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$V L S L A Q Y A E L A G L S T G V V T T T R L T H A T P A T V Y A B S S A S R M W$


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 KYMTPKGFPDPEYPSDASAQGQRR DGRNLIQDWI MYMTPMGTPDPEYP WDQKQNGDRNDGVNLI QTWL KYMFPKNQSDRKDGRNLVAEWTEKMGHYVWNKQQLVTLNP KYMFPKNTTDVEY QTEDKYRGTRLDGKTLTTSVWK MYMTPK GTGDRKDKKNLIDVWKGRNAQYVWNKEQFNAVDV KYMTPAGTPDREDGQNLI DMWLEKRPRYVWNRTEMLDAAAAA K Y MFPK GTPDPEYGRNLVEEWKHQGARYVWNLTGLQQASA KFMFPRETPDPEHGRNLVKEWKHQGARYVWNHTELIQASQ KYMTPRGTKDPEYSSDLL S SWGTRRDGRNLI QE WQ K FMFPKGTKKDPEYGQDLVQKWKNQGARYVWNGKELLAQASQ KFMFPKGTPDRRLDGRNLVQQEWKHQGARYVWNHTEELAQASIL Q Y MFPSSKGTRNDGRDLVKEWMNKTNAKYVWKKSDFDSVD
 KFMFPKGTPDPEYGRNLVQEWLAKPQRYVWNREQLIQASQ SYFEE QADA GDYEGQSLVFEQAEAR GYQVANDAAAALAADTE MYMTPKGTPDPEYPTS

NSRKGDRKDRRNLIDVWL K F MF PKGTPDRLDGRNLVQEWKHQGAKYVWNHTELI QASL K Y F DQR $\square A A G R F A G R T V R Q Q A V D T G F Q V V E R A D Q L D P$

 $K Y M F P M G T P D R M D G K N L V Q E W K Q Q G A R Y V W N R T E E$
$K Y M F P M G T P D P E Y P G D P A R G \square R L D G K N L V R N G G K$ KAFEQNGDTSWVKGRTVLENAKANGFNVVTAAAGLDSVKK CS F LLP VT TM K D R G D G R N L L E E WE K K K Y E Y V T N A S QL K S L
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ATQDKPVLGLFAEGNMPVRWEGPKAEKYGYL ADQDAPVLGLFSDGNMPVRWEGEKAVKEGYLQQPAETCTD ANQDKPLLGVFADGNDPRLDWDKATATKEGGGKEPAVTCSP ADQRRPVLGLFAPGNMATRWVGPLATHTGGGEPAVRCTDN ADQDSPVLGLFSKGNMPVRWEGDKAEKEGYL KPAQTCRD ADQKKPVLGGLFGQGNLPVVRWTGPAATPTGGAQAPAPPCTA AGQDRPLLGVFADGNLPRQWAKATAVPDGNR QPAVTCSP

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DKKPKDKNA QYVWNRSDLLSLLHMEVDFLLGLFEPMDMMYE D L A VT Y LM GLF EPA DMKYEFNRNQT L
NAKPEGKNALY L WNNRTALELDPENVDYLLGLFEP $\square D M M Y E$ $N$ L E VT H $\square M G L F E P G D T K Y D L Q R$
 P NRVNYLLGLFEPGDMPYELERNK

 RTTDNLMMGFEPK DCRYE L E K R
D P AVT HLMGL FEPGDMEYEIVYNKTL
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$P A T T D K V L G L F G S S N M A Y E L Q R$
D GKKAKK GHYVWNKK QLSLLNPNNVEYLLGLFEPADMTYN
DPSVTHLMGLFEPADMKFEAER
L S K T D H L LGLLFAMSHMDYA I D R N
S S A T HVMGLFEPSDMKYEL NR
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K T T DRLMGLFEPKDMKFEVFRNR
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DPSVTHLMGLFEPGDTKYETRRNLTL
A R Y V WNK E GL D A
STAKHVMGLFEPADMKYELNR
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D S T V T HL M G L F EPA A E M K Y D V N R
D P S V T H L M GLL F E P E HMKY D I YR
PRKTDFLMGLFEPKDCRYELDRDPNM
$\square D$ D K S R V M GLL F N S S H M E Y E L D R V K
A T T D F L M GLL F E P K D CR Y E L
D P AVT HLMGLFEP QHLLKYEINR
A GA QSPVVLGLGSPPKNMPTRYLSTPATDGGA DDPPDTCEA K A KPNKKSRYVWHRKEFDE I NVKNT DRLMMGFEPK DMRE E DPSVTHLMGLFEPEHMKYDI YR
$L R G D Q P V L G L F A A E G L D S V W T G P Q A R A G G T \quad P P T R C A E$
AKTGHVLGLFERSHMQYEAER
$Q \vee A G P G V R G L F E P G D T K F D V N R$
$\square W L K N K E D A V Y V W N K S Q L D G V N V R T T Y L M G L F E P K D M K Y D$ DPSVT H L M GL F EP G D MK Y E I HR DP T L
 PNEVDHLLGVFSYDHMNYSHYRLNGT
D S SVTHLMGLFEPGDMNYEAKR
KAKPKKKSHYVWNKKGFDE $\square N V K T T D R \square M G L F E P K D M K F E$ KHQVIGARG CRGSWLARGQPPLPSFPTGLFEPADMKYD
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 A ESHAGDDVAVF A Q GPSAHVFQQGVDEQNMIFHVMTHAS GI
 E E T H A G E D D V A V F A R G P Q A H L QETHGGGEVAVFARGPQAHLVHGVQEQSFVAHVMAAAAC GQGHTGAQLRIAASGPGAQNVVGRTDQTDLFYTVMNAL S N T H G G E DV GIVY A R GP Q A H LVVS GVVVEQNYI F HVVMD Y A L C L $K$ QQH G GE DV AVV A R GP Q A H L MH GVVQE Q SVV A HVMA FA A C L



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- 1 YDP8 UniRef90-VYDP8 UniRef90-Q94581 UniRef90-H2XPZ6 UniRef90_B4X983 UniRet90_UPIOOO375ED48 UniRef90_C3YZS9 UniRet90-G8H3N8 UniRef90 H2TYE7 UniRef90-UPIOOO3F07235 UniRef90-E8RVI7 UniRet90_B4KRA0 UniRef90_K1QS35 UniRef90-B1KIZ4 UniRef90-UPIO0037BOAE6 UniRef90 V4NHV0 UniRef90-Q7K3X8 UniRef90-K2LS49 UniRef90_Q31K07 UniRef90-B41XJ9 UniRef90-Q29CD2 UniRef90-B1KIZ3 UniRef90-AOA059G9W2 UniRef90-BOW2L3 UniRet90-D2A3C2 UniRef90_W8BXD2 UniRef90-Q2N756 UniRef90-Q21N12 niRet90 UP10003999626 UniRef90_UPIO003345304 UniRef90-UPI0002E7892B UniRef90-A8FSN8 UniRef90_H2ZEB1 UniRef90-G7WKQ6 UniRef90-B4MLS1 UniRef90-UPI000258DCEB UniRet90_UP10003C3811B UniRef90-UPIO003724082 UniRef90-H9JK21 UniRef90 UPI00036FC995 UniRef90-A0A023FLM1 UniRef90-Q9VRM8 UniRef90 C3YZD7 UniRef90 X1XXA1 UniRef90_UPIO003C36689 UniRef90_B9K6X5 UniRet90_V4PAX2 UniRef90-F1MPH8 UniRef90_R414D0

RASPAELLGSHWRAQAQDALKERLARPANRNKARNVIMF WN QKAA EALEVAKK LQP $\square$ Q T SAKNLI IF A R GVVLE
 WNRQAAQALDTAKNLQH\|QTAAKNLI I F WNT WAQRT LK NA L NKNKAKNLI LIF ATVEEENSEFWRQARKTVQAALDRKLNTNVARNVLEF S A A Y WE QVS E A EL LE TL QQKL N IK K A K NVI I F SEI KK KL DLLQRNTNRAKNVILLE
 ET TEAHWYKKAQES LDATMNDKKLNKNAKNVILLF LQDNLKLKQNNNVAKNVIFF
A NTWY QD GQDA LAAAKKLYPNNRKAKNVI L F WNRQAAQALDVAKKLQPDQTAAKNVILIF ERLERQANMRRARNVVL
S S Q LT S P Q $\square$ N S Q WY K D GE N VLK QK LN A K N DK NAI L F $R K \square D G D D T N D Y W R N Q G K E F \square Q T K M A Q K L N T Q K A K N V I L G$ $T$ TPP G GVAR GVVLD
QWF K D G V S T I R
KK
NKPTPEEEKDPEFWRSVAREQVLREKQKLNVNKAKNMGB
ARLRTGSARNVVMF K A GEAAKALTVAPNTGRAKNVILF WF HDAQRTLFEKLSTPPAKNVI FF
A NAQDTKTQDNNPWFTEG $\square K M L E E K L N Y K P \square K K V I L F$ GA QTA Y A D A ATWY QDGQAA LAASPNAKRAKNVILAF
 $K A A R D I R R A Q R \square K \square K N K D A K K V V L F$ $\square D$ A A Y WN QLG QQLL LD E L G K QRIIN S QAKNI I FF S NAKARNVI LI WF S DAQSTLYEKLSMQPAKNII FA A ETLNTKKAKNVI LIF WLEDATKTLNDKLNS GVANNIVVF
T QEYWHR LGGEND LMM S L K L V K K N E K TA K N V I IF A A DFETTAQYWNDGAQLKVKQHLMRRANRNVAKNVIEF AVRDRS QNDDYYQGDKALQEALKRAPNVRPAKNVILLF




E NPEFWRQAQKSLQSVLDRKLNTNVSRNILEF S Q S A E E W DK QGKD EL E K YL K LE Q NTNTAKNVILLF

DREVKAQSPWGD A Q
A Q

A A AKHYTPNHAEAKNVILDM
THRLSVKQNVKKARNVIMF
AEEQQTQYWVDKAQAKLQESATTNKAKNVILF A S LTT S NA WQTKLLAT TK TANAS DVTESGKAKNVILIF
 GQRRVI KGAKRAEEHSYAKKARNI I I

$R$ VPASELLEAKFWQNQASNELLKKLNQQMNKNKAKNVIFF A Q D DVTTAPAPVVQQAAETEQ ESGKAKNVILIF ASKG WYYAGQNK $\quad$ GA EKA Q S V GPDAGKGKARNV L L WN R K A A Q A LDDVA K $\operatorname{L}$ LQ P I T T K A K N L I L
 QMKPQAKPAKNVILFF D GAEPKEARSVI FLL

DSNDYEGMSFWLKS GQENLRRNLNENRAKNIIVGF | N T K V A K N V I | M F |
| :--- | :--- | :--- | :--- |
| S A A K A R NVV: |  |

Y WKKSAASTLKSKLKEKTNKNKARNGILFF A QF WL NDGAASLNDSPNAKKAKNVILEF E A K S K A GT P $\square A$ L R GWCV F
WHDKAQS $\quad$ LADK LA

AEQEQTDKYWRDQAKATVERLVKKKENTNTAKNVIVMF


WN R Q A A Q A L DVA KK LQ P DQTAAANV I L F
SRAAAATVSANYWAQEA QAALNARLAHKESVKKARNVVMF

UniRef90_S2WEE4 UniRef90 G3GBT4 UniRef90-UPIO0042AE610 UniRef90-UPIO00258EE12 UniRef90 L8F1P1
UniRef90_UPIOOO3956C72 UniRef90_UPI000398EC7B UniRef90- S9XMB2 UniRef90-UPIo003BCF5E1 UniRef90-13JXHO UniRef90-F6VTU7 UniRef90-A0A023FKB9 UniRef90-H2Z2U8 UniRef90-A0A021 W808 UniRef90-T1K3V0 UniRef90-T1J1A3 UniRef90-UPIOOO3288280 UniRef90-Q1H213

I GDGMGDSEIITSARNYLYGANGRपPGTDNLDEYTGSYTHFS ${ }^{60}$ LGDGMSVPTLAAARALLGQRQG ATGEEAQMTFESFPTSG LGDGMGVTTVTATRILK GQMGGHDGPETPLAMDRFPYMA VGDGMGMSTLTAARILSGQRHGN TGEEAQLAWDSFPAVA IGGDMGDSEITLARDYTVGAAGR LINMDGFPLTGAYTTYA MGDGMGLSTMSAARDYKGQLAGAASGESVLAMETFPHMA LGDGFG1 PTMTATRHLKGQQKGN LGAETPLAMDTFPYVA LGDGMGVPTVTATRULKGQMNGKLGPETPLVMDQFPYLA




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LADGTADADITAARNYLHGANGRFEAVDNLEYTGYHTTYS GDGMGDPTVTAARDYKGQRLHKHSGEEQQLSWDKFPHVS LGDGMGLTTHSAARNLIG IGDGMGQQEDTLARNYLHGAGGRFEGGDNFVATGAYTHHS GGDGMGPSTVTAARLLLDGQUKKQTGEEANLASWEEFDNVA LGDGMSVPTLAAARTLLGQRNNKTGEEAHLDFEMFHTVA

## L L L L

 I GDGMGQSEITSARNYLEGAGGRFAGLDNLTSEGLY THH

$L G D G M G V T H S A A R N L I G$



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V G D GMSIIPTVTAARIYEGQKRGVDGESNSQVAFFEGFPYTG
VGD GMGISTIITAARILAAQLLEGEMGEEHQLSFETMPYSGG
L G D GMGAVSVTSARILKGQKAGNP


I G D GMSSI P TVVTAARIVAGQKRGLD

Y GQRSGKS GED

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V G D G M D Q Q T I T A A R N Y L K G A G GRF E G DD N L P A T G A Y T H H S
 LGD GM G I S T V T A A R IV K G Q F K N N F S G E
L G D GMSVVH TIAATRAFMGDS
LGD GMGVSTVTTARILKGQKAGNP
L GD GMSIATVAMARVYAG
L G D GMSVGTLTAA RILLKGQRQGR TGEES
I G D GM GLL S QA Y L T S S I E G R

L G D GM GVVSTVTAARULKGQMA GKP GPETPLAMD QFP Y TG
UniRef90＿S2WEE4 UniRef90－G3GBT4
UniRet90－UPIOOO42AE610 UniRef90－UPIO00258EE12 UniRef90 L8F1P1 UniRef90－UPI0003956C72 UniRef90－UPIo00398EC7B UniRef90－S9XMB2 UniRef90－UPIO003BCF5E1 UniRef90－13JXHO UniRef90－F6VTU7 UniRe990－A0A023FKB9 UniRet90－H2Z2U8 UniRef90－A0A021 W808 UniRef90－T1K3V0 UniRef90－T1J1A3 UniRef90－UPIOOO3288280 UniRef90－Q1H213 UniRef90－UPIIOOO3AF6E30 UniRef90＿D7WBEO UniRef90－L7MLK7 UniRef90－B3RR75 UniRef90－AOAO34WOQO UniRef90－S2YUB6 UniRet90＿UPIO0021A803C UniRef90－UP10002B4D616 UniRef90 UPIOOO3C35414 UniRef90－G6CZ49 UniRef90－J2HE02 UniRef90－B3RR74 UniRef90＿UPIOOO3809804 UniRef90－G9FJB5 UniRef90－E9G5V0 UniRef90－D1LWV8 UniRef90－E9HCS7 UniRef90－K9EZZ3
UniRef90
B4J377 UniRef90＿W8BK97 UniRef90＿UPIOO02657320 UniRef90－EOVGWO UniRef90－X1YDP8 UniRef90－Q94581 UniRef90－H2XPZ6 UniRef90－B4X983 UniRef90－UP1000375ED48 UniRef90＿C3YZS9
UniRef90 G8H3N8 UniRef90－H2TYE7 UniRef90＿UPIooo3F07235 UniRef90－E8RVI7 UniRef90－B4KRAO UniRe90－K10S35 UniRef90－UPIOOO37BOAE6 UniRef90－V4NHVO UniRef90－Q7K3X8 UniRef90－Q31K07 UniRef90－C3YZD9 UniRef90－B4IXJ9
UniRef90 $\mathrm{O29CD2}$ UniRef90－O29CD2
UniRef90 ${ }^{\text {B1KIZ }}$ UniRef9O－AOAO59G9W2 UniRef90－BoW2L3 UniRef90－D2A3C2 UniRef90－W8BXD2 UniRef90－Q2N756
UniRet90
O21N12 UniRef90＿UPIOOO3999626 UniRef90－UPIOOOO3345304 UniRet90 UPIOOO2E7892B UniRef90－A8FSN8 UniRef90－H2ZEB1 UniRef90－G7WKQ6 UniRef90－B4MLS1 UniRef90－UP1000258DCEB UniRef90－UPIOOO3C3811B UniRef90－UPIOOO3724082 UniRef90－H9JK21 UniRef90－UPI00036FC995 UniRef90－A0AO23FLM1 UniRef90－Q9VRM8 UniRef90－C3YZD7 UniRef90－X1XXA1 UniRef90－UPIO003C36689 UniReffo－B9K6 UniRef90－V4PAX2 UniRef90－F1MPH8
UniRef90

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IDRD $A$ ワ 90
 SKTYCVNSQVADSACSATAYLCGVKTNQGLLGVDASVQH LSKTYNVDRQVPDSAGTATAYLCGVKANYKTVGGSAFGNE VARKNKMDAQVGESSACATALLCGVKANYETVGLDSFDAR LAKTYT1DRQVPDSAGTGTAYLCGVKANAKTLGLTTFGNE LSKTYNVDRQVPDSAGTATAYLCGVKTNYRTVGVSAFGNE

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## 30





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L S K T Y $\operatorname{S}$ V V D
L A K T Y C A D R QVVPD SAA S GTA Y L C G V K T N Y N T I GMM P N E Y A



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UniRef90
B4J377 UniRef90_W8BK97 UniRef90-UPIOOO2657320 UniRef90 EOVGWO UniRef90-X1YDP8
UniRef90 V4QX2 UniRef90-Q94581 UniRef $90-$-H2XPZ6 UniRef90-B4X983 UniRef90 UPIOOO375ED48 UniRef90_C3YZS9
UniRef90 G8H3N8 UniRef90-H2TYE7 UniRef90-UPIooo3F07235 UniRef90-E8RVI7 UniRef90-B4KRAO UniRef90-K1KS3
UniRef90_B1KIZ4 UniRef90-UPIO0037B0AE6 UniRet90 V4NHV0 UniRef90-Q7K3X8 UniRef90-Q31K07 UniRef90_C3YZD9 UniRef90 B4IXJ9
UniRef90 Q29CD2 UniRef90-B1KIZ3 UniRef90-AOAO59G9W2 UniRef90-BOW2L3 UniRef90-D2A3C2 UniRef90 W8BXD2 UniRef90_Q2N756
UniRef90 Q21N12 UniRef90-UPIO003999626 UniRef90-UPIO003345304 UniRef90-UPIO002E7892B UniRef90-A8FSN8 UniRef90-H2ZEB1 UniRef90-G7WKQ6 UniRef90-B4MLS1 UniRef90-UP1000258DCEB UniRef90 UPIOOO3C3811B UniRef90-UPIOOO3324082 UniRef90-H9JK21 UniRef90_UPI00036FC995 UniRe990_AOAO23F
UniRet90_Q9VRM8 UniRef90-C3YZD7 UniRef90 ${ }^{-}$X1XXA1 UniRef90-UPIO003C36689 UniRef90-B9К6×5 UniRef90-V4PAX2 UniRef90-F1MPH8

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QENLLLEK K KRAGLKTGNIIT TSEVVQDATPAVMGAHVTSRSH VESiAEWALADGRDAGIVTTTRITHASPAGVFAKTANRNW V SSVMHRAKKAGKSVGVVTTTSVQHASPAGTYAHTVNRDW $V$ PS L 1 N WA QE Q GK S T GL V T T T R V THA TPAAALYA HAAAN Y W L P T $\quad$ L L VDSVLHRARAAGKSVGVVTTTRVQHASPGAAYAHSASRSW VISVLERARKAGKAVGUVTTTRVQHASPSGTYAHVVDRDW VTS SMKKAKKAGKSVGVVTSSRVGHASPAGTYAHTVNRNW VTSGLKWAKDAGKSVVGIVVTTKVQHATPAGAYAHSASRTW VESVMKWAQDAGMWTGIVTTARVTDASPAAAYAHSGYRRW VSTVLEDSHKLGKAVGVVTTTRLNHATPASAYAHSAYRYW

 LATVLELDAEQNGRATGVISTARITHATPAATYAHTSARDW VPTMAELLKKAGMKVGNVSTAEI QDATPAAFAVHALLDRAD LPSDMQWAQDAGMWTGVVTSKVTHATPAGSYAHSGHRDW VYSI AKWAMDAGKSAGVVTTTRITHASPAGVYAHTADRDW VENLMEMAKKAGMRTGNVTTSEVQDATPAAAATHSVNRKC
 V SS A A A WA QKA KK STGFITTTYLT
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YAPSGNAKPAKGSDLLENGGMGSTSEQLVDTRADVTMGGGA ENDAEVKAANQDINACPDIAYQLIHKHPGNKFKVILGGGR Y SDAEMKAANQDINACPDIA EDDGKMPH
QGPADMAK
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## T

$C \frac{1}{P}$
PKEALLGK G GPGSIAAEQSVNHKVVDVLLGGGK
PAEARSQGCKDIA AQLI HNVDINVIMGGGR ADAKTQGCQDIATQLINNMDIDVILGGGGR
PVEADQAGCKDIARQLFENDPNIDKN PESAKRDGCTDDSFQLI NNTDIDVVI GGGR QQYVPENCSAQDIA QQLIVYLDGSEMRVILMGGGR
YGDADLTE EARDNGCKD IAYQLYNAPNDQVALGGGR

SDTDVKG
ASCKDIARQLVEDAPGNKLNVIMGGGW

ESDNNVPADS YAPSGEKKVAQDQRRENGGLGSISEQLVDVRADVTLGGGA
EA

## EANDEDD WC

DDTEVDAWCGTSQAGLGCKDUATQLLIGDGFEVVMGGGR
 EDDGKVPPGAARTSCKDIARQLLEDEPGRNINVVLGGGR EHDNAVK DKQCKDIASQLIDFKYGNGLEVALGGGR ESDADVMSFGQDPATCMDMAHQLVTQEPGRNFNIMMGGGM ESDSDVDDDEYDPEDCPD
EGDGDM
ESDFDVNSFGENASKCP

E C D A D VITT D K LIA E K R C V T D S P D I A R QL I G R N L N V V M G G GR





 ECDADMARFGADPTQCQD\|ASQLVYGETGKKLRVILGGGR $R A D S D M S \quad A E A D E N G C V D Q L V E A P A A D R M D V A M G G D \square$
 END GEVS QMGGLNAK DCPDDIA H Q L V V H H H P G N K F K V I F G G G K $E$ ASAPDGCTD\|AAQLVELEAAD GIDVVMGGGR
 $Y S D A D V \operatorname{DVESAKKDGCTD\| SSQLLNNTDIDDVIMGGGR}$

 G E G D S EME G $\quad$ V T G G CK D I A Y Q L V N Q H I Q V L F G G G R


 E S D S D L S D A A K A D G C K D I A A Q L I E WS A G D G L E V A F G G G R




 ESDAD D L K GGDAGDCKD\|ARQLIEWPEGDGFEVAMGGGR

 EA D A S MP E D QR G



E SNSE
EADSN
Y A D N S M N S T T K S E
$E N R$
EDLPEDARKEGCKD\|ADQLVYNMDIDVRLRGAG

I A A QF LAS GVDV ALGGGGL
 ENNDDLESYCGVDSGLDDIAVQLIHGEVGSRLLKVMMGGGK


 QA S V P D WCNA S DIAA QQLIY D LIPG SEMRVI LGGGR E H D G E II IS S K C S P D V N T D I A R Q L V E WP V G Q E L R V I M G G G R EAD S D L T
 ESDYDISKAYTHGEPCAD\|AK QLVQQEPGKNFDVIMMGGGF ENE
$R A D S D L T$
A EAVE N G C IDDLAR QLV EA PAA A I RMDGG DL


UniRef90＿S2WEE4 UniRef90－G3GBT4 UniRef90－UPIOOO42AE610 UniRef90－UPI000258EE12 UniRef90 L8F1P1 UniRef90－UPIO003956C72 UniRef90＿UPIo00398EC7B UniRef90 S9XMB2 UniRef90＿UPI0003BCF5E1 UniRef90－I3JXHO UniRef90－F6VTU7 UniRef90－A0A023FKB9 UniRef90－H2Z2U8 UniRef90－A0A021 W808 UniRef90＿T1K3V0 UniRef90－T1J1A3 UniRef90－UPIO003288280 UniRef90－Q1H213 UniRef90－UPI0003AF6E30 UniRef90－D7WBEO UniRef90－L7MLK7 UniRet90＿B3RR75 UniRef90－AOA034W0Q0 UniRef90－S2YUB6 UniRef90－UPI00021A803C UniRef90－UPIOOO2B4D616 UniRef90＿UPIO003C35414 UniRef90－G6CZ49 UniRet90＿J2HEO2 UniRef90－B5DP18 UniRef90－B3RR74 UniRef90＿UPIOOO3809804 UniRef90－G9FJB5 UniRef90－E9G5VO
UniRef90 F7DQL5 UniRef90－D1LWV8 UniRef90－E9HCS7 UniRef90－K9EZZ3
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UniRef90 Q21N12 UniRef90－UPIO003999626 UniRef90 UPIOOO3345304 UniRet90 UPIOOO2E7892B UniRet90－A8FSN8 UniRef90－H2ZEB1 UniRef90－G7WKQ6 UniRef90－B4MLS1 UniRef90－UP1000258DCEB UniRef90 UPIOOO3C3811B UniRef90＿UPIO003724082 UniRef90－H9JK21 UniRef90－UPI00036FC995 UniRef9－AOAO23FLM1 UniRef90＿Q9VRM8 UniRef90－C3YZD7 UniRef90－X1XXA1 UniRef90－UPIO003C36689 UniRef90－B9K6X5 UniRef90－V4PAX2 UniRef90－F1MPH8
UniRef90＿R414D0

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KYFDWGETTRWTAGKSVLENARDNDFQTVTTAEQMAALLTE RNFBPTTVTDRTDGRNLIEEWQQDKAARGVSFKYVWNVSE KFMFPKGTPDPEYPDNLVQKWKHQGSRYVWNHTELDQAS RHFVPKVTPDR啨GRNLIEEWLRNHRLRNVTAEYVANKEQ QRFDQKITEGPYKGLTVAEQARKLGYQVVTDRDGLQRVKS MYMTPRQTPDPEYPEDPDQNGTRKDG RNLIDAEWLSAKQG VYMTPAGTPDRRDGNNLINMWLEQGARYVWNRTEMLAAAA
$V Y M F P E G T P D R Q D K R N V E W Q A K A Q Y V W N T A L M Q A T N ~$信 KYMTPTGTKDRKDGRDLTKEWQNKVAHYVWNKADFDAVDP QYFKPNTTFDRGDGQDLIEVWKAKQSDYVWNKEQFDQVDV KVFLSKEECDRSDKENLI RKWQESSAVYVWNRTGLLEVNT $R Y F K P N G 1 K D R N D G Q D L L Q K W K N N M V D L G R N A Q Y V W N S A Q$
$S Y F L P A T V S D R K D G R L P T E W A A R G S Y V W N K A Q F D A T D$ KHFAGSNAGGRTDGVNLTDRWDSDREARSANWSFVTSTKD KHFVPSSANGTRLGDNLINEWKNAEAQYVTNLRELKDVDT KYMFPKGTPDPEYGHNLVQEWKNQGAQYVWNRTALFQASQ SRFDPNTVDDRRDGRNLAQEYVEKFGGKFVWNQAQFDADN MYMFPEGTPDRKDKRNLVQEWQAKHAQYVWNRTALLQAAS EYFDTEVMVDWTKGKTVLDNARDNGFETVNDAKSLDAVK KMFEEGKDGVRKDGKDLI KEWQEDNASYVWNRQQL $\backslash S V M$ CNFHSTNTTDRFDGKDLIQEWKNKKLSNSAYVWNLTAFND RHFIUDYANGTRSDGLDLIDQYKKSDRNAYVESRTELNNLN RHFEPDKEGRRILDGRNLIEEWRNAAAKYVANKEQFENVDP SAFLPNSTVDRGDGRNLVEEWDNKKYEYVSNAAQLRNLK AKFLPKNVKDREDGRNLLSTWQAMHPVFVSNREELGNVNT
REFLPNNVGKRRDDRNLIEEWKMDKYQYVWNRDQLKSVSN RFLPEAKDGKRADGRDLTAEWLKTPKAAYVTTDAQLAALD SKFLPNTEKDRLDGRNLIDEWQRSKPGNARNRTDLLANDA TKFMPTTVDDRTDGRNLITEYQTKFGADYVWNKAQFDADN
 KYMFRMGAPDRMDGKNLVQEWKQQGARYVWNRTELMQASL
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RNFIUPDKKGRRSDGVDLTKSWTDNNAAYVWDKTGFDATDT SKFTLKQSGGERDDEDLILSWQKRYPNFVENKKALLEVDA RNFMPNTSADRKDGRDLI KAWQKRYGSYVWDAKGFAALDP KNFIDATVNDRTDGRHLIRSWLDQKKEANVSAKYVWSRKD RMFMDKTMEDRSDGRDLTKEWKGKGASYUWNKEQFDADDV RHFDPKDEGDRTDNRNLISEWQGQYPNGTYVMDQTGFDAI VMFDPGSNGVRSDGRNLVQDWFGKTSARYVWNGTDFRTVN NFFDPYDKGRRTDGRNLVEEFEAKGNTYVKNRKKLLKVDP GGMSPMGWLNATEVKRTKFEGPTETDCSRRDQRNLPAEWH RAF PNKNGKRLDGRNLTDEWTAKYSAYVEDRDSFLADNP SAFLDGKTGSRKDGRDLTAEWVAKGPEHVTDQAGFDATDF QQMLSDGECVRNDTLNLTQTWIDDHKGLKASFDTNNQQLE GKFLPNSITDRLDGKNLLTRWQNLHPKGIIAKNREELRLN ASFFGADNGGRRLDAAADLPGAWVARTGGTYVTDANELSL RHF RPRDEGKRNDDANLDAEWQAQHPQGQVVFGKAFDKLA GVPQRSVXXXXXXVPPWLPGHPSPSCSVKGAPAPQPRSH TAFTPKDQSDRTDGRDLUAEWKKRNPKGQYDWNAAQFGAD SYMRPKGIYDEEYGRDLTREWRNNRARYVWNRPGFNSVNA CYFVGDNETDRDDDQDLLAQAQDGGYVFVYNRTELLKIDP RSFYAYDKGRRTDGRNLVEEFEADEGNVFVKTQKKLLNVN RNFLDYSKGLRTDGRNLIEEFLEMSPRNAYTREELEN LD ESLEHDSDMQWHKGRSVLDNALDAGYTVVTTAEELRSVDH SYFLPNSKGRRTDGRNLTQEYVSKFGGVYIENQTAFNALN KDFEECQSGERDDGQNLINKWKESNAHYVWNRSELGAVNT
SYFRDQSQHDTVGRDLISDWKKQGAEGKYVWSLKKETD RAFLTNNMTDRKDGRDLI QRWLDRPARYVWNETEFNSVDP REFLDRETGFRSDGRNLIDEWLKNGPVGENRTFVWKRSDD ANFLPESLGGKRSDGNLDEMAKKKGYVYVTKKEDLMK KYMFPAGTPDRKDKRNLVQEWQAKYAQYVWNRTELLKAAD $R$ N F $\square P$ T D VQ D E E G D



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UniRef90_I3I4S8
UniRef90-T1GFD9
UniRef90-F6U0P5
UniRef90_S6ANX4
UniRef90_K6ZSZ6

EDDGDTPD G ${ }^{170}$
180
190
200
T DI A A QLVHGE\|GQNLLTVALGGGS ENDNDVKQEGHDVNRCPDIAHQLIVMAPGNKFKVIVGGGR
ENE
 YSDADMM PASARQEGCRDIATQLVSNMDIDVILLGGGR E Y D GA DRAANADPSKCS DDAK QLVYNSPGNNLVKVIMMGGGR ECDTKTPKSEQQD CVVKDLARRQLVEDEPGNQFKVIMMGGGA Y GPSATSEKKCPGNALEKGGKGSIVTEQLLNARADVTLGGGA $A D Q Q V G K D I A D Q L A F A Q F D V A L G G G A$

Y S DADM
$P A D A L R A G C Q \quad D I A T A Q V N A D I D V I L G G G G R$
ENDAEVIADNGDPSLCPDIAAQLVNSPVGQKLNVILGGGR

E GDTEMPT
ED D GHVLKDNGDPKVCPD DAHQMDYSAVGRKLNVILGGGR Y S DADM $\quad$ PAKAREEGCQD\|AQQLISNMD』DVILGGGR



 ED DS DMP EAAVTGGCKDI ADQLVNFEDDVVFGGGR
 EN D A DVPEECL SLGCQDDAY Q DAE QMISK GVVNVLLGGGGR ESDADVPEECL S L GCQDDAYQQLVTGNPGRHFKVIVMGGGR EHDGEIVSSGCSAEKNTXIAR QUVS QLVNFEANVVLGGGR


E D I S D M

ENTIATGMVPGGEGYNSA $E S D S D M N S F F A A N V A T C K A K G D D A R Q L I E V S P K V A M M G G G R$
$E L D$ EHD GK $\quad$ K E NLCDPVANVDIAR QLVVEWEVGSKLLNVIVMGGGR
 Y GP Q GK T D G S S N D A K E N G G DG S I S E QL L D T R A DVVTIGGGGS

 EADSN LLPTEAVANECKD IAYQLVMRDEVDALTTGGGR

 ECDDTDVAS Y GVDPS ECVVDMATQLIDTQVPGKNFDI MF GGGGM E N A $I A S Q Y L T S D V D V L L G G G K$
Q GPRDARS DCPAEAKPNGLGS IAEQQVDEGFDLYL GGGRN ED DT E D G GSDCA D A R QL V E WDA GD GF EVV L G G GR


| $E$ |  |
| :--- | :--- |
| $E$ | $L$ |
| $E$ | $D$ | DRDKRE GCKD A L Q L I H GKNMNV IMG G GR

EADSD LPDAAKAAGCKDIASQLIDVDGIEVVMGGGR


## E1T7

 E Y G D D S A K R CDVA QLK Q N G GllG SI SE QLLDDTRADVTIGGGGS ECESRMM PAEAQQQGCQDILVEQSTGQQINVIMMGGR


ESDADMP A APPQQA L
5EAEC2 KGPA DMAA CPADTRTAGGAGSIVVEQTVAARPDVVLLGGGAR ECEATMDPANVRNKTMAKDMARQLVVENARGNKMNVILGGGGR
 ENDAEMPAACED $\square A A Q L A G F N Q L A Q Q L A G K K P E I \quad I L G G G A$ ENT
ENDS DMPETETA KTAE K CK D I A R R Q L A A S QNDATVTEAGWNATKCRDIA YQLIKGKTGSKFNFILGGGGS Q S D T DVTTSYGVDASTCVDMAT QLVTGTPGKNFEVMFGGGM
 ENDAV ECDAKMPT Y A DANM LPAEA
$\qquad$
 ENDAALPADAADAGCRD $\quad$ AARQLIEFNYGNGVDVVLGGGR

$\qquad$
 E N N V V $\operatorname{E}$ ME E V V C G A D S S K N D YVDSAMNSTTKSE GCKD SLQQLLMGRKDNVVLGGGR ESDANLPAGC

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UniRef90_Q17TZ1
UniRef90_D3TMW7 UniRef90_D2H853 UniRef90_UPIO003C3A3F3 UniRef90_A7RSL3 UniRef90_A0A022T248 UniRef90_B4KVA6 UniRef90_J9JMX2 UniRef90_B4J9P6 UniRef90_G4QEP8 UniRef90_K7ISW9 UniRef90_UPI0003C38A39 UniRef90_A0A013WUW3 UniRef90_M1ZFW3 UniRef90_G6CP67 UniRef90_Z5XPQ0 UniRef90_B3M3P1 UniRef90_K2JQL7 UniRef90_UPIO003F0ACF2 UniRef90_G6YUE1 UniRef90_K0C910 UniRef90_Q47B22 UniRef90-B4M3K4 UniRef90_UPI0003C39B49 UniRef90_G7FU42 UniRef90_D2Q7H6 UniRef90_A0A023F5X4 UniRef90_Q9BHT8 UniRef90_W8DRK9 UniRef90_J9K135 UniRef90_A8H1N5 UniRef90-T1P8B8
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210
220
230
240
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 Q N F L P E HVVK D R K D GRN L I E E FTF L P KNMSDP
FYM

E WLSKHS QYVWNRTE LLRRVSQ
 KTF A ETATAGEWQGKT L REQA QARGY QLVSDAA SLDS VTE RSFYGKSGGGRRSDVAADLPAQWAAKNGGVVVKDAASLAA
 KYMFPK GTQDPEYGKDLVQEWHNQVAQYVWNRRELIQAS Q Q N F LPKTVK DRLDGRNLI E EWQRQHAHYVQTRRELLLGLSN
 K H FL L K S NGSRRDGRNLI QEWKSLHGSTAHYVESREELFN K Y MFP Q GTPDPEYGRNLVQEWQAKYARYVWNRTAAIDEAS Q

 A YFRDK SMKDRKD GRDVI K DWLQDKANNGAEAKYVWSRNG N NFMK Q GVNGKRHDQDLI QTWKNDKKTRFADKREELLEET D
 GVLGMS S S C QRRRDGRQLSEYWKEANP GGKVTNNVKEDMSVD GKFLPKTLKDSHG KMGERSDNKNLLSSKWQG ANFLDPTTTGKRTDRKDLTKAWQRRNPRGAYVWNSADAKVD RQF L P S S Q S GKRDDKDLDDEAK K L GYQY DETRQE LNK
 R F L P K D E G D R T D GRDLTA E WK AK Y P A GQYVMD QAF NAVN


## 

$R$
$R$
R
S
R RNFLLSESMSGNRTDGRNNLIKQWWENDLKASYVWNKRDMEKR DC

K
SNF LIPKNKF DTYGNAGKRLDDNLDLVEEWQNDKRTRYGEGH

 R
K
ENF LP Q ITTRDRS DGRNL DEE $\begin{array}{llllll}N T & \text { N N S A Y V W D K A G F D A V D V } \\ \text { G D T E E DC S R G D D M N L K Q WL }\end{array}$ TKFLPKTIKDSFG VN L A W $N A G V R L D N R N L L T T W R N$ GKFLPKS』QDRSD DVNLLASWQARHGVLVTNRKQLLSVNV
 GAFFPASAIDPETDGPLTKVWTSQDHVYVTDQAGFPAVDF SPMGAFNECKRNDERNLAKEWLQRHANDSAAAREQDMKVD RELTP P R NVED P E Y GRNLIED WLEDKDPMRSHYVWDFNRVN GKFADE R R R D GKDLLA Q WRESNPNGCFARSLKELRNC RAFDAS GEGHRQDGRNLI QEWQRQYRDGNYQNAADLQA IK

 APFDANRTGSRTDGRDLTAEWTAKSADHVTDKAGFEADDF $\begin{array}{ll}K P M G S T N A S E V & T \\ K & V \\ K & \text { V }\end{array}$ QMLVSNVTGTA S DP LDDMWA GQAA D GRNLI R D WAMLLKTNLD DRYDQKI A GEFAGQTVTDSAAARGYNVVRDADNLD GKFDPKTITDP F N NKQGERSDGVNLLDSKWQS R MLKDNWA GQRND GRDLIE EWKR DKAARNLSSKKVVQNNED
 SYFMP GTVVADRQDGRD LTAE WLAAKYPQYVWNKA DFDAVNP D HFAQTVTDGPHRGRTVLDQARATGYQVVRDQAEDTAARLD A AFSMEKNCVREDGRNLVKDWLVSKNGSAATYVWNTAEGM TRF $\square P K T A T D R K D G R D L T A E W K H Q N A Q Y V W N K D Q F N A D D P$ RNFFPETPGKRKDGRNLVAEWRQNNPGFVSDAESLQQAVE RHFVP TG GKRKDGKDLI A $\square A K A N G F D Y I T T K T E L L N$ RHFLPKDEGDRTDERNLVTEWQTMYPQGTYVMDQAGFDAD QMLLKTNAT GHRQD GK DLI E E WK R DKAFSVVVQNNE ELLSRVN

 ANFYP GKTGARTDGRDLAADWASRTGGHY DWNGAQFAA L
 A YMSPRWTPDRRDGRDLVAEWTREGARYVWDKKGLDAVDD A S F LT T E E G GQR Q D R D L T Q E WR E Q G GVVYV D D R A G F D S LD


 REF $\square$ D SKEKKRRKGGTM K K K
A Y M R P D GAYDRDD GRDL $\square R E W K N L Q P S R Y V W R R S A L N A V N$ D Y F RMNT QLDR K D GR DLTTAEWDAS GA QYVWDKA GFEA AN




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UniRef90_D2C7E3 UniRef90_B4K503 UniRef90_UPI0003502AC1 UniRef90_C0JBW1 UniRef90_A0A026W4J5 UniRef90_H5DW20 UniRef90_UPIO00302B0F4 UniRef90-D6WY51 UniRef90_L8Y3S0 UniRef90-_Q29BY5 UniRef90-T1IEU8
UniRef90 O17TZ1 UniRef90-Q17TZ1
UniRef90-D3TMW7 UniRef90-D2H853 UniRef90_UPI0003C3A3F3 UniRef90-A7RSL3 UniRef90-A0A022T248 UniRef90_B4KVA6 UniRef90-J9JMX2
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UniRef90-B4JYR2
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330
 AHHDNYAHLALDETIEMDRAVKVATDAALKEDESLVVVTA EAHDNDDYGVWKEVKEFDKAVQVADDFALKRGDTLVIVVAC
 AHHDSYAQDA LDDETI EFDEAD MKAVEMMTDEEKDTLTVVTA
 QDHAANPCGQUGETVDLDEAVQRALEFAKKDGNTLVIVTA

 GHHDTLA LDRAI DETAEFDKSVRWARTH SS T DDTTLVVVTS GHHATQAAKALDETVEDSKAVATAMEDTN PD DTVIMVTS

GHHDGTAYLALTEAVMFDSAI DKASQI TS EK
AHHNNKAKLALLDETAQLDEAVAMARTLTS DVE
GHHNGDARQALNEVVNLEEGVAKAVEMTDKE
AHHRGHAAQALLRETVRLSDAVINATLHMVDDD



AHHQNHAQLALLREVAELCDAVTAAAVANVNDD

ASHANDPATTALDVIAFDDAVKVALDFAKNDK
A HHDSYAY DA LDETI EYSKAVQKAKSDTN
AHHAGNAYNALSDTVELSKAVQVALDKTSDE
AHHATQAKKALEDTQE
AHHGNWAYGA IT DTVAAFDDAVVEKADEDMVSTG


GHHETRAGYALDEMLELDAAIVEAVRDTNAR
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AHHQNYARAALLHEVYE

A H H R GQARKALC
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AHHAGNAYRALRDTEEFAKAVQAAVDSTNPDETLIVVKS







AHHRGHAAQALLETVRFSDAVINATLKMDNTQ DTVVIVTS





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AHHATNAARALGDAQAFAKAI EDAANQVD LSETLTLVTA
GHHAGSAYNALTDATV LDSNAI QAAVDSTSSE DTLILVTA

AHHAGNAYGALITDAI ELSEAVAKAVELGTNPEQETLVIVVTA

AHHDTSADYALDETAEFSKAVELDARQMTSEE DTVTVVSS

GHHAGSAYNADTDTIEFANAVQSADDNTDDP
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| :---: | :---: |
| UniRef90＿BOWJU7 |  |
| UniRet90－P2952 | DHTHVMSFNGYSPRGTDVLGTVRSDDSNRMWRTHTDVPLD |
| Ref90－D2C753 | GLGLS GD |
| UniRef90 B4K503 | 俍 |
| UniRef90－C0JB | D |
| UniRef90＿A0A0261 | DHSHSFTLNGYPVRGNWRKVDEDSTRGDPFYTQFAGIYMK |
| Ree90－H5DW20 |  |
| UP1000302B0 | GY |
| Ref90＿D6WY51 | G |
| UniRef90－L8Y3 UniRef90 O29 | DHSHTMSLAGYSSR |
| UniRef90－T11EU8 | DHSHTMSISGYPGR |
| UniRef90－Q177 | DHSHVFMMLVYGNGYEQRKNTTDTDTTDFGYRQE |
| UniRee90 D3TMW7 | NLH QVNMD |
| O－2 |  |
| UniRet90＿UP10003C3A |  |
| UniRef90＿A7RSL3 |  |
| A0 | DHSHSMAFNGYADRNPYTSLSYSTGGPNNMAYQQAAFISD |
|  | D |
| UniRef90－ 9 gun | D |
| B4 |  |
| UniRet90－K4QEP8 |  |
| UniRet90＿K715W9 | DHSHAFTMNGYPERGNNHTWKDLVNDENRKDPFYRHFYGK |
| Ref90＿UP10003C |  |
| A0AO | DHSHTFAMSGYPGRGNPLLGAVQTDTIALDYRQQALVPLG |
|  | G |
| UniRef90－G6CPE | DHAHTMTVAGYPSRGNDILGAHGS |
| UniRef90－Z5XPQ0 | DHSHVFT AGYPKRGNPLLGKVVP |
| UniRet90 В3ММР1 |  |
| UniRef90＿K2JQL7 | G |
| UniRet90＿UP10003F |  |
| UniRef90 G6 | DHSHVFTMAGYPKRGNP LIFRNLGMETDSDVAYSQAPNAG |
| UniRef90＿Koc910 | d VMA NGYSKIGNPVEDELUDDYLQEVGVKL |
| UniRef90－В4M3K4 | DHSHTLSMAGYANRGTAILGLDPSQRDLDGTPYSTLNYAT |
| UniRef90－UP10003C39B49 | DHSHTMTTGGYPSRNADILGLNEDDGLPYTIMSYANGPGY |
| UniRet90＿G7FU42 | G |
| UniRet90＿D2Q7H6 |  |
| UniRef90＿AOAO | S |
| UniRef90＿Q9BHT8 | DHGHTLTITGYADRNTDILDFAGISDLDDRRYT |
| UniRef90 W8DRK9 | DHAHTMTVAGYPSRGND1LGTVDTDD |
| UniRef90＿J9K135 | DHSHTMT NGYPSRGDK |
| UniRef90－A8HIN5 |  |
| UniRe990－T1P88 | VT NGYPKRGND |
| 84N | MS AGYSSRKND |
| UniRef90 A0f | DHGHGLSVSGYPERGNNILMDLTGKTGKPDFUSPSYI QV |
| UniRef90 B4MFQ5 | DHAHTLSGGPGRGTP LGLNQHDTDINGIKYSPGYITKE |
| UniRer9－UPIOCO2FC |  |
| D3FCN4 | A |
| UniRef90＿UPIOOO37F4 | SHTMTIAGYPVRGNPLLGKTDVDTTDKDFQQQSLVFSG |
| $\begin{aligned} & \text { UniRef90 - } 4 \text { M5W } \\ & \text { UniRef90 } \\ & \text { W4Y6E } \end{aligned}$ | DHSHSMTMNGYPERGADILGAANSHKPKPPMVYETVTYAN |
| UniRe990－B4II | DHSHTLSMSGYAKRGT |
| UniRef90－I2JLU3 | DHGHVFSFSGYPKRGNPDTPTLAADGMPYTT SSYSG |
| UniRef90 B4NCA1 | DHSHSLT NGHDAEQHQRVNPASSDTTDWEYTQQAADNTD |
| 6P183 | DHA HVMT NGYDDSVPYMTLSYTNGPGFRPHVSHGVRDDL |
| UniRet90－C3XY10 | DHA |
| UniRet90 AOAO59E1 | Stich |
|  | Q |
|  | DHAHSLT N |
| UniRef90－UPIOO00479B301 | DHSHTSQi DPDDTDSPGATA |
| UniRet90－Q28XS3 | DHAHPLTIAGYPGRGTPILGLNQHDTDNGV |
| UniRef90 UPP00022C8B9F | DHTHSMSFNGYSNRGSHILGISQKSKHDYT |
| niRet90 UP1000 | TDANGAP DEPSLIAADGMPYTTVGDTTQSGF |
| UniRef90－UP10001DDOE23 | 俍 |
|  |  |
| UniRet90－D3Y175 |  |
| UniRef90－Q1HQK7 | DHSHSMTFNGYPDRGNDILGYANRPDKW■PVETMNRSA】D |
| UniRef90－UP100045EAEC2 |  |
| UniRei90－C5BNT1 | DHSHVFVMAGYSARGNPILGKSKPKDYARDVNKLPYITVG |
| UniRet90＿C5CDP1 | K |
| W1 | DHSHVFTIAGYPKRGNPITPSLAADDMPTTVGYANGLGF |
|  | D |
| UniRef90＿V5GJ， | DHAHTLSMSGYPEYKPMGHRVDSDDTNKD |
| UniRef90－Q9W274 | DHGHAVSMAGYPGRGT |
| UniRef90＿W6UUW6 | DHSHSMLEGGQPDRKR |
| UniRef90 UPIO003B6308D | DHSHVFTMAGYPARGN |
| UniRef90－M4M5S | DHTHTLS DNGYPDRGPNSFQYYVAKDENNETTVRRRDP $^{\text {S }}$ |
|  |  |
| UniRef90－UPIO00372C6E3 | DHGHVFTTAGYPRRG |
| UniRet90－F4A | DHGHVFT AGYPKRGNPILPALAADEMPYTTLGYTNGNGF |
| IRef90－T1PDQ4 | DHSHTLTI NGHASKGSNI FDPTLEDTNDWEYMQQGAINTD |
| UniRet90－UP10003B3 |  |
| UniRet90 131458 | KTRAGGELLTDTMGLDYTTLGYANDTTSPAYMQEATVPLA |
| UniRet90＿TIGFD9 |  |
|  | DHGHVFTLGGYDRGNP\｜HGYARNHNEPRKAVDKHQYTSUA |
| UniRet90 S6ANX4 | DHSHTFTIAGYPHRGNNYANGPGWRDAVATGQKRPDLSAE |
| Ref90－K62 |  |

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UniRef90_D3TMW7
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 GETHAGEDVAALFATGPGAARAHGVIEQNVIYSSLIRKALG

| NNHGA |  | I |  |
| :---: | :---: | :---: | :---: |
| D | Q | L LS GV | P |
| SETHGGEDVA |  |  |  |
| DKDHGGDDVGV |  |  |  |

UniRef90_UPI0003C3A3F3 UniRef90-A7RSL3 UniRef90-A0A022T248 UniRef90_B4KVA6 UniRef90-J9JMX2 UniRef90_B4J9P6
UniRef90 G4QEP8 UniRef90-K7ISW9 UniRef90_UPIO003C38A39 UniRef90-A0A013WUW3 UniRef90-M1ZFW3 UniRef90_G6CP67 UniRef90-Z5XPQ0 UniRef90-B3M3P1 UniRef90-K2JQL7 UniRef90_UPI0003FOACF2 UniRef90-G6YUE1 UniRef90-K0C910 UniRef90_Q47B22 UniRef90-B4M3K4 UniRef90_UPI0003C39B49 UniRef90-G7FU42 UniRef90-D2Q7H6 UniRef90-A0A023F5X4 UniRef90_Q9BHT8 UniRef90_W8DRK9 UniRef90-J9K135 UniRef90_A8H1N5 UniRef90-T1P8B8 UniRef90-B4N8U6 UniRef90-A0A034VLD2 UniRef90 ${ }^{-}$B4MFQ5 UniRef90_UPI0002FC6566 UniRef90-D3FCN4 UniRef90-UPI00037F432E UniRef90-B4M5W8 UniRef90-W4Y6E3 UniRef90-B4IK92 UniRef90-12JLU3
UniRef90-B4NCA1
UniRef90-I6PI83
UniRef90-СЗХYТ0
UniRef90-A0A059E1T7
UniRef90-B4JYR2
UniRef90_M4RIF0
UniRef90-B4MAX3
UniRef90_UPIO00479B301
UniRef90_Q28XS3
UniRef90_UPI00022C8B9F
UniRef90_UPI0003792DEC
UniRef90_UPI0001DD0E23
UniRef90_C1DPW1
UniRef90_D3Y175
UniRef90-Q1HQK7
UniRef90_UPIO0045EAEC2
UniRef90_C5BNT1
UniRef90-C5CDP1
UniRef90-W1YW75
UniRef90-H9K8F5
UniRef90_V5GJJ7
UniRef90_Q9W274
UniRef90_W6UJW6
UniRef90- V4NUG3
UniRef90-UPI0003B6308D
UniRef90_M4M5S9
UniRef90-UPIO003503712
UniRef90_UPI000372C6E3
UniRef90-F4ANN1
UniRef90-T1PDQ4
UniRef90_UPIO003B305D4
UniRef90-I314S8
UniRef90-T1GFD9
UniRef90 F6U0P5
UniRef90-S6ANX4
UniRef90_K6ZSZ6
UniRef90_UPI0003B7BB15


UniRef90_X1YG68
UniRef90_Q17FS9
UniRef90_Q7Q8R8
UniRef90_X1XW89
UniRef90_C0N1N1
UniRef90_Q6WZ93
UniRef90_B3MT55
UniRef90_UPI000478F0C1
UniRef90_G6CZ50
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UniRef90_Q9W273
UniRef90_Q2MF59
UniRef90_B3MZ26
UniRef90_W8BLC1
UniRef90_E6RMB6
UniRef90_UPI00047E8D28
UniRef90_I3YW45
UniRef90_U6I9F3
UniRef90_UPI0003C36435
UniRef90_B7Z1D1
UniRef90_UPI00047D1FB4
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UniRef90_I3LB86
UniRef90_J2TEL5
UniRef90_J9K4Y9
UniRef90_Q9W275
UniRef90_C6CVM4
UniRef90_W6ZQ18
UniRef90_A8F7K3
UniRef90_UPI00037B6E6B
UniRef90_K7 UniRef90 K7ING2 UniRef90_D5DDC5 UniRef90_C3XQ71 UniRef90_F5SQX8 UniRef90_BOW2L4
UniRef90_UPI0003C3AB79 UniRef90-C4LDN5 UniRef90 S5BBE3 UniRef90_UPIO00364A2A3 UniRef90_A6EPU2 UniRef90_UPI0000D55541 UniRef90_UPI000369CF72 UniRef90_D3F1R6 UniRef90_Q17FS5 UniRef90_-_1M8U7
UniRef90_UPI0002559459 UniRef90-X1XXA2 UniRef90_T1IOY8 UniRef90_R7VLE4
UniRef90_A5G5J3 UniRef90-Q1YRX4 UniRef90_UPIO00478ADC1 UniRef90_W5JTP2 UniRef90_F4QUA1
UniRef90_W4Q9J1
UniRef90_UPI0004000043
UniRef90_G3QVI4
UniRef90_UPIO0034C079F
UniRef90_A9BXC1
UniRef90_Q17FS6
UniRef90_A0A017RWI9
UniRef90_E4Z3F6
UniRef90_F5SDB8
UniRef90_A0A024Q2P4
UniRef90_W0L754
UniRef90_Q0K9P2
UniRef90_F4DF83
UniRef90_R6YLY6
UniRef90_UPI0003B2F73F
UniRef90-R6FAZ9
UniRef90 K6WSB6
UniRef90_UPIO0036C1477
UniRef90_F7Z6W6
UniRef90_UPI0002EDAA1B
UniRef90_I8UHQ4
UniRef90_K6Y9Q9
UniRef90_W4QXU1
UniRef90_X0SGW8
UniRef90_UPI0003B605A2
UniRef90_F8CSH6
UniRef90_A0A016VGN1
UniRef90-F1NN44
UniRef90_F1NN44
UniRef90_R4YKP9
UniRef90_A6LGS2
UniRef90-A7HL25
UniRef90_A7HL25
UniRef90_J8TLP8
$L \operatorname{LST}$ K CANVVQVADSACTATAY|L|AGVKANYGT|IGQNDTANH

 $M S K T Y N T D R Q V P D S A G T A T A M F S G I K T R Y G V V G A D Y T I T K$ LS K TYNVVNAQTP DSAGTMTADIDSGVKTMAAGVIGDDENVHE









 L S K T Y NTNA QVP D SA GTATA YLGCGVKA DE GTVVGVSAQGNE


 $L S R T Y C S N A Q V P D S A C T A T A Y L C G V K T N N N C S G S E D P A N Q$
 IV K TF S A N T WVT D S A A A G T A LA T G FK T N N GMI GMLP N Q E S $L V K T Y N D D A Q V P D S A G T A S A I N T G L V T G R G A I N V Q P G N L S$ LLKTYNSDKQAPDSASTATALFGGVKTNYNVHGVDANVNR H T S S GN S F VT D S A A A A TAAMAS G V K S Y N GA I G V N M K GK P LVKTYNDDRQTPDSGATATAFDGGVKAKFYTVGVDGTVSF FIK TYNTNQQTPDSAGTATAMLTGVKTKAGVLGVTDRANR


 FAKTYNMDAQIGESSACATALMCGVKTNFETVGLDARGRF



 MSKTYNVDRMTPDSAGTATAFSCG
YQRTYSANST $\square T$ D SAPAASAWACGEKFNNGEDSFHD GRPF LS KT Y NVDA QTA DSA GTMTALVVGVKTNDGDVGLDED GNQ

 $M M K T S S A D S W V T$ DSAAAATAMSTGIVKNNGMIGVSAEGNA $T S A \bigvee T D S A A A A T A M A T$
 $M \square K T H S A N N W V T D S A A A A T A M A T G Q K T N N G M I G M K P N G E H$ FVVHTFSNNDAQVVTD SAP SMAAYMTGVVKMNNEVI SMTPDTQA TAKTYCVNRQVADDSACTATAY LTSGVKTNYGMINVGPHVPR LVK T Y C YN S II T D S A PAA TAMAT GYK SND GY I S V Y P S E $\square$ N


Q2P4

$\qquad$


3B2F73F
 TTYADDPEENITTDSAAAATSMSAGIVKTNGAIAVDTERSE FVHTYSN DA QVTTDSAPSMSAYMTGLK SNNEVI SMSACTMAA



 L I
DAA1B

 RTA S A S S RVT D S | $M$ | $M K$ | $H$ | $S$ | $E$ | $S$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $W$ | $W$ | $T$ | $D$ |  |  |  |
| $M M$ | $T$ | $H$ | $S$ | $S$ | $D$ | $W$ | MMK TVYSSDNA QVVMPD STYPE DE H Q N T D SAS A A TAAMSA GIVK TYNAA I A V V D N D K T E


 L S K TYYCANRLITT D S GA GGTAGMATGHKTN Y HMVGVDP E GKP UniRef90_J8TLP8

|  |  |  |
| :---: | :---: | :---: |
| UniRef90_X1YG68 | KWAQDAGLLSTGFVTTTE | VTNASPAGMYAHTANRNW |
|  | LPSFMDWAQEEGKRTGIVTTTRV |  |
| UniRef90-x1xW89 | MEWAQEEGKRTGIV | Y |
| UniRef90-CON1N1 | DLAELAGMATGFV |  |
| UniRef90-Q6WZ93 | VPTILELARQGGLATGSV | C |
| UniRef90-В3ММт55 | VQSVMEWAQKEKKRTGIV | w |
| UniRef90-UP1000478FOC1 | $V K T M E Y A K E D G K S T G V$ |  |
| UniRe990-G6C | A WA La DGRDAGI | $V$ THASPAGSYANTANRNW |
| UniRef90-B4- | QS GQWAQEAGKWAGL | THASPAGVYAHTAERNW |
| UniRef90 UPIO00237CAA8 | LTTILEYAEQNGLST GL | SRNN |
| UniRef90-UPIO00343155D | LVTALELAAI AGKSTGI | KSADRNW |
| UniRef90-Q47 $\times 80$ | LVTSLEAAEIK GLSTGI | THATPAATYAKSADRNW |
| UniRef90-Q9W273 | LTSAEWAQNAGKSTGIV | THASPSGAYAKTANRMW |
| UniRet90-O2MF59 | P T DEMARAKGDATGSV | - |
| UniRet90-B3MZ | VESLLQWAQKMGKATGVV | TDASPAGAYAHVAKRAE |
| UniRef90-W8BLC1 | KWA LA KGLATGVVS | GATYAKSADRNW |
| UniRef90-UP100047E8D28 |  |  |
| UniRef90-13YW45 | EHLLSKRGLATGI VA |  |
| UniRef90-U619F3 | SVLEAA $\square$ Ragkat GLV | THASPAGAYAH】AYRRW |
| UniRef90-UP10003 | SLAK WA QDAGKWAGL |  |
| UniRef90-B7Z1D1 | VT Sil R WAKDAGKSVGLV | W |
| UniRef90 UPIO0047D1FB4 | QMNLIELAKANGLLATGNV | QDATPAVLESHSTQRSC |
| UniRet90-RTV6S8 |  |  |
| UniRe990-J2TEL5 | VETLLEQSKAKGYATGVV | THATPAATYSHVCHRDA |
| UniRef90_J9K4Y9 | LTSLATWAQDAGKSTGFVTNT | TDATPAADYARTSNRKW |
| Uni | WAQAAGKATG |  |
|  |  |  |
| UniRef90-W6zC | MGKSTG1 | THATPAATYAKSPERNW |
| UniRef90-A8F7K3 | VPTIIEVAKAYGMKTGIVVT C | THATPASFYGHVPDRDM |
| UniRef90 UP100037B6E6B | AGC MD | F |
|  | V SAAASGKS | THATPAPLYSYGPNRKW |
| UniRet90_D5DDC5 | VLEKAKLI GKT GL | T DATPAAFGAHVKDRSA |
| 53 | VLRHAHDAGKSTGI |  |
| UniRef90-F5SQ | LVTALELLASMAGKATGIVTTA | THATPAAAYAKTSERNW |
| UniRef90-UPI0003C3AB79 | LESIASWAQKAGKATGI | THASPAGAYAHTSHRDF |
| UniRet90-C4LDN5 | VTTLLELAKAQGKGTGSV |  |
| UniRet90_S5BBE3 |  | W |
| UniRef90-UP1000364 | G\| STAR | ATYAKSADRNW |
| UniRef90 A6EPU2 | VRNDVDYASNKGMATGLISTSS | ASFFAHVDSRRK |
| UniRef90-UP1000369CF72 | VATIAEYAKNAGKSTGVVTTS | K |
| UniRet90-D3F1R6 | RTGNV |  |
|  |  |  |
|  |  |  |
| UP1000255 | G |  |
|  | WA Q A G |  |
| UniRef90-T110Y8 | AS WAQEAGKATGFV |  |
| UniRet90 R 7 VLE 4 |  |  |
| UniRef90-ASGEJ3 | Vrater |  |
| UniRet90-Q1YRX4 | $\checkmark$ 仡 | D ${ }^{\text {w }}$ |
| UniRef90 W5JTP2 | ATCLLKWAQDAGKTTGIV | AGAYAASAERDW |
| UniRef90-F4QUA1 | ПPTLAEQAARAGLATGVV | TDATPAGAYGHTtFRGW |
| UniRef90-UPI0002D5CE78 | VKTVLEAAKEQGKATG | N |
| UniRet90-W4Q9J1 | QKSILEAAKENGKATGLV | TDATPAAFGAHVPSRKD |
| UP10004 | T Lematoagk ital v | K |
|  | VES MKAKKAGKSVGV | PA YAAHVESRKD |
| UniRet90-UPIo0034C079F | VP St | PAAYA HV |
| UniRef90_A9BX | $\checkmark$ Y ${ }^{\text {P }}$ |  |
| UniRef90-Q17FS | Y C | THATPAGAYAS |
| UniRef90_AOAO17RWIS | YPTVEEAAKLKNKATG | W |
| UniRef90-F5SDB8 | RGKSSGL | THATPAVFASHVASRAD |
| UniRet90_C6XC | GLS T GV |  |
| AOAO24 | VETVLEAAKKKGKSTG | NHATPAAFGAHDESRRN |
| UniRef90_W0L754 |  |  |
|  | VVTVLELAKAAGKSVGAV |  |
|  | VTTLLELAKADGRGT | T |
| UniRe990_R6Y | LNS R LATLKGLSTG | M |
| UniRef90 UP10003B2F73F | M |  |
| R6FA | VOTVTD A A A SKSTGVV |  |
| UniRet90-K6WSB6 | VASVE | VHATPAAFGAHVKDRGE |
| UniRef90-UP100036C1477 | VATVVELTAPKNITKSGV | THATPAAF |
| UniRef90- UPIO002EDAA1B | LIT ATELAETKGLATGLVSTA | THATPAAT |
|  | VTSVLEMAKKAGKATGLVTTSO |  |
| UniRef90-K6Y9Q9 | GKSTGI | T H |
| UniRef90_DOMI23 | GMATGLVA | SHATPAAFAAHVPQRAM |
| UniRet90-W40XU1 | QTILEAAKASGKSTGL | DATPAAFGAHVD |
| OSGW | NKATG |  |
| UniRef90_UPIO003B605A2 | GLLSTG | w |
|  | TVLEAAKEKGMS | T |
| UniRef90-A0AO16VGN1 | VDG VENALHKGLDVGFVT |  |
| UniRef90-R4YKP9 | Gl $\mathrm{V}^{\text {T }}$ | THATPAATYAHSPDRVW |
| UniRef90-A6LGS2 | GLSSGII AVT CR | WDATPADFCCHNTDRDA |
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UniRef90 X1YG68 UniRef90_Q17FS9
UniRef90_Q7Q8R8 UniRef90-X1XW89 UniRef90_C0N1N1 UniRef90_Q6WZ93
UniRef90-B3MT55 UniRef90_B3MT55
UniRef90_UPIO00478F0C1 UniRef90-G6CZ50 UniRef90-B4H3D6 UniRef90_UPI000237CAA8 UniRef90-UPI00034B155D UniRef90_Q47X80 UniRef90_Q9W273 UniRef90-Q2MF59 UniRef90-B3MZ26
UniRef90 W8BLC1
UniRef90-E6RMB6
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UniRef90-U6I9F3
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UniRef90-R7V6S8
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UniRef90_Q9W275
UniRef90_C6CVM4
UniRef90-W6ZQ18
UniRef90-A8F7K3
UniRef90_UPI00037B6E6B UniRef90-K7ING2 UniRef90-D5DDC5 UniRef90-C3XQ71 UniRef90_F5SQX8 UniRef90-BOW2L4
UniRef90_UPI0003C3AB79 UniRef90-C4LDN5 UniRef90_S5BBE3 UniRef90_UPI000364A2A3 UniRef90-A6EPU2 UniRef90 UPIO000D55541 UniRef90-UPI000369CF72 UniRef90_D3F1R6 UniRef90_Q17FS5 UniRef90-F1M8U7 UniRef90-UPIOOO2559459 UniRef90- X1XXA2 UniRef90-T1IOY8 UniRef90-R7VLE4 UniRef90-A5G5J3 UniRef90-Q1YRX4 UniRef90 UPI000478ADC1 UniRef90-W5JTP2 UniRef90-F4QUA1 UniRef90-W4Q9J1 UniRef90-UPI0004000043 UniRef90-G3QVI4 UniRef90-UPI00034C079F UniRef90-A9BXC1 UniRef90_Q17FS6 UniRef90_A0A017RWI9 UniRef90-E4Z3F6 UniRef90-F5SDB8 UniRef90_C6XQK2 UniRef90_A0A024Q2P4 UniRef90-W0L754 UniRef90-Q0K9P2 UniRef90-F4DF83 UniRef90-R6YLY6 UniRef90_UPI0003B2F73F UniRef90-R6FAZ9 UniRef90 K6WSB6 UniRef90_UPIO0036C1477 UniRef90-F7Z6W6 UniRef90-UPI0002EDAA1B UniRef90_-18UHQ4 UniRef90-K6Y9Q9 UniRef90-DOMI23
UniRef90 W4QXU1 UniRef90-X0SGW8 UniRef90_UPI0003B605A2 UniRef90-F8CSH6 UniRef90-A0A016VGN1 UniRef90-F1NN44 UniRef90-R4YKP9 UniRef90_A6LGS2 UniRef90-A7HL25 UniRef90_J8TLP8


 EDNSD LPETA IAAACSD AAAQLIDYERIEVVMGGGR QGPADMER CPTDTRAAGGPGSIAEQTVAHRVDVLLGGGR ECDTEVPRAESVGDHVDIARQLVENEPGNRFNVIGG E NNAQVIQDGHDSELCRDTA YQLI HSEPGKNFKVI LGGGR EHDGQISDYGCSTEVNTDIARQLVEWNVGRDVRVIMGGGR YED I AADFLKTDIDIFIGGGK EDISDMPADAVAAGCEDIASQLVNFEPNVVMGGGR
EDISDM PEAAVTAGCVD ATQLIDVDGMEVAFGGGR ECDTDVTSYGVDANSCDDMATQLVTQTPGKNFEVMFGGGM QGPADMAA CPRDT $\square A R G G P G S V A E Q S V R L R P D V L L G G G R$ E L E
ECEAKMSAQAQ
C C AKMSAQAQ
QEGCKD
I ARQLVEEEP
Y E E
Y E E
Y Y D N M M ${ }^{\text {D }}$ C

## Q P

RPGRPKD
A G D
Y SDNEM PPEALSQGCKDIAYQDMHNRDIDVIMGGGR YGPQGKTDGTMNNAKENGGDGSISEQLLDTRADVTIGGGS ENDNE PPDDQKEACPDEDGAKQLVYSET GQNAKVIFGGGR CSDGSLLPVLKQSRRALD TFNS LDRGQELKVIMGGGR ENTD AAA LVPGGAG YNGKLGDGVDVFFGGGT ECNAAMP PSAKNCKD DARQLIEDRPGRHFKVDMGGGK ESDTDILTYGEGQNDPATCTDIATQQAPGKNFDVMLGGG\| QS D I A L Q Y L T K S KVDV Q
 LAEQLI NATVDIIMGGGY EGYDNLSE EALKNGCADIARQLVMSKVDVAYGGGR
ECESTMPK

EHVGQV PTFA
TFAQALGCTDI ALQLVQDNPFTNVILGGG EDEAKRYGCKDIATQFVESPYVDVAFGGGR EDDSYMARDECDTTKYPD A QQLIHGEVGKRLDVALGGGR $E S D F D V I T R H A D P E Q C D D U G R Q L V E N T V S K Q F N V I M G G G G$
$Q Y E D A T Q A V P G G A G F N S A$ EDISDM PAEDAVTAGC SDDADQLVNFEANVVMGGGA
 $Y P E \quad 1 / A T Y L P T S E V D F V A G G G L$ EDDSKVPPASRKS CKDLARQLIENDPGRNINVLLGGGR QS D KGPEATRT DCPQETKAAGGDGSIAEQQIDDRMDVLLGGGG ENDAEVVSDKCDPEKT IDDIARQMVYNDVPKNYKVILGGGR YSDAHMAT AALQEGCKD DAMQLISNMD DDVILGGGR E ATAPEGCKDIATQMVELAAGDGMDVIMGGGR ENDVEVADADCDPALVDDIAEQLVGKEMGQRFNVVLGGGR ECDSVMPENA TSCKDI ARQLI EDLPGRDFNVIMGGGM ENDSDFPEELKAECPDKDIAYQLVHTE $\square N K N D Q V L M G G G R$

## ENEDARQF IEV

ENPSVM
EADSN LPAAA IAAGCED $\square$ ASQLIDVDGIEVALGGGR EADSN LPAGATVKDIARQLLEFPYGDGLEVALGGGR


 YSDTNMPC SARQEGCKD IATQLISNMDDDVILGGGR ElE IDAQQMLES ADVLLGGGK ENTDIVAAAVVPGGSG YNNSKLGOGVDVILGGGGS EDDSYVTNAGCDATKYPDVAHQLVHGEVGKRLNVILGGGR Y F

YSDKSM
EAD
EDDSEDE

ENNAAQA
E A Di A VQ
QEE
EGDNEDTEEARRNG
AEALIADYAGCG
QS LIAK QF LE $\square$ SKPQVI LGGGE Y E D Q QS Q E D $\square$ S D MP
E S E
EAE
ETDTALP ETADTA
$M N A T I$

ADDYYDEGINNGQ
EYDGAAKQLGASD
YSDGEM
EGDYDRHL EAE

ADDYFDEMING
A A ALVPGGQGFNAK
TPGNAGYNTA
LVPGGKG

## AEDEDLINDDCEDI SMQLFKPNIDVIFGGGK GDEGCADワARQFDEWDHGDGFEVVMGGGR

Y N S A
 LAADYLNSDINLEI GGGR QLIEFPYGDGPEVVLGGGR VDFIFGGGK DRWLPPGTPGAF DA A DLVVSDIDFFAGGGT

 $R R I A A A Q M L A A Q R V D V L L G G G G W$
 ASD CDIA RQLLSSEFKVMMGGGA

 | $N A$ | Y WY GCDS I A K Q L I |
| ---: | :--- |
|  | $E$ |
|  | $G A V$ |

| YG68 REFLPVHEADRTDGTDLIKHWQHHHSRHRQNRVQLLETRT ${ }^{210}{ }^{230}$ |  |
| :---: | :---: |
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|  |  |
| CFDHLKSEYRFNGAMEKPCLRTDGRNLVTDWQQLKNGT |  |
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| UniRef90-G |  |
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| UniRef90 UPIO00237CAA8 SFFNE |  |
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| UniRef90-B3MZ26 GKFSME RRDDKDLLALWREQNPDGCFARNMAELRAC |  |
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| UniRef90-UP100047E8D28 | DGQN |
| 俍 |  |
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| UniRef90-B7Z1D1 ${ }^{\text {K }}$ K YMYPKNKTDVEY |  |
|  |  |
| UniRef90-RTV6S8 S S |  |
|  |  |
| UniRer90-J2TEL5 $\quad$ SYFTAKEDGGKRNDRNLDAELKAAKYSYAGSKSEFDK |  |
|  |  |
| Ref90-O9W275 |  |
| iRef90-W6ZQ | GRet90_C6CVM4 GAFDDETPADPSEKSKGTQGDLVKKAKSLGYTYVTNKTDM |
|  |  |
|  |  |
|  | QMLLQTHVRETETDPIDTWAGRRKD |
| UniRet90-D5DDC5 DAPPEDKTEGSKGTQNLVNKAQKLGYTYVNNENEDK |  |
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| A KLL |  |
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| , RHFLPRDEGDRTDGRDLTAEWQAMYGVYDYDQSGFD GLD |  |
| Ref90-UPI000364A2A3 |  |
|  |  |
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|  |  |
| KDFRQTGDG SARTVFDYAAERGFRRVANKDELAA TS |  |
|  |  |
| 1M8 |  |
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| X118A2 GNL |  |
|  | VDSWTCTRNDGRDLIEAWKRKGSMKFVTNTRQLLETD |
| KSVKADKCGTKGDFI QEAQDKGYAVAYSKKELDKVVT |  |
|  |  |
| UniRef90-UPI000478ADC1 S YFMPNTVADPEYGRDLTLLEWTAQYSDYVWNKAQFDAVNP |  |
|  |  |
| ( NNFLPAGEGRRKDGRDLTATWLGYPQARLVRDAAGLGAALN |  |
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| 079F KYMFPMGTPDPEYGKNLVQEWKHQGARYVWNHTELMQASL |  |
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| RRef90-AAAO17RW19 K Y L P GEKGRQDGLNLIDDELKKMNYQFVEDTKSMKS |  |
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|  | F |
| UnRef90 AOAO24Q2P4 DYFD ${ }^{\text {a }}$ |  |
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| UP10003B2F73F RYFLPEDKGKRRDGRDLTREWTTRFPRAAYVWNEQFEAAE |  |
| UniRef90-K6WSB6 Pr PAPAENPKEKSSGGNLIEKAQQLGYAYVSDAAGLKATT |  |
|  |  |
| DYWYPQGTQGAYKDHNLVDEAKRLGYQYV |  |
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| UPIOOO2EDAA1B RHFLLPKDEGDRTDERDLTAQWQQQYPEGKYVVDQAGFDSLL |  |
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| K6Y9Q9 RHFLPEDEGDRTDGRDLTAEWSTTYPSYVFDQTGFDADDT |  |
| UniRef90-DMMI23 S MFLPTAEGGRRQGRNLTREAEAMGYQVVRTAADFRRGVR |  |
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| UniRef90-UP10003B605A2 A AFVTQEQGGQRADRDLTAEWANDGGVYI EDRAGF DALD |  |
| UniRef90-A0A016VGN1 DFLIEKSRGGMREDGMNIDEWSRLGGGSRRVLGDVSDLQGV |  |
|  |  |
| KYMFPKNTSDVEYPQ EERHRGTRLDGKDLVQAWH |  |
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| UniRe990-A7HL25 |  |
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## UniRef90 X1YG68 UniRef90-Q17FS9 UniRef90 $0708 \mathrm{C}_{8}$ UniRef90-X1XW89 UniRef90-CON1N1 UniRef90-Q6WZ93 UniRef90-B3MT55 UniRef90-UPIOO0478FOC1 UniRef90-G6CZ50 UniRef90-B4H3D6 UniRef90-UP1000237CAA8 UniRef90-UPI00034B155D UniRef90_Q47×80 UniRef90 Q9W273 UniRef90-Q2MF59 UniRef90-B3MZ26 UniRef90 W8BLC1 UniRef90-W8BLC1 UniRef90_E6RMB6 UniRef90-UPI00047E8D28 UniRef90-13YW45

 UniRef90-U619F3 UniRef90_UPIO003C36435 UniRef90-B7Z1D1 UniRef90-UPIO0047D1FB4 UniRef90-R7V6S8 UniRef90-13LB86 UniRef90-J2TEL5UniRef90 J9K4Y9 UniRef90-Q9W275 UniRef90-C6CVM4 UniRef90_W6ZQ18
UniRef90 A8F7K3 UniRef90-A8F7K3 UniRef90-UPIo0037B6E6B UniRef90-K7ING2

UniRef90 UniRef90-C3XQ71 UniRef90-F5SQX8 | UniRef90 BoW2L4 |
| :--- |
| UniRef90 |
| UPloo | UniRef90_C4LDN5 UniRef90-S5BBE3 UniRef90_UPIO00364A2A3 UniRef90-A6EPU2 UniRef90 UPIOOOOD55541 UniRef90 UPIO00369CF72 UniRet90-D3F1R6 UniRef90-O17FS5 UniRef90-UPIOOO2559459 UniRef90-X1XXA2 UniRef90-T110Y8 UniRef90_R7VLE4 UniRef90-A5G5J3 UniRef90-Q1YRX4 UniRef90-UPIIO00478ADC1 UniRet90 W5JTP2 UniRef90-F4QUA1 UniRef90_W409J1 UniRef90_UPIO004000043 UniRef90-G3QVI4 UniRef90_UPIOOO34C079F UniRef90-A9BXC1 UniRef90_Q17FS6 UniRef90-A0A017RWI9 UniRef90-E4Z3F6 UniRef90-F5SDB8 UniRef90-C6XQK2 UniRef90-AOAO24Q2P4 UniRef90-WOL754 UniRef90-Q0K9P2 UniRef90-F4DF83 UniRef90_R6YLY6

UniRef90-UPI0003B2F73F UniRef90-R6FAZ9 UniRef90-K6WSB6 UniRef90-UP100036C1477 UniRef90-F7Z6W6

GHHYTOP ${ }^{330} 340$
Geril GHHDTWGRLADDEVQFSEAIELDAKKFS EDDTLIVVTS AHHQNHAHLALAEVVEDDKAVETALKKVDDDETLIIVTA AHHAGNAFNALNDTIELSNAVKQAlAHTDPA ETLIVVTA QNHDADPCGQI GETVAFDRAVKAAREYAARHPDTLVITTA GHHMNYARAALLELYEFDLAI QAAVNATDPDETLILVTA MAHANNAKQVI RSGEQLNKAVQVAKDFAKKHPDTLVVVLA AHHDNMVELALDETGEFHSAVAKATEMDSEEDSLIVVTA AHHATLAHKALEDTAEFAAAVKLARDLTNED DTLIVVTS AHHAGNAYNALHDTVELAEAVQAAMEKTN TVETLIIVTA GHHAGSAYNALTDTIEFSNAVQAADNNTNPE ETLILVTA GNHYTKAGYALDEALEFEKAVQAARDMTDDEDTLIVVTA GHHETRVGYALDEMLEFDAAVETVLKMTDPKETLVVVTA AHHRGTARRALNEALADEAVEAAVQMSDQDDETLIIVTA AHHAGNAFNALNDTIEFAKAVQAAVDNTDPE ETLILVTA AGHENNUVYLIEEMLDFDKAIGRALEFAEMNKETLIIVAS GGHDNDADYLI QELLDFDKTLGVALDFAKQNGETLVIVTA AHHGNKQVKSLDDMLAFEEACREGVKMVNGE RTLVILTA GHHEGKAKQALHEAVDMDRAI GQAGSLTSSEDTLTVVTA QDHAANACGQLGETDDLDKAISATVASLKASGDTLIVVTAA GHHEGKAKQALHEAVEMDRAIEQAGSMTSVE DTLTVVTA A LHATNARRALQDTGAFDDAI K LAADDKMQAIKNTLVVVTA A HHQSTARLALDDTVEFDKTINTSIN NLLKMLHDTLVIVTS MAHNNNAKDTIKAGQEDDKSVKVAKDFAKQHPDTLVLVLA GHHAGSAYNALTDAVEFSNAVQAAMDKTNAEDD EAHGNDPYGVWKEVAEFDKAVGVADQFAKTNPD AHHGTNAFRALTDTVELASAVRAAYERTDPN AHHRGHAAQALLETVRLSDAINATLELVDSE MAHNNNAELMI KAGKQLDDTVKMAKAYAKAHPD AHHDSKAAKALHDVIAFDDAIAVGKNMDDLDDTLVLVTA GHHAGSAYNALTDTVEFSKAVDAAMRKTSPQ DTLIVTA AHHETHPRLALEETAEYSRAIDDARKMTSVE DTLIVVTA AHHETKAKKALDETVQFDEAIKKAYELTDPN ETLIVIVAA AHHAGNAYGALHDTIAFAEAVDAADKLTDDEDTLIIVTA AHHAGNAYNALTDTI ELSKAVEVABNNTDPRKETLIVYTA AHHYNNAYRALDETLAM ETALLAALALINPTETLIVVTS FAHKNNAKMT KSGQEDDKAVQVAKTFAKKNPDTLVLVDA

GHHAGSAYSADTDGDEMARAVGSFALDGR
 AHHRGHARTALHETVALSDAI HGTMTMLDIRDETLVIVSS AHHATNAFRALSDTIALEEAVAKADQMTSIE DTLMVVTA ANHANNYPYQLGEMLAFDEAVKVVRDWDDRKENTLLIVVA GHHANSAYAALSDTVELSRAVQAAVDATSRDDTLIIVTA AHHAGNAYRALTDTVALSDAVKKAKQLTRDE DTLILVTA AHHSNRPRLSLLEEAEFHRALDLARKRTNVNDTLVEVSS WHHQNNAYRALTEVDELSRAVQVALERTDPRKDTLIVVTA AGHVHDPVWALNEAKAFEETVEKVLEFAKEDKETLVVVAA MSHENNAEKMIKAGRQLDQSVEVAKKYAKKHPDTLVLVVA GHHESRAYRALTETDMFDDAIERAGQLTSEE DTLSLVTA AGHANDAAWLMKETEAFEEAVNEA TKFAKKDKNTLVVIVG ALHATNARRALQDTVAFDNAIQTALDMAKLDPNTLIVVTA AHHDSRPRLALEETAEFSRAI ERARNDTALD DTLIVVSS ASHANDPKGVISDVLAYDEAIKVALDFAKKDKNTLIIAAA GHHAATPFRALHEWDAFDKAVGKAIELTNKNETLISVGA AHHAGNAARADAEAVADDEAIAKALEMTSDE ETLILVTA AGHANDSVSAMSEMEDFAKAFETVIEFAKKDKHTQVVLTA ALHATNARRALQDTVAFDDATKVALDKMQQLDNTLIVVTA ALHGTNAKRALEDTIAFDDAIKRALSMVD LSNTMIVVTA ALHDTNAKRALQDTHAFDNAIKAAIDEVKKSKNTLIVVTA GGHNNDQEYMVGETI DFDRAVGKALDFAEKDGNTLVVITA AHHAGNAYRALTETIEFSRAVETAMEMTDPAGDTLVIVTA MAHKSNATMVAKAGKQLDDAVSVAKRFAQKHGDTLVIVVA GGHANDSDYL SEGIDEDDAVGKA LDFAEKDGNTLVIVTA MAHENNASQLI KAGRQRDHAVKVAKDYAKKHPDTLVLVLA AHHAGNAYNALNDTDELANAVKAAVENTDPSETLILVTV MAHENNGKLMMKAGSKLDQSVK円AKDYAKKHKDTLVLVVG SHHAGSAYGADTDTDAFSEAIAIADEMTNDEDTLIIVTA AGHANDAAAHVREVLAYDEAVAVADDFARRDGQTLVVSVA AGHAHDSAWAMNDIAAFEQAVLSAQKFAQKNGNTLVVVAG AGHAHDAVWAMTDTAAFEEAVEVALDFAKEDGETLVIVVG AHHGANAARALNDALAFSEALDRAQSMVDLDGE
AGHDNDIVAAMSEMEDFEQAFKVALDGAKKDGE AEHANQMHLAFAEVYEFEEATRKAREMTDPSETLIIVTA FPGTGTQALHEAVELDRAVGLAGRLTSPR DTLSVVTA AHHNGNAARALAETAMLADSVQLADDMTKDD DTLIIVTA YGHFND DDLLMETHDFDRTI GRIFEWAAQDGETLVVVTA EAHANDFYGVWKEVVEFDDAVKVALDFAKKDGNTLVIVLG

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| UniRef90-XIYG68 |  |
| UniRef90-Q7Q8R | DHSHAMSFSGYPSRGNDWGAAGTDGLPYMY |
| UniRef90-X1XW89 | DHSHAMTFNGYPDRG |
| UniRef90-CON1N1 | DHSHVFTMAGYPKRGN |
| UniRet90-O6WZ93 | DHGHSSQ |
| UniRe990-B3MT5 | DHSHAVT |
| UniRef90_UPI000478FOC1 | DHETGGLA ${ }^{\text {deSKDDKDESGDGDSKEDGPFPDAGSKEVFYV }}$ |
| UniRef90-G6CZ50 | DHAHVMAYNGYSTRGRDVLGPSNNVDKDVRWQSHVDVPLD |
| UniRef90-B4H3D6 | DHSHTMSTNYPSNGPGSGANTYSDDNGRLDLSHVDTTAA |
| UniRef90 UPIIOO2337CAA8 | DHETSGMSINSGDFEKGE! |
| UniRef90_UP100034B155D | DHSHVFT AGYPKRGNPILGKVVAVGSDE |
| UniRef90-Q9W273 | DHGHAVSIAGYPGRGTPI L G I NQHDTDİGGVQYP |
| UniRef90-02MF59 | DHGHSSQIVPLDASPPSLWS |
| UniRef90-B3MZ26 |  |
| iRef90_W8BLC1 | DHSHSLT NFQPDANGKRV |
| UniRef90 E6RMB6 | DHSHVFTVAGYPKRGNPLLGKVVG |
| UniRef90 I 13 Y 45 | DHETGGYTLASDGSKGMVKANA |
| UniRef90-U619F3 | DHSHSFHLVGE |
| UniRef90-UPIO003C36435 | DHSHTMSLNGYPYRRQNTFDFRQYDTQDAEYRFMAT |
| UniRef90_B7Z1D1 |  |
| niRef90-UP10004 | DHAHTSQ VSDAP |
|  | DHSHAFA S |
|  | DHSHVFTFGGYTPRGNSIPMVSDTDK |
| UniRef90-J2TE | DHDHTLQLIGYATRGPISDA |
| UniRet90-J9K4Y | D |
| UniRef90-Q9W275 | DHA PRLISGYPGRGTPILGLNQD |
|  | ETGGFSVEDDSDESTDGKT |
| UniRet90_W6ZQ18 |  |
| A8F7K |  |
| UniRef90-UP100037B | DHSHVFTIAGYPERGNPLLGLAMTTDDDGTTKQQTGVNMR |
| UniRef90-K71N0 | DHA SLAFNGNSNKSM |
| UniRef90 D5DDC5 | DHATGGLALEKVDNKN |
| C5x | DHSHVLSTLAGYPTRGNPILGKVKGNDEHGEPKSDLDLATA |
| UniRef90-BOW2L4 | DHSHTMTYNGYTAQSTIRA |
| UniRef90-UPI0003C3AB79 | DHGHTMTTNGYPYSSPRSGMDKSENGLLFNTNDHV |
| UniRef90-C4LL | DHDHTMTMNGYSAKGNPILGLVADKDGNQATDVDGRPYTT |
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| UniRef90-UP1000364A2A3 | DHGHVFTIAGYPKRGNP |
| UniRef90-A6EPU2 |  |
| UniRef90 UPIOOOOD55 |  |
| UniRef90 UPI00036 | DHETGGLSIEPVDAEDESGDGISKEDGP |
|  | DHAHAGLIVSPTTDTPGYSQUIVTRDGTPMMLTYGPQKAK |
| UniRef90-Q17F | DHSHTMTYNGYTKNGPGYADTYKSDNLAERIDITNVDFTQ |
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| T110Y8 | DHTHTLSNGYPPRGPYTTLYAVSGPSNY |
| UniRet90-RTVLE4 |  |
| UniRef90 ASGs |  |
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| UniRef90-UPI000478ADC1 | DHSHVFTTAGYPSRGNPILGQTAVDGVYANGPGWTGGL |
|  | DHSHTLMYNGYPTRGNDILGIADASDUDQLPYTTLSYANG |
|  | DHSTGGYSTGSDGDYNWFGEPDKAAKRTPDFMSRSNTGWT |
| UniRef90_UPI0002D5 |  |
| UniRef90-W409J1 | DHDTGGL |
| UniRef90-UPIOOO4000043 | DHECGGLTIEEEVDGKDESGDGISKEDGPFKVANSTNQFTIU |
| UniRef90-UPIO0034C079F | DHDTGGMSVGGYDVYKANPQiEATDDDNQ\VSKRAFIGWT |
| UniRef90-A9BX | DHDHTLHLNGYDVDGNPYTTLGFGNG |
| UniRet90_Q17FS6 |  |
| UniRef90-E4Z3F6 |  |
| UniRet90-F5SDB8 | DHDTGGMSVGGYNQYKDKKAVKPGNARNGVINERALVGWT |
|  | DHAHTLTISGYSQRNNPFTPNKAAD |
| UniRef90-A0A024Q2P4 | DHSTGGFSIGRDGEYNMYPEVIKAAERTPEFMAEETMDFT |
| UniRef90-W0L7 | DHDHTLQMNGYDVEGNPYTIIGGFGNGPGHLATRGPIDENK |
| Q01 | DHDHTMTINGYSHRGNPILGTDTTADGYLQEVGVNLGSPG |
| UniRef90-F4D |  |
| niRet90_R6Y |  |
| UniRef90-UPIO003B2F73F | DHSHVFTMAGYPTRGNPULGKVVGNDAAGNPASNPERAAD |
|  |  |
| UniRet90-K6WS | DHATGGLAI QDDPGYPNERGEGRTAEDGPFTDRKFMVDWT |
| UP100036C1477 | DHETGGFTLASSTKK REDGAEYSD |
| ef90-F7Z6W6 | DHDCGGMTVESADNSDESGDGISKEDGPFQV |
| UniRef90- I8UHQ4 | DHECGGLTIDEVNNNDESGDGISKEDGPFTVAHSKEKFWT |
| K6Y | DHGHVFTIAGYPKRGNPILGKVVGVGQTQATLAADGKPF |
| UniRef90-Don | DHETGGLSLLGRNVN |
| UniRef90-W40X | DHDTGGMSVGGYNQYKQPD L |
| UniRef90-UPIOOO3B605A2 | DHGHVFTVAGYPRRGPYTTLGYHNGGMDPDYRQQAAVPMG |
| iRef90--F8CSH6 | DHSTGGFSLGANGTYNWFPEPTKAAKKTPDFMAEK\VNGA |
| ef90-A0A016 | DHGHALTLGFRGGLRMTDVQVNEQERADPLFRQPASVPMA |
| NN | HSHVFTFGGYTPRGNPIFNVSAVDFAHANYQAQAAVPLR |
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## UniRef90 X1YG68 UniRef90-O17FS9 UniRef90_O7Q8R8 UniRef90-X1XW89 UniRef90-CON1N1 UniRef90_O6WZ93 UniRef90_B3MT55 UniRef90-UPI000478FOC1 UniRef90-G6CZ50 UniRef90-B4H3D6 UniRef90-UPIO00237CAA8 UniRef90-UPI00034B155D UniRef90-Q47X80 UniRef90_Q9W273 UniRef90-Q2MF59 UniRef90-B3MZ26 UniRef90-W8BLC1 UniRef90_-E6RMB6 UniRef90-UPI00047E8D28 UniRef90-13YW45 UniRef90-U619F3 UniRef90-UPI0003C36435 UniRef90-B7Z1D1 UniRef90-UPIO0047D1FB4 UniRef90-R7V6S8 UniRef90-13LB86 UniRef90-J2TEL5 UniRef90 J9K4Y9 UniRef90-Q9W275 UniRef90-C6CVM4 UniRef90- W6ZQ18 UniRef90 A8F7K3 UniRef90-A8F7K3 UniRet90-UPIOOO37B6E6B UniRef90-K7ING2 UniRef90-D5DDC5 UniRet90-C3XQ71

 Uniref90-5SO2UniRef90-BOW2L4 UniRef90-UP10003C3AB79 UniRef90_C4LDN5 UniRef90_S5BBE3 UniRef90-UPIOOO364A2A3 UniRef90-A6EPU2 UniRef90_UPIO000D55541 UniRef90-UP1000369CF72 UniRet90-D3F1R6 UniRet90-O17FSS UniRef90-F1M8U7
UniRef90-UPIO002559459 UniRef90-X1XXA2 UniRef90 T110Y8 UniRef90-R7VLE4
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UniRef90-Q1YRX4 UniRef90-UPIO00478ADC1 UniRet90 W5JTP2 UniRef90-F4QUA1

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tGGHSATMDPVFAKGPGAEKFRGПYENNDTFTKMVSSLN WATHGGEDVPVYALGPLATLFTGTFDQSYIPHAIAYSACL DWTHTAVDIPVTAMGKNAQLFTGVFENTAVFDKLMQAYGF TQQHTGSAVPVMADGPQAANVSGAHDLTDLFPLI SNTHSGEDVAVFARGPQAHLVHGVQEQNYIAHVMAFAGCL AETHGGDDVPVWASGPSSHLERGVYEQNTLPYLISYDAQU REDHGGGDVVVYATGPMAHLFHTVHEQNYVATVIAY
SEWHAGEDVAVFARGPMAYLLTGTYEQSFIPHVMMYAACD GE H T G V D T L I WS D GP G S K A L A R A DD N T D I Y G V M V K A M GETHGGEDVAVYA TGPGAHVVGGSNEQSDVFHAMMHAGNL


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SETHAGEDVPDFASGPWAHLLTGVNEQTLVADVAEFALC口 SGQHTGTDVPLYAYGPGSHLFSGLRDNTDLPKLMAKAM MCTHAGEDVALDASGPGANLVSGVMEENEIFHVDGQSLGL TS GHT GVDVVPVYAYGPK E EVFSGLVVNTDIAN
TETHGGGDVFLAAQGLGAEQFSGTLNNDRVFDLIKQADDL
 HSASPVPFFSYGPGAEQFAGFKDNTASFHLMKKLLGL G L P YTTLN YANGRGAHELP
HS GVMVPVYAFGPGAELFTGDYENTDDFEKDKYLLKL TSNHTAEDVPLTAMGPGSQLLSGVYPNTHVHDVMVRAMGL




TVEHTGVDVPVYAFGPHSELFDGHQDNTDLPKKMAKAMG】 TNAHTGVDLPLYAYGPGTDLESGLLDNTDLPKKDADAMDI SETHSGEDVIAYAVGPWAHLVDGSMEQHTLHHVI THAYG NVRETGEDVAVYGYGPQDERFAGKDDNTDHAKI I FDIL HGAHGGEDVGIWADGPLSDLFSSSLENTEVAYUIKFLLCL QETHGGEDVAVFARGPMAHLDHGVHEQNYIPHAMAYAACl LGGYNGDDVALHAKGPGAYLFSGLMEQNEIFHTMLQAL TGGHSGVMVPVYAFGPGAENFSGGMEENTDI FWKIKKLLNL

UniRef90 X1YG68
UniRef90-Q17FS9 UniRef90-Q7Q8R8 UniRef90 X1XW89 UniRef90 CON1N1 UniRef90-Q6WZ93 UniRef90_B3MT55 UniRef90 UPI000478F0C UniRef90 G6CZ50 UniRef90-B4H3D6 UniRef90 UPI000237CAA8 UniRef90 UPI00034B155D UniRef90-Q47X80 UniRef90_Q9W273 UniRef90 Q2MF59 UniRef90-B3MZ26
UniRef90-W8BLC
UniRef90-E6RMB6 UniRef90 UPI00047E8D28 UniRef90-I3YW45 UniRef90-U619F3 UniRef90_UPI0003C36435 UniRef90 B7Z1D1 UniRef90_UPI00047D1FB4 UniRef90-R7V6S8 UniRef90 I3LB86 UniRef90-J2TEL5
UniRef90-J9K4Ys
UniRef90 Q9W27
UniRef90 C6CVM4
UniRef90-W6ZQ18
UniRef90-A8F7K3
UniRef90 UPI00037B6E6B
UniRef90 ${ }^{-}$K7ING2
UniRef90-D5DDC5
UniRef90 C3XQ71
UniRef90 F5SQX8
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UniRef90- S5BBE3
UniRef90-UPI000364A2A3
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UniRef90-W5JTP?
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UniRef90 G3QVI4
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UniRef90-Q17FS
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UniRef90-E4Z3F6
UniRef90_F5SDB8
UniRef90 C6XQK2
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UniRef90_W0L754
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UniRef90 F4DF8:
UniRef90- R6YLY6
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UniRef90 R6FAZ9
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UniRef90-UPIO0036C1477
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UniRef90-F1NN44
UniRef90-R4YKP
UniRef90 A6LGS2
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UniRef90_J8TLP8

WNRQAAQALDVAKKLQPTQTAAKNVILV A $\square T T G P T R N V V F$
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QRTSGNSKAKNVILF PPTGTKVKNVILM


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& \text { AHPGGETPDWWYR SGAAKAANNGAMRGKAKNVILF } \\
& \square A \text { A } V A T S T \square S F N V L S \\
& \text { GEAKNVIFF } \\
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\end{array} \\
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\end{aligned}
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NQEQNHAKVKNVI FL
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AAEAKNVILF
N NAK $\quad$ K NVIV
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GERSAAIAGAVDPSVPKNVILM
ALLPVSVLAQSRR DKEQTYVLENPPQGKKIKNVILMM
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$T L N \square S$
QTEVAEAKATE
AAVSVLTAFAGAELQQTEKASAKKQD KAEPNVILF
AEQAPKNIIYM
TAPTAKNIILL
TAAEKEQKAVS
APKNVILL
ATSAKGNNKKVENVIYM
AFAQDALPQASSQWYKDGEAALDRQPNTNRAKNVILL
TASAVETGRSASSKNLIVL

HYGFAQNTNLQTYTMEHAPKGKKDKNVILM LS S SVYASAPKNI I YM KNVIVF
A HPQGETAEWWYR
SGAAQAAARGAMAGQARNV: PKNIV
L LA SAQQQRAKYVFYF
WKD $\square G K E Q L K N L Q K Q A \| V K R A K N V I V F$
AENGKPKNI I MV
T SQEKTPNII LM
APGGNQGKAPEHSQG KSGKKDKVQNVIFL TEATWTVRD $\square A A P$ AESAPKNVI YM ATSTLSFNALSAEDKNVILM KKPAKNVILE

 KAKQAKNVILF
K S S LLNVADPETWKKSADERFNKFEKSLSYKRPKNVILF
QAFAAGEAKNVIFF
SSADSKKVEDKKVKNVI FiL NKPVKNVILL
TSTLSFTTLSAELKNVILDM TNKKKNVI FM

## UniRef90 V9IRA2 UniRef90-G0EZ57 UniRef90_U1YIQ8 UniRef90_A0A023FIV1 UniRef90 B8KSE1

 UniRef90-UPIO00467A91C UniRef90-W5JTB9 UniRef90-R1F7C8 UniRef90_Q6C1F6 UniRef90-D1CH14 UniRef90-Q5WAX7 UniRef90_UPIO0047DAB31 UniRef90_A4SL54 UniRef90 F4L5W2 UniRef90-UPI00042CDC1D UniRef90-M4U898 UniRef90-UPI0003725A75 UniRef90 K9E1U4 UniRef90_UPIO003720916 UniRef90-R6YWFO UniRef90-R7TR03 UniRef90_Q17E56 UniRef90-D3FXG6 UniRef90-V9ZWR4 UniRef90-W4F245 UniRef90-UPIO0047D793C UniRef90-K7PXI7 UniRef90-K8ZJJ4 UniRef90_B7VLA4 UniRef90-X5CHL9 UniRef90_UPI00047D9CEA UniRef90-UPI0003EBED42 UniRef90-D5H5B4 UniRef90_UPI00047AFAE6 UniRef90_E5WIG3 UniRef90_N9VFE2 UniRef90_UPI0002D6C024 UniRef90_V2RCR9UniRef90_UPI0003B32A4D
UniRef90-K9EEZ5
UniRef90-N9RAA5
UniRef90_W8G770
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UniRef90-K6H218
UniRef90-F5LJ63
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UniRef90-U7G7K2
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UniRef90-X4ZQ34
UniRef90-Q9KWY4
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UniRef90_UPI0004168EAA
UniRef90-UPI0004639C68
UniRef90-A5IW53
UniRef90-B1KHR4
UniRef90_R5IFS5
UniRef90-E4XNF1
UniRef90 K6YXH44
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UniRef90-M2TUE4
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UniRef90-R7DGH7
UniRef90_U3AKA1
UniRef90-Q6BW32
UniRef90_A6W4D2
 L GDGMGMATMTAAR IYK VGEDGELTMDTLPESG 1
$G D G M G Q S Y T T A Y R Y L K D D P S T P D G M E K T E F D K Y L V G T Q$
GDGMGDSTVTAARUFKGQFKKNFSGEESVLSWERFPHVS $\|G D G L G P Q Q L T M A R N Y L T G S A G Q L L V D T A P V Y A \quad S \square Q\| E$
$\square G D G L S \prod P T L A A T R V Y M G \quad G E E Q E L S F E R F P H A G$
 GEEQELS FERFPHAG MDTLPETA
 $M G D G M G A T Q R D A D Q L V T V G P Y G R \quad L T M D Q L P Y T G M M S T N S$
$M P D G F S Q G Y T N N Y R L Y K E D G$
$M$ LGDGMGDTYTTAARIYA VGEDGQLPDDQNDESA L GDGMSLPTVAAARVLEGQRHGHPGGEENRLSWEDFPYTA I GDGMGPTVLTATRLFK VNGNGEEGNLEMMKDPRSA
 LGDGMGGLAMTAARIVK
 $V G D G M G V A Q R N A D R L A A A G L N R D L E M N Q M P V A G L V H T S S$ I GDGMSLMHVYSAWTANRGKL
 IP DGYSASYATNYRIVYKEDTVLDS I GDGMGPSVLTATRLFK
 L GDGMGPATVTASRLYKVGEAGQLT

I GDGMGPQQVGLLETYANQAPNYKGNKTA GY LIMRTA LGDGMGDPTISAGRFFVAQEDGLNGSIMKHPREEQWPYNT I PDGFGPASVTMARDYLRWRDGQKELPYDSLQVG
I GDGMGPAYNTMYRYLKDDPSTPM MESTAFDSYLVGMQ I GDGMGDGQ\EDAR K LEYGKDGRDFDESLPHTA





MS STMLAATRVYL GGQYGHN
TIGDGMGDSEITVARNYLGGVNGTFQ
LGDGMGINTLTAARIYA
I GDGMGNPYTTGYRYFKANHSDKRVP QTAFDTYGVGQQ IGDGMGTPY DRAYRSMKNN GDTPNNPKLTEEMDRNLTGGMM I GDGMGPAYTTAYRYFKDDPSTK EMESTVFDTMLTGM
 I SDGTG GSQQSSAFYFK II PDGFSSDYASNYRAYKGEEVVWDSHDK
I ADGNGVGTNYATRLFDGQQKGMDGEENVLPYETPEFYSA I GDGMGPAQVTAARNYDMYNKGDEHLALDS IYVGQATTYA

 MSPDTDTASRIYRGGBEDSQDAWEHFPHIGB TGGDGMSDMDVYAAWVCNRGRDWD I GDGMGPAYTTAYRYYSDDLTTKDVE TVTVFDSDLTGM



 I PDGYSASYATNYRDYK
 I GDGMTVPMDTAARWIDHKSINGKY QSTMAMDKFPDHG I GDGMGPAYTTAYRYFKDDPATKEGTVFDTVLKGMAHTYP
 I GDGMGPVYTTAYRYYQDDPRSKHVGE TVIFDKHFVGMQ VGDGMGPAYTSAYRYYQDNPNTQ GEDEQTVFDRLLVGNA I PDGYSTSYATNYRWFKGEDSAFDPYLK
LGDGMGlPTLAATRF DRTNTTGKAEKHPFEDWQFSS I GDGMSLNTVTGARYLKAEKMDFLGGGDVQLVWENWPVAS
 L GDGMS $\quad 1$ PT DAAAHVLA GERAGTDGESYRLSFEKLPFSA I GDGMGLAQASAGMYANHNTLT I F



## UniRef90_V9IRA2 UniRef90-GOEZ57 UniRef90_U1YIQ8 UniRef90-AOA023FIV1 UniRef90 B8KSE1 UniRef90-UPIIOOO467A91C Uniinef90 W5JTB9 UniRef90-R1F7C8 UniRef90-Q6C1F6 UniRef90-D1CH14 UniRef90-O5WAX7 UniRef90 N9D3N9 UniRef90-UPIO0047DAB31 Uniref90-A4SL54 UniRef90-F4L5W2 UniRef9-UPIOOO42CDC1D UniRef90-M4U898 UniRef90_UPI0003725A75

 UniRef90_K9E1U4 UniRef90-UPIOOO3720916 UniRef90-R6YWFO UniRef90-R7TR03 UniRef90_Q17E56 UniRef90-D3FXG6 UniRef90-V9ZWR4 UniRef90-W4F245 UniRef90-UPIOOO47D793C UniRef90-K7PXI7 UniRef90-K8ZJJ4UniRef90-_B2U772 UniRef90-B7VLA4 UniRef90-X5CHL9 UniRef90-UP100047D9CEA UniRef90 UPIOOO3EBED42 UniRef90-D5H5B4 UniRef90-UP100047AFAE6 UniRet90-E5WIG3 UniRef90 N9VFE2 UniRef90-V2RCR9 UniRef90-UP10003B32A4D UniRef90-K9EEZ55 UniRef90-N9RAA5
UniRef90-W8G70 UniRef90-G6DGJ9 UniRef90-E4POG4 UniRef90-I4C284 UniRef90-UP1000373CD2D UniRef90-D4MF63 UniRef90-UPIOOO37F92C1 UniRef90-P19406 UniRef90-UP1000304DE63 UniRef9-KH218 UniRef90-F5LLJ63 UniRef90_A4AWU5
UniRef90-O8CUS UniRef90-U7G7K2 UniRef90-UPIOOO37C6354 UniRef90-X4ZQ34
UniRef90-O9KWY4 UniRef90-UPIO002D50797 UniRef90-F4WSIO UniRef90-D1VY16
UniRef90-A4C467 UniRef90-UPI0004168EAA UniRef90 UPIOOO4639C68 UniRef90-A5IW53 UniRef90-B1KHR4 UniRef90-E4XNF1 UniRef90-K6YXH4 UniRet90-COBFT9 UniRef90_O9KEH8 UniRef90-E4Q1A5 UniRef90-M2TUE4 UniRef90-G7G712
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UniRef90_O6BW32 22
UniRef9O_A6W42


[^0]$\square A S Q Y$ LD ${ }^{190}$ GIVIDVLIF GGGK
 ENPARHQASVPEGCNAKDIA QQLIYDLPGSEMRVIL GGGL
 E A D $\square$ A VQMVPGGAGYNPA EDEIA DQLL GYA QSEUARQYLESSKVDV Y T E
$T P L D R S V D L L M G G G R$
$L G G G E D Y W Y P K G D G A F P$ ENDDASQLVPSS QGDTYUASQMVANDHVVLMLGGGR $E D D E E M P Q D A D A$ A GC $\square D \square A R Q L V E S P L A G H V K V L M G G G R$ $A Y A \square A E Q A V P G G A G F N T A$ D E E
Y YSDAD LDPADAQTNGCQD』AAQLVYNMDIDFLAGGGK ENQ $\square A A Q G T P G N A \square Y N A A$
EEE
$\square A$ VD F
VY A $\square \mathrm{A} Q \mathrm{Q} \square \mathrm{V} P \mathrm{GGAGYNKA}$
Q S
EDE
LGDGVDVLMGGGR
ESDADTPE DQRDQCPGVKDI $\operatorname{A} A D Y V N C E A D Y V V G G G A$
(
EAD
A A D A DAEQAVPGGAGFNAA
M
QYD DAAQAVPGGAGYNAA ESDTDLPEKAVTE
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ENQIAAOG LKDGDDVLLGGGR
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 YNQ $\square$ ADDYYDDS $\square \mathrm{NGQQ}$ HKVDVLLGGGT AYADAAQAVPGGAGFN QALGDGVDVLLGGGA
 ENEIAAQ LVPSK $\square K A D R Y S N Y N T R D K N G \square D V I L G G G K R$ FTPQDAAKDCAKETKKAGGPGSTYEQUIDSKTDLMVGSGR
EAE
AVT DYVNCNADYVFGGGGA
ENDDAAQLVPAGGKGTGWAAYTKLNDGVDVVLGGGL
 Y GPQ ENF

QSD $\square$ DAKQY $\square E$
$M \quad A N S Y M D D K \square K G$
EKE
ESA
RGLDVGEGGA
niRef90-UPI000373CD2D UniRef90_D4MF63 UniRef90_UPI00037F92C1 UniRef90 P19406 UniRef90-UPI000304DE63 UniRef90-K6H218 UniRef90-A4AWU5 UniRef90-Q8CUS8 UniRef90_U7G7K2 UniRef90 UPI00037C6354 UniRef90-X4ZQ34 UniRef90-Q9KWY4 UniRef90_UPI0002D50797 UniRef90_F4WSIO UniRef90_D1VY16 UniRef90-A4C467 UniRef90_UPIO004168EAA UniRef90-UPI0004639C68 UniRef90-A5IW53 UniRef90-B1KHR4 UniRef90_R5IFS5 UniRef90-E4XNF1
UniRef90 K6YXH4 UniRef90-C0BFT9 UniRef90-Q9KEH8 UniRef90-14X2Y3 UniRef90-M2TUE4 UniRef90-G7G712 UniRef9O-E8VN59 UniRef90-19M7L0 UniRef90_F5SGA1 UniRef90-A3QHZ4 UniRef90_10JIF8 UniRef90 U6IC14 UniRef90-G4VJ94 UniRef90_UPI000362BD7A UniRef90_Q0HME9 UniRef90-14WLX0 UniRef90-UPI00037B5618 UniRef90-R7DGH7 UniRef90_U3AKA1 UniRef90-Q6BW32
UniRef90A6W4D2


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UniRef90_UP100047DAB31 UniRef90-A4SL54 UniRef90- F4L5W2 UniRef90-UPI00042CDC1D UniRef90-M4U898 UniRef90-UPIO003725A75 UniRef90-K9E1U4 UniRef90-UPIOOO3720916 UniRef90_R6YWF0 UniRef90-R7TR03 UniRef90_Q17E56 UniRef90-D3FXG6 UniRef90-V9ZWR4 UniRef90-W4F245 UniRef90_UPIO0047D793C UniRef90-K7PXI7 UniRef90-K8ZJJ4 UniRef90-B2U772 UniRef90-B7VLA4
UniRef90 ${ }^{-}$X5CHL9 UniRef90-UPI00047D9CEA UniRef90-UPI0003EBED42 UniRef90_D5H5B4 UniRef90_UPI00047AFAE6 UniRef90_E5WIG3 UniRef90-N9VFE2 UniRef90_UPI0002D6C024 UniRef90-V2RCR9 UniRef90_UPI0003B32A4D UniRef90-K9EEZ5 UniRef90-N9RAA5 UniRef90_W8G770 UniRef90-G6DGJ9 UniRef90-E4POG4 UniRef90-14C284 UniRef90_UPI000373CD2D UniRef90-D4MF63 UniRef90_UPI00037F92C1 UniRef90 P19406 UniRef90-UPIO00304DE63 UniRef90-K6H218 UniRef90-F5LJ63 UniRef90-A4AWU5 UniRef90-Q8CUS8 UniRef90-U7G7K2 UniRef90-UPI00037C6354 UniRef90-X4ZQ34 UniRef90-Q9KWY4 UniRef90_UPI0002D50797 UniRef90_F4WSIO UniRef90-D1VY16
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UniRef90_A3QHZ4 UniRef90-10JIF8 UniRef90_U6ICI4 UniRef90-G4VJ94 UniRef90-UPIO00362BD7A UniRef90_Q0HME9 UniRef90-14WLX0 UniRef90_UPI00037B5618 UniRef90-R7DGH7 UniRef90-U3AKA1 UniRef90-Q6BW32
UniRef90_A6W4D2

210
220 230
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FF $\square$ PQA


SNFLPAADEDPEYGRDLVSEWSQRHPGGAYDWNALKQLAQ
NHWTPYNKGGRADGRDLTAELTAQGYNYVTTQSELAK
KFFEQRAADGR NLYQELKDKGY QVSDFTQKNASS L $K Y M F P E G T P D P E Y P D N L V Q A W Q A K H A Q Y V W N R T E L L Q V A S ~$
$R H F D P Q G T T G S K R T D D V I A Q F Q A A S Y T Y V S T G T Q L A A V D ~$ RHFDPQGTTGSKRTDDLIAQFQAASYTYVSTGTQLAAVDP RYFDA RSDNENLLDKDEAKGFQVALNMDDVKKVT NHFTPRNPKGRPDGRDLMAEFAGAGYYVAGTRAGMMSAQP DYWYPAGTEGVYEDHNLVDRAKKDGYQYVTNGNQLQQ KKFE NRKDGRNI FKELEQKGYQVARSWEECKN SKFTP DDVEDRDDDRNLTEEWKKHQTARYVTRQSEFDDVD
 SNFLPKEENGNQAERNLVEEAESNGYEFVETKEELES S LI D REDRDLVKEFKKDGFNYVTTKKEL A YYSPEKQNGR D DLIKEATERGYAYASNREELLQ
NHWTPYNRRGRADGRNLLAELQAKGYAVVATKDQLAQ
SQFTTVEQRDPEYGRDLIGEWRQRHPQYVWNRGQLEAAQN RHYDPQGTTGSKRTDDLTAQFQTAGYTYVTTGTALLTAVNP $T Q G D V Y L K S K R K D D R N L L A E A E K D G Y Q L A F N R S M L E D$
$K N F Y P Q N A$

KYMFPKGTPDPEYPG RHFDPQSAEGREDDLDLLQAAQDRGYEVVQTASELRAGEG SYF EREDRNLVEAFQKDGYSYVTTRKQLLKDDH AYFGP DKQNGKDLINEARDKGYDYAANREEMQN


| NNFV |
| :--- |
| $H F L D T E S G G K R Q D D R N L T E E F K K S G Y S Y V T D R E Q L L N$ | D L N RGTPGTEHDGKSLEQYAKDASGYRYLTTK DQF LGVK



 KYFNQLDENGN $G N F D P Q S E K K R K D D K N L D E M M K K D G Y T Y V A N N S E L Q A V D P$
$Q F F T P F A N G G K R A D R D L L A E L G Q Q G V K V A R D S A Q F K A L A C P$ E LFA
D FWYPKGTAGAHPDGNLVDRAKKLGYDYVTDTAEMKA
SYF NRKDRNLTKEFKQAGYSYVTTKQALKK
 REDRNLVEEFKQAGYQYSDDFAALK D S SLL
$S$ LD G QFFLSKDEK EK



 DYF $\quad$ KRNDRDLVAEFLQSGYQYSDD A QFMPVDTGLRRDGRDLVAEWKAAHPGYVWNREQLQAAAG KYFGKSN GLRRDGNLDKKFKKDGYDLATNSKDLKK RYFPAK LLQQFEAKGYQYLSDFSQLET VI E STGDDEDKDSAYEADEKGGYVIAEGMDDFEVRKD $K Y F \square$
$M F F N$


KREDKRNLLDEMSDYDFVKNLDK $\qquad$ KMFVPEAEGGMQNSRHLLNEAEDAGYALIETKEEQQN $\square s$
DLFD
 QQFYPSELGGTYQDKNYYDEFAAQGYQVVHNRTSLLAASP QYFGDVALKSKRKDRNLVDEFKAAGYQYGDD
 D Y F I
KYF


SDKLIKQFEAKGYRVLKDSALLEEGVTQ
QYFYPESEGGKQKENNLVEQAQEDGYSYVENKEEMMDLK SEFYGPSKGARWDGRNDAKEWESQKSKGRNYVYADSPDA SEFYGPSKGKRSDSRNLLNEWQENHKHVLLHTNNEFKQTD
PFNASTTPKGRPDGRDLVAEMQGQGYTFVNDGASLNAAPN KYFPPE LLAQFTAKGYQHITRFDDLAS ITQ TEFMPAGADDPEYGRDLIGEWTSRHPDGKYVWNAQLKALD NNFV RKDRNLTEEFKKAGYSYVTDRESGLKDTN K DFEKNNTEK THGDVYLLTSKRKDERNLLKEAEQQGYDLAFNRTMLTTS


UniRef90 V9IRA2 UniRef90-G0EZ57 UniRef90-U1YIQ8
UniRef90- AOAO23FII UniRef90 B8KSE1 UniRef90_UPIOOO467A91C UniRef90-W5JTB9 UniRef90-R1F7C8 UniRef90-Q6C1F6 UniRef90-D1CH14 UniRef90-Q5WAX7 UniRef90 ${ }^{-}$N9D3N9 UniRef90_UPIo0047DAB31 UniRef90-A4SL54 UniRef90_F4L5W2 UniRef90-UPI00042CDC1D UniRef90-M4U898 UniRef90-UPI0003725A75 UniRef90 K9E1U4 UniRef90_UPIOOO3720916 UniRet90-R6YWFO UniRef90-R7TR03 UniRef90-Q17E56 UniRef90-D3FXG6 UniRef90-V9ZWR4 UniRef90-UPIO0047D7930 UniRef90-K7PXI7 UniRef90-K8ZJJ4 UniRef90-B2U772 UniRef90-B7VLA4 UniRef90- $\mathrm{X} 5 \mathrm{CHL9}$ UniRet90 UP100047D9CEA UniRef90-UPI0003EBED42 UniRef90-D5H5B4 UniRef90 UPI00047AFAE6 UniRef90 E5WIG3 UniRef90-N9VFE2 UniRef90-UPIO002D6C024 UniRef90_V2RCR9 UniRef90 UPI0003B32A4D UniRef90-K9EEZ5 UniRet90_N9RAA5 UniRef90 W8G770 UniRet90_G6DGJ9 UniRef90-E4POG4 UniRef90 - 14C284 UniRef90-UPI000373CD2D UniRef90-D4MF63 UniRef90_UPI00037F92C1 UniRef90 P19406 UniRef90 UPI000304DE63 UniRef90-K6H218 UniRef90 F5LJ63 UniRef90-A4AWU5 UniRef90-O8CUS8 UniRef90'UPI00037C6354 UniRef90-X4ZQ34 UniRef90-Q9KWY4 UniRef90-UPIO002D50797 UniRef90-F4WSIO UniRef90-D1VY16 UniRef90_A4C467 UniRef90 UPI0004168EAA UniRef90-UPI0004639C68 UniRef90-A5IW53 UniRet90_B1KHR4 UniRef90 R5IFS5 UniRef90-E4XNF1 UniRef90-K6YXH4 UniRet90 CobFT9 UniRef90_Q9KEH8 UniRe990-14×2Y3 UniRet90_E4Q1A5 UniRet90_M2TUE4 UniRef90-G7G712
UniRef90 E8VN59 UniRef90-19M7LO UniRef90 F5SGA1 UniRef90-A3QHZ4 UniRef90_10JIF8
UniRet90 U6ICl4 UniRef90-G4VJ94 UniRef90-UPIo00362BD7A UniRef90-Q0нME9 UniRef90 ${ }^{-14 W L X 0}$ UniRef90-UPL00037B5618 UniRef90_R7DGH7 UniRef90 UЗАКА1 UniRef90-Q6BW32
UniRef90-A6W4D

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260
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NGEEDRLLGLFAEEAL
S P
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VESGKVLGLFAKSHLDYELDRVAKGAA
KNKNKQVLGLFATGGMDKMIDRK
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HNSKGHKYCLVSKPSELASCDVSAVDYFFADP YADHMPY SKQTKVLGLEAPEGLPKMLDRE
QTQENRLLGLFSPGHMAYEDDR
GQ VLGLFAPVGMDKMIDRN
AKGGKLLGLFNNGYMNFKLDR
GVNAGKVLGLFATSHADYDLDRQ
ADQ RKI GLFNDSHLNYDLDRQNKQI
S ${ }^{2} K D G P V F A Q F G D W N T P R E F Q G S P G T K A D E G \square R D D D T C K V$ IKSGKVFAVPYPEDTPLPAERGDL
TKTKKLLGLFNASHMNYDLDRTNKKD
AAQ DPVLGLFNESHMRYEMDRKNDV
NNKYGSVLGLFASDHMSYHL
YKDGQPVLAL DGDGNLPTQFNPSVATKQDAAENPTVCTTN DATRKLLGLFAGSHLSYDLDRQ GQPAJALFAPNHLDYDALIRQ
NQDDK GGLFAPGGLPKMDDRT
SKSGKLLGLFANEEMFQAHNELGNKYNPTV
NKDQQVLGLFADGGLAKALDRD
DK Q
NSK EQVIGLFAEDGF
$\Pi R T N Q K A G F L \square A A D D M P P A A E G R G D F$
IKKDEKLLGLFADEALSSEDHR
DGSSPVLALFNNSHMEYEADRAD
PADSGKVLGLFGKSHDAY
PASTTKALGLFGSSHVAY
$\square$ ASNRKMGFL DADEAMPTMEKGRGNF
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EDEKVLGLFAEGPMSSELDRDET
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WSSVDYVLGLFAPNHLAYRLENQ
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$A G T P D K L G T F H N G N L V Y$


360
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TAAQGVNAVDHRAKNVIFF
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| $K R N M$ | $F M$ |
| :--- | :--- | :--- |
| $K R N L I$ | $F M$ |

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QFGDQHR $\begin{aligned} & \text { PQ V } \\ & \text { OKK }\end{aligned}$
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KYFE
K Y F DES
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RYF R R EDRNLI E EFKTQDYHYVTNRKELAK
RS MYPKNTPDRKDGRNLVGEWKEKRGYYVWNKKDLLDS LN
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K Y F P E D

A YFLSKDVPGRKDDKDYI AMFKDAGYTMATDKTELLTAASG


R H F V P K GQ D GR S D D R D L V KE M EA K G Y T F V K
K P A EDTSEASKGTK GDLI KKAQKAGYTYVSSSADEL N
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A GMS
$R Y A A A Q S A G Y T Q V T D S S Q L Q A$ L
RYFDEGGKGRRPDGQNLIEKATGMGAQYAWNTETFNQLTL

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AYF LDPKSTPGRKDEKNLFDMFQQKGYTIAENATQLKAA
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 KYF WPKS TRNDKRGDDLI DAYKKA GYDF LT TA A QL E K
EQFYPGK GSFQGKDYYEEFAKKGYNVVLNNTALQQATSN
N Y F KRDDRDDVTEFTDDAGYQYVDTDSALQQNTDV
T G G T $\square E \square K$ S K R K DERNLLA E A S DA GYS L AAYTRD GLLA D
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CNF LDPK GKGGCRKDDDDVGEKAKTDGWTYFDDDLTGFK S L Q S

## ,


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340
350
360 ASHPLDMERAVFETIEFDQAVALLAREFQAKNPDTLIVVTG AGHONDPAQVREVAFEXAFAAAMEADNSDETLCSTS MLHAQDSDRALGELLEDDDTVKATVEHDDCLKDTLIVVTA QMHVLDYERALGDLLELDDTVRATUQKLQDDGNTLIVVTA SAHPNDITGVMSEMEGFEKAFENATNYAKQNPDTVVVATA AGHANDAGTMLNEVVKFDEAVGSVYQWAAGRDDTLIIVTAA
 EAHGNDPFGVWKEIIEFEQAFNVAMEFLKENPDTLIIVTA YGHFNQLDMLMKETLDFDQT TGKIMQWAAKDGETLVVITA AGHNNDVTAMAEMDEFARADEVVEEFVRTRGDTLMVITA AGHGNDPAAQVHEVLAYDKAFSAVLEFLKKDSTPGILVTS CGHAND【ACAMAEMDDFAKS $\backslash$ ALAKAYVDAHPDTLLVVTA GHHG
ESHVRNPCGS पGEПAQDEEVVSVADTFAQTHPETGIVTS AGHNNDDATAMAEMHGFANAIEVVEQYVRANPDTLMVVTA AAHANDPAAHAHEDLYYHDUSLVKKYVDEHPGTVMI SVS AGHDNDVVAMSEMEDFEKAFKAADEFAKKDKHTLVVSTG AGHANDPAAQVHEVLAYDKAFASVLDFAKDTVQGVMVSTS AGHQNDPAAQAREVLAFDRAFKAVIEYVENDTETIIISTS
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AGHIDNDPAQVREVLEYDKAFKLVSDFVKDSKESLLVATS ALHAGNAYRALDETISMADAVAAALAHTDPKDTLIVVTA A HHRGHAAQALLETVRFSDAVNATLAMDDDN DTLVIVTS AGHGNDPAAQVHEVIAYDKAFAAVLEFLEKDETPGVLVTS ASHPMDFERSMIDTIIEFDKAVGAALEFQKTHPDTLIVTTA AGHGNDPAAQVHEVLAYDRAFAAVLEFLEKDSTPGVLVTS AGHDNDPAAQVREVLEYDNTFNAVLEFIEEDTEGVLVATS GNHDGNAYRTLTDGVAFAEAVAMADELTDDANDTLIIVTA AAHANDDGGLIYDQVAFDEAVKVADDFAEKDKNTLVIITAT FNHPLDWERAAFDTHMLSNAVQIAKEFAKTHPDTLIIVTP QLHPLDWERAAYDTIEMDKAI GVAKRFAEQNGETMIVVTA AGHSNDAGTMLHEMLKFDNTIDAVYQWAKGRDDTLVIVTAA Q LUA V VDWQRATYDTUEMDKA GGDAKEFAKKNNDTVIIVVA S D QMHADDYDRADGDLEEDDTVRATVEKLKKGKETLIVVSA ALLHATLGKRALQETVTYNAALQAAIDRMEGLKNTLIVATA QMHVLDYDRALGDLLELDDTVSATLAKLKELGDTLVVSA MSHPLDWDRALVETIEFDKAVGIAREFAKNPDTLIIVTG AGHGNDPAAQVHEVVAFDRAFAAVLEFLEQDSTPGILITS Q ${ }^{1} H T M D W Q R A V Y D A I E M D K A V E Y A K N W K Q N G D T L I V V I A$ AGHHNDPAAQVHEVLAYDRAFNSVLDFDKREKQTVMVSTS QMHALDYDRALGELLELDDTIKATVNKLRALGDTLI IVTA AGHANDPAAQVHEVMSYDKAFAAVTEFLEKDPTPGVLVTS AGHANDPSAQVREVLEYDNAMQAVLDFLEESKEGVMVATS ALHDTNAKRALVDTVAFDNAVKATLDKVRQTKNTVVVVTA ASHSSDITGUWKETI AFDDVVKYCVEWANNRKDTLVVVAA QMHTLDYDRALGDLLELDDTVKATLKYLESDGDTLVLVTA AGHSNDVGAAMGEMQDLAQTMTWLEQYVDAHPDTLVVLTA ASHSNDAGTADHEMDKFDEADQYVYDWIKDRDDTLLVVTA AGHQNDPASQVREVLAFDEAFQYVLEFASSNTETVLVSTS ASHDNDAATMVVEFKDFDQTMAMAMDFVTSNKETLLLVTA AGHSNDAGTMLHEMMKFDQAVESVYQWAQGRNDTLIVTA AGHSNDPAAQVREVLAYDRAFQAADDFANEDTETV I STS GGHSNDDGAAMAEMHDLADTLEWLEQYIEKNPDTLMVLTA ALLHETARKALQDTVAFDQALAAALARMQQVDNTLVVVTA AGHGNDPSAQVREVLAYDEAFSSVVRFDEEETEGVLVSTS MSHPLDWDRALVETIEFDKAVGVAREFAEKNPDTMIIVTGG TAHANDVTGVMSEMDGFNKAFENAMSYAENRDDTLVIATA MMHVLDYDRALGELLELDDTHKATIAHTDCDKETLILVTA AAHANDPDGVISDIMAFDDAVKVALDFADSDGNTALIVAA CGHANDVACAMAEMDDFAQSIEKAKAYDDKNPDTLLVVTA AAHNNDPVAHLSDMLAYQQTVQYGKDWVDAQDETMLISVS AGHHNDPAAQVREVLAYDEAFEEVIKFIDSSDETVAISTS GAHANDVGGLIYDQVAFDEAVGVALAFAEQHGDTLVVMTT AGHQNDPAAQVREVLAFDRAFKAAVEFAENSDETILISTS AGHGNDPAAQVHEVLAHDKAFSAVLDFLEKDPTPGlLVTS GHHDGDAQRALTEAVEFDRADQRAGELTK ETETLSVVTA AAHTNDTDGDISDVLAFDDAVHEAGEFAKKDGNTMVIVVS AAHNNDPDGHI HDILAYNDMVQAVVDWVDHEPETVVFSVA MSHPMDWERAL FETIEFDQAVGVGI EFLKTHPDTLIVVTG MMHVLDYDRALGELLEDDDT $\$ KATI SWLRDAGNTLVLVTA AGHDNDUVAMSEMEDYDKAFQAAIKFAEEDGNTLVVATA A AHANDPIGDISDVLAFDEAVAKALQFAKNDGNTMLIAVA

UniRef90 U4LN05 UniRef90_UPIO00426301C UniRef90-J7RTL1 UniRef90-M2SDB6 UniRef90-G4UGA9 UniRef90_K9AR40 UniRef90_A3YEY2 UniRef90_A0A024QD53 UniRef90_UPI0003779C19 UniRef90-B7IGS3 UniRef90_D1QT98 UniRef90-A1S325 UniRef90_C1GAX9 UniRef90-H0UJ46 UniRef90-L0I366 UniRef90_Q7ZTV9 UniRef90_AOZ6L8 UniRef90_A8H039 UniRef90_U9UYL7 UniRef90_A0A023DFT4 UniRef90_UPI0003826A26 UniRef90-R7Z322 UniRef90-G8ZNS1 UniRef90-F4NRH6 UniRef90_D3L290 UniRef90_UPI000379F61C UniRef90_UPIO00479568E UniRef90-H1VZD5 UniRef90_UPI00047C5AC9 UniRef90-A0A026WZL9 UniRef90-S7ZNT0 UniRef90_UPI000367ED85 UniRef90-C5P1I6 UniRef90-B2AWJ2 UniRef90_UPI000347E5B8 UniRef90-D0D9X9 UniRef90_UPIO0041E94BA UniRef90_A4SZ92 UniRef90-A0A031GWG1
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380
390
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DHTHGVSIV DHGHGFD VMGSVDTHYLAAQESDRKKRDA $\square$ GVYEQSGLS DHETGGDATADQEPGHLPVYNWYPRALAKATSSSEFLAAK DHGHGFDVVGGADTKYLAAQHDKDDRHKRSAVGVYKESG
DHSTGGLSMAKGKEYRWDPEY C
DHETGSFGFSYSSDNLPA AETRSGKAFENRDYKPNFNF
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DHETGGSFGFSYSSKDLPEPQKRPGEAFKERDYA
DHDLRSG
DHETGSFGFSYSSKDLPEPQKRPGEAFKERDYA
HETGGLGLSTGGYFFDVEMLRQFTKNTDFDAKQANNQYY DHETGGLTVHGGDLKTGTVIAHFSTKE

DHETGGLSIARQDHPSQYPTYLWYPGVLANASHSSEFGRN
DHSTGGLT $\square G A N G Q Y D W K T$
DHAQAAQ\IPEPVYSPGHVARLDMPDGS LMTDNYATNGFV DHNTGGLSI GANGEYAWDTAAIAIDDWQQLIDNRSFTGWT DHETGGLSLARQLTSDYPEYLWYPEPDTRVKNSSYVLSQL
 DHETGGLATARQLHATYPDYLWYPGVLANASHSAERLAFE DHEGGLTIGRQVTPQYPEYIWF
$D H E T G G L S V G Y Q L G P M Y P \square Y A W F P E A \square T G V K R S A E Y \square V R Q$
DHANGGLSI GMG
HETGGLAVEEADTADESGDG $\square$ SAEDGPFA $\square R G S D K S F Y \square$

HETGGL
HAHTLTFAGYPKRGNDTLGLVQGHTDSYDEEGGAGVARD HTHSMSFNGYSDRGSSULDPSKSNTSDFNYSQQATIISN HETGGLAAA RQQLHTTYPEYLWHPRVLANAKHSSEYHLSR
HE HETGGLSAARQLHESYPDYKWFPGVLENATHSSEY

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$D H D H T L V L N G Y A R N Y Q T G A V A K D A D G A P Y T I I G G G N G E N R$ HD H TV V V V
HETMVVSA
HETMGVSATEAMD $\square N$
HGHGFDVTGSVDTKFLNAQDSDRKKYQESGLSQYVVANR
HSTGGFT GGADT $\square Y K W E P Q W T \square T E D E K S L V N A \square D T Q D E E$ DHETGGFGFSYSRANVPEAKKLSGSTFKDHDYKPNFNF
DHETGGGLVTSRQVTASYPEYVWYPQVLANATHSGEFDFVH $H E T G G L Q L L S Q \quad K D D M V K V Q W G$ HETGFGFSYSGYQLPQP
DHETGGLTVGKQLDPDTYPEYLW
HGHGFDVFGGADTKYLAA QSTDRKKRDADGDYTNSGDS
HSTGGLTIGVNGNYRWEPKWAFYKA ISKILDNRTFTGWT
HDHTLVLNGYARRTGPTTAAAPGDDATVSASTYHQEAAV HETGGLSVARQTTSQYPVYKWY
HTHGVAII
HSHVFSFGGYT $\square R G T S \square F G L A P S K A S D S K S Y T S \square L Y G N G$ DHSTGGMT GSGEEYKWNPDAIH KM KMKK SGAHMT
HGHGFD VMGSVDTHYLAAQNVDRKKRDA $\square G T Y E Q S G L S$
HFTGGMS I
HSTGGLTLGAHGQYKWDTEVIKGDDLEPDWRANTFTGWT HETGGLAL GRQLGEAYPEYLWYPDALVNATHSSAYLGSLD HETGGLVVARQVSENYPDYLWYPEVLLNSTHSGDYLAHK HN
DHETGG
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DNSNYSETPVVSDYDDPDKKATMTAADMVNMDAERANDGFT HETGGISLARQVSSDYPEYLWLPE ILTRVKNSSFILSQG HECGGLTLGGQRSEDEESFYGWYPD
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$\square L N Y H A D D K \square D F V R H E V L E R D \square G \square T$ D Y TE

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LS QYTVEQPG $\square Y$ YTGPN FPVNWDPRYVIAAGTG

PNFNFG SFD LDDGLYNQKLSYYDMLSAFG GDELDT DEDMEYFAFGKGAENFNGFYDNTEIPR\|IGR\|AG SGGHTGTUVPIYAFGPGSEQFTGFMDNTEVFWKIKKLLK』 T LDA M LD GTGKGASGPRQEYVRGDHDATEL
FPDNPDPDVTDAVQ YANFPDHYEN

SEEHTGANVPLFANDVGQGLIPAF LRQREVHDVMASFLGL TSGHTGVDVQVFAAGPAADLLFKGNQDNTDIADKMDSLL LLNYWNKD
TSAHTGEDVPVYAYGPGSERFAGQ DENTDHAK $\square$ I D D $\square \mathrm{L}$ G NGDGYPDSVDVSRRGFMAAN
YF QHATDDLEAY LKDLVSEGL G $\square H D Y S D$
$\square K$ QYSGADATNF $\square K N T \quad V F P K W L N N T D P$
DWTHTGVDVPDTAAGPLADRFTGKHANTYVHDVLSE\|L QHTADLVPVFAKGPGSDLFKGFYHNKDIYHKI DEAL

ATGKPYTTLG FANGPGY
EAYHGGGDVAAYADGPHAHLLHSVHEQNYVAHVIAYAMS■
NTQHSEDKTKAFVRKTLLEEDLGGTDATD
DGDGYPDKVDVSRRLAIAADFPDYYE
HTGANVPVYAWGVNSQRVAEVMDNTQLFG\|VTGVAG SETHSGEDVAVYAKGPWAHLFDGTIEQNVIFHVMNQA
TVAQVREDE FANGA
PNR\|DVSKRIAFFYGSHYETMHPKLDGTFMP
TETHGGGDVKLLATGAGAKTFKGTLDNTKVFDLLKAAFGF

LYQVEAPGVS YNTGPNFPD NWSPRYVIASGFG
QETHGGEDVA $\square \mathrm{FA} A \mathrm{~K}$ GPMAHLLHGVREQNY DPHAMAYAACD SQYTK KAKGDNYGTGANFPTNWEPRYADAA AETHGGSDVYLGATGANAELFRGTDDNTRVFNLI KTAAGL GLS QYTVEVPGVSYGTG PTFPVNWDPRYVIAAGLG
$R \square D V S R R L F L A A N N G P H Y E T F R P K L D G P F V P A V Q N E A$ TGGHTAVNVNDYASSEDASALDGTHENTEIGTFLAKYL GDGFPEDPNPEHTLAVQYANFPDHYEN
RTAVGGEDVFLGAVGKGADSFLGTDDNTKVFGLVKNAAGL SQYTEQSDASLHQWDPRYTLYQGVTANPD
LKAYISEEASRTKQQKYAEKGLGVHDATD
LHRHVAE
$V Q T H G G T D V F \square G A \square G R G A D G F H G \square I E N N K V F E L V R G A A Q L$
SAPDGSDQNLVYSEGPRYTLFQGVTANPD
$\square A Y Q T$ GVDVPVFAKGPGSEKFRGLLNNTQVADNDFTLLG
NHKDANSKVKEY $\square K H E \| L E K D L G \square F D Y T$
TGSHTS $\square \mathrm{PVGVYAYGPGADKFTGLMDNTD} \mathrm{\square HYM} \mathrm{\square LDA} \mathrm{\square G}$

GYTVEADSTP\GAQGPN
TTGHTGVDVQi FAKGLGSERFNGHMDNTD\AQTVFELL $P M P H G G T D V F I G A A G L G A E R F T G V M D N T A V F T L V R Q A A G L$

PGYHGGEDVAVFARGPQAHLVHGVQEETFVAHLMAFAGC EQ QAKGEDV
QY IN TG G SNFPSNWDPRYTLFQGLMADPD
TGGHTAVDVQVFAYGKGSEHFNGAQNNTDDADKL
FASRYPAATRDWVISELFEKGLGUVD
$\square A D Y K N K D D S T F I K H E \ L E N D L G V S D Y T D$
$\square L N Y D G N N K K E F V A K E V L K N D \square N \square T D Y T E$ WADYLSSDLATAA
 LVQY WNVDNS I IN Y GLGGDDNVKDYE!NW

NGDGFPDKVDV
QYVLANRSAPI GSYGPGV NFPA NWDPRYTLYS GVEETGEDVPVYAYGPASEQFAGKDDNTDHAKIIFDLL SNLSNVEDVALYSYGPQKPY GLIQNTDDAKTMAKAMGF

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 QTRADRNVPSAKGKRNNVGMM VSGTAMAAP $\square K N V I L M$
 GKYVVEARAKGKTSAVTWDVYPTSAERKAKNVILF

AEWFVRPLAEEKKAKNV: TPTYKNDGSNKPVKSII FL
TQTYTVPEKTETGFAKNV M NEKPGSGKAKNI I FM AKNVI LIF KKNIIMM
AEPGRYTVEVKAGEESKSVTWEVYSTAETPKAKNVI F
KKKNVIFF
KKNVI LI
ASALTVALVAASTGAQAAGEAKNII FF


SGATRAAANGAMAGKAKNVILE DAA LPQASSPWFTDGQAAVAAQPNTARARNVIVL GCGQPNYANSENSDKAKNVIIL
 SASQAPEKAKNVLMI GSAKNVIVM
TTANWVVRPLATEKKAKNII FF
TWEVYGTAAEPKAKNVI FF
RAAKGLYTVEVKAGNDTRTVHWDVYGTPDTPKAKNII FF
PQAGSEWFTAGQEALDRQDNTNTAKNVIVM YWNERARKTLESALTRQPDTHTAKNNVVVLE KRNLVFM
ANWLVRKMPHKRRAKNVILFA $\square$ S $\square$ TLASCSSFAE PVKNVI LM AVKNFI Y I ARYVNNDSMGKVTNV: NDRARNV
A ASA
QAAEAKVKQVEHQPKNI LMM
APKYVFFM
$W \vee V R$ QAAEVKKPTNVI ML AQQAKYVFYF
KKVKNI I LIC

EK Q $\square$ AEKST $\square$ NTN $\square$ AK N I I F F PQSVI FI VKNVILM
VADAKVKNVIVL
TTATWVVRDLHTKKRAKNVI FF WTVYRTPD $\square$ AKAKNVI FF NVIVL $K Y \vee 1 L L$
SSPSGGKRNLVFM
RGALAADGGLVLPSFDLQATLGEAHKNKRTKNIIFM QSALGS $\square D A V L Q Q$
$V A H G Q A K Y V F Y F$
SASKERPKYI FYF
KPIEGRAKNVIVL
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A VESALS QPA WYAQAQETLQRAVNEKDNKNVAKNII I F

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UniRef90 K0B376 UniRef90-D5VR19 UniRef90_K6YV51 UniR Refo M2NJXO UniRef90-H1PXI1 UniRef90-UPIO003F5F88D UniRef90-M2SY20 UniRef90-Q8T104 UniRef90-M7T3V0 UniRef90_B5YH83

 IIGDGMGPAYTTGYRYFKDDPSTKVV DDTVFDSLLVGM VPDGYGPASQTMARDY历MQNGQNEGAPVS $\mathbb{V}$ LLAADKLVIG VGDGMGPAYNTAYRYFADNPDTK EVENTAFDDYLVGTQ LGDGLSVAHRTGARLMSKGMTEGKAN GRLNMDDGDHMA I GDGMGAQQVGLLEEYARRAPNNQTADSKLANGGHLGLSL IGDGMGPSYMTAHRYMKDNPGKTPERELTTFDEHFIGVQ
 LGDGMGPVTVTAAR YKGEKQSDKSSEYAQLQMQSLAYAA IGDGMTTNMITAARLLGHKSVNGKY OQRMQMDQFP IGLG VVDGMGPASLSLTRSFRQLVDDLPYS DTLTLDQHFWGTS I PDGMSTDGVTLTRW VSDGMSDGTLSMTDWYSRNDLGKGSHWDNG YHERKVTRA $\begin{array}{lll}\text { V GDGMGPASLLSAARSFRQLKDNKLS } & \text { DDVMDDMP } \\ \text { V }\end{array}$ LGDGLSVAHRTAARDMSKGMTEGKAN GRLAMDDLDHMA I GDGMGFAHVQLTKLVYGHDN VGDGMGPASLQSSRSFRQFTQNLTD DDVLTGDHHLTG LGDGMGPTTVTASRMYGYGESGKLT GEANGMDTLRRTV VADGNGVGTNYDTRLFDGQQKGMLGEENVLPYETPEWSSA IADGQSTDVITYSRWINGGESTK EVETTIFADDEMLSG I GDGLGPAQRQVAEYFLQDQNKS EVNEKLVMNQFPVAG 1 GDGMGPQQDGLLLAYAKQAPNSTDGNTAFDRDAANGRMG GDGTGLAQLYAGYTANKGALNVF I PDGMSVEALTTARWMTK DKKFVMDDFAT G I GDGMTTNMITAARLLGHKSDNGKY QTKLALDSFPVLG IADGLSVAHRTAARUMSKGMTEGKAN GRLNMDELDRMA VGDGMSVJARTGARLLSKGMTEGKAN GRLAMDDLDHMA VSDGMGPTSLSMTRSWRQYSSGLPY DDVLILDKHHIG VADGNGVGTNYATRVFAGQQEGKLGEEHVLPYETPDYHAA VSDGMGPASLSLTRSFRQYE GKLADDDULQLDQHLTGQS VGDGMTTNMITAARLIAHKSTNGKY MSKMAMDKFPVLG IGDGMGPGQMGLLEEYARKAPHSDYNGRDTALKTMIDNGVV IVTDGMGPASLSMARSFRQTRNDDTGD ILEDDKHLIGG IGDGMGLAQLYAGFTGNHGQLDNLLDAMDSEHAGMKNIGG VSDGMSTGTLHMANLYCERTLGRSSHWDQLYKDRKASRG 1 GDGMSDAHAALRTVNKGHUNDS VMDGTSSSATTLARLYKGA MGPLADDEDLTGG VMDGSSNNADTLSRWYKGEA
 GDGGLSQLRMTNAG





 $M D G C G D E Q L T L A R W Y K \quad G S P L A L D A I R R V A$


 I $\operatorname{G} D \mathrm{D}$ GM G P A Y T T A Y R R L Y Y K D D P N T P M V
 V S D GMSTGT LNMA D L L L N RKE GRMS S WMK L YA EQT GRRG




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UniRef90
USNB72 UniRef90-G7LUW4 UniRef90- ${ }^{-12 J X U 6}$ UniRef90-W4RS61 UniRef90-U1LGH5 UniRef90 L2GG9Y9 UniRef90-E8SGE8
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R T ${ }^{R}$
FSMTYPKDAVVVDSACSATA
LS K TYCVDHQTA LDDTASANSLVTDSAAASSSWGGGKRVQNGAI NVNSDGTE L D K Y Y D E K E S I T D S A A A G T A M S S GV K TYY H GA A G V MTYPDDPKAVVTDSAAAATAWATGEKTYNGA SVVDTGNP
 NVRTQSSDNLITDSAASGTAFACGVKTYNSAAGVDPDGKP QTYSDDDKENITDSAAAGTAFSSGHKTYNGAIGGVDKKQND FDGTSATNAVATDSANTMSAYMTGHKTAVNALGVYADRPR
RTNPDDPKNVTDSAAGGTAFATGHKTYNGATV NAPHGENGSLVVDSACSATQLATGKAAGSEMIGLDDQGYV TTYPEDDKENITDSAAAATAMSGGEKTYNNAAAVDNDKSE RTRPDDPENLVTDSAAAATALATGRKTRNGAVGQDAQGRR RIKTFSKDGQTTDSAPSMAAYMTGVKMNNEVISMSADTKA
$H Q M T H S V D T F T T D S A N S A S A L Y S G H K G T S D S M G V Y S D D P K ~$ LQNTSAKDAYTTDSAAGGSALATGELHNNRHMSMSEDGVA

SSRTRSADNAITD
SSRTRSSNSLLVTDSAAGAT
S 논

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TV T T G S F D S F F

 $L A K T V S V V D R Q Q G G A P A$ G P R G G R P A G L L Q G H R L P A GA Q H R H Q R



 F S K T Y S S D S Y i T D S A A G G T A M A S G K K T N N R Y V G G V DA T A V R

A DP E E A V T D S A A GA TA F A S G V R T Y N G A VVG V D V D G N P



 MATTTFSATNSVTDSSAAGTALATGEKTYNGAVSMDDDKNV FSVVTYSADAYITDSAAAGATAFASGQKTNDRAIGGDAAGKP



 $F \| G T S S T D A D I T A D S A N T M S A Y M T G H K S A D N A D G V Y Q N H P K$










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UniRef90-M2SY20 UniRef90_M2SY20
UniRef90 Q8TI04 UniRef90_M7T3V0 UniRef90_B5YH83

## 05

L VT|V|AERAKRS GKRVG|V|ATTVS|I|DHATPAAFYAHQASRKM $V$ ETAVELLKRWGSAWGAVSTAFLADATPDALTAHTRSRYA





## $\frac{\mathrm{Q}}{\mathrm{V}} \mathrm{N}$

 NTPIWQKFKKAGKSAGVVTTVMATHATPAGFCVTSNKRSDD
 $V$ K TV L E A A K E N G K A T GLLVA T S E I T HA T P A S F GA H D E S R K N L ETML E VA K R K GKTTALVVATS QI NHATPASTASHNESRRN V G S I L E A A K F A G M K T GLVVVT S TIIT H A T P A S Y A A H V A N R G S L
 I E T I L E K A K K A GK A T G L V S D T R L T H A T P A AF A A H QP H R S Y

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UniRef90 C $7 Z 9 \mathrm{~K} 5$ UniRef90-UPI00036A168D UniRet90-N6UH23 UniRef90-FOS5C7 UniRef90-L5NB72 UniRef90-G7LUW4 UniRef90-H2JXU6 UniRef90-W4RS61 UniRef90-L2G9Y9 UniRef90-E8SGE8 UniRefefo-GaTGP5 UniRef90-D3QGI8 UniRef90_U1KW25
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UniRef90
N9RKU6 UniRef90-BоU3Y4 UniRef90_-11AVG5 UniRef90-GOEJU6 UniRef90-UPI00036596DC UniRef90-UPIOOO3826D0C UniRef90-A3JHB5 UniRef90-G8TM68 UniRef90-UPIO00287AA62 UniRef90_G2WU31 UniRef90-A0A011 USTO UniRef90-UP100039ED664 UniRef90-W9WUVO UniRef90-Q0FP44 UniRef90-K7FSD7 UniRef90_L8FV71 UniRef90_S8ASX3 UniRef90-A1SXY0 UniRef90-H1V858 UniRef90-G8YPQ2 UniRef90-C7P9S2 UniRef90-U1YJK7
UniRef90 E4RTRO UniRef90-UPIO003726698 UniRef90-C2TZ46 UniRef90- Q2C529 UniRef90-R7ZJR2 UniRef90-E9DS79 UniRef90-R5K1U1 UniRef90-H1YIW9
UniRef90-UPIOOO3ACD544 UniRef90-A0A034W6A2 UniRef90-UP100047CD405 UniRef90-V4HWV0 UniRef90-HOUQL4 UniRef90-GORVO2 UniRef90-F4HCE3 UniRef90-F2NGD97 UniRef90-G2HCU7 UniRef90-F7VSC2 UniRef90-C7M6H4 UniRef90-R5JHL8 UniRef90-D5VR19 UniRef90-K6YV51 UniR Refo M2NJXO UniRef90-H1PXI1 UniRef90-UPIO003F5F88D UniRet90-M2SY20 UniRef90-Q8T104 UniRet90-M7T3V0 UniRef90_B5YH83

GFLSPDKTYDKKEAPSUYPLLFEQAGYSLVKGYDAFKA EQFYPGSSS YQGKDYYAAFAEANYTISLNKTSLAS EQFMPGGPGFKGKDYYAEFAKKGYSVSWNKTALLA DVLIAEKRADKED MLK ILQSKGYDIVKDAEELKN EYFGKEN GSGGGNHTDKLKKDGYDIVKNKSQMQN
 CHFWPNSTDGSCREDDKDVVALAREFNYVDSRKGFDGLNG AGDSFQLKSKRKDSRNLLTEAQARGYQLAFNRAQLGAAD KNFLPRNSGDRSDGVNLIEEWKRQLYEYVWNRERLFNVKE ENFSSEDRKDKRN VFDEYTKKGYEVFRDRKSMNSYAG DFFA REDRNLTEEFKKDGYDYVTTADELAA AYFLPKSTPGSKRKDNYIEKFQQAGYQLATDADALKQNAA PDKPAEDTGSRGTKGNLIAKAKRSGYQYVTSAKDLNK
 CFFKPQSTSCREDEDDLFGFAEENGYHDMQDRPAFDADNK KYFGKEN GNITDQFKNDGYGVVTNRQQLENASE AFFDPKSVPGRKDDKDYVAAFKDAGYTVATSASELEAAKG KYFGKNN GNLTKKFQNDGYDYVTNKTDLA
SVYKKSKRSD
DRNVVVEAKEQHGYELA
KNF
K
MF A YFLP DDRDLTQEFEKDGYGYVTNKK ( RNYLPNASSKRSDDANLVDMMKTKGYSYV SKGSELAADD STFLP GPSSYQGKDYYEEFRKQGYSVSWNATSLRD
 FFLKAENREDKED KMTAALKNNNYKVIKNKKEREQ PGAGERDDGRDLIYEAVSKGYKFVCDSTSFDVVD CHFVP ${ }^{\text {GAGGGCRDDRNLVKEAAKKGWSYVGDRKQFDQLDG }}$ AYFLKADDPGRKDDKDYI QLFKDAGYALATSRDELAAAAG
TSFYPKGRGSRTGRDLI KEAVADGWHYVGDRESFNTASE KKF KGOATLELGKQYGYEVIFDKEGLEK THFYYGSRGSRSDGRNLIKEADGDGWSYVGNREQFDADEN NHFTPFNKKGRDDGRNLLNELKAKNYTVGATKAEMDA AQFMPAHQHDPEYGRDLI EEWKRAHPNGAYVWNT HQFNA RAFLLPQSTGRRTDGVNLIDRATGLGVQFANDTASFDALTMM KYF QRSDRDLTAEFRQLGYQYIDSMDKLDQ RHFVAKDKSKRKDNRDIAREFVAKGYNVFEDATRSFRNFV SAGSVR E S A NVALLE GNVK KYLTKENRKDKED LISEDKNKGYDYVDTLDGMKS EQFDPGS GSYKGKDYYAEFANQGYTVSQNKTALEAAD AYFLPQSVAGRKDDTDH1EGFKEAGYTLATTKGELEAAAG
 CHFVPNTTEDSCRADDKDIVAMAKDFTYVDNRKDFDDLDP
 CHFLPNTTDGRKDTRDITKAAQEKYWNYINDRAGFDKL RYWIPMSKSKRDDEKNLLTEAEGAGYAVVHTRDALAN CYFKPQSTSCRRDGDDLEGFAKENGYHVMQNRSAFDADDK CHF
DNPAKDPTEQSKGTKNLVERAQDLGYTYVSDAEGLAD EHFNAEHRKDK KKDLYAAYAAKGYEVAKSRDELQKDS KVFOPVKDRPDGRN|FQEMKEKGYRVTRSLKDFAAGEK RHFINGEGSKRKDGKNLVDGFKQKGYHTFADSSSDFLAFH ESLSPGTTKNRKDGENLVNVLQEKNYALVKTRDELLN EQFKYAGKGSYKGKDYYEEFSKKGYSVSLNKTSLEKDD NDFTQQ पLNGQTPVDQMKQRGYT\|IRNFDEFLN KYMFPKGTPDPEYPRNLVQEWKYQGAQYVWNRTVLIQASQ KHFLPHTVGQRLDGHNLINEWLTMHGNDAHYAQTRDELLN DPEVSVSTQG K GMPASVYKKSKRDDLKNLVLDAKNEYGYTGAFDKTQLS KYLLPKSKGGREDGEDLLEELNRRGYKVITTKDEMRS EQFLPKGAGSYQGKDYYAEFAKKGYSVISLDKQSLLKAD AYFLPKSVPGRKDDVNYI EKFKEDGYQLVTTNTELTNDAK
 KYFDPAHRKDK KDLFAVLKKKGYTVARTRGEMDKA GF DKPTTTADKKEAPSIFPMFEEAGYTLARGYNDFKAKAP DASGKS $\square S S N R K D D R N E K E F E S K G Y K T F L G K K G A K D F S S$

GKEEFSNELLEKYKEEGYE\|VYNKDQLEK

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UniRef90 UPIO00420BA79 UniRef90-W3XJ47 UniRef90_G2Q8W4 UniRef90 E3QFV2 UniRef90_Q49ZN9 UniRef90_IOHDT0 UniRef90_B2WAE8 UniRef90_K2S8K0
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UniRef90 D7W2N2 UniRef90_UPI0003628B0E UniRef90_G8BA03 UniRef90_UPI000466928E UniRef90_Q6CNG1 UniRef90_WOIAA6 UniRef90_C5DID4
UniRef90_N9RKU6 UniRef90-B0U3Y4 UniRef90_I1AVG5 UniRef90_GOEJU6 UniRef90_UPIO0036596DC UniRef90_UPI0003826D0C UniRef90_A3JHB5 UniRef90_G8TM68 UniRef90_UPIO00287AA62 UniRef90_G2WU31 UniRef90-A0A011UST0 UniRef90_UPIO0039ED664 UniRef90_W9WUV0 UniRef90_Q0FP44 UniRef90_K7FSD7 UniRef90_L8FV71 UniRef90_S8ASX3
UniRef90-A1SXY0 UniRef90_H1 V858 UniRef90-G8YPQ2 UniRef90_C7P9S2 UniRef90_E4RTR0 UniRef90_UPI0003726698 UniRef90_C2TZ46 UniRef90-Q2C529 UniRef90_R7ZJR2 UniRef90_E9DS79 UniRef90_R5K1U1 UniRef90_H1YIW9 UniRef90_UPIO003ACD544 UniRef90_A0A034W6A2 UniRef90_UPI00047CD405 UniRef90_V4HWVO UniRef90_HOUQL4 UniRef90_G0RV02 UniRef90_F4HCE3 UniRef90_F2NGD9 UniRef90-G2HCU7 UniRef90_F7VSC2 UniRef90_C7M6H4 UniRef90_R5JHL8 UniRef90_D5VRI9 UniRef90_K6YV51 UniRef90_M2NJXO UniRef90_H1PXI1 UniRef90_UPI0003F5F88D UniRef90_M2SY20 UniRef90_Q8TI04 UniRef90_M7T3V0 UniRef90_B5YH83 UniRef90_UPI0003F0D080

ACHNNDAATAFNEVIIDFDNA|I KVAYEFYKKHPET|LIVI TA QMHTLDYDRALGDLEELD DTVRATVEHLKEDGETLI I VTA
 QMHALD Y DRALGDLLELDDTVKATIEKLEELGDTLVVVSS S GHPNDVVGGVMSEMQGFEKAFDYATQYAKANPDTLVVATA FAHRNNARRTLQAMGELDRAVAVARAYAANHRDTLVVVTA $M M H V L D Y D R A L G E L L E L D D T V Y A A T D A H T D S L K E T L I I V V T A$


 A H H L S WAR KAL DETAEFSKAVQKALLSLTNQQ DTLIVVTS A A HGNDVAALLVYQDAFDEAVGDAMDFAEKDGDTLVVITT A GHDNDIVAAMSEVEDFEQAHKKADEFAQKDGETLVITTAA AS HP LDD WERSFYNTDMLDQSVALAQKFAEKNPDTLIIVGG FAHNDNGTRVLQSMQQLEKAVAVARAY QATHPDTLLVVTG A GHDNDVVAAMSEMEDFEKAYKAADEFAKKDKHTLVVATA C GHAND』ACAMHEMDDFVESDKLAKAFVDNNPDTILVDTA A GHANDPAAHLFDTVHYNE DMGFVREWIDKHPDTMLMSAA QGHANDDT GVMSEMEGFEKAFANADDYAKSHPDTVVIATA
 SGHPNDDTGVMSEMSGFDKAFQNADNYANTHKDTLVVATAA A GHANDAGWMLLNELLKFDEAVEAVHEWAKERTDTLVVVTA AGHDNDVVAAMSEMDDFEKAFKASDDFAKKDKHTLVI ATA MTHPDD GERAADD TDE F D K A V G L A K K F A A S N P D T L I V V T G MSHENNAHGVLDAGRALDAAVAEVLRRTRSHPDTLVII GG A L H GTNAKRAL EDTLAF DKAI ENAMAYMEKKKNTLIVVVA
 A GH $\square$ N DPAAQVREVLDEDKTFKTVVDFDDKSKSQGVLVTS A AHANSPA GLI SELIKSFDDAVGVALNFAKNNKDTVVII S S A A HANDVAAII H D QLAAFDEAI KTVI DFAEREDNTLVI I T T ASHSHDAENAIT DTIA LD DAVDIAKEFALVKRDTLIIVGA


 A GHQNDPAAQAREVLAFDEAFEAVLDRFAEESDETVVMVSTS

 ANHDGNAARVVRDGVAFAEAVAMADELTD ESDTLILVLG
 A A HANDPVGMDHDTLAFDRADNKAYEFYKKHPETLIVVAG A A H Y N DTGTMLLHEML R DNETLNYVLD WAEGRDDTLIVVTA GGHANDLSYVASEVMDFDQVI GKAMQFADADGQTLVIVTA A A H SNDPVALLLSEI KAFDDAVVVAKDFADKKGDTVIILIAA QMHALD Y DRALGDLLE LDDTVRAT $\square A K L K E L G E T L I V V G A$
 Y E HP L D WP R A L WDVL E LD RAVAWAKGYAASHPDTLVI VTA MS HPMDWDRALYDTIE FD QALLRVAMDFAKEHPDTLVV ATP A GHANDPGAQVREVMAHDRAFGEVLDFDERDDEGVLVSTS
 A GHGNDPAAQVHEVLAYDKAFGSVLKFLAKSKDEGVVVTS
 A GHNNDAATMLHEMLKFDETVEYVYEWVKNRKDTLVVVTA A GHANDPAAHLVDTIHYNEVMGFVREWIDEHPDTMLMSAA A GHHNDAAAQVREVLAYDDAFKEVINFIDDSDETVAAISTS
 A A HANDIA GLIVYDQLAFDEAI KVAIIDFAEKDKNTLVI MTT Y GHTNDLDLLLMQETADFDRAI GAVMMWAEEDGETLVI VTA
 A A HANDVSTVI QDTIAFDQAVKAAVDFYEHHKDTLI I VAG
 ACHSNDPDVTVFEEVIDDLDNAVRVAYEFYKKHPETLIVVGA
 GHHAGTAYLALTEATMFDDAIDKASQLTSEE DTLTLVTA A HHDTLALKALDETAEFDK MAHDNNGTRMLQALRSLEAAVQVARDYVEEHPDTLLIVTG A GHANDAGWMLNELLKFDEAVEAVYEWVKDRDDTLVVVTA ASHANDPVGVVVDVLAFDDAVRVAMDFARKDRNTLVMVGS A MHVVLD Y D R AL G DLLLE LDDDTVVRATVAKLEKMGETLVIV SA S SHPLDWERALMMSTIMFDKSIV DAKKFAEKHPDTLI I VTGG ACHAHDPAHLI GDLLMFDRAVQAALDFAQKDGQTLLE ALP
 A A HGND $\square$ GA LLLYDQVAFDEA IGVALDFAKADGNTLVVLTS ACHSNDAATVVFNEVADMDEAIVKVAYEFYKKHPETLIVVVA ACHANDAVGGSIHDTDALDEAI SKAYEFMKKHPETLIVVVGG ACHGND I A SVVVAETKEFDDVVRYCLDYAKKRGDTLVIVLA A GHANDDAS AMGEMED LE Q T I K LLLKNYVDMHPDTLVVLTA







UniRef90 UPI000420BA79 UniRef90 W3XJ47 UniRef90-G2Q8W4 UniRef90 Q897S0 UniRef90 E3QFV2 UniRef90_Q49ZN9 UniRef90-।OHDT0 UniRef90-B2WAE8 UniRef90-K2S8K0 UniRef90_C7Z9K5 UniRef90-UPI00036A168D UniRef90 N6UH23 UniRef90-F0S5C7 UniRef90_L5NB72 UniRef90 G7LUW4 UniRef90-H2JXU6 UniRef90-W4RS61 UniRef90-U1LGH5 UniRef90-L2G9Y9 UniRef90-E8SGE8 UniRef90-G2TGP5 UniRef90-D3QGI8 UniRef90 U1KW25 UniRef90_UPI00030D9446 UniRef90_J2KWW4 UniRef90 D9V9B9 UniRef90-UPI00047A18A6 UniRef90-E3Q7P0 UniRef90 F8X2R3 UniRef90-R8BMT4 UniRef90-D1AG37 UniRef90-D7W2N2 UniRef90 UPIO003628B0E UniRef90- G8BA03 UniRef90_UPI000466928E UniRef90_Q6CNG1 UniRef90 W0IAA6 UniRef90_C5DID4 UniRef90-N9RKU6 UniRef90 B0U3Y4 UniRef90_I1AVG5 UniRef90_GOEJU6 UniRef90_UPI00036596DC UniRef90 UPIO003826D0C UniRef90-A3JHB5 UniRef90_G8TM68 UniRef90_UPI000287AA62 UniRef90- G2WU31 UniRef90_A0A011UST0 UniRef90_UPI00039ED664 UniRef90 UPI000365DC4D UniRef90-W9WUV0 UniRef90_-Q0FP44 UniRef90_K7FSD7 UniRef90-L8FV71 UniRef90_S8ASX3 UniRef90_A1SXY0 UniRef90 H1V858 UniRef90-G8YPQ2 UniRef90_C7P9S2 UniRef90_U1YJK7 UniRef90 E4RTRO UniRef90_UPI0003726698 UniRef90_C2TZ46 UniRef90 Q2C529 UniRef90-R7ZJR2 UniRef90-E9DS79 UniRef90_R5K1U1 UniRef90 H1YIW9 UniRef90_UPI0003ACD544 UniRef90-A0A034W6A2 UniRef90 UPI00047CD405 UniRef90_V4HWV0 UniRef90-HOUQL4 UniRef90-G0RV02 UniRef90-F4HCE3 UniRef90-F2NGD9 UniRef90-G2HCU7 UniRef90-F7VSC2 UniRef90 C7M6H4 UniRef90-R5JHL8 UniRef90-K0B376 UniRef90 D5VRI9 UniRef90 ${ }^{-}$K6YV51 UniRef90-M2NJXO UniRef90_H1PXI1 UniRef90-UPI0003F5F88D UniRef90-M2SY20 UniRef90-Q8TI04 UniRef90-M7T3V0 UniRef90-B5YH83 UniRef90_UPIO003F0D080

SQYTVEQPGDSYNTGPN SQYT QPKEGVSYGTGPNFPL

LS QY T VE QP GVY NTGPNFPL

FPVNWDPRYA\AAGMG NWDPRYVIAAGMG N WN PRYA $\square$ AA GVG
TDGHTGQDVPVTAFGPYAERFTGKHPNTYVHEVL Y $\square$ NTGNDRNFPSNWSPRYTLAEGFMANPD
Y HKF L A T N

Q WP H GADDVA $\square$ F A N GP WS H L F S GVME ENVIP Y LIGGASC

NKDGYPDDVNVFNNFPYYETFRPK LDGTFVPAV
DWT TSGVDVPVTAAGPLASRFTGKHANTYVHDVLSQVL

T G G H T A T DVT L Y G Y GA GRADMAGNWDNTQLPRY■EKVLD $\square$ NK D G Y P DR VDVSRR LA $\square$ S S NFPDYYE

TSGHTGEEVDVYGYGPGKEMFSGLMDNTEQAENDFY $\square \mathbf{L}$
TGDHSGVPTPVTATGPGSDRLDGTLDNTDVYRAMVSAAHL SPERGASQVDTTADGPGSETFKGTMDNTKVFSKVKEAAGL YTVSRPDGI E YGTGPNFPD K HTPDMLPDFSYGPGSSEF $\square G$ GVKNTQ $\square$ FHKMKKLLGL

ПGWTTGEEVVLYVYADDYKNDGGTVQNSDVARYMAKAMG K I L T GEEVGLYAYGPGNEFLQPFIKNTDLHDLMLKA TTGHTSVNVPVTAMGPQSEKLIGVNENTVIYDIIFNTF


FHKHTGEPVP LLAYGPGADNFVGFHHH DQTSK LIAK $\square$ M VQGYKGDSKSTF
A पP Y T T LTYANGPG
SESHSGEDVAVYAKGPWAH LIFDSTLEQNVIFHVMNHAD
 TGGHTAVDVPVFSSGTKSELFHGHQDNTEIAKKLHQLL


QYTSPNPNVS YNTGPNFPL NWTPRYA $\square$ AAGFG
DGDGYPDKVDVSRRLAFANNFPDYYETW
WT K Y L A S

QYTDDGPNS TR YSEGVH
$L A L D K D Y E Q K K S F G N M L A E F$
$T G G H T A S D G T L Y G Y G A G K A D M A G N W D N T E D P K Y \square E K A L G$ LRSFAAE

HSAVMVPVFAYGPHSDDFRGVYENTEDFAK\|IALL D WTHTGEATPITAQGPGAARLAGAQRN
SMSHSSDHVEVAAYGPGSELLQPYCMNTDLHYLMLQAA HS GVLVPIYLYGPSADYFTGDYHNTEGYHKVMHLLGL

DKSNLVEVAA LYYAKDGGSEKVTGLVENTDDAHAMAQFMDF G LS Q YTEKNKNDQYGTGVNNFS NWEPRYADAGGVG

## 

TTAHTGAPTVVTAVGPRSEELVGYYPNTHLHEVIREVL
$\begin{array}{ll}Y T K K G K V & S Y G T G V \\ V & P \quad \text { TNWEPRYA } \square A G G V G\end{array}$

S VAK VREHVA QYCGGMN

SHKHTAVPVPLLAYGPGAEDFMGFHHHVDTSKLVAK
 Y H Q H

TGFLANEIIP AYG


UniRef90 в6нвіз UniRef90_UPIO00374810E UniRef90-A3К2J7 UniRef90-G5GDD7 UniRef90 Q64747 UniRef90-UPIOOO18514B9 UniRef90_UPIO00366B2B5 UniRef90 C5DAH6 UniRef90-D8Q412 UniRef90-F4C1U5
UniRef90-R6XZ64 UniRet90 W6TQ21 UniRet90-E4RLK1 UniRef90-E4TFF2 UniRet90_F2SQW3 UniRef90- Q1W622 UniRef90_V8BMY4 UniRef90-G5HA34 UniRef90 I1BQ50 UniRef90-10HWA6 UniRef90-BOD5P3 UniRef90 W4BF04 UniRef90-W1TYA7 UniRef90-F9YR43 UniRef90 N9MLN9 UniRef90- U7I3K4 UniRef90-UPIOO04785C34 UniRef90 F4WZ88 UniRef90 UPI00046AF362 UniRef90-Q65HM5 UniRef90-BoTC33 UniRef90 WOJFNO UniRef90 E7NXC6 UniRef90_UPIo0032AE315 UniRet90_S8C2U4 UniRet90_F4AQA2 UniRef90-R7ZY88 UniRef90-UPIO00255822A UniRef90-LORDU9 UniRef90-F5L.J98 UniRef90-T5АЗLО UniRef90-KOKLNO UniRef90 J9H051 UniRef90-D8FJU1 UniRef90-G4SWK2 UniRef90 ${ }^{-12 \mathrm{H} 8 \mathrm{~B} 4}$ UniRef90_B2KE24 UniRef90-C4R2X1 UniRef90 G4QK09 UniRef90 D4W358 UniRef90-W0J4B8 UniRef90-G2RBG7 UniRef90 N4VTD8 UniRef90 B5YCM2 UniRef90-R7CMN8 UniRef90-G4NON7 UniRef90 K1 P9Y9 UniRef90-R9ClQ6 UniRef90-GOJ492 UniRef90-U5T6E5 UniRef90-U1G4E1 UniRef90-I6TWM7 UniRef90 UPI0003B32D21 UniRef90 C9SGF2 UniRef90-F3YWZ9 UniRef90-UPIO003B42DC7 UniRef90 FOR3G8 UniRef90-E4ZYD6 UniReffo-S7VO11 UniRef90_G1XV30 UniRef90-R7ZWT3 UniRef90-Q16EP7 UniRef90-R1AU07
UniRef90 D5EQV3 UniRef90_UPIO0037E9D03 UniRef90-B3Q9D2 UniRet90_R5SU89 UniRef90_E5KW00 UniRef90-G7WA58 UniRef90_KOYFF6 UniRef90 GoL3M1 UniRef90-D4YEW0 UniRef90_UPIO0045E675C UniRef90_J2IFT6 UniRef90 ${ }^{-}$F4HLRO UniRef90-B8N987 UniRef90_S2D815 UniRef90 UPI000377F55E UniRef90-M7P796
UniRef90_C2WG33

## PQAGSDWYAAGQAMLARQPNTGRAKNVIVF <br> MAQPKAKYVFYF

ATPGTYTVEATAGGETKDASAKKEVQLKGETVKNMTMV GSLTAGSFA FAAREEAKQEKKQKPDKNVIMM

GAS VLSPFQS $\square$ AGNRPMKNRKAKN IIFM
VRNVI YM
KKAKNI I MM
AQEVEHVFFF AAAG पLMATSNELLAKRMEPAKGHGITFD TTATWEVKELDTRRRAKNVIL F EK $\square$ SPASGKGHVKNVILMM TSKTVQAAEPVRNVI LMM
WTVYGTPAKRAAKNVILF
AAK $\quad \square T$ YNGGGQTVAN WVVRKPATHRKAKNVLFF ASS SLAYAEAPKNI I YM
 $A G M G S L F V P T F A K \quad A E I V E E F G G K T P K N I I Y M$ PTKSVIFF APPPATAKKNVLFF
QTTNNEWKGEQAKYVFLF
PAPSRPQNIVIM
T $\square$ A GA $\square$ A $\square$ A GTGSAAMETAKKKEEPKNVIMM ASTSQGKAKNVI FM AQSGKSSTGETSTVQNVILM

EHKKRNLIFM

SALS LGGVAQEPKNVIMV | $Q A P V K N V I L$ |
| :---: | :---: | :---: |
| $T G R A L N V: L L$ |

ASGAVSAPQASSQWFTDGQSALETALN KY V F YF
TGHAQSGRALPAEKKEVKNVILF STTAHWUVRPLAEAKRAKNVIFF

TAFAQRKAKYVFYF GSAKNVTMM DAR $\quad$ NNVILV NTSQKKNVI FF
 SAEVNVSKPKNIIMV APKYVFMF
TVNGRQAKNVIFM
TT T A E WF VRP $\square$ AEEKKAKNVI LF
K P VK Y I FWF
TGD■TVTASANDNTSTAKYKVVNEKAVKRAKNV:LF
K GRAKNIIFM
AGPVDNI I LL
NNGRTKNVI YL
T DNE WFEAGQAR $\square$ QSE $\square$ AK QQNTNTAKNVI LM

KNDI L

SNDSAGETKPAAEEAQAQNV $\frac{1}{1}$ LM
LASFVHAQQAKYVFFF

TTTADWTVRKMEEVRKTRNI LTF
$K G V F A S \square G A T A \square G T G S A F A R H T E D A F R K T A K N V I F L$ AQGEYDPNYWNQQAHDLLFEKKDYTMQKNDAKNIIVF

GASATVIGHQAVAVSPAQQSKAPKYVEYF


A A QPN $\square \mathrm{G} \square \mathrm{AKSANEE} \square \mathrm{Y} K \mathrm{GK}$ KPKYVFMF
APKNVIVM
AANT $\square$ KYDSKNKKAKNI VI

|  |  |
| ---: | :--- |
| $L L G C S T L A E K T A$ | SAP C |

PAVAAPKNI I YM
$\square$ T A GAALVQTADAASVAAKKNVI Y
RGEKAKNII FL
RPARNVI LL
$\square$ MNDNEVKAEVQQVEQRPKNVIMLL

\section*{UniRef90 B6HBI3 UniRef90_UPIO00374810E UniRef90-A3K2J7 UniRef90 Q64Z47 UniRef90_UPIO0018514B9 UniRef90_UPI000366B2B5 UniRef90-C5DAH6 <br>  UniRef90_D8Q412 UniRef90-F4C1U5 UniRef90_R6XZ64 UniRef90_W6TQ21 UniRef90-E4RLK1

UniRef90-E4TFF2 UniRef90-F2SQW3 UniRef90-Q1W622 UniRef90-V8BMY4 UniRef90_G5HA34
UniRef90_IBQ50 UniRef90-IOHWA6 UniRef90-B0D5P3 UniRef90-U1KL26
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UniRef90 B0TC33 UniRef90_WOJFN0 UniRef90-E7NXC6 UniRef90_UPIO0032AE315 UniRef90_S8C2U4 UniRef90_F4AQA2 UniRef90_R7ZY88 UniRef90_UPI000255822A UniRef90_LORDU9 UniRef90-F5LJ.J98
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UniRef90-I2H8B4 UniRef90_B2KE24 UniRef90-C4R2X1
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 I GDGMGLAQVTSY MLRGGA$\quad$ R

 VGDGMSPQUKEAARMLSKGVYEGRYNGH LISMENDPNMA



VGDGMGPAYTSAYRYFNDNPDTE EDEQTVFDRLLVGMA VMDGTSSSATTLARWYK K E L A MDQIVSGG


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 I GDGFGPQEVGGMAQYARYAPSSPYADSNLEKFFNKSNVG VVTDGMGPASVTVARDFKQFKY D D $\operatorname{V}$ SWDEQLFDDTYLVGS


$\prod$ I DGMSSGTLAMANQYSRNDLGKTGSWDNL YQENKVSRA I GDGNGDAQISAAMYGNGNDLTLT LGDGMGRTHVTAGRERFYGAAGKDAMETLPAQGYVSTYA
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A VIWD A H $\begin{array}{lll}L \\ K & G M F T \\ A & L & D\end{array}$

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| :--- | :--- | :--- |
| $L V$ | $T$ |






RTRSSNSFVTDSAAGATAFSCGLKSYNGATS\|LPDGNP STYPARISGYVTDSAAGATALATGVKSYNGAVAVNVDKKP LIRTASLDDFTTDSAAAGTALAASGQKVKNRSVGALPDGSP LVKTYN NAQTPDSAPTAGSMNTGVKQRFNVI NVGEDADN
 $L V R T Y A S D S L T T D S A A G A S A Y A T G H K V K S E T V S V S P D K K P$
$H Q M T H S I D D S Y I T D S A N S A S A L Y S G H K S T V N A M G V H V D D P K ~$
 LITTQSATNGVTDSAAGGTALACGKKTRNKALGVEDGKTP

 S RTRSFDSWVTDSAAGATAFSCRSKTGNNMVAVDYDSKP LVTTHNSTSFVPDSASTATALSSGVKTHSGVIGLEANKTK $L V K T A S L N S I I T D S A P G A A C Y S S G N K G N N N Q Q G V F P D N P R$

RTASTNSLVTDSAAGATAFACGRKSYNGAQGMLPGARP HQMTHSVDSFVTDSANSASADYSGHKATSDSMGVYFDDPK VITTSGYDSLVTDSANSASAYATGGHKSVVNAMGVYEDDPK $N V R T H A S D A L V T D S A A S G T A F A C G \square K T Y N A A D G V N D A D E P$
$\checkmark$ LR F $A P$ H
LMDTASASSMVTDSAAASSSFGGGTRVKNGVLNIGANGEK LLKTQSKDDFTTDSAAAGTALASGNKVKNRSVGALPDGSP VEQTDFKPNLVTDSASAATAWASGVKTYNAALGVDAKGAV FAKVYNVNAQTPDSAGTGTAMMGGVKTKAGLIGVTADVNT RTR E L HT ES LS GEVTDSAAAGTA DATGVKTYNRMISVTNDTGK LVRTHASNQRITDSAAGATAYATGVKTYNGAIVAVNPKKQP MTTTYSDDSLITDSAAAGTAMASGVKTYNAGVGVDGRNKP KVDTSSADAVITDSAAAGTAYADGERTNNGMIGMTPDGES TSSTYSATNGVTDSAAGGTADATGKKTMNGVIGMKDQQTP
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$M N T T Y S A D T L V T D S A A A G T A L A A G H K T N N G M I S V L P N G K P ~$ FQNTASASSDVTDSAAAASAWGSGQRVNNRSLNTSVDGQP LLSTEGTDSIITDSANAAHAYTTGHKSCVNALGVYCDHPK LVSTA GSDSIITDSANAASAYATGHKAAVNAMGVYADRPK I LAKTYNTNAQVPDSAGTATAYACGVKANEGTVGVDAMGNA
 WGEF DWAKHNPTDSAASGTALLATGEKTWNGKLGVDPDNQP $L M D M A S A S S\|V T D S A A A S S S W G G G V R\| A N G S L V V S Q N G E E$

$F$ L LT D S LS G EV T



## UniRef90 B6HBI3 UniRef9O-UPIO00374810E UniRef90_A3K2J7 UniRef90_Q64Z47 UniRef90_UPIO0018514B9 UniRef90_UPI000366B2B5 UniRef90-C5DAH6

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UniRef90_R7CMN8 UniRef90-R7CMN8
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160
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 VKTVLEQSKEEGDSTGLVATSRDNHATPAAYVAKNKSRSN
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CGTVLEAAKAAGYM VS TVLE WAK E H GMK T G V A V T S Q I N



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## UniRef90 B6HBI3 UniRef90_UPIO00374810E UniRef90-A3K2J7 UniRef90_G5GDD7 UniRef90-Q64Z47 UniRef90_UPIO0018514B9 UniRef90_UPI000366B2B5 UniRef90-C5DAH6

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EFFSADKREDKQD DGNAQYKEEGWMMMSAASDDKMMH
R LEKESPEGGSYRD AFGRRGYAVVGSLEEAE
KYFSSKRKDGS\|IDKY LT QGFKVAE NRAEMDT RHLYPEDHPDRTDDRNMYAEFAEAGYNTFEGPADVDEFRD KHFNPTTRKDKMD DYSKFVENGYDVVKTKKEL DDG EDFLDN DDNKKQNYYEMFKKKGYSLSWNATALAQAS MQGAWSPTSKRKDERNLLQEAADQGYGLAFTRDQMAA KYFEH RTDGRNIFNELKSKGYHISRTWEDLQKWQK
 PHFLDKSTPGRKDDTDFIAAYRQAGYQLATTKTEMTALAA EQF 1 AGKGSPNGTDFYKAFQAQGYNV1HNNTELQA KYLEPA AGRKDGENLISS $\square K A \square G Y D Y V T T P A A M K A$ QFF $\operatorname{LPD}$ DTNGRKDEQNVIADFEKAGFQFAGNRQEMLAA KYFSSQKRKDK KDMYQQFVRGGFTVVKNKTDMKKA NHWTPYNPKGRLDGRDLLAEFKQQGYQTVLSQSDLAQ RHFLPADQSGRRDGRNLIEEMQTAGYQYVDSTDALMGVAN HK AKGNKKEEPQPDAYELAASKGYKVVRTREEVLALKP RHFVPKVTGRRLDGRNLIEEWSRNHRKRNIAAKYVANKEQ KYFDQE LLAKFDAKGYQ LLQEFSALES ES LQPGTKDKRKDGEDLVKVLKDKKYDFVETKDQLLK
GYLGQ KRADGQDLIKVIKQRGYDYVTDTGKLKA
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NDF RDDRNLVAEFKKAGYQYVDNI AHLKT RGFAPEGKGRREDGVNELDNRAQAGFELVSGLSELEAYRGO RHFVAKNNAKRKDNVDVVKMFTGQGYKVFVGDSTVDAFRA GYLVPGDKENRKDGEDLTNVLKANGYEYATSRDDLLS
ERFYPGKTS YQGRDYYAEFADKGYTVSDNKTSLLAASH
 QY LDA SKRKDKED K LINE DKS $\square G Y D Y F T T K A E M D K T T$ QLLTDS $\square$ ASKRNDRKNLLAQARQQGYELVFNKSQLQQ SHFYSSNSKDRADDRNLIQEADDEGWSYVGDRASFDDLQN KYFAP $\square$ A G CFFYGRKDGGRYDGENLLKTAKASGGWNLLENKTAFDAENN SYFl A QPTGKNEDERNVYE IIEENGYQVAKTKEDVLAALDS


 CYYKPQGESGSCRPDDLFGFAQENGYHVMQNRTAFDALDK EFFNPKKRADKKDVYGLYQQKGYQ LLQNRSDLMKLE
DDFTKFEQDET $\mathrm{D}^{2}$ N
SRF DATDETALKEQGYSVLGSVSSQUPATRADLN
 KKFDENT

 $C Y F K P Q S T S C R E D D D D L E G Y A E S M G Y H V M Q D R A S F D Q M T V$
$G F L D P T G K K S K N P H G N V L D A V R A A G Y D V V T D K A S F E K L S A$ EQF YAGGRTYQNKDYYKEFAKEGYGVYLNNTSLQT
ELFNGSKRADK KDLYKDYRAAGFTVARNREELLK
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 A YFLPKSANGKRKDDDYLAKFRDAGYAVANNATDLDAASK

 P L F D D DAQPREAK WK WL S E E QYA HLSEQDS GREFVEDSGR NYFAPEKRKDK

TMTERAFKSARK
SYF $\square$

 EFFDPEKRVD GKNLEGDFNKNGVQVVKTKEEMLSA





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UniRef90-G4N0N7 UniRef90_K1P9Y9 UniRef90_R9CIQ6 UniRef90-G0J492 UniRef90-A0AW66 UniRef90_U5T6E5
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UniRef90-S2D815 UniRef90_UPI000377F55E UniRef90_M7P796

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 ACHSNDGAGFI HELIDDMDSCVQI A Y E FYKKKPDTLIVVTA WED ITKNLLS E EMGF WS VLPIT WE QEKK LIRDEYEKS FV A GHDNDVVISAMSEMEEYAELVFEYLVVEYKEDGETLVVATA MS HP LD WD RAVVETMEFDKAVAAARAFAEKNPDTLVIVTG
 Y QVATE SLLPNNDTVVYGDQPVQWAPRYAYAA GFAAN
A A HANDAGA LIDY D QLAA F DEAI GEAMAFALDADKETVVVLTT ASHGNDAEKILAEMRDFERAVAAAMDFADRTPGTVVVVTA A A H S NDVA GLI F D QLA F DEAVGKVIDEAEKDGETLVI I T T A A HNNDPGGMIYDTIAFDEAI GVALEFYEENPDTLI I V A G
 QMHTMDYDRALGELLELDDDTVRATIDTKLRALGDTLIIVTAA A A HSNDAGTMLNELIKFDEAVQGVFDWARDRDDTII LVVA Y GHFNQQLDMLMKETLDF DRTVGGVVMKWAAKD GQTLVVITA
 A A H TNDPAAHVHDILEYQQTVQLVKEFVDQHPNTVMVSTS Y S H S M D A E R A I Y D TI MLD D AV Q A A K D WSKAR G DT L L L V T A $M M H V L D Y D R A L G E L L E L D D T I V R A S D D H L K K Y K N T L I V V V A$ CGHAND DACAMAEMDDFANAIVHAKQYVDQNPDTLLVVTA
 QLHTMDWQRAAYDTIE LDQAVAYATDWAKANGDTVIVVIA A AHGND $\square$ GA LLLFDQLAFDQAVGVALQFAQKDKNTLVVVTT ALHANNAKRALQETKAFNDAI QTALDKDD LSNTLVVVTA A L H A T S A K R A L T D G DA F D N A V K T A L E K M E E I D N T L I V V T A ACHANDAATAIVQTFAFADAVQEAVLFAEKHPNTLIVVVGG A H H Y N NAYRALDETLALEEAVEAVMKEVDLTETVLVVVTA AGHNND $\quad$ AA AMAEMDEFAHTMEVVEQFVRQNPNTLMVATA A A H Q N D P I GMDS DVLAF D N A V K EAALD F AKKK DK H TMMVI A V S SAHANDPVGLI SEIVAFDRAVKVALD FAKKDKNTLLI VTG ANHANDCMGALMETAE LDQVLDVVDEYLKTNPKTLVIVTS A GHANDPVGMAT D LLA YDKAVVVALDFAEKNKNTVVI SAA
 A GHSNDVGAAMS EMQDLLA QTMTVWLEQYVDAHPDTLLVLTA GGHSNHVETVVEEGDDFDEAVAEALDRFADENGETLV V TVA A NHAANAKRAMDDGKAFADAIAALDEMTDDA DTLI I VTA A A HAHDPKSTDLDD TDALDEAVEVAYNFYKKHPDTLI VTAA

 A CHANDAAATFHEVVDMDEADKVAFEFYQKYPETLIVVTA


 A GHYNDAAA QVQEVLAA ACHAND AMTADIAEVLA A GHDNDPAAQVREVLV QMHALD Y DRALGD A A HAND A GSVI Y DV L
QL HV M D WQRAA Y D T I
 AHHDTT AKKA VAV A A HANDVA GLI H D QL A
 RS HANDAA QAL E E IKAF D D S V A A ALLDFAKKDGNTLV V TA ANHAGNLARVVHDGAAFAEAVDRVVNMVD LDSTLVIVTA T GHGNDPAAQVHEVLAHDAAFEAVLDFLEHDENEGVLVTS A A HEND $\square$ ASVVAAETKEFDDVVGYVLEYAKKRGDTVVIVLA A GHANDAAAHAGD LLAFYDAVQVALDAARAQGNTLVVVVS A GHANDPAAHVHETIMYNDVMGFCGGLTLNGFNPLPLQKA
 ACHSNDAATAFREVMDLNESVRQALQFYEEHPDTLIVISAA A GHASDTVAHLHDVLMYNEVLDYVREWDDAHPDTMMLSAA ACHANDATTTLLRDVSAFNDAVAQAMYFMKKHPETIIVVTA MMH LLLD Y D R A L G DLLLE F D D T I K A S IDE K L K E L G E T L I V V T A AAHGNDAPALLGDQIDFDEAVG IALLDFAARDGETLVI MT T A HKENKPDKAFEQVKHYANAFNMAHMMVSEA NTLLI SMN ACHANDAAGSDHDTLAFDKALEEAVEFYNEHPETLIVVVG A GHANDPAC LLQEQLEFDDCI P LAALEF $\square$ ATHPDTLAYRFK Y A H S M D P E R A I Y D TIIMLD D AV R A A K E WSKANGNTLILVTA Y A H A LDD M E R A V Y D T I MLL D N A V R Q T R D W A K A R G D T L I L V V A ACHSNDPGTMVKEVI DMDNAIVRVAYEFYKKHPETLIVVVAA GHHEGKAKQALHETVEM
ANHANDAAAS I Y DTVAAFDDSVKVALDFYNAHPDTLILVTA A GHDNATAGNI E EMIDDFNRAVVRVTQWVEQWEETLLLVTA A A H GNDIAGLIIYDQTAHDEA I QIAMHFAEQDGETLI I ITT

 ACHDNDVASTVAETKEFDDVVGYILEYAKKRGDTLVIVLA A GHDNDPANHAFETVMYNNVVAWVRDWDDQHPDTIMLSAA A A H GNDAAA LLLYD QV DFDEAVGVAMDFAMKDKNTLVIITT QAHAMDSDRWDLETLEFDRAVEVAQNFARQHTDTLVLVTA A GHDNDAA WAMSDVAA F E EA V E EA DVAAEE D GN T LVVV A G

UniRe99 $\mathbf{B 6 H B 1 3}$ UniRef90-UPIOOO374810E UniRef90-Aзк2Ј7 UniRef90-G5GDD7 UniRef90 Q64747 UniRef90_UPIO0018514B9 UniRef90_UPIO00366B2B5 UniRef90 C5DAH6 UniRef90-D8Q412 UniRef90-F4C1U5 UniRef90 R6XZ64 UniRef90-W6TQ21 UniRet90-E4RLK1
UniRef90-E4TFF2 UniRef90-F2SQW3 UniRef90 Q1W622 UniRef90-V8BMY4 UniRef90-G5HA34 UniRef90-I1BQ50 UniRef90-10HWA6 UniRef90-B0D5P3 UniRef90-U1KL26 UniRef90-W4BFO4 UniRef90-W1TYA7 UniRefefo-F9YR43 UniRef90_NMMLN9
UniRef90 U7l3K4 UniRef90_U713K4
UniRef9O_UPIOOO4785C34 UniRef90 ${ }^{-}$F4WZ88 UniRef90 UPI00046AF362 UniRef90-Q65HM5 UniRef90-вотсз3 UniRef90-W0JFNO UniRef90_E7NXC6
UniRef90_UPIOOO32AE315 UniRef90_S8C2U4 UniRef90_F4AQA2 UniRef90-R7ZY88 UniRef90_UPIO00255822A UniRef90_LORDU9 UniRef90-F5L.J98 UniRef90-T5A3L0 UniRef90-K0KLNO UniRef90-J9H051 UniRef90-D8FJU1 UniRef90-G4SWK2 UniRef90-12H8B4 UniRef90_B2KE24 UniRef90-C4R2X1 UniRef90-G4QK09 UniRef90-D4W358 UniRet90-WOJ4B8 UniRef90-G2RBG7 UniRef90-N4VTD8 UniRef90-B5YCM2 UniRef90-R7CMN8 UniRef90-G4NON7 UniRef90-K1P9Y9 UniRef90-R9ClQ6 UniRefofo-goJ492 UniRef90-U5T6E5 UniRef90-U1G4E1 UniRef90_16TWM7


DHETGGLS LGRGKYALHLEKLLHQKMSFFAYPRH
RNKVEFAESMYAKTEPMAAKAKEVMDQDAMVG
WT
DHSTGGLS IGSGGPY LIFHGYYT IDDA】DA【GNERVRAGWT
DHTHGVSII
DHREDYSVNTTGPR\PAVADSEDDEDMDFVVNGTDPTAYD
DHGNANPGLFYGEQANRNFDLIQSFKHTNDWILNGTDKSY
DHETGGLAIPS CDGDFTRSESGDRYVFG
DHGNSNPGLFYADEADKKFDNLQRFKHSNTW
DHETGGL
DHETGGL
WGNSG WGDNGSGPEYNDSTEGDFFYKNNKASFEYM
DHGHGFDVTGSVDTKYDAEQKSDREKRKADGTYFNSGLS HETG
HETGGMTVHGG NDESGTVVCNFS
HETGGMTLPSDENKFDMGKLQPGDKNRATVVQFS HETGGFTAGRQVGEDYPEYKWN
HSHPVSLI
DHGHGFDVFGGADTKY $\square A A Q S T D R K K R D A V G V Y A N S G L S$
HSTGGLTLGANGHYSWHTDVIKGVNASDTKIAKADMKSD
HGNGGLTIGNNATSGTYDKEPLSNAKRTNDKAVMKQYYG DHSHGVSLTGTYHEHD
H GNANPGLIYGQHCNTNFDNLQHFRHSNDWVLQNDDPNS HDHVMTFNGY
HDHTLVINGYAERTGKTTEDHAGDGNPYTILGFGNGPNR HETGGMSIGFAGTQYETFFNKDGFQKESYLAFDKRVADF HSHVYTTLLYSNGPGYDHPRNILREAGKDSIQTAGVPRA HNTGGLSI GSKGKYAWNPEVLKGLSAS $\square$ DTLAAAALTAE HGNSGISIGNSNTTKGY
DHGNGGI Ti
HGTGGFNVFG
DHGTGG
HS HVFSFGGYTLYGNGPGYALRAGDRPNVTETNSNDPDY HETGGLAAARQLHETYPDYLWY
HSTGGFT TGANKIYRWEPQWLDNKSK $\square E A \square D T Q D E E D A Y$


HATGGLMTNYDTMKD LQP $\square$ FTKAKHTSYGLEGR $\square$ NESNY DHGGF
HETGGLATARQ $\square$ S PNYPDY $\quad$ WYYPEA LLNAKHSGEY $\square N K K$ HETGGIA LGMGPYELHTEVLQYQK
$H G T G G M T$
$H E T G G F G$
HETGGFGFSYS
HETGGLVTAKQVTRTYPDY $\square W F$
HETGGFGFNY
HETGGLSAAKQVTPNYPDYAWFPEVLLNVTHSSEYLAAK HSTGGLTTGADGDYRWSPEFDQNMKASVTVMSEKIIDSE HETGGMSI GYAKTGYHTAF
HECAGVNI 1 G
DHECAGGNATAWQ
HETGGLA TA WQAPNELPVYDWY
HGHGFDVFGVADTQYLAAQTSDRGKRDAVGTYERSGLS HETGGLSIGY
DHAHGISISGTYH
DHECGALTLPGYNPLPMKAATASTE
HSHPFSLTGYTNRGNP LLGLVDPESFENNYMQQSAVPDD
DHGNAFNSIANYKYTNEYILNADHADFNDQQDKDWDYETN
DHETGGVTLPQGNDKEQKVELEFTTED
EAAGPPANVDSGNTANSSTPTRPGGNVKDPTRSSGWLNYL
DHEHADAFNGYCGRGSD LLGLCMGIDGSGVEHTGEPRLGS
DHETGGLAVGTDEYPPYHWFPEVLANASHSAEYDQHKWFQ



DHECGGLLT

DHGN
VGG NTD $\square P G Y P A R D T D \| L T E A G T S D K Q K E Q T C S A A V P M S$ HET GGMGLGFSKNY
RGNFDTVQFQQDTN $\square P N D N S V M T D T F R D E D M G \square S A V G W T$ DHAPVSVIIYADAGFPNYPAPDADGYPNMVDHPDFYDTF HNHPNALV
HE
DHECGGMT $\square$ GYS
DHETGYपN GENSPKRWTHVTGNAGENP\DGWYSG
DHGNANPGVIYGTEANDNFDTI QKYKHTNEWILNGDGKET
DHATGGMTMGANN $\square \mathrm{D}$ S W
DHETGGFGFSYS
DHETGGMSLGADGKY $\square W K A T G R R \square A D E M N A A D S E Q A A L A R$ DHETGGLAV
DHETGGGLTVNGYDPDPLRNATHSRAY LQSVWDNDRPADVD
DHGNSFESNYETKASNQWDLNQ DKPDSSPSQDIDMDDHYQ DHETAGASIIGSANSSDHAYDGTAKDRDQIVHVYDSAGFP DHDTGGMTILQDVTATGDHMAAQLNEDNHVISDRANDGWS

UniRef90 B6HBI3 UniRef90－UPIO00374810E UniRef90－A3K2J7 UniRef90－G5GDD7 UniRef90 Q64Z47 UniRef90－UPIO0018514B9 UniRef90＿UPI000366B2B5 UniRef90 C5DAH6 UniRef90－D8Q412 UniRef90－F4C1U5 UniRef90－R6XZ64 UniRef90 W6TQ21 UniRef90－E4RLK1 UniRef90－E4TFF2 UniRef90＿F2SQW3 UniRef90 Q1 W622 UniRef90＿V8BMY4 UniRef90＿G5HA34 UniRef90－I1BQ50 UniRef90－IOHWA6 UniRef90－B0D5P3 UniRef90＿U1KL26 UniRef90 W4BF04 UniRef90－W1TYA7 UniRef90－F9YR43 UniRef90 N9MLN9 UniRef90 U7I3K4 UniRef90＿UPIO004785C34 UniRef90 F4WZ88 UniRef90 UPIO0046AF362 UniRef90－Q65HM5 UniRef90－B0TC33 UniRef90 WOJFN0 UniRef90－E7NXC6 UniRef90＿UPIO0032AE315 UniRef90＿S8C2U4 UniRef90 F4AQA2 UniRef90＿R7ZY88 UniRef90－UPI000255822A UniRef90 LORDU9 UniRef90 F5LJ98 UniRef90－T5A3L0 UniRef90－KOKLNO UniRef90－J9H051 UniRef90－D8FJU1 UniRef90＿G4SWK2 UniRef90－12H8B4 UniRef90 B2KE24 UniRef90＿C4R2X1 UniRef90＿G4QK09 UniRef90 D4W358 UniRef90－W0J4B8 UniRef90－G2RBG7 UniRef90－N4VTD8 UniRef90－B5YCM2 UniRef90－R7CMN8 UniRef90－G4NON7 UniRef90 K1P9Y9 UniRef90＿R9CIQ6 UniRef90＿G0J492 UniRef90－A0AW66 UniRef90 U5T6E5 UniRef90＿U1G4E1 UniRef90－I6TWM7 UniRef90 UPI0003B32D21 UniRef90 C9SGF2 UniRef90－F3YWZ9 UniRef90＿UPI0003B42DC7 UniRef90 F0R3G8 UniRef90－E4ZYD6 UniRef90＿S7V011 UniRef90－G1XV30 UniRef90＿R7ZWT3 UniRef90＿Q16EP7 UniRef90－R1AU07 UniRef90 D5EQV3 UniRef90＿UPI00037E9D03 UniRef90－B3Q9D2 UniRef90－R5SU89 UniRef90 E5KW00 UniRef90－G7WA58 UniRef90＿KOYFF6 UniRef90 G0L3M1 UniRef90－D4YEW0 UniRef90＿UPIO0045E675C UniRef90＿J2IFT6 UniRef90 F4HLRO UniRef90－B8N987 UniRef90－S2D815 UniRef90 UPI000377F55E UniRef90－M7P796 UniRef90＿C2WG33

LKE $\quad$ Y LS GPGKDA KDSAKQS WVVRKTLK DGLG｜I ${ }^{440}$ YHTAD LIPDVAYGPGAEAFAG【YENTAIFDKMKELFGF
 TDGHTGEEVPVFAYGPLSEHYEGLIDNTFHADMTFEIL
 TPSRLIERIEFAQG
SKSHTATYVPVYLYGTGAGH $\square$ AG $\square M D N T Q \square A R R V M A L L G$
$\square K \square M K N K D L$
QYTVQKQGSLKYSEGVH FPAQWDPRYT $\square$ HS G $\square$ G
TKDHSGTMVPVYAFGPRSEQFTGFMDNTD TFWK $T K K L M D M$ TKGHTACLIPVYAYGAGAARFSGFMDNTD』PKRIAEALHL

GYTTSPGS $\square P N N Q T G P N \quad F P V Q W N P R Y T Y A A G F G$

SAKF $\square$ KE $\square V$ AEHFGGLQ
 RKNNAPDKASFDAFFPQDTEVFGLTN
WATHGGEDVPVFAVGPLAALFSGSVDQSY $\square$ PHA $\square$ AYAACL DWQAP L A QGLGFELEPALLEQ
$\square Q Q H G G E D V A L L A R G P Q A H L V H G V Q E Q S Y$ VAHVMAFAACD QTVKTLLDVPVFAKGPGSEMFRGMLNNTQVADNTFSLLG TQDHTGILVPVFAYGPHADKFRGVYENTDIFHKILE KSSESHSGVDVALYGPWAHLFDGTVEQNYIFHVMNHA

KKMHTSEEVGLFAYHPNDFLPTGVVENTDVGKYQQLLGL
$\square A N Y D G K D L K N F \square I E E \square L T K D \square G \square K D F T D$
$\square S N Y K E T D L L S F \square E E D \square L Q D G M G \square Y$ D A T
DMTLYVEDVFGFA

HYTVARPDGVEYGTGPHFPL NWSPRYA $\square$ APGFG

SETHSGEDVG $\square$ YAMGPMSH LFHGVHEQHYVAHVIQYAAC $\square$
K $\square R \square P D D D L P F K A Y G P G S E L L K P F V K N T D L H Y L M L E A A G$
HTADMVPDFAYGPMSNNFRGVYENSEVFQKIKEVL
SGNHTGADVPVYAYGSGSEQLQGSVDNTDLFD IVGNAL
DDKPYTVAGYLNGPGSVLMK
WLREEGSNADGF
SHKHTGAPVSLLAYGPGAENFAGF LHHVDTAKLIAKLM
TGGHTASDVT LIFGYAAGAEAFKGHWDNTE LPR $\square$ AERVLG
STDHTAVD】TAYAEGPGEEAFSGNDQNTEVFDAMQQAM

E Y $\square$ NTGD LT YTTNWTPRYA LIFAGTAASTD
EGVNGGEDASVYATGPWAFMFSGGYEQNF $\square$ AHA $\square$ SFASC $\square$
SNNHTAENVELLAAGPGAEATPGLIDNNQLFGYMRQALGT RPYMDGENVPLPNKGPSAANVHGQMENSDLFRDMANALAL
 $S \square S Q V K E R V$

WQA LTG $\square D V P \nabla M A Y G K Y S G A F R G F M D N T D \square A K$
ERDFLVSED LDPAYG
KVT LKNE EVALYAYGPGSENLSGMVKNYELHNFMLEAAG
QYQLMPD


UniRef90 B6HBI3
UniRef90-UPIO00374810E
UniRef90_A3K2J7
UniRef90-G5GDD7
UniRef90 Q64Z47
UniRef90-UPI00018514B9
UniRef90_UPI000366B2B5
UniRef90 C5DAH6
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UniRef90 R6XZ64
UniRef90 W6TQ21
UniRef90-E4RLK1
UniRef90-E4TFF2
UniRef90 F2SQW3
UniRef90-Q1W622
UniRef90-V8BMY4
UniRef90-G5HA34
UniRef90 I1BQ50
UniRef90-IOHWA6
UniRef90-B0D5P3
UniRef90_U1KL26
UniRef90 W4BF04
UniRef90-W1TYA7
UniRef90-F9YR43
UniRef90 N9MLN9
UniRef90-U7I3K4
UniRef90_UPI0004785C34
UniRef90 F4WZ88
UniRef90 UPI00046AF362
UniRef90_Q65HM5
UniRef90_BOTC33
UniRef90 WOJFN0
UniRef90-E7NXC6
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UniRef90-T5A3LC
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UniRef90-D8FJU1
UniRef90-G4SWK2
UniRef90-12H8B4
UniRef90-B2KE24
UniRef90_C4R2X1
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UniRef90 D4W358
UniRef90 ${ }^{-}$W0J4B8
UniRef90-G2RBG7
UniRef90_N4VTD8
UniRef90 ${ }^{-}$B5YCM2
UniRef90-R7CMN8
UniRef90-G4NON7
UniRef90 K1P9Y9
UniRef90-R9CIQ6
UniRef90-G0J492
UniRef90 A0AW66
UniRef90 U5T6E5
UniRef90 U1G4E1
UniRef90-I6TWM7
UniRef90 UPI0003B32D2
UniRef90-C9SGF2
UniRef90_F3YWZ9
UniRef90 UPI0003B42DC7
UniRef90 FOR3G8
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UniRef90-R7ZWT3
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UniRef90 D5EQV3
UniRef90-UPI00037E9D03
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UniRef90-G7WA58
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UniRef90 R5NEX1 UniRef90-H6CMA8 UniRef90-LTER44 UniRef90 ${ }^{-}$R6D415 UniRef90_UPIO0037EE23F UniRef90-F1A1T9 UniRef90 UPIO002DFC109 UniRef90-Q21DC7 UniRef90-H9KIE3 UniRef90-K8P900 UniRef90 G4YFT9 UniRef90-K6TSR3 UniRet90-H1XW52 UniRef90_H8GK44 UniRef90-R5UB66 UniRef90-B7POL3 UniRef90 UPI00046A9405 UniRef90 R5ERF7 UniRef90-A0A058ZG77 UniRef90-UPIO00364CF48 UniRef90_12F648 UniRef90 U5BMN8 UniRef90-S6EB88 UniRef90-D3PTP0 UniRet90 R6F2L2 UniRef90-Q5BAD7 UniRef90-C3XQ68 UniRef90_T1GXH7 UniRef90- S9R470 UniRef90-H6BZO9
UniRef90-A1CL92
UniRef90
UniRef90-M3HQC2 UniRef90-Q46D45 UniRef90_R6KM55 UniRef90-R5V6X2 UniRef90-S8GM76 UniRef90_K3W7V9 UniRef90-UP10003B6CDD9 UniRef90-W4BQN2 UniRef90_W2SYZ4 UniRef90 L8FRR6 UniRef90-D5B9Z3 UniRef90-UPIOOO35E319E UniRef90_S7THK1 UniRef90 ${ }^{-}$F8ABL8 UniRef90-O2RZT2 UniRef90 UPI00036AFD59 UniRef90 G3JUQ5 UniRef90-R5DRC9 UniRef90-B3M361 UniRef90 A6UUF4 UniRef90 ${ }^{-1}$ ANO3 UniRef90-S4RK19 UniRef90-B1YEJO UniRef90 O60109 UniRef90-Q312XS UniRef90-R6S3K7 UniRef90_Q483S3 UniRef90 C2FUE7 UniRef90_W7QT45 UniRef90_Q3A772 UniRef90 U7VC80 UniRef90_E3CV62 UniRef90_F6DRG7 UniRef90_M5E009 UniRef90 BobP25 UniRet90-B1QWDT UniRef90-EETOU44 UniRef90 B1KI22
UniRef90-UPI0003AFED57 UniRef90-G0S845 UniRet90_W1QIT9 UniRef90 U2CI36 UniRef90_UPI0003FA835C UniRef90_C6XCJ4 UniRef90-R7AAC9 UniRef90 M0MS22 UniRef90-R9XJF6 UniRet90_R5UPQ3 UniRef90 E9F958 UniRef90-DONY56 UniRef90-UPIOOO35FCA22 UniRef90_D3TL18 UniRef90 UPI000287EAC3 UniRef90-W2CHH4 UniRef90-A3HWH1 UniRef90 UPIO0025591FA UniRef90_F4H568
UniRef90-A1ANS2

AAGYEVEQPDTSRPLYED
YSKMA AANTNTYSGKKPKYVFLFF PKKKTNI MM AASPDVKSAG ${ }^{\text {ASSTVSGMQTSNKTTTSTSKKPKYVFLF }}$


 LDTPGAYTVVASDGVNSRTVTWNARKAKNVILF EAKAVSSSSWNGKTPKYI FMF KQEARQPKNIVF LLGCSTDAEKTPARA EDKNVIMV

TPTYRNDGGKGKVRNVIYL
LRHQVKVGRAKNVVLF GS पFADGTTLINPFESTANLKDFHKNKKAKNIIVI STQATRPKYVFYI KNHTHPPRAVTFM

LANSHKSEKAKNI IFL SELLSSNKHSKKKNVIFF RARNLIFF KAKKDKNVIFL
QTVANWLVRDDPKKRRAKNVVLF
AQTEEEKQPEYWNNपAQDTQNVLQLQPRTGVAKNLVLF
KPKYAVMM KRNMI FM
TTKANWLVRDGSKKRRAKNVILF
AQAESPKYVFYF
EAKDKNVIVL
DTGATYAQQAKYVFYF
SAQKTVAQNSAPNNIDMV Q
NAQQAKYVFYF
QAQEAKYVYF HQGDARSVTMM
RSARLGLAATAGTFAATSFAAAPATADEASAGPENIIVM LAAGNGTTYADGANNS DAPTNKSVKNVILE AKEN $\square G R R \square Q T N P H L L K A K K P K N V I L F$ ANWVVRDLAEEKKAKNVILF

PKNIILM $\square T T N Q G \quad \square T S E S S A S Q V D V I E L E K A K N I V M M$ K E K P K Y V F L F
A $\square G A L A L G T G G M A G T A R G Q A R V S N V E A G K A K Y V F L F$ SLLSLDASAVALTGCMSVAKQTEARVSTPKNIIMMV T PAPKRNLVFM AKAQDVENVKPVKNVILL SRVIEGENTNAYWQDQGKQFVKEKMASEQNKRQAKNVIMF QPNNGDN $\square A V V E D A A Y W Q Q \square G \square T A D Q A L L T Q P A K N I I L F$

MNDAEAKTKHAKSP KSKGTNEKPKFV MM
LVCAHSAAAAESFAKKPAKYVFLF GACTTTEQSSDTSSDNSVA PNSQSSPKNIIMI

TDRD\|RKVILL GNSERTTNTDTAEMYKSDNPPPPKN:VGV VKPGFAKNVIFL ASAAGENPKYVFLF ESYTGKTPKYIFMF SDNPKYVFF/L QEVGAETTSTVKTWNGKTPKYVFMF

PKNIIY
TTVAKWTVRPDATKKKAKNVI LIF RGLKDEGNAVETFANGK KNIIMM QAVGD DQA $V Q T A A G A S A V E Q V G A Q D S Q A G A P K Y V F L F$ PTKNVTLM RPAKNIILL
QLDAQQAKYVFYF
PTNVILF
KRNVIFF
QNAPQEKKAKYVFYF
ASALSSPAFAAPAGKVRSHRVRNFIYV NEDSPRSVIMM

TFKSDKKRKRVKNVILM CGRASA DDPADVKPVKNLILL PIKNVIL M
AKПASKVYQPTFAYDNAQEKVKNIILL
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210
220
230

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RDDRNIVDEFKSAGFHYLDDFQGLSK
MYFGDN
KRDDKDLTKAFQDKDGQSYNYTFVNTTE ANFDPKGAPGRRDDADYVAKFRDAGYTVATNAAELGAAKP RHFEPDKEGRRLDGRNDIEEWSRNHAKYVANKEQFESVDP ANFDPKGAPGSKRADDYVAKFKEAGYVYAATATELAASAN KHFN LSDDSKEVKEQGKTK QQDLAKEKGYKVVNTKADVEGLKN QELKQGKIGNDADGDGAVEYWT FI EDSADFAGLVS EHAFR $\square G S A$ RKDGKNLLNEARKQGYHLVFNARQLRQ REFTR RSDGVDLISELEKQY $R V F \square D K N M M D R T D G K N L I K E W T D A N A T Y V W N K Q G L L S V N P$ NYFSAEDRKDKRD LYKEFKAKGFTVVTNKSELEKCTL DKFTQPSPEGKKSLYDMDPKANY T LIA LGI QEYNR RHF $\square P R D V P G R T D D R D L!E A A E \square F N A T V V Q S A A E L A A D P R$ PQVKSKRTDNKDLLQTARRQGYTLAFNKAQLQQ
NRPDNKGK DRNLFEDAVENGFTVVRTQEEFESLES EFFDPSKRTD GRDLFLEFEQNGFQVVKDKAEMLLVS THFYSSSRGSRRDGRNLIEKAEKDGWSYVGDRSQFDQLQL



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$S Y L V Q A E G G R T D G E N L T K V L L D R N Y Q Y V D S R D Q M M N L T$ GFLKKTTTADKKEAPSIFP I EEEAGYT DAKGDDDFK VK D F

F DQPQDKKNPQSANLYSDADQYGY
G F RHFNESMLTTS LTGAGYTVAKNYADLLAYKSKNE
 NFLLDKSRGGMREDGMNVDEWSKLGGSRRVDSTKDDLHAL , R D FNAGAGSYQGKDYVEEFRKKGYKVALDNTTDATMAL


Q Y F
ERDDRDLVAEF DDADYQYVDSYNKLA CYFDPNSSADRQDDVDVTS $\square A R D K H G W T Y V D R A A F D A D D G$


L NMAK NYGYN VVY K K GLE S EEFSAQQ I LD ITTNAGYTYVTNKTALDS SNFFPSSVKDRQDGRNLVHEWLARTWGKKSDYVWTKKNDN SNFV RPDVDLTKSFKKDGYSYVTNLDQLQT CSFLPKSTYRSCRSDNLDYARKKEGFQQLLNRTDFDELS

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RQY QTKRPGGNSTDDLIT WAKGQGFSYAGNKRELESRDD KHFNETMLEDLKKSNGYTLA PHYDEDGQPVDEPAFDYVDEATYESASTGETGFTFVEETE QPDGAMNPMEKRTTPW EGGTEKVCSRNDTLNDPEMWLK A E F AEFDKEGE
SLLD L
SHFT SHFT
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## UniRef90 R5NEX1

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UniRet90 E1QJU4 UniRef90 ${ }^{-}$B1K122 UniRef90－UPI0003AFED57 UniRef90－G0S845 UniRef90－W1QIT9 UniRef90 U2Cl36 UniRef90＿UPI0003FA835C UniRef90－C6XCJ4 UniRef90－R7AAC9 UniRef90 M0MS22 UniRef90－R9XJF6 UniRef90－R5UPQ3 UniRef90 E9F958 UniRef90－DoNY56 UniRef90－UPI00035FCA2E UniRef90 D3TL18 UniRef90 UPI000287EAC3 UniRef90－W2CHH4 UniRef90－АЗНWH1 UniRef90 UPI00025591FA UniRef90－F4H568

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UniRef90＿A1ANS2


## UniRef90 R5NEX1 UniRef90－H6CMA8 UniRef90－LTER44 UniRef90 $054 Y 02$ UniRef90－R6D415

 UniRef90－UPIOOO37EE23F UniRef90－F1A1T9 UniRet90＿UPIOOO2DFC109 UniRef90＿Q21DC7 UniRef90－H9KIE3 UniRef90－K8P900UniRef90 G4YFT9 UniRef90－K6TSR3 UniRef90－H1XW52 UniRef90－H8GK44 UniRef9＿R5UB66 UniRef90＿UPI00046A9405 UniRef90－R5ERF7 UniRef90－A0A058ZG77 UniRef90＿UPIOOO364CF48 UniRef90＿12F648 UniRet90＿U5BMN8 UniRef90＿S6EB88
UniRef90 D3PTP0 UniRef90－R6F2L2 UniRef90－Q5BAD7 UniRef90－C3XQ688 UniRef90－S9R470 UniRef90－H6BZ09 UniRef90－A1CL92 UniRet90－E4RKL9 UniRef90－M3HQC2
UniRef90－Q46D45 UniRef90－R6KM55 UniRef90＿F5ZAT7 UniRef90－R5V6X2 UniRef90－S8GM76 UniRef90－UP10003B6CDD9 UniRef90－W4BQN2 UniRef90＿W2SYZ4 UniRet90 L8FRR6 UniRef90－D5B9Z3 UniRef90－UPIO0035E319E UniRe990＿S7THK1 UniRef90－F8ABL8
UniRef90 O2RZT2 UniRef90＿UPIO0036AFD59 UniRef90－G3JUQ5 UniRef90－R5DRC9 UniRef90－B3M361 UniRef90 X1ANO 3 UniRef90－S4RK19 UniRef90－B1YEJO UniRef90－O60109 UniRef90＿Q312X9 UniRef90－R6S3K7 UniRef90 C2FUE7 UniRef90－W7QT45 UniRef90－Q3A772 UniRef90＿U7VC80 UniRef90－F6DRG7 UniRef90－M5E009 UniRef90－B0BP25 UniRef90 B1 BWD7 UniRef90－E1QJU4 UniRef90－B1K122 UniRef90－UP10003AFED57 UniRef90－GOS845 UniRef90－W1 QIT9
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UniRef90-W2CHH4
UniRef90-A3HWH1
 AEHANDAKAT TTENAFQDSI NKADEFYNEHPDTLIVVTA AGHANDAATSIKEVISYDESIQKAKDFYNKHKDTLIIVTG AAHDNDAPTQI WETDAFDQTFNLVREWAEKDGNTIVIVTA ACHANDAGSAINDTDALADAVDEAVEFANEHPDTLILVTG AGHSND IASAMAEMTDLAKTMLYLEQYVKNNPDTLVVLTA AAHINDAPTQDYETREFDNTFELVREWAEKDGNTIVIVTA AAHDHD\｜VGAMSEVEDFERAYESADEFAKKDKHTLVVATA YAHADDMERAVYDTDMDDNAVRQARDWAARGDDTLILVDA AHHYNNAYRALDETLALEEAVRAVMKEVD LSETLLVVTA YAHALDFDRAVYDTI MLDNAVRLAREWAKRGDDTLILVVA AGHSNDPGTMAKEADAFDESVAVVINHVEQSPNTAMLSAA AGHANDAAANTSDTEAFSDAVQEAI NFYNAHPNTLILVTG AGHANAPGRLIEEKLDFDKAVQAAI EWVENWDETLIIVTGG AGHSRCLPGSU1DELSFDLAVAEALKFADRNGETLVVVTA
AAHGNDVTGLIYDQVAHDEATKVAMDFAEKDKNTLVI ITT AGHSRDGATNFRETKDLEESVKLAYDFYRKYPDTLIIVTA AAHDNDPAAHTYDLTMYNEVVAMVKKFVDEHPGTVVISVS ASHRNDTGLLLHEMLRFNDMLNAVLDWAANRQDTLIVVTA AAHGNDATALLYDQVDFDEAVGVA！DFALKDGNTLVIITT AGHQNDPSAQVREVLAFDRAFQAAKDLADREVETMMI STS ANHLNDPAGSLWDILAADEALEVVMNFVDQNPDTLLIIGS AGHSKCDPGSI DEMLSFDMAVREAVKFADKNGETLVVVTA QMHSLDYDRSLGELLEDDDTVRATIERGDKDGDTLVLVTA AHHDTQARMALDETLEFSEA DQRAQNYVK
ASHNNDPVAHVHDVLEYNRAFQKAAEFIERTGGVLDTSTS AGHANDPAAQVHEVMAHDEAFAAVLKFLEDDTDG1 LVSTS QMHNMDYDRALGELLEDDDTVRATMEKLKADGDTLILVTA AAHNNDVAGTIYDTLAFDDSIAVALDFYEQYPDTLIIVVG AGHENCVQSHALEALEYDEVVGLVRNYTENADDTVVATA ADHANDPNYAVTDFLAFDKAVKVAVDFAKKDGHTLVLASP AGHANDDASAMAEMQDDAYTIEFLKTYVQAHPDTLVILTA ACHSNDAATTFHEVIDFDNAIKVAYEFYSQHPDTLIVVTA
ACHSNDPGAWVNEVIDMDNALKVAYEFYQQHPDTLIVISA
AGHANSTAGNDEEMI AFNEAVETVHTWVETWDETLVIVTA
 AEHANQMHLAFAELYEFEEATRKAREMTDDSETGILVTA NGHTNNASGDIEEMLDFDKTIAEVLKVADKNKNTLVVITA ASHTNDEERMI HETI AFDKTVKAVANWAEDRSDSMVITTA ACHANDAMAAI GDLVAFNEAVAEAVKFMKKHPETLIVVTG ACHANDAVTAI KDTLAFNDAIKVAYDFYKHPKDTLIVVTA AAHEDDTGGLIYDQIEFDRAI GRVLEFVEGRDDTLVIIT T AGHANDDGSAMAEMDDLAATDSYLKTYVKNNPDTLVVLTA AGHDNDPAAQVHEVLAYDAAFRAVLDFIAASPETVLVATS AAHANDPVGMATDMLAFDRACGAALEFARQNGETAVVITAP
FTYAGYAY
ASHAND DAS VVAETKEFDDVVNYCDDYARKNKDTLVIVLA ASHDNDRVGAlLET】AFDQA】REAKNYVETHVNSILI
AGHDND VVGAMSEMEDFERAFKAA $\square$ AFAKKDKHTLVVSTG ASHNNDPIAHVYEVMEYNRAFEDASAFVEKNGGSL $\square$ I STS ACHANDAKAAIMDTVAFDEAVAEAVRFYKKHPDTLTVVTG ACHANDAATTFHEVMDMDEAVKVAYEFYSQHPDTLIVITA GGHGRDIGAAMAEMDDLAKTI AFLEEYVAKNPDTLVVLTA GGHANDLPYVITETDDFDQTVGEALRYADQDGHTLVIVTA CGHAND』ACAMHEMQDLESTLADLKSFVDDNPDTLLVVTA ASHANQTDRMDEEQVDFDRAVASVIKWVETWQDTLLIVTAA A GHANNPDA T TSEYAAFDKAVGVALDYAKKNSDTLVVAVT ACHANDAAAAVRDTLAFDEAVRVARSFAARHPETLIVVTG AGHANDAAASIHDTIAFGDAIQKALEFYKKHPNTLILVTA AAHDNDVAATIHDTLAFDDAVKTAYKFYEHPNETLIIVAG AAHANNLPRIVEEQIDFNLAVEAAVNWVEKWDETLLIVTT AGHANDAASSIHDTNAFSDAVQEAVNFYNAHPDTLILVTG
 GHHESDAYRALTEVVVFDNAI AKASQLTSEA DTLTLVTA QMHALDYDRALGDLLELDDTVAATDEKLK LDDETLTVVTA A GHSNDPAAQVREVLAYDKAFKAVI DYVDSETETFMVSTS ACHANDAASTI TDTI ALDNAVEKAVEFYEQHPETLIIVTG A A HNND DDRVI EETLDFDDAVAAVVEWAKADGETLVIVTA QAHDMDSDRWIEEVIEFDRAVQVAKNFATANPDTVVIVVTAA ASHSNYPVVA HEQLEADDVIGRLLDYADSHGETSVITTAA AAHYNDPAAQPKEVLAFDRAFQAAVKFAESDVETVLISTS
ACHGNDAATVFTEVVDMSEAVQKALDFYNQHPDTLIVITA A GHAND DA AH I HDI AMYYQVMSFLRKFVTENPDTQILSAA AGHSNDPGTMAKEADAFDESVAVVLDHVEQTPNTAMLSAA
 CGHENNDEGVVAEAIDFDRALI TAAI KFADENDDTLVII TA AAHGNDPVGMLTEYVAFDKACAVAVDEAKKDGQTLVVVVAB GGHSNSSSMIVSEMLDFDQVIGKVI QYADEHPGTLILI TA FGHANNTEGIVLEGUDFDRAISKVIQQADNNPGTLVII TA



LIKGGADPTKLIFDNTGYTL
$\square \mathrm{S}$ DS T A S ELLNF
I ITTNATDVNT
DK D GYPSRVDV

SHGHTNSLIPFFAKGQGSGLFEGF】DNSDVGKVLKS HTPAMLPVFAYGPGADKFCGTYMNTE $\square$ ARR $\square K S L I$

【S WE T $\square$ QKA L S HAF GF WS K $\square$
AADLFAYAAGSGSDAPPSE DE
T T S Q A $\square \mathrm{DM}$ M NH Y
$\square$ A N Y K G D D

QYT $\square G G S N A L R Y S E G V H$
YESHGGEDVSVFADGPMAHDFRGLHEQVYVAHVMKYAACL

$$
\text { A K S } \square \mathrm{M} \nabla \mathrm{H} \text { E E S G } \square \mathrm{H} \quad \mathrm{~S} \text { Y } \square \mathrm{E} \mathrm{~N} \mathrm{Y} \square \mathrm{~F} \text { P A } \square \mathrm{G} \square
$$


TDED $\square A E \square L K L Y N D G K G L S L L T G H V D N T E \square A G H \square A K E L G F$
TSGHTGVDVEVFAFGAGHDDFMGQ

KTEDCA
S GDHTQHLVPDFAHGAGAEQFHSYワDNTNVAH KDDHTSEEVGLFAYHPGANFSGVI QNTDVNKY QQEVTGL YGAHGGEDVGI WADGPLAEYVTSII
SQYQT GVSFPV NWEPRYCLAQGTVENYEVPH
THDHTGAMIPLFSYGPGSELENGVYENTAVFHRILKAL
WGSHTNVDVPIASWGLNSHVFVGTVDNTAVYNVMRGALL
S K Y $\square$ T F E DV
TSGHTGVDVEVFSFGAGSHAFVGQMDNTD $\quad$ GAHRMKA

NDSHGGDDVPVYAVGPWSH $\square$ FTGVYEQNT $\square$ PYMMAYASC

TGGHTGEDVPVYAFGPAKERFAGQVDNTDHAK $\square$ VID DL
 ELNFAQUEVPVLAYGAGANQFAGFNDNAEIGKLLLTLD STGHTNALVPLFAKGAGTQLLRPYLDNTSVGNVVMTLL

SDNHTRELVPVYAKGFGAKHF LGTYDNTD $\square$ FHTMLKAFA $\square$ ENKTSFDD
TEPKPGVS YGTGPNFPL NWDPRYVIAAGMG

YAKFDSDYVSVY KENKTDFAQVMDVTELFGLQAPA HTNSDVSIFSWGVNKQVFNGIIDNTSINNIMRGAF

LR TK THNQVS
STGHTAENVPTFATGPNAEFFDGTVDNTD DADA $\square$ RK M $\square \mathrm{NDPA}$
ATYLRNVLPQY
SEDHTNMLVPVYAQGPGASRMQAYDEHTDTANTVFDFWG
DETHGGEDVALFAHGPGSSLVRGVFEQNYIAFVMSYAGCM HDHTAAMVPLFAYGPKSTIFSGVYDNTDIFYK】LECL
HTG $\square M V P \square F A Y G A H A D E F R G V Y E N T E V F H K \square M N L$
THDHTGSMVPIFSYGPRASTFSGVYENNQVFHKILEVL
TSGHTGAATPLTAEGPGAERLARSQRNTDVFDVVLDAM

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UniRef90 - 3 ER UniRef90-LoGT17 UniRef90-M7AWT7 UniRef90-G9YWX2 UniRef90_11DT13 UniRef90-13C7J9 UniRef90 UPI0003B6F55B UniRef90-G8ULUQ UniRef90_G8QQA4 UniRef90_K2KWS6 UniRef90-R4KLJ3 UniRef90_XXXLR1 UniRef90-UP100037CCC77 UniRef90-UPIO0039EE61B UniRef90-DOMEX6 UniRef90 13 YLD8 UniRef90-19GBB9 UniRef90_UPI000359481E UniRef90 UPI00046AE8E8 UniRef90-Q605T9 UniRef90-S2KGW9 UniRef90_K9YV16 UniRef90-B3QVU9 UniRef90-O2H9Q4 UniRef90-GOL517 UniRef90_-UniRef90-C0WH63 UniRet90_I1BUP5 UniRef90 W8ATW7 UniRef90_G3B7P7 UniRef90-UPIOOO30B8A4C UniRef90 W4ZAE6 UniRet90_W8KSG8
UniRet90-UP100045DF27F UniRef90_K9YGH9 UniRet90-R5S947 UniRef90-B888R3 UniRef90-K9PHL8 UniRef90_UPIO004653FFD UniRef90-C6L190
UniRef90 R6KJT6 UniRef90-A6EG44 UniRef90-Q7MVY1 UniRef90-W4GMP6 UniRef90-F9Z5L1 UniRef90-LOFZZ1 UniRef90_W0QIS3 UniRef90-FOIFN9 UniRef90-E1X2G22
UniRef90 F7AEK5


TSDGMGPASASMARTYLQHWAALAAGFKTPRYGMDETLVG I GDGTGLSQTSAAALANKGEDTLT LGDGGGDTVTATRLKKQQQGKLGPETPLALDAFPYVA I GDGMTTNMITAARLIAHRSDNGYL TKLQLDKFPVLG
 ISDGGGYGHFDLPSLYEQGQSYGQASVDPTGAVEHVPGTAA I ADGWGYNQVDSTNYYQGGMSHYEVEKSNPITYGYDPVAM VGDGLSDAARDADRLATVGKDGR LAMDRLRYAGWTYTDS I PDGTSFAAVSLARWYQRY VGAGMSQTTVTGARYYNGG DNETFAFERLKWSGNA VPDGFGVASQTMARDYVSLLRNGETRPVTSQLAADQMVLG II SDGTSLATVSTARWLQWYSH ISDGTSLPAVSLARWYQRA VGDGMGMPVIKAYRTFKQEKDGSPKA QTVWDPHLVGMQ I GDGFGPASATMAR $\square$ AKNGKTG UGDGMGDPQRAATAAYTGKKL

VLNMDSHLVG RWYLGGQL
TGDGMQLEHERAANNYLFGNYTEGLAFWKFPYQGQASTWD IVYDGFSWEDFAGARAYAQRVLGRKLTGERLFGQGAF 1 GDGMGYWHVDALRKYDN IG GDGGFGHVEATRLFDDETKSSTLENLLFLD FPIVT VYDGMGWEDYADAQFYARRVLGRTLADERLLAGPAAWGFQ GDGMGTAQLQSARFYKGTVDNNGAVTEADLSFTSFPQVG LGDGMANAQLQTTEAYLTTANGDSATLENRLNMTQMPVHG I GDGMSDAQWQTGLDMNH SPLNIERMHSVG
I ADGMGFPFLSAYRYFKDGRNSSVAADUEQTIFDQYLLGS | PDGTSTGVVSAARWY VGDGLAMPQU| SATEAYANALASKDVNVKRLGFS QFPVTG
1 GDGNGLA $\mid$ SAALYGHGGQLNLS
G G GDMGMPQUTSTEDFKGTLSSNNPMNKESUSFTVFPNVG I GDGMGMEYLSAYRHFQDDPTTPEL EATWFDRHLQGSA IGDGMSYPQLQTASYYLGAKSSDGEVVAVPLSFMKFPVTG HPDGTSASHWGAARML DGDGMGFEYYSAYRYAMSDDDSKTUAETEFMLKGAATTYP LGDGMGLSMVTSGRVITAEKTGRDYRNEK WAFEKFDFSG LGDGMSASQI QATEAYLTTANGGDAMPENRLNMSKMSVLG L GDGMGDSTISAARDYKGQLAGGP GEDSQLAMETFPYVA GDGMSYPQUQSTSDFLGALNDADYGPEYGNFMDNFEAAG

 I GDGMSHVQ| NAAQVFNGNNTKGDLALSPMSFTDQFPVLG USDGCGYNQLDTASMYQYGKTGGQVYEHFPVKYGMSTYSE
पGDGMGVPTDTATR\|LKGQLQG KLGPETPLAMDAFPYVA TDGAGI ETWRAASYYRHGALGHEVAFDAKLFMSTHPLNU | GDGMGVNQVNGTEMFLAELDS VIGVKALNFAG FPVRN I GDGHGIAPRTATRMALGQGRPGSRFSDEPNFHDRLRYNA
 I GDGMGISTVTAART KNKDSHTSRRNPGLST LSDGSLATLSLARWYQR GVADAEKQNLLIDPYLCG
 ISDGTNVGMDTAARALDRKHTSGKYGTESLLSFEDFDNLG
 TGDGNGLNQLSSAVLANGGELTLS GHKDADDAMPAQGILTKSTG NAVGNLVGYDPQRGGDNPWTPG TGDGMGYGHVAFNNLYETGQSKYLVGESVQRFEDFNRLSM I SDGTNVGMITAARALARKHTSGKY HSLLSFEDFDNLG LGDGMGRTHVTAARQRFVGANGR LNMEQMPYVGAVATYA VVPGFGPSGLTMARDYRRTQLGLANDQKYTGNLDPF VGDGMDVSTVVSSRT RQGQQAGVEGVSNVLA WDAFPHGG IPDGQSQSVVTLGRLYRGEPLALDTGMVNTSMTNSVITGS LGDGMGVSTVTAASILKGQK KDKLGPETPLAMDYFPYMA 1 PDGTSTSVLSVVRWYRQHQNPQNG TVTLATDPYLCG IGDGMAAAQVNLAQDYKGNNKHNQISLKELSFQD FEAVG DGAVGNLVGYDPIKGGDNPWTPG TGDGLAMPQRSAAEYYLAAKAGSTEPGDVKLVMNTMPVQG IGDGMSFPQDQTTADYLGTTASDGGDETSALSFMNFPVVG

## UniRef90_R6KJT6 UniRef90-A6EG44 UniRef90 O7MV1 UniRet90-M9MBU6 UniRef90_W4GMP6 UniRef90-F9Z5L1 UniRef90-LoFZZ1 UniRef90_W0QIS3 UniRef90-FOIFN9 UniRef90-E1X2G2 UniRef90_FTAEK5 UniRef90 U5H419

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UniRef90 M1WQ17 UniRef90-UPI000368F68B UniRef90_B3E3B1 UniRef90-K7QZ27 UniRef90-UPI0003B388F7 UniRe90 R5IPF4 UniRef90-E8PNE8 UniRef90_A6LOGG UniRef90_D4K9M2 UniRef90-15BOIO UniRef90-RTJBB1 UniRef90_UPIooo3FC9F9E UniRef90-F8EYT1 UniRef90-UPI00037F001C UniRef90 19NLG1 UniRef90-UPIOOO3755016 UniRef90-L7VL95 UniRef90-G6FYX0 UniRet90-Q5QY92 UniRef90_-V8N947 UniRef90-H3ER38 UniRef90-LOGT177 UniRef90-G9YWX2 UniRef90_11DT13 UniRef90_13C7J9 UniRef90_UPIO003B6F55B UniRef90-G8ULUQ UniRef90_G8QQA4 UniRet90-K2KWS6 UniRef90-R4KLJ3 UniRef90 M7AS81 UniRef90-UP100037CCC77 UniRef90-UPIO0039EE61B UniRef90-DOMEX6 UniRef90_13YLD8 UniRef90-19GBB9 UniRet90_UP1000359481E UniRef90 UPI00046AE8E8 UniRef90-Q605T9 UniRef90-S2KGW9 UniRef90-K9YV16 UniRef90-B3QVU9 UniRef90-O2H9Q4 UniRef90-GOL517 UniRef90-K7FO3 UniRef90-COWH63 UniRef90_W8ATW7 UniRef90-G3B7P7 UniRef90-UPIIOOO30B8A4C UniRef90-W8KSG8 UniRef90_UPIO0045DF27F UniRef90-K9YGH9 UniRef90-R5S947 UniRef90-B818R3
UniRef90 K
UPHL8 UniRef90_UPI0004653FFD UniRef90-C6L190
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S SRTRSSSSLITDSAAGATAFACADKTYNGADGVEPQQEP
 $L$ SKTYNVDRRAPDSAGTATAYDCGVKGNYKTVGVSAAAHY HQMTHSMDSF■TDSANSATALYTGHKTTVNALNVYVDSSK LI KTQAADDFTTVSAAGATALATGTKTNNRALGVAPDGPV
 WSDFD YAK QNATDSASSGTAMASGEKTFSGMI GWSIDGEP EDPDEAVTDSAAAATA LAATVRTYNGAVSVDVDGRA



 TLKTFSSSSDVT DSAAGATAYAAGVHTYNGAISVDP DGKP
 V TTYNRFTGATDSASAGTALATGYKTDDGNVAWDPEDGR
 $R N S T Q P V P A Y V D E G A T E S A A L N V V A K P E G Y P A D E P Y T V K Y$ ASTYPDDDTYVTDSAAAATALATGTKSYNGADAMDHEKQH HAVT QSADHRITVDAAAATALATGSKTANYTVGMDSSRTY

NTNSLTS F V VTESSAA GNAWSTGVKTVNGGLADHADGRR ■ATTVSATNGVTDSAAAGTALATGNKTKNGALGVKKDETK SVTTTYDSTSFCPDSASTATSIATGHKTESGVINMCPWTRD MQMTY DAYALMTVDSASSATAFSCGDKTKSGVINMNPETVVS


KTFSSNAPI GDSAPTTSAYMTGMPQQTGNVSDYPVYQP
 IQTTHSANTFDTESAAAGTALATGHKTNNDQLGMDPK Q DK STHPD DVN NQVT DSAA SATALAA GDK TYN GAIGVDDLNKQP VA ETY DSSSSFAPDSSSTATSSIATGNKTYSGVINMDTYTKK $V Y$ LGHMKN QLT A T S N A GAVTHATGVVVNADSFGVVA F S G Q DDNT WVTDSAAGATALATGVKSYNGAGAVDSDKYP
 MQTTY DAYALMTDSASSATAFATGVKTQSGTIGMTPDTQS LA K T Y NVDR QVP DSA GT GTA Y LVCGVKANA KTLGVSAWGNE
 ATTNPDDDTYVTDSAAGATALATGVKSYNGAIAVNRQHVPB LVKTASEDNLI T DSAA GATAMATGVKTNNRAIGVDSEGKK

 TTY P D D D T WVT D S A A G A T A L A T G V K K S Y N GA G G D A A N K H P WGSFD Y VIKS GAT DSAAAATAMSTGVKTYDAA GVG■DGTS

LS K T Y NVDR QVP D S A GT A T A Y L C GVK A N Y Q T IGVVSAAARY SNTPTYTRADYTDSAAAATALATGVKTYNNAINWSNDDAR YATTYSAFNGVTCSAAA GTALATGEKTKNYTIGMRERKAP
 LVGSFSSSSPIDCSAPAMSAYMTGMPQQAGNVSVYPACQP
 TI LTYCS DSPDGDSAPTTSTYMNGVPGDAGQVSTYPVLHD S I MTA S LINS IV T D SAPGMQNYVTGNKANNNQEGVFPDNPR
 MANTQAANRFI T GSAAAATALDATGHKTSDGTIAKTAAHEN R R S S N S LVTTDSAA GATAFSCGRKSYNGAI SMLP GHRP F L K T Q S S

NDRFD

 HVIT NSVDS LLTDSANSASSYATGHKSSVNALGVYADDPK

 LVKKTYSTDAQAADSASTSTAIFGGVKTKDGVLGLDAT GNE AAA GTAFATGYKTSEPHMAPRSYDIVSNYQPEGVDWDWFP
 $V Y$ LGHMDD Q I GA T S NA GAVAA HAYGIKPVAP SYGFDENGEE



UniRef90_F8W379


UniRef90_F7AEK5 UniRef90_UPI000463FB61 UniRef90_UPI000395AEFC UniRef90 B8N747 UniRef90_UPI000479F38C UniRef90_UPI00047CA66D UniRef90_C7H9L0 UniRef90 D8K1X8 UniRef90_UPI0002EB5542 UniRef90_UPI00037B88DE UniRef90_Q7PPB6 UniRef90 K1WJC5 UniRef90_R7J8Z1 UniRef90_F4KJL0 UniRef90_A8FAR6 UniRef90_F4PU27 UniRef90_M1WQ17 UniRef90_UPI000368F68B UniRef90_B3E3B1 UniRef90_K7QZ2 UniRef90_UPI0003B388F7 UniRef90-R5IPF4 UniRef90_E8PNE8 UniRef90_A6L0G6 UniRef90_D4K9M2 UniRef90_I5B0IO
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DA8

C G TVVLEAAKRQGFAT GLVT TSRITTHATPASFYAHVVDRDLL $1 P \mathrm{~N} I \mathrm{I}$ ILLSKK GYK T GI I T T D E I T G A T P S S F Y A H Q I D R S E $V$ D $V$ M
L
-








 $L$ K H I G E H VVVE S G R S L G V V T T V Q WT HA TPA GF LA H NA S R N E
 L A T L L $\quad$ E A A K D R R G K A A G $\operatorname{L}$ L A T $T V L$ E A A K LLK S R SA G L V V V T $V$ D DII A $\quad$ K Q L VM N N A D I K V G V D LT P VR V Y F S C



aLK TI A E M A H E T G M K V G I IC G S V L E A A K R K G LAA T G L V V T T D V $V$ T DA T P A C F A A H V D M R M Q$V \operatorname{E} N M P$ E F L A K H G Y V S G I I T T D K V T G A T P A S F F A H Q K D R S DVKTIIAEMARDKGMKVGIVSSVSVDHATPAAFYAHVKNRSMQENTSERAKKAGKSAGVVSSVVPFSHATPAAWAABNDSRNN$V P T L M E Q A K A A G F A T G N V G T A E D T D A T P A A M F S H S T L R G C$$V$ A S NL H LA H A E GK A T G F V T S D S V T GA T V A A LAYA H S P R R D WY S TIIM E E A DA A GK P TA V I Q S GF I A E P G T GVVF LA D A E S R G D| $P$ | $Q$ | $T$ | $A$ | $E$ | $R$ | $L$ | $K$ | $E$ | $K$ | $G$ | $M$ | $K$ | $V$ | $G$ | $I$ | $S$ | $T$ | $V$ | $T$ | $I$ | $N$ | $H$ | $A$ | $T$ | $P$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |$A$



UniRef90 R6KJT6 UniReti90-A6EG44 UniRef90-Q7MVY1
UniRef90 M9MBU6 UniRef90-W4GMP6 UniRef90-F9Z5L1 UniRef90-L0FZZ1 UniRef90-W0QIS3 UniRef90_F01FN9
UniRef90-E1X2G2 UniRef90-F7AEK5 UniRef90-U5H419 UniRef90_UPI000463FB61 UniRef90_UPI000395AEFC UniRef90-B8N747 UniRef90_UPI000479F38C UniRef90_UPI00047CA66D UniRef90_C7H9L0
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UniRef90-LOGT17
UniRef90-M7AWT7
UniRef90_G9YWX2
UniRef90-I1DTI3
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UniRef90-G8ULU9
UniRef90-G8QQA4
UniRef90-K2KWS6
UniRef90-R4KLJ3
UniRef90-X7XLR1
UniRef90_M7AS81
UniRef90_UPI00037CCC77
UniRef90_UPIO0039EE61B
UniRef90-DOMEX6
UniRef90-I3YLD8
UniRef90_19GBB9
UniRef90_UPI000359481E
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UniRef90-I1BUP5
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UniRef90-R5S947
UniRef90-B818R3
UniRef90-K9PHL8
UniRef90_UPI0004653FFD
UniRef90_C6LI90
UniRef90_F8W379

FRDATDKNNPTTDNLYEMAGKNGYT■ARGYKDY|LK QS 230 KTFDDNNQA HYLHPE LTNKLKAKGFEFGDGLASLN
 RHF SDACDAKLKAAGYT $\square$ THDKDEDAAYRK
 ND FL RF VGGKDTWEKLTSGQTDYHFIEKKDDFIALAAEKR KYFNREKRSDKRD MYAEFVAKGYTVVKNTSQMNTA RNLVPKHKSKRVDNLNLLEVASNKNYQLVFDKSSLLK KYMFPKNRTDVEY EMDEKARGTRLDGLNLIDDWK CFMRPNSTGCRTDGQDMLAMAQQNGYTVLDGGKALRNWHD STFHT LP DASNF SUN SLNEDS KYMTPAGTPDREDGNNLIDMWDEARPRYVWNRTEMLAAAA ENFITSEDA PRDYYKLFSEKEYSISWNKTALQA KAFEPQLSNDKSVGFELVEQLDQVAKSNADRVGFFSAPGS $P N F T D A H T R R A S D W T W U S Q D D F E R V S T G G T D F T Y D E E R S D$
$Q K V N G D G T$ RYIGGESTWEGLLAGTTGNDANGDGSVDYWNLIQDKDDFQ DDPDDPRPEVSRSTKNLVERARSMGYQYVTNGSQLAAARG
 KHFDPTVETDRTDGKNLTNEWKQSKAGANATY NELASLD
 SULLTNN Q Y F SKWSNAT NRKDRDLVKEFKKSGYS LIRSKDDLLTS SKWSNAT KKSESPLGDALDTAKSRNYTIVSTR ASADEMWA $Y$ LLPQTAGGSRKDGVNLFDVLKQRGYAIAAT EKEMQ TSYMDTRDYNDLKASTEYVLAERQTGVDGNSTDAAKATEA RFFSAERRSDK $\qquad$ $K D L Y A L F R E K G Y G V V R T L E E L Q A$
YYYFSRNKGPYDDDQDGETLYEKVVNGFRGRVFVDEKAD QQYF $\square R P N R N L V Q E F N N G D Y Q Y Q S D D N D L H K F T R$ LK PVNNNNP QD DDLYTYFRKMGYTVCYDFKNYDKSAK RFFDP LDPTNKKAAGS
 NSESLYTTLVDKAGYTI A RGYKDYQKK QKVNGDGT GPDNHTVAANAGYNVVTTQAGAAALTA
 NSF STRNDGRNLLEELERKDYHVAKSDHEDQN KHFVREDAEGNR

VSHLRTLNNRGVRVAKSSY
EQLQT
LQPTGKNKDKPSVYDLAKAKGYTVADS
 RYFL SPNGEKGDDRNLVTEFESGGYTYADTYDGVAA
 SYF KYM NTSNRDDKNWLDVLPEHGMQVVTDMQKLNS KYMFPKNTSDVEYPD EEKYKGTRLDNRNLVQEWQ AFFTPTEEDGRTDGRNTEKEWQADPGRRTILRTVDDIHAH G L NKSDQALMDYVAAQGYTVLNDRTSILNLIQQ $M Y M T P R R T P D P E Y P T D P K Q S G T R K D G L D L V E R W L S G K E G A$
$G L L K P T G A E G D Q A D$
$L Y A B A E K A G G Y H V V K T Q A E A E Q V T G$

 SLLDEAGE AYLKKANGYNVYRN NKATDKGQA NGYYLAKANGYTFVDTKEADEAGDA
 KYFAETITAGEHKGKTSLEVAKAAGYQLPTTAGDLNKVNN K Y M T P A GTPDPEYPSYVDQ GETPYKNGIRTDNKDLIAQWL R F VGGKETWDKLVAGETPYKLIETKDDFEALAKGT RHFDPRNNPDRSDNVDLIEI AKDRGYVYVNSRDALLDEFS $K Q V S D A M R A Y L R G S G A T L I E Q D A A A F R A Y D G K G$
 SLIKPEYRKY LEERGWSV $\qquad$ FTEPGKAAL YVLPAD VVAGWDPGRDLIADFQAAGWNYVYDSASLSAA EYF SGNKSDNKNNYLNSFKKAGYNVVLNKKDLLANK KGYFQHYRDKEGDGKDIVKEMQNAGYQUVSTKVALQAT KVEWIIDPGKDGVDVVGLAQEKHGWGYKGDRAGFDEDRGG ENFTF

DWKNTDFT IVDRDDKIG K DPS GKKSKAPMGDALEKAKANGYRVVTDKKDFMALKP P LTVEPPTKFEY $\quad$ TTKTTVAE TSKNPNQNRYNYTF LEAKLD PFYDDNKKKDEAKYKY DVWEYFNAPKSLKGKDYYKAFQKAGYHLVHDDKKEAELLKN ARFEPDDQKAMLDNGYQVLGNMGDPALKAQTAESQKADLLK
CYWIPKSETGREDDRNLITTEAKDRGFTYFESRSEFDGHLA PGGVEPNTSNEF DAKSTYEELKNNPNSNRYDYTFDERGTD QEFLPTRTGRREDGNNLDGQWQASSSHYVWNKEDFDNVE RHLLPRSMGGSRDGENLRQVLHDRGYQVIDHADDL KYMFPMGAPDRMVGKNLVQEWKHQGARYV WNRTELMQASLL GFFGVEGT RTDGRNLI TEAEALGYEVVYTREQLEA L DY IDDDDVKS ULDDNGISYDEKDVPAFRA I NQPTGPKKDQKDAYEVMKQNGYTDAKTK PVGVEPNTSNEFDGKDTYKELSTKPTTNRYDYTFDEATGD KDPAGKKSKAEGEKPNALDVLKAAGYT LADTAEADKAAKP LLDPTGKEDDPKEDA YQVAENAGYKVIRTQEEAAALT

## UniRef90 R6KJT6 UniRef90 A6EG44 UniRef90-Q7MVY1 UniRef90 W4GMP6 UniRef90-F9Z5L1 UniRef90-LOFZZ1 UniRef90 WOQIS3 UniRef90 FoIFN9 UniRef90-E1X2G2 UniRef90_FTAEK5

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UniRef90 G9YWW2 UniRef90 - 11 DT13 UniRef90-13C7J9 UniRef90 UPIooo3B6F55B UniRef90-G8ULU9 UniRef90 G8QQA4 UniRef90-K2KWS6 UniRef90-R4KLJ3 UniRef90_X7XLR1 UniRef90 M7AS81 UniRef90-UPI00037CCC77 UniRef90-UPIO0039EE61B UniRef90 DOMEX6
UniRef90 I3YLD8 UniRef90-19GBB9 UniRef90-UPI000359481E UniRef90 UPI00046AE8E8 UniRef90- 6605 T9 UniRef90-S2KGW9 UniRef90 K9YV16 UniRef90-B3QVU9 UniRef90-Q2H9Q4 UniRef90-GOL517 UniRef90 F0JF03 UniRef90-K7W4Q0 UniRef90-COWH63 UnRe9o UniRef90-W8ATW
UniRef90 G3B7P7 UniRef90-UPIO0030B8A4C UniRef90 W4ZAE6 UniRef90 W8KSG8 UniRef90_UPIo0045DF27F UniRef90 K9YGH9 UniRef90 R5S947 UniRef90-B818R3 UniRef90-K9PHL8 UniRef90- UPIO004653FFD UniRef90-C6L190
UniRef90 ${ }^{-}$F8W 379

T Y A G D R M WA L F GKREMPYD LDD R
SPEGGDVFSHGREPTLPFMALLSAGNTPYEDDRLNAPQPL T NETLRMF GLYQKSHMSYEVDR\|RGET

STASKA GYFASNQGLPKADK I FMQEQGCD M GSLPY
LDLG SK S KVVLGTTQTASTTQFSRKGQTSGNL
PKD I P L L GVF DND G LPP Y TVDENSTTKNATI
SERGKLLGLFENSSMP
D G $\square \mathrm{WNT} T$
S F K P R HKHSHY DWNRTE LLLDPYTVDYLLGLFEPGDMQYE
ESNHDPVLGLFSHDHMEYE\|DRQQ\|DV
NQKVAKVGFFLSENGVPSMSNGRGNL
$D P N V N Y L M G L T E P V D T K Y N L V R N T T L$
A P ND T K ALGGVFSTSNLATWLDRN VYQENLRNQSNYPDG
NPSMEKGRGDF
$F$ D S LAA EGGTVPEKDFG LDAQVAETGQYNRPGLENDDVLP
GAGKTLI IALADGKSMNYAMDAAPGEWQ


D H K N G N MWS L Y GER D L P Y D F D R D T T K Y
T S K $\square$ D Y L F GLF DYD HLLP F S A D
GEETLD YLGGLFALNHMAYEVDRVDSL
ADTNSKMWALYADREMDYDLLDR
A HRGGGMWALFGDMDMPYDMDRRSLGDTL
QSSAKMLGLFQEDELDRADDRPKHV
SKNTSKILGLFAADNLPYE\|DRVTFGMTH
ADGKVLAW NEWLQD GQALDYVMD
A A K S PRLWGLFAPNDLDYDMDRKT
VANSKKLFGLFGNS GGQFDYPVPSNTPGT$\quad P$ S


NGK IV LLYD TLGGTKHI PYEDDRK

GAGKTLI I AL GDGKAMNYAMDAANGEWQ
$\square$ NP W LQD S S AMPYA DD R P E T NV
-K S GK LA G F T S E T NLDP D I L H GRGN
QQRLPL LGLFFDDSFPYVI DDEKR
FKGNNKVWALFQDRELDYDIDDR
VA A I Q GLK A GA GKVIA DN P NLQDSSAMKY A GFHFASSLDALAISRDERVGYFASNQGL
NDGK I A F DLAA D S A MQY D D R K D R V
$\square$ Q TP P A LA L L A D K GL LP F R D S D E P R R
PANTKKVLG\FAADDT
YNDAPEEELLKQQN
VD S T PVMGLFAEKGLPFA $\square \mathrm{D}$ $G D V D A$
D AK PK DKKA L Y L WWN
VN NDD QVLGVFHDKSFNYHLDELV
D P M D K
RYVWDKK G $\quad$ DAVDENSTDY

K A P A MMLLAETALD A KLL
GEEKAP
T M
A D GK V I A V WWQ D DE A M P Y S LD
S DNS NKMWAL F GDRDMAYDI DR
NS GKVY A Q S L Q D G G SMP Y S I D
VQQ TP VLGV FAP Y GLD HA I D
$D K T P E R V I G V G P Q V F T T L Q Q G R S G D D K A E P Y A V P M$
L DNPVLGIFGTGNLPVQWDKVPAAVPNGGKLPPTVCRR
ESKQGAR』DHGHHDG\|AQRALTEAVEFDRADQR
LE LGAKT KLLGTVVQNNATTQFNREGVAGGD
EAAKVVMLQEGEKSTLPYA】DRGK
P ENDAKLLGLFSSSHRSYEAERQ
$P \vee W S L$ F A Q G NMS Y D L D R
RHKEGKVWALWEDMDLPYVLDT
LDN T D Y L LG L F S P S H M
$\mathrm{D} \square \mathrm{FDE}$
D Y Q GEKVVGLFAPMDMPFDLDRDPAVM
GANRPLLGLFS LSNMNVALDK LG

```
\(\square\)
```

K R R GTSTVV K K Q D K L L G V F R Q G N L DV WF E R NL Y V N NTVGNKA GP DM S G NPETDKLLGIFAARDTYNDTAEDDLDRGQGEAENGDLIYYG $P K$ GKKCWA YTSYDK DAA L Y Y N $\square D E$

QHKADKLGYFLSKK GVPGVLEGRGNA
GDGKVIAWWLQDDQALPYAMD
$P N M G D R L L G L Y Q E G N L P F S S Q G Q K P D T V R P L L A G E T D Q S F$

KKKDEKLMGIFRKGNLDVWFERNLYVNNTVGNKAHPDLSG
AVTAPKVI GLFNRGNMTVV TNAKNALP

$P N N G E R L L G L Y Q N G N L P V S S A N G D Y S T T G P L L A G E T D A E F$ P T T T D Y L L GLFEP GRMQYGADR
$G \square H S D R V W G L F A S S S M M P E L D R R Y L R E N G \quad H D Y D V S$
D PSVT HLMGHTLD PNTK
P PDTERVLGTFAAEDTYNDLTEQELKDAGLVDEEQLITYG ADKAPVWSLFSDEDMAFDLDRDTLA

PEKGDR L L GL YGARDMFSVFANQGDNAKVDTKRPLKPGET $G V K L V A L N P L D A D K A L P Y A L D D G D K K G L$
$A E D G K A D V V A E T L A D G N A M S Y$
$V$
$V$

## UniRef90_R6KJT6 UniRef90-A6EG44 UniRet90 O7MV1 UniRet90-M9MBU6 UniRet90_W4GMPE UniRef90-F9Z5L1 UniRef90-LOFZZ1 UniRef90_W0QIS3 UniRef90-FOIFN9 UniRef90-E1X2G2 UniRef90_FTAEK5

 UniRe990-UP1000463FB61 UniRef90_UPIO00395AEFC UniRef90 B8N747 UniRef90 UPIO00479F38C UniRef90_UPIo0047CA66D UniRef90 C7H9L0UniRef90 D8K1X8 UniRef90-UPI0002EB5542 UniRef90_UPIO0037B88DE UniRet90_Q7PPB6
UniRef90 K1WJC5
UniRef90-R7J8Z1
UniRef90-F4KJLO
UniRef90_A8FAR6 UniRef90-F4PU27 UniRef90-M1WQ17 UniRef90_UP1000368F68B UniRef90_B3E3B1 UniRef90-K7QZ27 UniRef90-UPI0003B388F7 UniRef90- RSIPF UniRef90-E8PNE8 UniRef90_AbLOGG
UniRef90_D4K9M2 UniRef90-15BOIO
UniRef90-RJJBB UniRef90 ${ }^{-}$F7S054 UniRef90_UPIOOO3FC9F9E UniRef90-F8EYT1 UniRef90-I9NLG1 UniRef90-UPIOOO3755016
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UniRef90-G8ULU9
UniRef90_G8QQA4 UniRet90-K2KWS6
UniRef90_R4KLJ3
UniRef90-M7AS81
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UniRef90-UPIO0039EE61B UniRef90-DOMEX6
UniRef90_13YLD8
UniRef90-19GBB9
UniRef90-UPIO00359481E
UniRef90 UPI00046AE8E8 UniRef90-Q605T9
UniRef90-S2KGW9
UniRef90_K9YV16 UniRef90-B3QVU9 UniRef90-O2H9Q4 UniRef90-GOL517 UniRet90_-0JF03 UniRef90- $\mathrm{K} 7 \mathrm{~W} 4 \mathrm{Q0}$
UniRef90 COWH 63 UniRef90-11BUP5 UniRef90-W8ATW7 UniRef90-G3B7P7 UniRef90-UPIO0030B8A4C UniRet90_W4ZAE6 UniRef90_W8KSG8
UniRet90_UPIOOO45DF27F UniRef90-K9YGH9 UniRet90-R5S947 UniRef90-B888R3 UniRef90-K9PHL8 UniRef90-UPI0004653FFD UniRef90-C6L190 UniRef90-F8W379

ATDRKKGEMTLUDTTRSAIINFLISKDSKGFFIMVIEGGKIDW GDRPDEQFHMIEHAFEASVKFLGTDKKGFFLMIEGAKIDG PLK DTTQDPSLEEMTRLALEKLNRSEEGFFLMVEGSKVDW Ⓛ NEPSLSEMTEHIFALLKNNKHFFVMI EGSRVDH A $\square \mathrm{DRKPGD} \mathrm{LS} \mathrm{LEEDTQGAIDFLSKDKKGFFVMI} \mathrm{ECGLI} \mathrm{DW}$ LDNQPDLKEATSGALSFLSKEEAPFFLLIESAMVD

PSLAQMTQKAIEMMSDHKKGFVLQVEGGKVDW
 LIADEQPSLKEMTTHALRYLANQDKGFFLMIEGARIDM AATTKQGIYFLSKDDAPFFLLVEGAQDDS DPSLTEMTEAGKNYTS
SKRDAEDLPGLKEMTLKADDVLNARDDGWFLMSEAASTDK LSQSALAATTFLQRKNQPLILLMESAMIDS WS DPLNAVPGLDTMTEGALNVLEQGDEGFFLMVEGGAVDW FNDNVPTLAEMSVGALNVLDADPDGFFMMI GGGAVDW QGDEYAPVVPLATMTKALDVLDDDRQGFFLLVEEGGDE DGNGSVTPALVEMVGYSLEMLNQDGDGFELMVEGSKVDW NPDEQPSIEEMTKKAALEKLSKNDKGFFLMVEGSKVDW RYPSLAEMTETAIRNLENPNGFVLMVEGSKVDW MTDADTTLAEFTAKGIELLD NETGFFMMVEGGKI DW LIHPEQPSLAEMTAKAIETLSQNPKGFFLFVEASKVDW VVRGNDENPSLAEASKAALKVLAQNKNGFFLMIEQGDIDW GQAFTSSVPSLETMTKATLHVLEQDEDGFFVMI EGGAI DW PALGSEHPTLNQMTHKALQLLTQEKTPFVLLIEASQIDW A DDRKKGDPSTAEMTRKALQQLSARREGFVLQVEAGRVDH LTDYVKKGI ELL NNKKGFFLMTESGKI DW


EMMTREGLRLLGNSEKPFVLMIEASMIDW DTDREAGELALVDFVRKGI ELLQDGPEGFFLFVEGGKIDW PTVEKGREGFLARATTSALAFFSQKDQPFFLMVEGAMIDT SLADYTKKGIELLD NPNGFFMMVEGGKI DW
 $L P L Y V P T A P T V A E M L D A T L K V V S Q N S N G F F V V V E E E G S D N$

NKTSQPRLVDMSVKALEILSNNENGFYDMTEGGHTDL A IDDKPAENLSLAEMTEVGLATLCKSGEPFFMMVEGGKIDW AGEDVA

D DMWALADYVEKG\EVLSQDKDGFFMMCEGGK\DW NS GFDAMLAPLTEKALALLTPAEKGFVLMVEGSQIDW SKGRENTFPT ALKKALKVLDSKEKPFFLMAEGAQI DN
 DPAQQPS EEMTKKALDKLDKNENGFFLMVEGSKVDW DDAARLSYMTKHALRLLTERRKPFADMI EGSQI DW NQ NAPTLAEMTKGALNVLDNDSDGFFLMI EGGAIDW NPD LDPRDPQLSAMTTKAIDLLVNSKKGFFLQVESASIDK
$K L A N Q P S L A T M T K G S L N L L S K D E D G F F L M V E G G A V D W$ EDLTLAQMTAGAI GYLNRGDEGFFLMVEGGLIDY QLYP WEPALWEMTMVAIEVLKKSDKGFFLVVEGGRIDH NDAEQPSLAEMTAKALEVLDRHENGFFLMVEGSRVDM DTTR DPSLQEMTEKAI ELLSQNPNGFFLMVEGSKVDW ETANNETELSLADMTEAALKVLEKDNRGYFLMVEGARIDW

 QPPENPNPPTVAEMTEAALSSILSQDEDGFMLVAEEEATDN DKSARTDSLAEFTSEGI RLL NQPNGFFMMVEGGKDDW LAVATKNGI EFLNSKDKPFFLMVEAAQIDS MTDRD $\square$ TLPEFTGKAI EMLDNDKGFFLMVEGGKI DW $\square A K E D N E N P T L D D L T K A A L A V L D K D K D G F W L M V E G G D I D W$
 QDALGSDQPGLADMTLAALEVKKRGHGFFMMSEAASVDK $\square A R E R N E N P T L P E Q A L L A L K T L E K S T K G F F V Q I E G S L I D B$ ARERNETLNDLTKSALNVLEKDKDGFWLMVEGGDIDW LA A Q A L A E P SLLSEMTAKALDLLSQDRDGFFLGVEGSQVDW QPNQNNPDPTVGEMMEFGLDKFTQAEDGFFTVAEEEATDN
 DAQF $\square A T E P T L N D D T K A A L N V L G K D P D G F W L M D E G G D I D W$


 CGHANDDACAMHEMRDTEETLKLLSRYVSEQPDTLVVVTA ACHANDAATVIHDTDADSNAVEVAVEFYNKHPDTLI LVTG FCNFNHAAGCIEAVKHADDAVGVAMKF DEKNPHTLLVTAA

AEHENKMNDATEELAEFSHTTETDRGMVGEDTGIVVTA ACHANDAMAT $\square G D M R D F D D A V A V A L K F Q K R H P Q T L I V V T G$
ACHANDAAST $\square H D T Q A \square A D A V Q V A \square D F A K E H A D T L I L V T G$ CGHDNDIACAMAEMDDFAKAI AVVAKAYVDKHPDTLLVITA GGHSNNIKGIIEEMDDFDQAI AEALRFADANKNTLVLITA ACHANDAAAAVTNNAAFDDAVRVAVDFAKQHPDTLIVVTG A AHGNDPVGMLTDYLAFDKACRVAFDFARRDGHTLVVMVS ACHANDAAAEISDILAFDDAVKVADDFAQKHPNTLIVVTG CGHANDDACAVNEMHSDNDTLKVIKQYLKAHPDTLLVVTA


AA HANNLPR I IEEQ DDFNQAVETAVKWVEDWDETLVIVTS ACHVNDAATAFRETVDFADAI REAI QFYTKHPDTLIVVTA LE HANASDYMTKEVLDFDYAI EEGLNFMNDAGQTLILSTS

 AAHANDAVGMAEFLGFDRAVKAAFLRAKKDGNTVVLMTA QAHNMDTERFILDTIUEFDKSVAVAKEYARTHPGTLVLVTA QLHTFDFPRAWAELI EDDVTIQKTDKWLKKNGDTLIVVTA

 NGHYNNVGGIVTEGI DFDRAITEAIKFADTSGNTLVVITA ACHANDAAASI DNTI AFDKAVQQAMAFCEKHPDTLIVVTG A AHDDNDDNMI GTVLDFDKAVKTTDDWIKKWENNLLIVTA SGHGNESARDIGEVQDFNKSVVAAI DWVEEWDETLKVVTA RSHANDAAQTLDEVKAFDDAVAAAVDFAKKDGHTMVVVTA CGHDNDAACHTREVLEFDETFKVVKDFIIDTDTETVVVVTA
AAHDNNMDNLIGGMNDFDKAVKSTIDWI NQWE ENLLIVGA A H
A GHSNDVIYH $\square Q D F \square E F D D T V G L A D D F A K R D G Q T M V V V M P$
FGNDNNAAGVLDA $\square$ LRADAMTGSALDFVDNNPNTLVITAA AAHSNDPMGII SEYDAFDKAVAVAMDFAKKDGNTTVIVVP AGHANDAKANI GDVLAFDNAI QVADNFANKHPDTLIIVTG SAHDDNDDNLI GTTLLDFDKSVGSVI DWDNKWEENLLIVTA ACHANDAAAAI DDTLAFDAAVAEAVVFAEAHPETLIVVTG ACHANDAGSTVNDTQADSEAVESAVAFYNEHPDTLILVTG


UniRef90 R6KJT6
UniRef90－A6EG44
UniRef90－Q7MVY1 UniRef90 ${ }^{-}$M9MBU6 UniRef90 W4GMP6 UniRef90－F9Z5L1 UniRef90－L0FZZ1 UniRef90 W0QIS3 UniRef90－FOIFN9 UniRef90－E1X2G2 UniRef90 F7AEK5 UniRef90 U5H419 UniRef90－UPI000463FB61 UniRef90＿UPI000395AEFC UniRef90 B8N747 UniRef90－UPI000479F38C UniRef90＿UPI00047CA66D UniRef90＿C7H9L0 UniRef90 D8K1X8 UniRef90 UPI0002EB5542 UniRef90＿UPIO0037B88DE UniRef90－Q7PPB6
UniRef90 K1WJC5
UniRef90－R7J8Z1
UniRef90－F4KJLO UniRef90 A8FAR6 UniRef90－F4PU27 UniRef90－M1WQ17 UniRef90－UPI000368F68E UniRef90 B3E3B1 UniRef90 ${ }^{-K 7 Q Z 27}$
UniRef90－UPI0003B388F7 UniRef90 UPIO004700DA8 UniRef90－R5IPF4 UniRef90＿E8PNE8 UniRef90 A6L0G6 UniRef90 D4K9M2 UniRef90－15B010 UniRef90－R7JBB UniRef90 F7S054 UniRef90－UPI0003FC9F9E UniRef90－F8EYT1 UniRef90－UPI00037F001C UniRef90 I9NLG1 UniRef90＿UPI0003755016 UniRef90＿L7VL95 UniRef90 G6FYX0 UniRef90 Q5QY92 UniRef90＿V8N947 UniRef90＿H3ER38 UniRef90 LOGT17 UniRef90－M7AWT7 UniRef90－G9YWX2 UniRef90＿I1DT13
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UniRef90＿F8W379

H T G L P VP LLS Y GPGADQFTGF $\square$ QNSD $\square$ PNKVKAML
$\overline{L I D F V R T Q V A K A Q G G A H A S E ~ K R V R D \quad F \square R H S \square L G A S G L}$
 T DNHTRELVPVYANGVGADFFHSVIDNTQ』FDAATNALG】

HETHGGEDVAVFAKGPMAH LLDGVHEQNY $\square$ PHVMAYAACD


QYTVRGPNALRYSEGPRYTLHAGVQENYEVHK
HTGULVPDFAYGPHSDDFRGIFENSEVFDKVMELVG SGGHTNGLVPPYAKGAGSEVLQAYLDNTDIGEAVFDFLG
P F E T A MQDV
SGDHTNQLIPFFATGKGHQLVRAYLDETDP
TGSHTGAATPLTAEGPGSERLAQAQKNTHVFDVLLASM TCPDGGEDATVYASGPWAFM $\square$ S GGYEQHFVAHT $\square$ AFASC $\square$

AGF $\square$ Q G $\quad N \square$ T A A GP T A D

 TKGHTAIDVQVFAYGVEADKFSGHMTNSDIAQRLFKL
 A G WT TGEDVPV A $\square G P W S D S F R G S Q D Q T D \| G K Q L F D$


LGDFTGA【VAKAHGYNADLLPNTVDNTD\YK LMMRTD

H Q A K Y


S G SHTNSLIPFFAKGDAAR\FKSYDDNDEDAK VIFE DM SQTHTGTQVRDAAYGPGAANVSGLTDQTDNFNTIVGAL

SDTHTRELVPLYAKGAGSAHFLTVVDNTDVFRASMKALGL QGK LWPEPAGVIAYGPGNHTPRGLLDNTDLFPDMRDFLG

YTNHAGEDVAAYAVGPMAH LLHGTQEQNY $\square$ YH $\square$ MEYAAC

YFDNNKDGFP
APFQTGAP $\mathbb{V}$ AKAFGMNAETLPTTADNTD $\square$ YRTMYRTL

TFDHTATMVP $\square$ FAYGPSSQSFQG $\square$ YENSDMFEK $\square$ TRA $L$ N $L$

WGNHGNRPVPVYYQGKGAEVLTGLVDQ | VH |
| :--- | STQHTNQVVPFFFKGAGSEALRAYIDNTTLAKL

YFDHNQDGFPDNFSPKDTLAAGTSNGPDHF

WGNHSNRPVPVYYQGAGSEVLTGLVDQVN■YQTMYQA

TFWATFSDVPTKAYGपNADQLSST■DNTAVYR】MYETL

WGSHSNRPVPVYYQGAGSEVLQGLNDQTH $\square Y$ YTM

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UniRef90-LOFZZ1 UniRef90 WOOIS
UniRef90- FOIFN9
UniRef90-E1 X2G2
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UniRef90 B8N747
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UniRef90 K1WJC5
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UniRef90 I1DTI3
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UniRef90-R4KLJ3
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UniRef90-S2KGW9
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UniRef90-B3QVU9
UniRef90_Q2H9Q4
UniRef90 G0L5I7
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UniRef90-C6LI90
UniRef90_F8W379

VD A S $\square^{30} N$ VD SRKNVIF M PWS PHVKHNVIMM KKPKYIFMF KTYKNV L M QAQPKYVFMF
 A QEDTAKNVILM APAAPKYVFLF $G \square A S A V L P D S \square P Q V R N \square I L M$ LT A A P K T S S V I F M CALALVSAQPTNKEPKNVIUYM
 DAVDSGAAEHVILE GATGLLATGTASARTNGNGKSRENVIVL


| G | I | L | F |
| :--- | :--- | :--- | :--- |
| N | V | I | F |

A A $\square \mathrm{N} \square \mathrm{A} Q \square \mathrm{~S}$ SEKGNVIF
TK DTGNVI FI
AAALLLSGCQSESSSDEANDQKTKNVILMM

PKYVFMF | $P K$ | $Y$ | $V$ | $F$ | $M$ |
| :--- | :--- | :--- | :--- | :--- |
| $N$ | $H$ | 1 | $F$ |  |
| $N$ | $S$ | $V$ | 1 | $F$ |
| $G$ | 1 |  |  |  |
| $G$ | $V$ | $F$ | 1 |  |

FA LQTLQAAPKGNAAVPRY $\square \mathrm{F} \square \mathrm{L}$
 E LK A A L N K NWR $\square$ QPARNAIV F ELQLALKRADLHKQLAENA:I F
$\mathrm{N} V$ I L M

DQNSAEAPKNVIVM $\mathrm{N} V \mathrm{I} \mathrm{FI}$
PRYVFYF
LEARNSAPTPAPTPTKNTGNVIFI

KELTSRNPSPTKAPAATKSTGNVIFI
APASTQSTGNVI
$\square$
$\square$ ASRNPAPTAAPKATKETGNVIF $\square$

AKNVIVM
NHVIFI
QAPDPTADTGNVIF
$\square A P R N P A P T P A P Q A T R Q T G N V I F \square$
$\square T$ GCGSSSSNDGDRDVRAKNVILM A VTHLLASVPKPKNVIVM QQKAEKVILC PKNVILL PSAPKNIIYM
ATDRRPHAKNVVLF GTVILTCCQSPALVQSTSTKQPQRVVFF $R R G \square G A M V A C A G L L L A S A C S Q D P V Q S Q Q A S P R A R H V I V M$

| UniRef90_UPI00036C5E5F UniRef90-UPI00045614AA |  |
| :---: | :---: |
|  |  |
|  |  |
|  | UniRet90-R5YGN9 |
|  | UniRef90-F0RT64 |
|  | UniRef90-W0E1V9 |
|  | UniRef90 W7Y0T7 |
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|  | UniRef90 R7J2N6 |
|  | UniRef90-M7SKC0 |
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|  | UniRef90-14YDT3 |
|  | UniRet90-UPI00037F9613 |
|  | UniRei90-UPIO002FCABD3 |
|  | UniRef90-D3B3B5 |
|  | UniRef90-F1T131 |
|  | UniRef90-A31TD9 |
|  | UniRef90-B4S6A7 |
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|  | UniRef90-E3EWY4 |
|  | UniRef90-B3EM97 |
|  | UniRef90-B7JYU4 |
|  | UniRet90-×5PQ40 |
|  | UniRef90-B4D3K1 |
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|  | UniRef90-A9BFF3 |
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|  | UniRet90_R5B091 |
|  | UniRet90-R7UC35 |
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|  | UniRef90 ${ }^{\text {A }}$ ACCK |
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|  | UniRef90 ${ }^{\text {- W8 }}$ |
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VMDGTNSD $\frac{50}{\text { VIT TIARHYKGKA }}$
70
VSDGFGPASETYTRAFYQALTNNTAYDAAYRLALDElLSG VSDGFGPASETYTRAFYQALTNNTAYDAAYRLPLDTILVGG I GDGMSYPQDQVTQDYRDDNNND\|LEANSYLNFTHFEATG I GDGMSHVQI NAAQVLKGSNEKGKLSLKMPTFTSSFPVLG I GDGMASPQIHATEAYLGALQQDDAEPGGTKHMSQFPVQG I GDGMGPVHMTMPVYMRKANGDQQDTMFEKDMKEGDCGYV I GDGMGMGPVRAASYG VPDGCSLASYSMARDY LLLQN


T G DGMGPAYTSAYRYYKDDPKTPKVEPTVF DEMLVG I GDGMGYNHVSATNLLETGQTMYQVEGEPQAFEGTEWTQL I S D GLGGLPGLTMSREYRNLETNGNFLNYTYQLPLDDDMVG ISDGMGYNHVDVASLWEHGTTAHQVRVDPDQVYEDWPVQL 1 GDGFGPAAAVMARAAMKQRTNGNITSDNLDKYLVGTV $\square G D G M A A V Q V N S A Q \square Y K G \square N K H N Q M S L K E L N F Q N F E A V G$ GGESPWDSDYYENRDNPDE I G DGMNDEHEDAASRY DYGWGTMEDGWEGYSATWDVDTYN IGDGMGFDPIEVTSVVHGDL
$A L Q S M T G V G$
HPDGADPSHWSLARLA TEGPDGRTNWDEMTEAS VSDGLGQTGITAARQFKQTRDNL TNEEALLFLENYQVGS II GDGMSFAHVMATQLY YEHGNNPNGKESLA L LDFPVRS I TDGAGPESWSAGTYYRFGADGHEVGFDLKAYMATHPTSS

 HPDGTSPSHWGAARMLL HYGPDGRDNWDKTSNLG HPDGTGDSDWNA $\square R \square F K \quad V G P D N D \square N W D K M N S U G$ HPDGTS PSHFAAARFVEEGPDGRL I A D GMGDPHMQLSNMYKQYLYTDQLHMLELPYYGMVET I S DGAS DGAWDVASFWQHGELNDTYPFNELDTRYAMTTYA
I S DGAGYN QFDAASLYEHGQSLN QVAVDPSQVYEHFPVKV
$\square$ GDGMANPQ $\square$ TAAEAFMASGSAN $\square$ DRKE $\square$ SFTSFSGQG HPDGASPAHFTMARLVKEGPDGR LNWDTLDEARVYLGHM HPDGTSPSHFAAGRFAS VGPDGRLNWDNMTNAG HPDGTSPSHYAAARFAS VGPDGRLNWDDMSDAG $\square G D G M G M G Q \square M A A H T Y N R V A L G N D S A D Q$ G MMRFPYAG $\square G D G M G A A Q V E \square S S A L L H D A Q S F T \quad M T S D P V L G$ VGDGMGMGQME DASMLMRGGYN AKKGGSNPWTAGNDKKYL $V T S G 1 D T E T M A A A R A L L A N G T K P Q P A L \quad S W E R F P H D G$ VTSGID TETMAAARALLANQTKPQPAL I D GASWNTWEMAANFRSGARANDLPEYQLLT ERWGVTTF
ISDGFGPASESFARGFVQHLQNLTEEEQAKFSRWTFPLVG

T LTYTATLADGSALPEWLKFDASSHSLETMEE ПGDGMGYNHVVNTNLYETGQSQY ITSGEAGDVTEHDGTDA HPDGADPSHFAAARF $\square G D G M G A A Q V K L A E S L L E S G D S L E G P M T S P A S G$ HPDGTSPSHYMALR NI DHGPDGRDNWDNMTNAG ■GDGMGYNH


HPDGTSPSHFAFARFVDKGPDGR LNWDNLKKTGVYLGHM HPDGTSPSHYAFARFV

DL GPDGRLN WDNLDYAG HPDGTSPSHYAAARFASVGTDGR LNWDQMSEAGVYLGHI

MRGGYNAKKGGPTPWKAGEDKKY L

H P D G T S P S HFMA L R
NVDK GPDGRDNWDKMTNAG GGAAPWDPAYYGGPDPSGF
VT DGASDGA WD $\square A A Y W Q H G Q L A N S V E \square D T R Y A M T T F P L Y S$ HPDGTSVSHWTAARMA

ASGGYNAKRGGAYPWLEQSNSDYL TGDGMGENHTE DGKKYANGKMDF

ESFDYQGYMTTF I GDGMGYNHLDNMNAYENGWGGNSTPTEGFQAWDQVSMET IGDGMGYNHVAATNLFETGQTKNKLAMTTYQHGGAYDPDQ VGDGMGVATATAARI LRGQR LGKR L E D A M Gl T T L T A A R I Y A

650CDD

$V Y \square G H \square D D R \square V A T S N A G A V A H A Y G \square K P F S$ GSYGFDENADP $V$ RTKSAS QLITTDSAAAGTAFAAGHKTYNGA\|SVDADGKP A $\square R T Y$ A N N S L $\square$ T C S A A A GTALAT GHRTNDD FVVGDPEGKP E PTFSDEGTVVTFDPAWTDTAVDTGQKSYNNSINWSNNGES MATTHAEDRY $\quad$ TTGSAAAATALATGEKTTIGTISKNAHTQD
 MS A YMTGHKTAVNALGVYADRPR LLRNPARDFAVPDAAAAATALATGTRVGHRQLAVDAAGKP $V Y L G H M K N Q L T A T S N G G A V T H A T G V K V N A D S F G L D E N F K P$
 $V Y$ L G H M E D QL V GTS N S GAVTHAT GTKAPAPSFGFDEN GVP S SIN GVTD SAAAITAILSKEKTYNDRININPDDEK


MQT T Y A A DRF $\square$ T GSAASATSMSSGVKTNDGYVGVDSEENS
 VY LGHMDDTLVGTSNAGAVTHAFGIKAFSGSYGLDENGNP $V Y L G H M E D R L V G T S N G G A V V H A Y G I K P H A G S Y G L D E E G N P$ ILTTYYSASSTVTVSAAAGTALATGHKTNNGVLGLNA DSVA
 $\square G S P G N K Y H A Y P D S A N T A T S M T A G \square K S Y N N A I N V D P N G A P$
 RLLKNSCSNTDLCDPFTVASAILNGVRPRFRVGGLDNESHH RLKNSCSNTELLCDFTVASAIVNGVRSNFRVGGLDNVSHH PLNTSTKPTHYT DSAAAGTALASSGTKTYNNAINVDNTGQP SSRTRSSNSLITTDSAAGATAFSCALKTYNGAMIAVEPNQKP H A Y P D S A A TATSMTS GHKTYNGSI NIT P H GE K YF L LT G GSAAKATDSASADTAMVTGEKTDAGNLSWDPADGA WGDFNWAKDSPT DSAAAGTAMATGTKVENGALLNVDPEGNE VY LGHLDD SVVA TSNGGAVVHA YG GK SVAPSVGFDEN G DA
 VY LG HME DQLTGT SNA GAVTHANGVKVFNESFGLNGDNS Q A WA DHD Y V S QV T D SA A A GTAMATGSKVVENGVLGMSNYGHA DDDTY VTTDSAAAATALATSHKTYNGAlAVTKE QLP HMKNQLTATSNAGAVTHATGVKVNANSFGLDETGKP
 V Y L GHMED QLTGTSNAGAVTHATGNKVFAESFGLNGDNSP ASGSGSYSTPATDSASAGTA $\square A T G E K T V D G N \square A W E R T D S A$


NNPEY $\square K Y S Y$ P D S A N T A T T L Y T GVK S Y N GA $\square$ G VD $\square F E N P$ SRPTY D DVQR $\square$ T DSAAAATALATGEKTYNNAINYDNFGQA VD TYEQP
ED QLGGTSNSGAVTHATGAKAYAESFGFEAGNTP VY LG H M K D QL GGTS NA GAVTHATGAKVYAESFGLNEDGSP
 $\square G S S S N K Y H A Y P D S A N T A S S M T T G U K S Y N N A L N V D P N G A P$
 NKEY $\square K Y$ SYP DSANTATTGYTGVKSYNNADGVDDYE Q A MD R QVP D S VD T AT T YL C GVVK GRYK TI S L SAWGNE GSDPHD DDQDAT DSAAA GTALAA GVKTYNNAISVDYCGRP


 A WND H N YVVNTDT DSAAAGTAMATGVKTTNGTIGLDBEDNR


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UniRef90-W7Y0T7 UniRef90_UPI000477709F UniRef90_R7J2N6 UniRef90_M7SKC0 UniRef90_T1CR78 UniRef90_B3EFZ0 UniRef90-A6Q7P4 UniRef90-I4YDT3 UniRef90-UPI00037F9613 UniRef90_UPI0002FCABD3 UniRef90_D3B3B5
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UniRef90-W2NZF1 UniRef90_W2NZF1
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V

V A N|VLIEAAKEK GLAT GlV VATAPVVHATPAAFSAHSNSRHQ C GTVFEAAKRKGLLTGVVVTTRLTDATPAAFDSHAASRAE
 LLK TIA E QVVKE QK WKVGIVVSTVT LINHATPAAYYABVPSRNS YTTLAAELAKRK GMKVGII S SVVSLDHATPAVFYAHESSRNN
 L K H I G E Y T V E S G R A L G V V S S V Q IS H A T P A GF L A H NVVSRN D


 AKNTSE YA IEEKGKAA GVVSSVPVNHATPAAWAAHNSNRND I G S VLEA A KLA GMHTALVTNSYVSDATPGAFNVHSQSRDD $V K N L T E R A Q E L G K A S G V V S S V P F S H A T P A A Y V A H N P D R N D$




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

 L K A MA E MAKEK GMKV GIV S S V S IDDHATAPACFYA HENS R S N



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 $V$ G S I L E A A K L N G G R T A L V VT S II I N H

VK LIS E MAKK K K GY T SGGIVVA T S S V T H A T P A A LIYA H I D S R Y E




V


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 M G Y I T Q E A K A L G R A T GVV T S V P FT HATPA GF GA Q NID R N N


 $\bigvee A T \square A H E A Q D K G Y S V G V V T S V P I T H A T P A A A Y A H N D S R N D$

 $V N S V M F R A K Q A A V W D G V M T T T C V Q K A P P A S A Y T H T V N R D W$ LK I T E Y AKE Q GMS TGGVVSSVQFSHATPAAR GA QHVVTRR D

 V E NVV S E R A H E




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A $\square N K A D D G G K K S I Y T L L E E A G Y L V T D D A D Q \square R N L S S$ RVNKWKSASNAERYTLVREWARARGFQYADDRATFDTLAP SHFSQSMSA RKDDKNLLDDFMKKQYKMVHNTSQMEQLKV RF $\quad$ GGEEYYQRLMSGETDYAF $\square E S K E D F E A L A A G E I$ DVLDRFAAAGVT DARGLDAL PAATPGSRVLLLSPEN CYYKPQSSSCRSDDVDLVGWAEEQGYHVMQDKDGFDEGLGG DDYDAF $\square \mathrm{NG}$ T DGTDYVYVDRESGVDGGDADKAAAAEVD HFNEAYGD INQTAKKHNVA PFFDNNGNPDTEADEDYMQASQYERLASGETDFTFVEEDA CPFDPKSAEGSCRDRDLLQEAQEKGWTVARTDEEDNE KDPDPEGVEPPRTEDFVTEEFDERGANAAATAFAEAALAE LYFNKT VF ENAANANNNYKVVRDREAMLNVTE
HNQPTGAKKDQKDAYEVMKENGYTIARTKKDULDLNS RDDNDNGGNDEYDAFVGDYDGTPYVFVEREEDVDGGQADVR KVFDDYRANG

YNVVSGMDALKK QEF DDETLDRAESEGYELLYDADDLGS
FLKDKSRGGSREDGDNDDLEWKKLGGRRKLDNNDRDLQAVV VDY
 KGDFGSKGPG TASTYQELSENPTDNDYGYTFDERGPDAAATLAATAASLD A YFDPQSTPGRKDDKDYGIMMFRDAGYTALATDKTE AVAALKG
EFLPAAKGGHRKDGRDILSELQTKGWEMVRTKAELEN S A $M W Y L P K G T A G R H D G V N L I E V A K Q K G Y T V V Y T R D E L L K$ LI

HPLNQSNRSAFDDLDKGL
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FRY PNYTDAHTSRASNWTWISQNDFQRVSTGGTDFSYVETRSG




 $Y \square S E E T Q N K A D V K Q G G K Y T V A D R T P Q V K G K D G L K Q A T D A A$
$G G G E F F G A D E E E S E D R L V D D F Q E S G Y E Y A T T E E E ~$ QTLVSDVPNSAHDPVDESVCNSQDKRNLISDWQLLN QTLVSNVPNTVWDPVDETTCNSQDKRNIISDWQLLN KRWDVLAEPEWRELRTGRPAGAERPWTLVEDRAELERLDA
RFFLDSSSLLTSSRSDDHDLLATAQSKHGFTILNSTEAFEK $R F F L P S S S L T S S R S D D H D L L A T A Q S K H G F T D L N S T E A F E K$
$Y L A E E D R Q K A D E R S G G P Y V Y V E R M P G M D G T T A L A D A A A D A$


 PLYYDNNTLLDTPSYGYIDKPEFDALASGESDWEFMENTE RNDKDLSKGFVEGYHYI NNMADLD

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

$P L D D L D N K G T R D Y M M E P T Y K E F K E K P K N N S Y G Y T F V E K S L D$ K A QGYQVVTNTSELAALTT PAEVEPPSDHLY P LYDANGNLRATPNYQYMSETAWNTVNDENSAWTLIQSKS KYFN L N NLLPVGTNGQRPTENLIEKAKTLGYTVVYNKDQL NDLTLD RFGEEEGTRKDGRNLI EEAEAAGYTIVVYNREEGMMAVDT RHFDPDKEGRRDDGRNLIEEWSRNHRRKNIPAKYVFNKEQ KNFDPGWKY $\square$ SEET $\square$ NKADVKQGGKYPQVKGKVGLKQATA DNFMKQGSTGKRNDEDLDQNWKNDKKTRFGDKREELMNTD Y T E Y Q E L R R D L L L D P A AK Y
 LE YPDDPKAGVRNDRCLVKEWKQQGSQYVWNHQGLLEAME
 YFHESDRHADDRKNGGKYTVAQRTPGVAGRVGDMKGADQA D Y L P
PYYNDDHQPTETGDFSYIEESFEQLRNGESDFTYIEENAD
 $R H W L P K V A H D P E Q T K$
$R Q F L P K D Q G G E R I D R N L I A E R M Q Q A D G R N L I D D W V R D K K K R$ RQGGD D DQGGERAD R W

|  | 270 |
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| UniRef90－A4QGK0 | DFEALANGQV ESDKY F GLA QVEDTLQHNRDGDSVT P Y D |
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| UniRef90－F1TI31 | K S GKVY APVVQDSGAMPYAld |
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| UniRef90－X5PQ40 |  |
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| UniRef90＿A9BFF3 | VMLY Y G N F T F LT D |
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| UniRef90－M1P250 | EPVFAYQEG FAS GAFEYE |
| UniRef90－K9X9Q6 | NPNVLKVLG\FANEDT F |
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| UniRef90－T2JJ64 | DTDKVLGIFAAEDTYNDTTEANLVEQGFVDENGDLIL Y |
| UniRef90－R5B091 | RRVFLLHSADPFNSSNVGFT\D |
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| UniRef90＿A0A034W6G5 |  |
| UniRef90＿I0HLP6 | GQRRVDGPLL G G P R VRWTLQQ AREEEVLGADPA QPS |
| UniRef90＿J3PZF7 | A WDPTSANGHF |
| UniRef90－F0SKD8 | S S R G K R LF GYF G D S H L P Y R T A D G $\quad$ Y K P T A GVNGR】DEYTE |
| UniRef90－A1BH90 | LS A GERLF GLLFGTS G GNFEYDVS D T P G TV VIITRSTGD GTP |
| UniRef90＿UPI0003B32790 | FEA LANGEIGTEKVFGLAQVETTLQQARGGDSEGKLPG |
| UniRef90＿B0CDK3 | PA DTERVLGVFA ADDTYNDVPE GQLIQ DGFVDDNGLITTYG |
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| UniRef90－B1WZU3 |  |
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| UniRef90－K9UDF4 | STNPSKILGVFA ARNTEDDRTEEALGGLNTANP |
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| UniRef90－C0W782 | A DQDSPVLGLTSSSGMPRQFQAT＠PTEDGA QRDATRCELL |
| UniRef90－K9ZNF2 | PEK GDRLL GVYQDGNLPFASQGQNPDTVRPLLPGETDES F |
| UniRef90－Q1H466 | EFEALIA DGSLQVEDGLPQQVFDTLQYRRNGNVVGLDD A T P S |
| UniRef90－W2NZF1 | A NADTRLFGLFND DHMLYEVDRLRELAGNN |
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| UniRef90＿G6FW39 | P T P P T KVLGVFAPVHT F F F R P EEVLAERG |
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| UniRef90－E2ANL6 | FENVDPLLGLFAYSHMDFDVDRNTNDT |
| UniRef90－A6CDX7 |  |
| UniRef90＿G9FJB8 | MS K T D F VLGLFHRSHMDYRL |
| UniRef90－K8GDJ6 | ATPPTKVFGVFAP FHT F N D R P EEVLAEERN |
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| UniRef90＿UPI00035DD10E |  |
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| UniRef90＿D6WCR6 | G L K A E Y V W |
| UniRef90＿K9C5J5 |  |
| UniRef90＿UPI0004650CDD UniRef90＿R6VC01 | F A A L A D GTLA $\square \mathrm{DGG}$ GPR R $\square \mathrm{A} K \mathrm{~T}$ LQQARQADLVGRDRRNPS $\square D L I G E L S K N Y R F V R S I D E \square N A A E G R C D D E R M D$ |




S NHDNNLDNS IGAVKSGDHAFKVITEWVENWDETIVILTA A H H A T WAR DAL DETLE FSKAVSDAVALTSED DTLIVVTS F GNNNNAAGTIEAMRRSDRAIGVALDFINRHPNTLLLTAA A GHDNDPLYAMTDTEAFEEAVKAAID YAEENQDTVVVMVG F ANNNNAVGT\EAVRRADAAIGVAMDYVNNQPNTLVI TAA A A H D D N DD N L I GA I S D F N D S V E YV M N WI A D WE K N L L L V T A
 A A HANHTARII E EQIDD FD DSVAAVIGWVEEWDETMLIVTT F GNVNNAVGTLEALRRADAA YGVARSYVQRNPATLLLTAA


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DHETGGMATGDGYGSPTET
DHGHALTMGYRGGYRLIGDY DDKEEREQPHSADPSA $\square P \mathrm{~V}$ N
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DHGNAYVLGETSDSAПYAGVENPGAEKMPTV AYY
DHETGYLAGPGS KPTWTPMTGAKGELPQV SVGO
DSDAGGLQTFPDFENPGDGQNGVGTEAFVTTYNFGAAWAG DSDGGGLNVPYDGTTGNDTAPFITGDTNGDTFEFGVLWSG DSDAGGLEVDDTFDNDTEPFVTGAPDADGDDFNFGUAYAT DHETGGLSIGNGTVGYTSHTEYDPYQRMSKDMFSRKGAEF DHGHVFSFGGYHMINEDDYDMDMADDEKPYTDMNYANGRG DHEHYGNTLDRREANGYE
DHETLGMSATETMDVDGLKDDEVSPEYMAQQLETREDSDQ TNGNYVR DAVESSAETDAETNVFDFTEGSAPADEE TNGKYVRNAVESSAETDVTPNVIDFGNEENT PI EP
DHGNAMPMGPQSDRVAFQAVPNGGAGVRPA PRFW
DHETGGLALGRQLTEKYPVYAWYPEVLANATHSTAW
HGHYLVLDKPE
GHNSYMRNESEDGDGEVGADVTYS
DHETGYLGGAEDDPAFT EMTGEAGELPTVGWS
ADSAGGALEDDDVSGPTVGTTTTQRDRNGNSYEFGVAWAG DHECGGLAL
DSDAGGMQVFQGSEEFPWDAFPAMDS $\square D G P M G N F G \square A W A G$
DHETGYLSGVNEPDESKW NAMEGNASSLPSHQWY
DHSTGGLSLGRAGTYQW
DSDAGGLEVVGDVNLPSPVPERSRNGSPWDKQGKRFPFAV
 DSDAGGLQVFQY $\square P Y N P W Q S F S S V D S I D G P M G N F A V A W T G$ DHSNSYLEDFQFAPYQEEWLGLGADLPTQNGSSYPDGDVWYG DHDHYGTENPNFAEEDGTYNKAKPTEAAHFWGSDSSAKYG DHAHTSQUTSDGQPTAGRTTRLLTADGAPMVISYHDDALG DHGNGMPMGPDSDTGAFQADQNNGAGEGPGVGSETTKWG DHGTGGTTLGRGPAFPYAWY
DSDAGGLQIMDGRTGVASPPFVSAPDADGDRFNFGVAWAG DSDAGGLQVRDPLNADRPVGNINNNDADGDVFNFGIGWAG DSDAGGLEVDDGLTEPESDFTURTDDMDGSNNGNFEPFVT
DHGHY पN $\square \mathrm{DQPEAF}$ DPP
DHAHTMTMAGYPKRNENTTNSTSTDNMTYTTLSYANGPKQ
DSDAGGLQVMDGRTGANTLPFIARPDANGDVFPFAVAWAG DHDTGGMAVHASEAAHPQTNFEWTDEDNHAISEKTGFGWS DSDAGGLQVFQFAPYVRPSGNFDTSNPNGPMGNFGVAWVG DHDHYLTLLAYSRHTPADAGHFWGSEGSDPALVNSLVKYK NHFHVFTMGIHHWWC
DHGNSYVLGEASDQVAYAAVESAGQGKMPEV KFY DSDASGLEVVDGRTGTQSLPFDAEADQFGNRLPFGDAWTD
DHGHFLVIDDAEVIAD
HETGNLPHFTGTKEEDNNKDYRRKNHSRKKVKFFDQFPF HETGYLSGDPVEGSTDYVLGDWGPMEPTEAGSAPTQDWF DHETGYLSGKDEEPN


S D THTRELVPLYAHGAGAEFFHYWVDNTDVFRAGMNAFGD


T GGHTNELVS $\square$ Y ARGAGSELFTE $\square$ IDNTQ $\square$ Y DVMMQAA
$S G N H T N Q Q P V V R R G A G V S D V V A A A D Q V D P$
WGNHSNRPVPVYYQGAGADVLTGLVDQSQ $\square Y K T M Y A A$
Q L F N T
KAKNP
WGTHTSRPVPVYFQGP
TTGHTNELVTLQARGAGAELFSD $\square V D N T Q \square Y D V M R E A A$
T DLT WDAVKKVMAEGLWSH
SGHHGGEDVGLWADGPLSELFASTLENTEVAY】DKFLLC
LS DVA GSIVVTKAYGLNSEQLSSTVDNTGIYRIMYETL

SDTHTRELVPVFAHGAGSEYFRS $\square$ FDNTD $\square$ FRGA $\square$ TAMG $\square$
WGSHTNRPVPVYFQGNGSEY LP GLVDQVH DAQTQQAAL NGDGYPDKVDVTRRDADASNFPDYYE
SADNTAEDVMAVGQGAGSERLRGFLDNTETFK\LKDAL GGDNAGS IVS KAHGLNADKLPKTLDNTDIYRLMY RGFLRNEILP AYGVN

SGSHTNELVRFYAKGNGADKFSEYVIGT
SGGHTNALVPFYAKGAGSDVLNAYLDNTAVGETVFDLLG
TGRHTS $\square P V G V H A Y G P G A E L F Q G L M D N T D I H Y K I L E A L$
TPDFAGADVSKAHGLNADKDPVTDDNTDDYRAMYETL
NPDVAGSIVSKTYGLNAEKLPATVDNTGUYRLMYETL
TSDVAGSVVS KAYGLNSEMLEATVDNTDMYRLMYQTL
LK K N G P E DVKRF
WFEHRNGQLR
TFPMADDSVKVY FGPG
YTDES $\square Q Q V$
WLS NMATEALIYARGPRSYLLHGVHEETYMSYVLSYALQM RLSNVATEAVVYAKGPRSYLLHGVHEETYMSYVLSYALQM S DNHTNELVRLWARGAGAERFTGYVDNTDVFRVVKAAL

STGHTNELVTVTARGAGATYFTEDIDNTQDYTAMMNAA


TPDFPGS VAKT YGMNAELLSSTMDNTETYDTMYQTL SGGHTNQVVPFFFKGAGAADIQSY IDNTDVANLVKE
GWTSFGDNVVAKAHGLNANQLPTTVDNTD\YRDMYATL $T P D F P G S$
$T$
 TPDFPGSVVSKT YGMNADKDPSTLDNTQUYDLMYETL WGNHSNHLVPVYYQGPGVE GAI DQSH:YQVMLEA GQNHTGAQLRIAAEGPGAENVVGQLDQTDLHYLIAGSLGL WGTHTNRPVPVYYQGAGSEVLDGLVDQTHIYQTMFAA TGNHTNENTSFFAHGAGADLFFYDQ
$\square P D F S G S I I S$ KAHGLNADRLPPTLDNTKTYELMYETL TPDFSGSUVA KAEGLNAHKLPATVDNTGUYELMYETL GAPDADGDIFDFAYGLNAEDLPATADNTDMYRLMYQTL

SFTHGGDDVMVFARGPMSHDFTGNYEQNQTALGMAMAAGD TPDYSGSIVAKAHGDNANKLPTTADNTVIYELMYETL SYNHTGIDVPDYAYGAGAEKFSGTDDNTDVPKKMLEALGL

STDHTNELVRVYVKGVGAQHFDGYFDNTNTFDVMKE MNDGAGGULARAEGLNSEALRGSCDNSDVYRLMY

DVD SSTПPSK DDNTDTYNDCYQLI




SETPRNVIVM
GGTAFAGAMLVVCSTPAAAQEARNVILF QTAAQSTATGNAQAKNVILL ELLKDAMAMRTSESQPRNIQUL

$\mathrm{NH} \mathrm{VI} \mathrm{F} \square$

AKNDMVF

SRRTGNVIFI
QTAAQSTATGDAQAKNVILL AELDEALRKPRGPLFPKNVLIF

AEARPHNVIVM NKVVLV
A $\square E Q K \square W Y D R G \square E E L K R A M R D H S R Q R Q P R Q L L M L$
GTS LIDNTQUYSVMKEAAENGTKNVI LIF
A QEARNVILF
KAEQSATEDAAYWTQLGQQLLFDELAKQRAKNTIVF DVELDPAEQTVWFEANLAAELRNAFNKKRAKNVVLF


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1 GDGMGENHTKTTETY YGERAFMRSLGADGFVTTF GDGMGLAQVELGRALL APGDSLSPGSPVTG I GDGMGMGAVNAAMYANGGTDT MTNLRTFG VYDGFSWEDYA DAQAYARRRQGRVLTDERLLAR ПFGGYDPSRGGRFPWEIAPETPYPNG TADGSGYNMDASTRYWLGHALTADGPDWRHLSMATYALR LGDAGGLSTLGAAGILAHDRPQSL FDQSMPNVA PWHERDRTAYP
TSDGAGПNTWKAASYFRHGADGKEVYDKKDFASTHPLNTS VINGDDAPALANARFSSSQPSNF
 ПGDGMGPAYTTAYRYFKDDPTTKSVE QTVEFTMMDTGM HPDGASPSHFGFARF $\square$ DHGPDGR $\square$ NWDRMEAAGVYGGM

VGAGMSQATVTAARSYNGG DNATLAFENGKSGNA
PPDGVSLPQLYAAYTANGNNLNF
KMPYSG
F $\square H S M P N V G$

HPDGAG $\square$ NHWSAAR WYGPDA $\square$ SPWDTLPEMA
ПSDGAG TNTWKAASYFRHGADGKEVYDKK DFASTHPDNTS MVQGVGGGDLAAYRTSGNSQGNTNFLWDTFSHVARLKNSC INDGAGWGTWDAAAYWQYGSRTFPLNASSQPTRDNAQTLG I GDGMGKEHVKLNRSLEKYILESKINGD
MVHGDDAPALA AARFASADGNSSSNSDFDWDRFSHAA DGDGMQKAHUAGSRYMYGGDDN LTFHSFDWTGNVTTWD
$\square G D A G G \square P T \square N A G G \square L A N D K P Q S \square \quad F \square H S M P Y V G$
पGDGMS $\square$ STVTAARDYKGQKAGKTGEEEQDHF DRFPYAA I AD SAA ASPGDPRPVWESFPHLA LGDGMGTPQRGATGCGVGQRRAARMG QCNKAEDRNPFL

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lupas_14
lupas_28
jnet
jnenf
sol25
sol5
solO
jhmm
jpssm
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QTYNTNA QVPDSAGTATAYLCGVKANEGTDGVSAKGQE

SNNVGDPTDSAAAGSALATGQKFNNGEVARHGGNN MISTSAADRY ITDSAAAGTALATGYATSVGTVSMAANHRD LVRTQSADNFTTDSAASGTAYATGEKTNNGYVGMNTKQEK
 EEQPHWNRCTAPDSAGTASAMMTGTRTYNGAI DVDGNAQP LS DTSALDRWVTDSAAGMTADMTGNKTNNAMVSTTPRAMP IGKDREQPHTVTDSASSATSLTCGGDKTYNGSVGDAHDGTH TKPTHSDKNSVTDSAAA TALASGHKTYNNTINWSNDDTR R】KNSCSHSSPCNAANVIKAIWTGVKDDSSCGHNASHAGQ IGQDRLVPHTVADSAATATSLMSGVKTYNGSINVMPDGSH
 ARTYPDDHTVVTDSAASATALSSGHKSYNGAIVMDTDKKP VK HAYTDSSSSASSMTAGKKTYNNAVNVYPDGSQ EDQLGGTSNGGAVTHATGAKVYAESFGFEQGNDP $M D V D K N P$
RTYCVDSRVPDSACAGTA\|LTGVKSNFGTVATDPTVNR
VVNTSSADSFITDSAPGSTAFSSGVKTNNAYVGVDKKGNP $L S D T S A L N N W V T D S G A G M T A \square M T G Q K T N G S M \square S V V P S V T P$
AYRGHMED ILTGTSNGGATTHAFGYKVEGGSFGDRALSGY
TKPTHS $\square K N S V T D S A A A T T$ TASGHKTYNNA $\square$ NWSNDDTR SQQSPCQVGSVSRALWSGDPLDVSLGGESDCWIADNQTDN YDAGKAWDSQPVPAAAAGTALSSGI KTYNNAlINYNNDGNP VETNSLSDFGPTDSAASATAMATGVKVLNRRLS KNDRRD RLKNSCSYSSPCDAAAAFRSLWSGVPLAAVQNNCSSRESE
$V$ VMNYDGNQFATDSASAGTAMATGLKTDSGNDSWDPADGD

LS DTSS LIN WWT DS GAGMTA $\square$
 LLRPTTSDGAGASVSFNPTAMFCGIEPRHRHTAVSPSDDC


[^1]|  | UniRef90_K9RMP9 |
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|  | UniRef90-U4QBP4 |
|  | UniRef90-D5STE5 |
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|  | UniRef90-X1C3D2 |
|  | UniRef90-J9FIW2 |
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|  | UniRef90_B0X715 |
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|  | UniRef90-Q3ER55 |
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|  | UniRef90-U319U8 |
|  | UniRef90_B4PKL1 |



VK SVAEYAKEKGDGVGVVTIDNLYGATPASFSSHANNRGD LKTVIVEMAEGDGRRTGVVSSDVGDNATPACFYAHEPLR LKPFFAAAKEMGKAVGLVTTDTLTHATPASFFABRSARGS $L K P F F A A A K E M G K A V G L V T Y T T A T H A T P A S F V I S N P D R N A ~$
$V$
$V$ VESVAEAAKASGRKVGTLSTVPFSHATPAAAGAAHNASRG VKTLLEYAEQRGLSTGVVTNMNDWDATPAATFAHVAARAD AIS LGRQLQNEGFRVGVVTCVPVSHATPGAAYANNVSRGD LKNI GEYVVESGRALGVITSVQWSHARPAGFLSHNVNRNN
 VTS LLKWAKESGKPVGCVDN
LKTMLEDAKQRGMTTALLATSQDNHATPASFAAHNESRNN VATVLEAAKLKGLATGLVATSQIPHATPAGFSAHYPNRNK FETVVMQQQRLGWSVGVVTSVPVPHATPACAYAHNVDRDD
 LQTVAEKAKKAGKKVGVTTSVSVDHATPASFYAHQPDRNM

 VKSFLE YAEQKG NM GFATTSRVTAGSSAALYGHSADARW
PGS $\square$ MREA $\square$ NNGHPVALVNDGDIAEPGTAAFVSEVGNRNL
$\square K N D G E Y V E S G R A \square G V I T S V Q W S H A R P A G F \square S H N V N R N N$ FLSVVRQAQLAGLRTGFVTDQRDTGTTGAALYGNSK
VEFNTLRAKRLGMATGVVTSVPFAHATPAAFAAQNESRNN



MTGRKTNNAMVSAVPTGQAGAVAPVKT
CSTQDDPANQVDS VMTWAQLQ
LI NESILQWAQAVGRLTGVVTNGELVQPTPAALYAHTPNSSW AKHLIHLLRGEGCGGGCLVINNGSQDTRAPQTAGATGRG $S \square S G L R Q A Q L A G L R T G F V T T Q R \square T G F T G A A D G G A N T$

[^2]


HTK I ISFFPTSKLKY LDASPFSGWSEEDENHDKN QGDK K $\square$ WDATPAACYAHVASRKNQDETFKQMLAPRF GDGV ENDADVTAAGCNPAEVRDDAYQLIHGEVGKRFTVIFGGGR DNEA
Y AE $\square$ AKKAVTSGKA SVIMGTGH
YECDERMPVGS DQMGCQD DARQLTTGKS $\square$ NVI MGGGR Y H A $\square$ A H Q M $\square$ A Q GHMDLVMGTGGPGYSVDGRACDEGVGAAK DEE ECDGLMPVGADEEAGCQDVAQQLISSSAAGQSFNVLLGGGGR
$Y G E I I V Q N I K P E V V I G A G H P S Y V G E Y K Y I T E D S Y N A L A N G$ YGE VQN HMPAEALGEGCQDIVKQLISNMDDDVNALAGGR F LE YAEQRGLSTGVMTNMK IDWDAT

PAATF QSGSQQSDGYRDYDTNSNTCDDVAREMVGKNLKVVMAAGH LYVGPDGQQCPDVRTQLLYGETGRALNVIAGTMP SVPAGSCGDPGREHPCPPPLASEVI
FECNERMPRSAIIESGCQDIAHQLIVGKSLDNVLI GGGGR

[^3]UniRef90_K9RMP9 UniRef90_H1A1X3 UniRef90-F6W9J4 UniRef90-R6WHK2 UniRef90_A4SGX6 UniRef90-R5BHQ8 UniRef90-W2U4F4 UniRef90-UPI00029A9BCC UniRef90_M2U1M7 UniRef90-T1W822 UniRef90-M5SWU5 UniRef90 EOF3Q0 UniRef90 B4JY81 UniRef90-L7CKP1 UniRef90-UPI000440A803 UniRef90_G7FPM3 UniRef90 U4QBP4 UniRef90-D5STE5 UniRef90-K9P7P9 UniRef90-X1C3D2 UniRef90-J9FIW2 UniRef90-X1Y830 UniRef90 X1WPS3 UniRef90 E4TDM9 UniRef90_A0A013VPG8 UniRef90-B0X715 UniRef90-A5UUS4 UniRef90 Q3ER55 UniRef90_UPI0000397F4B UniRef90_B3M1S8 UniRef90 G0K575 UniRef90-R5FSR6 UniRef90-B4KCF4 UniRef90_UPI0003B2EF85 UniRef90_UPI0002C68706 UniRef90-A0A031JPH9 UniRef90_U7KMW8 UniRef90 E9HZC0 UniRef90-Q5TW22 UniRef90-U319U8 UniRef90_B4PKL1
 HQWLKSQDSQEMLGWNHHQGVQGQDCEWLQDKDHPCKCEA SYMRSMDKGDRKDGRDLIQEWKEDMGRYVWN SS S DND INP KYKSQFESKG EGNFPHKRSRAVVDRDTDSLMQLSGYSVVKNSASLKAVMP
 RFFNPEKRKDK KDMYAAFAQAGYGVVRTPEELA QYFTDADKAKDNGGKYVIAERTTG $\square A P V T L Q Q G V E R A D K E$
$D A Y H W I S Q A D W Q A V K D G T S G W$ SAEQAFRTAGYRFGEDTALVGQAPRAAVLRDADF ENFMPGNKGETDPSRRKYVVAERTDGRRGSEVLAEAASRA RY VGGKETWDNLVAGKTDYTLIDSKEDFITTLAEGK QLLSANVSTFPY DPLDEGLCRARSGRNLERDWL Q AKG SQGENFMEGNKYFHESDRDALKKKYEAGEPNSYLVATKKA K KYFD S ORDRNLVDEFKAAGYQYGDD QQNLNQDTQ QY LE KREDKENLISALKNRGYEY IT ERDELLT $L N L L P V G V A G F R P S Q N L I E L A Q S L G Y T V V Y T K D Q L D S L I N$ NGMSSGA GFLKPNTTFDKKEAPSTFP DFEQAGYTVA RGYEDYKVK KQFLDPTETDRTDGKNLAREWQQSRGADGANATY YTSAVS AKSDDCD LSHSKKTLI LDQTAEKMK LDKRNNWLQQAYSLF D LI GKGRSD KNFIPSTATDRADGKNLIEEWKQSKTTGNATTGGEDAADD VHLDP $\square$ TGAGRTDGRNLLKEFEAKGYVIVRTRAEFEALRE QDKGYDFVETKDALLN
 AEGCANPWEWVSQQDWQQLEAGSTGAGNPSGPWRLIRSKE DLYGSHKNDFEENGYSVFTE QLF NAKVPSYE WDPVDELLCRARAGRNLLRDWRNQK LK MYMFPKGTPDPEYPDNLVQEWKHQGAQYLWNRTALLQASQ A HVGARKDKDEDFRQMLKPRFGDGVD LIGKGRADAAASF PFYDDHQKVDTPDYSFMYEEDYAKLSAGETDWNYFESNDD TDPETQEACRRRDGKNLIDQWVTDHP
CP EEFCREAFESAWEGERDDADTS


[^4]

[^5]

UniRef90_K9RMP9 UniRef90-H1A1X3 UniRef90-F6W9J4 UniRef90 R6WHK2 UniRef90 R5BHQ8 UniRef90-W2U4F4 UniRef90-UPIO0029A9BCC UniRef90 M2U1M7 UniRef90-T1W822 UniRef90-M5SWU5 UniRef90_EOF3Q0 UniRef90 B4JY81 UniRef90-L7CKP1 UniRef90_UPI000440A803 UniRef90_G7FPM3 UniRef90- U4QBP4 UniRef90-D5STE5 UniRef90-K9P7P9 UniRef90 X1C3D2 UniRef90-J9FIW2 UniRef90-X1Y830 UniRef90- X1WPS3 UniRef90 E4TDM9 UniRef90_A0A013VPG8 UniRef90-B0X715 UniRef90-A5UUS4 UniRef90 Q3ER55 UniRef90_UPI0000397F4B UniRef90_B3M1S8 UniRef90_G0K575 UniRef90-R5FSR6 UniRef90_B4KCF4 UniRef90-UPI0003B2EF85 UniRef90-UPI0002C68706 UniRef90-A0A031JPH9 UniRef90_U7KMW8 UniRef90 E9HZC0 UniRef90-Q5TW22 UniRef90-U3I9U8 UniRef90-B4PKL1

VPSLK EMVQAALARLAAYRNGFVLQVEAGRTDH TDADVQENVTLKDMAEAAI HVLAQNPKGFWLMVEAGDVDW DTPRLETVPTLPELAMAGLSQLQSPDGLFLMIEGGAVDW WDMHTDDP KAGLRHVVE AEDVNENPTLADMTTAALHVLSAPTPGFWMMLEAGDVDW LENQPDLATMTLGALNVVSKNNKGFFLMVEGGAVDW D LSRNSQAPSLA DMVDKTLQVLRRPVVGHLLIVE HYVQQ THADVIENPTISDMTQSALEFLSAPQKGFWLLVEAGDVDW


TRAD DSENPTLAQMTEAA LVVLEAKKKPFWLMVEAGDVDW LPFYSPTAPAIAEMLTAAQRLMEAHPKGSITIVEEEGTDN -DYSSGPRLNQMAETA!ALLDNNVEGFFLMIEGGRIDH A $\square$ DRKEGDLTLAQ $\square$ MESAIDFLTKKDKGFFLMVEGGKIDW

K S NVETQPTLQEMTRNADQLLQKEPNGYVLFVEGGLIDM LKFADENEETLVDHETGGLTLLGGNPKQNKIFGQFATMDH RARDSDFAPTPA
 NPEQPTLSQMTEKAI QTLSKDKDGFFLFVEGSKPDW NPR ENQPDLATMTLGALNVGKNNKGFFLMVEGGAVDW $G V R K \square D S V P D L A T M T R G A L R F L Q Q R S K G L F L M V E G G A T D W$
 DNPLLS SQ TEAAMKVLSQDEDGFFLMVEQG DPSLTEMTEAALSV
DFAP P YS DPLNDVVDLPTMTTGALNALGQDEDGFSVMDEGGADDW

NAFH DDTVGALHVLDR PEGFVLVA DADP LDRNNETDPSLTEMVAVAIRMLQKNPRGFFLLAEGGGV DLS GNSKAPSLK LMVVKSLQVLNKYKQGY LL I V

[^6]
AHHQGRARFADEEFHEDERAVEVAKTATTEEDTLLVTA KSHKND\IPMTKYLKSFDNSIKIAYDRLKDDDSAIIVTA ACHANDAAAAGRDVAAFDRAUREAVAFYHRHPETLIVVTA

TLDFDKATEEA!R FAEKDGHTLVIISA ANHLNDPAATLWDVLAADET DELLTAFADRNPDTLLI LVS ANHDNNDDNSIGAVISGDNAVKAITDWVENWNESVMIVTA GMHANMLGRAIEEYDDFDRAVQAVSDWIEDWQDTLVIVTA MDDMDRRDSAVA ANHANNDDNSTGAVLSGDAAFRAVTKWAEDWDDTVVFVTS AAHANNLPRTVEEQUDFNLAVEAAVN
QGEARVKELQLL NATLANLLGPKDTLTLVLL ANHANNLDSSIGAVFSGDKAFATIVNWVEEWDDTAVFVTS CFHTEKHSYTLSDTSR DQM $\square Q$

A NHDNNDDNSTGADESGDNAVRVITDWVENWEESLVIVTA FGNNNNAAGTLEALRRADAAI GVALDFVERHPNTLVITAA TGHDNNLERNVQESIEFGNTVQGVLDWVNNWANTLVLVTA ACHANDAATVFNEVKDMDDAIKVAYEFYKKHPETLIVVTA

AHHNT WAR $\square$ A L DDETLELSKAVANAVAMTS EDDTLIVVTS
DMHTDNDANGDRHVVEMDDMDRRDSAVA GKDTDILTA AHQENKPNKAFQQVAHYSMAFDMGHMMVS ETNSLVVSLD FGNNDNA IGTLTGLKHANDVIEVVQRFQQRNRNTLILTAA A AHANDPIGGI SDVLAFDEAVAKALQFAKKDGDTMLIABT AAHANNLPRUVEEQIDFNLAVEAAVN
F DK S GMDKRMQLE LLL A AHTSACGTEWHETVEFNDAVAAVVEWIERWERNLLIVTTT


DMHTDDPKKGLGHVREMDEMTRRVSQ TA PGKAGTLAPSKA AGHGNNPVRDUEETDFNKSVDAADKWVEEWEETLLVVTA

[^7]| UniRef90_K9RMP9 |  |
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| UniRef90-H1A1X3 |  |
| UniRef90-F6W9J4 | D H GQMFMF GS G S VRGNPVYGLAPDNDNWKNYVVQSAVPMR |
| UniRef90-R6WHK2 | DHETGGL |
| UniRef90-A4SGX6 |  |
| UniRef90-R5BHQ8 | DHETGGTVLNF GVPSEGMVMGTFTS |
| UniRef90-W2U4F4 | D HATG |
| UniRef90-UPIO0029A9BCC | DHGHYLF LD HPEQLDDPQAKVSDT |
| UniRef90-M2U1M7 | DHDHMLT GPDPGEAFDPDENRGAGKDPGHMWWSNS |
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| UniRef90-UPI000440A803 |  |
| UniRef90-G7FPM3 |  |
| UniRef90-U4QBP4 |  |
| UniRef90-D5STE5 | D H GHYFHLLQPE |
| UniRef90-K9P7P9 | DS DAGGLQVRDP $\square$ A S D R P VGS |
| UniRef90_X1C3D2 | DHETGGMTVIQDNGPGNYPT T W WS E G |
| UniRef90-J9FIW2 | DHETGGLALGTGRYA |
| UniRef90-X1Y830 |  |
| UniRef90-X1WPS3 | D HA HTMTMAGYPKRNANILGLSGTMAMDNMTYTTLSYANG |
| UniRef90-E4TDM9 UniRef90 A0A013VPG8 |  |
| UniRef90_A0A013VPG8 UniRef90 B0X715 | DHSFGLRMGGGKRATPLAEQYATEAAKPETTVENNPIISV |
| UniRef90-A5UUS4 | DSDAGGLQVGA WDPARNVADYNNNPTGVEPDAYGRRMAFA |
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| UniRef90_UPIO000397F4B |  |
| UniRef90-B3M1S8 |  |
| UniRef90-G0K575 |  |
| UniRef90-R5FSR6 | DHETGGLI ID GTEYTNEMYHSKGHTKKNVYYLVKTNANDD |
| UniRef90-B4KCF4 | TNGNYLSASR DMSEETQLVSTLEKAFQGPELELQR |
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| UniRef90-UPI0002C68706 |  |
| UniRef90-A0A031JPH9 | DHSFGLRMSGGTRGEPLAAQYDAEVAKPGVTDATNDVISV |
| UniRef90-U7KMW8 | DHETGYLS GANEAPTEDNPEANRFNAMEGEKGKVARHGWY |
| UniRef90-E9HZC0 |  |
| UniRef90_Q5TW22 | S D A R G D |


GATHSAEDVVVFGRGPMAHMTSGVHEQSYTGHVMMYAACL THTGTNVKYFIFVKGLSADELKAlIDNTDVNRIARAL SFLIAALDSVRVFAGGAGAD
RGHSPMMVPLFAYGPKSGMFMGTQENSDVSNKDYTVL
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PKQHGGDDVMVFARGPMSHपFTGNYEQNQ $\square$ PGGMAMAAG $\square$
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SETHGGEDVAVFARGPQAHLVHGVQEQTFVAHVMAFAACL HGGHTGEEVIAAASGPGADKVHGFFPNTRLFDVMLSAMG SGQHTNQLVPFFFKGAGSDSVRGY $\square D N T L V A N L$

GAFATVHATGPMSHLLHRVHDQTF $\square$ AHF $\square$ SYAAR $\square$


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jnet
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jhmm
jpssm


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