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 LSDGGVHSHI EHLEGLLKLASTKGLEQVYVHGILDGRDVG
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 V S D G GVVHSHVEHLHACLELARREGVARAYVHAFMDGRDTP $L$ S D G GII H S H I K H L F A L V Q L A K S E G V E K V Y I H G F L D G R DVG


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 $L$ S D G GVVH S H I D H L F A L L E L A G K E G L E K V S V H V F L D G R D V P $L$ S D G G V H S H
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 $V$ S D G G V H S H N G H I Y GLL L E LAA K R Q G V E K V Y V H C F L D G R D TP $L$ S D G GVVHS H DE H L Y G ML E M C K K N G L S K V F V H A F L D G R D T P

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 V $V$ S G G GV H S H $\quad$ V $V$ S D G G V H S H N T H L Y GlL L E LAA K R N N I E K V Y V H A F L D G R D TA


## L

## L

 L S D G G V H S H I LSDGGVHSHINHLLALLELAKKENAEDVFVHGFLDGRDVA V S D G GVVHSHI S H L F A L L E M A K R Q G L N K V Y V V H A F L D G R DV G LSNGGVHSHDDHLFALL DLAKKEELNEVYIHAF LDDGRDVA
 L S D G G V H S H DQ HL F A L L DVVA K E K GII D K V Y I H G F L D G R DV G $V$ S D G GVVH S H I D H L Y A L L E L A K K R H D L K K V Y V V H A F L D G R D V P LSDGGVHSHNSHLYALVELARQQGLTDVFIHCLLDGRDTP $L$ S D G GVVHSHYE HL F A L L K L A K K Y G L D E V Y I H G F L D G R D V A FSYGGVVHSHMKHL R ALI E F A K DEGI T E I F I I H A F L D G R DV S
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P S S A K E Y I T EIIE DYMKELGVGKI A S L L G GRYYAMDRDKRWE $P$ D S S R G Y I E K L Q A K I A E V G I G R $\quad$ I A T V Q GR Y Y A M D R D K R WE



$P$ D S GK K Y M E Q L T E K I S S V G I G K I A
P T S A A GY L A E L E E K CR E I G V G EIIA TIIS GRYYAMDRDKRWE

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$P$ D SGER F


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160 $R \bigvee A Q A Y Y A L V L G E A L E V S D A L Q A V K E A Y N R G E T D E F I$ K $\operatorname{L}$ K T
 RTEKSYRAMVYGEGPKYTDPLKAIVKESEKSVFDEFVMPT RTEKSYRAMVYGEGPKFTDPIVAVRESYERSVYDEFVMPT $R T E K S Y R A M V Y G E G P T Y R D P V E A V Q A S Y E Q S V Y D E F V M P T$
 $R V Q E A Y N A M V L G R G T T A T D A V Q A I R D S$ $R V E L A Y N A M V L G E G E K A S S A V E A \| E K S Y H D N K T D E F V L P T$ $R T Q K A Y D A M T L G K G R E A S S A I V A M N R S Y Q E D V V T D E F V V P T$ RVKK A Y D A MVYGEGPSYKSALEVVEDSYQNGIYDEFVIPS RTEKAYNALAF GEGVTASNALEAVEQSYKEDTTDEFVEPT $R V K K S Y D A M V Y G E G P K Y K T P Y E V V D D S Y E N E D Y D E F V L P S$ RVELLAYNADVK GTGETSNSAVEAI ENSYHDNKTDEFVLPT RVKK S Y D A MVVYGEGPSYNTAMECVDDSYKNGIYDEFVLPS RLEKGYQALAYGQGKFAPSALAAVENSYDVRVTDEFVLPT
 RTQKAY DALVLGTGEFASSAVEAME QSYKADVTDEFVVPT $R$ VE K G Y R A L V D GE GLLKA P N P L A A I E Q S Y D DR V T D E F V A P T RVVEK S Y R A MV Y G E GP S Y T D P L E V V E D S Y K N E I Y D E F I DP S R V E K S Y R A DV Y G E G P Q Y T D P M E A L K E S Y E K S V F D E F V EP T
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 $R V E K A Y D V L V R S K G V V C E D A L Q A M A D S Y A N D V T$ RTKKA Y DAIVLGKGVYANSPMEA $R \bigvee E K A Y N A M V F G E G E Y A S S G L E A V E K S$ RTERAYRAMVLGEGRKALSGQAAI SEA $R T E K A Y R A M V V G D G P T A T D P D Q V L K A C$
$R V E R A Y N A L V$
$R$ $R V Q K A Y D S L V K G E G V K A T S V P D A M Q A S$ RVHQAYEALVFGRGPKAPDALSAIRASYY E GVT RTEKAYNAMVLGEGLRAESAMKALEEAYKRGET $R V E K S Y R A M V Y G E G P S Y H S P A E A A Q D S Y$ G N SVVH $R V Q L A Y N A D V L G Q G E T A G S A L E A V E K S$ RVEKSYRAMVYGEGPKYRDPIAAVEES $R \vee E K S Y R A M V Y G E G E T Y S S T K E A M D A S S Y S K E V H$ $R$ V E K A Y A A LTTY GE G L T A S S A A E A MQQ S RIIEKAYNADT LGEGNTAESAEACMTAS $R V A K A Y N A M V H A E G E Q V T D L V Q A V E K S$ $R V E K A F R A V A Y G E G P Q F K D P L T V V T S S$ RV EK A Y D A I A K G D GVKK A T A KEAII EA S


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 VIIDEKGEPRGTVADGDSVIFFNFRADRARELSHVFTDQN VI EEDGKPVATVKDNDSVIFFNFRPDRAREMTRVFCCDD IVTDSEGNPEAVIQDTDSIVFDNFRPDRARQLTWAFVKDD VVVDANGAPGGTLQDGDVVIFFNFRADRARQ TRALHDAE
 VILKDNGEPVAVVSDNDGII FYNFRPDRAREI TRAFVDKD



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 VIAD E N G R P I G R M N E N D TVVI $V$ V E A GKPVAKV QDNDAVI FFNFRPDRADQLSNAFTD QE
 VMKNEDGT P VT TVM DGDSVI F F NFRPDRAREITRAFCDPA





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LIS DGGV|HSHISHLLHALIDDLAKKQEVERVYLUAFDDGRDVG LSDGGVHSHMEHLFALIEIAKQEGLEEVYIHCFLDGRDTP LSDGGVHSHNTHLYGLLELAKRNGIDKVYVHAFLDGRDTA LSDGGVHSHDTHVFALLELAKRNGLKNVYVHGFMDGRDTA FGPGGVHAHEDHLHALLELAHRHHLQRVYLHEFDDGRDVL VSDGGVHSHNTHIYGLLELAKRKGLDKVYVHCFLDGRDTP LSDGGVHSHDNHLFGLLEMAERVGI EDVYVHALLDGRDTP VSDGGVHSHI THIYGLLELAKRNGLKKVYVHCFLDGRDTP LSDGGVHSHLDHLYGLLQMAKEKGLTKVFVHAFLDGRDTP LSDGGVHSHQEHLYALVELAKRQGLDRVFVHAFLDGRDTP LSDGGVHSHNSHLYALLELAKRSDLKKVYVHCFMDGRDTP LSDGGVHSHQEHLNALLRMAREQGLPQAYVHCFMDGRDTA LSDGGVHSHDKHLFALLEMAKKKDLKKVYVHAFLDGRDVG VSDGGVHSHLRHLIALIELAAAKGVEVVVHCFMDGRDTP LSDGGVHSHYEHLFALLKLAKQQGVERVYLHAFDDGRDVG LSDGGVHSHNTHMYALLELAKRNGLENVYLHAFLDGRDTP LSDGGVHSHVEHLYGLLEMAKREGLDKVYVHCLMDGRDVS LSDGGVHSHI THLYGLLELAKQQGLEKVYVHCFLDGRDTP LSDGGVHSHIDHLKALLKLCKEKELDRVFVHAFLDGRDVP VSDGGVHSHIKHLEAALEELADQHNVKKLYYVMPFLDGRDVS LSDGGIHSHNSHIMAVIELAAKEGLEDVYLHAFLDGRDVG VSDGGVHSHDSHLYALLKLAKDKGLTKVYVHAFLDGRDVP LSPGGVHSHMEHMYGLLEMAKQHGVDKVYVHAFLDGRDVP LSDGGVHSHDDHLKALLDMAKKNGLTSVYVHALTDGRDTD LSDGGVHSHIEHLFATLELCKKMDFDNVYIHAFMDGRDVS LSSGGVHSHNSHLYGLLELAKRAGLTKVYVHCFMDGRDVP VSDGGVHSQIKHLLALLDMARNAGVPRTYVHAITDGRDTS VSHGGVHSHIDHLYGLLETAKEQGIKDVYVHCFLDGRDVS LSDGGVHSH』HHLMALVDLAKAKGIQKLYIHAFMDGRDVD VSPGGVHSHTNHLKGLLQLAKQKGASRVYIHAFTDGRDVP LSPGGVHSHTEHLKGLLDLAKKGGLKEVYVHAFDDGRDVA LSPGGVHSHMEHLYGLLEMAKKNGLKKVYVHAFLDGRDEP LSDGGVHSHIDHLEALVKLCKDMDFNRVFVHAFLDGRDVP LSDGGVHSHITNHLKALISLCKKNQLEKVYIHCFLDGRDVP FSDGGVHASLNHLFALLELARREGLRQVCVHAFTDGRDTD MSDGGVHSHIDHICALLDLAKRGGLTKVCVHCFMDGRDTA
v $\stackrel{\text { L }}{\text { C }}$ VSDGGVHSHMNHIVALLKDAKREGLKRVCLHCFLDGRDTP VSDGGVHSHTNHLFALLEEAKKHGVPA FVDVILDGRDVS LSDGGVHSHIEHLKGLLDMAAKKGVEKVYVHAFTDGRDTD VSDGGVHSHDNHLKSLINDCKDNGLSDVYIHAFTDGRDTD VSPGGVHSHQGHLYALLEMAKQQGVKDVYVHAFLDGRDVP VSDGGVHSHNSHLYALLKLCAKEDFRDVYIHAFLDGRDVP VSDGGVHSSNEHLYALLELAKKQGLKEVYVHCYMDGRDTP LSNGGVHSHMEHVKALITMCKNKGLKKVYVHGFLDGRDVP LSDGGVHSHIDHVEALYLMAKKRGVDRLYVHAFTDGRDTD VSDGGVHSMQSHLVALICALSNQGVADVCVHAFBDGRDTP LSPGGVHSHTNHLKGLLQLAKKKNVKKVFVHAFLDGRDVP LSDGGVHSHDEHLYGLLEMAKKEGLEKVYVHAFLDGRDTP LSDGGVHSHNSHIEGLLLMAKQQGVKDVYVHAFMDGRDTP LSDGGVHSHYEHMFALLKLAKQQDLNDVFVHGFLDGRDVG LSTGGVHSYLGHLTGGLEMAKKEGVFKVYVHAFLDGRDTP LSDGGVHSHLKHLYALLKMAKKFDMSKVYIHAFLDGRDTS LSDGGVHSHESHVYALLRMAKERGMEKVYVHAFLDGRDVP VSDGGVHSHPEHLKALINLVNDSKIENLFIHAFLDGRDVP VSSGGVHSHIEHIYGLLELAKRAGLKKVYLHAFLDGRDTP LSDGGVHSHI DHLKGGLKKAKDNGLTKKVYLHAFMDGRDVP
 LSDGGVHSHYEHLFALLKLAKAQGVDKVYVHAFLDGRDVG VSPGGVHSSEQHLYGLLEMAKRNGLKKVYVHAFLDGRDVL LSPGGVHSHEEHIFALLEMAVKRGAEKLYVHALLDGRDMP LSNGGVHSTVEHVWALLKMAGAKGLKRVYLHCFLDGRDVS LSDGGVHSHIEHLKALLSMAKSKGLDTVFVHCFLDGRDVP LSDGGVHSHNTHLYGLI EMAKNLGVTELYVHAFMDGRDVA LSDGGVHSHQEHLYALVEMARDRGLEDIFVHAFLDGRDTP MSDGGVHSHTSHILGVVEMAKEKGLNEVYVHAIMDGRDTP VSTGGVHSSLDHVLALIKLAADEGLKKVYVHAFLDGRDTP LSDGGVHSHI HHLYALLLELAKREGLTKVYIHAFLDGRDVS LSDGGVHSHI RH| FAMVKMAHDRGUGRVYLHCFLDGRDVA VSDGGVHSHIDHLKGLVKDAKESGIKNALIHAFMDGRDTP
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 P K S A M Q Y I S DLQ D K I NE IGVGGR IA TVVGRYYAMDRDKRWE PTS GKEFMTELLCDKMKEIGGVGEVASVVSGRYYAMDRDNNWD T D G GKDFIN QLYNKMDEI GVGKI A SIMMGRYYAMDRDNRWD PR S A L G F L D T L E GVIAARLGVGTMAAVVSGRYYAMDRDKRWE PASGKN F V E A L E E K M K E L GTGGKVA SVVMGRYYYAMDRDN R WD


 $P$ Q S G I G Y L E H L E A Q LA D K GV G R I A T V T G R Y Y A M D R D N R WD G $\square$ RELEQKMQEIGVGEIATIISGRYYAMDRDNRWD $P$ TS G A GFMQELVDKMAELSYGKVVAVVGRFYAMDRDKRWE $P$ Q G G L G Y MK K L C GHMAE TGF GRVVATVDGRYWAMDRDRRWE PK S AV E F LA E L EAELKKKYNLDPQI ATI SGRYWAMDRDNRWD P T T GKT YV A QLEEKMKELGVGEIATLQGRYYAMDRDKRWD P T S G L G F ME ELVAAMARRIGCGQVATV SGRYWAMDRDRRWD P T T ALLP Y I K RTETEMMEEI GVGGQI ATVVSGRYYAMDRDKRWD $P A S G K D F V Q E A E D K M K E I G V G K V A T V M G R Y Y V M D R D N R W E$ VT S GVVGI K DVV A K T K E L G V G E I A TVMMGRYYAMDR D F A WD PKTAEKYVKAAQEKMDKYGVGKFATVVGRFYSMDRDKRWD
 PQSALE Y IIDEI EKYMGELKI GRFATVAGRYYAMDRDKRWE



 $P$ D A A M G G $P D S G K K Y M G Q L V D K D A E G G V G Q D A T V Q G R Y Y A M D R D D K R W E$
 P T G GED Y L R RVKA HM TAHGYGQI ASV CGRYYAMDRDRRWE





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P
PRSGRDYLEALEAEMNRIGVGRIATVMGRYYAMDRDNRWT

$P T S G G N Y V K Q L Q A K I D E E G H G G K I A A S I S G R Y Y A M D R D K R W E$ PRSAI GYAKETLEAMKEAGVGEFATVSGRYYAMDRDNRWE

P T IGGK Q H L DEL Q E E ITE K I GV GR I A TVVSGRYYAMDR DRRWE
P K S GK G Y I E E L E E K I K E I GVGGKIA TVVSGRYYAMMRDCRWE
P S S A L E FI NYL DEHMRKEGTGKFATIISGRYYAMDRDNRWE
P A NALE YVEAL EDK LK T LGGYGAVASVDGRYYAMDRDRRWE

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P A S GK S FVVEALVAKMKE GGVGQIASSLSGRYYAMDRDNRWD
$P$ QS GKD Y I VQLLENFMKTHGI GKILDTVSGRYYAMDRDKRWD
P T T ALD YI E ETEKQMSEIGI GQFASI HGRYYAMDRDKRWD

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PSSAP QYL DALAAKMQEYGVGCI STI SGRYYAMDRDKRWE
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UniRef90_A1S1L6
$R|V| K|L| A Y A|I T D G T G G L A R S A A E G| V E A A Y G R G E T D E F|V I| P F$ $R V K L A Y D A L V L G K G L V A S D P D D A V V S A Y N R D E M D E F V L P T$ RI E K A Y D Al A N GK GE T S E C P V K A I E D S Y A K E L T D E F V I P $R \ E A A Y K A L T E G V G N E A A C A R C A I S D S Y A A G K T D E F V V P T$ RTGRAYAALVDGVGEKAPSARAAI EASYARDVSDEFVLPT

 $R V Q L A Y D S L V A G E G V M A E D A D Q A M A D S Y A K D V T D E F V V P T$ $R V E L A Y R V L V D G \square G Q N A L S A S D G D R A S Y E T G I H D E F V V P F$ $R V E K A W D A L V R G R G A P A P S A T E A V R A A Y A L G Q T D E F V E P R$ REEKAYRALTLGEGQTAEDPVQAMQDSYDAGVTAEFVVP $R$ VE K A Y N ALVNGE GVK A T D P V Q A I K D S Y A N GVNDEFVLP $R N Q R A F E A M V L G R G E R T D D P L A A V Q A G Y D A G K T D E F I E P T$ RVEKAYNALLVGEGEKAANSDEAIVASYAKDVTDEFVEPT
 RVQK TYDA IVYGIGKHVDSAEEGISA $R V Q K A Y D A L V L G E G E V A E S G V D A V V K S$

 $R \vee E L A A Y$ A M MVK GE GELLALLSAREAVVNS

$R V K K A Y D A D A H G E G K Q A V D T V E A V E Q S$
 RI EKAYNAMTAGEGNLLAS $R V Q L A Y Q A \| V E G Q G P R A K S A S D C V K A$ $R V E K S Y R A M V Y$ GEGEFAASALDALVAS RVVQKAYDAMVNGKGNQCPCAKQAMEDS
 $R$ TK LA Y D A ITMMG $\square \mathrm{G}$ R E S D S S E K A V LD S $R$ L QL A Y D A L VK GQGKY F E S A Y Q A V E Q S $R V E L A Y N A L V Y G R G N K A A S A S E A V T N S Y D N G K T$ RVELA YNALVLGKGETAVSADDAVDKSYA LGKNDEFEVPT




 RVKKCYBALVLGEGNKESSSVVKAIEDSYQKETFDEFVEPT

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 REQKAYEAI AHAEGVVADDPVAGLKASYENGVNDEFVVPG RTKLA Y D S L VLGE GKKD DCPIEAVEKSYNE GINDEFVVPT RTKKA Y DALVVYGDGEKA DSAADAMQASYDADTTDE FVVLPT

 RVVELA Y A A LTE GR GLPAASSAAEAVRDAYAS GENDEFVVPR RVEKAYKAMVDGEGIQETDAVTAVKNSYAND】TDEFVIPT REELAYNAMVLGKGEEAESAIKAVDASYHDNKTDEFVLPT $R V E K A Y N A D A L G K G E E G T D P V Q V M A D S Y A K E V N D E F V I P T$ RVKLLAYDAI VKA DAPKA DSAL S CIIEASYHENVTDEFVLPT RVALTTYNVLVDGVGQTAESAKSGVAASYEREVTDEFVIPF RVEKA Y KVLLTAA DGNVAKSASEALEASYAADVNDEFVI PT



 $R V E Q A Y D A M V Y G E G A A A N D P V A A V K D S Y E K G V T D E F V E P$ $R V E Q A Y N L L T Q G Q A Y R F N S A S D A L Q A A Y Q R D E N D E F V K A S$ $R E$ QLA Y D A M T Y G K GVVE Y S S A A A GVV EA S Y A E G VVNDE FVVVP REEKAYDAMSNGVGPVYATAVEGVEANYQEGLTDEFVVPF

 RVQKAYDA $\square V N R K A E L F D T A K L A L D T A Y D K D E T D E F V L P C$

 RTE EAY DLMTLGNGDKAKSSDEAITGAYNRDETDEFVKAT
 $R V Q K A Y D A I V A A D A P Y A P D P V Q A V Q N S Y D K G L T D E F M L P V$ RI EASYNAMVCGKGDQDPDPVHAMEASYAAGVTDEFVKPV RVEKAYNAVVFAK GEHYDS PVEACEVSYKNNITDEFITTPK $R V E$ Q A Y DV L T L G E F P S F P S A K D A DIE A A Y A R GE E D E F I K A S




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| QDLTRLDVEUKER QNTpRTTLATQN QDLVKINLAIKDN |  |  |
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UniRef90 F4XCZ7 UniRef90_W6NGW7 UniRef90_Q21NH1 UniRef90_UPI00034693A7 UniRef90_U2RJE3 UniRef90_E1IBU3
UniRef90 B7S0T9 UniRef90_G7UW63 UniRef90_UPI00047CAF98 UniRef90_G8TMR4 UniRef90_UPI000472565E UniRef90_UPI0003B79BC4 UniRef90_C4L5H5 UniRef90-K2DWK6
UniRef90 K2DZK8 UniRef90-W9V0F1 UniRef90_V5B975 UniRef90_UPI000347B4A6 UniRef90_Q67SW0 UniRef90_K8GJF3 UniRef90_D6Z192 UniRef90-E1SR19 UniRef90_K1ZGE8
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UniRef90_A7MID1 UniRef90-X0VHP4 UniRef90_K1ZIU6 UniRef90-UPIO0029B4A06 UniRef90-K9W9W1 UniRef90_S7T4Z9 UniRef90_A3YAQ1
UniRef90_P59177 UniRef90_UPIO003B3813D UniRef90_E4TV30 UniRef90_Q898R1
UniRef90 A0A021V UniRef90-T0MP96 UniRef90_K1ZMH5 UniRef90_KONINO UniRef90-H8KRH2 UniRef90_A9KF70 UniRef90_C5BC37 UniRef90_UPIO00367E815 UniRef90_Q117D6 UniRef90_A8ZRY6
UniRef90_P74507 UniRef90_F3L2D7 UniRef90_Q47VY2 UniRef90-B9KYT9 UniRef90_UPIO0047942F6 UniRef90_B7K189 UniRef90_K1ZJG2
UniRef90_I3C5K3 UniRef90_E3H865 UniRef90_A6FG09 UniRef90_UPIO00412B73F UniRef90_UPI000463C43B UniRef90_UPI000470AB65
UniRef90_UPI00046FF39F UniRef90_K9SR56 UniRef90_I2JHZ5 UniRef90_S6CEQ0 UniRef90_UPIO003B79A42 UniRef90-F8E4H2 UniRef90_D6SS42 UniRef90_A6EKS1
UniRef90_R1J277

 LSPGGVHSHSEHLKGLIKFAKKKGLKKVYVHAFTDGRDVP $L$ S P G G V H S H S E H L K GL I K FA K K K G L K K V Y Y V H A F P D G R DV P LS P G GVVHSHEE HDI A A I ELAA AKRGAE H I Y V H A F L D G R D T P
 F GP G GV H A HED HL H AL L E LAARRHAFERVYL HLFLD GRDVL LS P G GVVHS H H E D Q I F A A AV K M A S D R G A S K K V Y L V S P G G V H S H H E R H L WA L L D L A R Q R G V A R V A V H A F L D G R D M P
 $L$ S D G G V H H S H Y E H H L F A L L R R L A E M N G I Q
 LSNGGVHSRNTHDEAMVELAVKRGLKNI CVHAFLDGRDTA $V$ GK GAVHSHDDHLYALLEMAKNQGIVENVIVVFSDGRDCA LSPGGVHSHEEHMFALI ELAVKKGVKNVFLHALLDGRDMP
 $V$ S D G GVVHS H DD HL K G L CT L A G E A GL E QV Y V HA F TD G R D T D VS D G GVVHSHIDHLLALIDLAKRENVERVYVHAFDDGRDVP LS D D G G VV
 LS P G GVVHS H E E HI H A ML K L A K K H H A E K V Y L H V F L D G R D T P

 LS P G GVVHS H Q D H L F A MV K M A V V H K G A K K V Y

## 


 FS D G G VV H S H H N S H H L K A V S D G GVHSHDKHLDALLKLAKKEGLTEVFVHVFLDGRDTP V G T G GV H SHADHWF GVVEMAKQMGAKEVVYHCITDGRDTD L S D G GV H S H I N H L F S L I E VAK D A G I K E I F V H A FMD GR D T S $V$ S D G GVVHA H $\quad$ Y HL K GL CDDAAKANGVQNLVI HAFTDGRDTD $L$ S P G GVVHS H E D H I V A MVVE L A A Q R G A K Q V Y V V H A F L D G R D T P
 $L S D G G V H S H E L H F H A L L D L A A R E G L D S V C L H V F L D G R D T P$


 CS D $\square G V H$ H S L L D H L Y G L L E L A K R N D D $V$ S A G GI H S HID HL F AL L DMAKENKVKEIVIIHA ITDGRDTP


 LSPGGVVSHEDHLHAMVDLAAARGAEADYVHAFLDGRDTP
 L S P G GVVHSHEK HI F A ML E L A QREGVVAR V A V HA A L D GRD MP V S D G GVVHS S L N HL F ALL EMAKENNVSEIVVVHAFLDGRDTS L S D G G V
 V S D G GVVHSHINHLKGLLSVAAEQQLKNVFVHAFLDGRDTD $L$ S N G GVV H S H I E H L F G L L A M A K K Y G V V K A Y

## L

 CSDGGVHSHLDHLKALVRMASNKNLP VLI HTILDGRDTP LS P G G V H S
 LSPGGVHSHEAHLEAMLDLAARRGVARVAVHAFLDGRDTA CS D G GVVHS H L D H L I G L L E L A K E Q H L D Q V CII HVI T D G R D T N
 L S D G G V H S H I N H L V G L V K M A K $\quad$ I Y D L ASPGGVHSHDDQILAMMELAARQGATKI YLHAFLDGRDTP



- D G GVHSSNEHLYALVDAAVAAGVPRIMVHCFMDGRDVP
 $V$ S D G GVVHSLQEHLHGLLNDLGQKNVSRVMVHCFLDGRDTS $V$ S D G GV H A H $\square E H$ H K A L CD A A GE Q E L T K V F I I H A F L D G R D T D

UniRef90_F4XCZ7 UniRef90-W6NGW7 UniRef90-Q21NH1 UniRef90-UPI00034693A7 UniRef90_U2RJE3 UniRef90-E1IBU3 UniRef90-B7SOT9 UniRef90-G7UW63 UniRef90_UPI00047CAF98 UniRef90-G8TMR4 UniRef90-UPIO00472565E UniRef90-UPI0003B79BC4 UniRef90_C4L5H5 UniRef90-K2DWK6 UniRef90_K2DZK8 UniRef90-W9V0F1 UniRef90_V5B975 UniRef90_UPI000347B4A6 UniRef90_Q67SW0 UniRef90-K8GJF3 UniRef90-D6Z192 UniRef90-E1SR19 UniRef90-K1ZGE8 UniRef90-D5BHSO UniRef90_UPIO003653614 UniRef90_UPI0003680825 UniRef90-K6X642 UniRef90-X8INJ1 UniRef90-UPI00035D0539 UniRef90_K9YZG3 UniRef90_H3NMX8
UniRef90 O1C282 UniRef90_Q1C282
UniRef90_UPI00040E85D5 UniRef90_UPIO0035C998E UniRef90_Q11NP9 UniRef90-K2FE10 UniRef90_M1WLB7 UniRef90-D4K344 UniRef90_C6BY17
UniRef90_R7ZZ05 UniRef90-E1VHM1 UniRef90-M7DC31 UniRef90_UPIO002EB8279 UniRef90-Q3SGA3 UniRef90_D0Z1F1 UniRef90-A6VDP9 UniRef90-UPIO0040A6DFE UniRef90_BOS1G8 UniRef90_A7MID1 UniRef90-X0VHP4
UniRef90 K1ZIU6 UniRef90_UPIOOO29B4A06 UniRef90-K9W9W1 UniRef90_S7T4Z9 UniRef90_A3YAQ1 UniRef90-P59177
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UniRef90_E4TV30
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UniRef90-T0MP96
UniRef90-K1ZMH5
UniRef90-KONINO
UniRef90-H8KRH2
UniRef90_C3W9T8
UniRef90_A9KF70
UniRef90-C5BC37
UniRef90_UPIO00367E815
UniRef90_Q117D6
UniRef90_A8ZRY6
UniRef90-P74507
UniRef90-F3L2D7
UniRef9O-Q47VY2
UniRef90-B9KYT9
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UniRef90-B7K189
UniRef90-K1ZJG2
UniRef90-13C5K3
UniRef90_E3H865
UniRef90_UPI000412B73F
UniRef90_UPI000463C43B
UniRef90-UPIO00470AB65
UniRef90-UPIO0046FF39F
UniRef90-K9SR56
UniRef90-K9SR56
UniRef90-I2JHZ5
UniRef90-S6CEQ0
UniRef90_UPI0003B79A42
UniRef90-F8E4H2
UniRef90-D6SS42
UniRef90_A6EKS1
UniRef90_R1J277

P T S GK S Y|V|E QLQ A K $\square$ QE L $|\square G E| I|A T| V \mid M G R Y Y$ AMDRDKRWD PSSAKEFI KDMEDYMKEI GLGEI ASVSGRYYAMDRDKRWE
 PRSAEASLKR $\square D E T F A R L G K G R I A S V V G R Y F A M D R D N R W D$ PESGVNYLAEMEKALADTGVGKLASVIGRYYGMDRDNNWD

 RSAQPSIMADEAACAKLGKGRIAASLDGRYYAMDRDNRWD P K S GA G F L K E TE E K LAA ELGGVGQVASVVSGRYYAMDRDNRWE

PRSAEPSI AAAEATFARLGTGAVATVVGRYYAMDRDNRWD

P ES GK GY V K Q V E Y I D QVGVVGQ V

PRSAEAS LARFDALFAELGKGAI ASIIVGRYYAMDRDQRWE P Q S A K A S L A T L DK QCE A L Q R GK I V S L I GRYY A M DR D K R Y E

 PK S A K E P L QKADELGA DLGVVGKTASII GRYYAMDRDERWD


## P


P T S GLKY TRQLMS ILTQLEVGSVATMTGRYWVMDRDQRYE
PHSGKGF DADLQAKLDELGIGKI ASVSGRYYAMDRDNNWD
PTSGKVYMQQLVDKMAE GAGKVASISGRYYSMDRDKHYE
PKSGLAF LS DL KEHC E GSVGKVASVDGRYYAMDRDNRWE
PKSAAPSIAKLDDCLHKAGVGRIASVSGRYFGMDRDNRWD

PKSAELLYLRRLT DKI A QA GVGHVASMI GRYFAMDRDRRWQ
PRSA QH S L ERRFQELFA K LGGK GRVVAS LVGRYYAMDRDNN WD

PK G K Y K QLQEQID AI GIGRIVTI SGRYYAMDRDKRWD

P D S G Q G Y I A D DiE K K A A E I GGVGK I A T V M G R F Y A M DR D S R WD
R N T A K R Y I N DLEKK L K K K I HL G K I A T V S G R F Y A M D R D N R WD

PRA G R GYMQRLLEFMAREGAGSVVASVVGRFYAMDRDKRFE
PRSAQAPDADLEAKLAALGTGRIIATLTGRYFAMDRDNRWE
 PNGGKA Y L EDVEKHAKETG AKI ASVVGRYYAMDRDNRWE PSSAKEYI DNI ENYMKELSVGQIATLAAGYYAMDRDKRWE

P TA G VK Y L K QL Q E K M Q K L GV G KL A TVVVGRYYAMDRDKRWD
P M S GL Q Y I T DLENKMK D IGGGGQIATI SGRYWSMDRDKHWD
P A S GI N Y I K QL Q A Y LD H HE Y GK I A T L VGGY WAMDRD T R WD
PKS GLGGMNDLEQHVAKT TGTVASAVGRYYAMDRDNRWE
P Q S AK GFVEEL EAKMKE $\quad$ GEEGTIAT LSGRYYAMDRDKNWD


PKS GLHVLK Q IIEYHTNQI GIIGRIATVSGRYYAMDRDKRWD
$P D S G K T Y M A D L C E F D A D Y P S A S V A T V V C G R F Y A M D R D T R W D$
TNEGAHFVQQQI QA HLDE K GGLGRIVSVVSGRYYADDRDRRWD
PR SAKA S L K AVVEAAFTELGGKGQVASVVGRYYAMDRDQRWD
$P R S A Q A S S L E K A Q Q K F S K L G E G Q I A S V V G R Y Y A M D R D R R W D$



P Q S G K G F I E E I Q K H C A K T N A R L A S V I G R Y Y A M D R D K R WE
P Q S S I G Y I K TL E NEMKE IGGVGK IA TV SGRYYSMDRDTN WD
PRSALATG EKFDAKFA EVGAGKTATMIGGYFAMDRDNRWD

PRSAKASLERFDALFAKLGKGRTASLVGRYYAMDRDNNWD

P T S S L I H V H K DQ A Y DD H G G G K IV T S S G R YY A M D R D R R WD
PRSALGSLEKLDTKFKELSCGRTATMIGRYFAMDRDNRWD
P A S GAGYMAELVDHLERACEDS IAS SVEGRYYAMDRDNRWE
P K G GVA Y VN DL E Q HL QR GAS GKI A S IVGRYYAMDRDNRWE

P NS GLDNFI K DLLE H HL E HSTGKIA S L VGRYYAMDRAARWE
P R S A K A S L ERF DALFA K LIGKGRTASIVGRYYAMDRNNNWD

RLLQRAYDAMACGTGPVVEDAAQAVVASYDAGVTDEFMEPV $R V E \square A Y N A \ V L G K G K N A N S A Q E A V D N S Y K D G K T D E F \| \square P T$ RVQQAFDLMVDGKAFTAQSATAGLEAAYERDENDEFVKAT RI ESAYNLMVLGEDYQAVDAVSALHAAYERDENDEFVKAT RIE 1 LA Y DALFSGAGETAASSDEAI KASYAAGVTDEFVKPT RTGLAYAAMVAGQGETATSAREAVEQAYARDISDEFVLPT

 RI KLA Y DVMVTGEGPVYASAEEGVQASYDAGVTDEFVVP RVEQAWQLLVDGKIYQANSASAALAQSYTREESDEFVKAT RVEKVYDVLVNGKGEVGTDPVEVLKKSYENDLTDEFVLPT $R V Q V A Y D L F T L G K D Y H F A D A V A A L E S A Y A R G E T D E F V K P T$ KI EKAYKAVVKGEGVNDTDTIKYLEESYKNGDYDEYI EPA RVQQAYDAMTVGTPYFAQSPQQALAEAYARDENDEFVQAT

 RVQKA YDVMTQDENVDGRSVLEVIEASYEAGDTDEFIVPT RVQDA WGAVVDGQQFTAADPLAAVTEAYGRGETDEFIKPT RVEQAYQLLTEGKGHQADHAVDALHAAYQRDENDEFVAPT RI EAAYDLLTEGKAYEAPDALNALQLAYERGETDEFVKAT
 RVELAYQALT GSAPAYATAVDAVQAAYEQQUYDEFVKPC RVQVAYDAMT LGQPQRFDSAQAALAAAYERGENDEFVQAT RVQAAYDLISQGKEFQYDSAVEALEASYERGDKDEFVKPT RLESAYDALT DSEGVHASGAAEAI R LSSYGKNESDEFVRPT RVQLAYDAMTKGAPCYETSAQDAL GNAYERGENDEFVQAT RVQKA Y DLYTIDDGEGDGRTPVQVLKDSYSQDITDEFIEPT
 $R V K L A Y D C L V K G E G P V A T S A L A A G E Q S Y A A E V T D E F I K P T$ RIKLAYDLLVHGKGEKFNSAEEAFQATYKSDVTDEFI KPV
 RVEKAYKALVEGKGNIVSDPLSGIKASYDAGETDEFFEPS REEKAYAAFVYGEGNHAANAQEAIEASYADDKTDEFVLPC
 RVSAAYHLITLGEDYVSTTAAEALAAAYERGETDEFVKPT RIESAYNAMTLGDTFTAEDPDSALEQAYERGENDEFVKAT RVK KA YDLLVKGEGEKASDPVAAVQKSYDEGVTDEFIKPD RVKSAYDLLTQGAEFSAGSAQAGLEAAYARGETDEFVKAT RVEQAYDLLTAAQEFTAESAVAGLEAAYARNENDEFVKAT RVQAAYELIVDGKEFTADSSVAALEAAYARGESDEFVKAT RVKQAYDIMTTDGEGNGDSAADVMLSSYSEGDKDEFVLPC RVEKAYNCITNCEGNKTNDPIQYLQKSYDRNDTDEFI EPC
 RI EATYKAMVKGDGKNAESAKEAI KTSYENQEFDENIKPT RIKDAYDLMVNGTGKGTSDLLSAI QESYDNDVTDEFIKPD
 RVETAYDAI ALGQECHAATAEQAILAAYDRDQNDEFVPAT RTEAAYRVMTSNEH 1 RVETAYRLLTEGVGVRTCTAVEALQLSYAEDVADEFVKAS RVKLA YDAMVHGEGKQTES ISDAIQQSYDEDVTDEFIKP RVELAYNALVYGTGELSNSAVEAIEKSYKDNTTDEFVLPT
 R\NQAYKAMVNG【GPDYTSASQAISENYRQGRTDEF\|IPS RVEKAYK KFTAA AGVMEQDPVCAVQNAYDSDKTDEFVVPPD
 RVEDAYDLLTDAKEFHADNADDGGLQAAYARGENDEFVKBT RVEKAYNAMVAGDEYYASSALEALEMAYTRGENDEFVIPT RIQKAYEVMTQDGYGTGCSASDLLQKSYAEGDTDEFVLPV RTKKAYDLYTLGEGTRESDPVTAJVKNAYLRGETDEFVTP
 RVEAAYNLMVNGEGHQYNSALDALAAAYERNENDEFVGAS RTK $R V R L A W D A I V E A Q G D A P D$ ALLAALQAAYARDENDEFVKPT RI QKAYDVYTQDRPGDGRSATEVIKDFYKNSITDEFI EPT RI QLAYDAMVAGDGSKYESAHEAIEDAYNKELFDDRI PP
 RVEEAYKLFTQAEQYTADTAVAGLDAAYARDENDEFVKAT RVQEAYELLTEGKYDNYATATDALNAAYARDENDEFVKAS RVEQAYQLI VDAKEFKANTALDGLQAAYARDENDEFVKPT RVERAYDLLTLAQGEHATSAVEGLEAAYAREENDEFVAPT $R V E Q A Y D L I S Q G S Q Y Q Y T N A V E A L A A A Y D R N E N D E F V K A S$ RVQKAYDVMVKDDQGA DTSAI AVLEHAHSEQDTDEFIPP T RVERAYDAVVCAEPFRDLAAVAAMEASYGSEVTDEFVEP RVKVAYDLLVNGKGTPSQNLI QSMQDSYKEGVTDEFLKPU R IEKAYNAIVRGKGRDADSPEKAVKYAYEAGESDEFITPT RTREAYEALTLGRAEAVRDPVQAI QASYSRGVTDEFVKPM



| UniRef90_F4XCZ7 |  |
| :---: | :---: |
| UniRef90-W6NGW7 | FDGFKREN L DIVEFVTMTEYDDT\KNDVAFK |
| UniRef90-Q21NH1 | F DGFAR ARVPALSSFVMTTEYSADIDTSCAYPP |
| UniRef90_UPI00034693A7 | F NGFS K K K APQLS GFVMLTE Y A A DIK A P VAFPP |
| UniRef90_U2RJE3 | FKGFSR KVHPKVNFVCMAQYDATEDVPVAYPP |
| UniRef90-E1IBU3 | $\square$ D T WQRGP QLQ NLFFV T M T Q Y E E GLPVHIA F N P |
| UniRef90-B7S0T9 | FDGFQRQAR PNTSAFVTSTEYAADIDAA |
| UniRef90_G7UW63 | FEGFQ V V R R PRLARFVCMTEYDARLP |
| UniRef90_UPI00047CAF98 | FQGFVREKGQ LNLHYVSMTLYDGSIEVKV |
| UniRef90_G8TMR4 | MPDFGMKK L S L NYTTMTEYDKT FKNNV |
| UniRef90-UPI000472565E | FDGF SSKKY SDLK F VTFTDYSAEVASEVV |
| UniRef90_UPI0003B79BC4 | F A GFKR QRLP QLS QFVMLT QYA A DLPAPSAFAP |
| UniRef90_C4L5H5 | FKGFELLSSKHPENILLV S M T K F S DEVDTDIVFP P |
| UniRef90-K2DWK6 |  |
| UniRef90-K2DZK8 | FAKFPREE LAANINFVTMTQYEE GLPAKVAFPP |
| UniRef90-W9V0F1 | F D GFVRSS A P A L S D Y VMLLT E Y A A S I D A S CAFPP |
| UniRef90_V5B975 | FKGFDRG HPPHKGVYATLTEYHEDFDYPVAFP |
| UniRef90_UPI000347B4A6 | FPEQGMQK LL L HYVTLTNYDETFNVG |
| UniRef90_Q67SW0 | F DGFKRPEGYRP VELVTMTQYDQTFDIPVAFGP |
| UniRef90_K8GJF3 | F Q GFERELIDP L L S A T F T Q Y D P N L AVAVAFAP |
| UniRef90_D6Z192 | FDGFPR PRRPRLSGFATMTRYEKDFDLP |
| UniRef90_E1SR19 | F DGFARAAT P K L N V M L T Q Y A D $\square$ D APCAFP P |
| UniRef90_K1ZGE8 | FKGFKRGAWAP V NFITTLTEYDMTESCPIVFPP |
| UniRef90-D5BHS0 | FPEYDMKK MPLYYVTLTTKYDDSFKNNVIFK |
| UniRef90_UPI0003653614 | F $\square$ GFKRQL $\quad \square \mathrm{G}$ L L N FVCMTE Y D K T I C A PVA |
| UniRef90-UPI0003680825 | F DGFERSA HPALAEYVMMTEYAASI DCACAYPP |
| UniRef90-K6X642 | F NGFEREY CPENLNFVMLT QYADSIDAPSAYPP |
| UniRef90-X8INJ1 | F D GFD R K K LP Q NLT Y V CMTE Y DVSMPNKVA F P P |
| UniRef90_UPI00035D0539 | F D GFTRS TVPQLS D FVMLT EYA S NIEASCA Y P P |
| UniRef90_K9YZG3 | F DGFEREL I L NLLHFAT FTQYDPNLPVKVAFEP |
| UniRef90-H3NMX8 | F D GF $\square$ REK Q V H THFVTTMT TYDKTINVS |
| UniRef90_Q1C282 | F DGFKRD KVVNFGDFIMLTEYA A D I K V A CA Y P P |
| UniRef90-UPI00040E85D5 | HADFGMRK L L L H T TMTLYDHKFNVNV |
| UniRef90_UPI00035C998E | FDEFDVEK L DLHYTTETSYDKTFEAHV |
| UniRef90-Q11NP9 | FHEQNMFK L D L Y Y VTMTNYDDTFNN |
| UniRef90_K2FE10 | $\square P \mathrm{GF}$ D K F K K EP L EVVE F A T LTT E Y E K N |
| UniRef90-M1WLB7 | FEEFERGA VP SLLAEFATMTQYESSFPLPVAFAP |
| UniRef90_D4K344 | F T GFERRGGR K QVVYVCMAEY DATMPNEVAYPP |
| UniRef90_C6BY17 | FSEFDR PKAPEFSGFVTMTQYES DFAFPNAFPP |
| UniRef90_R7ZZ05 |  |
| UniRef90-E1VHM1 | FS GFERKARR KLA DFVMLTEYAADIPAHCAYPP |
| UniRef90-M7DC31 | FDGFERR RHPELAEFVMMLEYAADIKTACAYPP |
| UniRef90-UPI0002EB8279 | MPEFGMK RLPLLYYCCMTPYDAKFEL |
| UniRef90_Q3SGA3 | FSEFER ERTPRLA T Y C T LT GY S D F DVV V A P P P |
| UniRef90_D0Z1F1 | FESFARKQF PQLADFVMLTQYAADIELSTAFPP |
| UniRef90_A6VDP9 | FGEFPR QRAA QLA GFVMLTQYAASIPAPCAFPP |
| UniRef90_UPI00040A6DFE | FKDFERSY $\square$ Q P L S F T L T Q Y D NF |
| UniRef90-B0S1G8 | FDGFAR KKFKDIS FVVTMTEYDKTDK N |
| UniRef90_A7MID1 | FEGFSR K K VVKK A D F V M LT E Y A A DI R T A CA Y P P |
| UniRef90-X0VHP4 | FKEFNRATK P P D S FVVCMTE Y DVTIIPAPVAFP |
| UniRef90-K1ZIU6 | FNKFSRD KRLDDL Y F V TMAEYEENLPVMAAF |
| UniRef90-UPI00029B4A06 | MPEYEMKT\ P L HYCTLTPYDTTFKGHLL |
| UniRef90_K9W9W1 | F Q GFEREQ Q P LAFA T F T Q Y P P F PVLVAFEP |
| UniRef90_S7T4Z9 | FEGFARAT R P LLLSAFASMTRYEASFPLAVAFGP |
| UniRef90_A3YAQ1 |  |
| UniRef90-P59177 | FS GFERALIT P L L F V TF T Q Y D A S F N C GVA F P P |
| UniRef90_UPI0003B3813D | F K GF T R AVR P V L A D FVMLT E Y S A A $\square$ P A SVA Y S P |
| UniRef90_E4TV30 | FHEQNM HPL DLHYI T M T K Y D D F K VKVLFE |
| UniRef90_Q898R1 | F DGFERK RLLKL NFITTMTQYDKTIENVI AYK P |
| UniRef90_A0A021W2M8 | FDGY A ARRPKLSRFVCLLTEYDARLPAPVAFGP |
| UniRef90-T0MP96 | FNEF PKENVKVHLVVSLCWYHDNLEAEIA |
| UniRef90-K1ZMH5 | $\square$ S E F N R G D K IP Y L Y F V S |
| UniRef90-K0NIN0 | FNEFARGKKI DLAGFVCMTQYDETFNLPVAFAP |
| UniRef90-H8KRH2 | FPEQDMKK LDDLFYVTMTTYDETFKVKVI |
| UniRef90-C3W9T8 | FTGFERE Y L GVKYYCMRQY S T I D A PVVYE |
| UniRef90_A9KF70 | F T A F NRQVR P P KLS AFVTLLT A Y A K DI H A AVVAFP P |
| UniRef90_C5BC37 | FDGFARRKTVRLGGS FIMLTE Y A A DI K T E CAYPP |
| UniRef90_UPI000367E815 |  |
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| UniRef90_A8ZRY6 |  |
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| UniRef90-F3L2D7 | F NGFER QRPLKLA NFTSATEYAKSLPTELA |
| UniRef90_Q47VY2 | F NGFER K R IP A I SNFVMLT QYA A DID APSAFAP |
| UniRef90_B9KYT9 | FTAFPRCRWPRDLLMVTMAEYEPHFPVLVAFAP |
| UniRef90_UPI00047942F6 |  |
| UniRef90-B7K189 |  |
| UniRef90_K1ZJG2 | F SKFDRKG A L K N L Y F V T M T D Y GLLFFPL HVAFT P |
| UniRef90-13C5K3 | FHEQNM HKLLDVYFVTMTNYDETFKNHVVY |
| UniRef90_E3H865 | FTGFERD Y I GVEFTCMRQY D T I E A AVVY |
| UniRef90_A6FG09 | FTGFERAVTT P KLA D F VMLLTEYA A S I D T S I A F P |
| UniRef90_UPI000412B | FTGFARAQE PKCNFIMMLTQYAADIDAVSAFPP |
| UniRef90_UPI000463C43B | FDGFKR ERVIN F A E FVMLTTEYADNI K A SVA Y P P |
| UniRef90_UPI000470AB65 | FDGFAR KKYAEDS DFVMLTEYAADI D T TVAFPP |
| UniRef90_UPI00046FF39F |  |
| UniRef90-K9SR56 | FSGFERNLITP LTHFATFTQYDPTLP VDVA |
| UniRef90-I2JHZ5 | F D GFERKVR PALLAEFVMTTEYA D S I P A AVAYPP |
| UniRef90-S6CEQ0 | F A GFER K K WPSVHFVCLTEY D P DiP A AVAFP |
| UniRef90_UPI0003B79A42 | FHAFQM HR L NLHYLTMTNYDAT F |
| UniRef90-F8E4H2 | FNQFKTEPVNPYYMTMTSYDKAFDVPVAFPP |
| UniRef90-D6SS42 | FQEFTRSK A P DLSVATMTEY K S F GL PV |
| UniRef90-A6EKS1 | YPDFDM HHMPLYYVTMTTYDENFKNKVI F |
|  |  |

UniRef90_F3BDX0
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D F TR|IT KA|INDGEFDSTPA|LVEN|IDKAVSAGKA|V|H|I|MG|L


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| 03 B 7 | 03B726D6 UniRef90-UPIO003 UniRef90-KOYXP2 UniRef90_K9TJL8 UniRef90-A6LFB1 UniRef90_UPIO003119B81 UniRef90_U2FME3 UniRef90 B4WKS9 UniRef90_R7AGQ0

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$\stackrel{\rightharpoonup}{V}$ UniRef90-UPIo003B726D6 UniRet90-KOYXP2 UniRef90-K9TJL8 UniRef90-A6LFB1 UniRef90-UPIOOO3119B81 UniRef90-U2FME3 UniRef90-B4WKS9 UniRef90-R7AGQ0
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 VSDGGVHSSLDHLKKLCDISKEYGITKTFVHCFMDGRDTD VSDGGVHSHDDHLKGLVKIRADRGLTNVFVHAFTDGRDCD

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L LSDGGVHSNNAHLYALLEMAKRDGVKKVRVHCFMDGRDVP LSPGGVHSHEEHLFAMLRLAHVQGVAHIVMHAFLDGRDTP VSDGGVHSHINHLKGLEKATKDFGIDNVYLHAFTDGRDCD TSNGGVHSSLEHLYALCDDAKEYGLTKVYLHCFMDGRDTD VSPGGVHSSEKHLYGLLEMARRYQLSRVYIHAFDDGRDVL LSDGGVHSHDDHLKGLLTAANEFGVKEKYVHAFTDGRDVD LSPGGVHSHEAHMTAMLELAVRAGLKKDFDHAFDDGRDTP LSDGGVHSHQNHDFAALELAKQKNCNQVYFHVFTDGRDTP LSDGGVHSHEQHIHAMVELAAARQGAKQVYVHAFLDGRDTP VSNGGVHSHDDHLKGLADATQDAGLDKVFIHAFTDGRDVD MSPGGVHSHESQIMSMFELLAKQGVKNAYFHAFTDGRDVP TSDGGVHSSSDHLYKLCDUAKEYA\|ENTFIHCFMDGRDTD LSTGGVHSHMSHLLGLLDAANEFGVQQSFIHGFTDGRDVD CSDGGVHSHITHLLGLLDFTKSQQVLDVCIHADMDGRDTQ VSDGGVHSHITHLYALLETAKEVGLKEVYIHFFGDGRDTA LSDGGVHSHETHIHAMVEMAVQRGAEKVYVHAFLDGRDTP LSDGGVHSHQEHLYALLRDAREHELERVFVHAFMDGRDTL VSDGGVHSHIEHLKGLLSMAAEKEVPEVYVHAFTDGRDTD VSDGGVHSDQKHLHALIELAADRGVEAVSHAFTDGRDTS VSHGGVHSKQEHLYSLLRAAKAAGVPEVY胃HFFGDGRDTD ISDGGVHSHTNHVFGLVNAANDYGLEDVFVHAFTDGRDVD LSDGGVHSHDNHIKAVLSLAVKRGA KTYLHVFTDGRDTA LSDGGVHSHEQHLYGLVDAASAAGVSDDCIHAFTDGRDVD LSDGGVHSHMRHLIALLEMAKVIDV DVCVMVVFDDGRDTS CSEGGVHSHI SHLFGLLELAKEQGISQVCLHALTDGRDTS VSNGGVHSHINHIKGLLDAANAYGLTDVFLHAFIDGRDVD LSDGAVHSHQDHLFALLABAKQHGLSRVAIHCFDDGRDTP VSDGGVHAHVDHLKGLLSIAHAHDLTNVYVHAFTDGRDTD LSPGGVHSHESHIIEAMCHLAVERGAKQVYLHAFLDGRDTP LSDGGVHSHIKHLKGLCDVAGRYQLPHVYIHAFLDGRDTD LSDGGVHSHIDHLFGLTDAANNAGVQQSYVHAFTDGRDVD VSDGGVHSHTRHLHALIRLCGQHGVKKPMVHMITDGRDTA LSDGGVHSHSSHLKALLTLAKQQGVPALYVHVFLDGRDQP LSNGGVHSSNEHIYALLRLAKEQGLEKVYVHAFLDGRDVA LSPGGVHSHEDHI LAMAELAAQRGAKRIYVHGFLDGRDTA VSDGGVHSHTSHLRGMIDVAAGEGVQNMYVHAFTDGRDVD LSPGGVHSHEDHL LAMAKLAKEKGAKQVFVHAFLDGRDTP VSPGGVHSSEKHLYGLLEMAASYGLKEVYIHAFLDGRDVL VSNGGVHSHDDHLKGLIEVSENYGVKNAFIHAFTDGRDVD

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PRSAKAS\|ERDEALIFSK\|LKCGRLASLIIGRYYAMDRDNRWN $P$ QSAMEYMTRFE E GLQQKLGA GRVATVVGRYFTMDRDKRWE P R S A E S S I K G L Q A K L D E L G T G S I A T L T G G Y Y Y A M D R D N R WE P D A S L E DVVK ELLE D Y L K KV GVGGKI A DV S GRYYAMDRD KRWE PRSAEKSI KKADKLL QDLLNLGYI ASVCGRYYAMDRDNRWD PRSAKASSLEKDTAAKFAELGTGQIAASLIGRYYAMDRDNRWE
 PTDA I NYVRA I QEHDDKI GLGKI VTV CGRYYAMDRDRRWD PMEAKEVLK TLLE EHLLKDIGLLGKVVTVVGRYYAMDRDRRWD P K S GK GFi A DVVQSYCERT NA KLA SVVVGRYYAMDRD QR WE PRTALLA YVEETELQMST $\quad$ GG $\square G K F A T I$ SGRYYALDRDRRWE PTGGADYLRE LQ GVDDEEGTGDVATVTGRYHAMDRDQNWE

PRSAEASLLAAQACFEELGVGRIATMITGRYYAMDRDQRWE

PTN G V K Y V D QL $P$ Q S A L Q Y I E E L E TFM K E L G G G R I A S V T G R Y F A L D R D N R WE
 $P$ T D G V K V I G L L Q D Y L D R IGGIGRI ATM S GRYYAMDRD HR WD $P$ D S G A D F V Q EL Q D K I D E I GGV GTMIA S V S GRYY A M D R D K R M D P F T GK GFI E QAEAKMAEI GI GQI AS V A GRYWAMDRDNRWD PRSGKKYLAELLE EKDPKNVDCKI GVVSGRYYAMDRDNRWE PR D G L L AV Q KI E D A I A E G GVGRIV VTI G GRYY A LD R D R R WD

 PHS GLGGFI QELLKEHMS HSAGRIIASVVGRYYAMDRDNRWE P T S GA GY L E A L Q QKMREY QVGK I A S V SGRYYAMDRDRRWE P K S G L G F L T E L Q Q T LD Q T T GR I A S V T GRYYAMDRD KR WE $P G S A M S S L E F L A N L I N R T G L G Q V A T V A G R Y Y A M D R D R R W D$

 $P$ TS GK GYVA QMKA TCD QYG A QI AT I S GRYYAMDRDTNWD
 PRDGAEALGKI EAATQE $\square G V G R I V T L S G R Y Y A M D R D N R W N$ P K S G K G F I E E L E N H L K T T G G K I A S I I G R Y Y A M D R D K R W E

 P C S G S G Y I E E L E EKI A A IA DVVRI GVV S GRYYAMDR DN R WD



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PKSAEAAI EKLEEESFKKSGTGQLATIIGRFYAMDRDNRWN
P K S GVGFI
$P R S A Q S S$
$P$
$P$
 $P K S G L G Y V T Q L E D Y D K D T P$ A KI GS I TGGRYYAMDRDKRWE
 P R S A A G Y L K DLLLA FIDEKEKVGEVVATIVGGYYAMDRDKRWE PKSAQSAA DALEKTEEKCGKGRALATLVGRFYAMDRDQRWN P T S GAE YVVAKLE QKMREYGVGKIASI SGRYYAMDRDKRWE P GTAD A F L K EVVEAHTK QEGTGVIVSVVGRYYAMDRDKRWE
 P K S G L G Y L K ELLLATAKE TGAGEI ATIVVGRYYAMDRDKRWE PK S GY GF I S ELLEDHLDNKT T GK LAATV TGRYYAMDRDKRWE
 $P$ TS GLLGFVVKQLLEAI DRIGAGRIAASISGRYYAMDRDKRWD


 $P$ K G G $\square$ G Y I S E V Q D HMAA T T G Q I A S V V G R Y Y A M DR D N R WE PRSAKSSLAHFDDLFTRLGTGRIASLI GRYYAMDRDNRWD
 P Q S A E P F L S T I E A Q I E KA G $\square$ G R R I A T PKASPNYLPELEAVLKEVGGSIATVGGRYYAMDRDKRWD

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UniRef90-K9RZC3 UniRef90_K9RZC3
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UniRef90-R7HPX9
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130
140
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 $R$ VEPA Y L L L T Q G E GVVHA D S A V E G L Q A A Y A R D E N D E F V A P T

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


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



 $R V V A R A W G A V V C G V P R S D E N V L D S D E A S Y E N G V T$


 RVE QA WRADWWLGENATERNALAEVLME DSYE QGIN RVEQAWRAI WLGENATERNAREVMEDSYAAEVTDEFVVPV


 $R$ VEKAYRAIADGKGEVARDYNACLQQS
 $R V Q \square A Y D M L T Q G Q Q F S A P S P B A A A L D A A Y A R G E N D E F F V Q A T$
 RTEKAYRLLTDDRQPRGLSSTEAIAASSYAADVEDEFLEPM $R$ R
 $R V K E S Y$ DLLL V H GK G V E A T S MVD A V Q A S

| $R$ | $V$ | $K$ | $V$ | $A$ | $Y$ | $D$ | $Q$ | $L$ | $V$ | $N$ | $G$ | $V$ | $G$ | $E$ | $P$ | $A$ | $T$ | $D$ | $M$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $A$ | $A$ | $M$ | $Q$ | $K$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $R$ | $K$ | $A$ | $Y$ | $D$ | $G$ | $M V$ | $N$ | $G$ | $I$ | $G$ | $E$ | $H$ | $T$ | $T$ | $D$ | $V$ | $S$ | $A$ | $A$ | $I$ |
| $S$ | $K$ | $N$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $R V Q L A Y D V M T Q E G A G K G K T A V E V L Q S L$ RI KIA V V GLVK GE GENAEDPVKAI E E HY K G GVT $R \bigvee E E A Y K L I A E G Q G Y H F A T G S E G L A A A$ RERKAFDAMVNGEGGAYADPVARIIMAASYNNGVTT RTQKAYDVFTGRDKTNFKTYEEAI DY LS GKGTT

 RTE A Y A R V $K$

 $R V K R A Y E V M T Q D G P G D G R S A R E V L L A S$ $R \vee K L A Y D L V V K G E G E T T T N V L E S I D A A Y Y G Q I T$
 $R \bigvee K \bigvee A Y D A M V H G \square G T K A S G V T Q A B L Q E S$ $R \vee T V A Y D L I T R G E L H Q Y T N A V D A L L A A$ RVVRKA Y DLMVNGEGTKTHNDLK SVVS S
 $R V$ R
 REQLA YEAIAHAKKTTAPSAI KGLLAS RVEKAYRLVTQGEGEHAGTAVAGLAAAYER
 $R V \operatorname{SA} A W R L L T Q A E G Q H A G N A S E A L A A A Y A R D E S$ RVEKAYRAVADGDGETAKDWQECLDNS



-


UniRef90 F3BDX0 UniRef90＿A0LDF3 UniRef90＿R4YN66
UniRef90 D1VSN7 UniRef90＿Q0BKX8 UniRef90＿F3LGN3 UniRef90－I3Z3I1 UniRef90＿J3NVQ5 UniRef90＿K9YHI4
UniRef90＿K9RZC3 UniRef90＿K9RZC3
UniRef90 W2UPI1 UniRef90－UPI0002FB74F9 UniRef90＿C7NQ18

## UniRef90＿C8WI00

UniRef90－A4A8S6
UniRef90＿UPI00045EC630
UniRef90－A0YA26
UniRef90＿Q1ISS4
UniRef90＿Q31E77
UniRef90＿K2ETR0
UniRef90＿K9YEK8
UniRef90＿K9PM87
UniRef90＿E7GE31
UniRef90
D5EQT7
UniRef90＿R7BQY5 UniRef90＿K9UNN1 UniRef90＿D6TN31 UniRef90＿UPI00025586C2 UniRef90＿L8M7E9 UniRef90＿R5UWG3 UniRef90－C1F9E8 UniRef90＿UPI0004170FA6 UniRef90 F8I551 UniRef90＿K0P2H9 UniRef90＿K2BWIO UniRef90＿U7V9X8 UniRef90＿UPI0003B726D6 UniRef90－K0YXP2
UniRef90＿K9TJL8
UniRef90 A6LFB
UniRef90＿UPI0003119B81 UniRef90＿U2FME3 UniRef90＿B4WKS9 UniRef90＿R7AGQ0
UniRef90－TOZ3U5
UniRef90＿L8NOT0
UniRef90－14A231
UniRef90＿R7HPX9
UniRef90＿K2FUP4
UniRef90＿F9MQF8
UniRef90＿H2BX17
UniRef90＿D5CNE8
UniRef90＿UPI000362FA50 UniRef90＿B5IMJ0 UniRef90－F5SZ32 UniRef90＿UPI000409053E UniRef90＿UPI0002556523 UniRef90＿F3ZQB8
UniRef90＿UPI0002D50CC6 UniRef90＿T2KJQ0 UniRef90－D4TV52 UniRef90＿－UPI0004411352 UniRef90＿C0N589
UniRef90＿UPI00047EE11E UniRef90＿M1E902
UniRef90＿UPI0004003669 UniRef90＿MOIJS2
UniRef90＿U7Q486 UniRef90－A0A024FI85 UniRef90－W0DQ75 UniRef90＿H1GSS4 UniRef90＿UPI00037A3928 UniRef90－I3YSN4 UniRef90＿UPI00035FECB5 UniRef90＿UPI00046ED618 UniRef90＿K1ZRK1
UniRef90＿UPI00036641CD UniRef90＿D4ZFB3 UniRef90＿H1Y7N0 UniRef90＿UPI00047BA2E4 UniRef90＿UPI0002001A40 UniRef90－W8KE66 UniRef90－T2GGH0 UniRef90＿M2Q0A4 UniRef90＿K9D3B2 UniRef90＿S2KZ27 UniRef90＿A3J4F7 UniRef90＿F7S0C4 UniRef90＿E2ZEC0 UniRef90＿UPI000375FFC6 UniRef90＿UPI00037A1AF6

T｜ITPTGATP
180
190
$R E$
200 T R A F VE P E $V M V E Q G Q P \| G M I N D G D T L I C M N F R A D R V R E I S H V F T D T T$ $V \mathrm{G} E \mathrm{G}$ G K V E D G D S I I F M N F FR
F
$F$ R P $R$
$R$
$R$
$R A$ $A R E$
$A R Q$ $\begin{array}{llllllll}1 & S & H & F & T & D & T \\ L & R & A & F & V & E & P & A \\ I & R & A & L & V & D & E & N\end{array}$ $\begin{array}{llll}C & K & K & \text { G H L V } \\ \text { S } & R P R & G Q D D A\end{array}$ KVQDNDSVI SIARPE GQDAAVI ND GDAVI FMNFRPDRARELLTAALIDQ D
 V VGGDE
R L A K GS I E
$\frac{\mathrm{R}}{\mathrm{V}} \mathrm{I}$ $R$
V
V VA K K DGDGVIF F N F R P R VI SENEQ

$P$ PA | $L$ | $I$ |
| :--- | :--- |
| $A$ | $E G$ |
|  | $L$ |

K F V K

## R G TA

IHVGA

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

$\qquad$

## HVGA DN

A GDG $A R V K$
$G T$
$G$
$G$

R
G A G GV
R L
$A A G G V E A G D G V$ GYNPAVDGGVS DND S I I FAANFRPD AVA D S E GKPVAS A A N GD SVI FFNFRG

## VCFSYEG

V K E G D A FV F F N F R P | $R$ |  |
| :--- | :--- | :--- | :--- |
| V I | $M$ |

M EHGK DRARQLTAAFVSPK


GE P

| $A P$ | $G$ | $A$ | E |
| :--- | :--- | :--- | :--- |
| P | V | A | T |
| V | Q |  |  |

VHVT S D GRP
P GA S D G D A L F M N FR P
$V V T D E Q G Q P V A$

| $V$ | $V$ | $G$ | $S$ | $D$ | $G$ | $R$ | $P$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $C$ | $C$ | $P$ | $L$ | $D$ | $R$ | $S$ | $P$ |
| $T$ | $H$ | $P$ | $D$ | $D$ | $V$ | $K$ | $P$ |

TI H P D

V I T A E N VIT A E
S F G R

GEI KK G DVV I
GE KKGDVVINFNYR

| S |
| :--- |
| $\mathrm{R} \mid$ |
| F | GMQ | $V$ | $H$ | $V$ | $E$ | $N$ | $G$ | $K$ | $P$ | $V$ | $A$ | $V$ | $I$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $K$ | $T$ | $D$ | $A$ | $S$ | $G$ | $N$ | $P$ | $I$ | $A$ | $V$ | $I$ |
| $E$ | $N$ |  |  |  |  |  |  |  |  |  |  |  |

 R
S
L
L T GEAASA

A P VI GAA P G R I V CTDDSGNP $\quad$ DA $\vee N A K V D G$

V VLTK K GK P T A V I K A H VLTK E D G T P V | $A T$ |
| :--- |
| $A T$ | ATLKDDEVVI FFNFR

V G E S SI GEA R L Q E
$\rightarrow-\mathrm{P}$ VK $\mathcal{A}$ N Q D D L V I FMN F Y R A

T
V I
V T T D G

GTPV | $R$ | $R$ |
| :--- | :--- | :--- |
| K | R |
| N |  |

VGDGDAVV | $D A$ | $F$ |  |
| :--- | :--- | :--- |
| $D$ | $A$ | $F$ |
| $D$ | $F$ |  |

$\qquad$ $V \mathrm{NS}$ S $\square \mathrm{NG}$

GAPV GDVLVFMNFRA
 I NSDENGTPVGNI KEGDVVI FFNFRTDRGRELTEVLSQSD RI
VINGDAG A A A

SVVGDN SHE $\square$ RI K D G D T L FF F N Y R S DRMREIVV VF GLP D | A | R |
| :--- | :--- | :--- |

## L VAD A

V V G GEK

$\checkmark$ SID E Y $R R I K D K D V V F F$ TIL K K N G K K V K $\qquad$
A S GDGVICFNFRP

| $P D R$ |
| :--- |
| $P D$ |

$R A R Q$
QL PA
P
N
S
S
K
VD
V QALTMEN
 Q R A
荡
${ }^{\circ}$${ }^{\text {RA }}$斯 ．
 $R P R E L L$ $R A R$


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



 | $T$ | $V$ | $A$ | $L$ | $T$ | $Q$ | $K$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $T$ | $A$ |  | $S$ | $N$ | $P$ | $E$ |
|  |  | $A$ | $F$ | $V$ | $M$ | $R$ | $E$ |



## V

 V R ！ VVQENGVP P T T I K E D $\begin{array}{lll}A V & S & P \\ A & G S \\ A & D & D\end{array}$ Al T D D Q G N $V$ A A K L VKTNDQDEP，FMNFRADRARQ $\mathrm{R} L$

V I | V |
| :--- | :--- |
| V | $V$ IT GADGQAAG SNRNTDG

 VVA GYPG $T$
$M$
$M$ SV RPDGQPV TMEDGDAAIFMNFRARRARERTRAPADER
 WL K G A K P I A A D N D A V FF M N F R A D


|  |  |
| :---: | :---: |
|  |  |
| UniRef90 A0LDF3 |  |
| UniRef90 R4YN666 |  |
| UniRef90-D1VSN7 | FDGFPRKEK NIFLVTMTQYDDTIPTNIAY |
| UniRee90 ${ }^{\text {Q }}$ OBKX8 8 FDHFPRKKH LNINFTTLTEYDSKL |  |
|  |  |
| UniRef90-13Z311 FGDYNMKK LALNYI TFTSYDETFKVKVLFE |  |
|  |  |
| UniRef90 K9YH14 F DGFERELIKP LSFATFTQYDPNLPVKVAFEP |  |
| UniRet90-K9RZ |  |
| UniRet90-UP |  |
|  |  |
| UniRe990-C7 |  |
|  |  |
| iRef90-E4K |  |
|  |  |
| UniRef90_UPIo0045EC630 | EDFNMKK LDLDYITFTNYDDTFQGKVLF |
| $\begin{aligned} & \text { AOY } \\ & \text { Q1 } \end{aligned}$ |  |
| Q3 |  |
| UniRef90-K9YEK8 $\quad$ F DGFEREQDQPNLHFATFTQYDASLPVEVAFKP |  |
|  |  |
| UniRef90 E7GE31 |  |
|  |  |
| R7BQY5 FDKFERE HWVKPRFVCLTEYDPTI PAEIAFP |  |
|  |  |
|  |  |
| UP100025 |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
| K2 |  |
|  |  |
|  |  |
|  |  |
|  |  |
| UPI0003119B81 FPEQGMK PLNLDYTTMTTYDETFKVKVVF |  |
| iRef90_U2FME3 |  |
|  |  |
|  |  |
| Ref90-Toz335 F S GFTIDAR PKLAA |  |
|  |  |
|  |  |
| K2 |  |
| UniRet90-F9MQ |  |
|  |  |
|  |  |
|  |  |
|  |  |
| iRet90-UP10002556523 FSGFERKVR PQLKFIMLTEYATDDK AECAFPP |  |
|  |  |
| UniRef90-UP10002D50CC6 MPA |  |
|  |  |
| Ref90-D4TV52 FQGFPREQTTP LSFVTFTQYDPEFPVSVAFAP |  |
| UP1000441 |  |
| , |  |
|  |  |
| UniRef90 M1E902 UniRef90 |  |
|  |  |
| U7Q486 R |  |
|  |  |
| WODQ |  |
| Higss4 |  |
|  |  |
|  |  |
|  |  |
| FPEQGMQK LIPGYYITMTNYDSEFNVKVIF |  |
|  |  |
| UniRet90 |  |
| UniRef90-UP100047BA2E4 F HEQNM HKLDL Y Y V M TN Y DESEK |  |
| P1 | A GLPVSVAFPP |
| W8KE66 FEHFERGSFQP VTVTCLTLYDAQFDLPVAFPP |  |
|  |  |
|  |  |
| UniRef90-K9D3B2 |  |
| UniRef90_S2KZ27 |  |
|  |  |
|  |  |
| UniRef90-UPIOOO375FFC6 |  |
|  |  |

UniRef90_UPI000408CA38 UniRef90_Q310U2 UniRef90_UPIO0026254E8 UniRef90-Q1N4E6 UniRef90-A9E0X2 UniRef90_UPI00028926A3 UniRef90_UPI0003FD9558 UniRef90_UPI0002DB02A4 UniRef90 K9H5N1 UniRef90_UPIO003AACC8D UniRef90-B4CUA2 UniRef90_UPI0000E0EE70 UniRef90-AOLYF4 UniRef90-W0TKG4 UniRef90-C6X9H9 UniRef90-UPIO004754AC8 UniRef90-UPIOOO4076154 UniRef90-U1NZ19 UniRef90-I3BU56 UniRef90_UPIO003451296 UniRef90_UPI00026C80C8 UniRef90-B8DJS4 UniRef90-R7YTJ5 UniRef90-A4Y077 UniRef90-Q7NMK9 UniRef90_Q3JF23 UniRef90_Q5X7P2 UniRef90_G8X594 UniRef90-K1XR48 UniRef90_L2FHY6 UniRef90_G1UWH0 UniRef90-R6Y6T2 UniRef90-D8Q153
UniRef90-D1W5Z2 UniRef90-X5JEH8 UniRef90_G8R351 UniRef90_K9EWP8
UniRef90_G7Q439 UniRef90-R7GKG5 UniRef9O FORAR1
UniRef90 C6WU75 UniRef90-C6WU75
UniRef90_F8EKQ44 UniRef90-H3NWW9 UniRef90_UPIO0040EBF1A UniRef90_UPIO00367B5FD UniRef90-K1JX67 UniRef90-10K520 UniRef90-M3CZF8 UniRef90_UPIO002DF706E UniRef90_A0Z8E2 UniRef90-X8JLQ7
UniRef90_V5FGM6 UniRef90-K4IAI8 UniRef90-A7TAM1 UniRef90_IOWH74
UniRef90 U6P8T2 UniRef90-E8X0M3 UniRef90-K6ZM18 UniRef90-G1WFC5 UniRef90-R7LCV2 UniRef90_K9LGX1 UniRef90_R5BRT1
UniRef90 UPIO003 UniRef90-R5W5F5 UniRef90-K2CGQ9 UniRef90-C7P3D5 UniRef90_UPIO0036BF588 UniRef90_V2QBG5 UniRef90_Q5K9Y3
UniRef90-S6GRU6
UniRef90_R7IYZ2
UniRef90_K2D8L8 UniRef90_UPIO00373625B UniRef90-J3JFI5 UniRef90_UPIO0040A3145 UniRef90_A3XGA4 UniRef90_UPIO0047A94C1 UniRef90-R4WA35 UniRef90-B0CA77 UniRef90_A5WFD5 UniRef90_UPIO0036751C7 UniRef90_G6EXP2 UniRef90_B2UMU5
UniRef90_R6MCF9 UniRef90-I1YJQ5 UniRef90_UPIO0047EBA6B UniRef90-D4W747 UniRef90_C7MND6 UniRef90_UPIO0047B0F5F UniRef90_A2TYZ7
UniRef90_UPI0002557F53

Q D L L A K|I $|N L A| V|A N H T| L|N Q E K| V L|Q D A F Q Y A K A N N K A| V|H L L| G \mid L$







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 $y^{3}$











## 








 Q S路AVK
$\qquad$

K A L\begin{tabular}{l}
G T C <br>
R <br>
\hline


$\mathrm{M} G$ <br>
\hline F <br>
\hline
\end{tabular}SA AV

| T | T | C |
| :--- | :--- | :--- |

N

UniRef90_UPI000408CA38 UniRef90-Q310U2 UniRef90-UPIooo26254E8 UniRet90_Q1N4E6 UniRef90-A9E0X2 UniRef90-UPIOOO28926A3 UniRef90_UPIO003FD9558 UniRef90-UPI0002DB02A4 UniRef90-K9H5N1
UniRef90-UPIO003AACC8D UniRef90-B4CUA2 UniRet90-UPIOOOOEOEE70 UniRef90-AOLYF4 UniRef90-WOTKG4 UniRef90_C6X9H9 UniRef90-UPIIO004754AC8 UniRef90-UPIOOO4076154 UniRef90-U1NZ19 UniRef90-I3BU56 UniRef90_UPIO003451296 UniRef90_UPIOOO26C80C8 UniRef90-B8DJS4 UniRef90_R7YTJ5 UniRef90-A4YO77
UniRet90 Q7NMK9 UniRef90-Q3JF23 UniRef90-Q5X7P2 UniRef90-G8×594 UniRef90-K1XR48 UniRef90-L2FHY6 UniRef90_G1UWHO UniRef90-R6Y6T2 UniRef90-D8Q153
UniRef90_D1W5Z2 UniRef90-X5JEH8 UniRef90_G8R351 UniRef90-K9EWP8
UniRef90 G70439 UniRef90-G7Q439
UniRef90-R7GKG5 UniRef90-FORAR1
UniRef90-C6WU75 UniRef90-C6WU75
UniRef90 $\mathrm{F} 8 \mathrm{EKQ4}$ UniRef90-H3NWW9 UniRef90-UPIIOOO40EBF1A UniRef90-UPIo00367B5FD UniRef90_K1JX67 UniRef90-10K520 UniRef90-M3CZF8 UniRef90-UPIO002DF706E UniRef90_AOZ8E2 UniRef90- 8 UJLQ 6 UniRef90_K4IA18 UniRef90-A7TAM1 UniRef90_10WH74
UniRef90 U6P8T2 UniRef90-E8X0M3 UniRef90_K6ZM18 UniRef90-G1WFC5
UniRef90 UniRef90_K9LGX1 UniRef90-R5BRT1
UniRef90 UPIO00377B3AA UniRef90-R5W5F5 UniRef90 K2CGQ9 UniRef90-C7P3D5 UniRef90-UPIO0036BF588 UniRef90-V2QBG5 UniRef90-Q5K9Y3
UniRef90 S6GRU6
UniRef90-R7IYZ2
UniRef90_K2D8L8 UniRef90_UPIOOO373625B UniRef90-J3JFI5 UniRef90_UPIO0040A3145 UniRef90 A3XGA4 UniRef90-UPIO0047A94C1 UniRet90_R4WA35 UniRef90-BOCA77
UniRef9O-A5WFD5 UniRef90-UPIOOO36751C7 UniRef90-G6EXP2 UniRef90_B2UMU5
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LSDGGVHSHTSHLRG\|IIDATEDFGLEKVIF\|HAFTDGRDVD VSDGGVHSHVRHLYALVEAARDACVP VCIHAFMDGRDTA LSAGGVHSHEEHLFAALRLARSRGAERVYVHAFLDGRDTL VSDGGVHSHDNHLEGLVNLANNHQVENVFVHAFTDGRDVD LSDGGVHSHHNH1 HAMLEMAHQKGSEKVFLHVFTDGRDTP ASPGGVHSHDDHILAALELAAKRGAKKVFVHAFDDGRDTP MSPGGVHSHEDHIYAAVQMAAERGAKKVYVHGFLDGRDTP LSPGGVHSHQDHMVALAKACSEAGVP VRVHAFMDGRDTP LSDGGVHSHDEHLKALCSVAADYGLQHVYIHAFMDGRDTD VSDGGVHSHQDHL HALAKAAHDAGVDDVLVALTDGRDTS LSDGGVHSHDNHLKGLLSAAEKLGVKDKYVHAFTDGRDVD LSPGGVHSHEEHIHAMVQLAAQRGAKKDYVHAFLDGRDMP VSDGGVHSQLNHLLALVDIIEATGHDKTFIHAFTDGRDTS VSDGGVHSHTSHLRGLLDAAEDFGLEYVFVHAFTDGRDVD VSDGGVHSDDTHLEALIELVGDRGVDAV THAFTDGRDTA VSDGGVHSHMTHLAALLTACKEHGVKPV LHATTDGRDTA CSEGGVHSHLKHLDGLLNLAKLNDVKDVCIHAITDGRDTY FSPGGVHSHENHLFALLELCAQQKFTSVYLHLFLDGRDTP VSDGGVHSHVRHLRPLVEAAKARNVPKVLVHAFLDGRDTS LSDGGVHSHQDHIVAMAELAARRGAEKIYLHAFLDGRDTP VSDGGVHSHDEHLFGLLDLAKREGFETLFHGMSDGRDTP LSPSGIHCHEDHIHAMVELADKRRCQEVYLHAFLDGRDTA LSPGGVHSHEQHLFALLALCNQKKFRSVHLHLEFLDGRDTP VSDGGVHSHTDHLKGLLDAANDYGLKKVFVHAFTDGRDVD CSEGGVHSHLNHLLGLLNLAQKQGLADVCVHADTDGRDTN VSHGGVHSKQEHLYNLLKAAKQYGVPEVYIVFFGDGRDTD LSDGGVHSHINHIKALLKLCKKEDFSNVYFHIFTDGRDTF VSDGGVHSHINHLFALLETAKEVGVPHTYVHFFGDGRDTA CSDGGVHSHISHLFGLLDLAKSKGLTDTCIHAVADGRDTK LSDGGVHSHINHLKGLTTAAAEKGLKDVKIHVFTDGRDTD CSEGGVHSHLDHLLGLVDMAKAQDIQELCIVALTDGRDTQ LSSGGVHSSNEHIYALLKLAKDAGLTKVYVHAFLDDGRDVA LSNGGVHSHTSHLKGLITAAESYGVENSYI HAFTDGRDVD LSDGGVHSHQDHIHAMVKMAAVHGVSKVYIHAFLDGRDTP
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 $P Q G G K D Y L Q T L L A H L E G K N T \quad R L A T V D G R Y F A M D R D K R W E$ PK S GK GYI E S L EKY Y L Q H T K A K L A S V CGRYYAMDRDKRWE PHSGE GHLE ESVAEMAEEHGTGDIATVVGRYYAMDRDENWE PK $\square A K Q F I$ Q QVLKVMETTG GEI ATVVGRFYAMDRDNRWE T T E G I K AL NKI QD S I D K $\square$ GVGRIVVII SGRYYAMDRDRRWN

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P
P
 $P R S A A S S G K A A E V F A E L G G G Q A S V V G R Y F A M D R D N R W D$

P K S GKGF I K ALDDVCNENGAAKVASVVGRYYAMDRDNRWE P H S G L G F V K E L E E KMA Q T T GKVVATVVCGRFYAMDRD K R WA

 P T G G E E Y L A D L A A H A E E R G T G H V A T V A GRYYAMMDRD Q N WE PDSGKS FVVKRLDEHLADQPT ELATVTGRFYAMDRDTRWE P N S GLGGYI T DLDNFLKENNAGQI SDI TGRFYAMDRDKRWD

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$P$ ES AK GFVVEEALLKE LDP
PTS
PRSAHA A L
P T S GLGGY L A AMA GTFT E C GAGRI A TMMGRFYAMDRDQRWN

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$R|V| K|L A Y D L L V| N G K G K R T K D A A L A|I L E S Y K N K \| T D E F| V \mid E P M$ $R N E T A W N A L V H G Q G E F A D S A A Q A V E N A Y A A G Q T D E F I M P V$ $R V Q Q A Y D L L T L G K G T H Y A T G Q E A L A A A Y A R G E S D E F V A P S$ RVQRAYDMYTQGKEYQAASA $\square E G L E A S Y D R D E H D E F V K D T$ $R V Q L A Y N A L V H G K G T \square S T N A T A S I Q E S Y D A D \square T D E F I K P \square$ $R V S K A Y H L L S S G K E R Q A V S A L N A V K M A Y D N G E S D E F I X A T$ RVVEQA Y S L L T E A K D H TA E S A L D G L E N A Y A R D E N DE F V K A T


 $R V E S A Y T$ LMTKGQGHTADNAVAGLEAAYARDENDEFVGAT
 R I R K A Y D L I TLLGQEYTATSAEQGLEMAYERGETEEFVVAT

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








 $R I K \emptyset A V D G L T K G E G E V S T A A D D T V E A N Y K K C V T$ | $R$ | V | K |
| :--- | :--- | :--- |
| R | V | K |

$R \vee K D A Y D V M G B G$ $R \vee E K V Y R V M T S S G A G N S N S A T E A I Q A$ $R$ V A E A Y A A LTTE GK GE P F S
RI NLA Y EA A VDHKGNSF
DVQFVKDSYAEEVF
$R V E A A Y K L F T E G G E F T A E T A A A G L Q D A Y A R G E N$
$R V A K A Y N G M V H G \square G Q A A K D Y E A L I Q A S Y D A N \square T D E F I M E D$
RI AS ATKLLVDGEEFSFDSALESLDAAYARDENDEFVAPS $R V E K A Y N L V S Q G G E F Q A D N A Q A G L K A A Y E R G E N D E F V M A T$
 $R V V K D A Y D A M V N A V G D R A Q G V F Q A D R D S Y D A G T T$




 $R \ C V A Y E A M I G G E A C S V E E A P A L V V K$
 $R V Q Q A Y N L I V S A Q T E Y A Y T A S E A L A A$ $R V Q L A Y B A I$ TKASDAES D P VEGIK A FYEKDPRRGDEFFVDP
 $R V A Q A Y N L I V K G E G K Q A T D L V E A V Q Q S Y D E D V T$


 R IE K A Y DA MVK GE GSPSTDDLA SIDAN RVEKAWNLLKNGGESEAASPVEAMKT $R I \operatorname{K} \square A V D G L V K G E G E K T D Q L I D K T V E D G Y E$ RVEQAYNAMANAREYHSDSAVQALQDAYQRGEN $R V K E A Y D L L I Q G T G V Q A T D M V K A M Q D S Y D A D V T$
 $\begin{array}{lllllllllllll}R & V & L & A & W & D & A & V & D & A & Q & E & F \\ R & A & S & D & A & L & A & A & L & E & A & A & Y \\ R & A & R & G & E & T \\ R & K & A & Y & D & A & V & E & R & E & E & Y & E\end{array}$ A A S S A V

 RLLKMA Y D L L V N G T GT K T K D $\triangle$ EA S V L K S Y E E G VT RTKKAYDAIVAREEYEAESGLDDAVSQAYDRDET

 $R V Q K A Y D A L I$ SAKGPHSADALSVI T GAYKEKVT $R N K L A W D A D G G R E Q C S C S P A E Y V E Q C Y A K G E$ G $R$ VEKA Y N A MV I G TE VR
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## R

## V

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 I I G D A GTiND GDSVI FANFR $V$ MTDSNNEPIAKI QADDVVIFFNFRTMRGREI TRAFVEQE SVGGKS
 EV RAEGQASAA IVVDGAVI FMNYRADRAREITRTAVBAD IVGDYAGA KDGDGVL
 V I G D A

 AI T A PGSAPL RMEDGDMVVFMNFRSDRARQLTHALLLSPE

 MPNAE

RI QSNDTVLFFNFRNDRPRQTAKALADDN RI G A S GAVES G D S V I F FN FRRPDRARQQTYA FVND H LI GK GKP $V V A$ E GGAPVGRVADGDGVFFFNFRADRARQLTRAFIDPA IVGGKE RRI QDDDTVFFFNYRSDRVREVTQLLGD

 LI GKEH

SI Q D GDAVLFFNFRA



 VIIDE S G $1 V D G B E G$
$T N A A V Q G Q$
$\qquad$

 $\frac{R}{V}$ VIDKA

A S G GAVESGDGVI FFNFRP
R L
S S G




VIRQAN
GEPV EME DGDAVLIFMNFRA DRAR QLL T
 VLIE N A H G V A V G RI R P H DAVVFVNFRNDRAKELTTVLTTQEP




STTK IMTDKLGNPKA VAVDTNQNPGATISNDDVVLMFNFRTDRGRQLTEVLSQHD ILNGDN ARVKDGDTVIFFDYRADRMREISEVMGMER TVTGADGKPVGLIQDEDVVINFNYRADRVRQUTRVLARTS AITGYKG VEDGDAILFMNFRADRARAMSHAMVDAD FVCHNEG VADGDAVIFMNFRADRARAMSHAMVDAD WIV EDGKP $\square$ GRVKDGDAVIFFNFRGDRPREMTSAFDDDD VNANVDG KLGEGDAVIFFNFRNDRAKELTICLTQRD


1 QGTP
LVEGDARRARPALDDGDAVIFFNFRSDRARQLTRMLGDVR VMYKA GDPVAKI EDGDVVINFNFRTDRPRQITRALTQED KDTGVDGSEDSLKDGDNVFMMNFRADRVREVVSVMIQDN
C

## N

N NSTFDG PEGK
VIGAGAKAADGD $\qquad$
A

V
V
L

$V 1$
$V V D D Q S E P V I G G$

$V V V D E N G$ | $G$ | $L$ | $R$ | $S$ |
| :--- | :--- | :--- | :--- |
| $L$ | $I$ | $Q$ | $D$ |
| $P$ | $M$ |  |  |

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UniRef90 - $\times 5 \mathrm{DAC7}$ UniRef90-X5DAC7
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QDLAKDNMAVADNNLAKEKELKDAFAYAKQNNKKVHLLGL QDVVKIDHTISQGEFSKTEEIVNSFNRAKNGNGRLHLLGL QDLAKINLAVKENTLKDEKVLQDAFTYAKANDKPVHFLGL QDLAKINLAVANNTLCQEQVLDDAFQYAKDQKVSLHFLGL QEFTRVSRSVRTGSFYSNLTLTDAVDAAVAHGRRVHDLGL QDMTR| DVAMETGELASNAALCELLANVKRTGGRLHFAGL QNLVKLNMAVENGTLGQEKVIQDAFEYAKKENKKVHFLGL
 QDLAK NKAVRENTLKDEQVLVDAFAFAKANSRKVHFAGL QELTRINLAVKNNTLKDEKVLVDAFDYAKKNKKKVHFLGLL


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$V$ S N G GVVHSH NHLK GLLLTAAKEFGLNNVFVHAFTDGADCD
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$L$ S D G G V H S H D H H L E A L C G M A H K A G $V$ V
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L S P G G V H S H M D H L F A FI K LiA K N N N N I E K A A L M M F T D G R D V P

LS P G GVVHS H E H H L H A L D D L A H Q H Q V E K L Y V V H A F L D G R D T P
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$L$ S D G G V H A H I D H L K A L L D V A E S H E I I E D V F I HAAFT D G R D V D
$V$ S D G GVVHSHVRHLA ALI KLCKRQGA RPMVHVFTD GRDTP




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 PHSADHFIKQLIPYTQDSSIQLATI GGRYYAMDRDNRWE PHSGKGFiERLEEHMAKT TGSI ASIVGRYYAMDRDKRWE PASGKEYVEKLEAKMKELGVGEVASVMGRYYAMDRDNRWD PACAKEYIKQFEEESNRDGDGKIATISGRYYAMDRDKRWD PLSGKGFIDDLLKHCAQTHS RLASIVGRYYAMDRDQRWE
PKSGAGYLETLLGE円KATGIGGKIGTVVGRYYAMDRDKRWE PKSGKGYVDD PKSGEKYVSDLQQFLEPTGNKLATVVGRYYAMDRDKRWE
PKSGAGYLRELEEVIEKAGTGEVATVSGRYYAMDRDTNWE PTSGAGFLAQLGDMMARTRAAEQAALVGRFYAMDRDKRWE
 PKSAAGYMQONAKTKEVGGFASVGRYAMDRDRWE PHGGPGFLARIQAMDDEAGVGRIATLCGRYWAMDRDQRWE
 PKSADGYLADFEQKПAQLNDGKIVSLVGRYFAMDRDKRWD PKSSARYLQELLGRIKELDTVKVGTVVGRYYAMDRDKRWE PHSGVDFMRALQKSIEGQPKTRIASMVGRFFAMDRDKHWE PKSGAGYLADLEATIDEHGTGDVATVTGRYYAMDRDKNWE PKSGKGYITDINNFCADKK AKI ATVIGRYYAMDRDKRWE
PKSAAKYMEQLDAKTTE PHSGKDFIKELTTEHMQNT TGKLASVVGRYYAMDRDRRWE AKSATKYLNQIESCDKKYNTGEIASI CGRYWDMDRNLLWD ERSAKKYIKQIQKRG GKG ATVVGRYYAMDRDTNWK DCAGLGHVKNLQQLMASLNCGQLTTLCGRYWAMDRDHRWE PTEGVNCITKIERLIATAGVGQIVTI CGRYFAMDRDRRWD PTEGKTF QRLQDHLDRGEMGQIVTLSGRYYAMDRDRRWD QTSGLGYVTDLVNHGLDVGKVATVSGRYYAMDRDNNWE PNSGVGFLEOTLEFEKTTGYGKLATVVGRYYAMDRDNRWE PRSAETYLKRLDAALAECPNARLVSVTGRYWAMDRDKRWE
PKTAKRYMEELLAKIEELGVARI ATVVGRYYAMDRDKRWE
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PQCADGFARQVESALQKLGKGRIASVDGRYYAMDRAGHWE
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PKSACSYIKELEDTLRNTGVGRIATI SGRYYAMDRDMNWD
PSSARGYLTRFQDAVAGLNV SIATVSGRYYAMDRDKRWE
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P
PKSGASHVANLEKHISGTNNAQLATVTGRYFAMDRDQRWE
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$P K S A A R Y M Q E L L D K T K E L G \square G E V G T V V G R Y Y V M D R D K R W D$
PMSSLAAHIKEFEAELEAIGNGRVASI AGRYYAMDRDNRWE
$P K S A E P S L A K L D A L F A Q Y P N G R I V S M \| G R Y F A M D R D N R D$





$P K$ S GK G F I E QL T E Y CAK K T G TVVA GI I GRYYAMD R D K R W D


$P$ Q S A K E Y L E K L Q N K I N E V G N S K i GVI S G R Y Y A M D R D K N WN
$P$ K S A K R F V A D V E L K I S R M K N V H I A TII M GR Y Y A M D R D K R WE



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

P T G GE E Y L A D LIEA HAE E Q GTGHVVA TVVSGRY YAMD R DEN WD Q Y K S K $\square \mathrm{F}$ V E Q I H N Y I K E LT H IIK I C T I S G R Y Y S M D R D C R W S










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UniRef90 - 5 DAC7 UniRef90- X5DAC7 UniRef90_W8DWF6 UniRef90-A3UAE3 UniRef90_-17DBF8 UniRef90-K1MAT9 UniRef90-D5VCC6
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R|VEAAYRLVVQGQKFHYETALLEALLQEAYARGESDEFVVAT

 RIIKVAYNALVIHGGNDQTNNWEAAINEAYVAGITDEFIDPDI RVKEAYDLLTAGTGAQATDMAGAVEKSYSDGVTDEFIKPI. RVEKAYQALVNGVGETAESGPAGIQAS

 $R L N V A L D G L V H G K G E V S E D P V K T I R E R Y E K N E T$ RVKKAYDLMVNAEGDKTAD\|AAKMQENYDKGVT RVKKAYDLVVHAQGTKTANPVQSDHESYHQNIT
 $R V K V A W D M M V H G E G O R A S D P V A A V E A D Y A A G E T D E F V E P T$


 RVAKAYQLLVEGIGAPSHDVVAAINESYAAGLT RVKLA YDVIVNGVGEPTEHUTKDLQDNYDNDVTDEFIVKM
 RLEEAWEVIVHGTPATTLAPVAAIEASYAAGDT


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RII Q K A Y D TMVVLGTG S K A Y K F
RI NVAYEAMIGGVGETS
RVEPAYRLLVDGEGFHAETAVEVVRKRYAADETDEFLKP I

RVEKA YRALVSAEGEKAASAEAAVKQSYDAGKHDEF I DPT
RTELAYAGIMHGTGSAVSSWREAVIVAYEAGENDEFIVPR
RTKRAYDAVIVREADHAASAVAAVEESYDRGDTDEFVEPT
RTEKAWRAYVHGEGEHAPDAESAI HTAWQRGEGDEFI QPT
$R \| D L A L R G L V N G D G E E T A D V L D T I Q K R Y D G G E T D E F L K P D$

RVT LA WNA LVEAKGEAAT DALAABVASYAAGKT

RVKKAYDVIVHGMGQPSHDATDSIKEF
RTEMAWRAMVDGEGRHAESAREAI EAAYAAGED
RVKEAYDLLTAAKGKSATDMVKAVVESSYAEGVT
RI ELAYEMLI GERDAMAH
RVEQAYRLLTESVVRQA
RVERAYNVIAGGENPQATSPQVYGQAQFEEGDSD

RTE LA WRALVLGEGRMTGSAREAI AAAYERGESDEFVKPT
RVKRAYDVMTQDGVGDGRSAVEVLQASYDEGVTDEFV RPT
$R V K V A W D G L V R G M G V P V R S G T A A I E D A Y A A D E T$

RVK EA WRLVVVNGDAEHVHNVAKALQQAAYARDES
RVEAAYNAIALGEGKHAASADEAIAASYKDGVT
 $R M E G A Y R A V V E G E E F H A D T A L Q A L A A$
$R I K G L S Y D A I V Y G K G N R N S S Y K D V I N S$
RTKKAFDALVHGDGERAASAAAAI ESAYEKGGYT
$R T K K A Y D L F T A G Q D Y T A D S A E M A V K N A Y A R N E T$
$R V Q D A Y D A L V H G V G E H A L N P R D A L Q A R Y A A D Q T$



RTEKSYQVLLSNQLEYATDAVSKINEY
RTK LAYDALVNAEGQPTNNILKSIQSYYQQNISDEFIPPT
RVSQAYDAMIHGRQYQAETAADAI KAS


RTMKYYNLLTIGEGEAYSSVVALIDDSNYHEEDYDEEVLEPG RVEKAYDVMVSAEGPKAATAQDVVTQAYQADISDEFI QPT
 RTARAYALLTDAHPCSNNDASAVLEASYAAGTTDEFLEPT RVQTAYDALVGAAPFSANSAVQALQDAYARGENDEFVQAT



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 1 C GSEGSRIKEGDTLFFFNYRSDRMREVVSVFGDEP VSVDAAGKPLATVEAGDVVIFFNYRNDRAKELTVVLTQQD ILTQHSGDPDATTQPGDVVLCFNFRTDRSRQTTQVLTQTP HNASLA QGEGLI AENDAVIFFNYRNDRAKELTTVLTQHD VVV KDGAPVAT KDDDSVIFFNFRPDRARETTRTFCDDA TVGDHAG LEAGDAVVFFNFRSDRARQLTRMLGDDR VI DENGKPVATVDAGDSIIFFNFRPDRARQLTRAFIDEV ALONADNNTLAKVEQDDVVIFFNFRTDRGRQLTQALSQRD VMTDSKGSPVAKISNDDVVIFFNFRTDRGRELTEVLSQND VVVDQNNNPVAQIKPHDVVVFFNFRTDRGRELTEALSQRD RI ESGGTPI PVVEDGDVIINMNYRSDRARQUTRPFIEPD VFGD PADVCVRNGDGIFFINFRADRGRELVSAFHFPD ILVVNNDVPVAKIDDNDVVICFNFRTDRGRETVEVLSQKD
 RLTE VAMNGHPV GLLLESGDGLVCFNFRPDRVRQURALVLPE VAAKN GTVDADDVIIFFNFRTDRGRELTNMLSQND

 VATNPDNTPDAKI ENGDVLIFFNFRTDRGRELTEVLSQVD VVGGKDGNP RRVQDG
RLSDN
MV L N
RFGEE
R
PEGYLKDGDSMICFNFRPDRGREUTEVLSQKA
 APGALGPGDGLICFNFRPDRVRQMIRALALED ILQGEKG GAVTAGDGVIFFNFRPDRARQLTQALVDPN Gl Qugarv KMQDGDALIFMNFRADRARQLTAAMGMDA IVSGDAG $\quad$ RVKENDTLEFFNYRADRVREETLLLGVDS VI EYDG TGKNDSMLFFNYRFDRTRQLTKAIVESD LI ESEAEQGGPALEDGDAVVWFNFRSDRARQLTRMLADDR IVCKK AGCITSKDTLLFFDFRSDRMREVVTLGQP GLSDE GRTKDGDTLIFFDYRADRMREVTECMGMER VFLDNEGN RTTDKNNDGVFFFNFRADRARMLTSK LEK UIDGYGG MKDGDALGMGNFRSDRARELDTLVDPA Al HTNDH LLHVQDGDIVIFFNYRADRAREITETFINKN $\vee \vee G N G T E P V A T V E D G D V I I F F N Y R T D R G R E L T Q M L S Q Q D$ $\because V A G A E \quad P I R D G D Q V I H D N F R K D R P R Q L V S A L H Q S D$ TNSGVNG KIEEGDVVIFFNYRNDRAKELTQVLSQTD
 QIGEA VSI DDNDSLVFMNFRADRARELSRAFIETE CFNNYNG GCPEGRMQNDDEVIFFNFRNDRPRQLTQAELGAA


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LVAD $\quad$ RPALSDGDAVVFFNFRSDRARQLTRMLAD DR


VID GYDG VKD G DGLFCLNFRADRAREMLRAMGEPG



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| UniRef90_G4T955 | K P MEVTVPRKDLHDT TMSRYNTEFPFPIAFPP |
| UniRef90_E4T591 | MPE EGMHTDPLEYYCMTPYDSSYK |
| UniRef90_R5YM05 |  |
| UniRef90_B3ER73 | MPD Y Q MET $\quad$ P L Y Y L L T L Y D T F K G |
| UniRef90_R5AN21 | $M P \quad E A G M K T \square A G L Q Q Y C M T P Y D A S F T V H \square L F$ |
| UniRef90-R6E8V7 |  |
| UniRef90_Q5UXB9 | PEDWG S DTEPPDTRLVTTMTQYDETPDLPVAFPP |
| UniRef90_C7IQW9 | F NHFEREKRYLP VFFVVSMTQYDET F Nil HVAYK P |
| UniRef90_K2NYX1 | FPEENMQK LPL Y F V T M T S Y E S F Nill V V Y |
| UniRef90-W7HKR5 |  |
| UniRef90_G0L9T1 | MHEQNM HKLLNLY Y V T LTTNYDDSYTV |
| UniRef90-G2Z4L4 | FHEQNM HKLLDLHYVTLTNYDETYNVKVVY |
| UniRef90_S6B9D8 | FDCFERRAT PKIARYV S L T Q Y K E F Dil PVAYP P |
| UniRef90_D8JAJ1 | R P EWDVDTPAP DVVHLVAMTQY |
| UniRef90-E5Y9L3 | FDGFDRGG VPALA GLVTMTSYDSSLHVPVAFP |
| UniRef90-W4TAZ3 | FPDYAMRK L NLLYYITLTNYDKTFNVQVVF |
| UniRef90_UPI00036F44CF | FS GFSRKARPSLA GK LVMLT Q Y A A D $\square$ S APAAFPP |
| UniRef90_A6R701 | RS P K P NFPYPKNTSITTTMTQYK T D Y K F P I A F P P |
| UniRef90-K9PCC2 | F D GFPREWLGP L HVVTFTQYEQGLPVQVAFPP |
| UniRef90-W8VQZ3 | FHEQNCHKLDLYYVTMTKYDDNFKNNVIFE |
| UniRef90-UPI00047A13A9 | FPEYHTKK LTPLYYVTMTNYDDSFKG |
| UniRef90_UPI000366633A |  |
| UniRef90-D5GHS9 | SPL L PGFPYPRNINTTTMTQYKT DYPFNI AFPP |
| UniRef90_UPI0003B5F6F6 | F DGFDRG RVPALA GVAS M T A Y E S S F N |
| UniRef90-M0MZJ7 | PE WGSALDDQPAILELVTMTEYDETFDFLVAFEP |
| UniRef90-E6X6M4 | MHEENM HK L D L Y YVTM T NYNDAYKNHVVY |
| UniRef90-W2S146 | RSPTPD Y A Y PKDIE I FTM T K Y K T D Y PFEI AFEP |
| UniRef90-E4TBA2 | FPDFGM TPLLKLHYITLTNYDKDFKVKVVF |
| UniRef90_UPI0004731947 | FSEFER KVFPDLEVVTFTQYDPNFPVKVAFPP |
| UniRef90_K2AQ85 | FKGFER R RVGNLVFI C CGEYSK |
| UniRef90-UPI00046F2EEE | F NGFPRS TWPGPLDVVTF TQYERGLPVEVAFPP |
| UniRef90_Q31R18 | FEGFERDLIQP LTMVVTFTQY D A NLNVPVAFEP |
| UniRef90-B8HVP2 | FKGFERSLISP L D F V T F T Q Y D A S S CAI AFPP |
| UniRef90_U4KLA7 | D T K LY HAEKP L H NI F FV S M M H Y N S SVKGVLA Y |
| UniRef90-F4Y451 | FDGFERE QILKPLTFATFTQYDPNFPVLVAFEP |
| UniRef90_G5EFZ1 | YKDCNSKLAHPSNLQVVYGMTQYKAEFPFKSLFPP |
| UniRef90-Q7NSR8 | FDGF KARQPKFGYYATLTS YGEAYSAPVAYAP |
| UniRef90_U4LP92 |  |
| UniRef90_G1Y4B8 | FSAFDRG T PVKF A A QLGMVEYS S T LA LIP AIF P P |
| UniRef90_U7D8P7 | FSEF PTTPHN】HFVAMTHYYDDGNFEEV |
| UniRef90_L9ZTZ5 | P E D WDEFS |
| UniRef90-F9ZNY1 | F SHFDRGAEGPRPV $\quad$ L CMTPYNDDYPFPVLPP |
| UniRef90-M1V5F0 | A P YE T K VQVPK L L G F F M S Q D $\square$ R F P F PVLEP P |
| UniRef90-B1P0R4 | Y K D L N S DIK HP K N M QV I G M T Q Y A E F T F P ALIF P P |
| UniRef90_V7PW72 | RGEMNLKLI TMTRYGDDFDCDVAFP |
| UniRef90-H8FT28 |  |
| UniRef90-K2AQ41 | FS GFTRKTVRTLGGEFV SLSEYDRTEDLKVAFAP |
| UniRef90_K6YVJ2 | F NDFDRAEVGCREV V C M E Y D A P P FPVLFKP |
| UniRef90_Q26FT9 | YHEQN THALDDLYYVTMTKYDDSYNNKVI F E |
| UniRef90_F9UD94 | FDKFDR R GVTRVQVTGMMEYDPWFGLPFAF |
| UniRef90-D1XY76 | MEA EGMKTIK DLQ Y Y CMT PYDA SF NV HILY |
| UniRef90-B6QQZ2 | R S P $\square$ P D FP Y P K NI Q $\square$ T T M T Q Y K S D Y P FPVAFPP |
| UniRef90_A5KRP9 | F A GFKRS RVIK DL H F VGFAEYDKGLGVPVAFP |
| UniRef90_S3P5C5 | FTGFER KKQPKLSMFVMLTRYQASLNAPVAYMP |
| UniRef90_UPI00047AA028 | F NAFERKKFTK】PL $\quad$ VTMTMYDKTFPFPILIP P |
| UniRef90_G4E3K0 | FTGFARGAFQ GLLRVTT LTTQYDPNYGLPVAFMP |
| UniRef90_J3GVA7 | FEGFER PFVLPKDRLLTLLTRYSEELGCPCAFAP |
| UniRef90-LOH385 | FDHFERPGFQ GAAVTCMMSYDASLGLPFAF |
| UniRef90_K9TS94 |  |
| UniRef90_UPI000381CFC0 | FKHFDRGEFKP VKLVTMTLYDNQLDALVQYQP |
| UniRef90_G8UMY8 | $M P \quad E Q G M K \square 1 / 2 N L Q Y F C M T P Y D A T F K N H V L F$ |
| UniRef90-UPI000361B02E | F D GFERDRT P DVGFVAMTQYA D D L DVPVAFP P |
| UniRef90_R6HNE3 | FTGFARKKEDRDS MA V G LTEYSVDHN |
| UniRef90-K9XW54 | FNGFERELLI QP LS SAATFTQYDPNLSVEVAFKP |
| UniRef90_R5G656 | M T G D K G K H D D L D FVCMMLY SENVKGDIA F P |
| UniRef90_K2BYY9 |  |
| UniRef90_UPI00037EFCC1 | FDGF AVRQPEFALYTSLLTSYGEAYKHPVAYAP |
| UniRef90-R5N732 | F NEFD V K R N N I K L VTMMPVADSVVCSNAFK |
| UniRef90-B8GU38 | FDGFDRGDFKP V S V TCLTE Y P PRFLSPlGFPP |
| UniRef90-K2BSR3 |  |
| UniRef90-F4P3X3 | AT DMPFESKTPPPLY I AS M T QYKA DFPFPTIFPP |
| UniRef90_Q3AHM9 | F D GFERS HTLELVVVT F T QVEQDLPVQVAFPP |
| UniRef90-11GB49 |  |
| UniRef90-X5DAC7 | KHEYDM HTMNLQWYTMT TYKADFKVNVIFE |
| UniRef90-M0D1C9 | S DAWG GRTDPPATRVVTMTQYDETFDLPTTAFPP |
| UniRef90_W8DWF6 |  |
| UniRef90-A3UAE3 |  |
| UniRef90-17DBF8 | FDAFDTGAR PKLA A L L GMVEYSEGHNGYMVFP |
| UniRef90-K1MAT9 |  |
| UniRef90-D5VCC6 | F D GFNRH IVPELSAFVMLTKYS E E L K T D A A H P |
| UniRef90_A7RZB7 | PPFET DVI PK DLY HI T M T Q Y K K EFPFPCLIP P |
| UniRef90_G4D132 | FS DALLRAKYVRLNVVVSMTQYDSTLNVTVAY |
| UniRef90_UPI000471EE36 | F DGFAR KKVVKFST@LGMTHYS DTLALTVLFPP |
| UniRef90_W0GM00 | F PVD HATEFFNPKLYFVS MMEYSATVASPI AFRP |
| UniRef90_C1AB94 | F A GFETGVR PSLHITTMTNY D D A F D FPI AFPP |
| UniRef90-A5GNA6 | FEGFERP HHPKLDVVTFTQYESGLPVEVAFPP |
| UniRef90_UPI000382EFD9 | FDGFER AKQPKIAYYTS LT S Y GKQYTHPVMFAP |
| UniRef90-E0UPM2 |  |
| UniRef90_U7QKG3 |  |
| UniRef90-L2F6C2 | F A GFVRlA QPKISRFVMLT K Y S D ELQ N T A F M P |
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VIS D G GVIH GH|V
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VSDGGVHSHLNHLKALI RLAKSHDLNNTYLHAFMDGRDTS CSDGGVHSHLNHLLGLLDLAKVNGIADVHI HADTDGRDTN LSDGGVHSHI NHLKALVTAANNAGVSKSYIHAFTDGRDVD FSDGGVHSHINHFFAVADAALAAGMQKVVFHPFLDGRDTP LSDGGVHSHQRHLYALLKLCAQLGAKDVFVHAFLDGRDTM ISDGGVHSHDSHIAALVQDAARAGVQSIHVHAFLDGRDTP CSDGGVHSHVDHVCGLLEWAAEEGLKNVAI HA DTDGRDTP VSDGGVHSHI NHLKKGLI LAAENAGVPQSYI HAFTDGRDVD
 VSDGGVHAHID HLFALLDGAQKLGVPNVYVHFFGDGRDTR I SDGGVHSHI SHLFALLETAKENEVPHTYIHFFADGRDTA VSDGGVHGHLDHIVAAAQADTGAGVP VALHATTDGRDVA MSDGRVHSDLQHGIAVI DLAKRNGLDQLAI HAITDGRDTS TSTGGVHSSLDHLFKLVEISKEYGVDKTYVHCFMDGRDTD ASEAGVHSSLNYLYALLALANDAGVDRVLVHNFSDGRDCP VSDGGVHSHQDHLVALCDAAKAAGVEDI FVHADTDGRDTS LSKGGVHSHQRHLYAVLKLCKDMGLDRVYVHAFLDGRDVS
 VSDGGVHGHIEHIKAAVKMVTALGCCRVVVHAITDGRDVS CSDGVHGHQAQTSALAGLLQTAGMPKVVVAI DDGRDTA
 VSPGGVHSLQDHCA AKILAKAGVKTVLHFTDGRDTP VSDGGVHSHIDHLETLLDAAKEQGVPECFVQYFADGRDTR $V$ S D G GVVHSHVNQLVALI ELCRREGA RPMVMVFTDGRDTP V S D G GVVHSHI DHYDAMLKLAKKNNVGNVFI HAFDDGRDTP
 $V S D G G V H S D Q A H L Q A L D V G A A A E A G V E A V T H A F T D G R D T A$



 LS DGGVHTYDLDACFELIAMAHELGITEIVVHAITDGRDVP LS D G GVVHSHDNHLIALI RAAKEQGVPHVYIMAFGDGRDTA
 $V$ S D G GVVHSHIN HLLFALLGGMKEACVVPQTFVMFFGDGRDTS
 CSNGGVVSHIEHLIALI KISSKQYKL NTCIHITTDGRDTQ VSDGGVHAHIDEHI FALLEGAKEHKVPRTFI QFFGDGRDTS



 V S D G GVVSH $\square \mathrm{NH} L \mathrm{~L}$ Y A F LAAAKAANVAQTFVQFFADGRDTS $V$ S D G GV HADQQHI HALVECAAGRGVEAA VHAFTDGRDTS

 $L S D G G V H S H I D H V V A M L R L A K E Q G L D Q V Y V H C F M D G R D V D$
 $L$ S D GNV H S HIVNHLKAMVARAKE DGVKRVRVHALLDGRDVGG V S P G GVVAHQDHILALAKILDAAGVP VALHIFSDGRDTP V S T G GV H A H MD HV I A L A QI VA Q A GIV P V AV HVVS D GR D T A
 $V S D G G V H A H Q D H G A A L A Q V L T R A G I R R V V H A F T D G R D T P$

 LS D E G V $\operatorname{H}$ A S V G HLL I A L L L T L M D K Q K F D S V Y V $V$ S D G G V H G H L D H I V A A A K A L

 $V V$

 AS D G G V $V$ H S H M E H L L G L A A QL F S S R L G



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P UniRef90-M5SUN9 UniRef90_R7S2Z3 UniRef90_A8EW05 UniRef90_K2B6S0 UniRef90_J5QB84 UniRef90_M5FY63 UniRef90_UPI0002653149 UniRef90_Q6B8L5 UniRef90_C5F0J8 UniRef90_M5DD48 UniRef90_B7Q0R0 UniRef90_D3NX43 UniRef90_UPI00037F2FEE UniRef90_G5N381 UniRef90_R6RG53 UniRef90_G215M8 UniRef90_E9CII5 UniRef90_Q9HNY7 UniRef90_B3SB43 UniRef90-K2GCA4 UniRef90-R7DNA8 UniRef90_Q7VGZ8 UniRef90-E1RA79 UniRef90_G6XLG3 UniRef90_V8A536 UniRef90_F8F1G3
UniRef90-J0D298
UniRef90_QOBRE2
UniRef90_UPIO00262CFCD UniRef90_X7EEZ6 UniRef90_P51379 UniRef90_K2BH50 UniRef90-U2YI32 UniRef90_D4XWE3 UniRef90_R7KAK7 UniRef90_B9Y4A7
UniRef90_T1IME7 UniRef90_Q30Q40 UniRef90_S9RUB1 UniRef90_A0A024HY15 UniRef90_Q7M7W9 UniRef90_R5GJC8
UniRef90 R6ULB7 UniRef90_R6ULB7
UniRef90_R9XYS6
UniRef90_Q17X03 UniRef90_R6SKR6 UniRef90_A0A058ZLZ3 UniRef90_P47669 UniRef90_UPI00045E6C79 UniRef90_UPI000479CE6F UniRef90_R7FJB7

9

PKSALLTTY|L|D Q|L|EAGMA PGA Q|I|ATVTGRYFAMDRDNRWE T QSASNYLHQI EDA I NAS GVGELASLCGRYWAMDRDHRWE
 K GIN YL Q Q I QA H ID K F GVGGSISTI SGRYFAMDRDRRWD

 P HS GRE YVA S L R A A L P DA V S I ATMMSGRYYAMDRDRRWD PRSAK Q Y L E KL DAVVCRAAGNARAVGVVGRYWAMDRDRKWE TQSAPTHLSKI QAA DSTYGDGRI AS L CGRYWAMDRDHRWE






 $P K G G A A Y V A K$ L K D LIDSGAAKIATVIGRYYAMDRDKRWE


 $A Q S A Q K Y$ S S K I E E S L S E Y E I G SI A S I C G R Y W IM D R N QLDWD
 P S S G V T F V $V$ E Q L L L N K M K S $\square$ N Y G K
PRSAKA F

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

P H G GL G F V K S I E E D K CA E T G V G II A
PRSAA GYAKDLLAAFDNDNGYGGLAMVVGRYYAMDRDCRWE
PNCAKTY Y NQI LE I CDE D D IGIIATI SGRYYAMDRDNRWD
P Q S A S K YV HKL QNKISA I GAGTI ASLLQGRWWVMDRDHRWE PK SATK YVK QLQQA IKEIGGCGELVTFVGRYYAMDRDKRWD
 P Y G S K I FI E E IN NQI Q QF NHDNI CTIISGRYYSMDRDCRWA
 $P T S G A K Y A Q Q V L D K I A E L K Y G S L A T V I G R Y Y A M D R D C R D E$ $P$ Q S A K D QVA E FMA DVVFEMPGVEVATVIGRYYAMDRDKRWD


 $P$ MS G V S F I E S L L A K L R E L N Y GK L A T I M G R Y Y A M D R D K R WE P TGGEDYLADLEAVADEHGTGDVASVSGRYYAMDRDQNWA P T S G V T FVVQKVLDNYIS E M N Y G S L A TVVVGRYY A M D R D K R Y D
 P Q S GV H Y L D T L Q HAMD ELKKVGQI A DI S GRYYAMDRDKNDD P K S A L N Y L A D D E S DCE D NV I I A SVVSGRFY A M DR DK R WD
E T S A L D Y F D P FA D YLLA S L S $D G K I$
$G 1$
$G$ GAS S T L S GRYYAMDRDRRWE
 PKSANKYMRQLVDFI AKDTTVEVATVVGRYYAMDRDKRWE PASARRFLTKFLPALPE GATLATLCGRFYAMDRDNRWD
 PK S A D A F V P DLDEAKLD GAA GI G TVVDGRYAAMDRDNRWD SNSAKS FI K LI A DH I EKK S F VII STI SGRYYAMDRDFRWS




 PRSALGYLEQLQRDLPA DVRIATVSGRYYAMDRDTRWD



| $E$ | $T$ | $S$ | $A$ | $L$ | $D$ | $Y$ | $L$ | $P$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $E$ | $A$ | $F$ | $L$ | $A$ | $S$ | $L$ | $N$ | $D$ |

$\begin{array}{lllll}P & N & C & A & K \\ M & I & Y \\ \text { M E A } & \text { I } & \text { R }\end{array}$
UniRef90_Q1GCX7 UniRef90_A2C700
UniRef90_Q3AZJ6 UniRef90_UPIO0047DE46F UniRef90_B1XJ47 UniRef90-UPIO00255B2C6 UniRef90_-V7IDZ2
UniRef90_W0BGQ7 UniRef90_I3ZHL7 UniRef90_A9H397 UniRef90_UPI00037E4388 UniRef90_Q0I7U9 UniRef90_F4AV33 UniRef90_UPI000347E227 UniRef90_UPI0003B6A538 UniRef90_UPI00026589B8 UniRef90_F8PD51 UniRef90_B9NVH8 UniRef90_Q7V051 UniRef90_Q7UFG7 UniRef90_G5GCB6 UniRef90_UPI0003A73C0F UniRef90_UPI00017452A1 UniRef90_F9MWP9 UniRef90_E6QUK8 UniRef90_UPI0004721F0E UniRef90_D0DAI9 UniRef90_UPIO003679FDB UniRef90_UPI0002F2BA6C UniRef90_R7M5I3 UniRef90_Q6NCX7 UniRef90_UPI0003F09E87 UniRef90_UPI00047704A6 UniRef90_A0P7W0 UniRef90-T0FD20 UniRef90_M0M8R8 UniRef90_A6FT32 UniRef90_UPI00037DA34D UniRef90-_T1KJ51
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130
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RVSEAYDAMVJKGGQFTAATARDAJVENAYGRDELDEFVVKAT
 RVKQAYDVMTQNGNDDQRSFAEGLQSHYDNGVTDEFBVPFV RVKKAYDALVKG KGTTSDADGTAMQQSYDNNITDEFVEP
 RELKAFDAMVKGEGGSTTDAAAKVVAGYNNGVTDEFTDPF RVEKAYDAVVSAQGPHGEDPAAVLDAAYKAGTTDEFLPPT RVEPAYNLVVDGKGHHADDVIAGLEAAYARDENDEFVGAT RTERAYALLTDPDDRQEDDPASVLVSSYAKGDTD RVEKAYRVMMEEGEGCGKTPLEVI QT S
 RI QI AFEGLVQGKGEKTISLVEGRYNAAENPKG
 RTEKAFVNLTDPNGKK DDSPADYLNKS RVEAAYNLMTQGTGQTFPSASAAIESYYANPDGD RVKVAYDQLVNGEGRKETDMVKAVED $R N K \square A W D A I V L G R G D V H S D A P S A A V A$
 $R T A R A W R V M V H A E G E T A N S A D E A I H K$
$R V S I D Y D A V F G A V G M R T D L D S V V L L E ~$
 RTEKAFDNLTDPDK DNQDTPKEYLDQSYKKDITDEFLEPVV RVKFAYDMLTMSKGEIVYDDIEEAWYDNQKKGMTDEFMMPS RVSKAYGVIADADGPRFADANAVIADGYAAGVNDEFIVPA R\|K\|AYDGLCQGEKTTQDQVIEVKKRYEA RTEIAWRGLVDGEGRHAATAAAGIDL
 M D D A Y $\triangle$ CMVNNDGHAYTDEQTFLKE RVQEAYEAMI HAKGARARTAVTAAVTNAYERGET RERLT FDAMVKGEAGAHQDADARVKESYSQGVTDEFVVPT RVQTAYDMVVQGDKCSADKASQAVQKYDEK TEF KP $R V K V A V D G L D N G V G E E S E D V V K T$ E RVKKAYDSITFANPKTQDDILSYI ETSYKNEDFD
 RVKIAVDALVRGEGEKTDDLLKTYQERYDKDETD RIKVAF EGGLVQGEATTKENVIQLVQS $\begin{array}{ll}R \square E E A Y N V I V & C A E N P Q S I S P Q E Y I \\ R T E K A Y N V \\ R\end{array}$
 RVAKAYAAMTKAEGEHAADPI QA DERSYNAPQTDEFFMP RVERAWRAVVLADAPRVGDAMEAVRAAHAKDVTDEFVPPA RVEQAYD LMTLAQEFQADTAVAGLQAAYARDENDEFVKAT RVEKTYNAIVAGQGEKAGDALEVLDRAYAAGTTDEFVVPT R $\$ K IAFDGLVSGEGEHVSELIERVKELYANNETDEFLKP RTKRAYDAI TD GVAHHAAAAVDAVTDSYERGDTDEFVEPT R 1 Q $\|$ A Y E GLVVK GELTS P GS I TEVMTNRYNAEGSQDEFMTP
 RND $\$ A Y R VMVDHDGPSFKDYHDFLKEQYTYEASDEFI DPH $R V Q K A Y E S I A L G K N P T N L S P K E Y$
$M V$
$M$ RVGLAVNAI RDGEGRHATDALSALKTSYAEDKGDEFVIPT MVERGWKTHVLGMGRQFSSAREAVETYRKLPGIDDQDLKE RVK LDAVDGLVLGEDGNGDELVKII EARYEKNEKDEFLKPI RVEKAYRMMVDAEGERYSDPCDAI TDAYAREFSDEFI RPA RI QSAFNLITKSQEFSAGTAVEGLQQAYQRGETDEFLKAT

 RVEKNYDAULGFSDKKYSSAVEYVNEQYANNVTDEFFEPA LTKEYYDLLVHNEGEK DSSYKDYI NSSYEKGVMDEFIVPA MVEKGWH UV LGEGRQFASTKEAIETYRDEQHCSDQDLPG
 RVELAYNAI MLGGKGESANTAKAA EASYAQDKTDEFILPT

 $M V E Q G W H V H V L G E G R E F A S A K E A G E T Y R A E S G V V D Q D L P G$
 MVERGWHTHVLGEGRQFASAEEAYKTLRAETGKDDQDDP RVSLAYHAMI NGMGEEVSGAEEAVAAAYARGETDEFI EPS REM IA YKALL GVSKNKFNDP $\quad$ GYY ETQYQNQ TIDEFIYPA $M V Q R G W D \| H V Q G K G R P F A S A H E A V V T Y R D E D S V I D Q D L P G$




UniRef90 N1VVU6 UniRef90-A1B4Z9
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UniRef90 R7MH67 UniRef90-R5J301 UniRef90-B3CLK9 UniRef90-Q2NJ4O UniRef90-DOLUK3 UniRef90-D5RI86 UniReffo-M7Y569 UniRef90-F4LJA2 UniRef90-R5IV85 | UniRef90-R5PTO3 |
| :--- |
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UniRef90 A3VCN9 UniRef90-A3PMX9 UniRef90-U3Q7D1 UniRef90-I0Zzz2 UniRef90-UPIO0036E2381 UniRef90-TOSQ49 UniRef90-UPIO003B6463A UniRef90-UPI0003806D3A UniRet90-E1ZKF2 UniRef90-E1WZB4

UniRef90 A7I3M6 UniRef90_Q98QA7 UniRef90-M5A604 UniRef90- O5ZZUU2 UniRef90-A4HOI8 UniRef90-G4ENO1 UniReft90-10YV40 UniRef90-W0E141 | UniRef90-V6F302 |
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UniRef90 Q0FOM9 UniRef90-I1A510 UniRef90-D3UHP5 UniRef90-AoLKY9 UniRef90 UPIOOO472BEA8
UniRef90_E6PCM8


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 QESVRISRAI RDESFFENKEFLNLIKFVKKNNDRMHVMGL QDLPRIDSAVADGSMATGPAVTGLIAKLKASGGTLHLMGL QDLPRIDTALADGSLAKNPALVRFIEALRASGGTCHLVGL QGAKLVSNS:ASGAMFKGDTWKKLVANVKAKNSTAHF:G QGAKLVSQSI ESGALFAGKAWGEGTENVKANASTLHFIGG QGAKLVNESUESGKMFASETWNELVNNVKTKSSTLHFLGG QDLPR1NDA:IKDGSLVKQPAMTELCDALKNSGGTCHLMGL
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 Q DLGQIVDLAVENGSYFEAEALVEFIGKMKASGGTAHVMGL
 QRLTRINKAIEEGKLGKKEAIDKAFQNAEEKDTTVHLAGI QELPKIDDAVKTGTAADTDTVKKDIAKLSDSKGVCH|AGLL
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UniRefoo- $6 P C M 8$
UniRef90_E6PCM8
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 LSDGNVHSHDDLIAMLQRAAGDGIKRLFVHALLDGRDVP LSPGGVHSHQDHALALARIFAGAGIP VAVMAWTDGRDTP LSDGNVHSHIKHLEALIKQAKEEGVKKVRLHILLDGRDVP GDGNVHSHI DHLKAMITEAQKEGVKKIRIHALLDGRDVG LSDGNVHSNISHLTAMLKKAREMGLKKVYCHILLDGRDVP LSPGGVHSHQDHIAKLARVIAAAGVPVKIHAFLDGRDTP LSDGNVHSNDSHLKKMIAKAKEQGAAKVRVHVLLDGRDVP LSTGGVHSHYSHVVALAKDISAKGAKVVIHVFTDGRDCF LSDGNVHSNI GHLTALIKGAKRAGIKRVFAHVLDDGRDVP V SDGGVHSHID HMMALA HITSELSGKKVFFHIITDGRDVS VSDGGVHSSLDHFLALIKLAKFHEVPLVVLHAFLDGRDTP FSDGNVHSHIDHLKAMIVRAKQDGVKTVRIHVLLDGRDVG LSPGGVHSLEDHLFKLIDMAHAYGLKKVSVHAFGDGRDVA VSDGGVHGHVDHITAAAKALTTADVP VAI HADTDGRDVS FSDGGVHSHMNHMFATFKAAAKAGLTEVYYVHAFTDGRDTK FSDGGVHSHLDHLKAMVEQARKEGIKSIRFHLLDDRDVS VSDGGVHGHI NHMIAAAKALADENIP VVIHALTDGRDVA LSDGGVHSHUNHLFYMLKUAHKKQINNVFVHAFTDGRDTS ISDGGlHGHDDHLKALMRMASDOV DVEDHCFADGRDVD LSEGGVHSHQAHMAALAKIIAGAGVP VKI HAYLDGRDTA LSDGGVHGHDNHVLAAARIITGAGVP VVLHAVTDGRDVA LSPGGVHSLEDHLFELLTAAYEFGDKKVSVHCFGDGRDVA LSPGGVHSLEDHLFELLREAHEFGLKKVSVHAFGDGRDVA LSPGGVHSLEDHLFALLDAAHNFGLKNVSVHCFGDGRDVA YSDGGVHSHLSHEDGMCELASANGCEEIYAHALTDGRDVS VSDGGVHSDVQHLLALIDAAADAGVPAT THAFTDGRDTA FSDGNVHSHIDHLRAMVVQAKADGVRTVRDHALLDGRDVP VSDGGVHSHDDHLLGLLPLIVAAGVEPVIHMITDGRDTA VSDGGVHGHLTHMLAAVKALRAHDIP VVIHALTDGRDVA VSDGNVHSHIDHLKAMITQAHKEGVKTLRVHALLDGRDVP LSDGGVHSHMSHLFSLLQDAYEKKUKDVFIHVFTDGRDTS YSDGGVHSHEDHLMGMCEFAKEAG KEVVGLHELSDGGRDVA LSDGNVHSNIENLKAMVLQAKADGVKKVRVHALLDGRDVG VSDGGVHSQLAHLEAAVAVLVEAGVP VAVHAITDGRDVA VSDGGVHGHI AHVLAACRAITADGVP VWLHAITDGRDVA MSDGGVHSHINHIVYMMNKAIERGVKKVVVHSFDDGRDVP VSDGGVHGHDQHLISAVEVLAGEGIP VVIHAITDGRDVA LSDGGVHSHMDHLFYLLKIAHQKKIRDVFIHDFTDGRDSS LSDGGVHSRYNQLWLLI QGAAERGVKRIRVHTLTDGRDTE LSNGGVHGHDSHLIASIRGLESHEVP RILHHLTDGRDVA LSDGGVHSHLNHLKILLNSLSSHQDLEVFFHAMMDGRDTA LSDGNVHSHDKHFLAVVRHANLQGITHLRLHALGDGRDVG LSDGGVHSRTDQLYGCLRGAAERGAKKVRVHFLTDGRDVG LSDGGVHSHDDHLKEAVKALNLEGDLEVFFHAFMDGRDTA
 HSDGGVHSSLEHLYALLRRAADEGVMSCAVHLGHDGRDVA LSDGGVHSRDNQLYPAVEHAVKDGAKKVRVHVLYDGRDVP LQDEGVHAHMDHLFKIMRQARKEYPQEVVIHPFLDGRDTP LSDGGVHSRCNQLVGFLKGAAKDGAKRIRVHLLTDGRDVP LSPGGVHSHQDHLAALARSAAQAGVP VKVHAFLDGRDTP LSDGGVHSHDEHIKKETVALSRYEGIEVFFHAFMDGRDTP LSDGGVHSRLDQLLLLVKGASERGAKRIRVH\|LTDGRDVL VSDGGVHGHLTHM1AAAKALDDAGVPVVIHALTDGRDVA FSDGNVHSNLNHLESMLRKAKEQGVKKARVHALDDGRDVP MSDGGVHGHLNHIAAAARADTEAGVP VLLHAMTDGRDVA
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UniRef90 A3VCN9 UniRef90-АзРМХ9 UniRef90-U3Q7D1 UniRef90-IOZzz2 UniRef90-UPIOOO36E2381 UniRef90-TOSQ49 UniRef90-UPI0003B6463A UniRef90-UPIO003806D3A UniRef90-E1ZKF2 UniRef90-E1WZB4 Uniinefoo-A713M6 UniRef90-Q980A7 UniRef90_M5AG04
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UniRef90_E6PCM8

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110
120
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 ATSALEYVDKLEAALAELVAA:ASGGGRMTMDRYEADWE


 ATSALDYVDQLESVLAELNDAKIUSGGGRMITMDREANWP PRSALGFLETFAA AAGPEAPI ATGSGRYYAMDRDKRFD ATSAPIYYEDLEKCMAEDNDAKI ASGGGRMVTMDRQADWD PKSAKNHLHTF TMALGGVADI ASVSGRFFAMDRDNHWD KNSALTYITKLESKITELGSVK VSIDGRYYALDRDENDN ATSALTYVDQLESAMAELNHACI ASGGGRMDTMDRYANWD
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 PTSAGEFVGQLVRVLPE GARIGTVIGRYWAMDRDKRWD PKKSGFYVQQLLNVTKQY VGKLSSVIGRYYSMDRDNKWE DGTSVKFMAQLVKDLRSLCDAQVASGGGRMDTMDRESDWN Q
DGSSLKFVVRELEDEFAACLC PKSAVNFVHEAEKKF PRSUKSSFEKDEKTTNKYNY DIASISGRFYSMDRDKIFE ARSALTYDERTEAVLAEDNAARIASGGGRMDTMDREANWK
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 DGSSVGFLENNYLAQLREKGVAQVASGGGRMYTMDRENDWG
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UniRef90 B2KEE4 UniRef90-A8TIQ9 UniRef90-V8CDP7 UniRef90-K2DXH9
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UniRef90 $1025 Z 2$ UniRef90_UPIOOO36E2381 UniRef90-TOSQ49 UniRef90-UP10003B6463A UniRef90-UPIO003806D3A UniRet90-E1ZKF2 UniRef90-E1WZB4 UniRef 90 -A713M6 UniRef90-Q98QA7 UniRef90-M5A604
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130
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 RTIE AY EADIAFAKAPRYDDAVS LIDDENYQNNITTDEFI RPA RINLVYNMLTSKQAPVTLSLEKTMQNFYNQGITDEFI TP
 RVRQAYDAMVEGDGAPAASAAEAIAAAHAAGKTDEFDPAS RVQDAYDALTAARGTRFARAGQAVAASYAEDVSDEFMRPA $M V E$ E GWN I HVHGKGRQFASATEAIETYRNESGVVDQDLPG $M V D R G W N V H V L G E G R T E K S A Q E A I E T Y R \square P G \square I D Q D M K E F$
 $R V R L A Y D V L V S G K G E S A A D A A S A V S Q F Y D K D K G D E F V L P T$ $M V K L G W E T H V K G E G R Q F A N A L E A V E T D R N E T G A D D Q D L P A$ RIE HS WKAVCLIA E S GRANDAMAAAVEQAYAQEETDEFITPT $R T S V A Y E L Q V K G N G T K V N S P R E A I T T S Y K N G D D S D E N I P P$ MVKNGFY THVYGEGRGFASATEAIETYRNENGVIDQDLPA

 $M V E E G W N T H V C G E G R F F D S A A D A V K T Y R A E T G K D D Q D L P P$
 RVETAYDAMAKGKGRKADTPQAAIIKAAYDDGKTDEFI PAT


 RTHQAYDAMALGEGFEFENPREAVKKAYEDGEYDYFIQPS $R V S Q A Y F T M V Q G K N Y S A D S A E A A I A N A Y E A G T T D E F V L P T$ $R V Q T A Y D A D A R G H A Q H A P D A V T A V T Q Q S H A A G A D D E F V V P A T$ RVEKAYDALLGKSNTTEKNADDYVDLDYKNGITTDEFEVPA
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 RTEKAWAALLDRGEGLTAESAEAAI HAAWKRGEGDEFI SPT $R I K \| A Y E G L T Q G Q K V T A Q N V I E V I Q S R Y D A N Q T D E F L K P$ RVAKAYAA V V A A Q GDRAKTAAAAVSAAYDRGENDEFITP T $M V E R G W H A H V L A D G R Q F A S A T E A I N T Y R N E N G L L D Q D M H E$
 RI K A F Y E V V A E N K N K F E I S P S K Y L E N S Y N E G I T D E F I K P A $M V K K G W E T H V L G E G R S F S S A H E A I N T Q R A E T G A \square D Q D L P P$ RVERAYSAMVRGEGDGANDALGAVAQAYDADKTDEFIPPT $R V G R A Y A A M V R G A G E A A A D A V A A V A A S Y A K G E T D E F L A P T$ RTQLA Y N A L V F G DAPV K GLL E GII D E S Y K E G I T DE FVVKPY $R V S R A Y D A M V K G M G G T A A N A D A A I A A S Y E A D V S D E F I D P V$ RVKRASDAMLHAT GEHAPDAEAAVAAALARGETDEFIAPT
 RVELA YNA IVFGNSDQKTSNTEADKKSYESVVSDEFILPT K I K H A Y DMML G H GQ Q

 KI K LIA Y D T F T GK G N DS T K S P L E Y L Q E E Y K K E I Y Y D E F I T P T
 $M V E N G Y M C H A H G E G P A F A S A A D A A V E T M M Y A E S D D A G D Q Y Q G R$
 LTDQA YNC V V SA Q GRRASSAEQAVKESYEKDRTPEY IPP Y RTEELAYKTLLGDNNNFYEDAGNYIDSSQYDQNDTDEFLDPA IVE R GWQA HV LG E P H K F T T A L E A I K T L R E G D I T D Q WL P P F $R V Q L A F D A M M L G G P A D A L D P L A A I Q A S Y D A G K T D E F M L P V$ KI EHADNAFS GHGDDTDLD P E E Y L E A E Y K K E $\square F D E F F I T P V$ $R V A R A F V A M V R A Q G E T A E S A Q A A V A A A Y G R G E T D E F I A P T$ VVKRGWDAQVLGEPHKFKNAVEAI KTLRQEPNTSDQYLPP RVEKAFEA AARGQGLAADDAQSAVDAAYARDENDEFVQAT $M V K R G W A T H V K A E G R T F A S M K E A V E T T R V E N P G D D Q D L P A$ RVQEAYEAIVSGRGLRCPDPRMAI TNAYARSETDEFITAT KVEAGWNLMVHGESERFPSMMAAITRLDQQPDLIDQDMPF RVVEKA YN A I L G N S E N T F E S A V D F V D S S Y S K D L S D E F F V P S RI QQAYEAITTKAANKSPDDVQSYVESEYQKGIFDEFETPA $M V L L G W K T H V A G E G R A F A S A E E A I L T Y R R E N G V D D Q D L P P$
 $R T Q A A Y D L L A F G K T R R F A N A S D A \mid L E Y A Y A R D E S D E F V L P S$

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UniRef90 UPIO002B440B UniRef90-B7RME9 UniRef90-10xB15 UniRef90-D0JAR4 UniRef90-K7SB61 UniRef90-S3XG18
UniRef90 G8QYR UniRef90-Q28VG6 UniRef90-V7EHE7 UniRef90-R6XRY9 UniRef90-АЗРМХ9 UniRef90-U3Q7D1 UniRef90-I0Zzz2

VITDTNGKP $\frac{170}{V}$
180
190
200 VVEGYAGA VIG AGAP $\underset{F}{\square}$ KDGDGFFCLNFRADRAREILAA KDGDSVIFFNFRQDRADQLTRAFIDAD VNGFGGKPVSMVPQDGLVMINFRSDRAREI IEVLGSDS VIF ENGKPVSMVGKNDSVIFFNLRSDRARQLTKLFAANG CITTSGGTMENDAVLFMNFRPERMTETVDALTNKS FIGDYQG TiKPEDGLLLANFRADRMLQLASGLLGKT CIVNSDNEPMGTI NDGDA
FTVVEGGEPVGR\|QDGDAVVVYNFRGDRAMETSRAFEDDD VIGGYAG MRDGDGLLCFNFRADRVRQLGALLLPG IIGDYAG $M R D G D G L S F N F A D R T R Q L L E A L L D P A$ FVIDAEDGKPVGTINDGDSVILFNFRGDRAQEICRAFDEDE VIAGADGKPVGTI EDGDSVIYFNFRGDRALEMTAAFETPA FVVAHDGKPVAKIENGDSVILFNFRGDRAQEISLAFDRRD FVIAENGTPVGTUNDGDSVVFYNFRGDRADEISEAFGGAD AI AGYDG

MKDGDGVFMVNYRSDRAREITQALLDPT FV DAENGAPVGK VDGDSVVLFNFRGDRADELSMAFGGDE II NG GMPV RNGDAVVMSNFRADRSKELIPFVDEN FVIKKDGQPVGAMHDGDSVITFNFRGDRADETSMAFDNAD AFEAYSG R TGDYNGDPRWEWQGEEVGLAVNFRPDRMREISAMLTRRN QL DPNAVIKNGDAVIFFNFRPDRARQLTAFIDPQ FVIAKDGKPVGTINDGDSVIFFNFRGDRAGEISRAFENRD HDKGAN G FVKDNDSMIFFNFRPDRARQLTHEFUGSK VIADYAG FFADDGFFCLNFRSDRAREVLAAIIADPD
 FVVAENGQPVGRПCSGDSVIFYNFRGDRSDEISQAFEDDE VLGGYTGA KDNDGFFCLNFRADRAREIMAATGDPD I SVDNFGNPDSKTEKEDVVFCFNFRSDRSRQLTEFLTNKN VVGDHTG LADGDAAVFCNFRADRARQLTRMLADPD VRENYEG MSEEDEVIFYNYRADRERQIEELLEDTD
 VDEAGAPVGT EDGDAVVLFNFRADRMVEMSKAFEYEE SFSDFGG K I NQNCKKEDFI NNNDSIIFFNFRPDRARQLSHLFINSK SFNGFRG LVEGESSSHRGKLDDGDAVVFFNFRADRARQLVRMLTDTR FVIDGGGQP GTIEDGDAVVLFNFRGDRADEITRAFVEND V GGPQQN RLAADEPVFFFNFRSDRMRQLSAAVAMPA 11 LNEDGV $\backslash R D G D S L D F D D F R D R M R Q V E A F A V Q R$ VLDGYEGA KDGDALFCLNFRADRAREVMAATGAPD
 AFEGYDG FKESDAVLILNFRSDRMRELTTAVGDSA SFKDFGG FVVAKDGKPVGTIEDGDSVILFNFRGDRALEDTKAFEAEN VLAGYAGA RDGDGFFCLNFRADRAREILAALGQPG
 VVGDYAGA
 VIVDDDDNPVGPI QDGDAVATFNFRADRVVELSKAFEYKD VINQYSG IRRNDFFCLNFRADRARQLSADGDPN LFYKN AAIQEGDCIEFLNFRPDRADQLALAFNEPG VVVDSNKNGLFVKDNDSIVFFNFRPDRARQLSHLDVGSN VIVGEDDKPVATDEDDDAVVIFNFRADRVIELSKALEYSE LFAKEDKPVAMMKEGDSVFFFNFRPDRAGQLSLCFNDPD LFAKEGG
CFANFGG VKAEDGUVFINFRNDRARELCAALGAEN FVVDRGAGPVGMIHDGDAVVFFNFRGDRADEISRAFEEPD INLKVNKKD FLADDHPVIFFNFRPDRARQLSHLILQTD VVVDNHDKPGGTIEDGDAVLCFNFRGDRVIEMSRAFEDDD V GDYDG VHDGDSVFHTNYRQDRALQLSMAFVEDT TKKDQSVY 1 KDNDAITEANFRPDRARQLSHFIGS VVTDDGGKAVGT EDGDAVVDFNFRADRMVEUSKAFEYEE VLEGAE PI ALAGYGG LFKKE VTGGYAG

## FAMRNNDCVFFLNFRPDRADQU

 VIVDENGKPVGPMRDGDGIFCLNFRADRARELRAMAQPD VIGYGAVGVDGDAVVTFNFRADRMVM AKALEYAD VIGGYQGA VIGDYAGA VIVGEDDAPDGKMSDGDAVVMVNFRGDRADEITTEAFEDDD INSNIDD RDNFVKDNDSLIFFNFRPDRARQLTHLFINSS FVIADESGPVGRDQDGDSVVYFNFRGDRADEITRAFEEKD


UniRef90_C5J7A4 UniRef90-R6UK78
UniRef90_W8K2H0 UniRef90_UPIO003B488DA UniRef90-K2CX33 UniRef90_UPIO0037C80D6 UniRef90_UPI00046A22BD UniRef90-U4V9H8 UniRef90-C8RWE5 UniRef90_UPI0003775BD1 UniRef90_UPIO00262738D UniRef90_Q42908 UniRef90-M7ZXD7
UniRef90-F7XVP0
UniRef90-XOS286
UniRef90-Q6AKC4
UniRef90_YOZR46 UniRef90_UPI00036E7E04 UniRef90_Q1XF17 UniRef90-M6ZJV9 UniRef90-Q2GKV7 UniRef90-Q3YRU6 UniRef90_UPIO00466586A UniRef90-A0A037ZPI1 UniRef90-W1U6A1 UniRef90-C1E3Y5 UniRef90-UPIO00479EDD4 UniRef90_C5LBSO UniRef90_V6LVQ4 UniRet90_R6AXL8 UniRef90-S6G3P3 UniRef90_UPIO00465D612 UniRef90-G2RZY0 UniRef90-N9VED3 UniRef90-A0A059LPU8 UniRef90_Q49006 UniRef90_Q5PAE9 UniRef90_UPIO003CFE52F UniRef90-B0EE06 UniRef90_A9TAB5 UniRef90-R5MDX2 UniRef90-R7QSN8 UniRef90-R5T1K9 UniRef90-E4LDD1 UniRef90-XOWVK4 UniRef90-H6N8M5
UniRef90_E7ACM2 UniRef90-E6LA37 UniRef90-C7DFX9 UniRef90-W1EI20 UniRef90-UPI000225ABBF UniRef90_A2ZZ01 UniRef90_U5NGG1 UniRef90-M1P8A0 UniRef90-U1DAG6 UniRef90_COB5F0 UniRef90-17BIH2 UniRef90-W6LG98 UniRef90-R6H2S3 UniRef90-D6PZ89 UniRef90-T2RDG0 UniRef90-FOQQ46 UniRef90_X0X2R0
UniRef90_G6A0P7 UniRef90 C6V607 UniRef90_U1P712 UniRef90-V9R9U9
UniRef90 R7NID1 UniRef90-R5UGR7 UniRef90-Q9L214
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UniRef90 M5RU98 UniRef90_M5RU98
UniRef90_A0A017T815 UniRef90_A5KRP3 UniRef90_L7K045 UniRef90-S9R6L6 UniRef90-Q7XYD2 UniRef90-H3EHZO UniRef90_W7T610 UniRef90-A0A059LHL5 UniRef90_L2GPF7 UniRef90_UPI00047015D6 UniRef90-V9R9U4 UniRef90-W4Y3U0
UniRef90_V4HVL8


Q GAS LVD VAALEKK S ITF Q D A GWQY VK P AFEAN T L H I T L





 QGASLVDAALRSGEDYASTGYRYLHGAFSKDHHTLHLVGL


> G LY R I N QS QEVLRVDELIES GELFKI PRLTDASTHCKTTGAKFHLMGL




D S L L V Q Q A ID S G A L R S H P R LD A VL N EVA A T S G A L H L I G L
 Q GA KLV D Q ALA S GK DYE G D GF D S LLV Q Q Q I D S GAMREHPKLNELCAA TAAA GKA L H L I G L



 QDLPPRISAAITDGEIGKSASALIDDLMERLRRTGGTCHLLGLL
Q S LIMMKN AFE T GE $\quad$ L K N IIS R L K VS GK K $\square H L I G M$ QD DVVRLDA A VQ D G SFAR NPVVFLEAIAAHARRN HA S L H L L A Y TKSIE TGNFAKRDDVLDVFEQLKFNGNTLHIFLL Q S VKKDDLA K E R T LIFVQK A YL N A

|  |  |
| :---: | :---: |
| UniRef90_C5J |  |
| UniRef90_R6UK78 | MSDGGVHSHDDHIVYLMNKAVQRGVKKVYVHSFLDGRDVP |
| UniRef90-W8K2H0 | YSDGGVHSMDTHENALLEDCAKNGNEVFAHADTDGRDVS |
| $\begin{aligned} & \text { UniRef90_UPIO003B488DA } \\ & \text { UniRef90-KวCX33 } \end{aligned}$ | LSANGSAHAYE |
|  | GGVHSHSNHITAMSKLLHENNIRTV HIFSDGRDSS |
| UniRef90-UPIO | VSDGGVHGHLSHMI AAAKTLDAAGVPTVVIHALTDGRDVS |
| Ref90_U4V9H8 | dogve |
| UniRef90-UPIO003775BD1 | LSDGGVHGHI DHLLASLKITSKEKVGVALHLITDGRDVA |
| UniRef90-UP1000262738D | LSNGNVHSHIDHTIALIEHAFKHGLRRCYVHAL DDGRDVA |
| UniRef90-Q42908 | LSDGGVHSRLDQLQLLLKGSAERGAKR\\|RVHTLTDGRDVL |
| Ref90-M7ZXD7 | LSDGGVHSRIDQLQLLLKGASEHGAKRIRVHILTDGRDVL |
| UniRet90-77 | ASDGGVHSHIKHFLECAKLIRNQNDKVFIHITIDGRDTP |
| UniRef90 XOS286 | VSDGGVHSSDKHLEKLCDLTKDYGLNKVFIHALTDGRDTD |
| UniRef90 YoZR4 | LSDGGVHSHYKHLFALLLEAAKKQGVEKVYVHA |
| UniRef90-UPIO0036E |  |
| UniRef | GGVHAKQTHLYALLRAAKEAGVPK1Y HFFGDGRDTD |
|  | FSDGNVHSHDDHTKALISQAlLEKVPKIRLHILLDGRDVP |
| UniRef90-Q2GKV7 | LSDGGVHSLQAHMETI EVITGFGI KVFIMVI |
| UniRef90-UPIO0046658 | DGGVHGHVSHVLA AIRAIVAAGVPVVLHAVTDGRDVA |
|  | , |
|  |  |
|  | LSSGGVHSRYDQLKGLMQGAVADGCKMLRLHVLTDGRDVP |
|  | FSDGGVHAHMDHMIA YKAAVAYGVTN KFDLITDGRDTA |
| UniRef90-C5LB | DGNVHSHLDHLKALITEASK TVKKI |
| $\begin{aligned} & \text { UniRef90_V6L } \\ & \text { UniRef90_RA } \end{aligned}$ | D |
| UniRet90-R6ATZ5 |  |
| inefet |  |
| - | VSDGGVHAHIEHALA LIAGLI AGAGIPVSIHAFTDGRDTA |
| UniRet90-G2 | NGGVHSLDNHLFEIMKLANEKGLKKVSTHI |
| UniRef90-A0A059LPU8 | GGVHSRYDQLCLLIEGALERGVRRVRVHA |
| UniRef90-Q4 | FSNGGVHSHFDHMIA YKAAIVYGITNIKFDLITDGRDTK |
|  | LSDGGVHGLQDHITQLARVLAELRIKV |
| ef90_UP1000 | FGSGGVHAMDSHLKK LPL PKD |
|  | LSDGNVHSNTTQLFQMMDGVVKCGGKKIRV |
|  | (lit KFNMWMLDYLHQMGIE KVYV |
| UniRef90-R7Q | GNVHAHVNHVFQLID GAIDDGAKRI |
| UniRef90-065 | GGVHSHMNHMISMYKAAVKFGLTNI |
| UniRef90-R57 |  |
|  |  |
|  |  |
|  | ISEGGVHSNMNHFLAFADICAKRNQPYV |
|  | MSDGGVHAHIDHLMGMALLLERSG KKVWLHLI GDGRDVL |
| UniRef90 E6LA3 | G G V |
|  | V |
| UniRef90-UPIo00225ABBF | MSDGGVHSHQDHILYLLKLLASYGIEKVKVHAJLD GRD |
| UniRef90 ${ }^{\text {A22ZZ01 }}$ | DGGVHS |
| UNGG1 | ASKGGVHSHLEHLYEFLKVTNNQGI KVFTHLFSDGRDVP |
|  |  |
|  | V |
|  |  |

GSKGGVHSHDQHLYAF LDVCKERGVSPDVVHFSDGRDVA LSNGGVHSRDDQLYLFI RKAVEDGAKRI RLHVLYDGRDVP


ASKGGVHSHDDHLYEFLRVANSYGDKSFVHLFSDGRDVA VQDQGVHAMQEHLFALLGFLAGQGVEKVFVHFFGDGRDTP LSDGGVHSHVAHINKI SNYLTSRGVT VCIHAFLDGRDTA VSDGGVHASQAHLHALIDLAAERGVTAV THAFTDGRDTP ASKGGVHSHVDHLYSFLKMTKARGFKPFVHLFSDGRDVP YSNGKVHSNLEHF $\mathrm{S}_{\mathrm{S}} \mathrm{MYEILKENNAQK} \mathrm{\square NFHLTTDGRDTK}$
CSDGQDHAHVEHLSELLAAAATHQVERVFTHALTDGRDVA VSFFSSHGSIHHLFALMELAKRENVPEVYIHAMLGRRGEM LSDGGVHSRLDQLQLLLKGAS
CSDGQIHSNIEHLGVLLAAAAEHGVPRVWDHAVTDGRDVA CSDGNIHAGVDDFVDMYKFLVNNGFSKIHFHLITDGRDTG MSDGRVHSDLDHAIA VELVRRSGLDKFAVHAITDGRDTS VSTADVHASRAHLHEVI RMARFFEV QVVLHAFLDGRHAS VSPGGVHSHTNGALALVKLAKELELTNVGVHAFTDGRDTP
 CSDGMTHANVEHLRELCLAVAAHGVSKVWLHATTDGRDVA $\square$ SPGGVHSHQDHATALLEILAETGVSAVVVHALTDVRDTP TSDGGVHSHDDHLKYLLECDPMKGASVY HALADGDDVS

C S D GR $\square H S D \square S H \square G E \square L G A A A D A S V S Q V W L H A \prod T D G R D V A$

## UniRef90_C5J7A4 UniRef90_R6UK78 UniRef90_W8K2H0 UniRef90_UP10003

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UniRef90_X0S286
UniRef90_Q6AKC4 UniRef90_Y0ZR46 UniRef90_UPI00036E7E04 UniRef90_Q1XF17 UniRef90_M6ZJV9 UniRef90-Q2GKV7 UniRef90_Q3YRU6 UniRef90_UPI000466586A UniRef90-A0A037ZPI1 UniRef90_W1U6A1 UniRef90_C1E3Y5 UniRef90_UPIO00479EDD4 UniRef90_C5LBS0 UniRef90_R6AXL8 UniRef90_R6ATZ5 UniRef90_S6G3P3 UniRef90_UPI000465D612 UniRef90_G2RZY0 UniRef90-N9VED3 UniRef90_A0A059LPU8 UniRef90_Q49006 UniRef90_Q5PAE9 UniRef90_UPIO003CFE52F UniRef90_B0EE06 UniRef90_A9TAB5 UniRef90-R5MDX2
UniRef90-R7QSN8 UniRef90-R7QSN8
UniRef90-Q6F0W3 UniRef90_R5T1K9 UniRef90-E4LDD1 UniRef90_X0WVK4 UniRef90_H6N8M5
UniRef90_E7ACM2 UniRef90 E6LA37 UniRef90_C7DFX9 UniRef90_W1EI20 UniRef90_UPI000225ABBF UniRef90_A2ZZ01 UniRef90_U5NGG1 UniRef90-M1P8A0
UniRef90-U1DAG6 UniRef90_D8ULC1 UniRef90_C0B5F0 UniRef90-17BIH2 UniRef90_W6LG98 UniRef90_R6H2S3 UniRef90_D6PZ89 UniRef90-T2RDG0 UniRef90-F0QQ46 UniRef90_X0X2R0 UniRef90_C6V607 UniRef90_U1P7I2 UniRef90_-V9R9U9
UniRef90-R7NID1 UniRef90_R5UGR7 UniRef90_Q9L214 UniRef90-Q2LUU2 UniRef90-K3YSM2 UniRef90_V6KB46 UniRef90-R7IB17
UniRef90-M5RU98 UniRef90_A0A017T8I5 UniRef90_A5KRP3 UniRef90_L7K045 UniRef90_S9R6L6 UniRef90_Q7XYD2 UniRef90_H3EHZO
UniRef90_W7T6I0 UniRef90_A5ECA6 UniRef90_A0A059LHL5 UniRef90_L2GPF7 UniRef90_UPI00047015D6 UniRef90_V9R9U4 UniRef90_W4Y3U0
UniRef90_V4HVL8
D
 PTSAKTYLTYGLDQQRVK GVEGVVSGRYYAMDRDKNY D
 P HEAV NLL K HLLQD HF LDD GEV I I AT I MGRSFAMERNKRWE

 PSSAADFLDGL IGDLPNDVVI GTVTGRYFAMDRDNRWE $P$ D S A A R F M A E L VA GLDPA G A SI GTV DGRYWAMDRDNRWD
 $\square$ Q S AL DYTEQL ES LLFHQLKSQRFASAGGRKDTMDRD QNWS $D G S S V G F V E T L V N L R A K G V D A Q D A S G G G R M Y T M D R E N D W S$ D G S S V P K S A V K Y I N T F V E Q GF N PKS GLGFI K NLENHLQNSS AEIAASVVGRYYTMDRDKRWD Q K S A L D Y I R P L E E RL R A L S VYRIA S G G G R MVTMD R Y K D WS
 PKS GAGYMQELLDTIIKEIGI GELATVVGRYYAMDRDKRWE EKS A L D Y L N P F E T WL D SLT D DR I A S G G GRMDTMMREAD WS

 P R S A A P QLAA ELLEAALD Q GA HIVGSLVGRYYADDRDNRWE


 VDS GLGFV RALKDKLAECGCGKIATVEGRYYAMDRNNNYD



P K L A A Y D $\quad$ F $V$ I $\operatorname{K}$ K $N$ L Q A D C A E WS D V R I
PRSAKKHVTALLNDAVHSY DIS

| $P K$ | $S$ | $A$ | $A$ | $Y$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $D$ | $F$ | $G L$ | $T$ | $Y$ |


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

ERSALD Y L EKRLEAI RESGVVRVASGGGRMVCMDREADWG
P K VA E Q Y I N QLL QVI K DNNNGEI A S I S GRYFAMDRDKRFE
Y N S S Y S Y I E K L K S Q N $\quad$ I A S I SGRYY A M DR DK R Y E

$P N S A K V D F \| S I V Q K L K D T \quad N G K L G V V S G R Y Y S M D R D K N W D$

PSSADAFMAELVAAMPD GARDGSVGGRYYALDRDTAWE PRSAEKT LAATFEAKFAALGKGRIASSDGRYYAMDRDNRWD
 PNQFSIDLEEIVVKLRE NNAVLAT $\quad$ SSGRYYAMDRDKNWD P K S A L K Y FVVPLLE EKLLKAMSDYCMA S GGGRMVVTMDREAAD WA
 $M K E \square G V G E V A S V S G R Y Y A M D R D N R W D$
 VD S S V N Y L N DL D EVL K N L N $\square G K I M T V C G R Y Y A M D R D N K W E$ PRSAENTLARFQALFAK LGKGRVAS LDGRYYAMDRDNNWD MK EVGVGKFASV SGRYYAMDRDKRWE
PSQFLVDLEE ILDKLKETNS LLATISGRYFAMDRDKNWD PRSALTY L A QLEEKIA QCGVGQQASVMGRYYAMDRTGNWG
 PTSATD Y L ER LAK HAAAAGTGQVATVTGRYYAMDRDENWA PKQF IT DLE E V VGKDK EANADQLA SI S GRYYSMDRD KNFD
 D H T GEA Y L TRVA ELAAAAAGTGQIATVI GRGYAMDKA GDLD
 D GTAVRYLTRVVELAQEAGAGRLATVTGRGYAMDKSGRED VH DAMKYVNMI K DVDK E Y GVVGEIAASVCGRFYAMDRDENWD P T G GKA YVVKKI EA AMKEK GVGH I A TVVGRFYAMDRDDRWE AEAAWELLAPVEETLR GTGVIGTLSGRHFAMDRS GRWD PMSSLAHI KEFEAELEA $\square G N G R V A S I A G R Y Y A M D R D N R W E ~$
 $P$ S S A A R Y L A D L E S R L P E G G R I A T VT GRYY A M DR D R R WD


 PDTFADFI QPFNN $P G S A P A L L A E L D S R L N Q \square G L G$



## UniRef90_C5J7A4

 UniRef90-R6UK78 UniRef90-W8K2H0 UniRef90_UPIO003B488DA UniRef90_K2CX33 UniRef90_UPIO0037C80D6 UniRef90_UPIO0046A22BD UniRef90_U4V9H8 UniRef90_C8RWE5 UniRef90_UPI0003775BD1 UniRef90_UPI000262738D UniRef90_Q42908 UniRef90-M7ZXD7UniRef90-F7XVPO
UniRef90-XOS286 UniRef90-Q6AKC4 UniRef90_YOZR46 UniRef90_UPIO0036E7E04 UniRef90_Q1XF17 UniRef90_M6ZJV9 UniRef90-Q2GKV7 UniRef90-Q3YRU6 UniRef90_UPIO00466586A UniRef90-A0A037ZPI1 UniRef90-W1U6A1 UniRef90-C1E3Y5 UniRef90-UPIO00479EDD4 UniRef90_C5LBSO UniRef90-R6AXL8 UniRef90-R6ATZ5 UniRef90-S6G3P3 UniRef90_UPIO00465D612 UniRef90-G2RZY0 UniRef90-N9VED3 UniRef90_A0A059LPU8 UniRef90_Q49006 UniRef90_Q5PAE9 UniRef90_UPI0003CFE52F UniRef90-B0EE06 UniRef90-A9TAB5 UniRef90-R5MDX2 UniRef90-R7QSN8 UniRef90-R5T1K9 UniRef90-E4LDD1 UniRef90-XOWVK4 UniRef90_H6N8M5
UniRef90_E7ACM2 UniRef90-E6LA37 UniRef90-C7DFX9 UniRef90-W1EI20 UniRef90_UPIO00225ABBF UniRef90_A2ZZO1 UniRef90-U5NGG1 UniRef90-M1P8A0
UniRef90-U1DAG6 UniRef90_D8ULC1 UniRef90_C0B5F0 UniRef90-17BIH2 UniRef90-W6LG98 UniRef90-R6H2S3 UniRef90-D6PZ89
UniRef90-T2RDG0 UniRef90-FOQQ46 UniRef90-X0X2R0 UniRef90-G6A0P7 UniRef90_C6V607 UniRef90_U1P712 UniRef90-V9R9U9
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UniRef90 L2GPF7 UniRef90_L2GPF7 UniRef90_UPI00047015D6 UniRef90-V9R9U4 UniRef90_W4Y3U0
UniRef90_V4HVL8
 R I Q LA Y DALVRGEAP $\quad$ K GLL EGI DESYQNNITDEFVKPY
 R


 RVATAYNAIVHGSNVRADTAEEAIKSNYAAGVSDEFIPAT
 KI QLGWNLHVHGKGEHQFTSVREGDEYFRQPDIDDQDLPG VVKRGWDAQVLGEPYKFKNAVEAVKTLRQEPKANDQYLPP VVKRGWDAQVLGEPHKFPSALEAVKKLRDDDPNDQYLPPF RTEKYYKALVGAEAKKFFTPFDIVKNYQ $R \square K K G Y D \square M V H G K G K Q T Q N \square P Q A I R E S Y K K G V T D E F I X P H$ VVERGWRAHVLGEGRFFSSASEAVETFYREDSTTDQYMAA REEKAYNA IRNFDAPTYATAKEGVEASYN
 MVERGWKVHVKGEGRYFSSAKEAIEETFRENPKDDDQYLPS
 RVEEAYRAMVQGQGLHASTARWAVDGAYNRSETDEFITAT
 MVERGWKAHVLGEPNKFKDPAEGALKKALKEGGESDQYLEPF
 MVERGWNTHVHGEGRQFSSLQEAYETLRSETGKKDQDLPS RTEKAYSALVYGEGDMFSDAEEAVKTSYQNGVTDEFIKPC RTEKYYNLVINGVGFNDLNYETAINNLYRKNITDEFLPPM

 LVK RGYDAHV DGRPNRGPSAPEMVGKDQEGDVSDQWVQPW RTRMAYNA VARNNVRFTNULDYI QQEYMIDNHDDEMIIPA RVQKSYDE M F GQLDQNDDPSEYVAKSYEKELTDEFGIPDV

 RSAAAYDTMTERKQPKFTDPIEYVKAAYENGLDDEMIVPA RTNLYFDTDTGNNDTNMS GKDYINNSYANNETDEFIKPA $R V E L A Y N A V V H G Q G E T A D S A C K A V Q Q S Y D K D A A D E F V L P A$
$R V E R A Y A M V F G E G H R A R S A G Q A V E N Y Y K N P V G D E F I E P T$
 RVEAYYKALAHACNK SPLSPEEYVIHSMYAQN RVQTAYDAMVMGRGPSTPSAVDVVANAYAADVTDEFIPAT RVEQAYDLLTLAKEFQADTAVAGLQAAYARDE

 IV EKGWQAHVLGVGRGFASACDA Q TYYDEDEMTDQYMDA RVQQAYGLMTQGKEFTADSASEALAAAYARDENDEFVKAT AVKRGWDAHVLGEPHKFPDPDTAVRGSETNPVSDQHLEPF RVEKAYAALTRGEGDTAASATEGI QASYDKEVTDEFVVPF
 $R T K D Y T D L L F K G D G V R V R G Y K T G L A A C Y R K N L T D E F L P P L$
 RLEKVLERVMTDGKGETATSAKEAVEKAYADGKTDEFVMPT RTECAYNALTCGAGLTARSAGEAI ENAY
RTQAFYDVMVTAQPYHAADAMQAVEDAYRRGETDEFVTAT RTVEAYRVIVKPTKHQFEKATEAI GYYYAQGDSDEFIPPS RTQRAYNAVVHRDAAAASNPVAAVEAAYDRGTTDEFVEPT RTERVLKVFTQSGVPSFKNLEDYVNSEYSKGTTDEFAVPA

RIKKTYDMLVFGR
$V V K R G W D A Q V L G E P Y K F K S A D E A V K T \square R A E P N A N D Y D P P F$ LTEAAVLAMADGQGSDRYQPQEAVVCSEGGD EWVLPS RTK T Y YDLVTMGKG\|SS $\square N \square E K S I E S S Y G K G \square T D E F\|K P\|$ RVEATYDMMTK
RTWTTYQAIVRGQANHATTAFDALQEGHAMGDTEDWLPPV R DELAY EMLI GERDAMAHSATHHUATSYEKGETDEFLRP I RVEEEAY LMMTDGKDI DES SDSY VVKRGWDAQVLGEPHKFQNALEAVKT LRAEPKANDQYLPP
 LTKEAGLVI ADGVGR
RVAKAYCTIVEA
$\square V R R G W R A H V L G E A E H A G E A L E A L R A G P D G E V V S D Q W L Q P$ $R T E Q V F Q M M V N K E N G P G C N A V N T N Q N D \square D R G I V D E F I E P T$ KVKRAYDALTDG
RI DKVWKAFLNFKGTPTFKNAKEYVKSQYENTYDKWDVPA RIKVAFEGLVQGEATTKENVIQLVQSRYDKEGSTDEFLTP


 A SSEY DSSLSGLKRGDKVVFDNFRPDRAKQLSHVLVGSK FVVERNGTAVGCIEDGDAVILFNFRGDRADELSKAFDDQD RI GEA GAPMQDG
VIVEEEEDPVGP LLDGDGVVLFNFRSDRMTQLVQALEAPE VVT KNGTPVATVKDGDSVI FFNFRPDRAREVTRTGCADD FISEDQG
 VIV ENDKPVGLIKENDSVITGNFRPDRARQDTRALVCDE FISSESG LLKEGDQVVF LNFRPDRAKQLSHVLVGSK


VIVDDS GNA $\square$ GPVLDGDAVVT $\square$ NFRADRMVMLAKALEYAD VLASPDGQPTTSITHHDAVLFFNFRSDRDQQLADRLV VCSRNN IKNGDIIVMWMNYRADRAKQILSSIVN
R I GEYEGMVGTFMADEEVGLS LNVRADRMRQLSAMFVRHD
 $V L D G H E G$ LHPQDGVFCDNFRADRVREILQALADPA VIVDESGKSVGPIVDGDAVVTFNFRADRMVMLAKALEFPD

$F V V V E A G R P V G T V E D G D A V V V F N F R A D R V I E D S K A F E Y A H$ LLINE
VSQEYADGP GLKEKD LVVNLNFLKYGTRQLSHVLVGSA


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| :---: | :---: |
| UniRef90_C5J7A4 |  |
| UniRef90_R6UK78 | YARSEKSVIEFKNI D F V Q M M L Y S ELVKGDI AF |
| UniRef90_W8K2H0 | FKEFEREKVFENLL |
| UniRef90_UPI0003B488DA |  |
| UniRef90_K2CX33 | NP GAF QRKKVLHNLEFIS MTDFGPDLDS V V A F P |
| UniRef90-UPI00037C80D6 | F K K K K DVK T P K L L N CLGM T E Y S K El S N Y M |
| UniRef90_UPI00046A22BD | FDAFATGLR PEWAALMGMAQYSTD H |
| UniRef90_U4V9H8 | F DEF DVGTR LQ WS MVLGMVEYSTS H D Y M C F P |
| UniRef90_C8RWE5 | F T GFETG $\square$ R PKWAAML GMVDYSKA H D A Y M AFP |
| UniRef90_UPI0003775BD1 | FDSFS lVDR PKLSSLLGMVEYSKQHN |
| UniRef90_UPI000262738D |  |
| UniRef90_Q42908 | FDKFDRV R F P KI R Y A G M L Q Y D GELKL P NRYP |
| UniRef90-M7ZXD7 | LD K F D RV R F PRI R Y A G MLQ Y D GELKL P S HYP |
| UniRef90_F7XVP0 | FRDFQ TRNLNLKGLGMTS Y S N K I D M V V F P |
| UniRef90_X0S286 |  |
| UniRef90_Q6AKC4 | F Q E D R VR R P DVF Y A G $\square$ M E Y D G D A H $\square$ P |
| UniRef90_Y0ZR46 |  |
| UniRef90-UPI00036 | F SE $\square \mathrm{K} \square \mathrm{K}$ N R P E LT N L VGMVE Y S D H H S T F M |
| UniRef90_Q1XF17 |  |
| UniRef90_M6ZJV9 | F |
| UniRef90-Q2GKV7 | R F PEVSNVLGMRQYSEKMR】A S L |
| UniRef90_Q3YRU6 |  |
| UniRef90_UPI000466586A | F DAFDVVAGR PAWAAVLGMVEYSQDHNGWMMFP |
| UniRef90-A0A037ZPI1 | F A EFATD A R P G WA SVTGGMVEYS D R H N A Y M I P P |
| UniRef90_W1U6A1 | FAGFERP R VPALEELITTMTPYEASFHTPVIVY |
| UniRef90-C1E3 | FKDFDRV R F P KVKFAGLMQY D G D L K L A N Y P P |
| UniRef90_UPI000479EDD4 | Y E A F A G $\$ P F $\square$ G D S I R F $\square$ S TMKY A D SVT S P $\square$ A Y P P |
| UniRef90_C5LBS0 | FDCFDR R NAPKVDYYGMLIY D N D |
| UniRef90_V6LVQ4 | F NHFER R R P K NLFYA G I M Q Y D D L A |
| UniRef90_R6AXL8 | FPQFERRRGYFP V K F V C M S Y S A EFNGRV |
| UniRef90_R6ATZ5 | FKEF KTKNLSNFKSYMMFKQDDVVNVKHFF |
| UniRef90_S6G3P3 |  |
| UniRef90_UPI000465D612 | $F D G F A R A R R I D F A A R V G M V S Y G G G L D A Y V L F E P$ |
| UniRef90_G2RZY0 | YPAFK G L Y F VGNDIR FVCMMKY SETVAS HI A Y P |
| UniRef90_N9VED3 | LY K Y K G K N N I K V N L F A S LM K Y E GI D SKI S F K |
| UniRef90_A0A059LPU8 | FEG FERERWPKI KYAGMMQY D GEL K L P L HFPP |
| UniRef90_Q49006 | YEAFSDAEFIGDK\RFVSMMKYS D S V T SPl A Y P P |
| UniRef90_Q5PAE9 | HRSQEV SNILGMVRYSEKI Q V P S L P P P |
| UniRef90_UPI0003CFE52F | K N Y $\square$ D R N S K F $\square$ R N 1 Y L A T M T K Y Y K E Y D G NV |
| UniRef90_B0EE06 | F K A F D RVVY T P K L R Y A GLLLE Y D S D NHVPP Q Y P P |
| UniRef90_A9TAB5 |  |
| UniRef90_R5MDX2 | FKEYET@KYKDLQV F |
| UniRef90_R7QSN8 | GEFTHFDRKRVPKVRYA G M M Q Y D G A G |
| UniRef90_Q6F0W3 | Y P A K DVEFIGG K I R F V S T M K Y A S VTSF |
| UniRef90_R5T1K9 | NK■IS Y G TKVLT M M K $\square$ N NEI S AP YL F |
| UniRef90_E4LDD1 | F D GFKREQ LS LYMATMTK Y L D G L PVHIVYE |
| UniRef90-X0WVK4 | FPGFDRG R R I D DLC Y VT LTA Y E E GLPVQVAFP |
| UniRef90_H6N8M5 | GLY D Y VP S LQL N NV S L F ALM D Y E K I NLKNTLIFP |
| UniRef90-E7ACM2 | $F K G L P E C G A G A P E L T I X A T M P Y S A S F N H P V L F P$ |
| UniRef90_E6LA37 | F T PLKKQKKR F $\quad$ S NLLTTMSVY D D K F N $\square$ P V L F E |
| UniRef90-C7DFX9 | FGDFD $\square$ T GR P T LGA ALGMVS Y S K D D A YVAFP |

F D K F D R
 F DGFDR K R R P EVVFFAGlMMQYDGDAMVPK H YP P

F T GFDRG RVPKDLRVVGLTRYSPRLPSRCLVAP FDGFDRGERI KTTYVCFTEY DETI PNKVAF

F NEYKVPK FNDLSVLTL
$F$ VGFERP CMKTYFVCLT TYD $\quad$ TT DKNHVAFKP GLY S HE SELVP K NLSLHSSISEYEGISSTSVFFP

QTGCQ $\square P D E A R N D \square F T A G M T P V A D D D A D K V M$
TNFCEDK $\quad \square K F S E M M T M S Q Y E E S L L P T L I$
$D \square Y S Y K S Q Q T P E D L K L Y T M T D Y E G V N S S G V F F P$ FEEF PTYKYQNLKTYSFFPLDKD DKT
$M P \quad E A G M R T \square P G L Q Y Y C M T P Y D A S F K D H \square L F$ HEHLTAS GRTVNMVSLAQYD
FDKFDHV RVVKNRYAGMLQYDGELK LPSRYPP A HLQRSGRQVFP AS LAQYD

EWLSDRGKHAFQEHCYRTLVEHDPAMG■PVAFP
$R K \square F$ T T LTRYETFNFP
FDGWDRGP APALLAARLGLVDYSAAHDAPAMFP
$F D K F D R V R B P K I K Y A G M L Q Y D G E L K L P S K Y P P$ Y K D C A S A L T H P K DV $H L A D R E V T V R \quad S L A Q Y D T R A E \square P$

DLY S H S P T II P E NLGGLFAMDD
 HERLESSGRT $\quad$ QVRLL L LA QYDT DT PLETL

UniRef90 C0CU65 UniRef90-UPI00037BC6A3 UniRef90_UPI00036BCCF9 UniRef90 I3SGX3 UniRef90 M6TWC5 UniRef90-A0A059EGM9
UniRef90-C0CWJ4 UniRef90 S9U1V5 UniRef90-W6KQJ8 UniRef90-D3LOR5 UniRef90-M0UH90 UniRef90 ROKPU2 UniRef90-R7QP21 UniRef90-H8ZA98 UniRef90_X5MCR1
 QGPTRINKAMDDGSFYQSTALQDUMKQCLQYQSTLHLLGL DSLLVQQADAAGTGRTHPRLGSVMDATAAAGSALHLIGGL
 QDDVI IEKS $\square$ ADGSFFKNHVLLEAVNRLHDSKGCLHLIGL



|  | $50.60{ }^{60} 80$ |
| :---: | :---: |
| UniRef90_C0CU65 |  |
| UniRef90-UPI00037BC6A3 | LS D GVVSHIEHFLAVIQHADRQGI TRLRLHALFDGRDVA |
| UniRef90-UPI00036BCCF9 | CS DGQIHAHIAHLAELLAAAADHGVDRVFVHAIT DGRDVA |
| UniRef90-I3SGX3 |  |
| UniRef90-M6TWC5 |  |
| UniRef90-A0A059EGM9 |  |
| UniRef90_C0CWJ4 | $L T$ YKS SHGSUDYPLS ICEMARD LIPEVYLH\\|IFDGRSTE |
| UniRef90-S9U1V5 |  |
| UniRef90_W6KQJ8 |  |
| UniRef90-D3L0R5 | $\square$ SHKS SHGLID Y VSNVLM |
| UniRef90_MOUH90 | G R D |
| UniRef90-R7QP21 | $\square S$ cat |
| UniRef90-H8ZA98 |  |
| UniRef90_X5MCR1 | LTS S G I E GLTAHAAK】AANLSHAG】 RVWVHAILDGRDTA |

lupas_21
lupas_14
lupas_28
jnet conf conf
sol25 sol5 solo
jhmm
jpssm

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| :---: | :---: |
| UniRef90_C0CU65 UniRef90_UP100037BC6A3 | PGSTAQDYVGRIVEVESTIGAGYI ASAGGREVMMDRDHDWR |
| UniRef90-UPI00036BCCF9 | DGTARTFLAQVGEMADRAGTGRLATVIGRGYADDKA |
| UniRef90_I3SGX3 | Q C CVRKGIDAQI A S G G GrmVT M R E N WG |
| UniRef90-M6TWC5 | NGAD $\square$ RIA S G G GRMIT MDREADWS |
| UniRef90-A0A059EGM9 | PRSFEKYFTD⿴ENFCKGTS AKI ASVSGRYFSMDRNENTE |
| UniRef90-C0CWJ4 |  |
| UniRef90-S9U1V5 | M MFVTMDRDADWE |
| UniRef90-W6KQJ8 | D WS |
| UniRef90-D3L0R5 | GRGDADDRS G ${ }^{\text {d S }}$ |
| UniRef90_M0UH90 |  |
| UniRef90-ROKPU2 |  |
| UniRef90-R7QP21 | DRYEADWG |
| UniRef90-H8ZA98 | PSEYLKYLDLLMESVPE NVLVVSVSGRFYSMDRDRREE |
|  | PDAALGALHEFHEDVAGVDTVRFATVSGRAFALDETADA |



|  | UniRef90_C0CU65 |
| :---: | :---: |
|  | UniRef90-UPI00037BC6A3 |
|  | UniRef90-UPI00036BCCF9 |
|  | UniRef90-I3SGX3 |
|  | UniRef90 M6TWC5 |
|  | UniRef90-A0A059EGM9 |
|  | UniRef90-C0CWJ4 |
|  | UniRef90-S9U1V5 |
|  | UniRef90-W6KQJ8 |
|  | UniRef90 D3L0R5 |
|  | UniRef90-M0UH90 |
|  | UniRef90-R0KPU2 |
|  | UniRef90-R7QP21 |
|  | UniRef90 H8ZA98 |
|  | UniRef90-X5MCR1 |

KVKRGYDAMV ${ }^{130}$ G R GTVV
KVETGWQAHVJGQAGH
MVERGWKVHVKGEGRYFSSAKEA IETFRENPK IIDQYLPS
RI EEAYKMMTGDK
NVKRAYDALTDG
IVERGWKAHVLGEARHFKSAKEAMTTAEDEK $\square T$ DQYYPPF
IVERGWKAHVLGDARPFKSAKDADTTFREEDMTDQYYPPF
IVERGWKAHVLGDARPFKSAKDA $\square$ TTFREEDMTDQYYPPF

VVKRGWDAQVLGEPHKFPNGHEAVKRLRDDPKANDQYLPP RI E EYFDVL
$M V E R G W A A H C D G D \square Q T F S S S V D A V Q G F Y K D E E T D Q Y F R P F$



VCVGDDDKPTGTVEDGDAVLCFNFRGDRVIETSRAFEEDG VIVDEQAAPIGTIQDGDAVLCFNFRGDRVIELSRAFEEED VVVDESGNPVGP VVDGAVVTFNFRADRMVMLAKALEYED VVVDDNGDAVGP\|QDNDSVLSWNLRGDRPDEDSTAFEAEE



UniRef90 C0CU65 UniRef90-UPI00037BC6A3 UniRef90_UPI00036BCCF9 UniRef90_I3SGX3 UniRef90 M6TWC5 UniRef90-A0A059EGM9
UniRef90-C0CWJ4
UniRef90-S9U1V5 UniRef90-W6KQJ8
UniRef90-D3LOR5
UniRef90-M0UH90 UniRef90 ROKPU2
UniRef90-R7QP21
UniRef90-H8ZA98
UniRef90- X5MCR1

FDNFDRV RVPK TRYAGMLEYDGELK LPKHYPP FTKFDRGP LIPNVLYAGDMQYDGDLKLPERFPP

FTKFDRV RVPK $\quad$ RRYAG $\square M R Y D G D L G \prod P N N F P P$ FTKFDRV RHPKVRYAGMVRYDGDLGUPNNFPP FDKFDRV RFPKVRYAGMLQYDGELK $\square$ PS HYPP GEFTHFDRKRVPKVRYAGMMHYDGDAG】PKRF

lupas_21
lupas_14
lupas_28
jnet
conf
conf
sol25
sol5
sol0
jhmm
jpssm


[^0]:    

