHLVVDSKLFGTFLKVYI DCI HS GNVPCLESTYRTVAERE

$M L A V A Y V D A D N S G A V P C L E N A V M T L A E H E$
 GREVTGK LIATMVT TYVTMICS GRVPCLENAVT TDS QIE

$$
\text { QP VT GE } \square \mathrm{LV} \mathrm{~V} \text { H } \square \text { A K } \square \mathrm{Y} \text { M E A } \square \text { N N K A } \mathrm{V} \text { P C } \square \mathrm{G} \text { S A S QLVVA S T E }
$$ V LT G P LF LK LT E Q Y VN S Q R S G DVP C $\square E S A L T Q V V T L A$

KHVNGRMFADMAEEYVMAFLTGQMPCDESVFKLTAGQE KHVNGRMFADMAEEYVMAFLTGQMPCIESVFKLTAGQE KHVN GRMFADMAEEYVMAFLTGQMPCDESVVFKLTAGQE G G QVVVTG C I L G R LRA N S Y I K A V T T K C I I A S L D H S I T E I I F LAA E QV T GRVLARLAETYMAAITTGSVPCVESALTVVVEAE


GRALTGRALCMLLQS YVEADNS GHLPCLE GAAAVMMANE



 VTGRVLGNLVDTYVQALNHGQRDCVESAVERDADDE
 GKNLTGEMYCDLIKSYVFAI NNGAVPNVENAWSY\|CKNE NGKSLS GEMLMTLCNSYLTA\|NNGAVPNIQNAWTYVCQDE

GASTLT GPVLAGLTQSFLDATNTGAVPTDSSSWQSVEEAE GATVMTGPILVGITDAYLNALNNGAVPTISSSWQSVEAAE

K PLD GS MF A GLLDHAYVDAINSGGVPVI TSAWEGVTAS E $N G K T L S S G Q M Y$ C DLLI K S Y V TA A N N GA V P A I E S A WT Y I C K N E
 $G V I L T G Q L F L Q V A E L Y V Q A H R L G D M A C I E G A R K E V V L L A$

GATVLT GPVLIGG $\quad$ TTES Y LDA $\square$ N N G A VP T $\square$ S S S WQ S VEEA E
$N G T E D D G D A V N D A Y A Y T M S D N T G S V P S D Q N A W S Y D C E S K$ G GTVMTGPILVGITQSYLDALNNGAVPTITSSWQSVEETE GEAVNGRMLVNLVHNYVDAINAGSVPTIGTAWQNVVQIE



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N G
N G


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NSAVV E EA LAA WCMAVLRRPRSALDPTEALLELLLALHAEAKCE NSKAVEEAVQCYQESMEK LVKFPMES DKLSKHHRCDEEK





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 NKKAAEEAVKYYRESMD KI QFPTESDFELSEYHRNYEKE


NS A A MEKAATHYSEQMAQHMADPMDT LQGLLEVHTACERE NS K A V E EAVQQCYQE SMEK LVVKFPMGS DEELSKHHDHSEK K NTAA GREALEFYKEAMSE VKPP DQS LDALSTVVERRCRSE (TMMAQRLQLPTDSLQELLEEHAK N NK L L VECVGKYKELMA NS RLP LDSTDEFRTVVQENHKN
 N M Q A R E D A M S L

ND RVLRECLRDYDTEMNQLDLPMPENM LLSTHSKIVTD NDRVLRECLRDYDI EMNQLDLPMPENM LLSIIHSKIVTD
 NDSTI KS ATE TLYKGKMMSKN FDT LQEFQAFHESSLKK NEAAVQEGLAHY DSQMKQLK FDVDQEELSEKHGETMAG NSTAVEAAVAEYRQGMEQGLVLPTASHDALMAVHRDWKQR $N V K A L E D A M V V Y S R T M A$ ATPLPVDKEELEKSHTTSHTV

NAAAVAAALEAYTRGM RGLSLPTEPAQ LSAAHGEHLHE NNS II K S STE L Y K K GK IMMSRSFDT LQQEFQTFHESSCLNE $N \square A A V E A A V A E Y R R G M K Q N L V L P T A S F S A L M A V H Q D W K K R$ NEAA I R E GLA Y Y VA QMEERVVKFPAEN

NAAAVTAALEAYARGM RGLSLDTEPAQ LSASHGECERE NEKAMGDALEDY TKGMES LDDMKLPMDLDELEHHHKGCMEM

NS A AVEKAVTYYTSHMN S SPDTS LEEELFKQNTEHFNK NAAAVTAALEAYARGM RGLSLPTEPAQ LSASHEEHLRE CHKA QQSALIENYD QVLREVLHNKPCS LEDLK IVYHMAKES CQKA QQKSFEYYEKYLEQVFTKDPTTLDELKYLNKQAKEQ

CRRAYDSA $\square$ DTYNSSFDRRK PAEEDAMREAHEDA LKK CRRAYDSATEDYMSAFDRTKPPPEVVSLRE SHDEAKQK CRKAMT T S F DLLFKKLMFEVD LDVVHEDLLE DFK DSEQR

 NKQAMEDAKGVYQREMETLLNKLPVEYKQLQRHQEECTKKCQQA L N DA I S S Y D K Q S K E M $\square$ A N E P L S M E D L E HK H R A MEK Q CRRAYDSGVETYMAAFDQSK TPEEGALREEHEEAVRK GERALKESLKLYKDRMNELFSVKVMEAEELTVKHEQYLLD Y QRAVVD A V K I Y G DEMKALSARLDPCDEQELLGHHQFFFEM
 CRRAYDSAAEFYMSTFDRTK PPEEVVALREAHEEAVQK

 CRRRA H D M A V Q K Y S L V F N K DV T H D EVVA LQ E
$\left.\begin{aligned} & \text { A Q E E A } \\ & \text { E H E E A }\end{aligned} \right\rvert\, \begin{aligned} & Q \\ & R\end{aligned}$

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UniRef90 H9FDJ2 UniRef90_H9KZK5 UniRef90_F7DK61 UniRef90_UPI00042BF9A5 UniRef90_S7MHW6 UniRef90_F1N9J3 UniRef90_UPI0003C47D29 UniRef90_UPI000203B1EA UniRef90_F1QUY8 UniRef90_M7BE06 UniRef90_UPIO00333E926 UniRef90-M7AML5 UniRef90-H3A9Q8 UniRef90_T1JAA3 UniRef90_UPI00038F199E UniRef90_W5NU19 UniRef90_UPI0003C84113 UniRef90_H2ZS93 UniRef90_V9KI44 UniRef90_UPI0003509287 UniRef90-T1J895 UniRef90-K7E431 UniRef90_S4RTL1 UniRef90_Q9D3E4 UniRef90_UPI0003ACB615 UniRef90-T1J4H2 UniRef90-T1J4H2 UniRef90_Q5BKG3 UniRef90_UPI0003C2A08C UniRef90_H9L2B5 UniRef90-T1J894 UniRef90_UPI00042CA81B UniRef90_UPI00035060AD UniRef90_Q6PCI2
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90
100
110
A|I EVV|FMKNSFKDVDQSFQKE|LETLLDAK QNDDCKWNSEAS AI AVFMMEHSFKDENQQFQKKLLELI DEKK G I FMLKN E EAS AL R A F M A R A F K D D D CR F Q G E L M R R L E E Q K QE L C R R N E L A S A 1 KVF $\square$ NMSFSSDKD Q DYQKELMMEKIMHEYQ HMCDQNHQAF AI EI F MS MS I LDE E QES QKKLQD YI E E E Y ERFCDLDNRRAS AI VI FMGVLLQKKGKKMQTDLTKAFKKNKEVLLLQNEEAF A $I$ E V F M Q H S F K D E D QK Y Q RE L R N H L L A K WD D F F K Q N E K E S ALKVFMKRSFNGENQKFQQEFKELLDGKMKEFSALNESKS
 ALERFASKSFKDDSGQHMSNL GSKI GQHYA LLLDHNEQVS $G C E L F L L P \square F$

TLKAQLVKRRNDFYKENMEAS ANTEFIVKHSFKDEEQEYFKKLMEAVNKHYVELIAQNMEAS ATQAFMARSFKDTDGKHLKVLEGKI NKLFNEYLCQNEQAS GTSVER QDQEEKYPAKVPAQLEKKRDDFYKQNMKAS ALLERASSKSFKDES GQHMSDLGEKI AEYYDCILMRNEEAS A LQVFMAHTFCDKVGPHKNDITEDIKNKKEDFVLQNEEAS
 KVLCGAARES A DTFRKCSFMDEQQEFQQKLQSDLESSYKQYHSKNKHEL ALLVF LKKRSFNDENQDFQKEFKNLLDNKMKNFSERNERES
 ALAL F LSRAFADHKHQYHDELVHKLEAAKEEFCQRNGEAS

 AL A YF MKK SFK D Q G GK CQAE L MA GI GQRYYS LLDDKNEAAS
 A I EVVFIKNSFNDVDHLLFQRKLQAQI EERQDNII QENQKKLL AVTLFLSHAFADNERTYQCQLMRELEAAKEEFCRRNEEAS GSSIE RQD QEEGCGPTE V A D QL E DRRD HFCKENMKAS A LQVFMARAFKDDAQRFQVKLMKTLDDRKEEFCRRNEQ AKQTFMDRCFRDTVGTHLASLEEAI GQEFDRYLWDNEKAS ALRAAFMARAFKDEEQQYQWQLKDKLDSKRSELCHRNELAS
 A IDDVYMR R SI T G S E R S F K E L LMV HVL LVNK S GTF HL N Y Y WK A
 A $\square$ A VF MERSFKDEDGKF QTQLVAEEV

KLQDK LQAKLDDFCKQNMKAS A $\square$ TVFMEHSFKDDKREFQKKLVVNI QKRKEEFQVQNEEAS A YDTFRTRSFKDEKKSYKRLLLQSDL ESSYKQYRSKNKRKS A L QVF LIKRSFKDE GDKY QAELERNMATLYE DFQKKFE LS E
V VDYF S R K H F LDE E N ME DHRK LQQLQLQQEY LIDCVERNCK E S
 AVEAFHQRSVLDCEHKHEKELVDSLVTAYDDWNQKNKDTS A MAVFMEHSFKDENQQFLKKLVELI GEAKVLGLLKNEEAS
 V V E K Y Q S K I I F E G V AL Q HLLREKKSFKY G ND K C E H Q L K E N I D K Q K E E V WK A L E E I S S A L GVFMMDRSFRD E GQK Y L Q Q K L K D GI K E N Y GK L L G K N EV A S A GTFF LSHAFANTRQCYQALLMDKLEAAKEEFCRRNEEAS
 ALIVF QRRSFRDRDQEHQRRLMEQI STEYSHHLQEEN DEAS ALTHFKEKYFKTVVQDQSEHQLMETVEKQKEEVVKTLDEVSS ALTLFLS QVVDKTEQHHQALLMMKLEVAKE EFCRRNE EA S KI N EHYG TVLSKNK ITTS
A $\square$ AVF MEYSFK D D K QEF QK K LMETI E E $\square K E D F L L Q N E D A S$ ALVVF QRRSFRDP DQEHQRRLMEQQSTEYS RLQEENDAAS AVKHFHEKSVLDREFTHQK】CMAKLVMERDSWIKKNGDVS
SLEDIF LKH S MMDRNHTYY LKKLFRALKEKYED LRHNDETES A LVV F QRRRSFRDPDDQEHQRRRLMEQQISTEYYSRLQEENDAAS
 A IE NFKKKAVGDVVQQYQDDLIVKIKNRFQQIKTDNEKES QAK QEDYCKQNVQA S AVSVFNASAVGAARSKFEKLLQTSLKKAFEDYKRNTFELAA SLAAFNASAVGPTRQKYENLLQNFFRKAFEDYKRTAFMEA
 AFALLFKKKCVG EYEEFKNELSKRIKNRFAAVVKQENDRE G A LDLLF YS HAVLDDRDHKHEKELMEHMETTYYLKLVKQNKQRS
 AMALLCRRSVLDCNHEFEKMLLLRFTLDETFEKMEKKN TE QS ALLAVYNAGAVGSARKKYEGLLQKFFRKAFEDHKKNVYMEA ALLQAFMERSFKDDDRRFQRELMRRLE EQKQELCRRNELAS SWA WF QKHADGSDTENFKHQLEDKI RELHRLLQQNENSAR G A L A MF NANAVGTARKKYEDLLHKDLKKRFTDYKKNAFMEA A GTLLR R K TVVAALSGTFEEQFRTGVSTMYAEYRKQNEMDS ALDGGFRADTQLDDCDSALMQQNMKELEDRCAAFDCDNEAKS


 A MAL F YRRSVLDRNHEHEKELLNFTMKEFERMKETNTERS


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UniRef90-M4E8D6
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SDRCTAAGQELWDEDDNRDGQGVYSVPGSYQCFDDDRQRM LMQCRKVLEYSFYPLEDKISDGSYLRPGGYRQYRALLNQL KEKCRHILTELTTPLSQNMAEGMYNKPGGYQEYDRDRERA


 SDRCSALLKDIGHSLEEDIKQGVYSKPGGYSLLMKTMHEL


EVKCENLLSVLSESMNERDSEGFYARSGGYDLFCCDLEDT S DRCTAALMELSQELEER
ANYCQAELTQQSKPLMKSDSEGAFSVPRGHGVYVAARRKV K DSCRTLLETLSAAMQRQLSDGVYSQPRGYELYWSDRSQV NSSVPSTLEVHRKRQEKHISTTTLVN GHNLRKTLLDEA $V V K C T E I I N Q L H E K I I D K I N R K E Y A R A G G Y E E Y C A D V T R L$ SDYCMALIQDSFHPGYEDVKQGTFSKPGGYYRGFGQSQAALL VKYCQAELDL VVFCRDLL RKLF QLVEKKVEQ CVLTNPCFLLL EVVCRDLLRKLFQLVEKKVEQNAYQRPGGFREYTDDQELV RD EKVCN DKL NLLSKALMMENDSTGTFFVPGGYQLYMEARKKV


マ KGQNHRLLELLYENUETNLHDDVYFKPDGYSDYTKDLDEF
 EQRCCAVLRELWWDTELLRMKRGDYVVPGGRRLFQEDLKRV
 RQHCKALLAELAAQALHTSLARGAYTQPGGYRAYEAERQRL EKKCRKILDRLFEPIIKAQEQNKYHVAGGHNDFVKARDE I EQRCWAVLRELWLDMELRMQRGDYVAPGETRGVGKDLKRM

 $L T K C D G C L H E L$
$A$ EKRCTSVVLKELESPVKERLTSSGYYDKPGGYGDFTADKEDT RRRCKALLAELARALNASLARGAYAQPGGY ARNCQSF QQEFQSI ERKLKMNEYKN NNQCQQFI QREFQPI ERKLKSCQYESFSEYEKDLKFFQQF TDYCKVLLQEDFEPL EDDVK QGLFSKAGGYHKDFKQKKRKF
,
K

Y ,

 DLRCTSTI QSMEKQLVEDTR
EEHCRELMEVHVQPVLDSLSANTQ AEQCELLLDTLARHILSDDIRSKEDTN DLQQSKV QSMETKL RAACHAAACHAPDAKLSDVIQLLDR DSRCSNA QSMGKRLRAACHASDASIDPD DNVVKVLDAL

 ELKCLRAVGIME

MNADFMQLGGYQKYEVAMQKL
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UniRef90 F7DK61
UniRe990-YPIO0042BF9A5
UniRef90_UPI UniRet90_S7MHW6 UniRef90 F1N9J3 UniRef90_UPI0003C47D29 UniRef90_UPIO00203B1EA UniRef90-F1QUY8 UniRef90 ${ }^{-}$M7BE06 UniRef90-UPIOoo333E926 UniRef90_M7AML5 UniRef90 H3A9Q8 UniRef90-T1JAA3 UniRef90-UPI00038F199E UniRef90 W5NU19 UniRef90-UPIOOO3C84113 UniRef90-H2ZS93 UniRef90-V9KI44 UniRef90 UPI0003509287 UniRef90-T1J895
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K A K Y Y R E P R K G ${ }^{170} \mid \mathrm{Q}$ VS L V L
$N V F A R E V F Q S F L Q S Q A T D E S S D L Q A D T A D T$
V E R Y W QVP G K GVVKA D E V L Q K F L K S K E V A A Q S I L Q M DVV L T I S D Y R A RTES QI K HEEAL WMF LQ GKE DVGN QI L QA DE SLLS $L L Q Y R Q V P G K G I M A E D A L G E F L R E R D S E A E A I L A S D Q A$ QWDNF HAPRK GVVKEK CHRN GFLLKS QE TE QK LIFIS S YN K VT KEKYEQESKK MA K Y D T A P Q K G L K S L E V L Q E F M N N L K A DE A T I L Q A D E S L T


VAQFRAEPNKGVKAEEVLDQFLKMKEVESRSILQADQK KKRYLQEPRKGI Q S E EVLQ T Y L R S K E SVVD AVLQ T D Q T L T IT QYHS QPNKGI QAEVVVERFLSEK SME
$V K T Y K S Q A K N E V Q A E M V L D K F L G Q K S V D S K A D L Q A D K K$
KK K Y L Q E P R K Gll Q A D E V L Q T Y L T S K E S V T D A lill Q T D Q S L T VA QF RA EP N K G V K A E E V L E Q S L K E E K E V V EAA N T I L R A D E E L T

 MEEYNTTPRKGLLK
VE QY R N LP G K G V K A D A A L Q D F LQ K R E T
EQS Y E LVVPRK GVVKAMEVLLQNF KQS QAATKES $\square M Q A D K T L T$ LE E Y K QRP D K GVVRAEAVLKEFLREHE
V R E Y Q GR P DK GVVK VR K DL
KKK Y H E EP R K GII Q A E E IL Q T Y L K S K E S VT D A ILLQT DK L T VERYRVLP GK GVVKA DAAL QEFLLRMESLARSI CSTDRA







 PQANEVLHSFLQSQA GVVEAI LQADKA
EK Q Y L S T P GK GVVEASNVLF EF KGGK K E T EM K LI L Q A N N L A




 K KENYKSN K ENYK S N N G KENYKSN NG S E K S L QEFLDEKEIV R DLII KMDKKMT V K K F H T E P G K G V V K A D F V L Q E F L K S L E ELLE P TiC Q T D K A L S V E D F R K K P K N GVVK M
L E Y ERRPDKGVVKEAVLKEFLRVKEMMEMWLDWVDQQC ERKY N Q I P N K G A L S D V S I Q T F L V N R K R D R D T I L L T K C E R E E E N Y K L I P R K G VVK A N QV L Q S F L Q S Q A GDVE K A I L K A D Q A L T LE GYRQAEGKGPKAEEVLNEFLAERRAEAEAVLKADNALS
 QE E Y K R R P D K GVVK K E A V L $\operatorname{V}$ K K F L L R V V K G L
 KRKYKETPPGLGDQFEE WL KNHAREVVEEGAE GALQQ
EREYELVPR
VK K Y N A RVV GEVVLASKGVLDDF LQQ L E A Y Q Q A A G K G P K A E E V L YNYFMENGPKTVNRQQFVSDFI HRATSDGAQYF D
L VE H G P Q TVVNRLIVFID FI NKMTTEGGATYF
KNKYNE DPRK GVVQA E E E L K K Y L E M K E E V LLTE YESKSYGPGKWKK LA TFFLQQ
LSEY EASSHGPGKWRKLS DFLQQR
RDTYMHKARGG AK LEECLVTFSEAKYAEAMR】LLSRQE E YNFF $\square E N G P R V G T R N Q U I L E F L Q$
EVD Y H DT T GLGGDEMAT MYKE FLLE QKKDSGKA DQMVDNTTLT RSEYMEKTPDTPAKDEVLLAFMEYQDPVQHSTMQFEKTIS
 I I E Y ETSCHGPGKWQKLAT F L Q $V$ V R Y R Q VIP G K G V K A E E V L Q M F L Q S K E A VA Q S L L Q T D E A L T

 | $R$ | $L$ | $S$ | $D$ | $E$ | $S$ | $C H G P$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $E$ | $K$ | $Y$ | $H$ | $L$ | $E$ | $A$ |





DEEYRATEGLGDEKD KAYKDFMEKNKDRANQI RVVDKALT $M V V E Y E S S Q V S G L F K Y Q K D V Q F M Q S L T G P V H D L V K S D B A A T$

AGEKA $\square A E E R A Q K E A A E K E Q E L L R Q K Q K E Q Q Q M M E A Q E R S$ EKEKEMAAQRARAEAAERERQVLQQKEAELQQKREDQECS A AEQEKEVQ\LKNE \LQQQHQRGLEEQKHLEEQ\IQQMKRN

YRG $\square$ A $\square Y \square T V I L G F T G D G D N K P N D N S T T E E Q Q \square L E A A E K N$
AKEKQ $\square$ AESQAEAEAAKRQMQ LLEEHARS LQESLENQKKS ENER

K REK K N E VQCDKAES

EKEKD IEVQRV
EKEKQiAEQHERAALAEQQRKAQEEQRLEMEQVLQDERGR DGEK
ERDKELSSEPVPPRAAGTGGGSGVRGGSVAQAERQEAEHS EKEKEITGKCAEVQHTQARDPAYKKPEKEKAARVEQRNQA

AGEKALKAEQAK

KKEKE $\square E \operatorname{VEHAKAESAQASAKMVEEMQ\square KYQQMMEEKEKS}$ QAQKQVAEESARAEQVEQQWLMEEEKRRQAEQLLKDQEQS EAEKHVEAMLQKGFAEKAR

MMERQREAAAAKEAAVREAEVACLKEQQRSLEEHCRQL
AQDKLIVEALVQSEVSRRQQEVLRQRRAELEQKMQDKQRS
DRQREDEEERTRAEAAEREGQLCQEMQTRTEQLLKDQERS DREKAI
EAEKDLATQRQEGERDEQQRKAAEEQRDQTEPLVKDQERS KKQKEVTAEERKVIKREKKAKAERQNKEALERLSLDLTKT EKDKEH EK EKEKEIEVKRMKSEAEAAEAANKMLEEMQKKNEQMMRERE

EKEKE TT GKCAEVQH
GKETALRAEPKKPELMK DAHQLLTAEQR LREEKDQHLEMS ADKKTI EAEMAKRKAAEKEQELLRQKVQEQEQKIAAQEKT EAEQKLEEERLLQE
DQEKALEAEQUKREATKKEQK LLEQQQME DMQKMEAQKRS E LQKQI
AGQKAI AEERTKKEAAEKEQDLLRQKQKEQQEYMEAQEKR DGEKALAAERARNQAAEKEKELLRQKQKEQQE $\square M Q A L E R S$

## ES VQAP $\square Q \square R D \square S D A T Q$

REHERAEQEQVK $D K T Q D R A K$ EGQAKENEEDL RRT DGDKAMAEECTKRQAAEMKQDLLTQKLNDEKQKMEAQERS EAEKQLEGEW
EKVDQQCKAVLAEARAAQAVVKQLEE HQQQQVVEMSKMW Y QEKALAAEFA LKEAAEKEDELLSQKYKEQQQ EAEKQLEDQKQQAQLLEQQQKATAERERQLEALLADERSS TGEKA $\square$ ATEWT LTEAAEKE M LMERQKQEEQKMEAQERS EAEKQLEGEW

KQFSHEQD $\square$ QKTLSQEVQKK LEFE LQE $\square K$ RRMHSE $\square \mathrm{NN}$ EKEKE $\square E \operatorname{VERAKAEAAEAANKMLEEDQRKNEQMMEQKERS}$

GYEKQ $\square R$ VSK $V$ K E E $\square$ G S $V G G R \quad E Q \square Y K E Q \square E Q M Q A Q$
$R$ VQQQ
E K V K S L L N S R A
AGEKALAAELAKTEAVERERELLRQTLRETQQKMEAREKS KKEKKAAAQPARAQAAEREQEVLKQKEEQE
DNA $\square E K N S \square A V K F R S V E D A M K H L K Q Q L D D S E K Y K \square E Y Q K R$
D Y DRRLESERDR
EKEVEADREKSK
HVESERNS LKSKCRLSEDK LIALMK MLEANEKHRSEY LKR D

Q A Q Q
E Y QNLVLKGRSMGERLAFSAKQTEAAQREAQ

HKENLEQLRTKLEQEREQLIKDQKVMLEKQLQDQKALLEE YQEHVRQLKEKLDGER

QEKIRRLKAKHKHEEASWM

Y E Q HE K MLI E K MES D R R NLI A ENELVINQKLQEQNAM

H Q E Q M Q
HEEHMRHLKAQLEAEHQQLLDEHWQVLDHK\R QQLLMQQ QEEQVLQIQKQLEDERMRIVHENKLLLEQKLQDQQQYLKE

Y Q E HV
HQENLQQLQSKMEEEARR $\square R E E A S H A L E S R L Q E Q E K L L$

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HKENMEQLEKKLLLERENLLRDQKMMLEQHMKDQMDLL ASYHVKQLTEKMEKERPQLIADQERVLADKDQEQERLLQE

LD E Q
 YEENMKQ $\square$ K $\square K \square E A E R D Q \square M R E Q K M \square L N H K \square K E Q K N L M$

NKENDEQLRRKDEQEREQLIKDHNMMVEKKLKAQKALLEE FQENMAQLKKKSERERE GLLREQEDMLEHKLKDQKELL
\AEQLQLLEEKHQADDEQQKQAFEQL!EMREREQRRLLEE YKENVAQLKEKLDMERENLLDEQEAVLVHKLKMQEELLTE

MAKEMVELKEKQQKEMLAEVTAAKKELEVRLQEEAAADQ

YAQS LQA LQTKMQEEAASAQRELDRALKAKDREHSELLQR SRENLTPDREKDERGGRSTQGGQ



FTENDALLKEKMKTEKEKEQENRGKMVEYETEREKELLLE

YDES NMDKKK LED $\square Y$ RER $\square T \quad$ K $\square$ QGENSS $\square$ NE

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GFRKK

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GFQHQVELLQNKTRGLRRQ $F D D \ A Q G M Q E E I D S L R$

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GFKEMAQMDAEE $\square$ T D $\square R K E$

GF Q K E S K E LY K E $\square$ A A L K K K L

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GFKKK
 GFERK

QVELMQEE

GFSER

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KNKELENK L

RCSKTVESRQEEDKEWKRK

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 SIISVYNASAVGSARQKYEVLLQNFCKKAFEDYKRNAF DEA A V QNFKTKAVGQEDSEFEMQLRDGVTKKHREDKDEFVRFC AVAVYRSSAMGDASTKYESDLAEKIEAEKTTLKKQNRAAS AMAEFNSTAVGSMRMKYEKRLQNFIKKAFEELKKDAFREA S LS SYNGNAVGSSRDKYEKLLQAFVRKQFEDYKTNAFREA SLAAFNDCAVGPTRKKYEGNLHRQLKKEFEDYKKKAYMEA ALNAFNSGAI GSARQNYEKLLQNFFKKAFEDYKRTALLEA ALATEDSAAVGPVRKKYEGTLHKFFRKAFEDYKRNAYMEA $C L V M F K K Q S M G E F A E K M K R E L Q Q Y F A S E R M K M D D R N E K A C$
$T A V S R M S A D V G D K D G T W R R S L Q G K L E T E R L A L L K D N S D K S ~$ AMDLFYCHAVLDDEHTHEKELMKHMENMCERLVTHNKQQS SLSVYNAEAVGPDRSKYERQLQTALRKHFEDYKQRSSMEA AL NTFNDEAVGGGRKKYEKELYNTVKKQFESHKRK LLMEA AL NTENLEAVGGSRKKYEKELYDTVKKQFESCKRKLFLEA SLAAFNTCAMGSARDNYEKLLKNFFRKTFEDYKRTAFLEA A LEDYKTHSVGSMRRSYFQKLKQHDQKQKNDLMTTDQHRS A RLAFEQRAVGDTETRAAAKLEHALKVRFGEYREKRRASA A LALLYSKKAVGS $\quad$ AADEYVKELKNKMQTLFNQDKDENEREA


LI K NFKKKS IA SEEKEFYEQLDRQFAEKFRDFKKKNKERLD ALEEFKKDAVGDKDKKFKNEVDKRDKGKQDTLEAENEKDG ALT L FKVRSVEGASRCFQ KLKQHMHTQRTALITQLDQKRS MKKVLKKNALGEEEQEYYQQI DEQLTEKFRDFKKQNKLQW AVSQYRRQAMGDATTKFEAELMEKI EEEKANVRKQNRAVS ATLLFLKGKFLGDTKMFE KLLQDELKNQ DKVI DKE DQCK I VRKQFKLKA G SEDKQFTEKLSEQFEEKFKELKQSNKRNL GFASFKSK ILGD DNQEY LEKLKKEFK DREQQUEKKNSQVT A IA HMGNNA EDTPYVNELKQKMKGKFENLLAFNETES ALTLFKVRSVEGASRCFQ KLKQHMHAQRSTLIAQLQKRS VHHLFSEMVVGDQQQEYRERLDKELAKLHERMVMDNERAS
 SLTMFRTETYGHSVENFLNQLTEQANDVMAGFLEENKHDT QES LLHYH IAPDRQDEGUVQLSKQQTEKSQVLFQENY IVS VTSLFGKERFGKDNDESSRMLLMQVEKAYVALVAF VNGRSS VFKKFKQKSDQDEDQEYFDMLECEFQEKFKGFKEKQEQKM VTDMLLEKNLGNENKQMQKRLVQREERKQEGFDKQNKESS ALAAFCESSIGEDKQKYKRDLWSFFAKAFEDHKRANLEAY ALNLFKVRSVGSSRATCYQKLKQHMHTRRTALIDAQLQKRS S L QLFVSK I DNM ITMDEFKNELISDNKEMNGEQFIQKNMEKS ALMLLFKVRSVEGASRCFQ KLKQHMHTQRTTLITTQLQKRS









 A E K E L D D
 S D K L F S K I L D Lid A D LQQ Y F K K Y S K R Y H D E C A K F Q L K N N EA S
 VTGGMF LE K V K K T V V D K M Q K R L V Q R E E R T V D Y Y T Q Q N K E L S CQEEVILDK $\quad$ L AME\|YQ A K Y A S MEP Q T VQQ H L R K QL HEVVY Q Q ELGGKLHD HS


 $A L Q Q L N F Q E Q L K E Q Q K F K E R I L D D V E R K Y$ V

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F LS DYETSCHGPGKWQKLA $\square \mathrm{FLQQQ}$
KQKYNDQGP
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$L L V G F E S S T H G P G K W K K L A A L L Q \quad Q S L Q G P D L D F R R Q L N$ LI SDYEASCHGPGKSQKLVMFLQ KSLEGPILDLTKRLD QRDTY LA QAVGSAKLECLMSFSESKYSEADRIIVT EEDFFET
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FGKEHQE
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$V A E Y$ EVS $\square N G P M K W Q T L S S F L K K S \square Q D \square L V H R R G D Q$
YDRKARGPAKKKAFYQFL
VT QYNSRADGPCKSS L NNF LVEKES $\square F E W G T Q V K T V F R$ FAAYDLE GDGPSKTKVLVQF DADKA MDS DVEWGTADT $Y Q F L D E H G P K T V L K Q Q V Y Q E F Y N K M M T E G T N M F I K Q Q N Q Q$ F LKEVGKNSDSEDFDKMLTDKDCQEAAEKDSGKQQRDLEK REQYHRWAR GPEKWAVLQEMTKNWDSLRANIKKKQEQLML
 ARQQYNEQARGPEKWVVLKEMTKTDEKMKVDF ESAYEKSMMKSPEAAKVIASYMQNQYSDADDYM ELAYEKSMMKSPEAAKVIASYMQNQYPTAUEYM LKNY
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EKLNYDKQ ASGGVRKASTYNNYRVELDQKSQTFLSYLLKQ
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$\square Q Q Y N Q Q A Q G N F K Y T \| F F Q K F$
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D R
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AQEMLQQQKDT

FEKK LRADEAEAASREQVYKQQDESGQSETSDMMGEKARS

CVESERNSGKSRCSLSEDKLDLLKKQLEANEKHRSEYGKR D

KEDRR


#### Abstract

AMQKA $\square$ STSRQKVKA $\square E G R A K A \quad A Q E M L Q Q Q K D T$ A GEKA $\square$ AEERTQREAAEKEQE LLRQKQREQQQLMEAQEKS HAQEKAEWNHTREQLAQQHVNEKMEKQHVQERTMEVQQ SDERQAQ DDR $\square$ EKERAE $\quad \square I M N Q K L I E Q R \square Q \square$ HTQEKAEWEHTREQ EYKQKLQVAQGLQESAK ENSKLKLQHHSMENA DDLLKKQLEGG EKMKKEYQKS


 DYDERLTQEQAEKAAMEDHRQRLETMEKAQEVHQLYNQAQDMQKTHQETGEKMDQQHREQMEKD HVHDRAEWERKREQ $\square G H \square H K Q Q Q Q A K M E T Q Q L L E$

SNEAKLVSD $\square$ ATQQNपRS $\square$ EAKVRVAQEMLSQQKES
 QQQQQQQPDQDKNENUSTEKDKTपNELICKVKEQENKVYS EKE
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QEQQRLEITKLESE QLTRLQEDEDMKLQNEKHLHEQQQA

S SETK $\square E G E \square G \quad A L K Q T \square R V T E G K V R A A Q E V L T Q Q K E S$

TNQFKDSLANSEADR EGMR $\square$ QNSK $\square M Q R Q$
QEQKKAHDAEKKAHDADVRAKERE
LKQMELEVGRDQT IIEMKGESQQKQSGATEQLLQEDQKKL ANEEQVKDLRAKREALTVHFKIDEEKMRQSERKMMEKARL
$V \mathrm{~V}$ TQQMTDVR $\square R D \square R G Q \square Q R E F E T K K E A L V A H$
$H G Y Q P P S V T K E K Q K E Y K G Y G S A D E E K Q R R K D Q R L A E M E R M$

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EAESEAQ

FERALQGVTDRDAEDK $\square$ N $\square$ RAD MDHK

QQRMDEQLQSKLQAEAA GKQHMDLE KEQVEL

YEEA $\square$ SD KEK $\square$ SKDYTGR $\square \mathrm{AD} \square \mathrm{L}$ Q

FERALQA】TDRLQEEK
NKENLE QLREKLVQERKQLIEEHNMMLEKQLKDQKAYLEE $\square L D A K T H \square E D K \square A T Q V E R \square A E \square Q H A S Q Q H$

Y DEKLREA LDAK LIKTYTVKEFRDQHQTQK LDADEY $\quad$ QQVLNE

Y E

FQE KQLSKMQEM

## YEKA $\square$ HS $\square$ T ER $\square$ TSERGT L R DE $\square$ ES K $\square \mathrm{A}$

FERALFGDSERMADEKMALTAE
QQSQIKLLEEQLFSSDKQLE ILDQTELDKQKELHQQQFLKE
NQLHKWQMKVKMEGEVWRWGEEQKFEDFRQAQMDE
NQE IFQQRIQQMQ
YHRALQG $\square S E R M \square E E$
HEQD $\square$ NHFKDKKETE $\square K K E Y S S Q V A Q \square H S K Y S N Q E E \square$

FERALLS $\square$ TERTADERSNLEDE
$R D \square E \square N \square K T N Q E \square F Q T R \square S Q M E A S K N D \square Q Q R \quad M N Q$
VQSQQRENELRMN【VAYQELVQRKDEEVTSLQEQMGRMR
FKQEETQ $\square$ RACMAREDETMQKMHHARHAR
YANQVEMHEKLLATEKEN $\square M K E V R S S Q E R N \square R R Q K Q F M E K$ $\begin{array}{lllllllllllllllllllll}C & C & C & C & C & C & C & C & C & C & C & C & C & C & C & C & C & C & C & C & C\end{array}$

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S EFNKMKALNE Q\QHLDTKQL
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F Q R K F DELTR R N Q D L R T Q I

T $\square$ LT N A N Q Y N S H $\square$ Q Q $\square \mathrm{Q}$ GT
lupas_21
lupas_14
lupas_28
jnet




```
sol25
sol5
sol5
solo
jhmm
jpssm
```

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B B
\(B\)
\(B\)
\(B\)
B B \(\quad \begin{array}{r}130 \\ B\end{array}\)
B
B
140
```



```
B B B
150
B B B

\begin{tabular}{lllllll} 
sol25 & B & 210 & B & 220 & 230 & B \\
sol5 \\
sol0 \\
jhmm \\
jpssm & & & & & \\
\hline
\end{tabular}
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\hline & & & & & & & & & 270 & & & 280 \\
\hline sol25 & B & B B & B & B & B & B & B & B & B & B & B B & \\
\hline sol5 & & & & & & & & & & & & \\
\hline sol0 & & & & & & & & & & & & \\
\hline jhmm & & & & & & & & & & & & \\
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\end{tabular}
\begin{tabular}{llllllll} 
sol25 & B & B & B & 290 & B & B & 300 \\
sol5 & B & B & & & \(B\) & \\
sol0 & & & & & & & \\
jhmm \\
jpssm & & & & & & & -
\end{tabular}```


[^0]:    

[^1]:    A6

