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 AA T I GNMKGERQRIVAFALETDEEENNARKK LEKKNADF LAS S GTKKTEKQLLI GFALLETNNEVVEAKDKLMRKNLDF

 I GT LGEHKKEGQFI CGFSMETENVIANSKDKLDKKNMDM
 I L A S L GEKK I L LA E L G K R $\quad$ K N K Q V L I GF I L K TLGER KEHQLLLVGFAAETKNI EEEYATRKKLREKNA DL $1 L$ K T L GE HKPE H LLF L CGFSMETENV DENSRKKLQSKHCDMM RTKDILMQRKEHQYLIGFAAETMDMERYGREKLAKKNLDA ILLAEFSTNRKP GQLAAVGFALDETA G GDDYARRKKLTM K KL DLL $I L K E L G K R K Q D Q Y L V G F A A E T A N P M Q Y G R K K L E A K N L D A$ I LA EVVVRRRRPGQLIVGFAAETENSDHHGRAKLLRKGADA

 LA YLGAHKTKDQFLCGFSMETENMLENSRKKLKKKNLDM LMELGK QKKHQLLVVGFAAETEDLI NNAREKIINKKNLDM LATVANLMENRPFVVGFAAETQNVEQYAKDKLQRKNLDM LAEI GQLLKKAE QVVI GFAAETENVKENADKKLHAKNADM LKTLGER KEKQLLVGFAAETENVQAYAEKKLKSKNLDM $V$ ATIAA RKDKRPFVVGFAAETEKVDEHARGKLARKND DM LASLGADKTS QKLVGFALETNNEEENARKKLEKKNLDB LETLGKQKSH QFLIGFAAETNSMEMYAREKLLERKNCDD L S W G Q HK K S D Q L L CGFAMETEDLEAHAKDKLLNRKN LDDL

AAELGKNKEPGQ AAELGKNKEPGQLVAFAAETQDALANAQEKLLRKKADL I A QTLGEERKTH QTVVVCFAAETNDLLENARKKLLTRKNCDL
 I L QYL GAHKREGQCVVGFSMETENLISSHQEKLMKKNVDM I VANV ATMMEENRPFVVGFAAETGNVEEYARKKLDQKHLDLD


210
QUERY
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UniRef90_F3BD04 UniRef90_A5Z642 UniRef90_G5IE90
UniRef90-R6VGS2
UniRef90_D0Z938 UniRef90_R6BPE8
UniRef90_F7V604
UniRef90 C9QDJ0 UniRef90_U2NNK1 UniRef90_C7N1B3
UniRef90-R6LMS5 UniRef90-R5WSE1 UniRef90_UPI0003B6E526 UniRef90_UPI000427C8CF UniRef90_R5D5Y6 UniRef90_10QQT8 UniRef90-U3APM9
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UniRef90 A6AJ38 UniRef90-13DZ56
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UniRef90-B7GGH2
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UniRef90_E3GMW7
UniRef90_D8PFY7
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UniRef90_UPI0003B769A9
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UniRef90 D1PX51
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UniRef90_R5K0K0

QLLLDEIVTRYDEKNR
HRLLDEI AKHYDEKN

QQLI DEIV SRYDEKN
A QILDTIVKK
GRLLDEIMKR
GQLL D T I L E R DQ A
CTLI NEIVRHYE KKNR
GQI I D E I L A R L
S GIL D D Y $\mathrm{A} A \mathrm{~A}$
SQI I LT I A E R L E A

D RLLDDELEK L
A C L D K L L E CMNK
N A L L D K I L S V CKER
NEILLNEILS K I D K
HRILDEI
FHILDHILVCKDAKNK
QALINEIVSRYDEKNR
V K I L H Q I H H L M D

QRLI DEEIV S RYDEKNR HAILDVI AKTLS
GRLLDEL
S AV M H L I HEQM
K K I LKEVFLLLE GESK
A GIL NE I L RLLQTQGN
QAILDEIVK
KEIL REVVRE!E GR
Q DLVGLVVDKLNS
DTILDAB V
QVI L D T I L K L
GQ: L D T I L E E CL
HLI L D RI L T L
Q QL I A E: A A L Y Q Q
A DLVNE VE QY QK H
DAILDYMKE

NCI L D E LTTKM
HAL MLLINDKL

Y DI I S E I V GRIL
HR I L D A I L D E L
VA
DEI FN NILA
DKLFDAVLLKLQQK
REI LDRARKLMS
$R R L L D L A A E R L S G R$
R A L A E HIA A MLLA A K
RHLIALI ARHYRH
K QLVNNK, VEKYNEK Q
SKII F DVI NE L
A R I A D KL E T L L K
K Q L L T L I A A K
D R L V A L L G R L H H

| $R$ | $D$ | $I$ | $D$ | $E$ |
| :--- | :--- | :--- | :--- | :--- |

K Di CQLIVQH
E QLLMNLVAQHYQK
CDI ID KL VR

| A R | I | S | R | L | A | $\mathrm{S} \square \mathrm{R}$ Q E R |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

S K I L D FI MAK
ME
N I L S KL


HRILDTILE
E NI L LAA A QEMESENR

DRIL D EVV
Q Q L I R H I A L L L M T Q R
RHLRD K I A ELL L
AHLLDEI QR R
$\mathrm{D} R \mathrm{~L}$ D Q $\mathrm{L} A \mathrm{~A}$

REEI I E QAARLLLE EK
K E I L K K A A T FLLK
A ELI K H DAA R
QDII TEVIGKMFHA
R R L L S IA A ER $\square A A G R N$
NAILDR
$R R L L Q \square A A Q$
D R I L D R V V T L L G E K
D A V WD R V V A L I S
D A LTMVVGLRNS
DLI I D H I Q T L
SLI L DTI ME
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UniRef90 G8AF97 UniRef90-W8VXG4 UniRef90_UPIO004012D03 UniRef90-K2Q5E9 UniRef90-IOJM88 UniRef90_UPIO003801B3D UniRef90_UPIO00248C5EE UniRef90-D3IIA4 UniRef90-R6E1Y2 UniRef90_IOWFR5 UniRef90_G5H9E7
UniRef90-R1CRL1 UniRef90-I2GIN4 UniRef90-B2IUV4
UniRef90 J5HUD6 UniRef90_U2L6G9 UniRef90-V2YFZ5
UniRef90 B4S4E9 UniRef90-R5GGG8 UniRef90_UPI0003828C25 UniRef90-A0A011R2N5 UniRef90_UPI00037C1632 UniRef90-H5SJI6 UniRef90_UPIO0035D0238 UniRef90-F3B1H4 UniRef90_UPIO004715E10 UniRef90 E1GTJ6 UniRef90-UPIO00309B48E UniRef90-R5G7M6 UniRef90-C4ZLV9 UniRef90-H6WNU6 UniRef90-REB8N5 UniRef90-W7CRE4
UniRef90 C5T3V9 UniRef90-UPIOO04127591 UniRef90_E3PSX4 UniRef90_R7LFV7 UniRef90-R5NY78
UniRef90 B0PFU2 UniRef90-D2RL25 UniRef90-D3L2S1 UniRef90-H1HLX3 UniRef90-H9UDH5 UniRef90-Z4WRG1 UniRef90_UPI000374F4B9 UniRef90_UPI000318E82D UniRef90-UPI0004788A15 UniRef90-IOKCN9 UniRef90-C9RCK8
UniRef90_FOGUF2
UniRef90_F5L7V0
UniRef90_UPIO003F8DEE7
UniRef90-K7SFE3
UniRef90_C7JHC9
UniRef90-R5I2U9
UniRef90-K9WQN0
UniRef90-A9BN38
UniRef90-D5WP73
UniRef90_UPI0002E08055
UniRef90-UPI00040AD2A4
UniRef90-R6NUA8
UniRef90-O35033
UniRef90_UPI0003732547
UniRef90-T1DRV0
UniRef90_A6EF67


GDLAGKKI LI TAGPTYEKI DPVRFI GNYSSGKMGFALAE
KDIHIVITAGPTQEALDPVRYLTNHSSGKMGFALAK
R

R D

R D
Q R


 $K D L S G L T V M V T$


T



K D L K G K Q I M I T \begin{tabular}{lllllllll}
$L$ \& $K$ \& $G$ \& $K$ \& $R$ \& $V$ \& $L$ \& $V$ \& $T$ <br>
$L$ \& $A$ \& $G$ \& $K$ \& $K$ \& $V$ \& $L$ \& $I$ \& $T$ <br>
\hline

 

$R$ \& $L$ \& $A$ \& $G$ \& $K$ \& $K$ \& $V$ <br>
$Q$ \& $L$ \& $L$ <br>
$R$ \& $G$ \& $K$ \& $K$ \& $L$ <br>
$R$ \& $G$ \& $L$ \& $R$ \& $F$ <br>
\& $L$
\end{tabular}

## K E L


 NHST
NHST
NHST

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

 D P V D P I RFFTNRSS GKMGYALT K D P $V$ V





 | $P$ | $V$ | $R$ | $Y$ | $L$ | $T$ | $N$ | $R$ | $S$ | $S$ | $G$ | $K$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $Y$ | $A$ | $L$ | $A$ | $E$ |  |  |  |  |  |  |  |
| $R$ | $F$ | $F$ | $T$ | $N$ | $Y$ | $S$ | $S$ | $G$ | $K$ | $M$ | $G$ | $F$ |
| $A$ | $I$ | $A$ | 0 |  |  |  |  |  |  |  |  |  |




 $R D \begin{array}{llllllll}L & A & G & K & P & V & L & T \\ A & G & K & R & V & L & I & S\end{array}$

H D
L

[^1]Q D

            \(D |\)\begin{tabular}{lllllll|ll}
    $L$ \& $E$ \& $G$ \& $K$ \& $R$ \& $V$ \& $L$ \& $V$ \& $T$ <br>
$L$ \& <br>
$L$ \& $D$ \& $K$ \& $N$ \& $I$ \& $I$ \& $V$ \& $T$ <br>
$L$ \& $D$ \& $G$ \& $K$ \& $H$ \& $V$ \& $L$ \& $I$ \& $T$
\end{tabular}


K D
LK GK H $A L^{2} V V V_{T}^{T} A$
$K D$
$G P$
$K$
$\qquad$


>
 Q E
A

R \begin{tabular}{c|ll|lllllllllllll}
$N$ \& $I$ \& $D$ \& $P$ \& $V$ \& $R$ \& $Y$ \& $F$ \& $T$ \& $N$ \& $P$ \& $S$ \& $T$ \& $G$ \& $R$ \& $M$ <br>
$G$ \& $F$ \& $A$ \& $L$ \& $A$ \& $R$ <br>
$K$ \& $I$ \& $D$ \& $P$ \& $V$ \& $R$ \& $F$ \& $I$ \& $G$ \& $N$ \& $Y$ \& $S$ \& $S$ \& $G$ \& $K$ \& $M$ <br>
$G$ \& $F$ \& $A$ \& $I$ \& $A$ \& $E$ <br>
$R$ \& $I$ \& $D$ \& $P$ \& $V$ \& $R$ \& $Y$ \& $L$ \& $T$ \& $N$ \& $D$ \& $S$ \& $S$ \& $G$ \& $K$ \& $M$ <br>
$G$ \& $Y$ \& $A$ \& $I$ \& $A$ \& $E$

 

$D$ \& $P$ \& $V$ \& $R$ \& $Y$ \& $L$ \& $T$ \& $N$ \& $D$ \& $S$ \& $S$ \& $G$ \& $K$ \& $M$ <br>
$G$ \& $Y$ \& $A$ \& $I$ \& $A$ \& $E$ <br>
$D$ \& $P$ \& $V$ \& $R$ \& $F$ \& 1 \& $G$ \& $N$ \& $Y$ \& $S$ \& $S$ \& $G$ \& $K$ \& $M$ <br>
$G$ \& $F$ \& $A$ \& $L$ \& $A$ \& $E$ <br>
$D$ \& $P$ \& $V$ \& $R$ \& $F$ \& $I$ \& $G$ \& $N$ \& $Y$ \& $S$ \& $S$ \& $G$ \& $K$ \& $M$ <br>
$G$ \& $F$ \& $A$ \& $L$ \& $A$ \& $E$
\end{tabular}





 |  | $R$ | $R$ | $V$ | $R$ | $M$ | $L$ | $T$ | $N$ | $H$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |










 | $Q$ | $D$ | $M$ | $A$ | $G$ | $L$ | $R$ | $V$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $V$ | $T$ |  |  |  |  |  |  |
| $R$ | $D$ | $R$ | $G$ | $L$ | $R$ | $V$ | $L$ | $V$ |
| $R$ | $D$ | $L$ | $I$ | $G$ | $K$ | $K$ | $I$ | $I$ |





## 

WQGKRVLVT

WKGRNVLVTA GPTQE Q S LVGRHALV | $G$ | $P$ | $L$ | $G$ | $K$ | $S$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $V$ | $V$ | $T$ |  |  |  |
| $A$ | $G$ | $R$ | $R$ | $A$ | $V$ | $V$ |
| $T$ |  |  |  |  |  |  | $A G P T Q$

$A G P T V$
$\qquad$ L

## $R D L V G K R V L I S T G$

\section*{$\begin{array}{llllllll}R & D & F A & D & V & V & V \\ Q & P & L & K & N & K & K & A L \\ R & V\end{array}$ <br> R S $|$| $L$ | $G$ | $V$ | $N$ |
| :--- | :--- | :--- | :--- |
| $H$ | $G$ | $V$ |  |}

$\begin{array}{lllllll}L & H & G & L & H & V & L \\ L & E & G & T \\ L & H & V & V & I \\ T\end{array}$



## UniRef90_F2NKA8 UniRef90-C4ZEU7 UniRef90-D1PM155 UniRef90_19GHB4

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UniRef90 B4S4E9 UniRef90-B4S4E9
UniRef90 5 GGG 8 UniRef90_UPI0003828C25 UniRef90-A0A011R2N5 UniRef90_UPI00037C1632 UniRef90-H5SJI6 UniRef90-UPIOOO35D0238 UniRef90-F3B1H4 UniRef90_UPIO004715E10 UniRef90-E1GTJ6 UniRef90_UPIO00309B48E UniRef90-R5G7M6 UniRef90-R9ILW8 UniRet90_C4ZLV9 UniRef90-H6WNU6 UniRef90-R5B8N5
UniRef90-W7CRE4 UniRef90-C5T3V9 UniRef90-UPIOOO4127591 UniRet90_E3PSX4 UniRef90-R7LFV7 UniRet90-R5NY78 UniRef90-BOPFU2 UniRef90-D2RL25 UniRef90-D3L2S1 UniRef90-F4LOY9 UniRef90-H9UDH5 UniRef90_Z4WRG1
UniRef90-UPIOOO374F4B9 UniRef90-UPIO00318E82D UniRef90_UPIO004788A15 UniRef90-10KCN9 UniRef90-C9RCK8 UniRef90_FOGUF2
UniRef90-F5LIV0 UniRef90-K7SFE3 UniRef90-C7JHC9 UniRef90-R512U9 UniRef90-U1KS87
UniRef90-K9WQNO UniRef90-A9BN38 UniRef90-D5WP73 UniRef90-UP10002E08055 UniRef90 UPIOOO40AD2A4 UniRet90-R6NUA8 UniRef90-O35033 UniRef90-UP10003732547 UniRef90-T1DRVO UniRef90_A6EF67
 50

60
 NCMRRAHVTLVNASVSVEPPMFVDVVNVTSAADMADVVK ACMLRGADVTLSSTGCTLPPVPFVKMVPYTTAEDLFDAVR EAAKEGANVVLISGPVNLQAPNGVTLVRVESAEDMYQAVM ACAGRGAEVTLVTGPVCLQTHPCIHRVDVETAAEMANQAQ AAVKLGAEVTLITGPVSLSTPKGVKRIDVISALDMQAAVM EARDRGADVTLVTGPVNLPDPPGMEVVHIETALELDEAVV AARNMGAQVVVVAGQTQVCPPEGVTIVRVESTQDMYEEVM AFAERGATVTLISGPVNLATPEKVQRINVDSAQDMHQQAL AARDFGGNVTLISGPTSLEKPDGVSVVNVKSAQDMYEAVL AAVARGAEVVLVSGPTHLSPVPGARLLRVRSTEDMLQAVL AALHRGAKVILVHCPANWDVPLGVEAIAVVSAEEMQQVMF ACKAQGAEVTLVSGPTALPDPSGVKTVRVTSALEMLQASE AAKQLGAEVTLISGPTSLQYPSGVKVVAITSAEEMYHAVD AAQRMGAQVTLVHGPCGIPPPRGVLPVAVESAEQMLAAVQ EARRMGARVTLVTGRASVPAPAGVEVVRVESALDMREAVL ECARRGAEVTLISGPVSLPTPDGVRRVDVESCNGMYNAAL EARRRGAHVTLITGPTALEAPVGVETVAVQTAEEMYNAVN AARDMGASVILVSGPTQLPPPAQVDLVRVETAAEMYEAVI AAADKGAKVTLITGPVNLRTPDRVQRINVDSALDMQEAVM AADQLGAHVNLI AGPVSLPTPHGASRFNVESALQMRDAAL AAAKRGANVTLITGPVNLPTPAGVKRTNVVSALEMYSQVH AAARRGARVILISGPTSLKPPHGVELIRVETALQMYDAVM QAMLRGADVTLVTGKVE! EPPRFVNVVDITSAQDMYEAVM ALRRLGAEVTLVTGPTRLPDPPGCTVRPIETAREMLAACE DLANRGATVTLIMGPSAVQQHELIRRIDVVSAQEMYDAVH EAAKLGARVTLISGPTSLDEPPGVDVVRVQSAEEMYQAVL ALARLGAEVTLVSGPVTLADPAGVRTQHVERAEEMRDAVL ECYQRGADVTVI AGPVSMKCSDGUNRIDVESSESMYNEAT EAQRMGANVTLVTGKASVAAPAGVTVVKVESTLEMMEAVL ECAKRGAEVTVI AGPVALSCSSGIHRVNVES SAASLGAEVVLVLGPSTETFHPQVIVERVVSAKQMYEAAH ELSRRGAEVVLVSGRTGLPVPQGVKRVDVLTAEEMYRAAV AFARAGADVTLVSGPTALPLPPFVRRVNVRSASEMYEATA AALHRGANVTLVHGPANWDVPLGVQAIPVVSAEQMQQAML AFAKRGAKATLISGPVNLATPAKVKRIDVVSAEQMAEQAV ECLARGAKVTLISGPVALSCAKKIHRINVESSKEMYDAAL MAMLRGAQVLLVTGPAAVAPPPFVEVVPVVSAQDMFEAVS
 AAMESGATVTLISGPVNLDTPDRVTRVDVLSARDMHQAVH AAREAGAQVTLVSGPVSLSCPQGVRRIEVSSALQMHAAVH ПAANRGADVTLVSGPTNIEVPSNIKLIRQSAQDMYNAI ALYSLGANVRLVCGPVNLPRFKDUGVTSVTSAEEMYNACL MAAYRGAKVSLVLGPSNVFVPDF NRIDVKSAEDMYEEDI ECACRGAKVILVSGPVNLQCSESIERIDVESTKEMYDAVV AARDHGANVTLISGPTDLTPPSGVKFVQIVTAQQMYEEVM RAMLRGADVTLISGPVALNPVPFVKMVSVVTAQDMFEAVS ACAQAGAEVVLVSGPVSLPVPAEVRRVSVTSALEMRDAVL ECARRGAEVTLIAGPVQLKQHSRIHRIDVESAQEMYEAAQ AAANSGAEVILVSGPVSIKPNPNVKVVKVESATQMLDECK AAAREAGADVTLVAGPVHLPTPRGVRRVDVQSAQEMLAAVE AAVSLGAEVILVSGPTNLTPPNGCKFIQTESAEEMFEADW SCANRGAEVELIAGPVELTDHPRIHRTDVVCAQEMFEAAT
 AASRRGAAVTLVTGPTALAAPQGVEAVPVESAQEMFEAVA TAWYRGADVTLI KGPTYIEPPFGVRTDDVTTAQEMYDAVL ECYQRGAEVTLISGP
AAARRGAEVTLVLGP IDAKRLGAQVCLVSGPTCLQDPYYTDYVSVESA EFARRGAEVTLILGPSSLRPREEVKVLPVMTAEEMLREAE VLAERGAQVTLVSGPTNLTVHPCIERIRVRSAADMYHACL AADHRGARVTLVHGPANWDVPDGMEAFSVVSAQQMHQAML AFARAGANVTLVAGPTYLATPDEDRRDNVRSAQEMFQSTA AARDRGAKVTLISGPTGLLPPSGVEFVRVTTALEMKEAVE AAKRRGAEVVLVSGPVDPIEDDGVKRIEVRTNKEMQEAVE EAAKRGATVTLVSGPSSLLDPPGVTTVRVTTAEEMYDAVI ALLAALGARVTLVSGPVSIPAPRGVTCVKVQTAEEMLAACE ALADLGATVTLVSGPTTLRAPADVTYVACETACQMLECVK AALDDGATVNLISGPVALAAPTDAALYPIESAQDMDDIAAM AALHRGATVTLIHAPITWEVPSG\|RAITVVSAAQMGQAML AAREAGAQVTLVAGPVHLRTPRGVQRIDVQSAQQMFDAVH AARDRGATVTLVAGPGELRSPEGVRLI RVETALEMRDAVL A ALINMGANVTVIAGPVNLTLPTGYRRLVKSAREMHQAAL QARDMGADVTLVSGPVTLSAPRGUDTVHVTTAQQMFNAVQ AAVQLGARVILISGPVSLDQPKGAEFIPVQSAADMREAVL


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A HF A E A D|VVV|MTAAV|ADYRPAEVVKAKEPKTAGEKVPNPD S K A A E Q DII I MTAAVA DFCPSHPADEKDKK ND DE LIERTED
 EQ F E N A A VVI KTACAV A D Y R P K ITTY D N K M K K K P G E TVVLE LE

 K S A V



 SRME Q Q D II I KA A A V A D Y R P A EAA Q Q K I K K K S DEMT K N P D A E F N Q C D A A L C A A V A D F K P E Y VAA E N K ID N L S DR L S P T N D
 ARAEASDI YI GAAAVADYTPAETQSEKIKKRGDTARTTRD

 EHFPGADVVVKSAAVADYRPKAVSPQKI KKHTDELEKNPD D R S T E Q D V I I S A L P P A D I $A$ A V C A A A V SVVF D E S D D V I K TAA A V A D Y R P K H D H D Q K M K K K D I E L E R T K D
 KEYPQQDIVI KSAAVADYKPKVTYEHKMKKYAVEMERTKD KAFSDCDAAI LCAAVADFKPENDADKKDKREDIQQLBTHD S RLDP E Q DVII K A A A V A D Y R P A E QA E H K I K K S GDEMTMMNP D

 D T F A G C D G A V M C A A V A AFPSAAVTI LNA AVADYTPAHPADRKIKKQEATFTKTT D

 ARQDWADFI FKAAAVAADYTPAQYAGDKLKKKDGELNRTRD
 D R IV G V D I F I G C A A V
 D N F D E S E V I I K S A A V

 ARFP E A DVVAI LSA A V A D F K P Q V I S D K K I K R E G K Q L Q S T Q D

 H A LDP G A DVVIGGVA A V A D Y R P L A S S A E H K L K K S A D T M N P N P D

 QRSETMDII I K A A A V $\operatorname{l}$ A D Y T P D A Y R P H K I K K S N F H F DR T T D QHAQSASVFI ATAAVA DWRPATSSSSQKIKK DGSGQPPNPD | $S$ | $Y$ | $Y$ | $N$ | $E$ | $A$ | $D$ | $V$ | $V$ | $I$ | $K$ | $T$ | $A$ | $A$ | $V$ | $A$ | $D$ | $Y$ | $T$ | $P$ | $S$ | $D$ | $T$ | $Y$ | $D$ | $Q$ | $K$ | $V$ | $K$ | $K$ | $A$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $D$ | $F$ | $K$ | $R$ | $T$ | $K$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $S$ | $S$ | $F$ | $D$ | $E$ | $M$ | $D$ | $I$ | $V$ | $I$ | $K$ | $S$ | $A$ | $A$ | $V$ | $A$ | $D$ | $Y$ | $K$ | $P$ | $K$ | $N$ | $I$ | $S$ | $D$ | $S$ | $K$ | $I$ | $K$ | $K$ | $S$ | $D$ |
| $S$ | $E$ | $L$ | $D$ | $R$ | $N$ | $K$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | S LF P S V D A GI L C A A V A D F T P D A HF PESSDAA L L A A V A D F T P A Q A S D R K I K REAADR L K P T R D

 A A Y P KVDDVVIMAAAVADYRPHHAEEQKIKKNDDTLDKNPD
 L H Y P Q F D A A L L A A A V A A D Y R R P K TVV A T E K I EKYKEYDILI MCAAVADYSPTQSAQEKIKKTQDELSKNPD D N $\square$ G E A D $\quad$ A I F A A A V A D Y Y R P L L H S S D D E K L K R E E K E L V



 R HY S S VDAV FK A A A V A D Y H P L N K S E Q K I K K D A E E I T I T F K






 SVVY D A S D D V I K T A A V A A D F T P K T V Vir D H K M K K Q D G GMMKRT V D


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I CLLNYPTREGSAF GSTHNEJV|T|IV|TPEGTEA|L|PRMSKRALA



 LLN YPTRRGTAFGGDDNEVTVVRPDGTEEWPRLSKREVA $V A N D V S R S E G G F G S D N N E V S I$ YDAE GVERDPLMAKS GVA CANDVVSDGQ VFGQD Q N S L H L F WH NGSTKLAALESK K T L A


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 I VANNDTTEGAGFDVDTNVVTVFTRDGQETYPQASKQEVA II AANWVGQAEGGFDSDRNALEVFWKGGREALAMTGKKRLA
 | C A $\operatorname{N}$ I D V $L V A N D V T$ QP GA GFGSDTNNDARLVYPGGRTVLPKMDKLLLA I AA N NLKVAGAGFGVDTNVLTM I TRDS DS ELPMMSKEECA
 LI LINSMRDEGAGFGTDTNKITIIDKSGNEAFPVKSKQMVA IIVANNVTAEGAGFGTETNDVTVYHKDGKKTHPLMTKREVA




 I VVNNDVSNKDA GFKKETNVATII DKE GEKSYPKMSKRELAA I V L N S L R D S G A GF GHD T N K ITVI D K DE Q T E F A L K S K D DVA $1 V A N P I D Q P D S G F G S D N N Q A I F L D R Q G N Q V I A P C S K D E M A$
 I CANNLLVVAGA GFGTDTNVMTVITRE GMEDLPDMSKEEAA I A Y N TYYD G E T S G G F EVVDTN A L T T L
 LVGNLIAD



 I V A N DV T L E GA GF G S D T N I V A V Y D A E GVVL NL P Q T S K D E V A
 IVANNVK QEGAGFGVDTNVITMYTRTGETELPLLSKREAA

 $V$ L N S L N D A GA GF RHD TN K I SSI I D R K G R E D Y P R K P K Q E V A

 $L V G N D G G P A T F G Q D D N A L L L V D A Q G H R E L P R A S K R T B A$
 IV ANDLK K E GAGFAGDTNUVKLLFADGDQELPDMTKNQLS




 I VLNS LLRDSGA GFNHDTNKI SI LIFRDNKKDFELKSKBAVA IVANDARK AMGSDENQVYLVFRDKPTDMVEGKKEEVAA IV V L




 L VA N D V R R
IVANDVS A GT G $V M G G D R N Q V V L I T$
 I CANDVSVKGLGFNANDNALTLFWPDDTLNLPATSKQQLA I A A NPID KPNSGFGSDTNQAI FLDKQGRQEIEPCSKLQLA

 I V L N S L N D S G A GF K T N T N KI T I DID K N L V K E F I L K S K E E V A I A ANDVNVGGQGFNSDNNALTVFAKDKRFDDGLNNKKEVA
 VANDVKANGAGFGADTNIVTI FFKDGHKEDPDMSKLDVVS



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UniRef90- W4QAV5 UniReffo-W4QAV5 UniRef90- F 8 FC 33 UniRef90-8FCB3 UniRef90-Q5WFK5 UniRef90_H8GGN4 UniRef90-Q491W9
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UniRef90 BopFU2
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QNI VEQISLLLQD
QD LNRLVEELQ
EKLLDEIVTHYEEKN
KRILQLAASRMKDPTR
KQLVNQIDARYRQ

HYLFDFVV
QDIVQAllKRDE
FRILEE
QQL MERDAACME
ARLLALIAERLPK
RDI DEITALFRQSEK
KQI LNELEAYMKRR
DRLTALI AERDQA
QQLDNEIDDRYNENN
LTVMQL ANKLS
QRLLDEI LQRCEEKNR
HRILDEVQAL
DMLLDRIMEM
ARLAEAIARHFN
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AQVLKEAALLFD
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KDVVELCERMK

RDI ADK EKY YLD
EDLLDLVEAEGNKQ
HYLFDFAlT
ELLVNETVERYRK
RDII DELCRTF
RR1LD
DRLLDADESLLS

RQLVTRIAARLEKRQ
NVILDKVKSLLEK
REILRRVARLL
TDI VDLI IKKLNEK
EKIFDEIVRNF
RQL QQLAVKRTS
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DKi LDE
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EELLLEVHHLLNEVER
KEIYDKIIYIMHNK
DDIVEELVSLFKQ
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NHILDIVRDAVKRK
WGL WDIVEAEF

KELLKRVCELL

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D DLLI DLIAEEQLPGR

TK LDAADEDFEERDK
GKLAERDAETFRS
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| $T$ | $N$ | $D$ | $L$ | $R$ | $G$ | $K$ | $N$ |
| :---: | :---: | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $V$ | $L$ | $V$ |  |  |  |  |
| $K$ | $A$ | $G$ | $E$ | $R$ | $V$ | $L$ | $I$ |

    K R \(\begin{array}{lllllll}L & A & G & E & R & V & L \\ L & L & I \\ L & G & K & R & V & L & I\end{array}\)
    KDLEGTSMLIT
    GRLGGRKAVVT
    KDFVGKQVLV
$K D F V G K Q V L V S A$
$K S H A G S V E V$

$\mathrm{V}_{\mathrm{K}}^{\mathrm{A}}$

TK | $L$ | G K R | 1 | $L$ |
| :---: | :---: | :---: | :---: |
| $F$ | $S$ | $G$ | $K$ |
| $F$ | 1 | 1 |  |
| F | K | $N$ |  |



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

G P $|$| $R$ | $R$ | $G$ | $R$ | $L$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $G$ | $V$ | $R$ | $V$ | $A$ |
| $L$ | $A$ | $V$ | $N$ | $I$ | $T$ |
| $A$ | $G$ | $R$ | $R$ | $V$ | $L$ |

| $H$ | $D$ | $L$ | $G$ |
| :--- | :--- | :--- | :--- |
| $Q$ | $G$ | $L$ | $R$ |
| $K$ | $G$ | $K$ | $K$ |
| $M$ | $A$ | $L$ |  |$\begin{array}{lllllllll}\text { Q P } & L & K & G & K & K & A & L & V \\ G & Q & L & K & G & R & H & V & V \\ K & G & R & K & V & V\end{array}$$\begin{array}{llllll}L & K & G & R & K & V \\ L & I & V \\ A & G & R & R & V & L\end{array}$| G P | $L$ | A | $G$ | $R$ | $R$ | $V$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| S | $G$ | $K$ | $T$ | $A$ | $I$ | $V$ |  |
| G R | $L$ | $L$ | $G$ | $G$ | $H$ | $V$ | $L$ |
| R P | $L$ | $V$ | $G$ | $R$ | $H$ | $V$ | $I$ |
| G | $V$ |  |  |  |  |  |  |A GK K V L I$\begin{array}{lllllllll}Q & D & L & V & G & L & H & F & V \\ R & D & L & K & G & K & R & L & L \\ K & P & L & R & G & R & R & V & V \\ C & V\end{array}$| $K$ | $S$ | $L$ | $E$ | $G$ | $K$ | $N$ | $V$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $K$ | $L$ | $V$ |  |  |  |  |  |
| $M$ | $L$ | $I$ | $G$ | $K$ | $K$ | $V$ | $L$ |
| $M$ | $V$ |  |  |  |  |  |  |
| $K$ | $F$ | $G$ | $K$ | $E$ | $V$ | $L$ | $I$ |
| $G$ | $L$ | $L$ | $G$ | $K$ | $R$ | $I$ | $L$ |
|  |  | $I$ |  |  |  |  |  |
|  | $E$ | $G$ | $K$ | $K$ | $V$ | $V$ | $V$ |


$K T$ T A H R L| $K$ | $T$ | $L$ | $E$ | $G$ | $K$ | $K$ | $V$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $P$ | $L$ | $K$ | $G$ | $K$ | $H$ | $A$ | $I$ |
| $G$ | $P$ | $L$ | $R$ | $K$ | $C$ | $I$ | $L$ |  |

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50 60

70
80 AAQKLGAETVLI SGPVELPVPSGVQVIHVESAADMYDAVL EFARRGAEVDLIGGPSSLKPSEAVRTTHVTTAEEMLQATE AALSFGAHVNLISGPVTVTAPQGVNLINESAEQLLHESL VAARRGAQVTLVSGPTALEDPSGVEVVRVETAEEMARAVEM ALVDLGSEVTLISGPTSEPYPLGVNTVLIESASDMLAACE AARNRGAVVTLVHGPATWEAPMG|ARTVPVVSATEMHRAMLL AAARKGAEVTLVSGPVALPAPEGVEVIYVESARDMLEAAM ACRDAGAEVTLVSGPTGMEAPMNVRRLDVQSAAEMQQAVL ECARRGADVTLISGPVSLECSKRIKRINVESCNEMYNAAV AAVSLGAKVNLISGPVTLKTPDGVHKIAVESADEMHQAAL DAVSRGAKVILVS NAMLRGAEVTLI AGPTNLPDVPFVKMV HI AALHRGAKVMFVHGPLQEMLPNGVESIPVVSAREMQEAVL AAVNDGAHVILISASTSLTPPEGVELISVTSARDMYEQVM AAAEAGAKTILISGPTQLKTPPRVQRIDVTSAQQMFDASM ACAARGAEVELI AGPVAMQHHPHIKRTDVTSAQQMYEAAT AAVEAGASVDLISGPVALSAPDRVKLHRIGTAQEMLEASLD AAALAGAKVTLVAGPVTLDTPYSCARVNVTTADEMLNACE ALRDLGAEVVFVTGRADAPRPTGMTVVEVESAREMREAVM EAKRRGANVTLVSGPTNDNPPNGDNVINITTNEEMKNALL A AREAGAQVTLIAGPVHLPTPRGVARVDVHSARNMFEAVE KADERGADVTLVSGPTNIVPPQNLKFI QI ESAEDMYNAVL ALLREGAEVILVSGPVSLAAPPGVRLVPVETALAMREAVL AAEMRGASVTLVTGSVSLDPPVGVETICVQTCQDMADTML AARMAGADVTLIAGPVSLETPRGVKRVNVRSARDMLLAVQ ALRDLGANVTFVTGPASVAPPSGVSVQHVETAAQMLSAVQ AA $D \mathrm{DRGATVTLVHGGHTLDPSPRFRLDSVDSADEMYEAML}$ AAEHRGAKVILVTGPVSISPPENVETHKVMTALEMAEVVL AARDRGASVTLISGPARVQPPAAVTLVRVETALEMQREVE AAWMEGADVTLVSCTTALPAPYGVKMVYVQDARELEKAMN ECAERGAKVTLIAGPQQKTTHANITRIDVRSAKDMHDEAV AARETGADVTLVAGPVSLPTPRGVRRVDVRSAQEMLQAVQ VAQELGADVHLIAANTSAEPPVGISERVQSADDMYSAVL AAFHRGADVTLVHGUVNAETPSGVRSLPVVSAAEMEKAML AALMRGATVTLIHAPLTPPVPDHIKTFPVETAQEMQQALL EARDRGAEVVLISGPTSLKPPFGVKLINVKTNQEMYDNVL SAANLGAEVVLISGPSNFIEQDSVTLVNVISAEEMYAAAH RAYQLGAKVTLISGPTDLRVPYGVEVINIKSARAMFEAVK ELYRRGAQVDLVLGPSVEIPEEGVNTVRVESAEEMLDACR AAQEAGANVILI SGSTNLATPTKVNRINTQTAEDMYQAVM KAAERGAKVTLILGPTALKPHPNIK\IPVTSALDMFEASQ AAVSHGAEVVLVAGPVYQPTPPGVTRVDVRSAAQMRDAVL TLAKLGAEVTLISGPVKVPKHPAVKIIDVKSAQEMYEAAI TALLLGAEVTLVYARTEGTPPAGAELVPVQSAEDMYEAVM AAIEAGATVTLVAGPVHLDTPERATRIDVESARDMLSACH ACRDAGAEVTLVSGPTALTEPVGVHTLAVRQAREMLAAVE QARDLGAQVTLVSGPVALDAPYGVDVVDVTTARDMFDVVT AVKSRGGRAILVTGPTNLEDPDDIETIHVNTACEMYDAVM A WARRGAQVRLISGPVTLAAPTNVERVDVTSASEMLSAAE AAVRRGAQVVLVSGPVQLPTDGVQRIDVRSAVQMRQAVL AARDCGAQVRLI NAPTSLRPLYGVEMMPVRTAREMYGQVM ACRDAGAEVTLVSGPTALRTPYGMQCLNVRSARDMLAAVE AAAAAGAQVVLVCGPVSLKTPVGMERVNVESAVEMHEVVM RLKQLGAQVTLI TGPTALPDPQEIETISIQSAQQMYDAST
 EARQLGADVTLVTTVK RAVHADIHVLMVETAQQLDMTMK ALARLGADVTLVSGPTADPQPSGMNFVQIETAVEMLDAVK AAAARGAAVTVVAGPCTEPTPPGVERVDVETAQQMHEAVM AAARAGAQVTLVSGPVETADPPGVTVRHVETADEMLAAVE ECAGRGAKVILVTGPVQQTTHPMYRYHEVESARQMYDVAY EARNRGAHVTLVSGPTGLKPPSGVEVVSI QSAEDLYEEVT ALDELGAEVHLVSGPVAIPDPKGVATVHVESARQMRDAVE A AAARGAEVTLVSGPVSLKVPDGVKAIKVKTAQDMFLAVT QA DARGAKVTLVSGPTNLPPVPGAKMVNIRSTEEMLQGVQ AAWYRGADVQLVHGPLASPLPPQLETVAVTSSAEMRAAML AAREAGADVTLVAGPVSQPTPRGVRRIDVQSAQQMLQATV AAAEAGARVTLISGPVMLPDPSGVTTVHVESAREMLQAVE EASRRGAKVTLVTGPTNLDDPQGVEAIRVNTTREMLEAIK ECRRRGATVTLVLGPAPEQDLSDITLKVTAEEMYQACM EARDRGAEVTLISGP ECAKRGAKVTLVAGP VCAQQGAEVCLIAGP AAQSLGADVTLIHGP SAAEAGAKVTLVSGP VDLDPAGVRVI RVESARDMLAEVE AAAEAGARVTLVAGPVNLPTPPRVDRVDVTSAAEMLAACE EARDRGAKVTLVSGPTNLKTPGGLDIIKVNTNEEMLKAVK LIAAQRGADVTLVAGS AAQEFGASVTLISGPVALDTPLGVERI WVESAADMLEATR TFAAEGAEVVLISGPTNLPDPPTIRTVRVQTADEMYRAAA AAASMGAEVVLVSGPTQLDTPEGVRRINIETAAEMLEAVT AASARGADVVLVSGPVNLPAPPGVTVI DVESTADMFEAVK


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AHFPTADYTMLSAAVADVKPAHYSTKKLPKKEDPNCLPDD AHFPTADYTMLSAAVADVKPAHYSTKKWPKKEDPNCDPDD SADADADLLIMNAAVADFRPATVAGQK KKGDDEEVRNPD AEYDSCDAA MAAAVSDYRPTVQADQKLKKEHDDLTQNPD DAFPNMDVAIDSAAVADYTPADVSATKMKEMNLELKPTQD PEDADASVFVATAAVADWRPASASTQKDKKDGSGKPPALE RQWGDSDLVVMAAAVADYRPREAAQTKLKKKDSTFTVKNIG
 QQFEDSNVVVMSAAVADYKPSQYSNTKGKKKENNDEKDND
 ESYEKQDYIGKAAAVGDYRVKEVATNKYKKHEDEMVKNDD KVVSWCHAAVFTAAVADYRPAERSDSKIKREQKGDMRNPD
 SAFP ADVYIGAAAVADYAPKSVLPQKIKKSGQELVRTQD SAFPGADVFIGANAAVADWRVANPSTQKMKKPDQKFEQNPD
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 K QSAAESDIFIGCAAVADYRADTVAEHKLKKADASDTMNPD
 A AHVAMADVFISVAAVADYRPQVTSEHKLKKTEGGLPENPD SVFPTADVIVMSAAVADYTPDDISKEKVKKKSDTFSIQDK NAFDGSDIAMSAAVADYTPAVAAKEKIKKEEGHESKTKD EQFDAADVVIMAAAVADFRVAEDAEHKMKKTDGDDTMNPD ARADTTGFIAAAAVADYRVAETAAQKYKKREGEEVRNPD AALP ADIFIGAAAVADWRI EPAPDKIKKQPGGAPPNPD ALLFKEADAAILSAAVADYTPEEVADEKLKREKTGGMDDAA KRFNDVDIVVKSAAVADYAPEIVENQKRKKQTNQWKKTRD ALLPADAGIFVAAVADWRPLTEVGEKDKKDRGANPPNPD AAMADNVIGCAAVSDYRVEKVSDGKKKQDGKLVKNPD AAMADADVL AAAAPADYRPVEVFNHKWKKPNUVLEETPD A AYPQADWTVMAAAVGDVQPAHYFPEKLPKKSLPSDPDPD KADP ADVGIFAAAVADWRVANAGEOKIKKPNLSLTENPD LRFKECDVLVKAAAPLDYRPDVVSDHKIKKDENTLKMKNP DHFESADUALMAAAVADYRPAAVSDTK|1KKQESNLVKTRD KAFKTADVAGLCAAVADYKPQNEAKEKVKHSEGNMQSTRD SRFYGMDGAILCAAVADFTALDVAPEKLKRGKDELQPTRD E YQHADVI:MAAAVSDFTPVDVHKNKVKKSEDKLTKTQD A ALPAADLEASAAVADYRPASCAPGKLKKMTLTVRNPD DNFERQHVVIKSAAVADYKPKEYKEHKYKKFNLELIKDKD YAAGLND FI ATAA VADYTPKQVATQK KKNNDEMTRTTD A EAAATDVWVFAAAVADYKPAHVAENKVKKAGDELVKNVD SEVPGTSIFIAAAAVADYRDKEVATKKMKKQHDELEQNPD
 A A LP ADUAVCAAAVGDWRPQTEAEQ

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I L|MT|L|GQRKT K Q|LVV|GFAAETNNDEVVIYAKDK|LISKKNADY I LK SLGDRKT NQLLI GFAAETTDVIAYGQKKLESKNLDY I AATLGARKRPEQFFVGFADESNAGVEEAKRKMHAKHFDA VIAAVANLTQNRPYTVGFAAETQNVANYAKGKLTNKNLDM L LA GL GARHAGKPVLVGFAAETEEVIARAREKLKGKRCDL

 I I K N L S K R K K K Q M MVAFAAAESQNLVEHAKEKLESKKNVDF ILATVASLDAA PFCVGFAAESQNLLEFAEAKRKRKKLPM I AAELGRQKNDNQLLVGFALETNDEEFNAKNKLERKNLDF I DADVAA DK S HRPFTVGFAAETQNVAQYAQGKLINKNLDLD
 LLLQQLSSLKQPQQKLIGFAAQTGDILDPAREKLDAKKLDA $L$ K EVVGEKK GD K LVI GFAA E T D N I Y E HAARAK LTK K N L D M
 RKRPFTVGFAAESENLLDYGRAKLVHKKLDLD V L A RVA GH SPKPF SVGFAAETEK RGEHADGKGERKGLNM LATISNR - LRDVSKLA $A E G R P L V V$ LK KLGBEK KSNOLVGFAAETDDVVANATAKRARKGCDW

## -

 LRTMGERKRPGQF VVGFAAE ATVAQAQKGDDFCIVGFAA I LATVSQMKTGRPLVVGFAAESHDLLAHATAKRLKKGVPD



 F ENADVLA GVAQYCVVGFAAESHDLLAHAQAKRARK QVP L | $D L L E S L G R S K K Q Q F L I$ |
| :--- |
| $I L A F A A E T G N L E T Y A M D K L E R K N C D L$ | LLMELGSRKQPHQKLI GFAAQTGSI I QPAWEKLKRKNLDA I LKEVGKLKKD QILVGFAAESNDLI TNAQSKLVNKNLD Y ILKK S L G D LTY L GA HKT T QT DCGFAMETQQNLI ENAKDKFKRKNCDL I AATLGQEKHEGQFFMGFSDETDRGLTEAKRKLEVKNFDA



 I LQA I GD WK QKAPFVI GFAAETDDVEKHALDKGRRKRCDV
 I LA WAGEHKRPDQTLCGFAME





 $1 L A Q L G G A K T G Q Y L V G F A A E T Q N L M T Y A Q N K L K K K N A D M$
 I L A GLS ALLKTH QYMVGFAAET QNVIDDYAGKKLAKKRVDM
 I LAEVVAARDTARPFVVGGAAETETLQEHAEAKRRRKAADM $I L A L V A R R E S E R P L V V G F A A E T R D V D A N A Q E K L A R K G C D L$ AL GKLK DATEKRKILAGFALETNDERHNAESKLNRKNLDF
 IL A GVVGHHENRPRLVI GFAAETQNLVVENARTKKLAKK GADLL

 i L ILATISHRTENRPLMVGFAAE DI A YEF GKIK GNKI II GFAAETKDVI ENATRKIIKKKN F D F
 I LKKVLG DKKKNQILIGGFAAESNDLIDENAKSKIVKKNLNY I A A ELGKQKTA QQLLVGFALETHNEECHAKEKLKKKNLDF
 I L A TI S K LLK QNRQLVI GFAAET QNLI ENATSKLKRKGCDW L L A T L A A H A Q R P G F C V






UniRef90 UPIO002E16067 UniRef90-F9DPG3
UniRef90 J4VSW7 UniRef90-UPIO0031503EC UniRef90-E6RIW9 UniRef90-B4UK14
UniRef90 F9Z8K5 UniRef90 ${ }^{-}$K7Z517 UniRef90-F4XUW4 UniRef90-F9MS71 UniRef90-R7B4Q8 UniRef90-Q7NTH4 UniRef90-R5MER9
UniRef90 A4C8K3 UniRef90-F2JR87 UniRef90-R7HDT5 UniRef90-B8HNM7 UniRef90-B2A2J9 UniRef90-131EX6 UniRef90-R6A2X8 UniRef90-A4A9B5 UniRet90-F2G1U8 UniRef90_A3JXA2
UniRef90 V9H417 UniRef90-UPIO0041677B8 UniRef90-F1VWV6 UniRet90-T4VWP1 Uniinefols S6BGP4 UniRef90- SoG761 UniRef90-UPI0003105202 UniRef90 UPIOOO3B6F20B UniRef90-K9YA34 UniRef90-B8FNB8 UniRef90-ATNPG6
UniRef9O-R6AGL5 UniRef90-F3ZUL9 UniRef90-A0A016XKP1 UniRef90-G7VVB2
UniRet90 K9U046 UniRet90-K9U046 UniRet90 UPIIO002F302A3 UniRef90-U2EE99 UniRef90-UPIO00368B4DD UniRef90-R5RHY4 UniRef90-UP1000467F44B Unirefogo-K1ZLVO UniRet90-GOJGT1 UniRet90_O9PGZ7
UniRet90 UPIOOO47 UniRef90-H6L6M7 UniRef90-UP1000363D6B5 UniRef90-F3L3K3 UniRef90-UPLIOOO3B36934 UniRef90-R5GMX5 UniRef90-D9TNS0 UniRef90-Q1QT82 UniRef90-D2UBD3 UniRef90-X0SR69 UniRef90-UPIO003B6F2EF UniRef90-C1D8V3 UniRef90-W6LXL3
UniRef90 U2HB4 UniRef90-C5RA38 UniRef90-UPIO00471877F UniRef90-M5JE46 UniRef90-UPIO0035FE9E2 UniRef90-UPIO003615DF9 UniRef90-UPIO001D2E532 UniRef90-E6SPM7 UniRef90-W7ZFK7 UniRefofo-Q11B03 UniRef90-ToCGE1 UniRef90-B0C6A4 UniRef90-UPIo0047B46DB UniRef90_-14YYP0 UniRef90-UPIo0047D94FF UniRef90-UPIO0036B78D1 UniRef90-L7EPS5 UniRef90-D3IBN6 UniRef90-E4T2Y5 UniRef90-UPIOOO3743AE3 UniRet90_K8NX35 UniRef90-AOAO31MDX3 UniRef90-B1IIM3 UniRef90_UPIOOO36B1200 UniRef90-W8EVC3 UniRef90-UPIOOO3B5FA65 UniRef90 UPIOOOOB163AA1 UniRet90 K5YZ27

V|ANDVITQADS GFGTDTNTVVLIGKENVQYFDNMTKKQLA I I VNDVTDPGGGFGSDTNVVTLLSREEETPFTAMPKDQLA IVLNSLQDAGAGFAHETNKVTIFDREGSMEYELKSKDAVA I CANDVSHSDVGFNSERNALTLYWQNEQLDLPETSKIEMA VVANKVGAPGAGFGGDTNRVALVAAEAKIVEGKDKVA IVLNSLKDSNACFGYDTNKVTIIDRNEVQQYEDKSKKEVA LLANNVSDDDSTFGSDNNTVHLI TSDKLENWPTMTKAEIA IVANPVDKPNAGFGSDTNQAIL: DKTGRQQUNRCTKLELAA IVANNIKKKDAGFATDTNDVTV DKDSADDYAKQTKKDLAA LVANLAQQ AMGADDNQVVLLDDAGQHPLPQMPKDEVA IVLNSTRNEGTTFRSDDNQIEI TNDEDKKFEKKNKKYVA ICANDVSQQGDGFNSDHNALT YWQNGQLDGPVQSKETLA VIANNLKVDGAGFGGDTNATMI SSGGVTAYEQMSKLQLG IVANPIMDPGAGFGSDQNQATFLDAQNRQT円PPCTKLQLA IVVNDISSDKAGFGKDTNTVTLFFEDGSKELDTMSKLELA VI ANNISDSR $\mathrm{A}_{\mathrm{G}} \mathrm{GNSDENAVTV} \mathrm{\square DE}$
 VANDVSDSRGGFNSENNAALLLWRDDEREVEOCSKDVLA IVANDVSPATGIMGGTENAVVLITADGAEAWPRAAKSDVA IVANDITSADTGFGSEDNKVLLISKDGEEILDKMSKKEVAA LVGNIGH ATFGKDDNELVLFDANTETHFPHAPKQQLA IVANDLTQDGAGFGVDTNDVKI TDREGVQEHPKMKKEEVA 1 AANQVGEGE GFEVDDNALLVLWEGGRLELPRQPKTRLA I AANLVGGKDAGFQTDTNKMTLFFKDGSKDIPLMDKQAVA LVGNIGGPATFGQDDNALMLVDATGAKELPHASKQVLA VVANDVPATGTMGGAENAVTVISDAGADGWPRMSKAEVA VANDIDRTEGGFGSDDNQCIILGKAGEQSMPLCSKLQLA IVAN EAVASDGSEDTQLILIDAQGDERLPLLPKTEAA LVANDVAMPGAGFNGTTNIASLLYKDGHEQYPKMSKDELG IVLNSLQDKGAGFQCDTNKVSLIDASSRTDFPLKMKSEVA LVGNIGPATFGQDDNALLLVDEAGTKELPRADKLTLA $L A A N D V T A D G A G F G V D T N A V Q I Y D R G G V E S I P V Q S K E E V A$ VANPIDLDPSGFGSDNNQAIFLNKAGDRIIAPGTKLEMA IVANPVDQVGVGFGTDQNQAVFFAKTGEKEVERCSKLQLA IVANDILSNDTGFASDDNKVITMSKTGEKSLDKMHKKSVA
 LVANNLSENGAGFKKDTNAVVGLWQDGEQALALGSKAALA LVANNLNENGAGFKKDTNKVTFUSKNDVSDELMSKDELS IVANQVGYNLCFDSDENSVVIFSKNNKDEGPRMQKTKLA VVLNSLLDSEAGFQKDTNQVTVLSKNKELKTPVMSKELLA LVGNGGH TFGQDDNTIILFDENGHTILPRADKLTLA IV V IVANDVTQAGAGFGVDTN\|VRVYGKEGVESLPLQSKRSVA IIANDVGN DAVFGQDHNSVIITGSELELHLPEASKLDVA LVANLAQ AAMGADDNEIVLLDDAGQHPMPRMEKSAVA ILVANNLRTPGAGFAADTNVVTVLTPGETERWSKMGKDALA IVANDVSMEGAGFSGDTNIVNII DKDNDKEYPLMSKTNVA $\| V A N D V S S A G L G F G A D D N A A L L L W H A E R Q A D P A Q A K T D L A$ I A AQVGVVGNGFESDQNAATAYWQHGARSFPAVVKTQLA LVANDVSATDSGFGVETNRVTLLTPDGSTELPLMSKSEVA AANDVAKSGQGFNSEKNALTVFSETERFDITLATKKVVA L Vanlaa
I AANRVGVAGS SAMGADDNEVVLGDDSGQHPLPRMGKPDVA VLINSMKDKGAGFGTDTNKVTIISKDT\|KNFQLKTKVEVA LI ANDVSKDQVGFGYDTNQVTILTKDKEPELPLQSKITLA $1 \vee L N S L R D S N A G F G F D T N K V T I F D R S G T V E T G L V S K K K V A$ |VFADVSQENTGFAHDTNAVSLVTENQVETLPLATKNDIA VANDVSGD VMGGSENEIALVKRDGUERLPRMDKAAVA I AANWVGRPGTGFDSERNALEVLWDGGHTSLPDAPKADLA I VANDVSAASGVFGGDANEVRLVGADGVESWPRLDKSEVA $\| V L N S L N D E G A G F R C D T N K I C I I D R E G T T D Y P L K S K V E V A$ IVANNITTEGAGFDHDTNIVTVYAKDHEKRYPLASKKDVA IVANDVSHRSGVMGGDRNKVHIVSRDRVEEWPEAGKEEVA IVLNDVSKQDIGFNSDFNAVTVFDKEGKVAFPKMTKEVLS IVVNDVSQPGVGFDVDTNQVVVISRNGEVDRPLMTKANVA IV VAPIDQPQSGFGSEHNQAVFLDSAGHQVIPICSKLLMA LVGNDG PATFGQDDNELLLVDAQGVRELPRASKRSLA IVANDVSSAGGVMGGDSNTVHLVTASGVETWPTLAKSDVA IVANNVAEQDAGFRGDTNVVTILDKDNIEEHPKMSKDQLS IVLNSLNDGAAFGADTNKVTVFTKTGEKFFASKSKQAI A II ANDITLKDTGFSSDDNLVTIISNTGEVYDDKMSKRNI A IVLNSMRNEGTTFQTADNQI NIISATENKAFEKKSKTLVA VLNSMQDAQAGFGYDTNKISILERSGDKEFELKNKTSVA IVANDVIDEGAGFESDTNTVHVLTKDKVDSWPVMTKEEVAA IVANDVSQPGIGFNADDNAVTLIDRSAPQPLPRASKHKLA IV VANNI DSKETGFASEDNLVTII SKDGDKNLKKMSKREVA LVVNAVGEGKAFEVDDNNGWLLSADGETALAHGSKALMA II AANSVAEGK GFDRATNALEVVWQGGSQSLPEMDKKLLA $\checkmark V$ VNSLRDAGAGFRHDTNKITLEADGQTIFDLKSKAEVA $\| V A N Q V G N G K G F D K D S N Q V D I L T A A G G H T L P E A S K T Q L A$ IVMNDVSNKETGMNSDDNEVMLFRDGEQPYPKMDKQALG


210
QLIF ETI L S HEKE

HH I FDDINHHLDHHN
EA I L D Wi L P VL DAR
HDiVDRIVQL
YRLASKI AE YFQSR
HRLEYFI
ElILNKIVKLL
DI I L D T I AA M
SAIVRHLAALLAKR

VSII KTI F ER

HALEFDADLLENL
EHLLAEIENLLN


GQLLALI A E RFALDN
RKLADRLAEADALK
SKI FETILRK
RALVQQMAERMRGRQ
RQLI TEDSERL
DVI D DKI KT LL NK
ERLVSVIAERMDAQ
HVLLDNLLTRLDPR

HAI LDKAAGF DPE
ELLLDA IVERCAAR
HII EKMAELMK
$Q D V \vee D R V S I L$
RKLLTIAARRMK

HRVVDLVVSH
HRLFDFILENL


D
A D LA D Y L VRK $K$ Q
RQIMRUI SSL
$\square$ QLLDRI GSLLENK
ERLLALI AERMQ

EDIAAKI CKMLQKK
ERIWRIAASR
RTCINELAKEY
WAlVQHI A QML
KRIL VKLAAMRADGER
HIILDEIKRYFN
DAIVDRVLSLYANR
EQLLDLI AERLHA
ERVLERVASLWRS

RA $V$ S HL A R L L
QQLIALIAERY
ND:CEL:

HAILMRISERLQK
QNLAKRIAESFES
DALMDLI DERYH
ARLVARLAERL


GVLMDLI FEM
DRILTRVKALRNS
HQVLNLI
RTLIAAEATRL
ARLVERLGTLM

KDILDIV, V
RKMFDLLEEK
QDIIDEVEAQLQSK
QDIVSEI YA IL
D A L V A K
RQLI ABV A A RL

RALMA II SQRYQQ
RDIVRAVLARLPHPH
FEILDIINTVYQQ
AEIIGTVVKRW
EKLAAKIGAHFE
K G|LVAR|IANAMTDK

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UniRef90-M9RC39 UniRef90-E6TTP3 UniRef90-K2MPI7 UniRef90-Q2SN68 UniRef90_V1CJA7 UniRef90-L2F5H4
UniRef90-K9TC67 UniRef90-K9TC67 UniRet90_UPIO00347650B UniRef90_W5YE60
UniRef90_C7RHM7 UniRef90-B0T7C6 UniRef90-H1HA86 UniRef90_UPIO002D80E47 UniRef90-E2ZD42 UniRef90-S9Q7J6 UniRet90-TMHWR8 UniRef90-Q7VN50 UniRef90_UPI00047E2E2E UniRef90-M2P752 UniRef90_UPI000478FF1A UniRef90-M2U7D0 UniRef90_V6S7R9 UniRef90-N1MQ34 UniRef90-Q5QZB5 UniRef90-D1VSE8 UniRef90_Q15ZW1 UniRef90_UPIO003802F30 UniRet90_UP10003 UniRef90_A0A011M8P1 UniRef90 K2FT21 UniRef90-A8U9S4 UniRef90-J1KXU6 UniRef90-B0UR63 UniRef90-E6YNW2 UniRef90-H8W7B5 UniRef90_UPI000409E7E9 UniRef90_A6VSX8 UniRef90_G7LYE2 UniRef90-J8TNZ7 UniRef90-D3QDI1 UniRef90-A0A010ZVW0 UniRef90_N9YOTO UniRef90-UPIO00237C88F UniRef90_G8M301 UniRef90-A0JX67 UniRef90_17LB85 UniRef90-M4ZIN8
UniRef90-Q2JMS1 UniRef90_UPI0003F6F931 UniRef90-17LQX0 UniRef90-IIYS17
UniRef90 E8T2A7 UniRef90-R6GRH7 UniRef90-R5PDZ2 UniRef90-UPIO0021918E6 UniRef90_V5PN48 UniRef90_UPI000262D05E UniRef90_G5GQB6 UniRef90-A0A015NL81 UniRef90_AOA024K
UniRef90_M3VB20 UniRef90 C5BLG6 UniRef90-M1KKK2 UniRef90-A5P8P5
UniRef90 F7SQW7 UniRef90_A3ING7 UniRef90_J5KB50
 ELARLGANVRLITGPTSLKSNNNINRDDVVSCDDMLKEVD
 EVAKRGGEVILVTGVGIKESHENIKVKKIVSTQDMYEVVK AAAEAGAKVTLISGPVHLPTPERVTRIDVVSARDMLAACE AARDLGANVTLVSGETNLTQPVGVEFVQVTSAEDMFQAVK AA DMAGAEVTLVSGPSALPPPAKVDFHSVHSAEEMLDKVM AAHK LGAETVLVSGSVAI EPPAGVRVVHVESAEDMLQAML A LAAMGAEVTLVSGPVSLADPAGMTVVRVESALQMLNAVR $A A R D A G A R V T L V H G P C E L A D P P G V Q A H A V E T A A E M H A A V L$
$A A Q K T G A R V I V I A G P S G E F L A A G I V R W D V E T A Q Q M Y E T V M$ ALVERGAQVILI SGPTYDEVPKDVTFIDPVETAVDMYNAVM ALRDLGARVNFVTGPASVAPPDGVNVIRVETARQMRDAVQ AAVAAGARVTLISGPVTLPDPAGCDVVRVESARDMFAAVA
 A L L G L G A RVTFVTGPADVAAPDGVDLVEVQTAAQMDDAV EAAERGAEVILITGPTNIKPPHGVTTIDPVESASDMYDAVT A LA R LGAEVVLVSGPVSIADPAGVSVTHVESARQMRDAVE
 A A Q EA GAEVVLIAGPVSLPTPTGVQRVNVETAQQMLDAVT ACEQLGASVTLVAGNVHLDTPRNVARIDVVSASQMLAVCQ CALHRGAKVTFVGGAMAPGFQPGARIVAVTCAKEMQQAMLL ACALAGARVTLVAGPVGLPTPAGVQRIDVRSAAQMHAAVL
 A $\square$ AK $\quad L G A R V T L V S G P V S D P T P L G V D R V D V E S A R D M L A A C Q$ EAAKQGADVVLVSGPSNQKDHERVKVISVMSAMEMYEACH AAAA LGARVTLI SGPVADPAPAGATRIDVESAREMHDAAQ AAAKCGADVTLVAAPTDLVTPFKVNRVDVMTTGEMKEAVD A ARS RGAHVTVVLGPVGAVDRTGLEVVDVVGAEDMAREVLD


 AAFMLGADVHLISGPVNLTDP YIPITHITSAQELFEKVT VAAARGAEVVLVAANVEVPAPFGVRVVPVGTAEELRAMH AL A K L GA DVTLLVAGPVTLPTPPGVQRVDIETADQMQAAVE AAADLGAEVILVSGPTHLQKHGLVKVERVTSAQEMYDVCH AAAQAGARVTLVAGPVHLPTPDGVTRDDVQTARQMLGAVEV AAAHAGAKVILVSGPTQLPTPTGVQRVDVETTEQMLNAVQ RAKKRGANVTLISGPTNIEDPKVDNFVRIKTTQDMFDQVGG AAVALGARVTLVSGPVNLTRPVGVDVIDVVSAEQMHNAVM

 AAHEAGARVTLVSGPVHLPCPTGVKRIDVTSARDMHTEVM AAAEAGARVTLISGPVNLPTPTRVKRIDVVRAEDMYNASM AARNLGADVCLI STSKVLQKPYGVTLI QVETAEQMHQADN EAASLGAEVFLI A GPTHLKKNSLIKVVDVVSAQEMYDACH AAAERGADVTLISGPVALPQPEGVKMVHVETANEMLSAAD AAAAAGARVTLVSGPVALPDPKGVTVVRVETARAMLAAVE ALAANGATVTLI CGPVDLMDPEGVKTIHVKTACQMLQAVQ A AVA A GAEVVLVSGPVSLSAPAGVDVRPVSTAQEMLEAAS

 ALAARGAVVTLVSGPTALAVPVGVTRVDVESALDMQAATT A A Y L R GAEVTLVSGPTNLMAPVGIKTI HI ESAKEMYEAVT A L K QRGA IVTLVTGPTQLDDPQGIEVVHIQSAEEMFEEVT TAAARGAKVTLI AANTALPDPAGVDVVRVVSTRDLQEAVF EARDRGAEVTLVSGADFLECPKGIVELINVQTNSEMREEVL
 AARDAGASVRLLAAHMDVPAPAGVEVVRVETALQLREEAL A ARDAGADVTLVYGNIQAALDPGINTIAVKSAQDMYEAIA A A QAVGADVRLIAGPVELADPKGVSVTHVESARQMLEAVE
 AAVESGAKVTLI STQKADQI YGVVVVYVNSAAEMYQQVQ ECFKRGANVTFVAGPVABTTCSEGVNRIDVVECEQMYEACQ AAAAAGAEVTLI SGPTCLKTPYRVKRVEVESVEEMREAAL AAMERGADVIAI CGYVSVQLPKECTIVRVTTTEEMLDKTA ECLRRGANVTLI A GPVNLSCSEGDRRIDVESCEEMYEAAL AARDLGAQVTLIAAPTMLTVPAGVAYVGVDSAEAMRSABL AAAQAGADVHLVAGPCALETPCGVTRTNVQTARQMFDAVM ACYAAGAKVTLISGPVSLDTPNGVKRLKVSSADQMLDESM
 AARDLGAEVTLVATKSVGALPEGVHAVRVESAADMLGAVM A LIANAGAKVRLVSGPVTLPDPRHVDVTHVETAEQMLSAVL AAAQRGAHVTLVAGATSPGEPAAVDVVHIDSAVELEREMQ AALDAGAQVTLVSGP A AVRLGARVTLISGP MAAAAGARVTLVAGPVHLDTPVGVDRLPVQSADMREAVL EAATQGARVTLISGPVNLPTPVGVERIDVVETAAQMAEEAR A ASDR GA IVTLVHGP A A DEEGAEVILI SGP
UniRef90 D5EF74 UniRef90_UPI0004217D9C UniRef90-UPI0003793104 UniRef90-W0EMC1 UniRef90-E5V1H9 UniRef90-UPIOOO2556B25 UniRef90_A0A033V5M6 UniRef90-W2V6N2 UniRef90-W4F010 UniRef90-Q2WAW9 UniRef90_UPI0004769D81 UniRef90-A4BU24 UniRef90-BOK294 UniRef90_UPI0003B5FDB6 UniRef90-UPIO0036D5255 UniRef90-D2PV85 UniRef90_Y5PIG4
UniRef90-M9RC39 UniRef90-E6TTP3 UniRef90-K2MPI7 UniRef90-Q2SN68 UniRef90-C0N8P9 UniRef90_V1CJA7 UniRef90-L2F5H4 UniRef90-K9TC67 UniRef 90 OPlou0347650B UniRef90_W5YE60
UniRef90_C7RHM7 UniRef90-B0T7C6 UniRef90-H1HA86 UniRef90_UPI0002D80E47 UniRef90_E2ZD42 UniRef90-S9Q7J6 UniRef90-TOHWR8
UniRef90 K1LXE5 UniRef90-Q7VN50 UniRef90_UPI00047E2E2E UniRef90-M2P752 UniRef90_UPI000478FF1A UniRef90-M2U7D0 UniRef90_V657R9 UniRef90-N1MQ34 UniRef90-I3ZX79 UniRef90_Q5QZB5 UniRef90-D1VSE8
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UniRef90_A0A010ZVwo UniRef90_N9Y0T0 UniRef90_UPI000237C88F UniRef90_G8M301 UniRef90-A0JX67 UniRef90-17LB85 UniRef90-M4ZIN8
UniRef90-Q2JMS1 UniRef90_UPI0003F6F931 UniRef90_17LQX0 UniRef90-I1YS17 UniRef90-E8T2A7 UniRef90-R5PDZ2 UniRef90_UPIO0021918E6 UniRef90-V5PN48 UniRef90-N8ZKZ4 UniRef90_UPI000262D05E UniRef90-G5GQB6 UniRef90-A0A015NL81 UniRef90_AOA024K
UniRef90_M3VB20 UniRef90-C5BLG6 UniRef90-M1KKK2 UniRef90-A5P8P5
UniRef90 F7SQW7 UniRef90-F7SQW7
UniRef9 UniRef90-A3ING7 UniRet90_-Q9RWT6
UniRef90_Q9

EKMDFAK ${ }^{90}$
100
110
120
K S A AVISDYRAASIIEMEKMKREGKDTVQNPD

 ENYKDCDIII KAAAVSDYTPVEVFDKKVKKQTDQFKRTPD A AMP CDLLI A A A AVADYRPEVVAQHKLKK SRMNDMDMI K A A AVADYTPVETSEHKMKKKNGTFKRTTD H HLK S D M Fi GTAAVADYRDQAPEPEKDKKSKQNGDPNPD
 EALEGTEVFI ATAAVADYRPATPAAQKLKKTREELERTPD QHI EDCDI FI GAAAVADYRPATRSAEKIKKKETRLVRNPD MHLNEVDI VI GAAAVSDYRPKEMKKEK IKKDEEKLTDKNP AALP AD AVMAAAVADWHVTNESGLKMKKDGSGMAENPD RVLP ADIFI GAAAVADWRVEAAAD KDKKRQFSLVENPD GRAADADAIVMAAAPADFRPADVAEHKIIKKTEDQLVQNPD
 KHFEGQDIVI KAAAVADYRPKTTFDHKVKKQTVEMERTDD GLLP ADAGIFVAAVADWRPETETGEKIVKKKGEATENPD
 KNLDENQVVI QSAAVADYRPRDYHEHKIKKSDDDLTIVLE
 EASNGAD\YI A A A AVGDYRPQQVAPCKLKKQAGTLAENPD HA LP CDUAI CTAAVADWHVA PAAQK KK PA LQLAPNPD RYFDSSDALI MSAAPVDYRVENPSDRKLKKTGNNDLDENP AALPADVGVFVAAVADWRIDEVFGVKGKKDKGGPPENPD QYYADVDAVVAAAAVADYRPKEVATEKIKKF IIEMDKNPD RLAGDCDLFI GCAAVADYRAEAPAEHKLKKQDGEDTLTDR RLYDDANIVIKAAAVADYRPAVRAQQKIKKNDDKDTKNDD ARVEDVDLFI ASAAVSDWKPQTRAEHKVKKTEGPETRTPD GALPAD AVMVAAVADWRVAQAADQKLKKRGSQLIENPD
 KATSSCDLFI ASAAVADYRVVNRATQKMKKEVGQDAQNPD E $\square$ SNDYDYUI MSAAVGDYTPIDTYTEKIKKESDTMKKTND A EAKEADVVVMSAAVADFRPATEAATKLKKGSAAEPRNPD A A LDP ADI AVMVAAVADWR TDAEPRKMKKAGSAPPENPD QYFNEVDVAVAAAAVADYRPKNVASQKDKKNEEAFSDEDE SADP ADAAI MVAAVADWRTADAADQKGKKDGSGQPENPD
 KYFDNADVLI KAAAAPADYKPAKYYSKEKDKKEQNNQPPQLN
 SALDPADDGAFFTAAVADWKVIKTKNQKLKKQNGMVPTFED
 AVVDECDVFI ATAAVADYRPSVTAEHKIKKSTEEIHVKNP KEFDKASIIIMAAAVSDYRPKKVETNKIKKNEQEMIKNTD
 A A DP A D A I FAAAAVADWRPAAETGEK KKGPGGPPENPD

 RSMNTQDVFI GAAAVADFKMKAANNQKMKKQSDTDEDNPD KAFSDADIVIKSAAVADYKPKNYSTQKDKKADNDFDRDND AALP ADI AVLSAAVADWRVDTVAGGKIKKAPGGPPTNPD S L Y DEADV VIK SAAVADYRPAVTYTQKRKKWADEMDRTKD ARYQTQDVVVKAAAVSDYTPKEVQPHKVKKKQDGEFKRTPD KHYKNSDLVVIKSAAVADYKPKNYSKEKI KK T GDEDLERDND K LI T S CHAAVFAAAVSDYAPSDVSAEKIKRSTDHLKANPD
 TNFNDADVLIMAAAVGDWRAKTVAKNKLKKQADQFVKNI D A E LDPA AVVAIFAAAVADWRVAHEGGQKGKKPADQQLTENPD
 SSFVTADVFI SVAAVADYRPANEASQK KKKEGSEGVQNVD
 EYAVNADVIIMAAAPSDYKPVYFSDNKI KEDHVDFVKNP
 ADVSHNDMFI AVAAVADWRVRDVADNKIVKKTGEEFVKNPD QMLDKCDI FI ATAAVADYRVAEVAEHKIKKAGDELIKNPD
 A E Y D AVVDAVI K A A A V A D D Y R P A ETAAEHK A SLIP A DGAI FVAAVADWRAAAIAEHKVKKSTDHEVRNPD ARAVDADVVIMAAAVADFRPDSVAGSKIKKGADGPAPNPD AAAESADVVI GAAAVADYRPQVAAQDKLKKHAGEPMQNPD SVFDSCDMVIKTAAVADFTPAAVSDHKMKKKDDEFNRTAD NALD AD A AFMVAAVADWKSRHVAAEKMKKRGSAPPENPD $T$ L A P H A A LIF IG C A A V A D Y R A A S A A E H K I K K K T D D S D T K N P D


UniRef90 D5EF74 UniRef90_UPIO004217D9C UniRef90_UPI0003793104 UniRef90_W0EMC1 UniRef90_E5V1H9 UniRef90_UPIO002556B25 UniRef90_A0A033V5M6 UniRef90_W2V6N2 UniRef90_W4F010 UniRef90_Q2WAW9 UniRef90_UPIO004769D81 UniRef90_A4BU24 UniRef90_UPIO003B5FDB6 UniRef90_UPIO0036D5255 UniRef90_D2PV85 UniRef90_M9RC39 UniRef90_E6TTP3 UniRef90_K2MPI7 UniRef90-Q2SN68 UniRef90_C0N8P9 UniRef90_V1CJA7
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UniRef90- F7SQW7 UniRef90_A3ING7 UniRef90_J5KB50
UniRef90_Q9RWT6

130
140
150
160 I A A EVVGARKS P D QULVVGFAAESSHLVVEHAKEKMLRKNLDLD LA HI G Q K K S A E Q L L V G F A L E T D H E V E N A V T K L K R K N L D F I I A R V T D R P A P PFTVVGFAAETRDMARYARDKLERKRLLDL AAELGHRKRAGQYLVGFALETNDEESNARSKMAKKNLDF LKYI GEHKKENQIVVGFAAETNDLIDYAKEKIKKKNLDY LA T L A T R E D R P F S SV GFAA A E T E N L L E Y A S S R K L K D K N L D L I L K Y L GEH K DK QY LV GFAAETNNVEEYAMGKLKK KNADV I LATVVASGQAS YVVGFAAETTDVVQHAKEKLQAKK LDM I L LTTL GERKKD QLLI GFAAETNDVLKYAK GKLLEKKNANY $L M T V S K A E A P P R L V V G F A A E T E K L M E H A A D K L A R K G C D W$ $L A D V A R R V D A R P L L V G F A A E T D N L R E Y A R D K L V A K G L D L$ $V Q A V A A L D Q G R P F T V G F A A E T H R L K E H A E H K R C H K Q L D M$




 I LA GVVGHHGKRPALVVGFAAETQDLLDDNRAKLDRKGADM L L A DVVA A A P N A P P F TVVGFAAA E T Q K VV E E Y A R G K L E R K N D N L IVSSVTTSQPDLTLFVVGFAAETRHIADYAREKMQRKKLDM RNKDVAHKVKGDRILVGFAAETDDVVANAKRKIEKKNLDF

 LL ATL GR S GPTARPLVI GFAAETEHVLAHATAKARAR GCD W DIVKYFA S K K N K QKI I GFAAA ETVDLVVENAK DK L K R K N L D Y LATLSASGPRRPLVI GFAAETNDVEMHARAKLARKGCDW
 L V K N AVV ARADRPFVVGFAAETARDLAAYAHDK LARKGG DM




 $V L V E L V A E R A P G R L V V G F A A E T G D D E T H A R A K L A R K G C D L D$ 1 L A E L SR HAERPALVVVGFAAETHNDEAHAAAKATRRKGCDW
 I L K SL GETTKKENQFLVGFALETQNAIGNATQKLNHKKADM $L V Q N Q V A S S E K P P F T V G F A A E T E N L K A N A L R K L E R K Q L Q M$ DI A K Y Y GSSKK SK Q I IVVGFAAAESTNNIMYEYAAKEKM N S K N L D M








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





 ELVEVVRAANKPGQLIVGFAAETGDAHAYAEAKLRKKGCDLD

 I L T E L V E R R R P GQLLVVGFAAETGDPDLH H GRAKKLARK GV D F LSEI GHSKSSNQFVVGFAAETNNQMAYAQKKLKTKQADM IA A L G QQ K T S R QRIV A FA L E T N N E E T N A S A K L V K K N A D F
 A A S L G KLLK DE RQCLI AFA LIETDNEEQNAMHKLKKSKNAD F LA ELGQQQKQ QQFLI GFAAETQHLLDTYAQKKLASKRVDM $L A A V A Q L P N A P Y C V G F A A E S G D L E K H G A D K R R R K Q V P L$ $V A T I A Q Q E K R P F M V G F A A E T R N I D E Y A A G K L V A K K L D D M$ I H S V A T C P D R P G LVI GFAA ETESVVLE HAREK LI A K S L D A Y ELGGQR KRHQLLVGFAAETENV AEYAR GKM AKKNNLDF KTADIA GRRKSGQFLVGFAAETNDVAVYAMDKLRRKKCDL L L A T I GH H A Q R P R LVI GF A A E T R DV I E N A GAK L R S K G A D W
 I L K E L G E R K T H $\quad$ Q L L V GFAA A E T Q D V E R Y A R R K L 1 LAAVAAGRKRPHLLIGFAAETENVVENAKSKRKRKGADW 1 I A DVV A L P G NRPFVVGFAAETQNVARYAEDKLTRKGLDM

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UniRef90_Q2WAW9
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 | $V$ L $L$ N S L Q D E GA G F K G D C N K I

 IV A A N D I
 V I A N QV G N GLLA F D K D Y N Q V T I I T K D G Q C E L A P F S H K T R L A
 IVA N DVVSE G S GTF G G D A N TVV HII D G T G T E S WP A M S K D D D V A A
 I VA NDVTTQK GAGFEVVDTNDI KI DDR DNDKE YPDMTKDEAS
 I I ANDVVEAA GVVFGGDANEAHLVSRSGVESWPRMSKAAVA $L V V N D V S \quad G G K V F G S D L N E A V V L D R D G N A P V P S G S K D A L A$ I I SNNVGD QT I GF QS D DNE LTMHFK D GQRDIGK GK KVQLA $I V A N D V V P S T G D M G G S E N D V V L I T A D C S E D W P P M G K D Q V A$ I AANSID DPGTGFQSDTNELLLYKRDGQTVIPMTTKKEAA I VANDV SHDS GVGPGGRNRVVIVGRDGHEAWPEMSKDEVA



 I A A N QVGE GL GFETADNALTLYWNGGSRELDRAGKA E L A A


 I VLNS LK KEGAGFGKPTNKVTFIDKDNDEPKELKSKEEVAA

 I I A N DVVSGD VVMGGDVNAVHIVVRAD DVIDSDPEMPKEDVAA
 I CANNVANGQVVGQDQNALHLFWREHQKILPLANKSDLA I C L N DV S G GKVVFGESENEMILFTQS GERPLLKKAKSEI A IV C N N L K V
 IV L N S L N D D E G A GF G K P T N K V


 I A A N DV AK S G Q GF N S D N N A L T L Y S A D D K $\quad \mathrm{E}$ E L P L A N K H I I A

 I ATNDVSGENVGFNSDNNALTVDWPGGHKVLPDAAKMRDA

 $V A N D V S A G T G D M G G D R N T V L L I G R D G V E T W P T L A K D E V V A$
 I A N DVVSVP GLLGF S S D R N AVVTVFWPA G S E S I G P D S K Q A I A $V A N H V A T P C G G F$ G T E E N E V $V$ T L F R A D G S T R L P R Q S K Q K L A


 VANDI S QE GA GFKGDTNEVI I YTKD
I SN NVGDTS DGF S S D D NELTMMHFKNH Q DD DS K G K K DDVVA $V$ VNDVVS GKA FESTENAAVVLAD D GTTEVPHGP K EVVLA


 $I V A N D V S Q N V F G S D E D Q V T I L A Q N K Q E K W P K M T K K Q V A$
 $1 \vee A N P$ D QPDS GF G S S H N Q GYW $L L V N V V G D G L A B E D V D N S G W L L G G D G E R R D P V G S N D L A$

 AVANDVTES GAGFDVDTNVATVVTRSGEESLDMMTKARLA IVLNS MRNK GTEF QSDNNQDTI I G S DRKK QFPDMS K IEAA I V ANDVASAHAGFNHDTNEVTILQPNVEQTLPLASKQVIA $L V G N L G B P A T F G K D D N E V I L F D E A G Q K R L P R A D K A S L A$ I ACNDVSRADDGFASDENAMIVFFADEKRELEKASK QDIAA
 I V A N NV A EK D A GF GVVATNHVQI FYAD GREDHPLMPKAELAA I VANDVTAEGAGFNGDTNVVQLFDADGAAQWPMLTKREVG FANDVVNDAGVFGGARNHVHLLSSNGVE DVGAGSKAEIA VVNAVGD GKA F GTEDNT GWVLLTAD GRETLLPF GSKTLMA I ANNVAD GGVFEQDENEVTVFSRDGTVSFARRGKKQLA VA N DVVK A E G A GF G T D T N VV T F Y F R D G R K E L A L M S K L D V S I A N NVAE GESVMGGDLNQVHVVTSGGVESSLAEMPKEEVAA
IVANDVSQQGLGFGSDNNAALLLWRSDQLEAPPQAKTRLAA
I V A N P 1

210
WGVLNTVISEMCKEENR





LELLFKTI LAR
RNLAARITTKALGK
RELITLI AERLQ
RHLI EII SERYHAQS

A QL 1 ARLAD!LD
GVI WNLVAS RWH
$\begin{array}{lllll}Q Q Q & L D E E L & E & T & R W Q \\ Q R & A L & K & A & E\end{array}$
KKL LDNTLE IYMEKQK
SRLAALIAETLEKK
GQLMSQ।VRQYQK
RDLMTLI I ERFYAKN
D IIDDKVLAMAEKR
EQLADLI GKQLAKK
H HLGDFI QSL
RELVACVAERFQ
HRLVARIATFLQ
NKILDLL
RDLAQR A E S D

ERII DRVID DYNKKN
RALLELV
RALVERFADAL
FELWQAlLT
VSLVE EVVNLFK
QQILEAlVTLF
Y DI L
AGIWAADSTRLD
RRLATRIAD H F T K
QDIVNKIVKQY
DKLI AKVADALSAH
KDiLNYIAQ
DK\LNRワSKLFS
$\square S L L T L V A Q R H A D K$
KQLVNLI NQHYLAKD
ETLVEKI SQSFEE
FQUL S LLESSRWD
$R Q L \vee A H I A G L L A K R$
K QLI ELIAIRHK
EEILAVALTKMKK
ADILNKVI QHFSKSS
HRVLDKTLELF
RRLVAHLAEL
EKLASVIVSFFSS
A RLVALI AD H
HELL
NQLVEF $\mathrm{V}_{\mathrm{Q}} \mathrm{QQH} \square \mathrm{KSSS}$
SNLFD IILEK
SRLADRIVDHFAE
QR LDEDETRWH
DTIWDLVAPRL
RSIFDNILE



HRLLD A ARQLE
STLWDAVARATAGRDR
RLI MNRI GQTF

DVI L DKI
GDIVDEMVEVISHKS

QQLVEA SDAINQEQQ
QEI FATLSPLLAKR
GVI LDRLEDVLK S
LRLMRLVAER
EQIVSRISTFF
SRILDEVAA
RGLI QWIAAALAEK
FEMLKEMTALKAEDR
RELVRRAAEALAE
ALI I R H




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UniRef90 W8RNW UniRef90-W8RNW3
UniRef90-UPIOOO40E2EC5 UniRet90-UPIOOO479207A UniRef90-UPIO003066A45 UniRef90-A1SJF8 UniRef90-J9DVEO UniRef90 UPIIOOO37B158E UniRef90_UPI0003B43768 UniRef90-W7DN68 UniRef90-LOEET5 UniRef90-D1BH12 UniRef90-Q3AQ58 UniRef90-UPI0004641D23 UniRef90_C5CSV2 UniRef90-A0Ао23X319 UniRef90-F7XVD8 UniRef90-W2BSFO UniRef90-UPIO0036FBEF9 UniRef90-V2QB14 UniRef90-UPIOOO38241CA UniRef90-EONQ77 UniRef90-UPI0003706DD9 UniRet90_C7R4B5 UniRef90_-19MED9 UniRef90-UPIOOO47DD39E UniRef90_LODUSO UniRef90_Q3B1M8
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UniRef90-R4VDC2

90

110
120 KEFDDCDALI MSAAPT DYKVREVSDKKI KKNNDELIENDD
 EAAGDADAVVMAAAVADFRPAAYQGSKIKKTPGGEPKNPD A GLP GA DVFI AVAAVAD WRPAEVAS QKLKKANDHFVQNPD N E F E N A D I I I M A A A V
 QALP A DAGVFAAAVADWHVEGAGDRKLKKSKDGFAENPD K HAPEA HVLVMMAAAVA DFRPA QVVHTSKKIKK SAPDPDVAPPP Q EF WD S Y A L V MVVA A V A D Y R P E T TA A E Q K I K K N N S E TVVAKNPD TEVKKADLLVMTAAVADYTPEKTLLSAKLKKSNKPLQLDLK S Q I S R H D L A I F T A A V A A D Y T P S K I I A E H K L K K T E D R M A L
 KAAGNVDAAVFAAAVADWHVANAGDSKI KKPKDEFAENPD D A LPA D A A I F A A A V A D WHVT S A S D SKIIK K D $\triangle N G \square P E N S D$
 A ALP A D A AV FAA AVA D WRVASASTHKMKK EAGEFAAENPD QLLPADAAV F VAAVAD WRTAGTAGEKDKKPAGQMVENPD




 K Y WK NS DVII K A A A V A D Y T P REKYD N K MK K H D G D L S $\square P$ L K
 GALPA DAAVGFAAAVADWRVATAASSSKIKKQAGEFTENPD ERA GES DVI IMAAAVA DFRPDTAQADSKLKKTTVVHLVENDD QRAKDYDI FI SVAAVADWHDPYPSEQKIKKNNWEFQKNPD A S V
 THFDEQDIVFKAAAVSDYAPAEMLEHKLKKQDVTHKRTPD
 QYFEDVDVAI A A A A V S D Y K P K N RTDQK DK K F VIDEFTKTK D K N WS Q M D M G I F A A A V A D Y R P A H S E T Q K I K K T Q D Q L E D N P D D A A LDP A D I A I MVVAA $V$ A


 $D K V A$ G S T I I I K A A A V $V$ A D Y R P A S RA D L K I K K S A E E L E K N P D K EFKHSNVVLIMAAAVAD WRMK QVADHKLKK QA DQQVVKTTD $T V L P A D A A V$ FAAAVA DWRVANAAA QKMKKDGSGFAENPD ALPADAAVFAAAVAD WRVTAQSEAKDKKQAGELAENPD GRAQGATIVIDATAAVADWRPAAPSDQKIKKPQLEFTENPD TAAA GS DVVIMMAAAVADFRPDTVGEHKMKKSEDGTDPNPD A GAASADAVVMAAAPADFRPVDVSEAKDKK DVDGSACNPD DALPSH I AVVMTAAVAD WRTTNTAKDKIKKQTDELTMNPD A E A A S A D I F I AVAA A A D WY VK N A S T Q K I K K P Q L E F E A N P D
 S N DP V D D A V M T A A V ERFDAADVVVKAAAVADYRPAVRRTSKMKKKEDELEKTPDD

 HAAQSASI FVATAAVAD WRPATHSEQKIKKDGSGKTPVLN
 SLLP S NDI AI MA A A PAD F SVVVEASSKKI K K DGDQGQQTED
 K H S $\square D V D$ AVI MA A A V A D F R P A E V A V A K I K K GA D E P E S I P D
 HLG S E A DGLI MAAAV S DYRVAKVAD HKLKK QEKE LQ K N P D
 A HYNES DIVVI KA A A V A D Y R P Q S TA E H K DKK K T G D T L Q R NP D K E F E GA D ALI MA A A PA D F TP A E Y S E E K I K K E D S D N H D DK D

 A A A A A A DVVV MA A A PA DFR PA A VA GQK IKK SAADELVT NP D
 E EFSSSHD DVI K A A A V A D Y R P KVTY DNKMKK QQQVEMERTK D EA LP A D GA I F V A A V A D WR S D H Q DS K K LLK K NK HK MVV N P D

 EI A A NHDVFI GAAAVADFRLKEVASQKMKKQADSDEMQPD A ALDAD AAVMVAAVAD WRV EAAGQKVKKDGGTLVVENPD THAPGNDVLIMNAAVAD F RPATDENSKIIKKREDESSVRNPD K LFP Q S SL AI M T A A V S D HRP P FL G K K K V K K D E F K F I R N P D A ALPADAAV MVAAVADWRVAQASGQKIKKGNGTLAPNPD
 ETFGRSS I A I F A A A V A A D Y R P E E R V S G K I



Unepoogsi
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190
200


 $L V V N Q V G E N L A \quad F G T P D N A A V V L D A D G S V D V P R G A K E E L A$ LVGNIGH HT FGMDDNEDVLFDAHGMTRLPRADK LT L A I A N D DS N K N DAF G S D K N Q V N I L S E K D S DQQ P LAA E K E E L A



 I I F $\operatorname{F} N \mathrm{D}$ I I VAN DVVSRSD GF D S S E N E V T L L V Y P D H S E T L P P Q D S K E H L A


 I V A N DVV HP T G V V M G G D R N K V R I V S K D GVVE E WP EMMK G E V A

 LVGNIGHQ TFGKDENALTLTDDKGHTSLPRADKQTLA $V V L N S T K E E G A G F Q H D T N K V K I F S K T G V V Q S E L L P K S A I A$ LVVAN RVDEPGQGFGSRDNQAMLLSNCGSDADPLVSKDEMA $L V V N A V G E G K A$ FEVDHNDGWLLGADGSESLEHGSKALMA




 $\| V L N S L R D E G A G F K N D T N K I R I$ FTRTGKKEFDLKSKDEVA $L V V N A V G D G K A \quad F G T E D N T G W L L A A N G E T S L P Y G S K T L M A$ I I ANNVGDRS $\quad$ NGFSSDDNDYTMYFKNGNMSLGKHKKVILA
 IV L N E I GEP GVGF GTD TN SVVKLI FKNNKRSEELQQSKE QLA


 I I A N DV S N S R DGFN S D H H QVV T L L T K D G H V V P E K S K E E L A $L \vee A N L G$


 I V A N DVVS AT GIM G GTENAVHLVTGEGDEDWPRMNKALVA $L V G N D G P D$ TFGQDDNALLLVDEQGTTELTRASKLSLA $L V L N E V G T D K V F G R D E N E V V V L S A R G A E E A S R G S K D E V A$ $L V V N D V S \quad G G A V F G S P E N Q A V I L A A D G E V E V P R G P R N A L A$ L MANNVSPES GVVMGDFNTVHFLTQTSEESWEMLSKHDVA $L \vee G N L A Q N$ $L V I N R V G W Q E G F A V D D N R V L V L D R G G D D V A E A G S K M S V A$ I VVNDVVSPDTK $\square M G G V E N E V T I L D S S S D K$ QHFKRADKREI G I VANDVTAPGAGFDVDTNAVSVFDAAGRTEWKVMPKQEI G




 $L V L N N V S D G N V V G K D S N E V I I I N S E G V L A E S Q G E K M S V A$ I A AN QV G GDQGGFERAENALICLDWREGRRVLDMMP KTRRLA I A A N DV S R K D $\square$ GFNSMDNEVVTEFADGHTHTGRQSKQDIAA LVVNAVGDGKA FEVVDHNDGWILSNGGESALEHGSKALMA
 $L \vee G N L A Q N$

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DTVWDLVAARLKPRS
RDLVAAI AQRL

| $H K$ | F $D Y$ | $L$ |
| :---: | :---: | :---: | :---: |
| $S D$ | $V$ | $L$ |

DVI LD HVVARLDAQ
SRIVDA VVALLQNH
K I L L N K i
YEiVKRITDRY

ATLADRIAEAL
ELLASRI
HELYDLILR
RKLAERIAAAL
ARLAALI AERLQA

| $K$ | $D$ | $L$ | $M$ |
| :--- | :--- | :--- | :--- |
| $A$ | $Q$ | $L$ | $M$ |

ARLBDRI A Q AL
RQLVREIAHRLSASS
KMILNEVKKL
HRLLDRLEK
SRVLDAV D QLF
RTI L RLI K E KI M D K
HWLLSHI A P QL
ERLAQRI
ARILDAAVA
DKLITAIHKRFNK
EQLVAEI AKRT
K DILD DVEHQL
SRILDEVRALLDPD
EHILDSLETRWE
WRIVDWLARR

R RLMEK M
QKIM
HMI L DRVAVMME
ADILTLI HDEL
LNIWESLLE
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HII LDRAA
QKLLQLI A QKT
RRLALRI AEAL
RRLAQRLAEAL
$R R L V Q E I A B R M$
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H II WDQVASRLQD
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RRLVAEI A A RLD K
DRILDVVA
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LR R MR LAAERLADR
A ALVDQVLAL
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FKLL
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EEI I HYVIDQLTKK
NHILNTVVHLLS

PALI RLI A ERMAE
GKLLEAVSR $\square \mathrm{M}$
WRI WDHV
DRIFDEILAL
DAI WDEVAGRL
WRLWDHLL
REILKLILRDMKD
QKLALKI ADFFSK
RQLVQHI QQL
RRLAGKI A A EL
EDIMKMVCEHL
K YLVTLI Q S QYQAH
$E G L A Q R 1$ A DA LQ
RVVIEQI
ADILNQV
R RLALDI AEAL



| K | D | L | N |
| :--- | :--- | :--- | :--- |
| S | E | L | L |

SELIELI GARLDA


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 | $E V A$ |
| :---: |
| $S$ | S RWA A A DGLVGAAAVA DQRPETYAAEKVKK GEGPETMTPD D NLK D H DVVIA A A A V S D F V V E K S Q S K I S S Q K E Q T L K L K P K HVVTDK DIVI MSAAVVSDYRSA HPADQKMKK D QLSNQQDGLE A HFATA DLVVLMS A A V A DVK P A H Y S D Q K L P K K NLE L A P P V P D


 R Y L S S S M T I A V C T A A V




 A A A A D S DVVI MS A A V A D F R P A DVV D T KI K K R E G H S DP NP D
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 H A A A E A D V V V M A A A V



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HRILDLV
A QI MDEVVELM
RAV VQWWAR RLES
ALIMDKMAEKIN

HVILDKALSM
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HDIFTHIVA
ARIWDG| ESL


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NVILDKI QE
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D
H HLLDEIKQL

GQII AIMAVTLQ
ARLATRIAEFF
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HD V VAVLARL
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 A A R D L G A E V T L L Q A A V E V P A P E GLV R VV E AVVSA A E L EA A V A

 VA A QR GA DV HL I A G H T DLLPTPS GAR V T R I S S A LIE L K D A T E I A A Q R G A R V T L V A G N T D L H T P S G A E V I N I V S T Q D L Q T E M E A CDVA G A DVVLI A G K V A L P T P L N V T R I D V L S A Q E ML I V A Q






 EAF DLLGA EVVTLI K GKTEVVLPHKGDKI I EANNHEEME QNVL
 A A A D R G A DVVTFVVTTMMPPA DLA QVVVVVSVESADQMRDADL A A A DEGADVVLI SGPTHLKKHERIKVVVHVTSSSQDMYTACH





A
A A HR L GADVTLV
A A L Y L G A DVVF H GPQREQLPA GCCCVVSVTTAQQMHKAVQ
 A AVAT GFEVVVYI A GPVVVVEFVTGAQNFSVTSTDEMQAAVG CA WL R GA EVVTAV CGPVRARMPQGDARRDVVVARDMFAVAA A L L E R G A Q V T V L A A H V S R D DT P G A E V V I P V S S A R D D L H E A V L

 A CAE A GAEVLLIT GPTHEQTPPGVSRLDVLS

## CB513 <br> 

## \section*{A}

A A GLIEMGASVVYY














 A A A E Q G A R V T L V A A A H V $V$ A D A L P P EAYRLGANLKILAAHHEVEIPKVFDVIDDASSSVMSEKTI TAAARGARVTLVAANTSLADPAGVDVVRVSTTAELRTAVR EAYYRGGKVTLI HGEDIKATLNPYYESIYSETTMQMYQKVL







 EALHRGAHVTLVTTASLPDPVGADVVRVETARELQDAMT A A V QR GAEVVLI S GPTATLKPPAGVAF CPPVKSAQEMAAADL

 VA Y F LG A K V E F I S S Q F P F I L P L N L Q T Q A V Q S T Q E Y L E A I K EAVDDRGAQVTVVHGPTCLEPPRRALS DRVVTAEEMAQVAA ACYDA GAEVTVVHDGSALSEDEDVHYADVRQAEEMLAAVE


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



 KEVPNYDYFFMNAAVAD $\square$ K $\square K K \square \square N H K V P K N N L K D H L V P D$ RLQDGADAlAMAAAVADHRRRRPEGRKLAKEALEWEPVPD NELDNTD LDMAAAPLDFRPAVYSDKKIKKQNINS DDNSD
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A PK $\square \square R \square K 130$
 VI A VLGESKRDD QWVVGFALETDDRRFRATVKLQKKHCDL

 I L K GLVVAAREA GEIVVVGFAAETGDEN DLA QAKFERK GCDDV



 $V L A B E A R R L R P G Q V V V G F A A E T G D A T D H G R A K A R R K G A D L$


 $V L A N C K K T Y P N D F A G G A A E S Q N I V D Y A Q A K L V K K N L N M$ I L A E AVVRQRDAELVVIVGFAAET GDADHAARAKL ARK GCDV



 $V V A T M G A K K Q A A Q W V V G F A L E T E D A R F R A L V K L E K K N C D L$ I I HQ IIS THQKRPK LVI GFSLLESENVVENSLKKLIFNKKCDW
 $I L S Y V S N H N S M R P L V I G F A A E T D E L D E N A K E K L N N K N C D W$
 IL A E LS A HRRRPGQLVVGFAAET EDVLAAHGRAK LARRK GCDL RV S KLK A K S GWPRVVIVGFAAES QKLIVNAQSKLEKK GLDL 1 L K TMAARNRPRAI LI GFAAETHETEKYAGGKLKDKELDDM IL Q S L A E Q R A P G Q K L A F A A E T A P D M N A A H A K I T R K K A D L L LA D S SHRARAGQLIVGFAAETGDAGDYGREKARRKAADLL

 IV S AV HRDSRRPRYIVAFAAETHDHLATAGTKAQRKGADV L V K N I REKNDRNVLRI GFSAETHSLN ENALDSKLNRKS LDD Y
 I LAAATTHPHRPPVIVVGAAETGDVRALGADKARRKGADL
 I I A EIA KA APDAI TVVGFAAEPSRSLDAARDKLARKGLYA I L K EII S K K K S K D QII I G FAA A T Q N II E Y GK E KL E K K GV D C

 I LA E LGADRKP GQLIVVGFAAETGDDGDYATAKLERK GADL



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 I L A LL L GKTKK DHPAI L G G VACR G N

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 $\mathrm{K} V \mathrm{~S}$ L A V R D A A P Q A L H I G F T A A P V S D P P E E A K K K


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$\vee \vee A N T L R$
170
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 I A ANDLKELQKTMGEDQAEVVILDKKQEKILPKMEKKLLA VVANSTE VFGNDNSSVTILSKHQTKQYNNKSKSETA LVANEVGDGVT FAQDSSTAHLLRRDDVVTVGPAPKSHIA VVLNSLNDEGAGFGKATNKVTFIDSDNEEPMELKTKEEVA II ISNTI INNEQVMGNDYNKITIITKDHYQEFPIMSKKDIG LAANLAQE ADGAEEVALTLFDDSGRHSLPKSSKDEQA IVGNYVGKDSKGFGDGDTSVVIYGKEGSKEDGPASKEADA IVVN
iAna TNTINNOVM VGNANIUNNQVMGNDNNQITITKDKNYKFPIMSKKDIA VGNDVVAGKGFGEVDSSVR:FSGKGEKEIGPLPKEKIA LAVNAVGKQL GFGDVPNALVILDSQGEEVAKAGTKDEVA TVYNTVSE
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I VANDITAVDAGFAVDT
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| UniRef90_D5UAN0 | E EIVNTIAVYE WK K K N |
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| UniRef90_Q7V359 | NNLIDEIIS |
| UniRef90-A6Q404 | LD L A T L A K A L D E |
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| UniRef90-H5UV06 | A AVWDAVEEAL |
| UniRef90-D8EWK1 |  |
| UniRef90-U1MUE5 | R A I I C VA QRL |
| UniRef90-B9NZV0 | NKLI S Qil |
| UniRef90-O28628 | ERIVEAYLE |
| UniRef90-C3XKQ3 | FKILEQ |
| UniRef90-G0EFA4 | R R L L D \( |
| ) A L A A LRARRK |  |
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| UniRef90-B8D3H7 | R I I GDFISRRLQA |
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 WNDRRVIVTGGGTDEKDDDVRYLSNFSSGKMASS $\backslash$ AT
d【agrhvVVSAGGTREPLDPVRFLGNRSSGKQGYAVAA DRDLEGRRALVTLGSTREWLDRVRFISNSSGVMGLEAAL RDFEGVELLVTAGPTQEFLDPARVLSNPSTGLMGVLLAQ

MG| A I A N


GPGAGRRVVSAGGTHEPDDPRFMGRSSGRGVADAS WSKQRVIVSGGGSKESVDEVRYI SNRSSGKQASYLAL


RNEKVVIT T GATLAPLDPVRFLTNSSSGKTGF LLAK KKEKVIVTSGPTSEYLDDVRTITNKSSGKQGRAIA I GS LA GRRVLITTSGPCREPVVDDVRVLTMRSTGQMGRALALL RPLEGEHVVVTSGATAESIDPVRVLINRSSGRMGRAVAR DMKGMKILITSGGTREADDQVRSITNHSTGRLGKEIAE

## K


$K T A L I T V G S T R E Y \square D P V R Y \square T N E S S G Q Q G M A \square \square K$ RNMSGLRVLVTSGPTREYIDDVKYVTTPSSGLTGYYIAR MKLLITTSGGTSEAI DQVRAITNHASGKLGKII AE
 NKYDGMK MKLLIJS G G TSEKUDQVRSUTNHSTGKLGALIAE
$\square R G K S L L \square T G G P T P V P \square D N \square R R \square T R F T G A \square S \square Q \square A R$ QPDAGEHVVVTSGATTESTDPLRTDSNRASGRTGRALAR MKILITS GGTTEKI DSVRGITNHSSGQTGKEIAQ MKILITSGGTTEKIDSVRGITNHATGSGGKYiAE


MNGKKVLITSGGCLEKWDEVRGHTNLSTGRMGKLLAE
 MKILITAGGTTEKDDQVRADTNHSTGRDGQADAD L K KVVI TS GGTAVPI DSVRYITNSSTGTTGALI AE R K V I N T G A T l A P I D P V R Y V T N S S T G 】T G F Q L A K


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UniRefgo UniRef90_Q4A742
 ALYCKGADVNLIATRFEDNIPQDMHTI DVESSDEMLEEQI datargarvtrv SANVALAVPDGCEVVAVG

E
A A $L L R R G A N V T L I$
AVI CRECGQAKGI

| $A$ | $F$ | $R$ | $R$ | $G$ | $Y$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $V$ | $V$ | $Y$ | $I$ | $I$ |  |



QIN SKNGNI IMYIE GSVSLITTNSKNKKIVKVE
AAKFRGANVDLIHGQ
AFYFLGARVKLLS
A L Y CRGADVNLI STKFE
EAAARGAEVTLVAGPG VRAPPGVRAVPAV
A A R DRGAKVTLI TAPTSLDPEPVGMEVVVHVTAAQMKEAVA




E F YR RGADVTVVHKGK A A ARRGANVTLVSGPVS LDDDGIREILVES
ALLENNDCWVTAVHGDCDVPTPPFVKRVDVTTALDMEAAVQ A A AKRGATVTLVSGPVDLATPAAVTLRDDVNSNGKMLLME




 EAFRLGGGDVTI I HRDE $1 H \square G$ | $R$ | $N$ | $P$ | $V$ |
| :--- | :--- | :--- | :--- |
|  | $T$ |  |  |

 E LMS Q GY DVVYI H S KAI S PVAGAK NI S FD TS K E L Q E S MN



 AAFRLGADVTVVHGGEEI PLVRNDGIRSASEMREAVL NAFRLGASI, TYYVGNSEYD DPGYVTYMEKYNDREDIIDEIN A LAAVR GA DVTLVVHDGDDAH YADVLAVVEAAEMLEAVE ALYFKGAKVTFI A SNFPTPDP KEDTNI LVVSDTQSYENALN
 VCRMA GA QVTTL Y GQLLQTPLDPTGYHMERAIDSAQEMYDAVH ACYARGAEVVVVHDGPDDLDATVVERVESAAAMLDAVLD QASRRGARAILVAANVSLLAGTPAEVRTVESAADMHAAMD A A LVA GAEVILI S GHIVAVSLPPSVKNVKVETTEQMLSAVK
 ACHDRGADVTLVHDGLDAH YAEVI KTESAAEMLAAVD


 EAAARGAEVYVVSGPVNVKYPNGVNVINVNGVVDMRNAVV. QALKGGHEVTLVTTKQAVKPDSQLTIIDITNVDSLKETLE T LLAS GHEVCLLMTTKRALKPHPNLSIVEINNTNDLLLEMQ



$A C Y V A G A D V T L V H D G P D V G D E V R R V E S A A E M T A A T T$ LF L D H GDQVTLVTTNATIKPDPHTNTY II SNVDSLLMTLE


 AVK K G A R V T LI S GPVVA I A P P E GVVYKI DVVT TKEMLDAV I E ALK S GASVI YL H GYFAEKPEGTHKLHSFEGIIDLQDKMK
 $Y \square A A N P \square D Y$ TTTKQA $T K P K R H S N \square T \square Y T \square E S A \square D L D A C T$





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AAAAEADVVVIMTAAVVADYRPREVRAEKILKKEAQGETMNPD HLIQKKPYLFMAAAVSDYVPKFVQNGKLKKEMLGNSFEDS ARVADADVFVGTAAVADYRPVAPAEQK KKKFDEMQKNPD AVWEDCDVLIKAAAVSDYRPKERADTKIKKTGDTMTKTVD VAAGDVDAVVMAAAVADFRPARYAEAKIVKSHDELVRNPD ELTSEYDAVVAAAAPVDFRPAGAFEGKIRSGQRLVLEELEP N $N F K D C D Y V V K A A A V S D Y T P V L V F D K K V K K Q D M E F E R T Q D$ RESEVADVVVMAAAVADYRPVQVSERKLTKPADDLENED SNSSENKIVIQSAAVADYKPKTYSDKKYKKKNDDLSURNY SQMEKTPYLLMAAAVSDYVPGKTHEGKLKKEELGETYTKR DNDAWCDCLI MAAAVSDYKPYSKSSEK: HK DNLKMKKNRD ELGEEVDVIISCAA:SDFVPEKK EGKISSDVEEDTVKLR KESKKQSFLFMVAAVSDYLPTFAQEGKLKKDLI GINWNLE DVCTDADTLVSAAAIGDYTVGEGSDEKLRSGRERSLELEP SELKNTDTLFMAAAPLDFKPAKTFDKKVKKQNDNN ENDD ELLQSDNA AMTAADSDIRSKGGSESLIDSDKDSFELVPD KNLDNHDFLDMTAAVSDFTPQSVGKGKKKNEHLQGLNLD ELAPHQDLMVFAAAPLDFYVEGRISGKIDSFYTVRLIRAP RAVAQADALIMAAAVADYQPKDVAKAKIKK EACETADTLVSAAALGDYTVEPSAEK RSGQEDTLSLEP EQNSNKDYLIMAAAVSDFDPEFKKGKIKKNEHLEGLNLR
 KYFPEADIISSAAAVADFRPKKVFAGKUKKTKNENPFIPD QKFNKGD LVMAAAVSDFDPNKVKGSKDDTAGVLT LNFRK KEDEHDYDMLDSAAAISDYTDDAMDDKDKSGGDISLKFRS AAVQQQH FFISCAAVADYRAET SASEK: KKQUIKMVKNPD AQTSQQDIFIASAAVADYRAANDAAEKIKKQGWR DAVADADAFVSAAAVSDY TLEASSEKVRSGEEETLRPTP KLVSHYD AV DTAAPLDFYVKDRVSGKLSSDENRVVIQAP VEFKHQDIF SAAAVADYRITQPFTQKMKKSGEPLTPTLD
 SVMEEEDIYISAAAISDFAPECDS GKI PSGKPATIHLRP
 TESNNAEHLYMVAAVSDFDPEK DEGKMKRSEGNMTLNDS QVLDEADYYLSAAAVSDFQPVRQS GKDPSGTPCRDELAP EACTGADALVSAAAIGDYTVET SDEKIRSGRDLELEFEP EMM NYDATVVPAALPDFKPERREGKIKSSRVYFEENPK PLVKNHDVLI HSMAVSDYTPVYMAENKVSSADDYQKKTPK ESTIDDADAYISAAADSDDEFIQQGESKMKKNQLED NTAPD TYLEKYDY YMPMALMDFDGKEKSEKKLDSNSEHDLTHKP AAVDADADALVSAAADSDFTVEAADRKI RSGEARTLDLEP KTAKNKPLLFNLAADSDYAPKTSFNHKLKKSEAGGTVNDE K AHTGDADALLSAAAISDYTVETASAKLRSGQTNDLRPTP AAAREADVVVMAAAVADYRPAAYERTKQKKRVLELVENPD TAFDGADALI MAAAVADYEPVNY円AHKПKKQDQG
AAVQQQHDFISCAAVADYRAET IASEKIKK
TASNDADALVSAAAIADYTVQEASAKLRSGEARTLELEP DQVPHHDILIHSMAVSDYTPVYMSEPKISSYQVLFLKKTP TEVPQHQVLI HAMAVSDYTPVYMQEAK EEYQVLFLKKNP EKMGEADGlVMSAAVSDYAPAKKENGKIKKTTQKKFQNPD MADYRPREVSAEKVKKSDGEMADRLD KNKNVDDADFNAAVADYRVENYQKQKIKRNKNKDKNNDD EVLKSRRLHIAVAAPLDFYVGNRVSGKLSSDVDKVEDKAP ERVQDYQVLI HSMAVSDYTPVYMHEAKYDEVQVEFKKKTP AELASKLYRI FSAAVADYQPETVFPGKIPSGVLKTVMLVP EEANNYDYIVVNAALPDFKVI EKSEKKYSSNESHKLTGEP
位 EACADADALLSAAAISDYTVEQR DRKVKSGEPSGTSPTP PLVKENDCLIHAMAVSDYTPVYMTDSKVSSKSDYQVLFDK ENMRGYDAIIVPAALPDFKPEKR EGKVKSNADEFEENPK EQVPHAEVLI HSMAVSDYTPVYMTDQKISSQSDYQDKTPK ONIAKADVVIMAAAGSDWUVDKIVDQKLSSDDPPVIHFKK KETPTHQLLIHAMAVSDYSPVYMSESKISEEDYQVLFKKK EQLSQKSYGIFSAAVADYQPETVLPGKTPSGGVKTLQLVP



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UniRef90_B9LUU9 UniRef90-R5LDD4 UniRet90_A9BDJ6 UniRef90-X5FQT3 UniRef90-Q30RV5 UniRef90-G4RNJ5 UniRef90-L9W124 UniRef90-T2LKR5 UniRef90-V5RJV6 UniRef90-ххדт880 UniRef90_TODIY3


TPKLIDEVRGERPEIVGFKTETSGMDEQARRTLERAGLAF LNEDL $\square K N L N F K G K K I$ GFKMEFDNALENAKKSLNDKKLDM VLKELGS $\square$ KRNQFLVGFSLSNEFDFQKAKEKLVEKNLDM I LYELGK
ILAHVVANKSAHQT I IGFAAETDDSKD ILESKYNRKPTKL $N D D L T S V D V D G \square K K I G F K L E V D E K T E N A K N M D K \square K K L D A$ TRKLI REVRDAYPY IIGFKAEADELIGARAKDSMKDADLDM VVA GVAALSDNRPYVVGFAAET




TPKLLDSVRQAHPELVGFKAETTSDFEAATALRDRVDLSF KVISYVK QWN PNDKLVGFKLLVNVPQEEARASLAKNHADY KI I S LVKEWSPALQLIGFKLLVDVSSEEARESLVKNHASM 1 LKELGQR
I L QY L GLHKREDQFLCGFSMETENMDGNSRAKLVKKNLDM LLKTISNUSSGPQUTVGFAYETNDVKTNAGKKGKKKNCDY
 K I SLVKEWNPTI HLDGFKLLVDVTEDHARKSLDKNQADVL TAKVIVRAKFPHLEMVTFKYQHEQLMEDARARLNNQGYQV
 K IISQVKKWNPN I R L I GFKLLLVEVSKEKARAS LVKNQAE I

 KLVDAVRSERPDLPIVGFKAETDDVDDERAREIRDRVDMAF
 KVISGVKSWNPDLCLI GFKLLVNVSKEEARESLQKNKARY FLKRLRREY K KGFLI GFKAESEELIDRRAKERMEEYEDDM D LIEAASVWKKGQLVVGFALAEDNNSKE EAARASLYYQNKADY APKVLSQQWDSGVMLVGFKLESGELIARAQURMDGAQADF NPKLIVKTWNPEI RLVGFKLLVDVSQNQARASLEKNQAEM $T L K V I V K Q R F P D L S M V T F K Y Q E N V S H E E A Q E R L K R ~ G Y S A$
$I L G T L S Q P S P M R P L V V G F A A E T E Q V D A H A S A K R L R K G C D W$





| VVANDAS | VMGAERTTALLVHDEDAARYE GTKAGLA |
| :---: | :---: |
| VCLNLLE | GSSKNEIHFITASK】EKSGLKSKQELA |
| LVVNLLDSV |  |





VVGN PASVMGETDTRALLVDGDDREAVE GSKLDLG TVVNRVGDAAGFGDVDTA DA VIDGTGATVAERGSKAELA 1 LANDA TVMGEAE $\perp$ VANDLTKIQNG


CEVVE GS K VV L $G$


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F DI L E H
Q QLVA L L V E A V S K
$R R L L A M A A D R L P E$
EAIWDTVVPQL

H GL L D H L R L R L P Q A A R
K E
A A IVWGVIA E Q
E H V VEQ
EKI I DETMRMFK

L K L V D A V
L E I L E K L Q D E F K
GE I A D S I A A IVVGER
G Q I A D R L A V E L
K E I VD IAMVEEWRNKN
H
FEVVKWCEKL
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REVLTTRALSL
$G E \prod A D S W A A$
F D V
FEE I K A $\square$ NE K L A V V H

| $K$ | $E$ | $I$ | $F$ | $K$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $E$ | $I$ |  |  |  |
| $A$ | $N$ | $L$ | $I$ |  |  |

E ALAA D NLE D MLT K R
K I L K T $\square$ NE L I
$L \vee V A D R \square A A V L$
REVL
QQL I E LIA E HLERKQ
$\begin{array}{llllllll}E & L & L & L & L & I & A & E\end{array} R_{1} L$
F GI A S AFS Q
A AVWSELL
T QI Y D R I I E K H
ESIVNHMIKK
D Y L I E S L
QEI I K
A A I WSTV
GEI A D S L V A L L
NRIVELMAE

TMI A Q E I L
A A I WK E I GK L

FKILD FI
D S L L K I S E E L K
$\mathrm{V} R \mathrm{R} A \mathrm{D} R \mathrm{~L} A \mathrm{~S} V \mathrm{~L}$
GlI LDA I S A
$D R \square A D R L V T E L D$
D L L Y ERMAK H
E A L R Y $\square$
$V R \square L N K \square L G E \square A R R$
NQVLRHILKAENE
$R$ RI L D K ALL S ML K
QLILETLEK
ELLLEK K Q A Y H S
K A A A D Y L E DQLDN S

| $R$ | $A$ | $L$ | $F$ | $R$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $N$ | $V$ | $E$ | $R$ |  |

Q QL V THill H
D Q L I K L I D
NAILD D R I
$R R L V A R F A E L L A A K S$
$R$ R V A A E L T G HL
QAI F E RVVSA
N L I F E RV T N H
$K$ R V E $\ M$ M E S $\quad$ L
NLLYERLTKKH

RII LDRAGALMAKK RSLIS KLAMMDSEKE Q | Q | $E$ | $I$ | $Y$ | $R$ | $H$ | $T$ | $T$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

Q A I A D Y L E R L
A LII Tr E K
N ALTTHVEKRVVSHK
SAI F R EL L E K
Q F I F Q K T DA L L P E
K AVLD RVAA
KE\| K N QLWK I I K A K

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WLD R E V Y IT G G G A S A M L D P V R A I T N H S S G L Q A S A $L$ A $\square$ $M K Q E \backsim V L I T L G G T S E P I D S V R E I R N Q A T G K L G \| L A A K$






Q GRRVVVTSGGTKVPDEPVRFDDNFSSGRRGATSAE LP NRKVVI T LGAN RAP DAVRAMQNASSGSTGWT IA E



QGRRVLITSGGTKVPLEAVRFLDNFSSGRRGAASAE





GRKVLVTSGGTTVPLENVRF V V V V NFSAGTRGASSAE

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UniRef90_G8JRR3 UniRef90-UPI0004621E4D UniRef90 X1DPE2 UniRef90_A4HE92 UniRef90_W1NFP7 UniRef90_R7U057


 $R F L A A Q H Q V T L V T A P S A V K P S E G L S V L E I S T V A D L I E T T L E$


 C F L A R G H E V T Y S F A K E D A V I D M I T T R H A M K P E K T I M P P Y Y I E S TAA D L E R T L K


 $K A V Q L G Y Q V I V V V S T T V E S L P S C V Q V M R I Q Q V L D L Q T T L L K$ ALAARGHAVTLLHGEGAVLPRTVADTRRFGSTADLRARLR VLTQQQGCDVTLLQAHSSQVPSSQLKVQRFSSFEDLNEKLE CLL K E R N D Y Y V C S K N S L R P S D D R V H V L E VE G T L D L Y F L K Q G Y A V L F L H R Q R S L Q P P C Q R I D R NV L D D L H CF DEKPETI FYY CGKNAPRPESPKTE I TVIVEDTAGLLEAVR
 YFLDAGYAVIYMHRQNS LEPFS QVSRHEAARAQNRLLLKVL



Y F L LE H GY A V DF M H RTK S L E P F S Y $\square T$ F TSSVVD Y M WL L R A A C AFARAGHEVRCFRGLRATAQQASFS IVPFTTTDDLARELL


Y Y FLD H D Y AVI FMHRHKS L YFCKS GYSVI FLYRNYS LMPHHRLDMDP YT TILTE YL WY L K Y F CK A GY A V I F L Y R N Y S L M P F V R HF E GP WT S S L E DL E HME RFLEAGYAVI F Y F $\operatorname{L}$ L K A G G Y A $\operatorname{V}$ I $\begin{array}{llllllllllll}\text { Y F } & L & K & A & G & Y & A & V & V & F & L & Y \\ \text { Y } & R & C & R \\ \text { L } & H & D & Y & A & V & I & F & L & H & R & H\end{array}$ Y F L K A GYA V I F L H R R K S L








##   $V F \operatorname{LA} A G Y G V L F L Y R A R S A F P Y A H L S L E A E E N A L D G F A A A L$  QF L Q A G Y A V I F L H R R H S $\quad$ LQP F P L H G V HVVME SAS E L V S D C V

 EF L K R G Y K V I F L N R K K S LQP F C W L L $\square$ S F E K VQ D Y L S L V L YF LDDEADVIFLHRQFSLQPYSRHYSHRYRAARDRLLAAM

EF LS NGYSVIFLYREFSLTPFNKSFTHDVNQYLWSLKEDA T F V T V N D Y L WL L R A V S
$T L A E R G W A C V L L A H R T A E F T P A P A Q K A E V L H A A E L Y H A V P$ ATSM
lupas_21
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jnet
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sol25
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sol0
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ILKTLIAADRRPDQKVVGFAAESQNDEDSVRGKLVVSKADM KLISLVKDWNPLIQLI GFKLLVGVTKEEARESLQKNKASY VI AI RNLMPDACCVGFKLEAGVTEDQLREKLQSNNLDLD KVISLVKQWNPAIKLI GFKLLVNELFQVARNSLNTNQMDY
 FLKSLVKNWNPNIQLIGFKVSKDELFAVARESLVNNQARY
$I I A M L R E K Q P Q A V L V G F K L V V G V S T E G H A V L A K N K C D F ~$
$K \square I S G K E W N P T D Q L I G F K L L K E E D F A D A R D S D I K N H A K F$ $K L I A M I R Q L Q P C A V F V G F K L L V D V S K E E G L T T L E K N Q C D F$ IVVAVGKMVEHRPFVVGFAAETQNVEEYARKKNENK
KI DSLIKKLQPQTILVGFKLLVDVPMNVAKESLKKNQADF $F L K S L V K Q W N P S I Q L I A F K L L V N V S K E E A R S S L K K N Q A D Y$ II QSI KHWQHTTVLFGFKLLANVTQENARTSLEKNQADF

 ILATMATR PDRPFSVGFAAETEHLLDYAARKLKDKNDDD
 LLPELRSYAPPGLFVI GFKLTAGADQAQAVARLFAAGVDA NFKIVNRGKDYSQNVVAFKLTSHASTEEAVQKLFESSVDA K I I S I KNLSPSTYLVGFKLLDGVSKLNTAKKLRDKNCDL MLKPLVKEWVPQAFIVSFKLETNPSMEKARGALRRYQHQM PTVK I S LGFQPHTMIVGFKLLDHVPHETAYRLLEKNHCAY KII GMI KKIQPETATLVGFKLLSNAAKEEGYGLLERNNCEM
$A P K L L L D L R F A H A F L V G W K F E V E G D R A A A D A S G K R Q R T D G$ ILLKPLVLSWVPDAFVI SFKLETNES IDKAHAALENYKHRL



$\stackrel{A}{\text { A }}$ II AELVNELLPEAFI SFKLLETDESVDVARKALKRYGHKL MLRKLVRDVVPEAFVVSFKMETDETVEKARQALRNYGHQA FLRFLVDTWAPEASII FLLRYLVDSWAPEALI
MLGELVNKWAPRAFTV MLKPLVSEWTHGQYVVS $\frac{1}{L} A P L V S L D W V R A F V V$
$M L V L E K D A P G A F C I$
$M L E L V K D W V P S A F I I$ MLSVLVNQWAPGAF CI S
 VLEPLVKLLWVPKAFVI I LLKPLVTEWTRGGYUV MLF KKOWAPSAFCVVFK ETBA FLRRLVDNWAPSAMIVSFKLETDHSIEKAEAALRKYGMNV VLSTLVQSWAPRSMLVSFKLETDPSVSKAEQALKRYHHDLE MLGVLRKDWAPMAFCISFKLETDSKIEKADMAFRKYKMHM VIEELRQKWCPDAFVVTFKLETDTKIEKAARAVERYGCHM FLSRLVENWAQGAMIISFKLETDNNIKKATSALDRYHHQL PNDDIVKLKNRDVNVVSFSAQTNNDLINFAEKIKNKDSDY FLKRLVEEWAPNAMIVSFKLETDEKLFKARQALTRYSHQL FLSRLVENWAQGAMI ISFKLETDNNI QKAESALERYHHQL MLGALRSDWAPEAFLVSFKLETDDTISKASKSIARYGVHA CLKKIKELANEAKVI SFKLETDNTIDKVLSSFKKYGVDI LLDEVGANEHPQLTLVGFKAETDAMVARARETMRRAGLAF FLKNLVDNWSPQCMVISFKMETDPQLLIVKAKLDRYQHNLL VLKPLVEQWSNEGFTVSFKLETDPQIPKARAALQRYGHQL FLRRLVDSWASQAMDVSFKLETDSGLKKATQALERYSHQL GLKPLVAEWTREGYVVSFKLETDEAVPKARQALARYGHQV VLLLVQQEWDHRPFLVTFKLETSEMKRKADSNLHAYRCDA


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Y E L A S P：KA SLDE
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[^4]:    9999999999873399

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