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पAEPETAPTAYVHSFSN ${ }^{10}$ Ti
20
VR 30
30 A EPKIDPTAYVHSFSNLI GDVRVEAEVLI APGTSSIRADE SRPLMSNSSFVMPQAAVIGRVVLGADHVGIAAAGSSVRADEE TEPVIDSTAYIHPQAAVI GDVTVGASVMVSPMASVRSDE KHPKVHHTAYVHPTADVLIGDVRVCENVMICPNVVLRADE
 SPQLDPSAFIADTAVVIGDVTIGPESSI WYNVVARGDV PNKHSTAFVAANANVLGNVKIGANSS:IWYGAVLRGDV EPN D PR SETADI
K T PTVDKDAFV PKIGDSVYI DPFSSLI

| $P$ | $K$ | $N$ |
| :--- | :--- | :--- |
| $T$ | $P$ | $V$ | TQP TTPLLGES

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1
$$ $P Q L G K R V Y V D P C A T L V$ K S S P V D KTPKIHESAF KKPEVMENVF


TPRIHPSVF T R
RPEIHETVF
TPVVSPESF
A
SPTLEPSAY
PVI DESEA
KAPQLGARVFVHPAVVI PVVHETAFVVPTAILCCGKIVVEENVSVIGPYAVVI RADM PVVHPNAFVHPTAVLIGDVILEEGVYIGPFASLRADF PTVGERVFVDPAATVI GDVVLGDDVSVWPGTVI RGDV K

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NA | $A$ |
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| $M$ |

 VVLGDHASVWPGAVIRGDV VT VGPNCYVGPGAVMRGDF
TPVIDPTAYV HPSAVLIGDVIIGPRCYVGPAACLRGDF

| $K$ | N P | Q | $D$ | $E$ |
| :--- | :--- | :--- | :--- | :--- |
| $K$ | $P$ | $K$ | $A$ | $Y$ |

A E NVF
$K P D \square A T T V F$ P TTG T N V FII D P S A VV I
K P K I A K D TF F A K S A D I I PQLAHEDTWVAAPGANLI
K K

| $R$ | $P$ | $R$ | $H$ | $E$ | $S$ | $A$ | $Y$ | $I$ | $A$ | $P$ | $G$ | $T$ | 1 | 1 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $P$ | $Q$ | $V$ | $D$ | $D$ | $S$ | $C$ | $F$ | $V$ | $D$ | $P$ | $S$ | $A$ | $V$ |

SPTIDPDTWI APDANV | $P$ | $A$ | $A$ | $D$ | $T$ |
| :---: | :---: | :---: | :---: | :---: |
| $P$ | $W$ | $A P P D A N L I$ |  |  |
| $P$ | $H$ | $P$ | $D$ | $A$ | PQI AEDAWVAPDAQLM

S

PKI A S TAWI A P S A DLI
K R

 KRPKVDPSVFI APTACVAGNVTIGRDSSIWFGAVVRGDF PVI HESAFVHPTAVI DGDVII GPGVYVGPMASLRGDF PHVATDAWI APSAELI ADVQLGPGSSI WFGAVVRAD
TPKI GKKVFIDATAVIIGDVSISDDSSIWPLVVI RGDM KTPQUSGENTFVADQATVI GNAQLGEQVTVVWPGAVI RAD K Y PVIHESAFIHPQATVTGNVTIGRDVYVGPGAA RGDW ARVETHPQSWVAPNAVLVGKVKLEEGANVWFNAVLRGD
KPKDGERVFIAENAVVIGBVVEIGNDSSIWFGVILRGDV PQi D H TAY I DP TAVIVGNV Hi
SPQLPDSTWI APDANLI G

QPRLHPSVYMAEGAKLIGDLTLGEESTIWFNAVLIRADL TPKI GKNVFLADNATVI GDTEI GDDCSIWFNTVLRGDV
SAPTIHESAWVAENAQVI G VMVDPTSVI

| R P | V | H | E |
| :---: | :--- | :--- | :--- | HPNATV DVDL



 TPEIGSQHFIASTATVIGDVELASQCVVWYGAVLRGDLD





## QUERY

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100 110

120
GFRSTVFNARVGAGCVVM NTSIIA H M A L I H GP A Y V G N D C F I G F R S TVVFNARVGBGCII M

 $R V S L A H Q S Q I H G P A Y V G N D T F I G M Q A L V F K A N V G D N C V L E$ GCSIIA HCAALVHGPALI GRETFVGFRAAVVNAKLGKNSFV
 DVTV GHSVTLHG $\mathrm{N} V \mathrm{~T} I \quad \mathrm{GH} \operatorname{GAT} \mathrm{V}$ HA

 KVSITHRALI HGPADVGNNAFVGFDAIVVFADVEDRCYI D D T S L A HGCIVHGP \begin{tabular}{l|l|l|llllll}
$D$ \& $V$ \& $T$ \& $G$ \& $H$ \& $N$ \& $V$ \& $L$ \& $H$ <br>
$N$ \& $V$ \& $T$ \& $V$ \& $G$ \& $H$ \& $S$ \& $A$ <br>
$D$ \& $L$ \& $H$ \& $G$

 DV TVGGHAM HA DVTI A HRVML H G D G H G G GAIL H G NCTI GHKVML H G D TV GHQAMLH G 

$D$ \& $V$ \& $T$ \& $G$ \& $G$ \& $K$ \& $A$ \& $M$ \& $H$ \& $H$ <br>
$N$ \& V \& T \& V \& G \& H \& S \& A \& V \& H <br>
\hline
\end{tabular} $N \vee T V G H S A V I H G$ $\mathrm{G} V \mathrm{~V}_{\mathrm{T}} \mathrm{V}$ G H Q V T L H

 $R \vee T V G H G A V L H G$ DVTI GHNCCVH G GI TI GHRSVI H

$C$
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 $\mathrm{D} \mathrm{V} T \mathrm{I}$ A H QVVML H G N S S I A H R S IV HG P
E Y GHI G H A A I L H G DVTIGHGAIVHA $N \vee T V G H R V I L H G$ DV T $V$ G H M A L V H G

$$
\begin{array}{ll}
C & T \\
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C & T \\
C & R \\
C & T \\
C & T \\
C & T \\
C & V \\
C & T \\
S & T
\end{array}
$$ GHNA I H G



D
DCTI A A H R VV ML DVTV G H K V M L H G FTTVVGHGAIL H $\begin{array}{llll}G C T & G H & K & V \\ R & M & H & G \\ \text { R } & \text { G H S A V I } & H & A\end{array}$ D V T V G H K A L V H G NVTIGHHVTLHG NCTI GHKAMLHG N CT G G K A M V DVI GHKVMLHG R VTV HVII GHNAII HSR $\mathrm{G} V \mathrm{~V}, \mathrm{~V}$ G H Q V T L SAH』GHGA I HGG $C$
$C$
$C$ $R \mathrm{~T}$ (1) GHHAlVHG
 NVMVQNDCT V Y VTI GHQAMLHG DVTVGHKDMLHG $\omega$

## S

 S $\begin{array}{ll}\mathrm{G} & \mathrm{C} \\ \mathrm{G} & \mathrm{C} \\ \mathrm{G} & \mathrm{C}\end{array}$ S C 8$$
\begin{aligned}
& \mathrm{C} \\
& \mathrm{C} \\
& \mathrm{C}
\end{aligned}
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\] | $G C T$ | $V$ | $G$ | $H$ | $K$ | $A$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $L$ | $G$ | $G$ |  |  |  |
| $R$ | $G$ | $H$ | $K$ | $A$ | $M$ | $V$ |
| $H$ | $G$ |  |  |  |  |  |




 $\begin{array}{llllllll}D V & G & G H & K & A & L & H & G \\ N G G H & G H & G A & L & L & G\end{array}$ $D$ GH $\quad$ GH GA V L $H$ H $\begin{array}{llllllllllll}D & V & T & V & G & H & H & A & V & L & H & G \\ E & V & T & V & G & H & Q & A & M & L & H & G\end{array}$ E T T GHQA M L \begin{tabular}{ll|lllllll}
$D$ \& $V$ \& $T$ \& $G$ \& $H$ \& $Q$ \& $A$ \& $M$ \& $H$ <br>
$N$ \& $V$ \& $S$ \& $G$ \& $H$ \& $N$ \& $A$ <br>
$I$ \& $V$ \& $H$ \& $G$

 $E \vee S$ GHNVI LHG $\begin{array}{llll:l}A & A & H & G & H \\ G & A & H & G \\ G & T & G H & N & A \\ M & L & H\end{array}$ 

$G$ \& $V$ \& $T$ \& $G$ \& $H$ \& $N$ \& $A$ \& $M$ \& $L$ <br>
$Y$ \& $V$ \& $T$ \& $G$ \& $G$ \& $H$ \& $S$ \& $V$ \& $K$ <br>
\hline \& $T$ \& $H$ \& $G$

 $\begin{array}{llll}R & C & S & G \\ N & H & G & C \\ G & H & K & A \\ M & H & H \\ H\end{array}$ $\begin{array}{llllllll}N & V & V & G H & S & A & H & H \\ S & G & G & N & A & T & H & G\end{array}$ $\begin{array}{llllllll}D & V & S & G & H & A & V & M \\ H & H & G\end{array}$ 

$D$ \& $V$ \& $T$ \& $V$ \& $G$ \& $H$ \& $M$ \& $A$ \& $M$ \& $L$ <br>
$D$ \& $V$ \& $T$ \& $G$ \& $G$ <br>
$H$ \& $H$ \& $K$ \& $A$ \& $M$ \& $L$ \& $H$ \& $G$
\end{tabular} DVLVGHMAMMHG $\begin{array}{lll}\text { N GH } & G H G G A V L & H \\ D V T & G H K A C L\end{array}$ $\begin{array}{llllllll}N & M & Q & \text { Q } & \text { C } & C & I & L \\ G & H & R & A & I & H\end{array}$ $N \vee S V$ G H Q A A L H G




 C E I G D GVLV GMS A TI LGARVGS GSLI A
$R \vee S V G H N A V V H G$

## QUERY

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UniRef90-N6U7R7 UniRef90-LOWC03 UniRef90-Q3SFN8 UniRef90-N8XDQ5
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 PKSGAIGVTI PDGRYI PAGTVVTSQAEADELPEVTDDY HGAMVLNVELPDDSSVPVGRII QSEAETRELPAIAADQEDS $H L A M V V G V R L R D G S F V P P G A V V Q A Q E K A D G L G P V P E G L R G$
$H N A V V D G C D L P P G F Y V P S T Q R I G P R T D L S T V P K V S K A S E$ ARALVTEGTVDP PHTL
A GAVV PPKTVIPSGQQVW
TGAIVTGGVISENKYVPVGAIIDTQDKADALLEVVMEQSA HNATVRKVSI PDGKVVSDGMAI NKQDAVENLDDITSDLIE ANSLVT HTLPY

 $\qquad$ WG G
A GSLLVTNKKFPPRSLI
ACSFIKAAAVFDANKLVLGS

A GALIENKVIP DGSLVGSPGKVVREDP \begin{tabular}{l}
P <br>
P <br>
P <br>
\hline

 

$A G G S$ \& $L$ \& $P$ <br>
$A$ \& <br>
$A G S$ \& $V$ \& $P$ <br>
\hline
\end{tabular} PPGKTLQSGFLYVG RPARQVRPLNEKEMA






ACAFVADA FPDNSLI
AGAMI TNKQFPPCSLI
AGA IVT
AMAFVAGAE $\square$ P EGKV

FPD N S L
A GSLV
GPGKRLESGHLYRGQS
HNSVVEGCTVPPGFY PSTANDHSDKDDASV ERVSPQAAD
ANSTVKAKAVDPANVLADGS
$A G A V \square I P P G K T V G S G E L V W G N P A R C V R R L S D K E I E$
$A G S L V$ V $P$ GKVLESGFLYLGSPARKVRALTEKEDAH
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ANALVSNAQLEPNSVVPAKKVVTAEQREEV DRRTAHDYML
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PAR I DRELGEEEDA
A GSSLV
PQGKKI PANSLAFG
$R P A$
$R P$
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ANSLVT
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A GSLV PPGKVLESGHLY LGN PVKKQVRDSDKEI A
A GAL
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 ANSLI EGKEIPD GSLVGSPGKVVRELTEQQKKMLEASAAH $A G T L V$ PVPNKEFPPGSLI MG FPAKVVRSLTEEEDR

 A GSVVENTKDPPYT LDAGTPAKVI RELTDADLE ANALVVTGTKIEPNSVVPAKKVIEPQQTKEMIDKIANNYLM

 A LLCLVPERMEDPERKVAVGVPIVGDVSDERLAWKTA GTRLC MGAIVAGSLVPPGKTLEGGYL WKGNPVQKARPLTEQERA DGMLAAGALLTPGKRIGSRQL WGGRPAAYMRDLTDAA LA ANALVEGKEFPDNSLI PAKAI RTLDDDA VERLRQSAAR A GSLVVPRQKKIPPNSLAFGPRPAKVI RELNEDDDR
ACSFVAGMQVPPATLVA DEVVLAGAQVPPGKRLESGYLYVGSPQARPLSDKEKSFFA

 A GSLV
A GAVVT
PPNKVLES GYLYVGS PVKQARPLTEKEQA

AQALL V


| Q | FAQHVV |
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| UniRef90-R1AW31 | F |
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| UniRef90-G7WMN6 | F NDEVV |
| UniRef90-Q82V91 | FSEDV |
| UniRef90-D7ALV6 | WL |
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| UniRef90-B2TJP5 | F TKKVI |
| UniRef90-LOKZ08 | F K G S V I |
| UniRef90-UPI00022C, | HAAHYV |
| UniRef90-K4B6E8 | F |
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| UniRef90-A6DAJ9 | N A K Y V |
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| UniRef90-D1P0Z9 |  |
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A GSLIT

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ANSL IIPEGKIIPDGSLVMGS

## A NALV

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$A G A L V T E G K E F$
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I SA AVLENVKMPENTMVES G
AGALVEGKEIPDNSMV
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$G \mathrm{~V} P$
A $\operatorname{GAPARADRQLDDAADE}$

ANALVT EGKQFPDNSLIVGSPAKVARDLSEQE
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A GSVV DENTI CESGYLYAGT
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A GALL E GKEVPERSLVAPGKVVRQVSDQEDEGMLQMSAQH D GVQI EDSVVPPGRLI PSGQL WA GNPVQFVRNLNEKQDN
 $\begin{array}{ll}M G A V V D G V E I & E D Y V L V G A G A L L T P N K P A K V V R D L K P E E D E ~ \\ A G A V V G N R V V V E R A M A L G D P A K D R E G A A P Q D L I R M A A E S\end{array}$ AGAVV GNRVVVPERAMALGDPAK DREGAAPQDLIRMAAES
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 $G^{\text {G }}$ RVT:GHGAIVHG DVSI GHNVTIHG GVSVGHNAVLHG VSHKNDAKPNGP NVSVGHNAVLHG YVNI GHQAMVHG YVN:GHNATVHG RVSUGHNALVHG


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MGSIIAGSLVSPGKRLVGYMYFGS PARQDRPDSEEEDY AHALV PEGMQ PDNSLVMGAPAKVVKEITDGHKA THALLAGSVLPPGRRIPTGEL WAGNPARFVRTLTHEE AGATVT PNTRVPDETVAKGS PAKSFTPLSDTARA AGSVVSHTQVEPWS IVPAKFVKKVDPEKEMNQKIARNYHM ANALIPPKKKFSSRSIDTGVPGTVRRKSDDMERINENASA AGCVV PENMVIPQRSVVVG VPAK IIKKTSESQLS AGAVVSNTKIGPYELAPAKYIKKVDPEQSREQKIAHNYLL GGTVVLEGQVDPPRSLVAGVPGKVRREDEEVAGLRANADH ASALV PQGFVVPPRSLVAG VPGKVRRDLSDAEVA AGAVVDENTTCESGYLYAGIV PAKKIKAITDEQRE AGAVV DENMFCESGFLYAGVPAKKVKPLTEDQRS AGAVL LEGTVVESGTIYAGGVPAKIVSVREEEVL MNSVVDGAVI GEDSVVAAMSFVNAGQPAKVIREVTEKELS AGSVVTSGK FPENSLDMGV GRORVVRELSEEEVK GHSFLTENTUTPPNSUVMGAPGKDRRSQDCSVENDANALL AGAGI TGRQDEGKQFAEYSLIVGQAPARVIRMLDPSETE

HNAVVDGCDDPPGFYVPSTERIGPSTDDGTTPRVTVAASE AGSLVT QNKEFDDGVLIDGN PARAVRKLTEEEDK
AGSVVT QNTVVESGAIYAG DPAKKVKDIDQS
ANTLIENMETPDYSVVGSPGKVVKQFDSSVEEKLQASAAH MGAI AGSLVPPNKRLVSGFLYVGS PVKQTRPLTEKEKA AHSLVS PGTE PDGMLAVGSPARGKGPVAGTQAAE
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AGSLVT EGTVIPANSLAFGS PARVIRKDTPEEDE AGALV PPGMEIPPGKLAAG VPARVVRSVRESDRA
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$K H S V L A G V V P G G R V S G E L$ ESALVPQGKIDPPETLVAGV WAGAPARPLRELTDKDR SNSIVAGAVVTQNTVITSGT TWAGVPAKKVKDIDQS AGALLTKPGKRILSGQ MWAGRPAKYVRDLTEEDLA GNTAIMKG TETSGSTL
AKALVEGKE\PDNSVVGAPATVVKT पTDEQAVMMK【SALH
AQSGVGGT
SDSVVAAGAVVDAGTVVESNSTYGGTPARKLKE $\square G P E M R E$ NSTTLAGHDTIGDYVVLAGMVAIHQ
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 SQTGISGSTILGRNVVMGGQSGTAG

YGTKI AGDCE $\square G N G V I F S S S V I$
AGAVVT
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RNVTVINNVMLAGHTIGDYATTAGGSGDHQFTR $\square G H H A$
NNTLLAGHVVVEDYAHTAGAVVVHQ
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 GDEVTVGSGSTLGADAFYYKKRPEGFDKLLSGGRVVVIED EGTRMGNNIIYQTATVGAAPQDFKFKGDEDGDNNTIRE GSRTEVGESSVVCENA GLRASAVAADQPVLVGD GKRVVIHSGSVI GADGFGFAPQSDGSYVKIPQMGDVEGD DRVVIGDRSN| QDNCVVH GKNCRIFPGTVISADPQDLKFEGED TQVIDGDNTT:RE $N$ KVVIGERTNVQDRAVIHVASG GGKGERALPTFIGN GDRVIIHPGARLGQDGFGCAMSHLDEQASSPQTGRVVVGA NDSIYANYDCIIVDVCKVIIGENVMFGPRVGGYTAGHPDD TVIGEDCHIVSGTTIRDSKIGDRVKVRASEIEESQVKD AAHGINTICTKEDEEKWKSLEVGSYERKKDAGMFDGYVGR GGNSIIRSNAIIGPNSIQQNEVGEDSVVKQSVATDSKIGK NCK GDGTRDEAFSLVEDAVVSQNCNVGPYARLRPGADLH FSFVTENPDNIIKEENIKQVIFKIPSIGSVVIGNNVEIGA GKNCKDFPGAVI SSDPQDLKFAGEVTTTHDGD NSVIRE SNVTVGDNNHDH GNGVITHNGTR GQDGFGYAPGPRGMVK VQUGRVIQDN
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LSSTTSDSKIGD
PSTVQ GDNTVI RECVTINRGTNCLIMAYVHVAHDCIIGD ESITVGK

GASI GDGTMIDMNAVVGARGTDGKNVHVGAGA AGK $\square Q \square G D N C \rrbracket L G P N V S M Y T D E L S T D P K H R Q G G H$ Si GDGAVIHSFSHIVQS GNNVIIHAGTVVGSDGFGFVNTKQGHDKDKHDGRVVIEGR GDG NDCI HAGGVGGSDGFGFANTKDGKY KVYON
 IGNDVKIDSSTI ED GFGTEKDEGKTYRDPHGSEVGD GKRCYIKENCVIGGEGFGDEKDKEGKTYRDPHDGGVEIGD GATVGPYARLRPGANLAEGSKVGNFCEVKKAELGKGAKVN GNNTVIYPNVSTYRDCKDGNDCIIHAGTVIGSDGFGFANT GNRVFIHAGSVIGSDGFGYAHTERGEHTKI H HNGVVVIED
 GEAFYGNTGLTVDTCEDH
IK DNVTVVNSVVLDE STMGE GATTIAEDAVI GPDTTLVDCEVGQGATVKRTDATLSVIGA GS IEIGDNCVILENA VLRSTVKHSLKICN GNDCYITSGSRIVDSV VGNEVTITSSTLDHAQMAD GKFCVIHAGVVVGADGFGFSPSDDGAYQKVPQI GNVIIED IGNDTLIRHSVVHDDGPFAHDRPLCKDGDDVR\GNFVEDK GCS:GAKAQVGPFARMRPGAKUGEQAKVGNFVEDKNAD PTEVVMGDDNTIRECVTINRATADGEQTRLGVGHNCLLGD QDRVKIGDDNR REYVTVNRATGLGEATMIGNGHNCVIED GNNCTVANTVLGADAFYYKNRPSGFDKLISGGREDHVDLD
 GHNCTIHSGTIIGSDGFGFAPQEDGTFTKVPQIGNVI: ED GEKCLITREHVTI HRGTAHGHMKTCFDMDGSHIGHDCIIGN GNARIAAGAVIHPYTHDEDGGTSESDWVEVGA GPHVVIEGPTEVGKNNRIFPSAEPQDGKYKGVPSGLKIGD LEGCQUGNDCRIGPFARLRTGTQAHCKIGNFVETKKAVA FCYIGCAGMVRIGDNVMLGPRVSVFAENHNFSDSETST1 GKTVIKENCTILQNCRIKDSIDESGVEVQASVVLESKIGE QDYVFIGDRTTIREGATVHRATGEGEETRDGNDHNCVVGN GNGCTI HSGSII GSDGFGFVPNEEGIYSKDPQDGNVVI ED TVHVVIEGETIIGENNY GFSFAS\|GKVPQDGEKTRTVIGN GKFANDASHVRINATNHPTWRATQHHFTYRAADYFDAAE
NFCVLDENRVTIGDNVFTGP GRE VS GGKNCIIESGVIIKNSEDNVH GKAYSUIEEAVINS
UniRef90_E8QX81 UniRet90-B9MPJ8 UniRef90 W2UK48
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100
110
dVETGGCNTTIFGDTKIGAGTK\|DNLVQ\|HNTSIGRHNLIIC EGVKIGNFVEVKNSKVGRNTKSAHLTYIGDADI GENVNLG

## GVIIDNQVQIAHNVVI

HSKANHL $A$ Y 1 GDDV GDNVSIGHNADVHGCT:ADNVLI G HVTVGHLSVILGDCEKIGTEVNVGAGTITCNTRIGDGAF: G DNSTREYVTESEPTVF
RVTV GHQVVLHG CTI


 $H V F V G P H A T L L G C T V E R A C Y L A T S V S V L Q E A V V G T G S V V A$
 DVSVG H GA I L H G CTI GNRVLV GMGAIVLNAMIGEGSVI G
 $H V T I G H G A I I D H G A M I E D D C L I G M G A D V L D A H L Q K G C L V V G$ GTQVGPF V HFRPD TVI GNDVKVGNFMEVKNSVVGDGAKLPB EVTI G H GAA L H A C C A V E D Q A V V G M GADVVLD S RVVES GA V I G







 Y V S I H R S S KP N D C TVI

 GVI EPPSA K P V VI $\mathrm{N} V \mathrm{~S} \mathrm{~L} Q \mathrm{~T}, \mathrm{~N} Y \mathrm{~V} P \mathrm{~T} D \mathrm{~T} Q$ $\begin{array}{lllllllllllll}G & V & T & G & H & N & A & I & H & G & C & T \\ F & T & S & V & G & P & Y & A & H & R & N & N & C \\ D & L\end{array}$

$\mathrm{N} V \mathrm{~V}$ V
 NTSVGPYARMRPGTSL VEIGGNCSVDKGSTVVI


## 

 N V E G G L T T V C R N T I I




$\begin{array}{lllllllll}N & T & S & G & P & F & A & Y & R \\ N & A & T & G & E & T & T \\ R & W & S & Y \\ R & P & N & S & V\end{array}$ $E \vee L I \quad G P N A H V V G$

 KATFGDGSSKYIGBA EV $\begin{array}{lllllllllllll}\text { Q G A } & K & V & S & H & L & T & Y & I & G & D & A & R \\ E & G & S & K & V & P & H & L & S & Y & M & G & D \\ C & E & 1 \\ R & I & V & V & A & N & S & V & A & I & A & G & H \\ V & V\end{array}$ SVVTI S N AVA A A GHV H H V S L Q T NVV Y V P T Q T T $\begin{array}{lllllllllll}G & A & S & C & T & \square & D & K & G & V & T \\ G & D & T & T \\ G & E & E & G & P & F & G & H & L & R & P \\ G & A & H\end{array}$ ENSSLA Q NTCLQMCV | $N$ | $V$ | $E$ | $G$ | $A$ | $C$ | $T$ | $T$ | $L$ | $G$ | $S$ | $T$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Q$ | $V$ | $F$ | $H$ | $\square$ | $G$ | $A$ | $F$ | $A$ | $R$ | $G$ | $Q$ | $T$ | HVIMANNATLGGHVIV

 GALI GP YARRLRPGAKLGEDVHIGNFVEVKNSTLAS GAKAN




## $P D \square R M K Q G M R K G$

 | $N$ | $V$ | $M$ | $S$ | $L$ | $A$ | $S$ | $L$ | $A$ | $G$ | $H$ | $A$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $V$ | $Q$ | $I$ | $G$ | $F$ | $A$ | $H$ | $I$ | $R$ | $D$ | $A$ | $S$ |



 N A E V $V$ G P F A A R L L R P $\quad$ Q T

|  | 150 |
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| UniRef90－Tом3 | EGAVVKNNFEVPEKALAVGVPAKV |
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| UniRet90 UPIooo2F31867 | D S |
| UniRet90－A1wLL8 | AGALVEGAVVI |
| UniRef90－J7QF80 | SNSLVAPVTIGQGAYVGSGSVVTKDVAPDALAMVARGRQME |
| niRef90－R7DJI9 |  |
| 4N4 |  |
| UniRef90＿B4SA | G G |
| UniRef90 LOHGK6 |  |
| UniRet90－E4T9U6 | NGCGIAGHVEIGDFTVMGG |
| UniRet90－UPIOoo33724610 | AGT |
| UniRet90＿G9YJ45 | HLSYIGDSDLGAGVNIGCGT W |
| UniRef90－M1V5M7 | AGSVL |
| UniRef90－UP10001D2D4 | $A Q S G L A G S T I G E G A R \\| A A K S G V$ |
| UniRef90－UPIOOO42066EE | SGSVVT KDIPDN |
| UniRef90－D4YHX1 | Y GDatLGKNI |
| UniRef90 Kossmo | MGAVLPGSVIESQSFVAAGAVTWGGFPARKपRDMTEDEKR |
| UP100022 | YI GDAKVGSNVNI GCG |
|  | APVSIGENATIGAGSVVTKDVNADELA |
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| 7UEK1 | NGSALAGHVEMEDHVIISGGLAAVHQ |
| UniRef90＿06 | SII SGAVIAAGSYVEEGTTVPSGR |
| UniRef90－S3L304 | G AGCVVDEDE |
| UniRef90－U5N2D8 | ${ }_{\text {AGAGVIV }}$ |
| UniRef90－L9V4P5 | ANALLPGVTI GENAFIVAAGAVVTDDVPANS LiA |
| UniRet90＿R5AGN2 |  |
| UniRef90＿C5NX | EVGNNTNI |
| UniRef90－UPIO004164E6B UniRef90－R5HBF1 |  |
| UniRef90－ B 1 Y J41 | GSVVTE DV |
| UniRef90－G3J799 | AGSVVTKDIPPFTVVA |
| UniRet90＿H0TKD3 | HLLSYI GDAQVGAKTN |
| UniRef90－F8E4MO | AQTAIGGSSKIGDFVVLG |
| UniRef90－G2H | SNKTOCMCKG |
| UniRef90＿W6S097 |  |
| UniRef90－EONNH3 | dor |
| UniRef90－D5RFG9 | LKIGNDVAARVLDDVKDKQT |
| UniRef90－H4F4Z0 | SNSLVAPVTIGDGALVASGSVITKDVPADALA |
| iRef90 UPl000463 |  |
| UniRe90－Q7 | RN |
| UniRef90－D9QS85 UniRef90 UPIooo3b71137 | ALVATANTESEVTVGSGAVVP |
| UniRet90－C5RC98 | AVVV |
| UniRef90－81LWW7 | MLAAGATLWGGRPAR\｜LAPLDAEKRA |
| B9D |  |
| iRet90＿UPI0004 | $V$ |
|  | NECVP\GWVA】GN PVK！LPAEKHDD\W |
| UniRef90－UPIO0029B2539 | AQTGIAGSTKIGGKNCLIGGQV |
| UniRef90－B7GFH7 | CNSLIAPVTVGSGAYVAAGSTITDDVPSEALA TARARQT |
| UniRef90－W6KGV0 | SNALVAPVT GDGAl GagsvVardVandalavtramhre |
| iRet90＿R607B2 | HV |
| iRef90＿A3YVF4 | RI DRD |
| UniRef90－G6F | RI DRDVPPYMLVEGNPTRVRSLNLLGLK |
| UniRef90－MoCL UniRef90 A2U2 | ANALLPGVTVGENAFVAAGAVVTDDVPADTLA |
| UniRef90－D2DIP | HFSYI GDATVGENVNIGA |
| UniRef90－E8N1V4 | gCVGHNCRI GAGMLVYPARTDE |
| niRet90－A3J6Q0 | AQTGIAGTTKIGKNCLIGGQV |
| UniRet90＿UP1000382E9EE | G |
|  | GTAGVNEDVIPFGMIUMSRSKLE GNLIGMKRRGFDREEIH |
| UniRef90－F3KTJ2 UniRef90 O4C400 | GVNYGAGSTANTMGANKHRTVIEDDVH |
| UniRef90 UPIO003B40229 | YVGDTKIGENVNI GAGTV |
| UniRef90－G9ETN2 | SLI APVTVGAYATI GAGSTIRKNVPADELTLTE |
| iRef90＿S0AP36 | MGA VLNKHLRPGTVVAAGTVI |
| UniRef90＿－4BSS 4 | GTLVA KDIPAKSIVKDK |
| UniRef90 UPI0002E6E381 | AGSVVTKKDIPANCNGGCGVVAVGNPCRVLREVNEHDKE |
| Ref90－UP100035 | GMSKLTQDVVPPAKAVGLNSVGISRAP可SRRRIKQ |
| RRef90－UPI00036 | HDSYI GDAEI GSGVNI GCGAITVNYDGKNKFKTT】EDDA |
| UniRef90 UPIOOO40EFFCA | GVAGSTKIGSN |
| UniRef90－U2SSQ1 | DNCVLANAATFAGHVVEDYAVVGGLTAVVQFTRVGRHAM |
|  |  |
| U4TNN1 |  |
| Ref90＿GOTVZ5 |  |

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UniRef90 R7DJI9
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UniRef90_E4T9U6
UniRef90_UPI0003724610
UniRef90 G9YJ45
UniRef90-M1 V5M7
UniRef90-F3LOT0
UniRef90 UPI0001D2D499
UniRef90 UPI00042066EE
UniRef90-D4YHX1
UniRef90-I319Z4
UniRef90 KOSSMO
UniRef90_UPI000225AD8C
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UniRef90 UPIO004077BCA
UniRef90-F9N6W0
UniRef90_LOLLY6
UniRef90 A9TYW2
UniRef90-L7UEK1
UniRef90_Q6QIV
UniRef90 S3L304
UniRef90 UPI0004147378
UniRef90-L5N2D8
UniRef90-L9V4P5
UniRef90 R5AGN2
UniRef90 ${ }^{-}$C5NXH1
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UniRef90-R5HBF1
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UniRef90-HOTKD
UniRef90_F8E4M0
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UniRef90_W6S097
UniRef90_UPI0003B74A8L
UniRef90 EONNH3
UniRef90-D5RFG9
UniRef90-H4F4Z0
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UniRef90-UPI00029B2539
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UniRef90-W6KGV0
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UniRef90-M0CDB3
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UniRef90-F3KTJ2
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UniRef90 R5Q3E8
UniRef90 U4TNN1
UniRef90_GOTVZ5

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ПGPDVAVAPGAEDMGPCEDYGCSR\ERGA
TI GRGTRI DSGTELRGNTVI GEDCII GRNCIL
I HPTAYI APDVSLPEDITVGPFAVI ESGVELGRAC
KI AQNVEI EPFAMI HSDVEI GEGSWI GSHAVI NSGID


ADAVIGSDTVI LPGVII EGKTVIGEDCKIGPNSHIVDSQ HPSALVAPEAlLGENVTIGPWCSVGPDVSIGEGA
K $\square$ GRDST $\$ L PFTFLLGNTEVGSGCTiGPG
GMDVEDDTNVIIEGNVSTGDNVIIGTGCVEYT DF
SRAK $\square G E G T E I H A G A V I G E D V E I G S G C I V Y P N A T I Y D G C$


VGEGAEI DPGAVLRGPLFI GDYVQVEAG
1 S PLA Y I HPEAVI GEGCEIGGPCCY: DKNVVIGKNN
VRVSPTASPVTNVRVGRHVAVE GTPFTCDY



UniRef90 B5R1Q8 UniRef90-UPIO00363CB5C UniRef90-K1XKL5 UniRef90- ${ }^{\text {X2H289 }}$
UniRef90 FORCQ0 UniRef90-A814D4 UniRef90-Q8EGG5 UniRef90-MOLVD6 UniRef90-N1WPJ7 UniRef90-R7GKY9 UniRef90-UPIO0025561E0 UniRef90-M5ЕЗЕ4 UniRef90-A5N229 UniRef90-B3QMRO UniRef90-TOLYK7 UniRef90 E1RH42
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UniRef90-Q97G16 UniRef90-X7EBHO UniRef90-UPIO0047BB16F UniRef90_A5Z963
UniRef90_C7LPV8
UniRef90-E6UGV1
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UniRef90_S5F6B6
UniRef90-A3UBJO
UniRef90-Q7VLE6
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UniRef90_R6S4M9

50
60
70
80 GRLILE AGSNTQDGCTMHG VGKNTVITASVIEEA EVVAGVTMGPYAHDRPDSLIK GANCIIHSNAVIGSDGFGFAPSPDGSYKKDPQTGNVVLED GDNVTTHAGSVLGADAFYYKNRPEGFGGKVVIENNVDI GA GAHLERGVS GPYARLRPGTGEGVR GNFVETKAALDD WDKRPQTGGVRIGDRVElGANS TVDRGALGHTEVMN GKRNLIHANTVIGADGFGFYDKGGVRHK DPQDGNVVI GD GKDNVETKFSVLSDSVGFVESGTDIGPYARLRTNCHIRE K1PTKIGCRNKIFQFVTGGEDCQDKKFKEEDRTYEEDGDD $M R S N S I F K D E D K F P P A V V D D C L I G A G V I I Y C G C S I G Q$ GDRVTIHSGTVIGADGFGFAPQKDGSYVKIPQMGTVRIED TYTWSGMHNTKVGKFCSIALHNRICYGFHPSHTFVAMHPA GECCLVQSNAVIGSDGFGFAPSPDGWQKDLQLASVRIGDR SDGRYCTFAANI SISSGNHYFDKFPEDNI KDQDR RVLKD GDDCKDYPNVVIYRQSTIGDRVNDHAGSVTGSDGFGYAHT NDHVYANFDCVI DDDCEVRDGDYCFMAPGVHDYTATHPLN LEGVVTHGPC\IGPFARLRPGTELASGVHIGVETKKAQUG QDYVYIGDRTKVREYAT
 GRDCIIHANVVLGSDGFGYANDQGQWVKTPQVGSVIIGDS GAGTRLWANVTI YHDDSTGERCLIQSGTIIGSDGFGYAND WПPTKMGQGNKIFQFASVG EDCQDLKYNGEETFLETGD LENDVClHPHVI IENS GSHVSIIGKTK GKNNKTYPFNDPQD $\square K F N G E E T K E I G D$ EGASVGAGAQ GPYARLRPGARMAAAKMGNFVEIGAAD GSDCIIHANTTI GSDGFGFATSKLGEHKKIYQNGNVVIED
 GPHAVIKGPARUGQDNSIGQFEDPQDKKYAGEETWLEVGD GDNVTTHAGTVLGADALIDATLGDGVAVPHSYLTSCTLED GKNISVGKGFLLQQNCTFMDRGG川ETGDNVWDAPNVRIIN GRGTRLAANVTIQHDCVVGENCIIHSGAVIGADGFGFARE RTTLSIGEKCII REGVTMHRGSNCQFFCYAHVAHDCHVGN ASGVKIGNDNRIREYVTDNRATOAGETTYDGUAHNCIVED HSHVAVAGHTTLGDQCEVYPFHAPQDLKFKGENSRLIVGK GDRVILHCGVVIGSDSVSDRHHKDPQUGTVIIEDDVEVGA
,

SHTKDSKIGHRTTVH
SRISDSE QDNVEVDSSTDEKATMHKGVTQVIGE

 ElVNNKVADAQGGEACMIGPFCYLLRPGTKLEAGGDFVETK EVKDRGDRCNVGPNVNUYTATDYDDPKRRLGSRGPTLGK GNGNTEFPGSVI SATVQVGDKFKGEVTTAFBGGESFCRIGN GAHVVLEGPCEIGARNQDFPGAADGMLKYVGEPTWVKIGN KKFISMAAMVRVGPTNHPYDRPAQHISLYNGAAYGFDHPD GPHVTLLGHTRLGEHCQVHAGAVLGDLPQDGEDSQVQI GD GESCVINSNVVLGADGFGFTPNEKGEYHKVPQTGNVILED
 GAGSRLSEIGEGAMIGMNAVVGARGKIGKRAHIDGAA KDCVVGDNTIMIDMVVMGGKANVGLRCHIGVGAA MEGTTTGDNSNVQDNCTLHHNMGGMFALTGN SISSHCWUKDSVL GPCQVKSFSHIEGSHIRA HQYVKMGEGNILHPHAVLGGDPQDVSFKPETDGDNNHFRE GKNCRIFPGAVIASTPQDLKYNNEYTFT IGGDNT T TRE A PVVVREGANVQDGAVLHAPPGD
 HANVIIDGLTEGGAQVEVFPFATDGDDKYKGEPTRCVIGA GEHFYTNFNCTVLDVCEVRDGDNCLMGPDVHIYTATHPLA GKNDHVGKNVFINACCHFQDQGGLTLGDDCLI GHNVVFAT DCEIDDNTVIRPYS RDRVIVHSSAVI GGDGFGYYQKHGRNVKTPHI GSVILEND S $\square G E K V N \square G Q N V V A G P E V R \square G S G C K D Q N N V S V Y K G V V L E D$ $G K R C L I Q A G T V I G A D G F G Y A N D C G N W I K D P Q M G R V I I G D$
$G D G V V I K A N S I V E E A A K C T G G F A R L R P G A D M E E D S H I M N$ VELRKYTVLGDNV VVRAGAQLHRAVLGD
 GYNDS $\square G H H V V I G R N C T V N D V C E V K I G D N C V I G P N V I F T$ QDLKYKGASTDIGDNNTFRECVTDNKATDEGEKT


| Uni |  |
| :---: | :---: |
| UniRef90－UP1000363CB5C |  |
| UniRef90－K1X |  |
| UniRef90－X2H289 | HLSYLGDSETGCNVNTGAGT T C C Y DGANKFKT\IIEDDV |
| UniRef90－FORCQO | SQTGl AGCVI DEDEVTLWGQVGT |
| UniRef90－A814D4 UniRef90＿－Q8EGG5 |  |
| UniRee90－M0LVL | SGTVVDGY |
| UniRet90－N1WPJ7 | GGTVLAGSVTDEDGVIM |
| UniRef90－R7GKY9 | CNSLVAPVTVGEGAFV |
| UniRef90－UPIO0025 | DDC FANNATLAGHVHIGNWVI |
| UniRef90－M5E3E4 |  |
| UniRef90－B30M | SQAGI SGSVI GR |
| UniRef90－TOLYK | EHALVTRQTIEPEK DAGGVPAKVIKDVSEDYKA |
| UniRef90－E1RH42 | AGAVVT KDVPDYALVA |
| UniRef90 B8KY91 | AGSTV |
|  | ANAVLTS |
| UniRef90－UPIOOO366A9E0 | AGALVA KDVPPGAVV GGAPAK乌LKSVE |
| UniRef90－A0AO23NXC9 | SNALVAPVTVGAQATVGAGSVIGKDAPPGEL |
| UniRef90－C7RAE |  |
| UniRef90－R7J3S | NATQLAGEVIVDDYA\｜ 1 GGGGTLVHQ |
| UniRef90＿UP10004761 |  |
| UniRef90＿C7R5Y8 | GCTAIAGST |
| UniRef90＿G3ADQ0 | VV GDNTAIAGGVV |
| UniRef90 UPIOOO3695147 | DNIILSNNATLAGHTKLANNVIIGGLSA |
| UniRef90－UPIOOO3C7F04D | NNVILANNVLGGHAEIEDNVITGGNSAVQQFTRTGRSAM |
| UniRef90－UPI000462F44C | SNSLVAPVAlGDGAYVGSGSVITRDVGVDA佼 |
| UniRe990＿ToL3C3 |  |
| iRef90＿A0A059K | ATVGEP |
| H9U9 | VAVENKTI GKYVKIETN |
| UniRef90＿G2DA | SLGGHVI |
| UniRef90－D3FEG5 | HLSY GDADIGEGSNIGAAT T ANYDGRRKHR |
| UniRef90－VPIOOO255A | SQCGiAGCVIDEDEVLWGVGVTS |
| UniRef90－S9Z9H8 | HNVRIGENTATAGCVGTA GSTTIG |
| UniRef90－UPI00036F4C95 | ASSVVAPVAVGDGAYTGA |
| 1 JC | K R K D ${ }^{\text {b }}$ |
| UniRef90 UPIO003468F36 | GMSR A DRDVPPYM |
| UniRef90 K2LRU7 | NHCILVNNGTLAGHVVVEDFATVGGLS |
| UniRef90－UPIO0036350B4 | AQTG1AGSTDGADSTVFAKSAVTKDL |
| UniRef90－C0C4W8 | SGAVVT ${ }^{\text {a }}$ |
| UniRet90＿UP10002FC08F2 | LSY GDAEVGERVNIGCG｜VI |
| UniRef90 UP10002197690 | AGGAVVRGATLGTDLNVGGVVFVNYDGVKK |
| UniRef90－UPI000378 |  |
| UniRef90 UPIO00417A932 | QNCAFAGHVLAGGVTVGNGVLLAGQV |
| G7W7 | 俍 |
| UniRef90＿BOJPZ8 |  |
| UniRef90－D1V） | YGTKISGNCEIGNGVIF |
| UniRef90－FOSTA2 | PGVIISGSLLGGHVHVGERAIISGNSGVHQFCRD |
| UniRef90 F3ZT06 |  |
| UniRef90－G9ZT01 |  |
| UniRef90－B8E020 | N G T Ql |
| UniRef90＿B8HXT6 | LLAGVEVGDRAFISGNCLIHQFTRUGRLAMIS |
| UniRef90＿13YY 3 | TGVAGSTI IGGQ |
| UniRef90＿K41Y94 |  |
| UniRef90－Q47G16 | AGSVVVED ${ }^{\text {a }}$ |
| UniRef90＿\7EBH0 |  |
| UniRet90＿UPIOOO4 | AVVTD |
| iRef90＿A5Z963 | GALVTGKMEIPDNSMAFG NPAKV |
| UniRef90 C7LPV8 | HLSYLGDSDIGPGVNVGAGTITCNYDGARKHREEVENA |
| UniRef90－UPIO0035EF440 | NNVA |
| UniRef90＿UP1000418AD3D | Q |
| ef90－S5F6B6 | CM A A |
| UniRef90－A3UBJO UniRef90 O7VLE6 | GQVGIA AHT GDKV |
| UniRet90－F2F192 | HLSYIGDAEVGKNVNI GCGSITVNYDGKNKYKTT自EDDV |
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| UniRef90－UP1000462F92E | SGAVVT K VVPDNMIV |
| UniRef90－6B4G8 |  |
| UniRef90 UPIooo2F6F1F6 | HGTYLGDAQIGQRVNVGAGVI GGVAL |
| UniRef90－D4H333 | Al AGSt TGDYVM |
| UniRef90－G2H8 | ANC\VCGNETGQYAFVAAGAVVTRPVP |
| UniRef90－7x ${ }^{\text {d }}$ | DNAVAGGV MAGSTM GSGCMVGGNVAEQQ⿴囗十介VSRAKQRN |
| UniRef90－UPIO0037B84A3 | AEAVVGGVKI YPFKTi EAGAVVNSSVAEQQLAVSRAKQRN |
| UniRef90－R6AD66 | （1）EVVDDDFAIISACV |
| iRef90－LOD7C2 | RAYVA |
| UniRef90－AOAO14N835 UniRef90 UPIOOO40949E5 | A G S V V ${ }_{\text {S }}{ }^{\text {d }}$ |
|  | DNAIIGGC LGTHQFVHVGYLAMTGGMTRVDRDVP |
|  |  |

UniRef90_B5R1Q8 UniRef90-UPI000363CB5C UniRef90-K1XKL5
UniRef90 X2H289
UniRef90 FORCQ0
UniRef90-A814D4
UniRef90_Q8EGG5
UniRef90 M0LVD6
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UniRef90-R7GKY9
UniRef90 ${ }^{-}$UPI00025561EO
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UniRef90_D4KGB3
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UniRef90-UPI0003695147
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UniRef90-T0L3C3
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UniRef90 UPI000418AD3D
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EDGVR $\square K A N S I I E D$ K■G KNCVIADNTVLGKEPFKSATTEEKDLPP鸟EI GD HTRMGARNRVAEHAVGGDPQDFKFRADCUSF TE GD VCPDRTGAYTLI GPNVQI Y TACHSLD
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 VSHLTTYTGDAEVGENCNFGCGT GAGTRLWANVTVYHEVETGQGCSGTVIGADGFGYANERGN GDHVILQPGAVLGGDGYGYAQTPFGHMK $\prod P Q \Pi G T V V V E N D$ GKNCKIYPGAVISSVPQDLKFAGEDTVAIDGDNT VVIRE KRVMACTVIGNDGYSFAPAEDKKLVKDPQLGWAE GD RTQUGGHCVIGDTTLTDVTVGDSATVIRTHGTSSSIGD LDRVRIHANTVI GGEGFGFAPYQGRWHRIVQLGKVRIGND IEDNVRVDNAVI ED CYMEE HSHVVVKGDTRGEDNQTYQFDTNQDDKYHGEPTRTVIGN EAEIRHVTEAKVGRGTKVGPYAQLRPQSELGEEVK GNFV GKACTIHAGAVIGSDGFGFAPQQDGSYKTIPQLGNVVVED GKHVSDHSHAS GNDGFGFAPRGSTDEAGWQKIHGDHVSV TEIADNAEI GDTTDTDMKDGEGAHVYRTHGSDSEI GA NSKI EDGAH
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 FCTFNRGTIQDKGTTIGNDNWIMAYVHIHDCVIGNNTIMA



 ANERDS GREYGKPVTI GHNVWI G GRAII NGVRI GDNAVI A





 $\begin{array}{llllll}N V & N & S & S & S & G \\ G & I & D\end{array}$ | $G V I$ | $D$ | $N$ | $C$ | $Q$ | $A$ | $H$ | $N$ | $T$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | WV KI P





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

 S S IVVGPYARLLRPGA D I
 PALV THNYRSRRNVTI



 $P$ VERRTGDEYSRPVVIGENVWIGGGSVILGVTVGDDAIIG GNTVRETCTLHRGTPSGRQTHIGNHNLIMYTHIABDCKIA



## 

 \begin{tabular}{l|lllllllllll}
$N$ \& $V$ \& $V$ \& $S$ \& $R$ \& $A$ \& $T$ \& $H$ \& $E$ \& $S$ \& $G$ \& $C$ <br>
$G$ \& $R$ \& $R$ <br>
$V$ \& $E$ \& $G A$ \& $N$ \& $S$ \& $C$ \& $V$ \& $D$ \& $R$ \& $G$ \& $T$ \& $V$ <br>
$A$ \& $E$ \& $Q$ \& $R$ \& $I$ \& $Q$ \& $G$ \& $L$ \& $E$ \& $Y$ \& $A$ \& $Y$ <br>
$P$ \& $I$ \& $T$

 

$A$ \& $E$ \& $Q$ \& $R$ \& $I$ \& $Q$ \& $G$ \& $L$ \& $E$ \& $Y$ \& $A$ \& $Y$ \& $P$ <br>
$W$ \& $I$ \& $T$ <br>
$W$ \& $K$ \& $I$ \& $E$ \& $Q$ \& $G$ \& $V$ \& $I$ \& $I$ \& $G$ \& $D$ \& $D$ \& $V$ <br>
\hline
\end{tabular} $R \vee S V G P$ F A Y I R P G T E $F$ CT F N R G T V Q D K G T $T$

N A T I A K G S T Y NAT $\square A K G S T Y \square G D A D I G G$ Q G
 RTHVGPFAYIRPGCTIGDDGKVGDFVEVKNSTVGDGTKIS Y VT I HRAT GENCET RV NADI GA GATYCGDAT
 FNSI REYCTIHRATGE DVDI GANTTIDRGTVIGRER G T






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## $\square D P N T Y 乌 S$

SADA IIGSDTVLH
HPGT【IE

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TGQGTRLHPRAVVLAGCTLGARCTVHSGAVIGADV

## F

S A


TARTGKNVAA：

SAVIHQTAII EEGAIIAANVTVGPFCFI GSEVEIGEG GKNVWI AAFVDYGENI HI GNNVEI NMNCIFLD

## $K \square S N D V \operatorname{Fi}$

FY T D C
ASATLGDETYVGEFAVIGANVRLGKNCQDYPHVYVGDNV ELGKNVVI GPFVNIKSNVEI GDNTIIEANAYI RIGEDCVI GRGAYI GSGVRLGAGCKVQNYALVYE EPFDHPDCT』TGSRFGAYVEGGAGCRVANAVVGDYSY $\square D P N T Y \square D W N V$ SI GEKTFI NMNVTMLD

 Q GNRTTLQKGVTLNGNVRIGANCILAPN

GRGEAL WDTAPFFADY
 KIGNDCFI GPFVEI QKDVTI GDKTRI QSHSFI CE

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 E S $\square W \square E P D V S \square E G D V E V H P N V S \square K$

GENFYIEPNFKCDYGY
SVELGEGVA DGPHAVVMEGVK】GDHTQ\｜HPNVHERTE $\underset{W}{\|}$
$T V$ VDP T T WDD A DVTDGRDTVVRPNCQLL
AEVEDGADTVVDPGCVI EGKTKIGSDCEIGPNCRIVD VGKDTEIGPHVVLDGHTEIGQRNRIFAGAAIGLEP
EVE $\square G M D T V V Y P N V H L E G Q T V I G E D C R D H T G A R D V N A$ EDAVLHEYPWIERPDNLDYGTNITVGSNVFDNF


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 I A D GATIVEANSMLDQAVVGENCSVGPYARLRPGAVMHENA

 IA EGGTIVEIGDNCVVLENA $\quad$ VLRSTVKHSSLKIGN

 $G K N D S G G K E V F L N A G C R F Q D Q G G \square T D G N G V L I G H N V V L H D$ $G D R V Q V S A G A V I G A D G F G F A Q D G E R W E A V P Q L G T V Q I E D D$ QHLKYR GEDTR Q Q H SETRR DGENCSF FTGAHVAHDCVVVGN
 A A GIRIGDHTRIAARCTVYAFNHGLSPDALVRAQP GNNVVIHANTVI GSDGFGFAPQADRSYSKI AQ Q G NVVIED
 Y S NVTVVRENCVIGDRVIL QAGCVI GGDGFGYITSEGKH T PGRTKLGDNNVIGYHAVVGVKCQDLKYKPWDECF LE GGD



 PA S L A E G V F I G P A V V L T N D H F P R A V
 GAK I T I G N NVLI GPNA QFYCA SHHLL



 $L \vee S I G K N C F I G H G V M F \square N D T F S \square G G P A C G N K S$


 $\begin{array}{ll}V V T G R T T \\ L & E \\ G & A \\ V\end{array}$
 $G N R V I V H A G V R I G Q D \quad G F G F V G G R T G P E K M P Q V G R V V I D Q$

 $E L V T I G D D C F V G H \quad G V M F \square N D L F N$

 GARCVI HS GAVI GADGFGMAWAGAEEGWFDPQIGRVVIED

 VI R Q S VA E K S Ei G S DVQVGPFA H DR PI S DEVKIGNF VEVK
 TSPLEVGAFCSIA EETLFLCRANHPTHFDSTFPFEVHMTN

 RNLLDDDQTYTHESKH




 HNNDK LGPFAQQ RPESVI HDNAKLGNF $\square R E F T L F N P G T L G G G S Q T V I G N H N L F M G Y V H V G H D V H I G N$


 GCA I GPFA QLRAGTHLAAGCRDGNFVEVKNS RLGE GCKAN
 EVP QA Y IIE Y S EI GKNT I IS I GTPP QDLGYKGEPTKVIIGE




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 UniRef90-A8EWV5 UniRef90-R2SOO7 UniReffo-C4K351 UniRef90_U3JZR1
UniRef90_K2D9C4 UniRef90-UPIO003820CA0 UniRef90-G8QPD3 UniRef90-F9L6X7 UniRef90_V3TY15

NERGQW $\quad 90$ PQGGVRIGDRIVIGNTTVNQVQI AHNDGG

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 HVFIASHAVISGYCEIGQGSFIGVNATLSDVHTAANNTVG $G \vee K I A D N L V Q \mid A H N V Q$ V T S Q GI D
DVE円GANTS!MGSTVI NVTMLDETVIKQGTK KVLQTGNVVVGDDVE NNDGGCNTCI DRATVDSTVIGKGTKID NNDIREHASIHRSSKSSDQTIGGNNLIMGCHI AHDCHI G HTYLGDADVGAGANDGAGTITCNGYFKHRTVI GERAFI G SVSDHRGTKQGGETKI GNDNLLMDNTHПHDCLI GNHCVLA GNKFPFWKSFTKPVT GRTEKRKTLFKGPT GVQVGPYAH|RPNSN DKGAYHKIPQ1GNVR
NTTIREFCMINRGTK $\stackrel{\mathrm{NT}}{\mathrm{N}} \mathrm{V}^{\top}$
DNSNAPHपNYVGDSI
SASYWDDAEDGRTAC
Y LاKRRNWETTCAPIT NTTVGPFAYDRPESVI RTMDR REFATINRATTE AGDYDCDPVAVGEDCWLG
TAFHPTNAMDRFGVPQQ $G K E H F K I T H I D G K V I I$
$R V M V G H G S L N E$

 DCMIREGVTINGTGGGTRIGSRHIAHDCQLGNDVMS DCMLREGVTVNPGTEGGMSTTVGNGAFLANSHVGHDCHVGG YRKGNQGTQYGKPVII DVEGGATTDDRGTVI RGAHLGNFVEVKKAE
KNAKVGNFVETKKAN
EGGPGAPEKWKST EGGPSGAPEKWKSTTI FVTFAPGVHCNGNIIV $N V H V G A N T T I D R G T V I$
$K G Q V V K P Q L G T V I$ GVTVGPYAHLRPGTTL
NLRHOGNDKVEAAT KSTVGKGSTYIGDAEV

 NPMERLKYEFGKSVTVGQNSHIGNFVEVKKSLVGRDVKAK NVEVGSNTTVVGETRIGRGVKIGNHSTVGVGTVGNNVVA
 SVIIANSVALAGHVHI NUYQEEGATLGRDTVI RTTVGPFAHLRLDAH V IGQRNAGDEYARPIT DVRDGSNCSVDRGTII
FYTLEGWDMMKGDTVI EGTKVPHDTYDGDAEV
 GVTVNRSTREGGATEVGDRVIMGGGAAVHQTRI GHHAFI G SHCMAAAHVHDSLVGKKVVI G TVRUGAGSEIGGASTVVDRGVVIDGSVVVLHNVRIGRGGSCIA YTLFNPGTIGGGSVTI GSNNFMGYVHVAHDCII GDNCIFA HLSYLGDADLGSEVNVGAGTITANGVRKHRTVIGGGSKTG ASLRQKGAQYNDPVTIEKGAWLGAGVTVLGVTIGENSVIG

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UniRef90 A9DCX8 UniRef90-B5JFI2 UniRef90-R9R8V5 UniRef90-V5FJ71
UniRef90 A8EWV5 UniRef90-K9Р3С6 UniRet90-R2S0Q7 UniR Ref90-C4K351 UniRef90_U3JZR1 UniRet90_K2D9C4 UniRef90-UPIOOO3820CAO UniRef90-G8QPD3 UniRef90 F9L6X7 UniRef90-V3TY15 UniRef90_UPIO004632651

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SNALVAPVQI GNMATVGAGSVVTKTVADQE LA $\square A R A K Q R N$ HNVFIDEDTADAGCTVLAGSCRDGKR
HLTYLGDAEVGARTNI GAGTI
HLSYLGDSII GENVNIGAGTI
INGVVHKT TLPENESVPDGWIADGNPVKMFPAEKHDE AQVGl AGSTKUGNHVIAGGQTGUTG
AGALLLSDAEPEGLYVGS
$H \square S Y 1$ GDAQVGEDVNLGCGS $\square T V N Y D G K N K F K T V$
AGAVVT KDVAPNTVVA GVPARLLRPLTEEEL
ACTGISGSTRIGRCCl| $1 / A G S V G \prod A G$
HHAYI GGLAAVEGDVIPFGMVLGNRAYLSGLNVIGMKRAG AGALVTRHTEAERVYVGSPARAVAGR
GGVGI AGHLEDADHVVIGGMSGVSRS
AQSGIISGSTKLGEMSJVVGGQVGIAG
GQVGVADHTITDNVIITAKSGVGKNDDKAGVYGSGDSAVE HLSYVGDSTVGKNVNI GAGTITCNYDGANKFRTVIEDDA NLVHVGNDVIGENCILVAHVG■SGSVTV NNNIFANNTLLAGHVI
SNALIAPVRIGADAIVAAGSAVSRDVADGE $\square R M$ VRAEQL NNATJGGHVI DDDYVI DGGMTAVHQ AGSVVTKNLEPKDIPSQS KAVGNP
AGSVVTKNLEP
HGSYVGDATVGHDVNTGCGS
AGAVVT RDVPDNTIV GGVPASVMRSLSEEEM
HNVTVGENTVAASQVGVAGSSKVG
NAVQFAGHVVVEDNVVIGGM
AGATVTKDVPPHALVPARRПAWVGRAGEPLEPASDGTDS
$\square N V S!P G R K I G S G S F I G P G V V V D V N V P P R S L V V V K Q D$
SGAIVTKKDVAYTVVGGNTAKVIRRR
ANSVVNTDVPPNSLVGNGGGPAKIRVIDESE
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NNVI LSNVVNMAGHV
GGVI MAGSKIGRYCMIGGASVING

GGAIIP PGVTI GDNVVI GAGSVVTKDDP
SQSGl AGSSILGNGVIMAG
AGCVVEGRDIPPPEFV
AGSVVDKDDERPG TYAGNPARFDKSSE
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ANAVIT KDVPDYC VAVGLPARIIKR
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GQCGlSGSVTLGDGVMMGGSV
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SNSLVAPVRVGAGATVGAGSTITKTIEADQLAVTRAKQLN
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$G Q V G I A G S V I G D G V L I G G Q C G V T G$
$H G A V V G M G A V V T$
$K S V P G V T V V G N$
GAVGMGAV PARVLKR
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HNVII GDHTADAGGVVMAGSLKDGQ
HLTYI GNAQVGSSVNVGAGTi
$P G V V V G A D K N O S N S L V V V R Q E V V M E R$
CNSLIAPVTDGKNAYIAAGSTUTEDVPGEALS $\square$ ARARQVN
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AGSVVT KDVAPYAVVA
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GMSRIERDVPPYMMVEGNPSRVRGDNQVGLKRSGDGDDE
ANVKIVGSYI WNGATVADGATI
HLSYLGDATLGAGVNVGAGT\|TCNYDGRQKHRTIVED
AGSVVTRLEIPPG
AGSVVTT KNDPANVLAVGN PCRVIRPVSPKE
AKCGIAGST $\square 1 G K N C I F A G A V G V V G$
ADSVVVGGNVEYTIVAGDPARLIRRRFDQE
CNVLVSPLKVNDNAFIAAGSTI TDEVPEGALA
GASALS QDIPPFCLAEGNRAILRGLNLNGLRR
GLAAVSNDVIPYGMLNGPGVLMGLNIIGMQRSGFDKASDH
NASLLAGHV
AGALIGGSSIGSNVFVGMNASTKS
GGTVVGGSTIGKYCIIGGGAA】SG
NGATLAGHVECDDFVVVGG
ANSVVAPDTLGEGVTVGAGSTLTKDVPAGALA
AHSLVT QDIPAN VVAYDPCRVIRPDPKEE
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SNVL:APVK: GQGAYVVAGSTITHNVEANDMADARERQVN


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50
60
70
80
 $K$ NAKI GNHAE $E \square G F C H V E G A V V G K G A R L G P F A R L R P G G E N V H I G N F V E V K$ GDNCFILEDNTIQPFVKIGNNVTLWSGNHVGBHDSTIED GPHVVVKGTTKMGKGNKI YQFEDCQDLKYNGETTELEI GD





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

 S $\square \mathrm{G}$ N S CII GGKDCKDI P GAVI SA QP QDLKFKGEYTTVE $\square$ GDRT TVRE ESHVSVKRYTTI GSDCK IHIGGGPQHLGFKGEETYDRIGN NAPI RI GAHVMI GPNVQIYTAAHALEADE
A A HVVI D R NTIL GKYSYACVGSDPQHLGYK GEESCLEVGGD ARI A A GTRIA P FSHLEDCD

I GA P S RLLEVGDKTVI RECVTL HDGTGCLLMANAHVAHDCVVGN GKDNQI Y QFASI GEVS QDLVY A GELLTRDEDGDR NSI RE

 GSEI GAHCIVN G $\quad$ I I I GDGTVI GHNVVLATGNHGFRPEDRGTLYP
GYKAEDDVKVII GKNCTIREFD DCF $\square M \square Y S H \square A H D C Q V G N$
 EAGTVVGDNV

 $L V A G G K P G \square K M D D F C T L A Y G D K V F S Q T D D Y S G E A G L T G A$ $G D R V \frac{V}{I} H P G A R \square G Q D G F G Y V G S A K G H A K \square P Q \square A R V I L Q D D$
 F GY $\square$ T NAFGRHK QVI IED DVE DGANTTDDRGRFKNSVI RE
 $H \square R I G E G T F V N F G D V A P \square T I G A H C Q F G P D V Q L L T P S H D L D$


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 GDSCVIDHNGV CDGQD GF GFFVVED GSMVKKPQMLNARMGN
 GSTT\ANNVEVGPDSTLINMVVGEGAHVIRTHAMDSEVKA HV G K G T V I LIP GTY $\square$ D G NVVI G E GDNTTDYAGVK IYEGCRDGSNVII HAGAVIGADGFGFAPD




$E \| G$
K HVIVNS GAVVEHDC I LED

 GAVIGAEGF GFVVPVVDQAHRWYPMPQS GQTILEDQVVVGC

 GENFYANYDCI MVDVCEDI I G DNVLLAPRRVGDYTAGHPDD GAYVRIFNFVQIGQDCRI YENGEPQDHSFRGERTKVVVGD





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 $G N N V V I H A G A V I G A D G F G Y K Q R N E Q H \square K V P H V G N \triangle I I E D D$ ■D AF TH HD GAEL GANTVIGPY



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 DARI GPFARLRPGTRDAEAVHI GNFVEVKNSVIGQGSKAN $N V I L V N C A T L G G H V H I G D N T I L G G L S A V H Q V R V G E G V M V G$

 GVTVGDDVVEVGANTTI DRGTLI GNGVIAHNVQIGDNTAMA

NVTMANNATLAG GSDIGP Y S HL R P A A E I

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 $N V V L G P Y A R L R P G A T L G D E A H V G N F V E V K N A V L G H G S K A N$ $G V$ I EP P S A $\qquad$ GVSLGP GVLIDPVILEKNVMVGANAVILGVHVGEGAVVA







 GAR $\square D N \frac{L V Q V A H}{A H D V Y}$ | N | V | A |
| :--- | :--- | :--- |
| P | G |  |
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$Y \mathrm{~V} H \mathrm{~L}$ S P NATLAG $\mathrm{K}, \mathrm{V} F \mathrm{~F} \mathrm{G}$

## N

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## R

$R G I D E G V T \ H R A T G E G Q S T V I G D D V F L M G V H V G H N V R I G$


 DI RMGPFCHLRPKAHLAKGVKMGNFGEVKASYLGPGVHMG $N A T V G P F T Y I R P G T T L G P E G K L G G F V E T K K A T I G R G S K V P$ $R V I M M V N S S A L A B H C I V G D D V I I G G G L S G V H Q V R L G R G A A I I G$


 DV Q V G P Y S H L R P E S E I S E G V K I G N F V E T K K A T I G K N S K I P $Y$ V TI H R GS R S G L L T V V G H NL L M G L S HVA H DV E I G N R VI L A




 $D V K \| G P F A H D R P A S Q Q E D E V R I G N G V E V V K A S S I G K G S S K A S$


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 GQDVETDVNCTFEGAVSLGDRVTI GANCI!
 KNSKLESTLEVGPFSII GKEVKI GKNVKI QSHVVISGDT RIEPGAFI RDQAII GKNAVIMMGAVI NIGA VGERTVIHPFAVIGGDPQHGEPVRLEIGADNSDRE QLHPTVRVEPYAVIGSQVTHGANTVVGSHADDGG RLSHDTELEADVMLEPNVFFGPGVKVAAGARDRFSH ELQPDVIIEPQTHLRGQTVIGSGCRI GPG SVTVAPGVSGGEGVITEDDVQQGENTRIETGALVGRGQ
SRATHHPEAKTADDVQVGPWTTTGPEVETGAGC\|DASV RUGKNCRUYPGVYUGEDCVIGDDVTIHANAVFYPDVV AAAQLDPTVTVGPYAVIGPHVQTGARTSI GAHCVIEG ASATI GENVTI GANAVVGENVVIGDNVY:GACATIDN ARSVIGEGGWLAPRVTI YHDVRIGKAVVIQSGAVNEKGV KMGKSVNIEPFFIVWGNTFIGNGVYM NREDS DYD VGAGAVIRPPFHCDYGY GKNVWDAPFFVDYGNTHLGNNVEINMNCV T LDVNVIFEGTVVLEDHVSIGPNCVIKNAVIKSGTE PSACTWPGCHLSTNUTMGRESFI NVGFFFDG QVGMDTTLLPGTTLKGRTTMGANCMI GPN
SAKLADDVVVGPWSIVGADVEIGEGTVLGPNVIIPTKD SARLAPDVTVGPFSVIGADVEIEAGTWIGPHVVIQG ADVTUAENVEIGPGCVIQQGVTHGAGSRLVANVTLCHGM

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TIVDPSTYTENDVVIGADTVIEPNVQLK $D V S D D N C D F E R V T L G K G V Q G P N C L L K N C H$ VGEGAEVHPEAVLKGPLYGGDYKVEAGAELLRE MSNNKIAKTAQLKDNVTIGDNVIIEDDCFIDYGVIIRDN PDLGEGSFU QGPLQVDYGNNAGKNFFANY AQARTGPNARTAPHVSTGAETIIGASSTLHAGVKIRVFI EAKปGDNNIIGPFCYIDKNTVIGDNNVLQNNVTI GSDVETDVGSWIEGPVRANWACNTYWGSKCYANF RSVIGEGTFWLDATVI:GQDTVIEGGVT: QSGAVNEKGV EVTIEPDAVILPGSYLQGKTKVGAHAVIGPDTTLIDAE SEVTI GQDTTILPGVQLDGATDIGADVRIGP
 RVGQDVIIHPNTQLHGSTVIADNAVIGP TTGENTYVEPTCDYGGDGLGENVNIRPPFHCDYGT
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70 GDSCVIHSGVCIGQDGFGFYVDGDGNMDKKPQK $\quad$ NNVIIGN N C VLL
 GEYCQLAPGVQLLT A P G
H P F AWHPDEAEPR

TNASVGHDSEVGK QDKKYGGERVVI GDGNVI REFVTMNRGTAGGGGHDCQVGS ADRVRDHAGVVIGSDGFGYEFTAGRHAK DPQDGTVLVGND K 1 GKCFHANL K S A T IEE EWTEDGEECTDSQGTDPQDTGFENKKSFVKIGD T IH $\square G S N T F D N M G D N T E I H \square G N N V L I G P N A Q F Y T P T H S L D$ KNATMADDVV EYVT GGEGC $\square E A N S V V E D S V V G R$
 HCTF NRGTPQGSGVTRVGSHGLFMTGAHVGHDAVVGE
 LIE $\ G N H V H V T L G V K F V T H D G A V W V F R E K I P D D D V F$ $L E G A I V E A N A E I G P F A R L R P G T R V S P T A K V G N F C E V K V L D$ SLIENSKI GENV TVLYAVIT DSEVES
 GIGGVGNSIIGNGCKIGK V $\quad$ KGPTK $\square G R N N Q \square Y Q F S S V G E D T P D L K Y N G E P T R L V I G D$ GNRVLIHAAAVLGCDGFGYRFEAGRFIK VPHDGSVRIED GFNDEVGDNCTVLDSGKVSUGDNVMFAPNVSLYTVGHPLH GTKISIAHDVVI GTGCII HQNAVIGCDGFGNARDEDGSWT WQKIA QIGGVVI GDNVEI GANT TDDRGALADTLIGN NALVSIGDNVLI GPGVCI CTTTHATDIKGRREA
 $\square K S F S H D E D A Q G Q N C E D G P Y A R L R P G T E N F V E T K K V Q I G$ A A RLT TGNNVRVGQFLSVVTATHDVGPAEQRCTDEAVL GKHNRVYQFSSLGEDTPDRKYKGEP TRLVIGDHNDIRE

PTRIGHDNRI YQFSS LGERPQDKKYGGEPI GDRNTIRE GHRVILHPGVVI GADGFGIANDNGRWDNVPQLGSVEDGDD
 FGFAPDGAG QWWKIYQ GGVEDGDNVEIGA
 K GQVTVIGHTSVGDNCVISPFGAPQDLSYKGEPTKLE G G GEDFYANTGCVFLDTAPITDGNHVYMAPSDSGYTAGHPDD $G R T A D A T D A T V G P D T T L T D V T D G E G A S V I R T H G S S A C I G D$
$V$ V SRPSVTI GNNVDMNMNFQDLTHDWASLVFRTKYND $\square 1 \operatorname{GKNCSLGQNCMVGKNVIIGDNLKAQNNDSVYQGVRMCD}$ GDNTTIAPNSVIGEDGFHVYDDLNGIKRMVIHDGFVKIGK QSHVVVSGHTSMGSGNRVFPFTS $\square G Q \square K Y H G E A S E V I I G D$ EDCLIGDNVSLNY

VQAFKSEI EA
E 1 REHTVIGSNVVVNGSGAFLHRAVVAD
$D T \square T I G E R S N I Q D G C V A H T D P G$ GNGSII QPGAVI GSDGFGFDKVNGNNVK】EQ QGKVI I EEE NDGAVI GEGTM DMNAVVG GRGTIGKNCHVGAGAVIA GKNDTIGKDVF NACCHFQDHGGVVLGDGCQVGHNVVFAT GDKFYMNYGCVILDCNPVHDGENVLCAPYVQIYTAYHPTE $G K T V I G S D C F I G S N S V I V D S E D A D E V A D Y A S H L E Q A K V G R$
$L A D G T R V E A N S I I I E D A E V G E A C T V G P F A G N F V E T K K A K V G$
$V$ $V H \square K K G S T G A R C \square \square G E Y G S T V V R E A F A H R T V L H D$ $N L T M M D V C P V T I G H D V F F G P N G S L L T P M H P D Y K E R N A Q V D$ N KVVIGKRSNI QDGSVLHVTHKSSSNPDGF
GDGFIAQAGAVI GSDGFSFTTSGPSNVERAVRSRPGVALE NYGARDGNNNE FPGAS DSTKPQ DLKFKGEDTTCEVGD $N L V L V D D G R D D G D H T M F G \quad P N V T V T T G H A D R P D \| R S$ GQTVIGKNNLITQGSRISDSFIGDDSVITSSHLESARLAN
 VEGEAHVERSRVES S M H GGRKATIGPWTYLRPGNHLG FRG $\square$ S $\square$ GARS LIGEGCILRGQGG $\square$ S I GDDVY LAPRVQLL YVTIGSRCFIGHGVMFANDMFR
ATRVDDDAVIGDTTLTDMQVGRGASVIRTHGEKSVIGP YWRDVGTLTEYQEAHDDCLNGKVNLDFTYDYEKI AD DTTLTNMVVGEGAQVVRTHGSDSEIGP $Y$ VS $\square$ GAHTF $\quad$ NFGDAAP VCE R I GYNCFDAPGVHIYTATHPLHPEE
 $\square G S G V T V K H S V L Q E A V$

GTAVYEGAVIGDTTLSNCVVGPGAKVIRTHGTDSEIGGE GRGARIGAGSHI GPNNVIHHGKRFRSFGNCTVGGDGFRFV $\square G K F C S \square A N G V Y \square G L D A H S D N A D S T S P V F Y S S R N A D G F S$ GKNFYANFDCVI LDVCEVRIGDNCMDAPGVHIYTATHPDD GNMTS $\square$ GPGSII KDAS $\square$ GSRCNVTQSVVENAVIED
$V R L A A G T V V Q A H S D$ D NDKQPRSKDYPDESGGVVTEG HS G H Q DDVF GPNVTFTNDKQPRSKVYPDEYL NS H NVVI NGVTE GEDNQI FQFAS\|GEIKYQGEPTKTIIGH




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| UniRef90_IOHZE | GSCAQIGKHVHLSGGVGIGGVLEPMQAGPTIIEDNCF\|GA |
| UniRef90-Q7N | GPHVVIEGHTALGKNNRVFQFCSLGATPQDELGDNNTIRE |
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| UniRef90-G5ZY19 | HSHVVIDGNTSVGEGCEVFSFAAPQHTRYEGEDSELI GG |
| UniRef90-UP10004641 | DSDVIIRSGARVGGVGFEFKREGDSHSGGVKDGKHVEVQN |
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| UniRef90_S3UK | NPGVLGEGVN QDNTL |
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| UniRef90-UP10003B5: | GR SASDEIVIGDSVMMANGVYUTDSDWHDLYDRTARSP |
| UniRef90 ${ }^{\text {K1 }}$ | ELVS GDNCFISHGVMFTNDLFKTGK |
| UniRef90-F9z7 | GSGCTTHAGTVIGAD GFGFAPNGDNYNKVPQDGNVVIED |
| UniRef90-A8UVU8 | NCRIYEGAVIGEDPQ |
|  | VISPSVVLGKNVKVQNNVSVYTGEDHVFLGPSMVFT |
| UniRef90-R4X9 |  |
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| UniRef90_C1D | EGTVIEPNCIIRNSKIGKNVKANSYIEDSEIQD |
| UniRet90-Q6CE | P IIA G G Y Cli STQVTVEPPCKDENYYPVRTGD |
| UniRef90 UP100037E |  |
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| UniRet90 A7L4W4 | GSRCVLGNSI MMDDTAIASHSRVVDAVIGERCGLADHT |
| UniRef90- ${ }^{\text {O9CJLO }}$ | D |
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| UniRet90-25XPX8 | WANVT'YHDVE GSDCLFQANT VVGSDGFGYANERGE |
|  | ( ${ }^{\text {a }}$, |
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|  | GVSLYKGVI EDDVGCGPSCVFTNV |
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|  | \AKDSQVDAFSVADQCKVGPYPGAQLSKGSQVGNFVEIKN |
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| UniReef90-K5xW | SGRTRVGAGAKIVPPFCTIGLLEPQADDLKYKGEETETVIGP |
| UniRet90 WoNFYo | GNGVRIASHASIVGFNHGFDDPDDPTHRQGVVSTGITIGD |
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|  | R GDDVEIGANTCI DRGALQDTVIED |
| UniRef90-UPIIO022DF33DA | ARGAS\|KPFCH |
|  | A |
| UniRef90 B4 | NNLIREHCTFNRGTPQGTGVTSNNLFMTGAHVGHDCVVGS |
| niRef90-UPIOOO2D5 | D |
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| UP1000363252F | $V G P D T S L V D C E V G E G A T D T R T D A T L A V F G A ~$ |
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| $\begin{aligned} & 0-A 6 E Y B 5 \\ & 0 \end{aligned}$ | GPGSFINSA\AANCKMMSSYVIDSEMGA |

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EVTVGHRAVIH GSID GDYCK
GHNVWL
 EV TPDYQQASNSKGVVIGEDVWI NVETGANAClMGSTRI YVTIHRGTIDKMKTVIGDDVMLMALVQVVHDCVVGENTVVA EDGSRYVITTTRPIHVGNDVWI GGNVTVLGVTVGNNVIMA NVINPRSAVNRRGTFVRKGATIGANAIVCGVELGEYCFIG NVFLARSALLVSRVVVGTETRI GEGSTI ENSII GRSCHVD NVEI GANT TIDRGVI ESNVII DNQIQIHNVQI GSGSAMA NAVIGPFARIRGGSVIKEEAVI GNFVEVKNSVI GRKTNAR VLAGVIEPPSANPVVLEDDVLI GANAVIEGVRIGKGAVVG

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 RVWI GGGSIILSGVTIGD DVWI GANCVI LDGATIGN NCLIMAYVH:GNDCT:ESNCDLGNNVTLTGVYVETNADIS GVKLDNLVQGHNVR GKHSAMAGCVGVAGATI GAHCTVG WVYVCDOGRVKSPVRGGDTWI GTKSELKNSKVARKCKAN HTVVREHVTMNGGTAGGGHVTRVGSHCLEGSHVAHDCQUG NLVMANNATLGGHAHTGDKVFLGGLCAVHNGRVGQGATI G

 HDHEYREVVLDATVTI GRGSWI ANGVII GDVHI GRGCVVG DVEDGANSTVDGSTILRRGVKLDNGVQI HNVEVGENTVIA $N N H N F Q G D R Q G I V E E D C W L G D G V V L D G V T$ GRGSVIG GCTIREHCTIHRGTVTGHGTRVGAGCLLMAVHVAHDCALG VEDGANTCVDRGSTYVGNDVWLGEHVTVLNVTVGNGAVDG

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$N S D I G P N S H R R P G A L$ GVIEPPSAM PVTVEDDVLIGANAVVKGVTIGKGAVVG

RKSTQPAPIVLGKNVWVGSNAT, GVVIGDNAIVA YVT TSRGTNGGGGTKIGDGCLIMAYVHI HDSSIGNGCLLA PRSQVERKSEYRDTLVREGATLGANCIVCGVTIGRYAFVG
 ADTHVGNFVELKNAQVD $\mathbb{C}$ SKI NHLSYVGDASVGKSVNI G KATVGVGSTYVGDAVI GKDCNLGAGVITCNTTI GDNVFVG

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N NATLA GHV
$G C D G I A G S T I G A R C T V G G A A M V F G$
E EAQI SNVKVWPSKRVEPGA】LNDN
MGSAI SKDVLP
$N H I L A N G V N V G G H V E D G D Y A Y F G G N S A$
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A G SVVTTKD TK P G
$A Q C G I A G T T V G A H C M F G G Q V G I A G$
$N C A T L G G \boxtimes E V G E Y T F D G G$
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$S D T L V A P V K V G D G A M T A T G S V I T S D V P A G A M A$
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ACCNVNTYEVIPENTVIYGADCLRRVQTER
HLTYI GDAQVGAEANVGAGTV.
NNATLGGHVSVDDFAI I GGGMTAVHQ
HLTYLGDAEIGANVNI GAGTI
A A ALI LS DAEAD GVYVASASER SRVPSSK DRK $\square$
AGSVVT RDVPAGATVAGNPARPVRRSA
AGAVVNKDVPANTVVPAGVI



| lupas_21 |  |
| :---: | :---: |
| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
| conf | 986 |
| sol25 | B B |
| sol5 |  |
| sol0 |  |
| jhmm |  |
| jpssm |  |

