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T
T
 A K GT M E V L S S K D D GY I S Y DD A E Q V G I S S M I L G A GRAAKK E D

## A

 A K Y Q T A L K A E K A G WVVEA I VA E K I GHAA A MLLLGGA GRTT T K D S TARHTHEATADRDGYLTEMDALAGLGVASWRLGGARARKE D A S YKE QVKA QED GYVA A DHA ERRIGRVAMLLGAGRKTKE D A SFHVVELKAEE D GYVVTQIDDAEAVGIAAAMLLGAGRATK E D AKERE QVVVAERDGFLTTMDAYAVGVAAWRLGAGRARKED APEQHVVVAETSSGVLSRLDALAVVGVAAWRLGAGRARKED A P HVVVPLVA QRSSGVVSAMDTRAAIGEAALRSLGGGGRMMRKD
 TAVLSKAVYAEKAGIITAMDTRALGMSVVTLGGGRRKATD

 ASFS REVVYAPADGYI THMDSEKI GLTAVLLLGAGREKKD D TARFTF DI PAKED GFVA GMRAEDIGTAAMLLGAGRATKDS

TAAHTHTVTADKDGYLGSLDALAVGVASWRLGAGRARKED
 APYRAEIKKAR


## $T$ $T$


T

S

TA A QI Y E L K S D Q D G Y I E K I EAA E E V G V S A MI L G A GREKK D D TA Q L L H A L LAKED GYVAEIDAEA G HASVVLGAGRQTK DM SAS DVHEVTADRD GWLTHTDALAFGVASWRLGAGRARKED




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 PI DPSAGLMLVKKVGDRVQQGETLAWMHTACPEKLDPEAEVV










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 VI DLA AGVMLKRLGDRVEAGEPLVELHFNDPARLEAARR V: DLSVGUVLCKKIGDYVKEGEPLALLHSNNQ QVDDSDK PVSSVAGVNLCAKPGDTVTAGAPLLTLHTDDPSRIARAEQ ELDLSAGUVLTKKVSDFVNEGETVAYMHYNKDDKLEGAKD S: DYSVGLSDMAQLGDHIDAHRPLAVIHAASESGWQEAAH DVQAVAG ELHAKPGDKVVKGQPLMTLHTATPERFERALQ TIDHAVGLRLHKKVGDNVQKGESLGTIYSNNPD DADVSK ELDLSAGIVLKKKVGDYVDKGDTLAFMHFNKEEKLQQAKT PVQAAAGVELHAKPGDTVTEGQPLLTLHTDTPERFDYALE VIDLAVGIVLCKKRGEKVSEGDILARIYANDENKGHKAVE VI DLAVGAVLNKKRGDSVANGDVLAYVHSNNMDKANEAV E CI DYSAGUQLKKKYGQRVEAGDVLAVLHGSDQDRTRAGAD VI DNSAG:ILHKKYGDYVQKGEPLAELFASDETLFEAAGA DIDLSVGVVLNKKDGDAVSQGESLLTHHANTKTVDDVKE EIDDHAVGLKLHKKVGESVSEGDVLLTVYSNTEDVVEEVI E TI DLAVGGVLQKKLGDAVSEGESLGTVHSNTEDVEERVKE VI DLAVGVVLHKKVGDYVQAGEALVTVHSNNENVQEVI E ILLDLSAGLILEKKVGDYVNEGEVLAYMYYNDEQKLSEAKG VIDPAVGISKNKKRGEEVKSGEILATIYYNDEHRARDAER
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 VI DLAVGLVLNKKVGDRVEEGESLLTVYANSEDVEQVKQ VI DMAVGIVLNKKVGDTVKKGEPGCY:HANDMKKAAHAEE AI DLAVGVVLRKKIGDSVQQGETLVTDFSNREDVTEVKD II DLSVGUVLHKKVGDFVRKGENGATFHANDEDRLNASLK PVQAAAGULCHAKPGARVAEGDPLLELHTDTPEAIPAALT P DLAVGVVLSAKVGARVESGETLCTVHANDESK AGKAKN
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1 10 ASDEPPIVDAKEGYUKS ${ }^{20}$

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 K E VM EVVLSAK E GYV S K I K A E E I G KA A MII G A G R A T K E D A PHTHDVI A DA D GYLTELDALAVGVASWRLGAGRARKED SASYRHQVVSTEGGWVQGMHAAKI GQAAMMLGAGRATLED SAKT IVVAVKANRA GYIVKKDDAMSIGDAAMKLGAGRATVED
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$S$
 A AVQYELKAPQAGYI HHMDAQKI GESSAILGAGRKTKDD AKHHDEV LA NHAGY S S DDAERQ G LVAMLLGAGRKKKD D A N E V TVV V S A P A T G V L T T R L D A Y A V GVV A A W R L G A GRAAR K E D AE Y Y E FK A K K S G Wi S Kill A A E E I G K A A M VL GA GARA T K E D
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T A

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 A PVIRREITAT QA GYVSAIN GEALGLAVVDLGGGRQVES D

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T A


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TARHEDVVTATESSGHVTAVDARSVGVAAWRLGAGRARPGE AKETVFVVPSEKS GYVYKINAEAVGLASVLLGAGRSKKED
 T A E Q Q T D V L A A D S G Y i A A I HA A Q I GKA A M ML GAARAATM D D $A K Y V Q E V V A K Q D G Y V S Q I V A D A V G T A A M K L G A G R A T K E S$ ARHTHVVPAPESGVLTRLDAMAVGRAAWRLGAGRAVQTD T P RETHTT TA GRA GTVVSRMDALDPFGDAA WRLGA GRARAED AKYVIEVPAKRTGVVSKIVADELGI ASMLLGAGRATKED AKYI RPWIA DRDVYI K DLMADDLGLVAMKLGAGREKKED A S IVVREVTS PVVDGYVSHI E S DRVVGI SAMKGGGGRETKES
 AKDTEVVFAPESGVLTKLDALSVGVASWRLGAGRARKED A E I I L PVVPAERD GFVGAID S RAVVI GVIELGGGRRTPED
 AK H THDVV A EA D GVLSKKLDA LSSVGVASWRLGAGRAFKDE ARETHDILAPTEGVLVELDAYQVGVAAWRLGAGRSRKED
 $A L Y Q E K V K A L R S G Y$ A $K L D A L T I G I A S M K L G G G R E K K D D$ A HE S E Q QV LAAP A D GVVL A A H H I HV T S D K E GYVV T E I DA E S I G I A A M Y L GA GRA T K E D A Q Y QV ELLPAKESGVVTEIVANEMGIASMMLGAGRQTKED A EQVVVEFSAAREGFVSKIVDAEKVGIASMMLGAGRKKKED

 A A M O
 A S HVVETVPAPA T GHLLHRLDDARAVGLAA WRLGA GRVVRKE D



T|I D Y G VG|L K L | H K K V G E Q|V|EK G E S JL VT|I Y S NTE Q DEP DK E KI DK TVVGIVLEKKVGBKVADGDVLAYIHANEEKKAKABVE







 TI D L A V G L V L H K K $\square$ G D L V K K G E S L V T I H S N A E D I H T V V E PVQHSAGVDLHAKPGDTVTKGQPLFTLSADEPARFPRALDE

 A I D P A A GI E LVVK K T R D K V EK G E T I A F L Y A S DE NR I H E A L Q
 KI D H S V GI T L K K K I G D K V E E G E P L V V L H S N M K E P E D SV E
 VI D H S V GI I L N K K V G D Q C K V G E V L A Y I H A N N E V S A D E L I N ELDYGAGIILEKKMGDYVKVGDVLATVYSSDEDKFEKAEE

 $N$ N D H GVVGIKFLVEGGSSKVDAGADVALVYFNNENTLNSALK







 PVQHGAGVALHAGVGDRVTAGQALCTLHTDTPEAFDSAAA K I D L S VGI LL E K K K G D A V K K G DVL G Y L H A N DEQRLDEAA K D

 E I D Y S V G GIVKVMK K L G A K V E K G D T I A L L

 K I DL S A GI I L N K K I G D M I D L D E S L A V V H H N DMS K YE EAK E



 K $\operatorname{I}$ EI DLLSVGI LI NKKVGDSVKKGEKI ATLYANDNAKLEAALS K I D H S V G I V L R K K V G D K V L R G DV L A E L H Y N D E K K L E D A Q K
 TI DHSVGLTGLLPVGAEMRRGEPI CMVHASSEDAAQRAVR

 $P \vee Q L A A G I E L F A K P G D E V K K G Q K L M T L H T D D D T R D E R A L E$ $P \vee S A A A G V E L H A K P G A H V R A G Q P V L T L H A D D P G R F P R A V E$
 VI D Y S VGV KLSAKRGDYVKCGDCLATII A ANKDKILEAEG $P \vee Q A G A G V V L H A K P G D V V R A G Q P L L T L H T D T P E R F A R A L E$
 QI D L A V GI V L R K K I G D A V K V G E T L A T L HVVNGKNAA QRA I A



 PI DPAAGILLHKKCGDAVRCGDPLATLYAASEELLEVGEE
 DI DLLSVGLVLHKKVGDKVE E GE SLLMTIVYSNTED DEDVKS RI D H S V GI I V E K K L G D S V K K G E A I A R L F V S D R S DV E S A L K

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




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A NKLVQ V S P
 ARATRRDVVAPVEGFVTA I DTEAVVGLAAVALGAGRQRVDS
TAEKVVEI KAQEDGYI A T L NALLEVGLAAMLLGAGRENKDS ARE QHTVNASSS GVLTTVDA YAVVI SAWRLGAGRARKED A PVVQV D L A A P R A G F V T A A RE Q QVV TAPA S G VLLTR LDA Y D I GV A A WRL GA GRAR K E D A SFTFDVKAKQSGFVSNIDADKIGTAAMDLGAGRATKS S A K HVVEVI E A A E D GVVLTCGVDA Y A V G V A A W RL G A G R A R K E D ARHTEIL RAPAS GTLDRLAALDVGLAA WRLGAGQARQGD TAKY Q Y EVVKAK QD GFVVKMNALALGNYAMTGGAGRLDTK DA A AFKQEI PAKQSGFVSEIVADEMGVAAMMLGAGRATKED AKY I IPVTAENDGYITKINTEAMGLIAMELGAGRATKDS
 ARETHVVTAERDGVLVQQDALPFGIAAWRLGAGRARQGD A P Y CREVVTA QADGYI AHMDAESDGITSSMLGAGRETVDS $A A Y Q D D V V A R Q G G Y$ S A MVA D E L G A A S M L GA GRMM KA S

TAREVEVVRADESGVVAQVDAYGMGVAAWRLGAGRARKED

TATYTVEVEATDDGYIADI I ADEIGVAASILGAGRATKES APVI KPVFAREPGVI SAMDTREIGMT VVRMGGGRQRAGE
 A QF T E E I L A S Q N GYy I Q E I D A E E ATYKDDLPAEKS GYVTQIDADKIGDASMLLGGGRQKAVD
 A PVRLRVPAPGDGY LAACETRAI GLAVVELGGGRKRAAD A P F E YVI A A D R D G Y L N S l D A R QV G E GIVKRLGGGRAT K E D


 $A T E T E D V I A P E S G V L S R L D A L A V G D A A W R L G A G R Q R Q G E$ A K Y D K PV TA K V S G YV H A I D T Y R I G M I A L T I G A GR LT LD T A AVI R PVVA ESAG GVGGMDTRALGMMAVALGGGRLRATD A A YYY DVVA QHSGYVA HTDAQQLG $\quad$ A SMVLGAGRETKES A A HS RTVVAPRDGYIHHVDTEGYGMASLILGAGRSKKGD


 A K HVVELEAKEA GVVSEUVADSVGTAAMLLGAGRATKD S S PC SLLEVKAEKS GYLTHMDTAKIGRASQETAAGRAFKEQ

 ARETEQVLAESDGVLTTLDAFGVGVAAWRLGAGRARKED
 SSPHRLTLTAPQNGYI GRDDARTVGNAAVLSGAGREKK D
 A EYN E LPA K Q S GYV SE VVA DEVGNAAMLL GAGRQT K D S A R DTETVVRAAADGVVQRVDARAVGVGAWRLGAGRARP GD

 $A Q T H V T A V E D V A$ A


A K
 $K A T R V$ VA
KATRVLKASRAGYLAGMDCKEVGWAVQRLGAGRAKPGD
 ARDREQDSAGRAGIVAGVDALLVGRAAWLLGAGRARQGD TAKNCLEVRSVSSGIVTKIKTEEIGKAAMVIGAGRETKES
 AKFVVPVISNRS GYVKELLAQEIGKASMNLGAGRKKKED A A Y QI EVVPADQDGVVAAITTADEI GTAAMKLGAGRATKES SAR HTDTVVAA ES GIVVSRVDAMAVGVAAWRLGAGRAVPGE
 ARVVRRTVCAKEGGYLTMLDAETVGRAAVLLGAGRTEKDA A K E K $\square$ E V V ARHTDDVTATTTGYVRRLDARAVGDAAWLLGAGRSRPGE
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A QF KI EVVEAESQGYVVEITADE\| GTAAMLLGAGRATKES AKYKIDVPADKGGFVSN:VADEVGDAAMULGAGRATKDD A S Q Ql TADVVLPVVAPVSGVI SAIDTRA: G DSVVVSLGGGRDHPQD AKYUVELKSQASGYIKNMYAEEIGKAALTLGAGRDTKEG APGRAEVTAPAAGFVSAVDALGVGRAVLALGGGRERKGE AS LIEPVCAPKDGWVNKLVCDQVGDCSLLLGGGRETKES
 ADHEIAIPAEHAGWVQEI DAASVGTAAMYLGAGRATKDD AAGQHTYTAPRSGWL DIDALLVGQAAMLLGAGRATKDD
$R C R E T V T A P E S G V V Q D I D A L A V G M A V W R L G A G R S A P G E$
$K Y T Y D V L C P R S G Y I S F M D T E G C G I D A S A M L G A G R E T K D S$
 ARETEHVVADRTGVLAELDAYAVGVAAWRLGAGRGRRED AR F Q TAKENLVI TAPSSGTI LSMDAMKVGLAAWRLGAGRSRQGE TARHTEEITAETGGFVVDMDAYAVGVAAWRLGAGRTRQGQ

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IVVPVYAEQAGFASAMDTRELGMAVVTLGGGRRKPGD AAFSREIRAPKAGYDTSMQTEQVGVAAGVLGAGREKKDS ARYQ TAPVIVPAPA $\operatorname{VQA}$ GYASAVDTREL GLAVVALGGGRVRPQD $H T E T V V A S R S G V M G D V D A M A V A M A V W R L G A G R A Q P G D$
$A R E Q H I V T A E S T G V L T R G D A Y A V G V A A W R L G A G R A R K E D$ RHVHVVPAPADGVLSRLDAYAVGVAAWRLGAGRARKED AKVVRPVYPDRKGIVTAMDTRAI GMAVVNMGGGRKVASD A TVMREVTAQTSGYVQADDAEALGLAVVALGGGRMVESD AKYKIPFKADRDGVLTKLSADEVGTASMLLGGGRQKADD AAFHLEILADRAGYI THMDAETI GRAACMLGAGRETKES APVVRAVVAHRTSFVTSVDTRTVGVAVIAALGGGRTRAED TAGHVHVVEAPEDGVLVELDAYAVGVAAWRLGAGRARKED ANFKLAVISEWEGYVESI AADEI GRAALVLGAGRETKES AKEVLEVVTSREEGYVK L L HADEELGTLAMKLGAGRMVKED APY EPVYPEMSGYVSANTRE
 AKFKlELPAKESGVVSEIEADEMGIASMLLGGGRQKADD AAFQ 1 EVKSTTTGFI TKMEADE $\square G V A A M L L G A G R A T K E D$

VSKELCAERSGYLAHDDCTAAGWAVQRLGAGRERAGE ADIIKPVFAKFDGTVTAMDTRADGMAVVSMGGGRKVASD AKYEMEVKSQKEGYVSNDDADKLGTAAMMLGAGRATKTS A R H T E TVVVA Q E S GVVLTR L D A L


 A KVKYEVVKTKKAGYINHINTENCGRAAVILGAGRETKES
 AK Y Q K K V IA N K M GYVN S IN A LE IGGKLACY L G A GR』EKE D AKYKENVYAEKSGYISKVDTEGYGVASLMLGAGRNAVGE A E H I F DVV A P E T G Y I E DL E A LT L GLV S M RL G G GRETV T D AKAIF EVVKALCD GYVKELHALQLGTLAMQLGAGRMVKED AFTRIVPAPASGHLTRLDARAVGVAAWRLGAGRARKED
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 EVDHSAGITLKKKVGDRVEKGDVLCILMTNRENH DAALS PVQAGAGVEUAKPGDQVVAGQTLLTHTDTPERFDRARD R|DPAAGIVLHKKVGDPVKQGESLLTVHSNRQDKVEVTAA TVQAGAGI QI KAKVGDVVKKGETLAIVLANDREKGKEAVK SVQAGAGVEILKAVGERVEVGEPVLRLHTDTPERIEAAKE EIDASVGVLVLKKVGDFVKKGDVI AKICYNESKDVEKSAK
 KVDYSAG|LVYKKIGAYVEPGDVMAVLYTNREESADTAGE QI DLAVGLKLKKKIGDRVEVDDTLVTLYANREEVEDIDA PV QLGAGVRLHRRPGEPVAAGETLFTLYTDTPDRLPAALG

 PVQAAAGVLCLAKPGDTVSAGEPLLELHTDTPEAVPSALA SIDHSVGFDNLCVLRQSVDEQTPLAMLHANDDAQWQAGAD
 ALDYA GGEBKKLGDYVKGEPLLTVCNRQERLPDIEQ V DHAAGLRELKKTGEAVEAKEVLAVLCTNDESRLAPAAA AVQAGAGVELHAVRGDRVRAGQRIATLHTDTPERFEWAVQ PVQHGAGVLCLAKPGERVSKGQPLLELHTDTPEAVPSAVE KIDDSVGVLVHKKDGDRIDKGEMLATIHANDMQRAQEARQ PVDPAVGLVLNKKDGDYVNKGDULAYVHDNHP LAPQHWLE Vi DLSVGVVLNKKCGDKVSSGDVLAYVHYNDDKKKEDSVK EI DPAVGVTGMDDLGQTVREGTVMCTVHARTEDQLDAAEK D PIDYAVGFDQFIRLGETVDEQTPLAMMHARTEEQWQQAAD PVOY GGELLRKKGDYVKEGETVVVHSNNQQUEDILL PVQYAAGVEMHCKPGEFVARGDVLFTLRTDVESVIPAAVE TIDLAVGTLKKKI GDAVTVGETVAVLHANSENVDRVIE TI DLSVG|l MLGGKI GDFIKKGQPI ATVYANDKNKLDWAMN AVDLSAGVLMQCRLGQAVRRGQPLATVYTNDESRLEEAGL AVDLAVGVVLRKKVGDRVNTGEPLCDIHARDEESARRAEN EI DFSAGDVENKKI GSFVEAGEVI AVLHSDDDEKCKDAEN
 NTDHEVGVVLNKKVGNKVEKDDVLAYYYANDKAKWGQAAA E:DHSVGUILHKKDGDYVEOGEPLVTVHDNGKWTQER KE RIDPSVGIVLNKKDGDYVQTGDVLAYVHSNHP DAKQWLQ PVSASAGLRWFAAVGEEVRAGAPLFELHSDDEATFPRALA $R I D P S V G L S D M V R 1 G Q K V E K G Q V L A R V H G A R V E T A E A A V A$
$P V S A G A G V M M A K P G D V T G G Q L M E L H T D D E D R F G A M Q$ PVSAGAGVVMMAKPGDVVTQGQPLMELHTDDEDRFGRAMQ S DHTVGLTRLLPVGSEVRDGEALALVHARSQGDAEDAAA A 1 NHSVGFDHILPVGAHADAHTPLAVIHAQSEDDWQAAAA PVQAGAGVELHAKPGDSVTAGAPLLTLHSDTPEAFAYAAE AI DHGVGVELDRKPGESVKAGEAVLRLYHRDGRGLETARQ
 Ki DLGAGVYLYKKQGDWVEAGEPVLELYTSTEDKKAEGIA ELDLAVGLELHKKDGNPVAKGDVLVTIYADQEDVSETIN VVQAGAGVRLHAKPGAVVRAGEPLMTLLTDTPERFDRARD VI DHAVGLDNIVKDGEAVNAGDALMSVHVQNQQQFDDVRQ Q D LGVGLLLRRKIGDRVEAGETLVTIFSNREDVVEVKA A DPAVGYWMKKRLGDRVAVGDVI AEFHVGEHSDLDAALA TI DHSAGIVLSAKTGAVVEEGDVLATLYAANDRLLDEGEH RIDPAVGLSDIARLGTRVDDVTPLARMHTADEDEGRALAA PVVHAAG ELHVKPGDAVTVGQPLFTLAADDPARFDRALE KI NPAVGLSNMVRLGTRVARGQTLAVVHAVRSDQGDQAAR SIDLAAGIVIHKKSGETVQQGELLAELHYNKKAQVEEVRS PVDLSAGVVLHKKTGDFVNKNEEI ATYYNKKEVKNDVIN PVQAGAGVQUHARPGDTVRAGSPLFTLHTDTPESFPGALA

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 AKHSETVIAARSGTMGNI DAMAVGLAAWRLGAGRSRPGG
 AAYKKAVLAPKTGYLTHMDAEACGRAALALGAGRYTKTD AQYQDEYKAKKSGYVTELVSNDMGVASMMLGAGRLTKED ASLHETLCAPRAGFVAHIDTERVGVASAELGGGRLTLDD AKYVIDLPAKKSGVVSEMVADQLGIAAGLIGAGRETKDS UKQEVYAECDGYVKSMDALLLGEVARDLGAGRDTKDT AKFKTELLAKSSGVVSKIVADEVGVASMLLGGGRQKADD AAVLYPVQAKLDGYIAEIQQEQIGLAAMALGAGRATKED APVVKTLTAQASGVVTSMQAEEVGKVAMRLGAGRARQGE AKYlIDVPAKTSGVISNTVADEIGIIAAMLLGAGRATKED ATVIRQVSAPHDGYVAKINGEALGWAVVDLGGGRMKQED APVMLDLHPGQSGHVSALDTRALGEAVVHLGGGRLRQSD ANETHTVVAERDGVLARQEALPFGIAAWRLGAGRARASD ARQSHVLTAPESGVLTRLDAMAVGLAAWRLGAGRARAED AKYQ!DLDAKESGVVAELRADQIGLAAMLLGAGRATKED AKYKIEVRAKESGFVAKMVADEIGIAAMLLGAGRAAKDD AKQIDKLKADRDGYISHTNCEEIGLAAMMLGAGRETKDS APVQLEVKSDRAGFVKHISAKDVGLVSMHLGGGRVTKES AKFTVPVVNDKDGYVKELLAEEVGKASMNLGAGRKKKED

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 A K Y I I EVVK S E K E GY I K S L N A E E I GKC A L K L G A G R E TM D S


 A R H Q E V V TAAD R D G V V TADMDARA V G DAA WR L G G GR S K P G E

 A RETMHTVLAAE DGVLIEQQALP FGG\|AA WRLGAGRARRQR A E K H I E V K S S T A G Y I N S V N N A E D D G V S A M L L G A G R K T K N D


 A A E SHDDITA E S D G VI T G L DA M GVVGVAA WRLGA GRERQ GE



 A A Y R I E V P A K K D G V V A R I VA D A G TAA M L L G A G R A T K E S A K Y $\quad$ Q 1.
 TANEVELVVTATEDGWVADVDAYAIGVAAWRLGAGRARKE



 A A E T E VVTTA P D D GVLLTARLDA LAB GVAA WRLGA GRARRE D A P Y MYEVK S S A K S GYilA FMD T E KI GTAASTMLGAGRKTRES

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[^0]A|I DHGVG|V|EVLKKPGDA|VQAGETVDR\|IHRDGRGLDVARG AI DRRVGI LV HSKVG DPVEKGQPI FTIHANSEAKAERAAA
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 QI DLSSVGI RLDQKVGK YV HK G DVLA EVVFANDCQKLEA A M T

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$\stackrel{Q}{\mathrm{~V}}$

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D


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








 $A V V Q A$

 SVVSA EA GVII HA KPG DPI RA GQP L F T L H T Q D E ER DA GARS


 A
 G $V$ A GQKI AT LIY T D T P E K F E Y A TA



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



$\stackrel{\square}{P}$






 $A|V Q A A A G| V|T T V R P G E Q \||R A G Q P| L L H| H T D T P D R L P G A R D$


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SKAVYADRAGCVTHMDTRALGMAVVAMGGGRQRASD AKHSDDLHAPHDGVVTDDDAMSVGDAAWRLGAGRARKED APYQKKLIADQSAY SAMDTEKCGKTAVILGAGRETKES APYQKDFVMKKSAYIKSMDTEKCGKTSVVLGAGRETKES APVVEVAPQGEGFVCADDTRALGMVIGLGGGRRRAED AATTVDVKAKESGVVSEIVADKVGTVAMILGAGRETKDS ASERDVVVAPADGYVSRLDAMAVGRAAWLLGAGRATPGQ AP\|IKPIIFAPDSGYLSSMDTRAMGMAVVDLGGGRKRASD ATYQDALPAKRSGFVTSMDADEDGDAAMQLGAGRATKDD AKYHVPLTAKHAGVITGMKADEWGVASMMLGGGRAAKED SAP VRPVFAGRAGFVGADDTRGVGMAVVALGGGRTRTTD AKLSAEIKALRSGYIESIDAEGIGLSSQHSGAGRASKED AP LQRQVFAPVAGYLSA $\downarrow$ AGEALGLAVVRLGGGRMVEND TASCTHDVVADRDGYLVRADALGFGVASWRLGAGRARKED A QNHLELKSDTAGYI QSMAAEPVGIAAMLLGAGRKTKNE AP TY Y VEAPEDGFI AAIDARVVGLLAVALGAGRSTKED AAVRKTVEAQADGWVETINAELVGRAVIDI GGGRRKKED

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FKVPVLSESDGFVEGIJADEI GTAAMLLGAGRATKDS APWSLPILAKESGYVQSFDAHKIGLLAMTLGAGRMTKES ATYQMPILAARDGVITKMKADEMGIAAMMLGGGRQKKDD ARYQDEIKAKSSGHVAQDKANELGUASMLLGGGRQNKED A PLIRPV
( TAKESQEVADADGVLTRLDALSVGVAAWRLGAGRARKED
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 TTAYTFEVEATMDGYVSEIVADEIGIAASMLGAGRLTKES ACQETVLAPVGGVMRR1 DAMPVGIAAWRLGAGRSRPGE



VKVPVPAPAGGVVQRVDCRGLGLAVVALGGGRTRAED


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 RINPAVGUSNILPDGMKVEKGEPIADVHAASGEDAAYADK AVQLAAGVELHAPGAAVRAGQPLLTLHTDTPERFPHALE KIDFAAGUTIVKKYGEKVKKDDVICVLHTNMENCTEAKI KIDPKAG IFYPKDGMKIKKGDLIAELFTDNKDVLDAASD

 VI DLSVGVVLHKKIGDEVKDDEPVATHHSNEEDAVSARK QLDYGVGLTLSKKVGDEVHQGDTVLTVHNREDVSDVQQ RIDHRVGFSGLLPLGTFVEAGAPLGLVHAVTAGACEAAMQ PVQAGAGVLLHAKPGDAVRAGQPLLTLDTDTPERFARARE PVQAAAGVVMHAKPGDEVRKGQPLMTLHTDEAHRDERAAD
 P DHGAGLVLSRR|GDSVAEGEPLATLHGSDYDQDESLAD E:|DLSVGLVLNKKVGDTVKEGESLLTVHCNOQTDREAVKT A: DSLAGALMLSVKINDH:CKNDTVMTLYSNDENKLKEAIK a DVDLAAGVVLHKKVGDTVESGDIMASLYSNKPINNEEEVVS SVQAGAGVRMHVKPGALVRRGEPTATLLTDTPEKMERAGE PVQAAAGVYLTAQTGDEVVAGQPLATLLTDTAEA IPRAEE E:DPSVGIYLHKKVGDPVTKGEPLDTLYAHDQEVVELVD A DHAVGLADIAELGSKLDAGQPLATLHARSHAEADQAER PLDFSAGVVLHKKRGATVHKGESLATFYGABPDKFAAABE EVVHAVGLSELPQLGQQVSEGDCLALVHARSAEEAGLAVAC RVSPGAGVVLHAGPGERVRAGRPLFTLHTDDPSRFRGAAE
 E: DYAVGLVLHKKLGDPVQKGESLLT:YSNREDS:EACKD QLDYAVGUMMNKKIGDAVEAGEPMLTVYSNRED SVDPAAGLTEVVSLGASVERGDPLALVHARDEASAARAVA PVSAHAGLEVHAKLGQKVEAGQPLLTLFAEEESLLAEPHE KVDHVVG TGLLPVGAEVRAGDALAVVHARSPLAAEVAAA SVDYTVGLDAVAGIGEDVDSDRPARVHARTDDDAERAAE DU GAG VCRAKPGEVAGSPLELVTVEAFEARE
 QI DPQVGLILKAKVGDWVQEGDEIVTIYSNHEDVSEAVN DIDLAVGVVLNKKIGDKVKKGESLVTIHSNOQQVSEVSE VI DLAVGLMLEKKVGDRVEEGETLAVIHSNRENVGDVKD KLDYSVGLSEIAELGAAVEKGQPLAVIHAANESDWQRAAN R DHSVGYSVLRPGGAVAAGEPLALVHAATEEGWQEAAA VI DYAVGDELHKKVGGAVAEGESLLTVHSNT T DVANDKE



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UniRef90 H3RPX1 UniRef90-A0A022KV37 UniRef90-V5WGX5 UniRef90-UTUCL5 UniRef90-R5BA66 UniRef90-UPIOOO309A181 UniRef90-E7G7J5 UniRef 90 -E4U642 UniRet90 UPIOOO4782884 UniRef90-D4LFI2 UniRef90-A5EY73 UniRef90-_13ZCT7 UniRef90_G2ICR5 UniRef90-UPIO001FFE600 UniRef90-UPI0003FA5FB7 UniRef90 W1N799 UniRef90-D3DA52
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AKFEVELT APRTGYLSRRDADAVGTSSMRLGGGRTKKDD APF $\quad$ MMPAPA LDSAGFANVRDCRAI GLAVVALGGGRRRPTD
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 A

 AHHSQDVIAASEA GVVT GDDAMSVGLAA WRLGAGRARKED RRVLMAESSGYLASMNCKQVGWAVQRLGAGRARPGD A RHQEVVTAPAEGVIVSMDARAVGBAAWRLGAGRSRPGE SARLLSRDVVATESGYVNRVDAEGYGNAALYLGAGRNRAD D T PR H THDVLVAADGVLTGLDALAVGEAAWLLGAGRSRPGD




 A DMKT H I K A F QT G Y I S E I D A R AVVGQVVWRLLGA GR DKP E D TAQVKPVFADKSGFVNTMDTRDLGMAVVGMGGGRRVASD TANVVK PVVFASRAGFVSAMDTRAMVMAVVGLGGGRRVASD A K F K T E M L S K E E G Y I E N I H S M G L G I Q A M K L G A G R A K K T D
S
SA
A P VT LD F N S P LDD G AEIVQPVKAPRNG $\checkmark$ H DI D A R A K YKAEIKAKK Q KY K K KA DN GLAAMLLGAGRKNKE D SAMRETVTSDRS GIVGSIDALAVGRAAWQLGAGRARQGD $A N V I R P V A L Q S G F V Q S M D T R A G G M A V S M G G G R M K S S D$
 ATLSK PVVFAEREGVI A SMDTRAI GMAVVSLGGGRDRPDD

KKSVVKAPRSGYI S DID A GTIIAQVVWRLGAGRNKPDD
 A REREVLLYANVVGVLTGLDARAAVGVAAWRLGAGRERQGQ AKYQIEVTAPTSGYLSRWKAHDVGVACSLLGAGRIE YT D TAKHTKKVTAPKRGYVHTIDADQLARGVK LVVHGEEDGK
 A TVVMREVVKAPVA GYV Q A I N GEAL GLADVVALGGGRVIIES D A PV DA PVYAKEPGVVTGVDARAI GVAVVELGGGRRVAAD A GAS GTMGDIDAMAVGLAAWRLGAGRSRPGA A S IVEYEYRADVVEGYVSRIVVCDIVGTSAMVLGGGRENKDS A PVVVREVRAVE E GVVGAVVAYRVGLAGVVLGVGRSRDVD SA


SA AP $P$ VA DCLA E A AKHTRVLEAAEDGVLTGLDAYAVGVAAWRLGAGRARKED SKNIF ELKADKSGYLDYNNTVEVGMA IVELGGGRTRKED A E Y Q Y DVI IS E E E G Y V E VID A ENI GVA A SIL G A GRQT K E D RYEVVVA E DD GFVVDKMNAAND GRADVTLLGGGGRLDKKE D A A Y Q IDDLPAKRTGII A S A P $\mathrm{P} V$ SAERS GWLAS CATRDLGMVVVELGGGRRMPSD APYRIELPSKEDGFVAEITADAVGTAAMLLGAGRATKES
 $R H V H E V R A G S D G V L V S L D A D A V G H A A W R L G A G R S R P G E$
 A P VT DV F QK S GY HA FDVES GRSAMLLGAGRAR QD D
 AKY Q $\square E Y P$ A QK G GVVI A K L T A D E I GMA SMLMMGGGRAKA D D AKHTEEVRAEQDGVVEGLDAMGVGVAAWRLGAGRSRPGE
$V R Q E I T A D S S D G Y A A M D S Y M V G S A S V I L G A G R N V A S D$ K Q R $\square$ AKEKTY AKEVIA LRAQRSGF TEMDA LRVGYAS WRLGAGRAFQGA
 A PVVLPVEAP DEGF GLG G G T K E E
 A AVQK P L F A P HA GTITAMNSREMGLAVDQLGGGRVRTDD $T R V L T A D R D G F L A G M D C T E V G W A V Q R L G A G R E V P G G$
 TVVEVKSTKE GYIT K DDA L GIIGVAASRLGAGRETKE D APVVRDVYAAHDGVVAAQDVKSLGMAVVALGGGRRRASD TPGFTQVVPAPASSFL SARLEARAVGVAAWRLGAGRARKED K A EVVYARKK GYVWEI D GERIGFASQHTGAGRRTKDD Y AFQVVKAPQDGFVWNIDAYKTAYACK LLGAGREKKTD
 APEVEVVRADADGYVAGVDAYAMGVAAWRLGAGRARKED


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| UniRef90 AOAO31GK41 | EI QEA YAl S AVALTMANPVI |
|  | LIEGALQUQDSKPA |
| UniRe | YLSALSYGDSA |
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| UniRef90-UP10003732 | HFKAAYRLAPKRPNPIPLVVERV |
| UniRef90 R6EUX2 | EASKAFS GESAAEPPALIKEGI |
| UniRef90-UPI0003647B4F | ALNAAYRTGDSSVEDHPI |
| UniRef90-R4MLC6 | ELAGGWSTRDSPPQVRP |
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| iRef90-S3YBB4 | A ${ }^{\text {a GAWCDEDENERGSL }}$ |
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| UniRef90-UP1000377CE32 | RLSHSFT |
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| UniRef90-U1R |  |
| UniRe | Qdor |
|  | RITACYGVADTAMETSTVV |
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| Unif | DQAVA dKESA $^{\text {d }}$ |
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| Uni | RGRRALS SAEAVSV |
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UniRef90
TOBME7 UniRef90-Z9JRC2
UniRef90-R5HFQ5 AKYHQDFI APQDGWVVKMDTEDCKTAVVLGAGRETKDS APHDEVVRAPTSGVLRSDDAMAVGVAAWRLGAGRAVPGA ATLSKPVFPAGEGYIRSMDTRALGMTVVALGGGRQRARD AKYVIDIKATHAGFVKEIVADELGI AASMLGAGRLDTKDS TAP EAPVYAEQSGTVTGVNAREVGLAVVALKGGRTFAAQ
$S$
$\begin{array}{lllllllll}A & I & Y & Q & H & E & l & I \\ A & P & V & I & G & D & V & P \\ A & T & Y & N & V & D & V & K\end{array}$ ASHVLLAV T S D D K F G Y ASHVLAV S S DK E GY I K K M D A K T GLVVSCQ G G G GREK E G D


 A K AKHSEDVVTADTD GILTTMMDALTVGVASWRLGAGRARKAD

 I HV I Y A E E S GYMLE T L D A L N F G L A A C R L G A G R E T K D D
 SKFVTEMKSKEAGFVHNIHSQQLGILAMMLGAGRATKDAD

 $A P V I E F V A G Q A V V T E D C R E L G E V V \frac{L}{L} L G G G R Q V E D$ ASSVYPVIDDQEGYVREIQSEQVGVVAMWLGAGRATKES ATVIREIPAPADGYVAEDDGQACGMTVVDLGGGRHVESD AAVVRPVYAERSGRVTRMDTRALGLAVVTLGGGRRAPSD ARFEDNVVSDSEGIVSEVVAAGVAAMKLGAGRETKED
T

A K N $\qquad$ A R H H D T V V K A K T N GY V K K LDD T K A L G II S M K L G G G R L T K D D ARHADTVAARDGVVTQMDARAVGDAAWRLGGGRSKPGE
 AYKLDFICEKPGY| QFMKTDQ:GMASLVLGAGRETKES ATVIREIPAPEAGHVAAIDGEALGLAVVHMGGGRTVETD AVLKEEVLSPLSGYVQQI QARIIGEASVALGAGRRYKGE


## A

K RAELTS GQDCY ERVK DSLGVAAMLGAGRETKES
 RETHVVTAPAS GTLTRLDAFALGVAAWRLGAGRARKED AKYEVEVVAERDGYLHDLKAMELGIVSMHLGAGRQTKDD A K VERAVSAPKD GYVAGVATREIGLAVVTLGGGRTRPED AKYKDAFTAPSSGVISRMKADEMGIASMMLGGGRAARED S K H $\ E D M K$ S K E E GY S K I N S E E L G L A S V Q M E V $V$ P S P A S G Y V $V$ R H
 G A A ML G G GRQAK S D
 SAPVQVPVYPVQPGTVVAVDTRAVGVAVVELGGGRRTAED

 A T E N Q Q V L A E S D G V L A AVIVK PVLA E Q A GFVVSEVD S K A L G M AVVA MGGGR QHPK D A A C S E T T A S R G GTMGEVDAMAVGMAAWRLGAGRSRPCE AKYSEDI LAPAAD GVMTK L DA LDDVGVAAWRLGAGRAR KED
 A P $\square Q R P V Y M P E A S L V T G V D A R A V G L A V V E L G G G R R A A A D$
 A R R LVVEV Q S A S S G Y V R RLAA A WP G Q A T MLL GA GRAR VD S


TETV TARR G GFMGDD DAMAVVALAAWRLGAGRSRP GE AS $\square R Q P V R A S H G G L V T A L D A M A V G R A A A L L G A G R Q Q K G D$ A A HVVRVVTAAAGGY QDID PKRLGGRLVQSLGAGRRRKED A P WNLPI LA S E S G Y V Q P F D A H K G G L A M T L G A GRDTTK E S A MLLCKPVVADGQGVVSAMDTRALGMAVVGLGGGRRQATD ASHTEVFAAPRSGVVAGLDALALGVASRRLGAGRARRED ATAVHEISTSRGGYISAIDAELI GQASSMIGAGRNTKED
 A E EKWEVVKATKS GYLTRMDTAMIGRASQETGAGRMFKGQ
 A PVVK EMRARRRRGYIA GLPALRRFGEAAMRLGAGRATMD D A A HTEE LRRAEADGVVAGLDAMKVGVAGWRLGAGRSRPGE

UniRef90_UPI00036C97C9


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| UniRef90-E2CF | MVRAAYQ GEAR |
| UniRet90 ${ }^{\text {l4WYJ2 }}$ | RVACAFRITSE |
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| UniRef90-K0B1A5 | KLKDIIK $\square$ SDKEDTNKKL |
| UniRef90- $\mathrm{C6BFF} 1$ | NALHFSQSAPSPSAL |
|  | DLDGAIR APAGVHRPAL |
| UniRef90-D5EF | YFEHAVTLQSIK PLDQ ${ }^{\text {d }}$ |
| UniRef90-UP10003 | TLPSLITL NENQNESPVLIHE |
| UniRef90 UPIO0038 | ALDGGWSVDPA |
| UniRef90-UPI0003F94132 | ALSTGLIVDGAAAETGSVVLERT |
| UniRef90-UPIO0044 | AVQAAMTLSDTSAQVPDLILERV |
| UniRef90 UPI00 | ALEGAITVGPQEPSARQVVL |
| UniRef90 ${ }^{\text {Q5 }}$ | RAA T-GPEPVAPPP |
| UniRef90-R5IZU4 | M FYNTFSFGDEKVDPTP |
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| UniRet90-EOMN | RVQAAYTLTAAMVAD |
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| UniRef90 BOVFP4 | K |
| UniRef90-8812V8 | KEAVVISELPHERKPLI |
| UniRef90-10AH |  |
| UniRef90-UPIO003778E4A | MLS SAFVLGETPSLSSPDVLGWV |
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| UniRef90-F5WTG8 | VSCFVMGQEPVEKPN |
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| UniRet90-D1VUZ2 | QAYEFSKNKVEKIKVI EEIL |
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| UniRei90-UPIOOO3B614E2 |  |
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| Uni |  |
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| UniRef90_R6T8R4 | N |
| UniRef90 C8PPU4 | A RYA A K P Qa RPLVF |
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| UniRet90-D1 | D |
| UniR |  |
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| UniRef90 LODAT6 | MI R DAFVYGDPLLERDAL |
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|  | AL N |
| UniRef90 UP100041D6520 | EL GDYRVGDTPPLPRPL |
| UniRef90-BOTEL6 | AVSDAYALGPGALAPLIPLI |
| UniRef90-J7INA3 | K LVSVSSDGSELPSL |
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| UniRei90 UPI00037795C5 | A ${ }^{\text {a }}$ |
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| UniRet90-TOBME7 | ELADVIVQQESQVEKPALVLGY! |
|  | A DGAWDLAATAVPARRI |
| UniRef90_R5HFO5 | kkrekl |
| UniRef90_UPIO0036C97C9 |  |

UniRef90_F2WUD8 UniRef90-U5ENO3 UniRet90-UPI00041A8F7D UniRef90-U7NZ72 UniRef90-UPIO00476FOBA UniRef90 B8BQ44
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UniRef90-WOGQP7 UniRef90-W9HOZ7 UniRet90_UPIOOO345499E UniRef90-E8T375 UniRef90_UPI0004671F46 UniRef90-A1S475 UniRef90_R5FSJO UniRef90-UP100034CC672 UniRef90-IOV0Q2 UniRef90_R7LAX6 UniRef90-D5E100 UniRef90-W1 J795 UniRef90-W4N7N9 UniRef90_S6G839 UniRef90_UPIOOO3660764 UniRef90- ${ }^{-}$2NNI4 UniRef90_UPIOOO2554F13 UniRef90_UPIOOO301EF11
UniRef90 UPIOOO46F350B UniRef90-V9VT37 UniRef90-U4V828 UniRef90-A3CMP5 UniRef90-UPI00016C3D71 UniRet90_O92T50 UniRef90-12BD25
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UniRef90-R4LNS2 UniRef90-A9EOL5 UniRef90-R6HZQ4 UniRef90_H8G5S8 UniRef90_UPIO0047734B4 UniRef90-C5C983 UniRef90-EOE3B5 UniRef90-EOICF6 UniRef90-UPIO0047B7E9E UniRef90_G4RFR2 UniRef90-E4L3D7 UniRef90-Q6LUH3 UniRef90-B3QVM5 UniRef90-X1DR72 UniRef90-A9G2AA
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APVVRAVRSGTT
 GLAVI ALGGGRTRPQD ATFSASVDASQSGYVSS: DSME:GLVSVLLGAGRNTVDE KVEIKATNSGYI ESI DALAIIGHAAMILGAGRATKED AHWHVIEAERDGVLAELDALAVGMAAWRLGAGRSAPGE TPSHEHTI LAPASGVLSKLDARSVGEAAWHLGAGROYOGO APVHKPVTAQEDGYLASLHALT:GEAARRLGAGRLTMED APVRRPVLASSMGYVAACDARALGMGVIDLGGGRRRPED SQIIRPVYADRAGFASAMDTRELGLAVVTLGGGRRKPGD KNKVE APVTLEVRA SA
 AEKVVQVKAPVSGYVAQINGEALGYLIIELGGGRKRAGE A AVERPVLAGEAGFVADIATRDGLAVVEGGGRRRAED ASUTRPVYAERDGFAYSMVTRELGLAVVTLGGGRRKPGD AKEVVSVKAKDTGYVKT NTLDLGVSAMLLGAGREEDTD AAERREVPAPATGLLTGLDAYAVGVAARRLGAGRVRKED AHVHVVEAAESGTLTRLDAYGVGVAAWRLGAGRARKDD KHSRKLPAPKRGYVHNL NAGMIARGVQULGASTMKSG TASFSRPVFAEKRGFVTEMDTRALGMAVVALGGGRRKATD ASRHTEFVADRSGVIASMKADDLGTASMLLGGGRSTKDD KNKLE KATKSGYVKYTRAEELGLDSVQLGAGRAKKTD APHRHILTANRPGVVHGLEAFNIGAATMLGAGRAKAAD APEVLEVRAEAGGTVNRLDAMKVGLAVLRLGGGRERKNQ SPVSAEIRAEKSGFLSRIDAWKVGHAGVDLGVGRNRTED RESHVVTAAESGVLTRLDALSVGQASWRLGAGRARPGD QHKLYAKADGYLEKVDALKVGQAGMKLGAGRATKED AEVIREVKTPSAGYVTAMNGEALLGLAVVRLGGGRMVESD SAAH I DVKAEQAGYYTELPAMEFGLFAMRLGAGRAVKSD APAILAVPAGRHGYLTSCKTRELGMAVRELGGGRDRPDD ATLSKAVYADTAGYVCDMDTRALGMAVVGMGGGRRQAQD
 LPAEYHGYLSEVNTRELGMAVVCLGGGRRKADD TPNYQVELKAKSGF SEEKALGGLLAMKLGAGRATKTD TPNETLIVTSDKEGYVSKDKAEELGKAAMVIGAGRATKDD APVKQAWTAPYDGFVKELPALAFGSAAMRLGAGRSKKDD AKYQSEVAAAEDGYVNKIDAARLGLTAMKLGAGRQKKDD AKY LKEINAQSSGCILSIDSKK GEALVCLGGGRDKKGD ARETEVLRATEDGVVAALDALGIGLABWRGAGRARKED APVIRAVPAPRAGYVNAIDGAALGMAVVNLGGGRVVEAD AAVIRPVFADEPGYVSAMQTRDIGLALIKLKGGRIVSDQ RHVHVVEAAESGVVASLDAYRVGVAAWRLGAGRARKSD APVVKPVKAAKAGFVTGMNTRAIGMAVVALGGGRTDPAA TAAHAEDVVAETDGVLTELDAMAVGLAAWRLGAGRERQGQ AKYVTE RSREAGYI SRI HSMQLGI DAMKLGAGRATKSD

VEVKAESSGWVTGUAAEQLGLAAMKLGAGRATKEA SAEVVREVHPVSIGRVAHI DVRGVGMAVVVLGGGRTDPSQ SKKVYATTSGIVSTMDTRALGMAVVALGGGRRRASD AEIAKPVFAETTGYAYAMDTRGLGMAVVGMGGGRRVASD SRFCAALHADKSGWDSQDDAREVGLCSTLLGAGRLRKED ARYKDELDAKYNGFISKIDCKQ GI ASTILGAGREKKED SAPVVVEVAAQDEGYVAAVDPLEIGLSAVALGAGRTRADQ AVETETLRAHEGGVVERVDALAVGLAVWRLGAGRSAPGQ
APIVRDVAALKPGFVGTMDGYA AAVIVPVPAPVSGVVQRVDCRA AKIIVRPVYANTTGFAYKMDTRALGLVVALGGGRTRAED AK AQFKIEVEAKEDGYVSEVVADE:GTAAMLLGAGRATKES
 SAPVMREVLAGRAGWLASVPTRRLGEAVRRLGGGRLLTQTD AAGTYPVPAPAAGFVAVDGEAGLAVAGGRMKGGD A RHMYEFTSEQDCCD EKURTDMLGUSSMALGAGRETKES APERTAVRAETGGWVQRIDARAVGQAALALGAGRTKKGE RCTHEVDADRDGRLARLDALAVGQAAWLLGAGRSRPGQ AKWKKEVKSNDSGFINEINAENVGYASMLLGAGRQKKND AVVSVPVWAEEEGCVTEIDTRAVGLAVVTLGGGRSHPDD
SVKYMKEVHAQKDGYLVSDDSKKVGEALVCLGGGRNKKDD
 APVVRAVHAERTGIVQKVAARAIGVAVVALGGGRTRPQD THDLTAAQSGWIAALDTTALGWAVQRLGAGREMAGA $A R H Q Q L L R V P T T G T V Q G I R A L P L A E V V H E L G A G R T V P G E$
$A P V H V W R A E E S G I I R Q V N T A G V E V A L I L G A G R H R D D D$

UniRef90_F2WUD8 UniRef90-U5ENO3
UniRef90 UP10004 UniRef90-UPIO0041A8F7D UniRef90_U7NZ72 UniRef90_UPIO00476FOBA UniRef90 B8BQ44
UniRef90 U4KRVO UniRef90-U4KRVO
UniRef90-W9DN21 UniRef90-UPIOOO3B67BC0 UniRef90-F9MXC6 UniRef90-B9J6V5 UniRef90-BOTO90 UniRef90_WOGQP7 UniRef90-W9HOZ7 UniRef90-UPIOOO345499E UniRef90-E8T375 UniRef90_UPI0004671F46 UniRef90_A1S475 UniRef90-R5FSJO UniRef90-UPIO0034CC672 UniRef90-IOVOQ2 UniRef90-R7LAX6 UniRef90-D5EIOO UniRef90-W1 J795 UniRef90-W4N7N9 UniRef90_S6G839 UniRef90_UPI0003660764 UniRef90-F2NN14 UniRef90-UP10002554F13 UniRef90-UPIOOO301EF11
UniRef90-UPIOOO46F350B UniRef90_V9VT37 UniRef90-U4V828 UniRef90-АзСМР5 UniRef90-UPIO0016C3D71 UniRef90_Q92T50 UniRef90-I2BD25
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UniRef90-S6FHW7 UniRef90_U2OHZ2 UniRef90-J9HR30 UniRef90-F4LQW7 UniRef90-R5LFX6
UniRef90_R4LNS2 UniRef90-A9EOL5 UniRef90-R6HZQ4
UniRef9O-H8G5S8 UniRef90_UPIO0047734B4 UniRef90-C5C983 UniRef90-EOE3B5 UniRef90-EOICF6 UniRef90-UPIOOO47B7E9E UniRef90-E4L3D7 UniRef90-B2VH51 UniRef90 O6LUH3 UniRef90_B3QVM5
UniRef90_X1DR72 UniRef90-A9G2A4 UniRef90-UPIO00462F283 UniRef90-K2JGJ6 UniRef90-G8S413
UniRef90 O1BV59 UniRef90-Q086F9 UniRef90-C3AQ50 UniRef90-C1FP04 UniRef90-UPIOOO35ED13C UniRef90-H9UJ12 UniRef90-E3Cz91 UniRef90-AOAO59IJ39 UniRef90_B4UCR6
UniRef90 G8M200 UniRef90-B11497 UniRef90-L7LP73 UniRef90-J8M619 UniRef90-DOMK71 UniRef90-UP10002EBD663 UniRef90 R6TYU5 UniRef90-UP1000371C7A6 UniRet90-E5BH53 UniRef90-I4YPB4
UniRef90_E6QL86 UniRef90-V9KGQ0 UniRef90-F811U5 UniRef90_LCL6A6
UniRef90_S9S4G



RVIDHAlVIV 50 R R V $\quad 60$
60
70
80
R RVQPGAGVEMHAKPGDSVAGQPLFTLHTDTPNAFAAAAS

 AVDFSSGVMFHKRPGMLVEKGDVLATVYTERQAVLENSVL AVDFSSGVMFHKRPGMLVEKGDVLATVYTERQAVLENSVL PVQYAAGVRLFARPGERVTAGQPLAELHTDTADAIPAAMA SVQATAGURLHVKPGDAIVAGEPDTVATETPERISVAEE KIDHRVGFSDILPLGTKVSKGDRIATVHAADDASAEKAAA $1 V D P A V G L A E L A P L G A Q L S R G G V I G V V H A A D E A A A D D A E K$
 A: DHHAGIYYNKKTGEFVNEGEVVMTLYTNRYGTAEPVYE VLDFETG VFEKKVGEKVTAGQVLSKHYANQKDS GEAVT PIDYSVGLGFRKKIGERVEKGEVIGEIVYSKGSPEEFVE ALDYSVGLSNVCALGQPINKDTPLGVIHAQSEAAFEEAAR KIDPQVGIVFYPKKGDYITKGEVICKVYTNGKNTSEAVQ
 KI DPYVGVTEIKKVGTQVKQGEPL LMI HYNDETNLDSGID P DHSVGIRLRCKVGDRVEAGTVLAELLYSDETVLEDAVG
 TIDHAAGIYLDKEYGDQVNVGDVIMTLYTNKEDND LWEK HVDHAVGVRVDATVGSTVREGDGILEVYYSDPAKDKTALP PIDRGVGVYLEKKLGDPVRPGEVLARVYHRGRGVEEALT AVSPTAGI QFHRKGGSPVAAGDLIMTVWAKDEAGLAAALP AVQAGAG R LHAKPGDAVEAGTPLMTLYTDEAPRFDRALE KINLFVGADLHKDGDKIKKGDLICTLYHDEKGLVDALE
 DLDYETGVVFEKKVGDKVEDGEVFAKVYSNGEKISQELVT
 PIDHGVGVYLLQKPGDRVERGEALALVYHRRRG LDEEALG KVCHAVGFSDIVSVGTKLSKGTPMKKHHAARIDHAESAKID VINLFVGLDLHKKMGDEVKVGDTICTVYHESEKGLKEAVE DI DFEAGVTLTKKVGDKVSAGEVIAHLYSNREDT DELVA II NHAVGIKLNKKVGDFVREGELLAKIYYNNNENDLS SKN I I HPAVGMVVKKVGDRVNAGEPVFTVHADDQPSAQACID D DYAVGFEFLKKVGDNVGEGEPILKVIYNDKEKFDEAFS
P

## R



 AV Q A A A GVV V HVVR GERVARGQKVLTLHTDTPERFEAAKA

 <br> \section*{. <br> \section*{. <br> }



 A I D Y S A GI KL Y K K T G M S V K K G E LI A T L Y S D D T E K $\square \mathrm{N}$ Q ALDE PVDPAVGVVLHHKVGSWVEPGAALATVHGAGRGEAEAAA


 R I D H R V G D S D I L P L L G T R V E K G D P I A L L V H A S S A D S A D A A V A DI NPAVGLK L HKKYGD FVEVVGESLCAI YHDNPLE ENWKT


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


| UniRef90_F2WUD8 | $\text { EATA AFT\\|D }{ }^{90} \text { S P VEPRSGVHSVL }$ |
| :---: | :---: |
| UniRef90-U5EN03 | A LTAAVTI STSEYKPGELFLDRI |
| UniRef90-UPI00041A8F7D | EVRSAYALEAEPPARQP |
| UniRef90_U7NZ72 | TLREAMLVGDAAATPPTLI QERL |
| UniRef90_UPI000476F0BA | AL R A A Y R I T P N T PLPRLA I IE R I A |
| UniRef90-B8BQ44 | RVKHAFAFSD |
| UniRef90-U4KRV0 | $\square \mathrm{I}$ EKATSDGNKKVAF KLIEKVI |
| UniRef90-W9DN21 | ALS DGVR』ADTAQEPGPLVLDVV |
| UniRef90-UPI0003B67BC0 | ILQNAI D TAD A Y SAPELIVDVI |
| UniRef90-F9MXC6 | DI QAGISSYSKDPVQAPDLILHEV |
| UniRef90-B9J6V5 | DLA A NYRIA D T A PI LPP PVIVSRI |
| UniRef90-B7QUG1 | SLRAAYTLS STAPVVPSLI HE |
| UniRef90-B0TQ90 | AVKKADHI GDTKPDKTPEI Y |
| UniRef90-W0GQP7 | WAESTFKITDKKPKDYELVYEVI |
| UniRef90-W9H0Z7 | MVRGAFTVGQSAPKPNPPIARR |
| UniRef90-UPI000345499E | EFKKNVKISNER K K TKE: L E I I S |
| UniRef90-E8T375 | KFLKAFTFTEGEVERPKLIKKRV |
| UniRef90-UPI000467 |  |
| UniRef90-A1S475 | AVRGAITVVSDKQPEKTPEIYQYV |
| UniRef90_R5FSJ0 | MI Q A Y TVV |
| UniRef90-UPI00034 | ALA GAARITDTPPEPLPLI DD RL |
| UniRef90-IOV0Q2 | ALEAACTI G |
| UniRef90-R7LAX6 | Y L R N A Y RLAPRRPNPPSIVVE |
| UniRef90-D5EI00 | RLRSAYSFGSDKPSVAD |
| UniRef90-W1J795 | AVRKSFVLQ |
| UniRef90_W4N7N9 | LREAIVIGDHA EP |
| UniRef90-S6G | K FE VES |
| UniRef90-UPI0003660764 | L EKA ${ }^{\text {a }}$ NI GDGNVTPENLVVEEI |
| UniRef90_F2NNI4 | L REAYGVGPEG ARPPLVLEVV |
| UniRef90_UPI0002554 | QL REAVEYSNQKPPAGQLILKEL |
| UniRef90-UPI000301EF11 | SLE GATVIAPAGSPEATAVA |
| UniRef90-UPI00046F350B | LI ESS YI I GPNK RHLKLVEEMT |
| UniRef90-V9VT37 | ALVAAVSI GEAPDALPPLVHERI |
| UniRef90-U4V828 | ALENVILI GDAAVDEQPLILEQI |
| UniRef90-A3CMP5 | DFQK NV |
| UniRef90_UPI00016C | LLKESFAI G GAPPGSEPLVLEQVT |
| UniRef90-Q92T50 | RVVTLYAI A D EEPARR |
| UniRef90 |  |
| UniRef90-F6DF54 | YLREAYALGEEA HPAPLVLEAI |
| UniRef90-UPI00037AFAD3 | QV $\mathrm{L}^{\text {Q A MKV }}$ S D T P PKEAELVLKRV |
| UniRef90-F5Y6Q9 | QLADAVEYSGKAPEKRKLI LKE I |
| UniRef90_A9NG19 | VNNSYVVGPHK! K L |
| UniRef90-Q5QXT8 | S I LKALSFSSTPPEPDSVIYERI |
| UniRef90-S6FHW7 | EFNDSLVISDQQV HQKEILETI |
| UniRef90-U2QHZ2 | MVLKSYıI K K E K PKK\N NI L E I I |
| UniRef90-J9HR30 | $E L T Q \\| I R L V E Q P V S S L P L L L G R V$ |
| UniRef90-F4LQW7 | AFEFTLDSIEKRKVI W |
| UniRef90-R5LFX6 |  |
| UniRef90_R4LNS2 | EAERAVTLAAGVPTHGRLLIDRI |
| UniRef90-A9E0L5 | AVLAAISLGDAPVAAPD |
| UniRef90-R6HZQ4 | DLK A AVKLA S A Q P S LT N Plile Kld |
| UniRef90-H8G5S8 | LLDAALVLKD |
| UniRef90_UPI000477 |  |
| UniRef90-C5C983 | ALAGGWAVGDDAAAERSVI LD R I |
| UniRef90-E0E3B5 | D MYRSFQYS DDKQEP $\square$ PIVEEAIL |
| UniRef90-E0ICF6 | ETA |
| UniRef90-UPI00047B7E9E | LI L E S Y II EEAPLGKPKLIKGFVNK |
| UniRef90_G4RFR2 | RLLA A Y TI DEDTPEH PVI Y SEl S |
| UniRef90-E4L3D7 | EFEKNVK |
| UniRef90-B2VH51 | AVQHAVMVGQQQPASTAVIYRRI |
| UniRef90-Q6LUH3 | AVRANI TI A DEKPAPTPDVYRRI |
| UniRef90-B3QVM5 | QL NAAI QI S PEHVQTSKKVLEMI |
| UniRef90-X1DR72 | ILEKSVEI S |
| UniRef90-A9G2A4 | RVR A AFRLGPAPAEAPALVLERT |
| UniRef90-UPI000462F283 | GLRDGIVVGSAVADTLVGV |
| UniRef90-K2JGJ6 | A 1 RAAI PI VDEAPDEPPLVYEKV |
| UniRef90-G8S413 | DAQAAIMI GTDAPASAGLLLDRIA |
| UniRef90_Q1BV59 | A 1 RRGYVLGETGEAPPTLYQRV |
| UniRef90-Q086F9 | AI QQAII I GDSAPEKTPEIYRYI |
| UniRef90-C3AQ50 | KI Y EN |
| UniRef90-C1FP04 | DI LIN NYVIEEELKKEELPPLIY DTV |
| UniRef90-F9V982 | EFKDNIEISDQQVHA PEILEII |
| UniRef90_UPI00035ED13C | QLRTA A T ${ }_{\text {l }}$ |
| UniRef90-H9UJ12 | RVLGAVEL A P E |
| UniRef90-E3CZ91 | ALEGTFVISPRPVEPVRWVRRRL |
| UniRef90-A0A0591J39 | AVRAAFSLGEAEVEEPPLIYERI |
| UniRef90-B4UCR6 | RLA GAYRI GPAAPPAAPLFLERL |
| UniRef90-G8M200 | TLKKSLVLGDSVEPQRPLILSYV |
| UniRef90-B11497 | LVREAYVLAAEKTAPGPLVHAVV |
| UniRef90-L7LP73 | AL D GGVDVRVEPVSRPSRILDRV |
| UniRef90-J8M619 | LI QDALIVADKRMSHKDLNFVVIS |
| UniRef90-D0MK71 | AL LAA YRFAE |
| UniRef90-UPIO002EBD663 | ALRAAYRLGGERLASRELIQALL |
| UniRef90-R6TYU5 |  |
| UniRef90-UPI000371C7A6 | ALAKHYRIDEHQPATPAVIYERI |
| UniRef90-E5BH53 | RLLESFEI QEGKPKKKNMI |
| UniRef90-14YPB4 | AVRAAYTIGDGKAAPGPA\\|LERII |
| UniRef90-E6QL86 | RIEAATEWSSTPPQSV |
| UniRef90 ${ }^{-}$V9KGQ0 | RLQGALS S S C P VTISSRVTEVI |
| UniRef90-F811U5 | TLA GTVEWGD PGNVPELVLGRVS |
| UniRef90-L7L6A6 | HLA GAVR |
| UniRef90- $9954 \mathrm{G5}$ | AVRKAFQIIGSAKVNAPEDFVDRVA |

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UniRef90 UPI00047 UniRef90_UPI00047C3A62 UniRef90_R5X0V6 UniRef90_F1YFY0 UniRef90_D0LL72 UniRef90_A0A023X699 UniRef90_Q6MSE5 UniRef90_V5HMG4 UniRef90_UPI00037B0A38 UniRef90_R5J9G8 UniRef90_R5SYE3 UniRef90_UPIO0035F815C UniRef90-UPIO002654828 UniRef90-UPIO002F9F488 UniRef90_UPI0003B393AA UniRef90_F0T078
UniRef90_A8AX58
UniRef90_D2R591 UniRef90_G9YF14 UniRef90-M3XJ19 UniRef90_UPIO003B6B7B2 UniRef90-J3JPL9 UniRef90-EOTL78
UniRef90 K2MAM6 UniRef90-HOJBH1 UniRef90_R7KXS4 UniRef90-Q6F1Z8
UniRef90-S7T8S8 UniRef90-S7T8S8 UniRef90-UPIOO0379689E UniRef90-UPIOOO40C1F04 UniRef90_B7G7Y6 UniRe990 UPIO0036FC22B UniRef90-UPIo00346B11D UniRef90-J2V1X9 UniRef90-R5PFQ5 UniRef90-R7IJ68 UniRefofo-TODLV5 UniRet90_TORGB7 UniRef90 Q6KHA8 UniRef90-Q4A5W5
UniRet90
S6AOK3 UniRef90-F8AY08 UniRef90-C6CU52 UniRef90-F4EFQ3 UniRef90-M5RJS3 UniRef90-UP100036ADEBB UniRef90-UPI0002EA3F24 UniRef90-F7NTL3 UniRef90_Q2S3E2 UniRef90-R6Z2F2 UniRef90_UPIOO0466132F UniRef90-F2NVL8 UniRef90-H6MUC1 UniRef90-F9QCE2
UniRef90-G9RV67
UniRef90-K2ML13 UniRef90-UPIOOO35F1DC0 UniRef90-U4KSZ6 UniRef90-C5J6Z4 UniRef90-Q2CGX3 UniRef90-B9DS94 UniRef90-J9JUJ7 UniRef90-E3F393
UniRef90-R5QH67 UniRef90-R7M7B5 UniRef90-V6Z1P9 UniRef90_W5NJC2
UniRef90_R9PJX7 UniRef90_N9V458 UniRef90-X1DVA3 UniRet90-B5X3F7 UniRef90-B6IPF9 UniRef90-A6FVK2 UniRef90-A0A037URE2 UniRef90_E1PSK3
 R|| DHSVVGFSGLLPV|GTAVVKGDVLAVV|HAADEASGTRAAQ





 $T I D Y S V V G F N Q V L R L G Q Q A D A S R P D A L V H A R N E S E W Q L A A N$

 $P \vee Q A G A G V F L H V E R G Q Q V R A G Q R L A T L M T D T P E A F E R A E Q$ P I D M S A G I V L T K K N K D F C Q K G DLI A T L M G K T S D Q C Q S G A K
 $R V S A T A G V V W H A V V G D R V R R G R P L L T L H T D D E S T I E R A A A$ R I D H A VA I EMMLA R P G D QVA E G QP L A R L H Y R E R GLERAAAA




 AI D Y GVGLLSALAELGQRVEA GQPVGFVHARDAAAAA QAVE TVDPTAGF GLEHHIGDSVAPGACLARIYGTHTDRMDATAA


 A I D H A V G L T A L A K L G E E I G P D R P L A M V H A A D D TAAA E VA I A
 A 1 D H S V G L T G C L P P V G A E V R R G E P L A M V H A R T T D D A E R A V A
 DI D S TA GI IF S C NVG S CVVNKGDVLGTVMTSSECDLEEDKR



 RI D P A A GL L M V K K V G D A V A T G DV L A L L LHN RTP S E A E E A A R




 K I D Y E A Gli T L V K Q T N E K V S K N E V I F K L H S S N V I D S S S L V E
 E V S A VA G V R WF A GLLGE RVVVA GA PL L E L H T D D P A R L A TA RA


 T I D P A V G I V L N K K A G D A I H D G D V L A Y V H D N A P A L S D E WI N VI N M A V G F S DVVK A L G A K V VA G D L L A R V H A D T T E A A A E HA K A
 S I










DI D F E A GII T L N R K TN EL V K K G DVL F T L Y S S N P DDP K LAA D SI D H A VGIEVVLQKVGKYVEQ DQPVFIV HANNEELLDA




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URE2
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|  |  |
| :---: | :---: |
| UniRef90_B9JYS4 |  |
| UniRef90-F5ZIA6 | DFEKNVKI SKEHFD TKEI |
| UniRef90-W6A7X7 | EANEQILI T DQ ${ }^{\text {L }}$ L QEPVI |
| UniRef90-A0A023VNJ9 | EFEKNVKı GLEQIES K EI I K IV S |
| UniRef90_UPI0002628E28 | T TQQA CVI GPNKNTLSNCVY |
| UniRef90-UPI0003612B9C | RLNQAYRLAADA QTPPLILEVL |
| UniRef90-UPI0002FB76C8 | LAGDAl EVSDAAGAAQTVILDR |
| UniRef90-UPI0003783653 | AVKA AVKLSEQPLAEQPVIYRR |
| UniRef90_A1SYK5 | A IQ S A I I CGT DSLQAQTQVYR |
| UniRef90-I4DZV5 | EFKKNVKISNEPKKV |
| UniRef90_UPI0003AFB391 | HLESALTVGADKQQK |
| UniRef90-R8ATR1 | AI Q NAISIS |
| UniRef90-R7L | DLRNVYE |
| UniRef90-C7MUQ5 | TLRAAYDI DGHETAPAALVL |
| UniRef90-R5R819 | ALRKHIKVSAAHPLAHSSII |
| UniRef90-M2WBN4 | LVLGAI SVGPDRPQA |
| UniRef90-UPI00047C3A62 | KFGECIALS PKPLSDNKLIGDVI |
| UniRef90_R5X0V6 | ELYHAFELTNEEVAPQP\I EKVLS |
| UniRef90-F1YFY0 | A AVGAVEL GADPGSARSR\\|LERV |
| UniRef90-D0LL72 | R\LSEAFVI EEAPVRAR |
| UniRef90-A0A023X6 | LVREALRLSEQPTESAPAl |
| UniRef90_Q6MSE5 | EI HESYEL LEQQPVK KVI WE |
| UniRef90-V5HMG4 | ALQAA I HI GDSQYQATPVVYA QI |
| UniRef90_UPI00037B | NFQKNVTI GEEKV |
| UniRef90-R5J9G8 | RSAFTI DKEKKGKEKL |
| UniRef90-R5SYE3 | YCDEAFSINETRPSHNNL |
| UniRef90_UPI00035F815C | ALA DAAVIGSAAPQSGSRVI GRV |
| UniRef90_UPI0002654828 | RLQATLEYSDHPVSVPNIVIDVV |
| UniRef90-UPI0002F9F488 | AVQRIYTVGDAGDALPPTI HR |
| UniRef90-UPI0003B393AA | SI REAFTFGPEAPEPSNVLM |
| UniRef90_F0T078 | A |
| UniRef90-A8AX58 | K V Rid DVERKKVSE! I EV |
| UniRef90_D2R591 | MI Q HAl T F S HEPVESPPLIVERV |
| UniRef90_G9YF14 | RI RKAFHILEAGKVEE |
| UniRef90-M3XJ19 | HLQEALVIGNGKNFTTSRISEV |
| UniRef90-UPI0003B6B7B2 | AVQAA YGPGDG ETGPLVRERI |
| UniRef90-J3JPL9 | EFKKNVK\NKEELSV |
| UniRef90-E0TL78 | ELEKSYVI RQKPKKQKLILERL |
| UniRef90-K2MAM6 | AVRAAYRMTDEKPRAGKAILRRIA |
| UniRef90-H0JBH1 | HLQLA Y GLLGEERPAAVPAVLDR |
| UniRef90-R7KXS4 | D F HDVFSFSDEPVPERTA |
| UniRef90-Q6F1Z8 | RAKKSFlISTE NEKQQN |
| UniRef90-S7T8S8 | DEAVAVGPQAPPIGLLMRGVLS |
| UniRef90-K2E5V4 | ELQRAV |
| UniRef90-UPI000379689E | TVK CFIIDDETIEKPSLI AAVL |
| UniRef90-UPI00040C1F04 |  |
| UniRef90-B7G7Y6 | RLQSAIVIGDFPINVP |
| UniRef90_UPI00036FC22B | LAAAAYRMEHKPVADRPLVLSIV |
| UniRef90-UPI000346B | ALR S A Y R $\square$ GMVSPDACEPVVERL |
| UniRef90-J2V1X9 | AVEAAYHFADKKPRTVNPVLRRI |
| UniRef90-R5PFQ5 |  |
| UniRef90-R7IJ68 | AI RKALTI AREKPQTPKLWDAVV |
| UniRef90-TODLV5 | DLKKDIKVTTAKPKASKLIPDV |
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| UniRef90-Q6KHA8 | DLLKAlKI NESQIQKQNI I IERI |
| UniRef90-Q4A5W5 | ELKTAYKIQNNKV |
| UniRef90-S6A0K3 |  |
| UniRef90-F8AY08 | ALA D AVEITA D T P P S VQRLVLD HV |
| UniRef90-C6C | KVREAYTI A A DKPEERPLLLSVV |
| UniRef90-F4EFQ3 | NFQKNVKI DKESV KTKEIIEII S |
| UniRef90-B9KS27 | AlQAAYVISDQEPAEPPLIHARIA |
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| UniRef90-Q2S3E2 | AVRSAYT |
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| UniRef90-UPI000466132F | QAYETFTIVEKQ |
| UniRef90-F2NVL8 | QLEAALDFCEEKPEEKKLVLKEI |
| UniRef90-H6MUC1 | ALVGAVDПA A EPNSARPLVIEHV |
| UniRef90-F9QCE2 | ELKQGYK】NKNKVENKIILDRL |
| UniRef90-G9RV67 | KFHSALT FA A R R PQLPALVLARV |
| UniRef90-K2ML13 | LLREAIVIGDGEVARTAAVRERI |
| UniRef90-UPIO0035F1DC0 |  |
| UniRef90-U4KSZ6 | TLKEAIHI GSKKNDVT LIEEGV |
| UniRef90-C5J6Z4 | LI EQA YTI LDEKQHQ TKMFLT RMT |
| UniRef90-Q2CGX3 | A I LAAVTI GETAAEPPPLVHARI |
| UniRef90-B9DS94 | EFEKNVKI GLEQLE DKEI I K V I |
| UniRef90-J9JUJ77 | LLQQSIIELVNE\VEPEDILLGV |
| UniRef90-E3F393 | AVLA A MQITTDAPPAARPLILAEV |
| UniRef90-R5QH67 | HLK GAVCI SEQPV |
| UniRef90-R7M7B5 | HI D NTFKI GPNKVYNPR\VYEVI |
| UniRef90-V6Z1P9 | EFKKNVKI GLTESQ PKEI IGI I |
| UniRef90-W5NJC2 | Y LQS ALVIGSKA $\square$ D D T P LIS EFI |


$S$
$R$
$R$
$V$


UniRef90_M3V3H6
UniRef90_G2LH86
UniRef90_T0RV07
UniRef90_UPI0003708C7A A R Dolva 10

| $A$ | $A$ | $V$ | $D$ | $A$ | $R$ | $A$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $S$ | $I$ | $A$ | $C$ | $Q$ | $E$ | $F$ |
| $T$ | $D$ | $I$ | $N$ | $S$ | $K$ | $K$ | $I$ |
| $A$ |  |  |  |  |  |  |  |

QMQVINTEQGYI S G\|QAEEIGYANLILGGGHTTKDS
A HVHVVEAEDDGLLSTMDAYAVGVAAWRLGAGRARRGE AAEHHEI RAGRAGVLTGVDAFDVGIAAWRLGAGRARKED

 RD GY LA A CETRELGMAVIALGGGRRRPDD

 $S A P V V V E V R D A S D G F V A G G D G R A D G E A V V H L G G G G R D R D E C$
A

## A K

23B43D39

## S4

003B433B1 J5P873 Ref90_H2MSQ1 UniRef90_Q0RRG3 UniRef90_W6SFW3 UniRef90_F6UIF5 UniRef90-X7F3V4
UniRef90 UPI0003 UniRef90_H4FDG2 UniRef90_Q161B1 UniRef90_R1G3L0
UniRef90 R5MUP7 UniRef90_G5JMN4 UniRef90-UPI000252C13D UniRef90_UPI00047D80B5 UniRef90_C5J6Z5 UniRef90_UPI0004766D7F UniRef90_Q98PS3 UniRef90_UPI00037C6995 UniRef90_C3Z938 UniRef90_A0A022LK92 UniRef90_UPI00036E1EAC UniRef90_UPI00038300D9 UniRef90_E2ZD26 UniRef90_B1ZGR5
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UniRef90-K1R192 UniRef90-UP10003B43D39 UniRefofo-S5MOB1
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UniRef90- 1 AYFO | UniRef90-Q1AYFO |
| :--- |
| UniRef90 $\times 7 E G 5$ | UniRef90-UPIOOO368EF7C UniRef90-F2U912

UniRef90-G2KSZ3 UniRef90-A7RXX2 UniRef90-UPIOOO3B51408 UniRef90-H5X6Z6
 VIDPAVGFRMEVELGAPVSAGDALVRVYYNAAQAVPEVEQ KVDMGVGFILKKKIGDKVEKGETLVEIHKKQSSEVEEIMK ELDLSVGDEAMDPVGAPVQADTPLCY:RATNDADAQRIAE VI DHASG| YLDKSYAQKVEKDQVVMTLYTNKPTNSD WIK

 SIDFAAGUYLNADSGSFVNKGDVIMTLYTNKDVDPCWID K1 DFKAGLVFHFKVGDHVKAGEALVTLFT DGTYPDYLSD TLDYETGUVFEKKVGDKIEKGTSIAKIYSNKKDEAKMDT GIDHAVGLTEDAAGGESVGPGRPLALLHTRDEAAADRAEA
 PLDYETGAVFDKKVGEQVKKGERUARVFVNKEKNSQESVT

 RVDLSVGALLHKKRGDRVQPGEAVATVYANGMDAAKEAYG PVSAAAGVTLRQRRGDQVRAGDVLAVLATDDAARIPGAVD EID DHKAGIYLNKKHGDVVKKDEVIMTLYTNRYPT QADYE VLDLDAGLRLFKKDGDYVESGEPIFEVLYNKADDAEKESQ AR DYEVGLVGGRRLGTKVEKGERIAGVHGADRDQAEAVAK SVDHAVGMTRLLPVGAEVRAGEALALVHARSGASAEAAAA EIDHAVGISDI LPPGGAVRAGDRLALVHARREAEADEAAA R1 NPSVGLSDLAGLGEGVARGVPLAMVHAADAAAAERAVQ SIDPRVGFVFNKKVGDIVNEGDVIGTIYADDDDKANEVLN AVDFGVGLITNKKI GDTVKKGESLVTIYYHAKQKGKDAAE

 E DYGAGUVMHCKVGDYVKKGDELFTVYFGSEKKVTEG D E: NPAVGLTEVVRLGQRVEKGQPLARVHAAREGQADRAAE EIDHSVGLRFFKKIGDYVKRGEPVGEVIYNRGNVEEFKA PVNHSVGAELLVSLDQRVRTGSPWLRLHYEDPAPSPDQUQ AVSATAGVRWRAGIGDRVTAGEPLLEMHTDDP
KIDLLAVGIVLKKKIGDKVKKGEELATHYCNSEEAGKSVLS PI NHSVGAELLVSMGQHVEQGKPWIRIHYENPQLQDEQRK RIDPAVGDTDMVRLGAPVAAGAPLARVHAAREGAADAAAR PINHHVGAELLVTVGQRVAKGSPWIRIHYDTPELSNDQRH Lid

 QLDYSVGAELKKKVGDEVKAGESLAKTHYSNRPNVVODKKD
 A 1 DFAVGFTDLAGDGEKAER DVGVVHARSEAQAEAAES RIDHRVGLSGLAELGQSLEAGEPVAWVHAASDADADRACE AVNHAVGLQLLKTVGAKVTKGDVWVKVHHQGDCVSPNHTT AVDPAAGVVLHRVEGDPVRLGDVVATVHAGDPGRLPAACA AVRPGAGVRCLAKRGDRVTEGDPVLELHTDDPEAVEDAVW AVRAGTGVEPRAKPGDTVAAGQRLLTLPTDTPERFDYAIE VI NLYTGLALHKEVYDKVEAGDLLCTLYGGEGADTSAYEE PVDHGAGVELLVGPGERVEEGQAVARLYGDR DAERAAG
 SLDYESGUVFEKKVGDAVSKGDLVAKIYS HE LDKKVHT KIDHGTGMAAMAA IGERVGRDAPLCVIVGRDEVKDKRAEE AVDHSVGLILHVRVGQYVHKGDVWVCVHHKGNLDKEGDE KI DHRVGFAALLPLGTRVEKGDTLAIVVAASEAAAQKAAA QLDHGAGVVVHRRVGEEVAKGDLLAELHHSS GDAESAWS TIDHAAGLKLLKKVGDEVTKGEDIAELYYDN DQGNKTAK AIDHRVGLSRIAGLGQRVERGQPLLRLHAASRAEADAVSR DVCFDAGVVMHKKTGAEVRKGELILEVYGKDAECLAPAVA SVDHSVGFTDIVEMGESVDSQRPWATVHARSEAAAERAAE RIDPAVGFAACAAI GDAVGPDRPLAIIHAADAEAARKGVA SINYAVGFNDFIVSLGKNVDTNKPLAMIHAQNELQWLESEK KI DYSAGVIINKNINDIVEVGDTIMTLYTNKEPNWD


 AVDHSVGLTELAADGTVLGEGDPGAMVARDGAAAEAAVR GVDHSVGLTVDAKTGQCVRAKDVLAVVHAASPAMAEAVRD KI DSEAG ELKFENSESVKAGETIFVLYSSNP DDVNKFND DLDYETGUVFEKKVGDAVKVGEVVAKLYTN NNLGQKEDS


| UniRef90_M3V3H6 |  |
| :---: | :---: |
| UniRef90-G2LH86 |  |
| UniRef90_T0RV07 | S L K K DIK KVSNDK P K K S K L |
| UniRef90-UPI0003708C7A | MVRTTIKKI SAEQPSTEVAV |
| UniRef90-G2RYQ3 | LAESTFEIVDQQP SQEV |
| UniRef90-K2 | A V La A $\square$ HVGDAR AVPP |
| UniRef90-Q2SRA5 |  |
| UniRef90-UPI00047A071F | MAYQTFVLS KKQT |
| UniRef90-L1JRF6 |  |
| UniRef90_UPI00035E8D89 | ALQANYTI SDSAPALDP PVI S S R |
| UniRef90-UPI000375B283 | EFKKNVKIGDESVDS K E |
| UniRef90-UPIO004133B3A | AlR A AVTVA GA APA QPPLVAERIA |
| UniRef90-E1WXH9 |  |
| UniRef90-R5TB43 | YIS DGI II QDNALANKPHVLDV |
| UniRef90-T0V6H8 | EFKKNVKILEGA ESVKE |
| UniRef90-UP10004718 | QKGYKF NQA VEN |
| UniRef90_UPI00035C8 | EFQKNVK\GRV |
| UniRef90-A0A017HDQ1 | ALRGAMTIGD A PRLNDLVRGRV |
| UniRef90-W5UU23 | LI DEAYAIVDKP |
| UniRef90_R9KFP7 | RVVRAYQV Q G A R P E ET DMVK GVV |
| UniRef90-UPI0004760E81 | ALDGGLVVSDS |
| UniRef90_UPI00037EF885 | ALAEAFT, |
| UniRef90-R4UDI1 |  |
| UniRef90-17L6P0 | VLLDAISI SNEKVE |
| UniRef90-UPIO0037FD756 | DFKKNVKISKEQM RQNEILKI |
| UniRef90_A6UET3 | RVATLYAI A EEAPAQRPVIASRL |
| UniRef90_UPI00031E5021 | AVRAAYDL GDTRPTMRKTVMR |
| UniRef90_A8LRC3 | EVQAAFTLG TSFDAKPLVLGEV |
| UniRef90_UPI000464F | ALTA A Y S G E A R P R T P K AVL R RV |
| UniRef90-V7EMV9 | A V Q A A Y R IG T S VP DEPPLILKRV |
| UniRef90 R5N792 |  |
| UniRef90-TORQG0 UniRef90 K1R192 |  |
| UniRef90-UPI0003B43D39 | RLLTKSI SFEKEKQNKQI |
| UniRef90-S5M0B1 | TAKELI VLSNQKSEDN |
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| UniRef90_C7GZ76 | DD D 1 |
| UniRef90_A3K5S0 | AVRAAI AYGD APEPCDA |
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| UniRef90_U5P873 | EFQKNVK L L |
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| UniRef90_QRRRG3 |  |
| UniRef90-W6SFW3 | KLK DVI I I S DVY E EYKLIY EIV |
| UniRef90-F6UIF5 | YLQE AI CI A E M P C F P LP |
| UniRef90-X7F3V4 | AVAAAVTIRPEPGPVPPLFRGRV |
| UniRef90-UPI0003890E5D | TLQ Q ALVLAGSEPFAPSCV |
| UniRef90-H4FDG2 | AI TAAI AI GSTKPDRRPVITGRL |
| UniRef90_Q161B1 | AV R A A $\downarrow$ SLT T S A VAVPD LI HERV |
| UniRef90-R1G3L0 | ALKAAYRI G GAAPAEKEAVIQRL |
| UniRef90-R5MUP7 | ELS G I FKI S DEKKEE |
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| UniRef90-UPI000252C13D | LLYQNI AI ADHA DKKPMIYRVI |
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| UniRef90_C5J6Z5 | LI SETYSIVPQ PHKTKVFLARV |
| UniRef90_UPI0004766D7F | AL R A A Y RI AP E A EPKAL |
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| UniRef90_UPI00037C6995 | RVREAYTL |
| UniRef90-C3Z938 | RLQ S S LLV G GES VEVGS R VT E V I S |
| UniRef90-A0A022 | ELASALEI G |
| UniRef90-UPI00036E1EAC | LLE GA Y GVT DSPVETRPVV |
| UniRef90-UPI00038300D9 | ALA GAVEI APEGTEPTPI A |
| UniRef90-E2ZD26 | RVRVAFQUEETEPEKESVVADII |
| UniRef90-B1ZGR5 | AL RAAYRLGEARQEPREAVLERL |
| UniRef90-Q1AYF0 | A GA |
| UniRef90-X7EGX5 | SIIRVAVRI GESA APAALVR |
| UniRef90_UPI000368EF7C | DFQKNVKI GRVVQAENSE |
| UniRef90-F2U912 | R I K GALVLADKA |
| UniRef90-G2KSZ3 | II K R A YTI APEALSS S DPII RERI |
| UniRef90-A7RXX2 | CLEEKADMIVEEKTESLPVIIEEVI |
| UniRef90-UPI0003B51408 | SI A S S YRICCGNAPSLPPVI S GRI |
| UniRef90-H5X6Z6 | LVRSAFEFGDDPVAE PLI HQ L L |
| UniRef90-UPIO003613418 | EI ENCFEYSEDK |
| UniRef90-Q1QZC1 | RLREAFTLGEPGHAVPPLIHATLR |
| UniRef90-H7ENX5 | LLEEAlS YSPEKPEEDELVFKII |
| UniRef90-C1JCL6 | CLQKALVIGS |
| UniRef90-T2L4A5 | QLRAAFS |
| UniRef90-W0A7I3 | QFRAACIVAALQVPPVPVLHGT |
| UniRef90_UPI0003B3F283 | II QQAI SYTECKPKAETQI YQHI |
| UniRef90-_R71 | 1 NKLLFI I SNNKNDDNKLI Y EVI |
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| UniRef90-C5AWR0 | SLRAAYQ $\mathrm{S}_{\text {L A A P P EPREAVMERL }}$ |
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| UniRef90-D5E552 | ELTNGYR\\|VSKQVENK\|ILDRL |
| UniRef90-B3PM94 |  |
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| UniRef90_U1GSJ8 | K I EDALA YS T A LD K K PLILK TIR Q |
| UniRef90_E6VZ74 | RVLIA A AVI D P M S E EG |
| UniRef90-W5USU9 | LI K DAYSI EESAFEH K MFLDLIS |
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|  |  |

## UniRef90 HowDT6

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KYKLE LAAKQDGYLDFKSTKELGMIAVDLKAGRKVKTAD

QRDTVAERS GWVESIDCPAIGDAIISMGGGRRKTTD


A P F V Y T AV S TE G GY T A I K AKTLG EI A MRMGAGRAQKED
A P Y Y EVK S D REGYLITNIHS LEI A KLS S SLGSGRKNKED

K Y T IQ Q LA Q N D G Y L S F A S A D QLGGYLS M HLLGA GRA T K E E
Q Y K Q E

APVVRAVEAGGAGFVAAVDGTALGRAVVALGGGRVRAS D

A P VR R P V
SKES DDLDSKE DGYI T D I NP VVLAEFIDNKLGAGRQKK D D
$A L Q Y P V E A P R D G V V T A I D N L Q I A R I A R L A G A$






A EY
QEELRTLQDGTVQQQL





APYQHPVIAPRDGLVSGFNNRQLGTVAKLAGAPRA
$T G R V L D D D G L A L A B V L H K L G A G R S K A G Q$



$R M V V T A P R S G H V H G C D A L A V G R A C V R L G A G R C L L G E$

A HKVVAVTAVVSEGTVETINALLVGEASVSLLGGAGRELTK E S

T A A Q Q $\square E I$ R A P H A G QLTA I D N R R DA R I A K L A GAPR QK
K L C H E V $V$ H A D R D G F V

$H Q L E L Q S G A D G T V L D I N G L V I A E V L H N L G A G R T K A C Q$
APF QHPVLLA ER $\square G R V A R I D N R L L A R A A K L A G A P H A K$
G WI E R I D A R A L G L A V V G L G G G R A K I G D

SPRVQTALVAHCDGTVHQILAMPIAQVLHALGAGRTKEGQ


A PVQRPVVWPA Q G GTVVAI DTRAVVGAAVVALGGGRCRPCD


A PVQRPVR QDGTVAGIDTRADGLAVIGLGGGRTRPED


APHTHPVCAVKAGRVTABDNRLVSRAAKLAGAPRA


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 S| DYEAG|VYLNKSSNEYVNKGDVLETLYSSKPIDNPEELQK RUDPRVGLS QLLRKGDQVSTGAPLALVHARSEAEAEAAAA S: DYEAGIYYLNKTSNDYVKKNDVLFTLYSSKPIDDSSYGEN IINYGVGVKLNKQTNEKVSVGDKLLTI DCDEKDDDNE PMDKSAGVDLHKKLHDRVTRGTPLYTLHAEFRADYQFARN PMDKGSGVYVMKRIGDPVQAGEPLFRGHSQFPADMQFADR K $\mid$ DFASGUYLNKTTDDYVEENEVVMTLFTNKKDNLESFTL AI DHRVGLSHIVQLGERVDAGQPLDRLHAASQADAEAIDAS ALDPAVGFSNILSNGSRVQAGDRLATVHAASQABAAADARD QLDYESGUVFAKKVGQSVKKNEKVATVFANGKIS DDEMLS DLDYETGUVFEKKVGDSVQKGETVAKVYTNGKIS SEGVT EVDPAVGFSALALPGERVGDEQPLGLVHARDAASAERAAA KINHRVGAELLVSVGQQVKKGTPWIRIHYETPKLSNTHRD P: NHSVGAKLLVHLGQQVQKGQSWITIHHDCPVLSPEQRS RI DHAVGCLIQVVQGENVDPGKCWAVLHHNTPDDPKDQVE SLDPSVGLTDVAPPGTWVARGDPLAVVHAADEASAARAVE QLKLGVGAELLVDVGQRLCRGTPWLRVHLDGPALSCPQRR
 P NI NYAVGLEMKVKKGDKIKKDDILATVYH DEKLTDEWTE KLDYLSGI YLNKICGDKVSVNDVILTVYSSTPDS DKVI E
 AVDPAAGVVLAKEGDFVEPGAPLAELRAADTARLAAARP DVDPAVGLTDVVSLGDRVDKGQPLARIHAAREDAADAAVR AI DLSVGICLKKKIGAPVSRGDVIAEIYANDKTLGADAKK KLDYDAG QLIAKKGDHVTNGDTIAYLYSNQPDDEETIN PLFKRAGVRLLVRI GDWVDKGQPLYELHAETPGELAYALDA AI DPRVGLDEMVALGETRRAGEPLARVHAADEAGAARAVA KI DYSAGVIIEKPLGSKVHKGDILGVIYYNK KDENMDE A 1 NHSVGAELLVSVGQRVAKGDSWLRLHHEDAALPPDLIS TLDYSVGLSALAELGERVEAGQPLATVHARDADSAAQATD HLDHAAGGY LKKVSDEKVQKGDVVMTLLSNKEPNAS WNE RI QHQVGAELLVSVGERVRKGMPWIWIHCVSLELSDANRS D DFDAGUTVNKKNETVKKGDVIFTLYS SKTVPNSVVE ALDLSVGFSRLVFVGEAVGAERPLGWVHAASDSAADEAAH P DKGAG RLFKKVGDRVEAGEPLYRIYAFDPAELDAVAAA SLNHRVGURTCDRIGDEVEKGQLLYSVFDDSDSIAGSMHA AI DPRVGFTDLAGPGD VASGLLGVVHAADAAAADRAEA SLLNETGIVFEKKVGDSVVQGDLVAKVYS ASAGUDLHVMVDSHVDLGMPLFTVHAETPGELEYALS R】NSQVGARLAEPGAYVEKNTPLARLYGAKNTDLDQYAK PMSKGAGVDLHAHKGESVEQGEPGFTVHSESLGELVHYCD PATPASGLDLHVRLGDWVEAGQPLFTLHAESAGVLAYADE KПDFGVGISLVQ GDKIKKGDVIATIYGDDNYQID
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RAVNSLKI G

$P \square Q P$ VRMSETSVPARPLILQR
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EFQKYVK LND GVQS $\square R E \| \quad$ I I I S
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M D S ALKVSTTSVPHTSILIKTI
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AL RAAYTVGSAKVMDRPSVVER $\square$ A
Y V A R
$R L Q S A L T \square G P E G T P V R P A L V E$
SFYNTFSYSNEKTNP $\square$ PVVEE 1 L
SLKNNTLYTNKPKKASKEILEVI
Y L E D HLDDIELAK K K
LVESAFTLEDEHAGQAPLVRGLVS
ERESGYSIGEA
 KI QQAYTIA
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YAES
LSNNGYTDGDDELADTS LI
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RFKESF
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F VR S
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EVKKTFE $\square$ NQKPKNNK II LAA
Y L
RVERAFTLQQEK $\square E \square$ PLIYEVLS
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30 AGTVTII
dnrsiliakvak ${ }^{30}$ Aga VRAPRAGYVTAI DNLRMAQIARLAGA TSRLQRPLLAERSGRVHSDSRRDARAKLAGA $A P F Q R P V P A P C A G R V Q A M D N L L L A R A A K L A G A P H A R$ TARLTHPLLAAHSGRVTHI

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AAYRHT TASQTGTVSQUDNRRLATIAKLAGAPRSK
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KY QV E I K A D K S GFi, S E EK A L Gli G L L A M KL G A GRATTK T D
A LQ FE I CAPAA GVVAGIDNQQIARIARLAGAPKVQ
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A R F K Q DVVLSEKGGVVKAVDNRKLARIAK LA GAPRS
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A RLS FEVVAADAHGVVTAIDDNQLARIARIAGAPKDQ
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DPAA GAS MHVVRVQDRVVDRGQP L F T L HA E S L G E L Q Y A L S $P$ NVA A A G L R L H K R V G D K V

 GA GVVDLLK KL GEPVAACGELLYRVHADYPADDEFARAQ A GVVDL $L$
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 P I N H S VGAKLLVTA GMKVKKG DPWVRVMFETPPFNAKLQA QIDP A $V$ GFSSNV A A GTEVVSVGEPDAMVHAATSAAAAVAQA P ED K G A G T T F HV K VG E K V K E G D P L F T I H A E S E T R LDD R A V
 R A GVV D L K K L G S P V K K G E LL YRI HAEFPADFNFA LA $\square D P S A G L I V V K K V G E N V E S G E T L A D L Q S N K P V G N E V L E$ TAGVGFVLHKKI GDSVEAGETLATIYSA QAEDQPALK


 E I N H GVGI T L K K K L $P K D H G A G L K L H R G V G E T T T T D E L L A T V H A E S T D K D A D A V A$ KLDLSVVGIKLLCSAGDQISAEDCWLELHHNLPVS DELAR P I D P A A G V H IVPVK LGG D RI E P N E I L L S I H A ESSS GELDN Y AVVD K I D M S A G I V M N C S V G D Q L A A D DI I M T L Y S T V $K V D P A V G I T T R L L D V G A E V R A G E P L A L V A R S L D A D A B A A A D$

 A G V D L L K K L G N P V K K G E I L Y R I Y A E F P A D F K F A Q D
 $P$ VA K GA G I DLVFK K G D R V E K G E P L Y R V Y A S D S A E F D L A L A HI YNHS GVVDFFVKNGDFINKGDLLAKIVYSKEKLTD QQIGE P I N K G A GI R LF KK IG D PVVQQ GEPLYRVFACDPSDLAAAAAA
 $P I D P S V G F S A L A A G L G G E D V G S D H P L G F V H A A S E S A A D A A A A$

 P GA GVD L Y R R L G D P V R A GE A L Y A I H A Q F P A D F H F A R A $P$ E D K G A G I Q L H V $\underset{P}{ }$ K T G Y R V $V$ R K G D P PVDHAAGVEVLVRPGGRVRAGDALFVAACDNAGRMAR P I D D Q G GL Y L C K K LG D KVKK K D DI YVMYAN QESKIDMALE PVD H GA GLHLHKKPGEYVKRGEPLLTIIYAERGWRLTRALE
 A A GVVLMARLGDEVAS GQPWVMIHADSPGELE YALD E LDYGAGI IL K K K M G D Y V K K
P L D L Q A GL YL H K K LGG D T V K K G D I I Y T M Y A N D Q G K I S L A K E
 GA GVVDL L
K $\square$ D P
 A A GVVRLVKVGDEVSKGDPLLELCAETPGELRYARS



 PHSSSA GVVYFLAP L GKRIVERGEILYTVVHSESEGEMEYSFE

P A A GLVLHA P L G T ML S A G QPLL LTL HAESP GE LT Y A LAA A A GVVDF HAP

 A RA GVLLLARPGDRVQRGGPLFEIHSETPGELAYAQD $P \square D K G A G I R L F K K D G D R V Q Q G E P L Y R I H A B E R S G R D D A A$ A S A G L L F H S P L G K K V V N K G DV L F T V Y A E A T G E L N Y A L E P Y E P A A GI EFY AKL NTQI EK GQLLYRVVAESKGILD YAAS GAGVVDMRKLGDAVERGGVLYRVHADYAADLEFAR Q $P$ L H H DV G L E L L V S I G Q R L S A G G P L
$P G S P A A G V R L H A K V G D T L S K G E P L F T L F S D S E G E R D Y A L A$ GA GVVD LR K L G E P V R A G D C L Y RVVYA D FPA D LA FA R Q


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KH $\square \mathrm{F}$ E K A DK S GVI KELNSKNI TII AK ILLGAPKQK $G R V \vee R I E V R A L G L A V V G L G G G R T R P D Q$



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UniRef90- 851 IE53 UniRef90-G0J1M6 UniRef90 L8J681 UniRef90-B2UE73 UniRef90-G7WPV4 UniRef90-G7UNI4 UniRef90-S61HN4 UniRef90-UPIO0047BFAOD UniRef90_14WMB4 UniRef90-UP100045EB5AD UniRef90_O1GQ92 UniRef90_UPI000203AD44 UniRef90_R6IPF8 UniRef90-M1E576 UniRe990 XоTDH5 UniRef90_E6PDE1 UniRef90-X1412
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DSGAGLVVHRTVGDEVELGDRLYTI HAETESKLEEAV PKDKGAGI MLHKKGGQHVKVGDPLFTIYAEKEWKLDRAVE AGVLLMTKPGGRVDQGETLYEVHAETPGELAWAKD P पD S GAGLRVILKEGRGINKDEPLLEIYAEHETKLDEALA LIDPMAG|KLVKQANEVVKAGDTVLELYSSTPAHIEAAQH PHDHGAGLLLHAKKGEQVNAGDPI FTIYADRDWRLKMAVE PHVQGAGVDLLRKLGEPVAPGDVLYRVHAGFGADLEFARQ RVNPAVGFTDMIELGASVTRGDPLCVVHAADEDAAMEAAM PTDKGAGMLLLKKKGQRVEQGDVLFQLFADNKTKLDRAKD

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P P N D K G A A G G V V



 LHVRPGEFVERGQ $P$ QVIG A GVVDL R K Q G D AVVQA GQP L Y R I HACYAA D
 PM R QVA G V QM R V R L R D Q V PKDK

TA GlV L
A CA G P K A P A A G L E L HVVK L G D R V E R GMP L F TVV HA E A L G E L D Y A F D P K D E G A G L L L A R K I G D A V E E G D P L F T I F A E R G N N L PESP
 S
$P E S P A A G L R L L V R L G D E V A P G Q P L L E L H A Q T A A E L A Y A L D$
 SA GL E M H V R L G S AV E T G T PLLTVHAES Q G
$R \square Q H Q V G A E L L V S V G E R V R K G E$

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V A G V E L L V MR QVA GLLEMRVRVNDEVRAGQPLFTVHAQAS GELDYS CS GA GIG L N K K T G E AV K K D D T I A T L Y S E N K N S L E Q G K N PGDK R A GVVI H K K M G E IVKKK G E P L L T I C S S T D WE L E C A VK
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 P G A P A A GI T L E V V K L G D R I A R G Q P L F H V H A Q T T G E L E Y A Q A

Y P G A G L D L L L K K V G D H V $P K D K G A G V L L E K K G G F H V K K G G V L F R I V A E K E W K L D K A D E$


 $P R A P A A G L Q L H H H L G D R V A R G E P L F T L H A E S P G E V V Y A$ P A D A A A GVVELHAKLGQTVQPND LLLTVHADSDGELVYAVD
 P A A P R A GVVFEAPI GTHVVSRQPLFTIYAESEGELD YA YE PMDKGAGI YLLHKKVGDKV KK GEVLFTIYAEFNADFTAAKN PKAPAAGVDVHARI GDPVQAGQPLFTLHAQTAGELDYA A GLYLN F K L N N KVVK G QEI F S I Y A E S K A K L D Y G $\square E$ TA GII Y L N K K I G E P I EKGGEVI CTFYT QNMYNLLKEA K D


 $\square S$ D H GPGLLI F K K I GEKVEK GE
$P$ A A P A A G L V L GTA L G E RVVEA D Q P L P S S P T A G L E T A L R G A A V V T G Q P L L T L H A Q T R G E

| UniRef90_F6IP45 | $\begin{array}{ll} \text { Y A R S GF R } \square \text { G E A P } & 90 \\ \hline \end{array}$ |
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| UniRef90-T0ZP85 |  |
| UniRef90-UPI000380152F | Y A R R S |
| UniRef90_Q89QK7 |  |
| UniRef90-R7U0W3 |  |
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| UniRef90-A8IA58 |  |
| UniRef90-D3T1T7 |  |
| UniRef90-F2KNP9 | LAMR EPPVV VS GM\LER |
| UniRef90_G6EF82 | FAMAG PEPVILE |
| UniRef90_L9W555 | LAER |
| UniRef90-X1JQP8 | 1 A K R |
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| UniRef90-B8GDS2 | E |
| UniRef90_UPI00036F3EB4 | A CQRS |
| UniRef90-A4EDL0 | A VQ A A $\square$ T $\square$ G D A VT P G P L V I E G $\square$ T |
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| UniRef90_IOHWZ6 | E A L S A Y A IT |
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| UniRef90_Q46UT0 | M |
| UniRef90_F7XK77 | $S A Q$ |
| UniRef90-14W8S7 | K V A R A F R $\square$ T S EPAPSRPL |
| UniRef90-K2J0K8 | Y A E A |
| UniRef90-K4M9W8 | Y A R E |
| UniRef90_UPI00026C76DA | $F \square K Q$ |
| UniRef90_B4RED3 |  |
| UniRef90-A1W9B0 | F V R A |
| UniRef90_R9TC71 | L A R K |
| UniRef90-D7E6W4 | S A Q |
| UniRef90-N0BHE6 | VA L Q E K P VE $\square$ S G M $\square$ F E T |
| UniRef90-J1L190 |  |
| UniRef90-K2E941 | T L R N |
| UniRef90_E9FR91 | KLQ D A $\square \mathrm{S}$ \ S P Q Q Q T T Q S R $\square \mathrm{L}$ E $\square$ I |
| UniRef90_R5PYR1 | E G N S G Y K $\downarrow$ S |
| UniRef90_Q12E97 | Y A A S |
| UniRef90_B1Y6C6 |  |
| UniRef90_Q16A32 | QAQSAFK |
| UniRef90-X0YKU1 | \LEEK S VEI S K K R V S K P L I K K |
| UniRef90_B2UIS2 | YALT H AVVGLS P |
| UniRef90-B5IE53 | $\square$ ¢ K |
| UniRef90_G0J1M6 | Y L K E $\square$ I K I K E S |
| UniRef90_L8J681 | YYRDNFEIGD |
| UniRef90_B2UE73 | Y L E A H $\square$ DVGG S R |
| UniRef90_G7WPV4 | R L E G |
| UniRef90-A7HYS8 | $Y \mathrm{~V}$ H D $\quad \square \mathrm{GD}$ |
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| UniRef90_UPI00045EB5AD | $Y$ L E |
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| UniRef90_Q46S32 | Y ALA A V S I E P |
| UniRef90-K2B8B8 | S 1 |
| UniRef90_A0B6C9 | MMRDAL E Q P P V VE |
| UniRef90_P47717 |  |
| UniRef90_D8P4F5 | C A H P AVCVT GTEPA |
| UniRef90_A3SNY1 | V L A G |
| UniRef90_UPI0002559C39 | YL N E |
| UniRef90-H0BZ17 |  |
| UniRef90-U4QMC1 | L L Y D N $\square$ EVA D T A K VP E L I Y T T $\square$ |
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| UniRef90-UPI000377B722 | S L |
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| UniRef90-W9V159 | $Y$ Y L N H $\square$ Q L S P Q P |
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| UniRef90-A0A059G1C7 | A Y A $\square$ S N A |
| UniRef90-Q0ATA0 | $Y \square \mathrm{~A} S$ |
| UniRef90-X1GCT6 |  |
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| UniRef90_A0A023NSM1 UniRef90_R0FY55 | $E \backslash Q A$ |



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1
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A TCVVSATMQGRVAAIDGLRISGVARAAGAPRE H $\square \mathrm{FTV}$ KANESGYVEYI NFNRLVELSKE
KYEMKSYQRGKISSINNFNLNTIAK ILLGA

$T T Q V T S D Q A Y T V H D N G \quad G L L A K A L$ $R \square A G A$ V L A G A
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jnet
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sol5
solo
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jpssm


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UniRef90_A5PEB6
$\boxed{L V} / \mathrm{RA}$
LA A D
R
TARSDFP $\square$
A $\square$ AD AVT $\square$ APEGSPANQLIMDR $\square A$ A V L D A L

FAAQAVR DDDD
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CI Y K A I P I GE F R S S VIQS TVVYV

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sol25
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sol5
sol0
sol0
jhmm

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jhmm
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