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E QRYREVGEQALDVA QLVARDSAVITGVRRADTARLND TRAQLEDKAMAVARTLADSPEI QRALTPPDGTRIQP MHAQIGDQALQAAQLIAEMPSVHVAFTQPNPTTLQP K DATEEKMGQMALQAAT TMSLDMTVKEAFQASEPSEI QP A D ILDKEVGHRA LQQAEQDASRPTI IAAMEHRDYDEVVR K N TQEQEMGEKAL GLLARFLGNSPSIVVMLES GQVGELNT EREALNRSVAVAETFANSPGMEAALKSPDPSALQP RDGTYERHRDRSLAVARTLAGEPAVRQALAGPDPTALQP
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LE E QMGERALHVAAKTIASSIPQVIDQSVETGDSTELQP ESDVRATLGQKALDICRTMTHSPTVISSGLEANDTAAIIQE NRSQAEDAAGRHATAVARSVADSPSVNSAI RTSDPSALQP K D T $\square E E N L E E R A \| I L S N I V A R S D E V I N G L K N E E H D D I Q E$ S Q E Q E M G Q K A L GVVA R FLLA T S T T V I ERDTSTEARRRSIAVAETFAHSPGVVEALRSPHPSALQP NSIKKNHQEKAQIVSRTVAKSTIVIDDTVDGNTQAIQE
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VDTDAGQKTMAVATAIADNPFVVDALSSADPAELQP
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 EIG G SLA GKLVYVESVDGPLGREVQATVPVKNPGNKVVGVV N AAPLAGREVVSVARGSLGTSVRGKTPVRDAKGRVVGVV E G VPLAGQVHVESVSGPLGHEVQAIVPVDDSHGTVVGLV 1 EPSLA GEVHTESVRGPLGDEIQAIVPVFDE GKVVALV HIDAAAHGRTSTETYTGSLGPSVRAVVPVVGPDGRPIALV EKEVFLN QEYSS 1 SEGTLTTSLRSFTPVLDDEGEQI GAV NGPVL QGMSIISKADGSMGPSLRGKTPIYNDKNEII G\|V
 EAKAL NGRTYVSTAEGTLGVSMRAFVPVMN GGEQI GVVT H DERAQRGQTFTETYTGTLGPSVRAVTPIVD DGRVVGLV S R QKEAL RGEESISEGEGLLGKSLRAFVPVYSGQGYQLGVV

 NERALMFGESY SKSAGSLGNSLRAKVPIY SNEEIVGVV NDGALDEGRAYVSTAKGSLGVSVRGKSAIFNVNGDUIGVV INPALGAGHENAAVNRGTLGEAMRVFTPVWDDRHQQUGVV GRRALVEGKGYVARALGNLGESMRGKAPVEEPDGADIGLV

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EAVERKAREEVVSVAATLADSPDVRRALRSPDPSALQP

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QRLMTH QIALRAQVQAA QLATAPELDEAVAARDTEQVSY
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| UniRef90-UPI000375FACA EAERIVREATGAEYVVVMDRRGVRWSHTDPERVGETVSTDP |  |  |
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| UniRef90 E1V8E4 RADGLRQRLGVDFMVVMDDRSTRLTHPEPSRGGHHFRGGD |  |  |
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| Ref90-L8EWE8 EAERTRRATGAEYVVIMDVHGVRWSHTDPDQI GRHVSTDP |  |  |
| Ref90-M3EL |  |  |
| UniRef90 Q5WJK1 YVETFMGQADVQFVVIIDMDGIRYAHPDREKVGKAFVGGD |  |  |
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| AA RVRAESGVDFVVMSMGGRYSHPNKDA GOPF GDD |  |  |
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| F4D8J6 $\quad$ YVEAVCNRTDATYMVVTDEHGRRLSHPNPDLVGQKFRGED |  |  |
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| 90-UPI000288288A YALKKMKDTEVDFVTVMNPQG RWTHPERAQ GQKFL |  |  |
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| B8K775 TVEQLQKATDADFITVSDKNGIRLAHPVKSRIGFPVVGGD |  |  |
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| V5C3L6 LMKQIRAASDASYIVVGDQHTLHLYHEHPKQLGKPMVGGD |  |  |
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| UniRef90-UPI000463F411 LAERVRERTGVEYVVVAGTNGIRYTHPDRERTGKHLVGGP |  |  |
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| PPI0004769289 EAERIRKATKAEYVVVMDWRGMRWSHTTPSEIGRFVSTSP |  |  |
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| UniRefo-UUYYU7 FSNR1KDDTNVSFVVVLDMNLIRKSHPDPSRVGQSFLDRE |  |  |
|  |  | K HKTS |
| YTSKI QKTTDVSFIVVMDMNGI RKSHPNEKLIGKHFKGGD |  |  |
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| 90-12N3E3 ${ }^{\text {RAEAARKGAEVSFVVVLNRQGI R LTHPDPDRIGKMTSTD }}$ |  |  |
| 4760 |  |  |
| YVVVMNMDGVRWSHTDPTQ ${ }^{\text {akVVSTDP }}$ |  |  |
| YAQDMLEAAQVRFIVVTDMAGIRYSHPNPELVGQRLTGGD |  |  |
|  |  |  |
| KANDLLFIVVTDMNGTRHSHPNSAMI GQHFI GND |  |  |
| G\| RYSHPNRKYI GKSMGTS |  |  |
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| f90-D2ATR6 ${ }^{\text {a }}$ ( AERVRRETGVDFVTIMSTGGLRYTHPNPAQI |  |  |
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| W1RZX4 HIESLRKQTDASYIVVVDKKAI有LSHPTQSMVGKVFIGAD |  |  |
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| EDDTLRERLGVDFiVVMNPQA\RLTHPDPER\GRHFRGDD |  |  |
| YAESVRDATETDF VVMAPDRTRYTHPDPDLIGQPFAGT |  |  |
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| Uniref90V6KGF7 |  |  |
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UniRef90_C6PY91 UniRef90-A0R312 UniRef90- UPI000382C221 UniRef90-M5B9K8 UniRef90-B7LL59 UniRef90_UPI000375FACA UniRef90-M9SJ56 UniRef90-E1V8E4 UniRef90-UPIO003636E71 UniRef90_C0Z7C5 UniRef90-A5D2L2
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UniRef90-R9V173
UniRef90-UPIO0023791A5
UniRef90-D8MR32
UniRef90-UPIOO047563EE UniRef90_UPIO0046E994C UniRef90-R7ZG67 UniRef90_UPIO00475AE3B UniRef90-UPIO003FEC154 UniRef90-UPIOOO3943546 UniRef90-M1MRM7
UniRef90-UPIOO047A9E14 UniRef90-F4D8J6 UniRef90-U5RZ95 UniRef90-UPI000288288A UniRef90-A0A011AHL4 UniRef90-UPIOOO4762B51 UniRef90-F3NNTO UniRef90-G2PB81 UniRef90-UPIO0047AEA80 UniRef90-Koc9Y1 UniRef90-88K775 UniRef90-E7B9J8
UniRef90 $14 D 8 G 7$ UniRef90-NOAQ47 UniRef90-V5C3L6
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UniRef90 L8PJF8 UniRef90_UPIO0028A1247 UniRef90-ABLAL8 UniRef90-LOMJF2 UniRef90-UPI00037DFAC7 UniRet90-GOSNB4 UniRef90-UPIOOO4769289 UniRef90-E8WAP1 UniRet90-A6W417 UniRef90-K9AEH9
UniRef90 U4WYU7 UniRef90-D5DFL3 UniRef90-A0A033UWW7 UniRef90-UPIO00319FE36 UniRef90-AGAIY4 UniRef90-18U122 UniRef90-I2N3E3 UniRef90-UPI0004760D8D UniRet90_Q82KH3 UniRef90-UPIo003685CFF UniRef90_UPIooo40363F9 UniRef90-C4U3Q6 UniRef90-S3K511
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D2ATR6 UniRef90-UP100037E6E96 UniRef90_W1RZX4 UniRef90-K8X125
UniRef90 D9W1P6 UniRef90-E4L1M2 UniRef90-G2GI115 UniRef90-UPIOOO36B99D6 UniRef90_U5VZ55 UniRef9-L8J9T5 UniRef90-UPIOOO4231045 UniRef90-V6KGF7 UniRef90_Z5XHW0


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| UniRef90-DOFT22 | A GI SLGDV |
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| UniRef90-AOR312 |  |
| UniRef90- ${ }^{\text {a }}$ | A AGVTVDRV |
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| UniRef90-UPI000375FACA |  |
| UniRef90 M9 | SAGITVDQ1 |
| UniRef | A VGV |
| UniRef90-UPIO003636 | A AGI T TRNV |
| UniRef90-C0Z7 | SVGYVMSDV |
| iRef90-A5D2L2 |  |
| Ref90-L8EW | G A Y ENV |
| UniRef90-M3EL | A V G |
| UniRef90-OSW | AVGISLEVV |
| UniRef90-R9V1 | $\checkmark \mathrm{VVGI}$ |
| UniRef90-UP10002 | SDG |
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| UniRef90-R7ZG6 | SIGYLTSEL |
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UniRef90 D2C1H2 UniRef90_UPI0002F99C58 UniRet90_G2NN99 UniRef90-GOHDR3 UniRef90-R7XW48 UniRef90_UPIOOO474D843 UniRef90-E2PVZ4 UniRef90-C4LAHO UniRef90-KoV3S3 UniRef90-UPIO0035E330D UniRef90-UPIOOO477C5588 UniRef90_UPIo003B33945 UniRef90 A4IKNO UniRef90-UPIO00361CC20 UniRef90-H6RVM6 UniRef90_D019E8 UniRef90-A0A022MIQ9 UniRef90-UPI0004650F97 UniRef90-E8XW40 UniRef90_UPIOO0464BD99 UniRef90_10JOW4
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UniRef9O-B8HGF5 UniRef90-E6WAN5 UniRef90-UPIOOO378C7AD UniRef90_UPIOOO3750A53 RRDTHEHAALDQVRALASALAELPEVRTALKGPDPAELQP EQADREAYKDRMQAVAQSUAALPTVHABEDDAEPAACQP RATEDRARDKVTAVAEAVADAPGVLAALSTSEPTRLQP TGRTLDAQYTQRALDIANTVAHVPEVADALAQRDPDRIQA

QLDDQAMRRALSIAQTTAAEPDLARELAATAPDAVQA RSQAEHQYEQRALAI ARSVAATPETRSALADGEGAGIAQ VRKNQEQALLAVGEQLADEPNVDEALKNDHSDELEA RRDSYSRATQRAVAVAQTVADSPTVRTALRGDDPTALQP DQLDDQAMRRALAIAQSTAAQPRIADSLEPRADGPVQT $R S Q A E D A A G R Q A T A V A R S V A D S P S V V A A I G T S D P T A L E T$
$D K Q L Y T E L G N R A Q V Q A R E A M I P S L I D A V K K R D T A A I A T$ DKQLYTELGNRAQVQARE:AADPSLIDAVKKRD|AAAIAT RRAAHDRAEQTVTAVAESIADSPNLRAALDGPDPSVLQP NRQQFETRESQLLLSVGRQLAQEPRVDSALANKADPATRA VERDAAAKSLAVAETLAADPYVATALGTTDPSSLQP $T V A E D P E V K Q A L G T G D V D K V R E$ QNQESARDEVRSVAKTLAGMPTLRSALDSADPSRLQP DRAAQQQTTAVAVSVATSPETARAIASPDPAALQE $D E L D R Q V M R R A M A I A Q S T A V E P G L A E A L L T E P A G P V Q R$
$E N V L N N Q U A L R A Q V Q S Q Q L A K L P S L D D A V E R E N A Q L V S E ~$ $L V H Q A Q Q R A L T I S R A V A S D P R V A R A V D A R D P E E V Q A$ RQRALTTADQRVTGVAETLAETPTVRAALDLPEPSRLQP KEQMHRDEETLLLSUGRQLASEAEVKQALREKASPQLQS

VTEATGKSLIDTAFVVAANPMIQKELANGDPTHLQN EDMIKTSLGNQAMAVAKMTSQKEHIINAFKDPNPSIIQP RRQAEDAATGEVVSVARAVASDPAVRAAMGRPDSAELQP QQAVDQNARDQVRTVALTVADAPSVAAAVGTPNPSALQP RQLYQEMSTRARIDAEEI ALIPTLQESVEKKDDPAI HN EKQLYQEMGARAKIQAEE:ALIPNLRKEVVERDTTALHQ DRTYDQHRDETRAIARILA DDPTVPRALTRPDPTRLQP
NNTREYLAEKVQLSASHVAYNSLVQNSLKAGETQELMH EREATRRSLAVAETFANAPGLEEALKSPDPTALQP ESNLEEKGSDLARVLAADTRVVQALQQGNDPGLRD DRQLYDELGSRAQIQAREAADPSLIEAVKYKDTATIDN DDELDRQYSERVLTIARSVALMPQVREAVPRPDGARIDP RELDAEAMHRALAI AQTTAADPAIVRGLQTTRPGPVQQ
 OEEEMGQRLLVTARTVAEMPVVRESMAEPDSWEIDP QLYQEMSTRAKIQAEEILALMPDLRRQVIQEDPQSLTS NSLEEKARGVARTLTETPFVGAALTIDPEQALQG DAAAEQQVLGIATALADSPSTAQAIESGQTAILQP EQQLYE G Q EEELSQRALLTARTVSELPEVKQHIVGPNRALVNP RTAQQQAMRQALSIAQTTAATPGLAQDLVSTRPSVVQE LIDEQLSLRAEVQARQLIQLLPSLVGAVRRESADDVMA ANTVRDQATEEVVSVAVTLADSPDVRQAVSLADSAVLQP ERQLYEDMGDRAKVQAEEIALIDPSLITAVENKDISAINS RAQAEETARRQSTATAAAVADSPSVVAAARSADPAALQP EESLGEHALVTGRTMANDALKEGLESEGWKKINP RDGLEETARAIARTLASTPEVVNGLQPREDNRIQP DRQLDDQAMLRALAIAETTAGSPQVAGALLDSEPSAVQA TRDGVKDMADAVARTLADNPETKRGLTPPDSNEIGP DRAARAEVTGIAVGLAESPSTAQALASPDPSALQP QQAQRDSVVAAQSFASAPGMVEALRGPHPTALQP TEDRVTDEHGQRALATARSVSADPTVRDEVASPDSGAVQE QEI QDD पGSRALDI GRSI AEMPQVRENILHNPSDVLQP KNSIETQMGNNAMDLAVTIASMDRIKEALANKDDYQIQN LEQASEARVMDLARVVAGTEPVRAALEGGATGELQR DD EQAMRRALAIARTVAGMPELAEDVTGSRPGPVQA
SARQATSERVLSI AETLAHDPFVDESVESAASAKLQP RDTQARAQADRVTDIAQVVATRRDVARALQQRPDSDLQG DREARTRSVAVAEAFAHAPGLPEVLARPDPSRLQP RRDSDDA EDDKKRSVITARTVAELPEIRRGVAGGEEGRLNL ERARESGAAKATTLARAVADAPSVVGAVSGPDPTALQP TTQRNLEDKAKA! ASAVGHTSTTLESLRNGSGGSVQT RRDADEAAREQVIGI ATTLADSPSTAQAIESGRATEIQP RNLTDQYGERALGVARAVAADTGLADAVAGGSQQAVRD $\left.\begin{array}{lll}T H Q S L K Q Q E S H L L T\end{array}\right)$ RDRTYSEAGDRMTGIATS:AFNPLVLQAAGTRDPSSLQP


UniRef90 UPI000465F447 UniRef90-UPI00034D727A UniRef90- T5KGJ4 UniRef90_UPI000371427E UniRef90_R4T9W1 UniRef90_W7TFB3 UniRef90-J2JVI9 UniRef90_K6W3Z4 UniRef90-UPI000373F473 UniRef90_Q836A8 UniRef90_E9URV5 UniRef90_UPI0003678146 UniRef90_V3TTE4 UniRef90_UPI0004762736 UniRef90_UPI00047EE303 UniRef90_S5A5I1
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UniRef90_D0I9E8 UniRef90-A0A022MIQ9 UniRef90_UPI0004650F97 UniRef90_E8XW40 UniRef90_UPI000464BD99 UniRef90_IOJQW4

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LHS I Y T Q S DADY\|VIGDNHANRLFHTKNAP|LNMPMVGGD LAESVGEAAGTDFIVEMAPDRTRYTHPDPERIGEPFVGT I A EVVI R E A S D L A Y V V V A N E D G I R Y S H P P NP E R I GE K V ST D P I T E L A R K E A G V


 A A EDVVRTRTGARYVVVADQDGIRHS
 A A ERVVRRSTGAEYVVIMDRRGVRWS $Y$ S LR V QR D T Q VD F V Ti MNP Q Gl R WT HPDKN QI GK K F L G LGNKLKKQRSDASFI VI GDQHAI HLLYHEDPAALGKKMVGGD LMNNI THHSDASFIVI GDRHAVHLYHQHSERVGKE LVGGD
 Y A LDDVMREA GIDDFI TI MAPDRVRYTHPDPAQI GQQF LG AAERI RIINDATYVVVMDMNRFRQSHPVESLIGSRISAGE $M 1 D \mathrm{Q}$ I Q R N A GAE Y I VI G D G D G V R L T H P NREQQIGQEMVGGD LAAR RTTS Q T G V D F V T I M S K E G I R RTSALARRLGVDFIVVMAPDRTRYTHADPERIGQPFSG RAERI RKATGAEYVVVLDNRGVRWSHTRPERVGHRVSTDP
 IS T A V E QRNH LLLYAVV T DMHGLIRYS

Y

LVERMRRGSGMSFI TVMRPDRTR $\square T$ K A E TAARKLDS GVD FVVVVLDTAQGRRRLT $Y$ VQGI CNRTDAAYMVVTAEHARRLS






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 \begin{tabular}{lllllllllllll}
$A$ \& $A$ \& $E$ \& $A$ <br>
$D$ \& $R$ \& $T$ \& $A$ \& $T$ \& $G A$ \& $L$ \& $F$ \& $V$ \& $V$ \& $V$ \& $T$ \& $D$ <br>
$D$ \& $Q$ \& $G$ \& $L$ \& $R$ \& $L$ \& $A$ <br>
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\hline$T$ \& $I$ \& $D$ \& $S$ \& $F$ \& $R$ \& $K$ \& $T$ \& $R$ \& $F$ \& $Q$ \& $Y$ \& $I$ \& $V$ \& $M$ <br>
$E$ \& $M$ \& $N$ \& $G$ \& $I$ \& $K$ \& $Y$ \& $S$ <br>
$I$ \& $D$ \& $T$ \& $L$ \& $R$ \& $R$ \& $E$ \& $L$ \& $E$ \& $V$ \& $D$ \& $F$ \& $V$ \& $V$ \& $M$ <br>
$A$ \& $E$ \& $R$ \& $R$ \& $R$ \& $L$ \& $T$
\end{tabular} A A ERI R I I N DVV Y VVV M DMHR L RLS EAERI RQATGAEYIVVMDGRGVRWS


 QTEKIRQATGVDFIVVMAPDRTRFT
 FMHQVVLHSDASFIVVGDNKGDHLF

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## UniRef90-W7TFB UniRef90-J2JVI9

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UniRef90_A8ALT1

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UniRef90-DOI9E8
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NIDRALDGDAFVSVQRGTLGRSLRGFVPVYGDAFTETYTGTLGPSVVARVVPVEADDGEVVALV

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$\square$ <br> \section*{N} <br> \section*{N} RALLAGE NDSALI ING NE EVL QGK NTEVL H G K , R $\qquad$
 $\begin{array}{llll}G & P A L \\ 1 & Y & P & V \\ 1 & W & A & A\end{array}$
 S D P $\qquad$
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## Q 1

 P ALH GE I K A A G GE Y IS EAK
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| T | GS GT LL L $1 \quad 1$ $=\begin{array}{ll}\mathrm{V} & \mathrm{L} \\ \mathrm{P} & \mathrm{L}\end{array}$ TYT $\begin{array}{ll}\text { E K A L } & \text { L } \\ \text { E P A } \\ \text { P A } \\ \text { H }\end{array}$ AYT $\begin{array}{lll}1 & Y & R \\ Y & G & V \\ E & I & N\end{array}$

$\qquad$ $H \square E E A V R$
$E G P A F G E$ GKST EGPAFGE
 S A AL A GRHVMGIES GTLGR $N$
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$D R A A R E V A V A V S A D A P S T I A A V T S D P A A L Q P$ DRAARNEVTAVAVSLIADASTIAAVTSPDPAALQP MNVAKMTANSEEVVYALKEKDNGKI EN QSKENDLEQRALITSRTVAEMPEIREKIEKDSKNINQ RVEHELEEKAMSIARTLSHAPLIDEHLQQSDSSSSME KSVKKNEEDHLLKVARTISEYPLVHQSLEQKKTSELQE DQEA $\frac{1}{} A R A L A V A E T M A A T P D V V A G V Q G P D P S V L Q P$ DQLDDQATHRALAVAQAMASDEDLAGDLDRAEPNPVQR RRAAGQQVTAVAVSLADSPAVAQALVSPDPTALHP TEQEAVRRATAVAQTFATSPGIASAMGTENPAQLQP DDRVREEYGQRALAIAETVAVDPDVVAGVGSHQGTSLQR EEGLRQRLITTAQTVANLPGVAEYINEQNGAEIAP DGARGRSLAAAESFAHAPGLVAAMRGPDPPALQP RSSVSDKISSMAKIVANDKLIQKKLQTGDPTALQG RDTQEDAQAARVTD $\backslash A Q V V A S R R R V V N V L E A G D T S D V Q R$ RAARDQVRSVAVSIADAPSTARALESPDPSTLQP YEDAENTVSSVAQLAAESPLVVEAMRTRQPEAYRQ QADDEQMAQKAMHVANTISDDPSVQRAVTERDSNFLHP DSAARQQVLGI ATALADSPSTAAAI QSRATETLQP
DAFEKEGGERAVAIARTVAQMPDRRQVGEGGATELQL RRDSDDATRREVTHVAETLALSDATIAALRGPDPSALQP EQEA $\square N R S T V A Q A F A G S P G T A E A M T S R H P T V L Q P$
$D T \square E E G Q A R V T N V A S V A A R D D V R Q A L V G T A D N P G R$ RERIGERAITASRIVSRLDSVVOGAEAGQNAALNR ERSNSDEATRRVIAVAASI ANEPSTPTAI ASDDPTALQP RTTDEQAESTRMTDLARVVAGKDSVRTALAAGDRAALQE RDHLAEKVRISASHIAHSEMAKAALVAGETDELKA EQELGKRVMAIGQSLAQSPVIREGLQRPDGWQIQP RDRAYDNAGGRMLALSTSIANNPLVLEAAATANPSELQP DNDSQRGLELARVMAHDDKVIEALNQGQADSLES RQLYQEMSDRARIQAEEI ALIDPDVRKEVAQKDTPDLAR DSTSQRGDELGRVIAHNEKVDQAVEQGKTSDIQT EKELRDRSMNTARTVAEMSDVKKSLQEKNGWILNS QRRDDELKAR
 VQKREEELLLGVGKQLALEDSVRQTLQKNASEKTET KNIRDSQEEKAKIVSRTVAKSPDVQAGLQNEEAADEDQ QTORSEEHLLLSVGKQLADDPQVTTALEEGRSDQLEA TREQLDALHQQRALADAQSVAADPQVRAAFRDPDPSVLQP RDARDRTLAAAEAFAHSPGMIEALAGRNPTALQP ARTQSLSVAQTFAHAPGVAAALDSKDPTTLQP QDAAESRATDEVVAVATTVAGSPALPAALTGDAPSRLQP TKRQVEQLLALQTAKSLSFMPAIKDAFQNNEHSAIQS DDQAMHKALSIAQATAADPGLAHDLLTTEPSAVQQ ODAAARQQVTGASSLIAESPSTAAALESGTASALQP DRQLDDQAMRRALAIQAQTTAAESQLAEQVKDTPPGPVQR TYQT KVQETHLLTSTGNMLTQNEEI QKALKDESNQKL DT QQTYLNDLSSKGLEDAHMLA LDPSI TRSVEHSNAGQIRP TGQTLYENLYEQRSVVQAQQUAAMPEMVAAVRTRDLDPVVER RRAQTQEATSRAMSVARTVASTPEVVDALAPSSTSPVQE QQVVADMSERAFTIGRGVANDPLVSRPLTPEDSARVQP R REARARTLAVAESVAQSPGIVAAVDGRNPAALQP RSQAHEFAAMRVLSVAETLSHDPFVTLAVQGDDPSALQP DSGQRQAEQVTRSVAETLAHEPDVAALVERRDDTLQP DRNQHAAAFNRTLAVATTFANSPGLVDAMRSPDPTALQP RQLYQEMSARAKIQAEETALIPTLRKEVEQKDDKSIHD
 DREDRYARVLTARSAVMPGGLQEPDPALDP RRDSDTDTEHRVTTLATGLAELPEVKRAVAGEDPAALQP DE ILTHQTSRRAQVQSQQLAGSDPSAVALVSSGKAEAVSE EKELGTEAMLIARTVGKLPEIREQLASKKSATINQ TREQLADKVQISA RETREEGQAARVTNAA RLLDEYEARALLVARSVAATPEVARAVVRDDDGEVQR QAEESARDQTTSTAVAAARSPSVVEAARSDDPAALQP RRDADDATRGSVTDTAVTMAQFPEVAEGLESADPAALQP ENAQTEASNEAIEI ARIVANSAVVIEGLSGRDEKHI QN DRVRDEYAQRALAlIARSVAADTGVRVAVAAQQDGPLQR TREHLADKVQISASHLKDHPLVTSALEAGSSEELDE EKEFGSRAIAITARTVAQLEDVQKTVGKEEGEVI QP TYHSTKSQETHLLTSTGKMLASNQLI SDNLRDKADQTIIN DKQLYSELGTRAQVQAREDADPTLVESVKNRDDKQIYT DARHRTLAAAGTFAESPGIVAALRSPHPSALQP

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## R

RAEETRKQAHLLDVVVANTKGDRYT

VA D K $\quad$ I R M M L N E A D C Y

| $R$ | T E A A R R Q G G |
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EVERI REATGTDFIVVMAPDRTRFT

QV N Q R A Q A EADFIVVGNRAGIRLA




L M N K F A R H S D A S F ll V V GD N Q A L H L













 Y A E S V R LAA T HT D F VVVVMMGTD RTR Y S


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UniRef90_C5WG55


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R Q EQDAQARSRAVAETLAHSPGIAAALRSDDPARLQP RREVHQEYEHRAMTMAETVAAMPQVREDLTAEDPAELAP REARER $\square G E R A V I I S R L V A Q L P L V Y Q G A E R G E P P A L N T$ T THRTYAERALRESRLIATLPPVRAALEGDRQARLNG Q I IRTQEERFLKTARM AKNQQIDAMLKQGESQQVQD $N \operatorname{LQREMDTNIMNVAQVLANSAMVIDEGIRTGDESAIQP}$ $S V E Q E A Q Q R A L S: A Q A V A A D P R Y A Q W V Q S S P P S A V Q A$ QQLRAEAESTALAIARTVAEDPEVRAAVARYSDGPLQP ERSLRDAYLDRMIGVAYSVAQLPSVTEAFDDPDPAADQP
 RTQLDSQAEHEALALAQTTAADPEI ATGLSTPDPAPVQQ
 NSDNDEEQLKGKAVNVSRVVAHSQAVQNGLQNEAMEERIQ VADSPSVREAARTDPSAELQP DDATRAEVDDTAVAVADSPSTLAGVHSPKPDVLQP RAEDAAEDRVTAAALAVADAPSVAAAIRGEDPAALQP VRTVAESLADLPGF PADTKALQP
 TKDETKK $\square$ RTRSVASPTVGAAI HTPDPSELQP QSLHQEVGEKALALAKAVAVREDVMAALTDRDSSQIQR RDHAYEEAGRRMGALATSIADNPLVLQAAGTGNPAQLQP $R L G N E A E R Q A L A V A R T V A A S G D V R T A L A D A S P A E L Q P$ EKQLYMEMSTRAKDQAEE I A IIDPVLRENVARKDDSAITH

TLSNQYGERALAVAKSVATEPVVVADAAARDPAALQQ HRTATVRTLGIARDIAASPEVHAALGENDPSRIQD ERNTFDAAAERMLSVAGTIADDPLVLDAVTRPAAAELQP
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 RDADSTARKEVTAVALSLAEMPATARALA SERPSELQA QEARQLAFGVAQAFAHAPGTLEAMKSDDPRALQP HQTFADRALRESQLMATLPPVRAALSGDSREQLNA EKDFGQRAMLVARTVSNMPELSMHLKNDNDSEEVNA YETVSEKMSSTAK IIIAKSETVRNGLLYGDKQQVQQ SHQRLADQYEDRSLDMARAIAFAPAVRADVARYDAAPLQQ DRESRLVRQK ISETARIVADDPRVDKAVSEEDSGVVQE RREADSDAEHTVTEVAATALSDGTADAVRAPDPSAD EDTARVRSLA TAEAFAHAPGTLRALQSPDPTALQQP RATREAYDRSLAVSETFANAPGTVAAMRSRDPSAIQP VHEDVSNRAQAISRLVASNSKLQDWMARSPDTPIQR $R V T D R A E S V T R V A T T T L A D D P F V R S S L L S A D P A R L Q P$ ERELKKRLMNTARTVVSEDTDLKQALERQHQNEQVSS VESRATAQARSTAEAI ADSPLVREAVVGPDPGVLQP $R D V R A E Y T Q R A M T M A Q S V A A D P E V R G Y L A D P Q H G E I A S$ LRDQFGQRALTLARSVAADSDIGRAVVAGDPGVVQD QLRQEAEASALAI ARTVAEDSDVRSAVQSADPGTLQP DQEA $\square A R A T G V A E T V A A T P D V V R A V E G P D P A A L Q P$ QAARDRTLSVAQTFANAPGTAEALDGPDPTALLQP $R \square R D E Y A Q R A L A D A R S V A T D D Q V Q A E V E S Q E S G A L Q Q$ E E E LGRRLLVTARTAARDPEIAAGLEEEARQQLRE D D D L R E E Y A ERALAVSHTVAGDPDVQRGLQGSDRGVLAK $R D R V T G I A V A V A Q A P S T V A A V G S P D P T A L Q P$ RSERTEAEEVTRAVAESLAALPEVGDALAAPDASRLQP EDEDGQRVMITARTMAGLPEVQQSIASPDGWKIAP RQGTQAARNEVLVAGEVFANSPGIVKALDGPDPAALQP RNAREQAHACAGGVAATPSTAAALRSPDPTALQP RRDHDQAQQEALGMARTVAS DPEVRDLVAEQADEDLQS QQLRAEAESTALGUARTLAEDAQVRAAVAEPDAEALQQ ENTKEKDANIANLAAESSDVKDGLLGLEQDEVQN EHDAQNRSRAAAESFADAPGTLAALRSADPAILQR
$M N D E \square K \backslash T Q N V G N S \prod A Q N P \square V Q D R L E D G K T G S I Q N$
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UniRef90＿A5MLP6 UniRef90－L5MU37 UniRef90－A6TSE9 UniRef90－K6VIH3 UniRef90－U3P4Z0 UniRef90－U1LNB4 UniRef90＿UPI0003FBDB25 UniRef90＿G7VWIO UniRef90－UPIO0036D62DC UniRef90－B5GKY5 UniRef90－W3AK52 UniRef90－A0A024YWZ4 UniRef90－W8A048 UniRef90＿UPI00047769F8 UniRef90－UPIO004776A54 UniRef90－V5X217 UniRef90＿UPLO00348BEE3 UniRef90－S5V9X2 UniRef90＿UPIO003F6896A UniRef90＿HLEM2 UniRef90－N1V247 UniRef90－S4MY02 UniRef90＿M9W814
UniRef90－D9V143 UniRef90－D9V143
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RAEATRRAT G｜V｜DF\｜｜A｜VLSPDG｜V｜RYTDSQPELI｜GRRATGD F Y VE EMS Y L K GI D MIVV A DMD GMRYA H P N P E NVGRRFVVG D HAEAAR KAA GVDAI IVVYRDDGDTVTHSDPNEIGKLVI GP Y

 $H V A A A H Q G T G V D F I V V M A R D G T R Y A D T D P R L I G E R \quad A D$

 YTERARRGTAVVTFI TIMAPDGTRFTHPNPDVI GEAFLGG $L A E T L R K A S G F R Y Y V I V D R H G Q R Q S H P V E E A I G R P P B T D P$ QVNALRDEAKADFIVVGNAQGIRLAHPVPESLGRPMMGGD LI $N$ N G Y R A L L G A D Y V V V T D D R S T R R L T H P N P A R L G E R MVG G

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 MADK』R ILNNDAAYIVVLDMNRKRLSHPLSERIGGTFQAR D
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 $R V Q A V T K E N D A D F V V I T M D H G D R L A H P K P D D V G Q E V S T P W$

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UniRef90 A6TSE9 UniRef90-K6VIH3
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## $A G P$ $D A$

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$H \square A P A A A G G R V V E D Y T G T L G P S T R V V L P V R D A A S Q V V A L V$
 DAAPTLRGQSHFSKKMGILGLGYRYFVPVYSDTHNDIGVV


D R
A L A GE
PETAAA
ADAAFAE HTYTEEFTGTLGPSVRTMVVVTVVDGAVAGWV
K QADV A H GK A F T H R A S G E A G T A V
SRAALDGKAYTEKFHGEPTDSARAVVPVRDADGRVIGIV
D
A AVLAGREVVDWQTGTLGESARAKVPVRDDDGRVVGEI
DAKKALSGKSHYSEQ $\quad$ G GVLGDGYRYFTPVFNSSGEVIGVV

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

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| iRef90-UP | V |
| UniRef90-UPI0002DD1ECA | AAGVRLETV |
| UniRef90-D4GJY1 | SV |
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| UniRef90-UP1000255CF9E |  |
| UniRef90_C1CWC8 | GY |
| UniRef90-Q1J1H6 | S VGF |
| UniRef90-A5MLP6 |  |
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| UniRef90-K6VII | SAGVPL |
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| UniRef90-U1WZ60 | MVGNTVPKL |
| UniRef90-U1LNB4 |  |
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| UniRef90_R7WH00 | SVGVT |
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| iRef90-UP100037AA546 | SVGISTEQV |
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$R R T A$ EDQVRDVAVTVARAPSTLAAVNSPYPSGLQP
 RTNDAAAKQLLTGVVTLADAPSTAAALRAGNTEVLQP पDRTYEERAVAVAKTTAADPQURRAMQEGGSDVVQA PDIDDAFADNPAAIQP RSQAEESARDQSRATAAAAARSPSVAEAVGTKDPSALLQP

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TYQSDKHQETHLLTAAGKMLAKNKGIKQVLTDNVPNE!NQ ERSARDRSLAAEAFAHAPGLPAVLASADPAALQP DQLDRQAMRRALAVAQTTAARPGLAADLAAAPRGPLQA
 TRAELDEQYAQRVLVIAESVASLHTVREAFDDPHPETI AP TQDRVTDEHGQRALAAARTVAADPDVRADVEEDAVSAVQE TESELGQRLMTTARTVAQDQSIQKSIQEPDGWKINP ERLSNEYGQRALAMARAVASDPQVRAAVARDADGELEQ LeEEMGMRALAI ARTLAQMEALQNNVGHPGGASIQP TKQTQTQQD DNLTTLGEELAKQEDIISALEQKQAPPLQR ERSTRAATEERVLDVATSLVELDQVQRAVTAAATAELQP RRVSQEMGVRTRVQADLISAMPELRSAVDQRDLQKiKH DRПGTEAENQALTLARTVAADPDVRADVQTPPPGPLQA

DEDKVQGNLKNVSSGFARDPFDQKNLYEKNPDLTQN RRQSIEGTRDEVLAAGEGFANAPGTAEALDGPDPTALQP DRLGREAENQALTLARTVASDPSVRAEVQSLLAGPLMA ESSIREATGERVRDVATSLARDDQVRTVLEAEATRELQP EQTGAQAAQRTANLAATLADSPLLPEAARSADPSSLQP TSQRLYNELGGRAQVQAKEIAVIPTLTTSVKRDDPADDL ERSDRESTGERVSEVATSHASARGVVQVLNAPDPTAELQA QQGRRASVIAQSFASAPGTAAALRSRDPSALQP EDEDKDRALITARTVAEFPGDRSTVSSEERSTLNP REARGKAASVAHLIVKSPLVIGELQDKNDDAMQT
TrtLVE REARLISSMDAKTFAYSPDISSALAGPDPARLQP QAARDRSLAAAEAFAHAPGLPAVMAGPDPSVLQP QEARRLSLGVAQTARAPGTADAMKSADPALQP
SAARLENT DEE LLVSNAD DLASSDSVKNA LDNKNDASLMH TEDRVTDEYGQRALAVARTVAADATVRAEVARGNPETVQQ DRVYSRAEDTSLTIARSVAVDPDVDEAIEDDDNGKLQQ DQQLRAEAESSALN:ARSVAATPDVRELVAEPDAAKLQGA ERLGRDAEGQALASARSVAADDVRAEVAAGSGGPLQA DQLKTEAEHSALALISRSVAANPQVRAEVAGANPSALQE DTTRDGVKDTALAVARTFSDMPEVKQALTPPQSGLIQPA RAK \QAGQGADDKSUQQALVKAQPSPLQK VREAI EDADPTRLQP
RAEAVTRVLATA LADDPYVLEAVGGPDPAVLQP QRDARNRSLAAAEAFAHAPGLPEALMSRDPAALQP KNREDEDIRQK Y Y TAKVVANDKGVDDDVKHRRTKGGQE SDQRLRDGYGQRALALIARTVAADPAVRREVARYAPGAIEH

RERDGERALTTSRIVAQLPVVYRGAEAGQSPALNA QAARDRSLAAAEAFAHAPGLVATLAGPDPSALQP EAARGRSLACAVAVAGSAETAAALQTADPTALQP QEAGGRSLALAQGFAVAPGTAAAIQTPDPTALQP RKDREKVENGLMDMADTLSKSPVLIDNVGEDGGEMINP QARQRLGERALTTSRLVSQLPLVYRGAESGGPPVLNT RSQAEETARRQSTATAAAVADSPSVAAAARSADPTALQP QT $\square Q R R Q L R$ VARSTAKMPAVKRVIDRASNAGALQTT
ERSVRTATGERVREVATTLAGLSQVRDALRALAAAELQP DQFSERALAIAKSVAVDPVVMADTAAKDPGALQE QTADNRADEQATGGAVTLGRVPQVAQALEGGDPGHLDP RDARNAALEEVTAVADTHALSPAVVDGLRSADPAA QP RRQARTAAERQVTAAADALAAAPTVREAVGAPEPTRLQP LTDQYGTRALAVAHTLAADPVIAAAAGDDPGALPA MDEDVRNTLKETAFSISEDPFIQEDLNNGE\SRIQE ERQLREAYVDRMAGVAQSVARLPAI HDAFDDKDPSAIRP EEELKQRALLTARTVSELPELKQNTKGKERRMINP EQQLRDSYRDMIAVAQSVATLPAI IGALDDHSPSTIQP


UniRef90_UPI00036E7F58 UniRefao G8RTI2
UniRef90 U5EJW7 UniRef90-H2JPM8
UniRef90 ${ }^{-}$F3A7Y8 UniRef90-UPIOOO37CF277 UniRef90_UPI00030BB7C5 UniRef90-V6K0s5 UniRef90-UPIOOO416BD72 UniRef90-Q5WK99 UniRef90-UniRef90-B4V244 UniRef90-G2NT69 UniRef90-UPI000378A1BA UniRef90-C7QIX1 UniRef90_UPI000372A4C4 UniRef90-F5ZHV7
UniRef90-D9VPJ5
UniRef90-S3ANT4 UniRef90-UPI0004735A66 UniRef90 UPIOOOO35E9D7 UniRef90-UPIO0036F63FO UniRet90_M2WH62 UniRef90-M8ECI4
UniRef90 W8ATU5 UniRef90-W8ATU5
UniRef90_D7WQV5 UniRef90-F6СМ33 UniRef90-M2WHL6 UniReffo-S1RND2 UniRef90_E8NFB8
UniRef9_-UPIOOO46F4275 UniRef90-J1RVH6 UniRef90-U2A5J5 UniRef90-B1HPS8 UniRef90-E3HDHO UniRet90-UPIO0047508F4 UniRef90-UPIO00367819C UniRef90-UPIO002629A9E UniRef90-АоАо24Н552 UniRef90-UP100037F2FD7 UniRef90-UPI0004797C76 UniRef90-UPIO003817094 UniRef90-UP100046A5ECC UniRef90-H2JY89 UniRef90-K6CX93
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UniRef90 GOE819 UniRef90_UPI00037DF078 UniRef90-UPI000361D89C UniRef90-A0A024YV02 UniRef90_C5NY99 UniRef90_J9STD8 UniRet90-KOENZ1 UniRef90-UPIOO03B6C713 UniReffol-13WY46 UniRef90-XоР3U3 UniRef90 E2Q1R2
UniRef90-U2NMG3 UniRef90-H8GZO4 UniRef90_12N6D3 UniRef90-M5AC14
UniRef90 ${ }^{-}$W1DHY3 UniRef90-UPI00036AA1C6 UniRef90-D8HUQ7 UniRef90-W9G7W8 UniRef90-D5DB64 UniRef90_10HD13 UniRef90_D6M4X1
UniRef90_R4LKB1 UniRef90-M2XXB8 UniRet90-H7CSW8 UniRef90-D7C248 UniRef90_UPIOOO3605699 UniRef90-R4FDC0 UniRef90_M8EON1
UniRef90-S7XEO2
 3


 ALAGRETVIDQSGTLGPSVRAKVPVLRPNSQVIGEV RAA RTLTE AVVPVTDPGR ALKDENGNNIGVV EEKVARDGQPHVGTDQGATGRSANGKVPLYGPTGTLVGEV EEKVIETGESYVSEAVGTLGPSLRAFAP:SNSKGKQVGFI HDEPALGGRVYSEQYVGTLGLSVRTVAPVYEGGRVVAVV SRAVARGQTFTEVFKGTPSDAVRAVAPVRDASGAVVGLV HDKPALRGRDFAETYTGTLGSSVRVVAPVRDDRGRIVALV
 HIAPAVAGKAFTENYRGSTLGPSVRTVVPVRDGSGRTVALLV ENQVL KGKEVISTARGSLGKSLRYLIPVYNGKGKQUGAL ARAAA GESFTEVFRGDPSDAVRAVVPVRDARGTVVGLV GRAVLAGHDVTALDNGTLGRSARGKAPLRDSRGRVVGAV EGQAFAE HTYTDKAKGESGTVVRSLVPIINHHHEQVGVV APALRGETFTEVYDGTLGPSVRAVVPVVTDDGEVVGMV AAPALAGEVWTGVQTGTTGRSMRAKVPVLDDS


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 MAVLAGKVTHSUSKGSLGRSLRVFVPVKGHQGKQVGVV NDEVL RGKTVITCRRGGLGMSLRSKAPVFDNLGNVVGTV NDRALGGEEDTTRNTGTLGPSAGAKVPVYDRTGTIVGEV

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

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$\begin{array}{ll}\mathrm{D} \\ \mathrm{S} \\ \mathrm{K} \\ \mathrm{S} \\ \mathrm{N} \\ \mathrm{N} \\ \mathrm{N} \\ \mathrm{N} & \mathrm{I}\end{array}$ $E \mathrm{~L} P \mathrm{P} A \mathrm{~A}$ EVVAKGTLGDALRAFVPVFTPEGKQ

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IDRAI KYGEVYADEGDGTMGATVKAFSPIFRGDRQVGVV NAQPL SGQEVVSVARGSLGLSVRGKVPVWAPGTRVVGVV EQ ALRGEVHSETTVGVLGSSIRTVVPVFAPGRKVIALV

 S | A D R A | $L$ |
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 NDRALLFGGYYTLDGEGTTGPADMGKAPIVISHGK $N D D E A L R G G T V V E E F H G S L G D S V R T V V A V F E P G T R \square I G L V$

 D

 EGPAFAE HTYTTKARGEIGTVIRRAFVPVMDNDHHQ
E D A A F TE HTYTSKAKG DLGVSVRAFTPIMNEN

| UniRef90_UPI00036E7F58 | $S V G V L D D$ |
| :---: | :---: |
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| UniRef90-U5EJW7 | S A GVTRSK |
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| UniRef90-F3A7Y8 | CVGYT K |
| UniRef90_UPI00037CF277 | A A G |
| UniRef90-UPI00030BB7C5 | STGVT |
| UniRef90-V6K0S5 | SVGIPEHD |
| UniRef90_UPI000416BD72 | M V G TL |
| UniRef90-Q5WK99 | SVGFL |
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| UniRef90_B4V244 | GT GIIE |
| UniRef90-G2NT69 | S A GITVD |
| UniRef90-UPI000378A1BA | SAGITVDR |
| UniRef90-C7QIX1 | SVGIT Q C RL |
| UniRef90-UPI000372A4C4 | SAGITTD |
| UniRef90-F5ZHV7 | A VG |
| UniRef90-D9VPJ5 | STGI EVEN |
| UniRef90-S3ANT4 | SVGID ${ }^{\text {S }}$ |
| UniRef90-UPI0004735A66 | G Y |
| UniRef90_UPI00035E99D7 | S A GVTLD RL |
| UniRef90-UPI00036F63F0 |  |
| UniRef90-M2WH62 | SVG ${ }^{\text {d }}$ T A EV |
| UniRef90-M8ECI4 | G HV |
| UniRef90-W8ATU5 | SVGGIS TAAV |
| UniRef90-D7WQV5 | V V G Y S V LTV |
| UniRef90-F6CM33 |  |
| UniRef90-M2WHL6 | S VGVTRERT1 |
| UniRef90-S1RND2 | ALGGKLVVSL |
| UniRef90-E8NFB8 | S V GV |
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| UniRef90-J1RVH6 | S APVRV |
| UniRef90_U2A5J5 | SVGGY V E S L |
| UniRef90-B1HPS8 | SI GYLT |
| UniRef90-E3HDH0 | TVGKLYWKI |
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| UniRef90_UP100037F2FD7 | S V GVTVS A |
| UniRef90-UPI0004797C76 | SVGYLKT |
| UniRef90-UPI0003817094 | GTG\\|ElQ V V |
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| UniRef90-H2JY89 | S A GLLTVRN |
| UniRef90-K6CX93 |  |
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| UniRef90-D5ZQS8 | A V G $\square$ T V Q K V |
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| UniRef90-M3BYV4 | S S GIIKVA A V |
| UniRef90-L8PMK4 | S V G |
| UniRef90-M3A2R0 |  |
| UniRef90-W3AQW8 | MVSTRMSQV |
| UniRef90-A0A059MVL0 | S V G 1 A T D RV |
| UniRef90_UPI0003B5C352 | S V GVT |
| UniRef90-UPI00039FADB8 | SVGFERASV |
| UniRef90-V8D2P0 | S V G ITS T E K I |
| UniRef90_UPI00037B459D | SVGUS |
| UniRef90-M1TMJ0 | SVGFERESV |
| UniRef90-M9VVI4 |  |
| UniRef90-W1WJQ0 | A TGLLELS R V |
| UniRef90_S0K5T9 | A L G I KLA T L |
| UniRef90-G0E819 | SVGYL |
| UniRef90-UPI00037DF078 | S AGITID El |
| UniRef90_UPI000361D89C | A T GVLLEAV |
| UniRef90-A0A024YV02 | GTGUEV |
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| UniRef90-J9STD8 | SVGGVSTERL |
| UniRef90-K0ENZ1 | SVGI A T D A V |
| UniRef90-UPI0003B6C713 | S T GYLMP Q |
| UniRef90-I3WY46 | A S GIKVSAV |
| UniRef90-X0P3U3 | T T GVQVT T L |
| UniRef90_E2Q1R2 |  |
| UniRef90-U2NMG3 | CVGTLKVNI |
| UniRef90-H8GZ04 | STGYLMPQ |
| UniRef90-I2N6D3 | SAGITDERI |
| UniRef90-M5AC14 | CVGLTQQNL |
| UniRef90-W1DHY3 | SVGYTDE QL |
| UniRef90-UPI00036AA1C6 | SVGULESHI |
| UniRef90-D8HUQ7 | S V GF DVA D |
| UniRef90-W9G7W8 | SVG LiESEV |
| UniRef90-D5DB64 |  |
| UniRef90-IOHDI3 | S V G 11 T T A A 1 |
| UniRef90-D6M4X1 | S A Gld ${ }^{\text {dT A }}$ |
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| UniRef90-M2XXB8 | S V G 1 S |
| UniRef90-H7CSW8 | MVGKYYNE |
| UniRef90-D7C248 | S V GVKVE S V |
| UniRef90-UPI0003605699 | SVGULESEL |

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UniRef90-F6ENI1
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UniRef90- AOAO31FKDO UniRef90-W5WIB6 UniRef90-W5XR21 UniRef90-U2UD72 UniRef90 A3KIJ7 UniRet90_Q6ADJ1 UniRef90-D9WFG3 UniRef90_UPIOO0289D051 UniRef90-D2BTF6 UniRef90-UP10002FDD97F UniRef90-UPIOOO47B0E35 UniRef90-L8ESB6 UniRef90-E7IDC7 UniRef90-UP10001BC2D81 UniRef90_M7NEC9 DDRVRDEYAQRALAIAQTMADDPDVVASVAAHQGSSLQR YEDAHNRSLAAAEAFAYAPGTAEALRSPDPAALQP QEARQRSAVGAETFAHAPGTLAAMQSADPARLQP DQMKTEAEHTALSIGRSVASNPQTREEVAGANPSAIQA HSERTTRALALA LASAPHTARALTEPPGSAAQE NRQTKELDSTVTSMAAVVADMPMVVSALEERDVEELTS NQSEQEAENRSLATAAAFAHAPGTAAALTSPDPAALQP NKDATILE ESSYLLNMGEDLANEPEIITALENNQTSQLTD
 SKRTSEAAAERRVLVLASALADSPSVVAAARSDEPSALQP EREDELSNRTMITAQLVAQNHTVQQWVDAKPEEALQP ERQVREATTERVLAVARSLAEDDQVRDAIGGDDAEELQP

LDRDAMQRALSIAQVTAADPAVARAAADRDAATAQD DDLHDEDKRDLKETSYVVANTPLVQKTLERKNNFERQN
RQASEEYGERALATVATAASDPEVRTLVEQFSAAALQR RQASEEYGERALAVARTAASDPEVRTLVEQFSAAALQR EKRDSEQAMLVAQTVAKLSEVAETLSDTTTSNLDE NQEQEMGEKALGVARFLADSAVVREMIETQNPQPYQL ETEALATARALASAPEVREASEARDPDSLRA NASQRVIGVAEAVARSPETAAA NSTMQQARHLTFGVAEGFAHAPGTLAAMRSKNASALQP QRNAADRSLAAAESFAHAPGTVLALRTNATAQLQA HNSVEESVGNYTLKVAQILSKMDVVEETLKAPPNNNLQS QLDGQYEQRAAAI AQTTAGVPDVDGCLEAPQPPRVEM EQLKAEAEQSALSUSRVVAADPQVRDEVARDARGPLQE KSQEESLGERSLMTGRTVANLPAVEDGLEGSEGWKINP

TISDTLANDPFVGNADAGDNPSELQP
sak Q ETALGERLMTIARTVATIPNVQKSIQEPDGWKIQP QRAMVSGQIVAQDASVQEALKTGNRSVVQH QQLKAEADSSALNIARSVAEAPEVRDLVASADPGTLQR QDADERAREISRTLADDPFVDEQSGADDPAQLQP
DEKIKMSRQETGFSMAHSVLIKEKLITHDDGSIGK EQAEQTVANVAQLTAESSAVDEGMEEPRGEAWKQ


QRTARAEAERVT QAVAATLADLREVSTALAQSDDAALQP
A E D R IV G QA LTT L S RLLP T V DE A M R S D D P E Q I Q P $R L V Q Q T Q E S A L R I A Q T V A Q T P G V R A G A E A E S A G T L D D$ RVYDQSEQEALGI GRTLAADPVLVSAVARESGAQVQQ DENMRDEYAQRAVDVARLVAANQGVNLDAAALANGELQH QARERLGERAITTSRLVAQLPLVVRAAAGGQNPALNA NDVAEKSQNMASILSQDSELKQAISNRDTAGLRS ESEEEQLGERGLMTGRDVANLSEVKKGLDQPDGWEVNP EAESSALS $\square$ ARTVAAEPEVRSEVARRASG\|LQD EQLRDEAETSALMIASYI ASMPQVVSMLEAGYPSALQD RNRADQEAGDRSLVAAESFANAPGTAEAMQSDDPAALQP ETKALATARTLAVDPDVRAAATQASAEHADE
पETDAAEKSTAVAVSTARNPFVVEQARSADPSRLEP VRVQEEK ILKNTGYALSRNPQVIQTLKDNHDQSLQK DEQDISNKSMQTARTVSDSPAVVAAARTKDPAALQP REEAQATALATARTAAEDPALRAAVETADPATVQR TRDGLKETALAVARTMADMPQVKRGLEAPPQQQIQP ERGRDDAENSALLIARTVAAQPVVRAEVAAQSAGPLQQ ERTTRDATAERVMGVAESLADLADVRTTLATAATTALQP TDDRSRDEYAQRALAI AQSVAADRETVSEVAESDRSDI QA DDRVRDEYAQRALALAQSVAADEQVQTEVABDTGPLQA NRHRLDLQYGVHALDDARVVASSPTVLTNI SRYDTGPDQS ETQLGQRLMTIARTVAESPLVLQQGVQEPNGWALSE DNLTHQYEQRAVAVARAVADDPDVGAAVAQGDPQVVQA QLRDEAETSALMLARTVAAEPEVRELVEENPPAELQQ NFQKQVEESLRATADSLASNPMVLDAYRAGRSEELVR TEHDAQERSRAVAVALARSPGFVTALRSDDPAALQP EAQARGRALADADTLAAAPGVRRALESRDPSAIQP RTNQQQAMSDRAEVVAQTVGKLTVVTQTLTNRRATDLKG LYNDVADKSKNLALILSQDTALKLAVQHRDLAMLRD ADQ $\square R E T T \square E R V R D V A T Q T A S G P V V V S G G Q S A D P P R 1 A P$


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| :---: | :---: |
| UniRef90 |  |
| UniRef90-UP100035C84F9 | SRAAA GEAFTETFKGEPHQAVRAVVPVLDGSRR |
| UniRe | P |
| UniRet90_A4 | SFEAAMRGEETMAWETGTLGA |
| UniRef90 UPIO00262AOFC | PDEA |
| UniRef90 G5IMI6 | EGA |
| UniRef90 HOQMLO UniRef90- ${ }^{-} 5 \mathrm{HCU}$ | SEEALAGREVTTRNTGTLGPSAGAKVPVEAPGTTVVG |
| UniRef90-UP10003E | GREVIVWERGTDGESARAKVPVFAPDSQPV |
| UniRef90-AоАО | 仡 |
| UniRef90 UP100 | EENVFTGGSYVSTGUGTGGNSLRSFAPVDQDD QV GAV |
| UniRef90 G2NU | GVRDELSGKTISATFRASQGPSVVSAVPVTRADGTF GGV |
| UniRet90_M7A1V1 | ST ALSGDVDITTDRGTLGESVRAKVPIFVGS |
| UniRef90 F2R329 | HTEQARAGRTYTETHLGGVGPSVRTVAPVFDGD RVVALV |
| UniRef90-F6ENI1 | S D $^{\text {DAALLAGGVVTEKYEGTLGPSVRAVVPI RPASAE }}$ |
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| UniRef90-A0AO22LNT6 | PVLAGATFVGTEEGTLGPTLRAKVPVY |
| UniRee90-E4NFF9 UniRef90-UPIOOO3F7C04B | (eat |
| UniRef90-L8DMB5 | AGNEVVEQDRGT何SVRAKVPVLEGGRV |
| UniRef90-UP10004732FA3 | NYRALMFGGYYTLEGMGTSGLSIMGKAPVISEQGK |
| UniRef90_UP10002885389 | AFTE HYYTTVAKGDVG |
| UniRef90-D0X |  |
| UniRergo-k9AW39 | DDQALQGQPFTETYTGTLGPSVRAVVPVRSGGNVVG |
| UniRef90-UPIO00262EDDE | $V$ DSTIPVYDTGGKIV |
| UniRef90-S5VG81 | ATAGEAVTQPFHGRPHDAVRAVVPVLDA |
| UniRef90_D3FWQ1 |  |
| 3J |  |
| UniRef90_Q8FSY7 |  |
| UniRef90 G4KURO | AYVVDGVGTLGLQRR |
| UniRef90-UPIO00363384C | AVAGNDVVSEFNAGTGGAVRSKTPIR LGPRVVGEV |
| UniRef90-UP100038688F70 | QALAGETYNEVALGTLGRSVRTDAPVY HDGKLVGLV |
| UniRee90-D5UWV7 | EQRGTLGDSVRAKAPVYGPDGAVVGLV |
| UniRef90_COZ |  |
|  |  |
| UniRef90_UPI |  |
| UniRef90-E8NEN | GREVVTWETGTLGESARAKVPVYPPGGAPVGEVV |
| UniRef90 M2YAM1 | ASGQVRTSTEQGQLGLSARTTAPVR |
|  | QGKll |
| UniRet90 B8J110 | Q |
| UniRet90 U2YY02 |  |
| UniRef90-Z2EN54 | NQRALVVEGSYVSTARGSLGYSVRGKAAIFDAQGN |
| UniRef90-A0A011UUI7 | PASPA PLTEEFSGTLGPSLRTIVPV EVDGRLVG |
| Un | ERGVEE |
|  | ETVSWER |
|  |  |
| UniRef90- A0A0160RD2 | AGHEVVSVARGSLGVSVRGKVPI W |
|  |  |
| UniRef90-U6ZB43 | TVKNTGYSGASVKTRAP F |
| UniRef90-W9G818 | VVVPVRDGA R\\|VALV |
| UP100026 | GAAFAEHSYVVRAKGEQGAVVRSF |
| UniRef90_M1NVU3 | ALRGQEII A WETGTLGESARAKVPVYAPGREPVGEV |
| UniRef90-D5NGLL | AT ALAGKEVVAWEKGTLGESARAKVPVFAPDSEPVGE |
|  |  |
| UniRef90-UPIO0046F5E62 | VRAKVPIYSEDGKVVGEV |
| O-E8U7 |  |
| Un | APALAGTTFTETFAGTLGPSVRAVTP |
| UniR |  |
| UniRef90-UPI000262 | RVFGGYYNMETEEFIGPSIVGVAPIMSSTGSVRGVV |
|  | ALSGREEVTWATGTLGESARAKVPVRAASSRVVGEVV |
| UniRet90-W1CU | DIQPPTLQGKENVADNHGVLAPALRRAKVPVYAPSDTPVGOV |
| UniRef90_UPI000380CE82 | SET A RGEEVTAWETGTLGPSARAKVPVYAPSDTPVGQV |
| UniRee90-B4VP6 |  |
| UniRef90-H5TVU7 | TK ALSGQADITTDRGTLGESVRAKVPI IDD |
|  |  |
|  | V |
| UniRef90-U5W | EQVIHQSGTLGRSIVAKVPVVEPSNRVLGMV |
| UniRef90-V6MAB2 | AAFAEHSYLHKVRGELGTALRAYVPIMDGLHQQ |
| UniRef90-A0AO31FKD0 UniRef90- W5WIB6 |  |
| UniRef90-W5XR21 | GREVVAWERGTLGESARAKVPVFAPSD |
| UniRef90 U2UD72 |  |
|  |  |
| UniRef90-06AD | GKE VVWETGTLGESARAKVPVYGPGGSPVGEV |
| UniRet90-D9WFG3 | PLUPATAGRAFTDENPAAPGPSIIRAAVPV |
| UniRef90- D2BTF6 | VNNKGYSGASARARAPLMNANHEQGGVA |
| hiRef90 UPI0002FDD97F | Q |
| UniRef90 | G G |
|  |  |
|  | al RVFTPDENHKOGV |
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ENNDTKNLLLEAAKVV S S S N E I RK N L L Q S Y K G G E I E K
RQRQEIDKNI SALAA YVASMDNVVSMLENPDGSANEA $R R Q V D R Q Y M D E A L Q U A Q T V A D T P E V K S C I A F P S \square S T M Q S$
$R L E R A A E G T A L A D A Q S V A A Q S D V R A A V A R L S D G P V Q R$ TETTLHD



## $\square N \square A R T \square A E D R D V R E L V T E P D A A A L Q Q$

 RTERKTLDQNLLNSASVLSQVPLVREALLGEVPAELABD NTLNKN $\quad$ KK S D L H T S A VF

EFARRAQA $\square$ AETVASDQEVQAGAAAQSAARRQR DEYQNNALNFGALI AMQP AVVVTAMVKNRNDMA VQE E S M K Q K AL N A S K WL E G S P RLI S A L Q N Q D R Q GLL L E
 ETVVE Q $\square$ GKRALHVAK TVAA DPE EQEAFQK ENPSAMQP
TR QTFYALEREHVVATAQLIADESTVVEGFAAADPAASLQP $M E Q N L E D K I S W T C Q L L A A D S D I T E E L D A G S Q Q V I Q K$ RRAAETGAASVTARAVATGLATMPRTVAALQEEPSRALQP
 N NF E K $\quad$ D E G R R S L

ERTEGRRALLAAAEALGSNPTVRALLPEAAEPSALPA E QY L L D QVVSK TAAMN QA K I I A S M D S V V N A A V K H R D K A Q L A A TFERVESRRALSAAENLASNPTVRALLPGARPAALPA

DNDARKRSLAAAEAFAHAPGTALAFAAPDPTKLQT
E R E L R K R L M N T A R T VA EMN E VK QA L D D Q T K ERAR R L S D R R L V R E L K Q Q R A M NVV G T Q L NSLDHEVRDNALTVARLMAENPDVARALDQGDAAFLRG DMTRDGLANKALAVARTLADSPEIRQGLQKPQESGIQA

S D A AFRATEGRRMLSVAEDLAATEGVRDSLPDPRHDVLP R S MDDT $\square$ R S SAA Y A Q L E TVVEDMLERPDPAVSRQ RSARSEAERVT QAVAQTVADSAQVADLLATGBSAALDP


QNRQQRALNATELLTGSPGLLEAIRTGNRQGALAA
R QRNQVDAS ISSSSAA YVSKLPSVVAMLKAPDPNVTRN
 EAVGKRDE QEAM E IAASHVSVNDNVDNTVSQP DRELLQQS RREAETLTLAVARSVAADPAVADAVAAGGTDVLQP
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ERVVE GRRALLSAAETVAAMPAVRSLLDPEARPAAALPA


QSQVDTLKSRATAAS LMSFDPR REGGLADPDRVAVRD
 EDLLK QKALLKATKWFENS PRRVVSAFKNNDKKGALE
 QSET DNMKAKALLNAA GWLESSA QLSQAYQAGDRQTVIIE



$R N Q V E Q L V L Q T A K T \square A L M P E L E A D E E N E L E E T F R P$ ERVEGRRALSAAETLAATPAVRSLLQPQSGSVLPS
 D S MVVR E A G K E V K K G V T F L L A T R P P
$R R A E G G R L L S V A E T V A A Q D A V R V G L A S R R Q G I L M T$
ER $\square E G R R A L S A A E A L G G N P V V R E L L E P R G G A V L P S$
 D REA $\square A R V T A V A E T V A A T P A V V A A V Q G S A P T A L Q P$ E D E G R S L L S V A E S V A A T P G V G E S L A A D P N H D P L P $\square$
 RERKALDRK ITTDAATYVAELRGVHDMLEAPDPGVTEQ

 D T F DQQRKK EAL E K T K IVAA L N P DVIAA GVK S G S R E H L L S Q A G Q EVVKGAT Y ML A T R P DVVVA A V E A G D K A R L V E | $A$ | $L$ | $L$ | $S$ | $D$ | $H$ | $D$ | $I$ | $S$ | $G$ | $V$ | $K$ | $N$ | $K$ | $D$ | $S$ | $N$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $L$ | $V$ | $V$ | $V$ |  |  |  |  |  |  |  |  |  |  |  |  |
| $A$ | $E$ | $N$ | $P$ | $A$ | $V$ | $A$ | $A$ | $A$ | $A$ | $E$ | $G$ | $D$ | $S$ | $A$ | $F$ | $L$ |
| $A$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



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## S



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 $\square D E \square A$ QGKE $\square$ S DVVEGLYGRVLVARVPIVFYHGRFIGIV PGA
SE VMEGRAWTGSTDRGGVKMLEAHVPVLDDNGKLVGFA VSRAVAGETFTDTFHGKPADAVRAVVPVMDASRRVVGVV EEPAFAE H $\quad$ YFSEAQGE LGTAIRAFYPVKDEKFNQTGVV
 $N V Q K A L N G Q A S V G M E P G V V K L S L R A G Q P V R \quad \square D G R I V G V A$



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10
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 DARFRAEEGRRMLTVAEAAASTDAVRVGVSDPDRAILQP $T E Q Q S \square D S N L I N S A S L A Q V P L V Q A A L Q D E D P A E K L A$ RARDDSQYHVHATDMARVVASSPTVDANIARYDTGPDQG RTRLDQNLE NTAQAVAQSQII RDKLTDGDGNMTES ERVESEKFLREARLIAQNPDLIEAVVRRDHAAAAA

QQLRASSQTAADGDARTVAEDPTVRELVASADPGEDQR NNFRTTEGRRALSVAESVAA QGIVGDLDNGPWELNA RQLVANELNRYLPVPELMAEHPLLQRALEAPDPSADNE GRRVAALGEQLAGSPLLRDRLNTPAPALAP RDKVEKLSLQUVKTLSFLPPIQHAFEHSPEDAKI ERSGNDLRDKAGGEARTFAADPELAVAVKAGNREELGR ESYKEVYADMARTQADRPNVIDGVLAGDTAKLLD QRDAGRRAQSAAETLAANPVVRQLLPSAQPTGLQS
 GQRMIAVAENVASTPLVRDRYADPFAARLAP ENKKTHALETASLMAADPVLVRAVASGTFEEVRD GRRVTALAEQLAANPLVRDRLAQPAHEALAP RRQAEQLAVQTARTISYMPPVKELIERKDAAQTQE RDLQGQRMIAVAENVASTPVVRDQLSDRSVERLAP

QTLDAADSYSSNEK【TSAFKEQDRAKपNP RDVVVRNDGDRSLEEAALVAQHTDFVAAVAAGDGARATE TKEDVE QAEELLLQTAQTLSFMPAVQETFQNNNQQKLQLL

HESEGRRARAAGETLANAKATRDEEDGGLRYLQD
AEKMAYQTARALSYMPTVQESLQDKDIPELRN EATFERVEGRRVGALAEQLAATPLVRSELARPVPEALAP KHSQEKEDGLKALGVASFLAKSDAVVNLTETRDSADVQD REFRETRSQRMIAVAENVASTPTVRDRLADPFAARLAP GRRVGALAEQLAAQPLVRSRLVGPSPAALAP REFRDVRGQRMIAVAENLASTPIVRDRYADPAAQVLAP $T Q D L I D R N T G Y K G L A Q A Q S V G R P N V I N G V A T A D H T L L K K$ RQLYQEMSSRARDQAEEVSLIPSLRETVRQRNDPALKK

QKQAEQLAVQTAKTHMMPPVKEAFRLADQEAFTK AELLARD DDLITAIKQGESETLQK ALA AT SVAMDTTTREALLAARDPERLRA QRVLTQVSNDAGVVSFGAATTSAKREAFR PNLQQT NLLQEYKQLSRQTANALSFMPALANALHENDVSEVQG GRRVAA A ELYAK DRQDETYKEGYLDMARTQASRPNV DDSVLAGDTARLRE
 S Le LQAAGLATAALAVVITADTRVRAALAKHDDERLRP TKKDTERRVTANAEEMASNPLVRTGQVRPAPAELAP KRAQDTEGRRALAVAETLANARIFREAVAEGGEAYIRV

RDSQGGRMVAVAENLASTPVVREQLDSLEADRLAP
 DSSLRRQADGLELALLGLLANPRLQQGLAAGDADRLLP EEAMHNLLLSKAEFVAQMGEMQVAAESDDSESMDP TFDRVE GRRVTALAEQLAGNPLVSSQLGRPAPGELAP DENSVKSLTKDIANTQRIKTDIQSNNMNALSN ASSPYTVQAVKNHDTGELKK
RKQSEQLAVQTAKTTSYMPPVKELFQKKRGGEAQE RDETDHIILERSQSQAELLAENASYILSHSTNPEADLQS EKDI DDSMRA YLVSAKLFGEKPELAQAVVAGDHGKVMA TFDRVE GRRVTALAEEMAGNPLVRTQLVRPAPAELAP RKAIEEQMRERAAGLGRTLAVAAT EAMLTYDFTKLRQ RLVAETGAKALAVSQTVAENDTVQDVLQRTDAGPVQD RQLVANELNRYVPIPELMAEHPLLAEALASPDPGTLND GRRVIALAEQLAANPLVRSQLVRPAPGELAP
NRHRDD DQYGVHADDDARVVASSPTVLTNISRYDTGPLQS



|  |  |
| :---: | :---: |
| UniRef90 U7UUT2 |  |
| iRe |  |
| UniRef90-UP10004 | NFTDVANGKVIT TIGRRGLSGVTINTRMPIYYHNGTVVGVV |
| UniRef90 UP | NYKAIVFGGFYTDETDNELGTILWGKAPITADEHQIVGVV |
| UniRee90-UP | TVVIALTGKPAVAVVAGTEVPFIRASFPVM HDGKLV |
| UniRef90-M | EV |
| UniRef90 D2 | SR VLEGRSWVADVEVPGGHAAV |
| UniRet90-A0 |  |
| UniRef90_UPIOOO3 | VLS GRSWIIGVAEMDGGRAV |
| UniRef90 UPI000 UniRef9- R6T19 | $\stackrel{N}{\mathrm{~N}}$ |
| Uni | AAP LAGHEVTSHDDTYMGRAIVAKDPVFESSDRVLGVV |
|  | PDFT DSDDFYVTSDTGPSGAQR |
| UniRef90-UPIOOOS ${ }^{\text {a }}$ | TVRAGLQGKSTVGLVPGALITPFL |
| UniRef90-B8HBB1 | SR VMEGRAWTGVLTTNGTAVL |
| B81ZC5 |  |
| UniRet90_KOVAF6 | DILRTLRGEYGARSSHGADGSTMYVAAPI RAADGGRLLGVVV |
| UniRef90-D9 |  |
| UniRef90-E3NQ50 | DR VLQGHEVVDWERGTLG |
| UniRet90-R6RID7 | EQAVLSGSGPY T G G G HGTQRRAFHAVVGNDGA SGGV |
| UniRef90 E4PQE5 | GDSAIIYFALGSGVRGLYFSHPVRDEGGQ |
| UniRef90-C4 | GRSWSGELALGGSRELVAQVPVLGAGGDQLGVV |
| UniRet90-UF | NYKALTFGGYYDKEGKGVNGSSYIAKAPIVQENEKII GVVI |
|  | IVQQVLRGDSITG\\|EHGEHTSS TRSGEPVK KDGEVVGAV |
| UniRet90 E3CZL | NVRSA |
| UniRef90-UPIOOO35ECF5D | DGKRALAGSSRV |
| UniRef90-C9YYS3 | QV |
|  |  |
| UniRef90-G412U2 UniRef90-H5WZK | GRAWFGDLDVDGHHALVGQVPILSTDGA |
| UniRef90 UPIOOO478 | GRSGAFLEEGKVVRSVRAG |
| UniRef90-L1KTL8 | EGAAPGRGWSGSLTLDGSH ELVAQVPVLGATGRLLGTV |
|  |  |
| UniReef90 QOS241 | S |
| UniRef90 UPIO0037091F6 |  |
|  | T |
| UniRef90-UP10004787202 | TYKA |
| UniRef90-SISE76 | GAGVISGRS |
| UniRef90-M7NZ01 |  |
| UniRef90-K4RFP0 |  |
| UniRef90-H2J6V0 |  |
|  |  |
| MYN9 | Ws |
|  | GI |
|  | CVIKALSGLSCSTFEPGVVKVSLRASSPVQ KDGDIIGAV |

NKTDMFGGSPVS DGMKAVRGSAPVILEENEVVGTV YFKEAKAGGTFFGVGATTRRPGYFDAVPVRDAA GAIVGVI



 GVKRALAGEACCLFESGNVVRFIRAYAPIK K DGRIVGAV SRAADEGRAWFGDADDDGTHSLVGQVPVLSTDGEVLAVAA $A L E A E R T G R T A S G D E L G P G G T F L V V V Q P V E D A D G A L V G Y V$
$P R D A B E G R G W S G E L P V G G V T E L V A Q A P V L G A A G D H L G T V$ GSKAADENEDNLKEMILQSFGKVII CFVPI RDENNDPLGFV ST VLEGRAWVGERELDGDPAAVAMVPVLGPERESAGFV LDGDAASGRAWSGDVDIDGRRAIAGHVPVLSPNGDVRAVV


 TVQNALRGQVSSGIIKGKEVKFLRATAPVKDGNH II GTI $G V A E A R G W S G D L V L D G B A H Q L V A Q V P V L K P A G Q H L G M V$ PAKAALSGKSGVGFETTKLVKAIRAYSPIVDDSGKLIGTV RKILFGGSHISKTKNDGRMVIRGSAPIIQEQSKVIGSVV $T \square A G A G R G Q P Q H S R W Y A D V Q D V W V Y M M P I Y V D G R L W G A F$


FQDAMASGDSA $\square$ YFA LGTDVRGLYFSHPVRGDSGETLGVI PRQGALPERGWAGQLTLDGNRELAAQVPVLGATGRVLGTV N $1 Q G A L K G T P A A G L E Q G T E V L S A R A G A P L V D P A G I L V G A G$

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

| UniRef90_UTUUT2 |  |
| :---: | :---: |
| UniRef90-T2GE62 |  |
| UniRef90 HOBRMO PIOOO4 | AVKVRMEPV |
| UniRef90-UPIO00287BDFA | SVGFLKSEI |
| UniRef90 UPIO003B6CC54 |  |
| UniRef90-M1E435 | ST |
| UniRef90-A0R000 | SVSQRYPSV |
| UniRef90-UPIOO | LAGRDVP |
| UniRef9-UP | S A |
| UniRef90 R6T194 |  |
| $\begin{aligned} & \text { UniRef90-A0A051TYR7 } \\ & \text { UniRef90 RTKD5 } \end{aligned}$ | L AVGLLTQ ${ }^{\text {a }}$ |
| UniRef90-UPIIOOO3AB2809 |  |
| iRef90_B8HBB1 |  |
| 隹ef90_B8IZC5 |  |
| UniRef90-KOVAF6 UniRef90 G9ZBW3 | S |
| UniRef90-D9V | v |
| UniRef90-E3NQ |  |
| UniRef90-R6RID7 |  |
| UniRet90_R4SYZ5 |  |
| iRet90-E4PQE5 |  |
| UniRef90 C4RCU4 |  |
| UniRef90-D6 | VM G |
| UniRef90-E3C |  |
| ef90C4 |  |
| RRef90-CP100035 | M |
| Unir | V |
| in |  |
| UniRet90-H5WZKO | MIGE |
| UniRef90 UP1000478555C |  |
| iRet90 - L1KT |  |
|  | S $V$ d |
| UniRef90-UPIOOO3B61 | M TIMLMKTSI |
| iRef90-UP10003709 | QTGF |
| iiRef90_B8DJD3 | A |
| UniRef90 SISE76 | MVGEADPTV |
| UniRef90-UP100047D2F5C | VVQRLYPSV |
| niRet90-M7NZ0 |  |
| 4R |  |
| H2J6 | Q |
| UniRef90-A1U136 | SVSEPYPSV |
| UniRef90-A0A014MYN9 | MIGEASPTV |
| niRef90 X5L673 |  |
| niRef90-K121D6 |  |
| - | IVGMNLSK |
| UniRef90-S6F | TV |
| UniRee90-UPIO0036311E0 | AVKVSL |
| UniRef90-C6BZS5 | SLGTS |
| W0E413 |  |
| Ref90_UPI00047C |  |
| UniRef90 W7ZXQ4 |  |
| F2 | Q ${ }^{\text {d }}$ GL |
| UniRef90- 120 | $\stackrel{M}{1} \mathrm{~V}$ G |
| UniRef90-F6DQK3 | $\bar{N} \mathrm{VGLS}$ |
| iRef90-A1TAU8 |  |
| Ret90_3Y6X9 |  |
| G2GDX0 |  |
| UniRef90 AOAO372862 |  |
| UniRei90-UPIOoo370B031 | AVSSSYPS |
| UniRef90-B81ZC2 | SI GVSL |
| UniRef90-H87761 |  |
| iRet90_Q1NTH5 |  |
| UniRef90 UPIO004795F7E |  |
| UniRef90-UPI0002F72AC8 UniRef90-LORH19 | S $L$ |
| UniRef90_V6K6Y9 | M |
| UniRef90-M1E7M4 |  |
|  |  |
| niRet90_Q65P27 |  |
| UniRef90_C9P3z4 |  |
| A1VE25 |  |
| UniRef90-GOY | M |
| UniRef90-X10 | RVGFSL |
| 90-A9 |  |
|  |  |
|  |  |
| UniRef90 E3CY |  |
| C3 |  |
| et90_G1UPC0 |  |
| niRef90-G8R×R4 | SVVSERYPST |

UniRef90 KOHWT7 UniRef90－UPIO004649E74 UniRef90＿UPIO003B2EF94 UniRef90＿E6VVG6
UniRef9－A AI2UO UniRef90－UPIO0037513D8 UniRef90 ${ }^{-}$K2ARR1 UniRef90＿W8KUZ8 UniRef90－10X7S5 UniRef90－K7S3C8 UniRef90 D6Z2C0 UniRef90－A9DGG2
UniRef $90-\mathrm{H} 1 \mathrm{G2M1} 1$
UniRef90 C8XB17 UniRef90 U5VXD8 UniRef90－WOHFZ4 UniRef90－UPIO0030B7CF1 UniRef90－UPIO003718618 UniRef90－S6AXF3 UniRef90－UPIO003A81DB7 UniRet90＿X1RR66 UniRef90＿G5PJS6 UniRef90－K6H519 UniRef90－A0A024H7G5 UniRef90＿B2IYT3 UniRef90－A1HQD9 UniRef90－UPI0004711C3B UniRef90－UPI00047903AD UniRef90－J3CAQ8 UniRef90－R8W0S5 UniRef90－A0A011 WSV4 UniRef90 R6HGP8 UniRef90－UPIO0037822A5 UniRef90－UPIo0036BF033 UniRef90－T1VJ37
UniRef90 UPIo002884BE3 UniRef90－A31FS8 UniRef90＿UPIooo347E7EB UniRef90 L9PJJ1 UniRef90＿UPIO004767891 UniRef90－UPIO00373FB07 UniRef90－UPIOOO346C464 UniRef90 UPIO003B5E95B UniRef90－E5WGL5
UniRef90－K1Z107
UniRef90 Q1NWB3 UniRef90－UPIOO047EOEE8 UniRef90－UPIOOO3B34A42 UniRef90－E6UFT4 4 UniRef90－D1YYD8 UniRef90－C6PXN0 UniRef90－131302 UniRef90 K1YG50 UniRet90 W70781 UniRef90－QOYU93
UniRef90 A6TLU2 UniRef90＿UPI0003738CC8 UniRef90＿UPI0003B63B2B UniRef90－UPIO003607028 UniRef90－UPI0003B39971 UniRef90 HOJBE1 UniRef90－B0UIU3 UniRef90－UPIOOO2376602 UniRef90 W9UY37 UniRef90－B8FFKO UniRef90－F6ACPO UniRef90－UPIO0035DDB92 UniRef90 E8VXF6 UniRef90－U1WSQ0 UniRef90－UPI0003B714C3 UniRef90－R6T4K0 UniRef90－D6XXV4 UniRef90－C4XPT9 UniRef90－UPI000255674E UniRef90 W9GJ68 UniRef90 KOC9Z8 UniRef90－UPIOOO3B715D7 UniRef90 L1M5F7 UniRef90＿UPI000308F8B9 UniRef90－UPI0003C7FB37 UniRef90 M7CU90 UniRet90－W4LCI3 UniRef90－B2UXK8 UniRet90＿X1CE98 UniRef90 UPIOOO34A642F UniRef90 R8B5C5 UniRef90＿S7V515 UniRef90－A0A024QF62 UniRef90＿S3K6L5

GQRMDAVAFNMAQHPLVRRLLQRPASQAVNA THNQLTEEYESKALALLAYSMAQSDLVRSDLDRDAAAVQS DRMVEEYVSKGTA乌AQS■AGAS QDILLNRDAATVQA

STRMVAVAESLAAAPLVRDVLEDRNPRQLQN ELQNDSILAVKALNNNSTVVSALSGEDRNLLDN EETSLRAQTQAEVVASQPHVQRAFAERNREALTP

पNEQSSALSLA【KPTANDPVVLKALREGDSNTLQD | $K P A N D V V L K A R R E G D N T L Q D$ |  |
| :--- | :--- | :--- | :--- |
| $R A$ | $A R S K T T R Q A L K D R D R D R L R E ~$ | LAQDPLTKETLSGSSNQRLNL EDAGVRAESQAMVVASMPAVQQAFAMRDREALQA SQAQFRTNAADR\｜LGAAESLAANPTVRDRTGSATAAALAP GERLRSVGENTAGNRTVRLGLGNPGREALET


RYHETEGNRALAVAERLADVAGVRDSLGLPAYTTALQA KRALYRRLEERGLALSRTLSLASLDDSFVTNSFSDLNF EDYLASHVRDMAMNQAKIIASNDSIDAAVKNRDYKRLAI NFVKNPAVRSLLPDAQPAALPA DQLLEHKRQTVLMLAEFLLABPPRGGRQSVAKGAPSEANL TASLLPDVLAALAHPQDAAVNR SKDAERTQAEARMLDVSNTAAADGEVLKNIKSADYNRTLD RQEUDKNLKNISEATVSSPLLINRLSAEDATYFCD
RRDEGKKLLLHAESLATNDTVRHGMAGSVWGPLAA
SFQREEGRRALSAAESTAANPAVRELFQTRDRSGLQG SEATFHRVEGRRVGALAEQLGANPLVRSRLTRPAPEALAP KENVSDALLEKSIQQVDEVARQAEYILLSTSNPTVELQN SDARLRQTEGQRMLSVAESTAARDTVRVGLHDPRREVLAL

VSSDRNVVSFLTSNAPGKMQQ
SDARLRQTESRRMLAVAESTAARDTI RVGLGDPGREELAP
EQLQRTESRRALSAAENLAGNPTVRSLLPTGGSASLAA

DQLIRDNQR

SKRS位EQ S $\square$ ADRPLVVRAMENGDTAFLTS

ERVKN ARVIANNPLIAKGTEDKDYPETVQ $K$ QI ASQHIVVDYLQQKSPALQNP
DQVLDERGRLLQNNVEDLANDFGFKSAVATRDTGTLQS

$$
R \text { RDQEAA RATSMAETVAR }
$$

LQHHTKMHFDEEATEIAGNKAVSAALHQKDTKALRS
QQLTTQTHSLAQTVATNTT EWMLISNNVVGLQE
ERFAY IPQLLSRQSLMVNALQTPNNTALRE
QRALGVADTLAHDPAVAEALERDDRTGLDE
DNLRRSGEVQALAVATTAAQQPLIAELLHHPGAQSLNA
ESSKAVSSLLAGMRRIVEALRTNNDESLRA
DRLDQESARATAMAETVARDPDVQEAMANGDRDRLAA TQQAVKESTGNVGVQTALNVAQSVDVQNPMEGKEYWELRN RDQAVENSVE AVKLSEAFANHVGVESLETGVGDELSN RDQAVENSVEQAVKLSEAFANHVGDLYELNEGDLSMI QA


QLVDRELKRYRPTPELMAEHPLLRAALEEPADPELNN TLEKLIDQAETSEMLLVSMVANMPEVQAAMDARNREVLLP RRFEALPQLGDDPTLRAVADPDRLEFQT QLEAERNDVRTALGQKDTQALDK
GSRVVAVATNLANTPLVRDT：CGPAPNELAF RQLVANELNRYLPIPELMAQHPLMVRALRHPDQPEVNQ RTSIEAQVEKRGTTVAEHLAAVS RNSLMTYNWTALAQ KNSMTDVLLDKS $\square E V A N E M N S L V E Y \square I Q N E D N P \square E K L Q E$

ATTPNQRKSLRPRLEKTLEN
QLVDREDKRYRPMPGLMAEHPALREALDNPDPGRINR HQSMTREFTAKGEAVARSIANTSG ELLDNRDASTIQS

LSYMPVTQDAIERDTKPKLKG
EKDEAHLIDKAADVAEIVARMPSLRDTSLSY YQKAQS


UniRef90 конWT7 UniRef90_UPIOOO4649E74 UniRef90_UPIO003B2EF94 UniRef90-E6VVGG6 UniRef90_A512U0
UniRef90_F4AAH7 UniRef90_UPIO0037513D8 UniRef90-K2ARR1 UniRef90-W8KUZ8 UniRef90-IOX7S5 UniRef90-K7S3C8 UniRef90-D6Z2C0 UniRef90-A9DGG2
UniRef90-H1G2M1
UniRef90-C8XBI7 UniRef90-U5VXD8 UniRef9O- WOHFZ4 UniRef90_UPI00030B7CF1 UniRef90_UPIO003718618 UniRef90_S6AXF3 UniRef90-UP10003A81DB7 UniRef90-X1RR66 UniRef90-G5PJS6 UniRef90-K6H519 UniRef90-A0A024H7G5
UniRef90-B2IYT3 UniRef90-A1HQD9 UniRef90_UPI0004711C3B UniRef90_UPI00047903AD UniRef90-J3CAQ8 UniRef90-R8WOS5
UniRef90-A0A011 WSV4 UniRef90-R6HGP8 UniRef90_UPIO0037822A5 UniRef90_UPI00036BF033 UniRef90-T1VJ37 UniRef90_UPI0002884BE3 UniRef90-A3IIFS8 UniRef90_UPI000347E7EB UniRef90-L9PJJ1 UniRef90_UPI0004767891 UniRef90_UPI000373FB07 UniRef90-UPIO00346C464 UniRef90-UPI0003B5E95B UniRef90-E5WGL5 UniRef90-K1Z107 UniRef90-Q1NWB3 UniRef90_UPI00047E0EE8 UniRef90_UPIO003B34A42 UniRef90-E6UFT4 UniRef90-D1YYD8 UniRef90-C6PXNO UniRef90-13IJO2 UniRef90-K1YG50 UniRef9O-W7Q781 UniRef90_QOYU93
UniRef90-A6TLU2 UniRef90_A6TLU2
UniRef90_UPI0003738CC8 UniRef90_UPI0003B63B2B UniRef90_UPIO003607028 UniRef90_HOJBE1 UniRef90-BOUIU3 UniRef90_UPIOOO2376602 UniRef90-W9UY37 UniRef90-B8FFK0 UniRef90-F6ACP0 UniRef90_UPIO0035DDB92 UniRef90_U1WSQ0 UniRef90_UPI0003B714C3 UniRef90-R6T4K0 UniRef90-D6XXV4 UniRef90_C4XPT9 UniRef90_UPI000255674E UniRef90 W9GJ68 UniRef90-R7RTU9
UniRef90 K0C9Z8 UniRef90_UPIO003B715D7 UniRet90_L1M5F7 UniRef90_UPI000308F8B9 UniRef90_UP10003C7FB37 UniRef90-M7CU90 UniRef90-B2UXK8 UniRef90-X1CE98 UniRef90-UPI00034A642F UniRef90-R8B5C5 UniRef90-S7V515
 43

Y|L Q A VN QHA GS DMLY|V|MDP Q GLTTLASSNWD F|V|H QNYGNR P

 IL EKLTKDSNI KFALVMDNKLKVTHHSDKKRDGKILTDTG LI EKKLEAEKNLEYALFINKEFKMVAHSDKSRGGKVSDDTB


## - $\ll$

 AAKLQRGTDFDYVVIGDRLRSPLDPADPSADATB LASLVKGMTGVDYANVFDASGLCMASTNPAAVGKVKVADR VAEAVRTLSGSSQVALAKLDRTVVASSDPGLLGGKLDDGA VAN KLAQAMKVLDCYRIA AD A LLAQWLK QSLADTIYYVHDKTGLVIASS Y IEEMNGNAGFANLYGIDPQGGFLVAVTDPELLGERRQFRE
 AAEMTRGTSGANFVMVADTHGIVVTGQLRGR AAEMK PAQL MAKLTKESAGADFVTIFDNRGRVIARSNNEVIGD YELPN SVDSVRADSGVTYVSLADADGSVVDSTRPGDVG LVVSTQAQSGVTSVSVADASGRIVAATDPTLVGRLL FVENKAKQSGIAYAVVDDKNVTAHAHSDQEKIGKNYEDDY LAEEARALSGADLVVVHDQEGRPLTDPGPVEDDEARWDTP TLLQTIQQQAKVGAI YVMDRDGLTIGASNWDQVGENFSYRP TLENISHSNDFDAIFLMDTQGKCVASTEPKFVGNKYNYRE YIEQVNRQAGSDALYLSDMQGLTLAASNWDFVGQSYANRP VGETVRTVSGSDVAALLRPNRTVVGSSRPSDVGATLADDR LMDQIKYQSKPMTVFFQGRDGRLIASTDEQGLYKMLLNDN LLRVKAATD DASTYVMNSDGVMMAASYPEVVGKNLSHRE LFERVNADYAVTHFYFSDTNRVCLLRAHPDKHGDRFDRFT胃 MAAYANSTERINSVYFTDKNGTVLAATAPGLIGTSVDRPY LVTKLGKKSNVVFALTFDSNLKALSHSDKSRVGDSLTDEG YLEEIKNEYGYKGIMMSNNKGLVTVTTSGESIGRDILQTD AVLESLTMADAESI NDMDTSGVDLVSTNPMAVGQSFAFRE VLANHGDRAGADMVLLSDLDGTLLASSHHPQ GAAMPFPT LYKRLERYYGDTHFNFIDTARNILRVHNPSRSGDRDNRFT TVENLAKEENIVFALFADKSLRAMAHSDRERDGLDLSDDE LTDALRERYGAEQYQFHTPPATFLRVHRPDRYGDDLSGQT SALIRITKDNFVEDASFYDSNGHLVTRLLEEHFGEHPSLEM IINRHLDTYGASDTYLLNDQGTTIASSNWSFVGKNFSFRP AAEDURQRTGADVIYLMQDDGTCLASSNYRQVGRDFSFRP YLQA NANAGSDTLYVDNTDGGTVASSNWDFVNQNYGNRP DEERLSPNQDIRAEVITRDQTLFAKSWDPTPSNERGPNRL RFEMLNTAAGASVLYYLDRNGHTLAASNWNEVGSNYGFRP QLAEWSKQTGADTHYMHNQQGVVIYQQDDTFVGGEDFSFRP QLINDRKKTDALYMTHKDDGQPKGSKDASPIGKSASEPK YLNITKSUAGLDGVAVCDTENTCLYYPNRAFIGRTLSGGG YLEQVAEDPDIAYAVLDDAENVEIAHNNPERIGVTYDDEP LLNDLKEQTGADVIYLMAPNGQTLAASNWQQVGRNFSYRP LVQSVVTQYGVTSVTLTGTDGVARVSSDPTLENTSVQLGS LVEELASRGNIVYALFIDKNLKAVAHSNKDRIGIELNDQG QMKRMATIIGSSDVYLMDHRGLTAGASNHDRLGRNFDRPY
VVEKAKKESRLPFFLFHTPDGHFLRTWKPDKYGDKSFRFM NANRIDTOTGAEVIYLMDAKGNTLVASNWDKDGRNFSFRP ILVSHKTNLEDDLIKVVNQNGGVVLEDREPRLNESYEDRT ATDRAVS SGADVAWLTDAEGRVLVSTDPTSVGRRDDDGA KMQRMAGVVGSSDVYLMDDSGLTVAASNFGRVGRRFAYRP DVKNVSRADVLYAIVLQLDGKLAAHSEHSAVRSEFPDPV
VVDKKAKDDNVTYYVVVDKNNKALAHSDEQK GKVVYDDDY

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DYYAAVAGKTVVSKALVSRTTGKAAVVPDRDAAGK LVGLV SR VMEGRAWTGVVAESNAAVLSAHVPVLDDAGKMI GI A YFQRA $\square A G D A F V S I G V T T K R E G V F F T Y P V Y S E S G E V L G V A$ SFFAAARGRPVISI FAGLSDAFVSLRVPVYDDHDKVIAVL
 YFRDARAGRYGVGQTTGEPGDFISA PVVRDGGAVLGVV LTHDEDGDRVILADGKAPAGMERCAYAAVYDVTGKVIGMV ALLNA AKGKSDVDKGAHSDGRFYSAYSPIFDDDGKVVGDI ADSEALEGKSWTGIEDGTK A LVAHAPVDEAGKFDG』V LDKKVLNGTEDNSIEMENKGMALVS IMKPIKDHDGNDVGA VDARQTQDRSWTGLVDTSSGKAVEAHVPI LGSEGGITGTA PKARPGRGWSGSLADDGSRELVAQVPVRNSVGEHLGTV SVDGAKNGETMTSRFYADVQKSWTFMVPIYDDN KLYGSM GVTTALDDGRSWTGVSEADGRRTV
YFDAALHGRAGRFYG $\square G T S T S E A G Y F \square P V Y R A G G P V T G V V$ YFQQA QGKSYVSTGQTTGRPGLFLSHPVQSEKGKIVGVA YFIDA RSGRYGVGQTTGEPGDF S S PVVGEGGEIVGVV GVATALDGRAWTGV
T DKALP P S R S WS GALLA DRPTVA AEVPVLDDEGTVVGDA
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 $A A S A L T L Q N V T V S F G M G N T G L G V I G F A P V V D E G G Q L I G G V$
$Y F Q K A M E G R T A T Y L A L G S D K R G V Y S S H P V M G S D G E L A G V V$
 YFI EAMQGHIARYVALGSNKRGYFYSAPI WLEN K AGVI VFQPVLQGKTYTDIIHNEYGDFASAVAPLKNSQGEIDGAV DKMVASDGLVNNGIMTASGKLVMSMYAPVYDEKGKPIGF LTVAAATEGEQSSEAETTNEWTYD\MTPVY SS GTLVGTVL $V V K A N K Y R S P F R G D E V G P G G A A M R A I I P L N D G S G E H I G T V$ SKATVAHGASWTGTLTTLDGEQMLVTQTPVVLSDAGDHLGGTV
 YFSDATAGRRFFGQGTGSAKRGYFFGAPVWDENGQVIGVL
 $S D$ VQQGRA WRGEVDLA GSPAIVGHVPLLDDDGQLVGIAA

TVNAVQQGKTTARKFYADVQKDWAYMVPIVNVNGELYGSL YYSSAIDQGRAYVSMGRTTRRPGLYFSSPVKTESGAIVGVM
 TYQA $\square M F G S A Y T E M L G E G E E E L L L G D A P I$ YVDYGKVEGAI


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REMTREASKA
 ELLATNPRLDDFMRAPSIDQALNR RREMTREYESKA DA पA RSVAES RTAGMHPDVFEVLAHPRDPAAQQ KKTVEES $\square$ ANQS $\square E A A T T \square A S S D D T A Y L D N P H Y W E R S$ QRTAVVPLLLARDPALISALRSGDFSTTSA VRQSVEETLLQTANLLAEFAS QEASENKGDTDTQA RQLDQEA QRGESMARA AEDPVIRQAFADGDRERLLE $R Q L V A N E \square N R Y \square P \square P A L I A L H P L L A D A L K A P D N A R A N E$ $\square V A E R P D L A A L L R Q P E N A L Q A$ QRVVQYADTLANNVNYGELLYYNEDEKLAR QRYRDLAVFLADHPQVHDLSDQPGRARD LS MLRTVASSDAVVQFLQNPSAESURD
EQATTMAESपALSSSVWVASRDLSGLQE AQTPEIDDALGSEDPTALDN EQGERAQA LSATMARMPEIQKAFADADRARLHP SHDE DDNWILKRSQAQAELLADRAEYILENSSTPTADLQD ITPRLLAKDKELI DALHSPSNSATNR MATQVANDHRFVEAMQRGDRDALLA SHQEDDKDILKKSQAQAEGLAKNVEYVLTTSPKPDDDLQN LLSTHPLVQDALRQPNGEAVNR DKTSYQA
RDLQGQRMDAVAENVASTPVVRELLSAPSAGVLAP Q DDSEL DKFKQUPDLLSHDPRLLSYFDSSSAAQLNQ QILGDLPALRNALLQPNKGAANR ESFAQMMSVVRVLLKERLEYQSK NKEQSVNSLVASRNSTVQLLKNPDGQSLPE KQNTYDEYGNNVKTISESII ADRPSVVSAVAEDNRPVLHS QK DDEПILKKSQAKAEVIAKNVEYVLQKSSQPLVDLQE
 ILASNDRMRKALIRDGDINQLNR DQAGRFADAQAETTARRPSVARALGAGNRAELTA

QQHVLQARALTQSVSASSAV WVASRDYSGLQE DPSLDTAWEGRDRETLQP DDTGDNAMT SRVVADSTNVTELLAKKEPNEMQA KKR】SQNQEENNLSLARNMARDPLLIH DYLQLDV QDNDUNQLQE ATAQSDEVARLLEKKDPAHLNA RQVVEDT【AENAN【IAQLIAEDPEFDQK乌QTALSRQLNA STRAEAMSAVVAR $\quad$ PA AVQDAMAQNDRDALMR SASRLDQLI IDYHRVVAQISSDRHVVDFLSATTPENLQQ $\begin{array}{llllllllllllllllll}R & A & S & G & I & R & E & L & Q & T & A & L & T & D & T & N & L & E \\ I & T & N & K \\ E & E & A & S & N & A & I & D & V & G & E & F & V & K & E & K & N & P \\ S & Y & I & Q & M\end{array}$ EASDRAYETVEEASNADDVGEFVKEKNOSYIQM

E DEATSATAMALVVAAMPDVQEAFSSRNREELTA
 ACNPDLKDALAENDSEKL S S
LARDPHVIQAVEGLRS QDLNT



 $Q R N S \square V P Q L L V R D P E L D E A L R T G D N N A A G L$ VQ A

F L A S D P P L I A A L A T R D RVR L A S QLVANE पNRYRPDPELMAEHPLMESVLRKPSDELLNE LA NDVRVVSTLAGDGVGEMND $\square P Q L L A Q N K R L T N L L E H K N S A Q I N R$ $L A Y S$ A QQPRVQAAFA A GDRQALDP
 Q R A S IVVPQL L A R D P A L I G M A L R N S S E D D D D S S E $R A T L L E Q H G Q R L E A A A E H V$ S Q A V S S V VAAMLS E D GARRLKR VARNHEIVNVVTGNGTVDINQ

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UniRet90
H1KZN9 UniRef90-S5Y296 UniRef90-DOKV15 UniRef90_F3Z209 UniRef90-UPIO0036C3E20 UniRef90-UP100047AABB8 UniRef90_U7G4H5 UniRef90-A8LI85 UniRef90-F2NHN2 UniRef90-B7RHD3 UniRef90-B9QRT9 UniRef90 UPIOOO3B5F318 UniRef90-R9C6V7 UniRef90-CgYA12 UniRef90-V6ATK1 UniRef90-ІІҮ6K0 UniRef90_UPIO0046E640E UniRef90-F7YLF1 UniRef90-Q47CE7

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 LAGPRYRELHAQFYFITPDRKVLLRVHDPERSGDEVRRKG LVKSLKSRSD
Y YLEEMAQRSKASQAYLITGDGLCVAASNWREVGMRYVFRP EVDRAVNLSGATLAEVVTADGTVLVASDPTALGAANEDGA LLQQVREQTGADVIYLMDPDGKTLAASNWDQUERNFAFRP EVIKLKAGVELDILEVCDEQGLVMVGGDLEEYGEDKSHDP LLEQLRDTLDADPAVMVRHNGIRVATLLKDKNGQPSPDSA VTENVKKAGNISHTFVLDSNLKDI SDSNASFVGKSYADKK AATYVNSTNRI NSDYFVDSKGIVIESTDPGLI GSNASNSY FTSIVNERSEVETNFIVNSKGTVISHTTPKNI GSDYSDRS LVLSLSERSDIIYADFIDRKIQAVAHSDDNKLNKDYKDSY LFERLNVQAQSDEIGLMDTTGLTRWSSNQSFVGQNYGYRP LA A A YTAAYSADIVYVSEWNTHVLAH IIAALEHYPNLAHALVLDSRGQVLAHSDRKRI GGLYDTLD LAADLHQDFQVTHFYLVEPDRNVLRPYNPERUGGTDERHT LVQSTKEALLCKYAYILDHHGRVVAHSDKSRGGQKYSPAS LVEKKAKLDN|AYVVIVDKNDKAIAHSDKQKLGKVYDDDY LINELMSSDGIVYALFIDKNLKATAHSEKDRVGKVLDDEG TI WQHKKDEDNQQLY TDQHGIVIYDSEDQAI GQDYSKWN LVDEVRKSTGSLYVYILDAENKKLGRDDPSPVGSEVTGTT TIQNVRSHPNLDVVLLMDKNGQCLAATDPKFGGEHLQGNF RLEYMRKISGAKYIFTMNDDGNFMYVVDISHIGDTEESMP LTSQKERLUSLAQFQFHLPPATSFLRLHKPEAFDDEDVSERVT L SSDWLAQSLADTMYVHDQTGLVIASSNYQQDGSNFAFRP RLEDFALRAGLEAIYLMSPTGLTIAASNHSFDGQNYAFRP TVTQYA VTUVSIADPSGVVRVSSDPTLDDTRLPTGS YLSQLAKQFNVDEI NFTDSTGKI YSNDQSSGSVFGSDH
 FVEQKTEQEEVAYAIVIDKTVTAVAHSDAERLGRNYQDDY IVDLIKQETGADTVTLFAQDW RVSTNVPYQLGTRVSREV ALRMLVEEMGASSFMLYDRDGRVVASTEPGHLGEHGRDPY VVDR|AELTGGDTVTIFLGDGDRTTTVREKIGTRVSSVV GAEATTKHNVNLRVYVTDSNGTVVYDSKGEKTGEDFRAWH

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 SKK
FFQMGLE RPYREYTQDSQKRVAVTTVP TFDQQNKKTGV DVEANRTQQPVRGLETGVAGLGVRGVEPV SWQGQPVGVV TVAGAGQGQPQHSRWFADVQDVWVYMMPVYV DGRLWGAF YFKTADTGQESQYFALGSTQRGYYYSYPIVYAAGDVIGVV TVDGATKGKAQHSKWYADTQGVWVYLTPVYV DGKLYGTF FTQVNQSKQPVMGLENGVAGLGNRGVVPVFYEGKLIGSV SKKAAIDGEEYAYFYDVKNVTVYDVLTPVYVNGEHUGAU SDVATGRAWSGDVVVDG YFASAFAGRSFFGLGTTSGKRGYYFAAAVRDGT A AVGVI SKTAAVEGKPYSSTYEKEKVNVYDVLVPVK KDGQLUGALI

 YVQAALKGESSYSDSKANGNRIVVVATPVKDNGGKV1GVL TMEGAGKGEQKFSKWYADVQKMWVYMVPVYDKNGELLGAF
YFKEAAQGKTYVSSVVPSEIPRMNVSSPLKDREGNIIGIV YFKEAAQGKTYVSSVVPSEDPGMNVSSPLKDREGN:IGVV
 VDARQTADRSWTGLVDTSSGKAVEAHVPILGSEGGITGTA PDQPLLQGEAAYGVLQKTIRMVDVASPILGHGGKPIGWV THTKAFHTRAQTSTLWGT

TKNAVKEGE
SKTAAVDGKTYSSTYKYKGKTEVYVIVPVYVKNTHIGACl

 YGSSTLLGET YYKKAVNGGASTY DALGTDKRGVYYAHPVYDENSDVLGVV AFEKVWSGEVYDHHEEGW GSFISSYYPLKDNQGNVVGFI VVKVNRTKKPVSGKEKGVAGLGVRGVVPVNAMNGSHIGSV S TQNALRGKQFLSYEPGTAPYGAVYSVPVIDGGKVIGAV YFQQALQGQYAIGSTTGLPGYFLVADPVLNSTGKIGGVIV




LRDARATEKEAHGLELGODGSFLRVVRPV SGDDGHVIGFI YFQTAMAGETFFGVGATTGRPGYFVSEPVVSPTGGVGVV YFQQADSGQNSQYFALGSMSRGYYYSSPVIHAAEGUGVV
 YYADAIAGRTAVGVTTGKAGLFVSAMAIRDNTGRILGVT YSQGLDA A A WIEEGRSPQERFLKLTAPVRNADGAVIGVV TMAALA

| UniRef90_UPI00036A584C | EFGMAF |
| :---: | :---: |
| UniRef90-UPI000237764C | TVKVNLE |
| UniRef90-K1YCT9 | L L TVVPL S |
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| UniRef90-K1YSG1 | R\\|GI |
| UniRef90-E6VQM2 |  |
| UniRef90-W9VGE6 |  |
| UniRef90-G2DZF3 | V VK $\mathrm{D}^{\text {D }}$ DS E |
| UniRef90-FOJHN0 |  |
| UniRef90-C5CVQ4 | T VKTS LTR Q L |
| UniRef90-B1HU69 | G $\\|$ D S A TL |
| UniRef90_H1KZN9 |  |
| UniRef90_S5Y296 | $\overline{\mathrm{V} V G A D L S R \square}$ |
| UniRef90-DOKVI5 | SVGG |
| UniRef90_F3Z209 |  |
| UniRef90_UPI00036C3E20 | EFGMAFD |
| UniRef90-UPI00047AABB8 | S VKVPLGEL |
| UniRef90-U7G4H5 | AI KVLVHEL |
| UniRef90-A8LI85 | AVK FTVVD |
| UniRef90-F2NHN2 | LTGMLVV |
| UniRef90-B7RHD3 | VVSTDL NG $\square$ |
| UniRef90-B9QRT9 | AVK F TVD |
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| UniRef90-R9C6V7 | $D \square G \square S L K N V$ |
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| UniRef90-F7YLF1 | V VKMDL |
| UniRef90-Q47CE7 | EMGMEVE |
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| UniRef90-E5AV90 | VIKI DL |
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| UniRef90-X1FAM3 | STGYFLD |
| UniRef90-K1ZA27 | A 1 K 1 NID T V |
| UniRef90-C1D9Z8 | S VRIS MD |
| UniRef90-FOK4N4 |  |
| UniRef90-D1YYA1 | M V G |
| UniRef90-K6CB22 |  |
| UniRef90-A6FAZ2 | $\mathrm{D} \square \mathrm{G} \square \mathrm{P} \square \mathrm{SEV}$ |
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| UniRef90_A6VTR6 | V V |
| UniRef90-A4B9N0 | $\mathrm{V} \mathrm{V} \mathrm{K} \\| \mathrm{S}$ L |
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| UniRef90_W7UHV9 | GI GII F T N R L |
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| UniRef90-B3E2P6 | R I G L |
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| UniRef90-H0S425 | E F G L |
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| UniRef90-F8ALI2 | Y V G M |
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| UniRef90-A4F0B9 | A I KI |
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| UniRef90_UPI00036A4A97 | A V K I G V D R I |
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| UniRef90-YOKKK6 | S V GKAVS S |
| UniRef90-S7T8Y7 | EI SEDI E HT |
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| UniRef90-G4E6L7 | EFGLA |
| UniRef90_Q2BL12 | VVK】DLNEI |
| UniRef90-UPI00036C19C8 | VVGFS Q H HV |
| UniRef90_Q2SNG0 | V V |
| UniRef90-Q2CDD8 | V V TVDLS R L |
| UniRef90-C5D122 | A A |
| UniRef90_K2MPD7 | A V K $\square \mathrm{E}$ L D E L |
| UniRef90-G2H9C0 |  |
| UniRef90_B3E4R8 | E/L G T E\|V|N E I |

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UniRef90 UPI0003A52AF1 UniRef90 C0Q8Z0 UniRef90-UPI00037EF963 UniRef90-F6CQ07 UniRef90 UPI00041F06F9 UniRef90-UPI000479EF20 UniRef90_A0A037XIE7 UniRef90_UPI0003942B75 UniRef90 17A4Q3 UniRef90-LOGXW3 UniRef90_UPI0003B4BE86 UniRef90 A0A024HNY2 UniRef90 U2ZY42 UniRef90-W6KDJ0 UniRef90_W9V5U7 UniRef90 UPIO00361690C UniRef90-UPI00037D0A23 UniRef90-E1R4L1 UniRef90 Q20JY7 UniRef90 Q0W406 UniRef90-B1J820
UniRef90-UPI00037CDEFC UniRef90 T0JTR7 UniRef90-D7WYR5 UniRef90_UPI000470CB95 UniRet90_E4Q195 UniRef90 Q6N5W3 UniRef90_UPI0002EA9132 UniRef90_A4TVG4 UniRef90 U4T8D9 UniRef90 ${ }^{-}$W0DY74 UniRef90_A0A011MKX1 UniRef90_M1PT76 UniRef90 E9US06 UniRef90-XOZOH6 UniRef90-D3S7C7 UniRef90 A0A037ZAEO UniRef90 E4PHD2 UniRef90_H2CAJ9 UniRef90-R4Y7L6 UniRef90 H6SRS9 UniRef90_U0FU22 UniRef90_A6UPU7 UniRef90-V4J3F9 UniRef90_UPI0002F26950 UniRef90_UPI00037A42F1 UniRef90 A5I3C5 UniRef90-M4X293 UniRef90-Q28RL4 UniRef90-W4BIX9 UniRef90 Q7NVN4 UniRef90_U1ZSG5 UniRef90-X1L258 UniRef90 R7ZCN7 UniRef90_Q1IJ95
UniRef90_W9AUZ8

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HDSESEYLSSRLANYVSAVAQEKDFARLLESSDTEALGK NHAYS $\square A K N \square A R D E D L K \square S \square K K N Q H P K D A N$ LSNARYI ANNPFLIQAMQKTGNAEVNE QRTSVVPLLLARDPELTKALGSGDFSTTSG SDARARDTEGRRALA A ESLAATAGVHSALATTDPERAQG DRYRTLAPEVLSLDNELRAALQUPDVNYLNR

 A QS $\square Q Q R \square E R Y R T \square A Q V L A L D P E L R N A L K Q P \square S L A T Q R$ Q $\square$ NNQAMS AQAMSAM $\square$ ASQPS $\square$ KEAFARGDREQL $D P$

RS QLAARLTAARNGLGRSLAKRQADSEQA EATFTRTEGRRDFA $\square A E Q L A S H P L V R Q E L A P P Q \prod N A L P T$ RQKAEQALAMATVLAANDRVARALYRGDINLLENR QKQAEQLAVQTARTI SYMPPVKESTKGNRMKEAQE YERTTLVYAKMLAENPYVKKETLET DNVGPDLDR QILGGLPVLRQALQQPGDPLLQK QQNVMQEDKDQAKGDAFKSPIVRDYLKNQNDKDLQD QQNVMQELKDQAKGLAQNVATSTAVGWVASRDFSGLQN QRNSVVPQLLARDPELDSALNSQDYSRSTA


EAEADRAVSMGALVAGLPPVKQAMAEGDRAALSD


TADALRTE RALL RTV $\quad$ DDNLPDA TYVKDTEGRKT KALAGLKELRMALEMKDDALLNP
 TVQQVI EDTLLDTSKLLAAS
QRDILQTAQRRMQTTAESVAQDP

QRYEVLPQ!LGRLPNVQQALLAPSDETANQ TRQSLEQGLRQSADQLAQLLAAVAP KAMWDNDVPTLSE RLLSKDKELVDALLDPDPAQI NR GELAQSLSALVSRDPVVQQAFAEGDRDRLRE S LQQQED D RYKDLDKLLSSHSELVNLLLLPESDRANLL DKAKEEARQQVMLSAQLVAADQQIVQLLLSAAASRINQ MA LDP PG LIAAVKKDDRKA $\square$ KA

DSEGRDATADAQSMATSPPVQKAFAEQDRAADMP Q TEAATAEKALATAQEDADHPGVVNGKDYKGTSLI NE KKTVEESIANQSLEAAHSIAASDAYQQFLNNPQEWKVRN $R I L A A Y S S E L S S L S L D H A N S K Y L N H$
 DT TQENGEHDAER DASED DAEQYEKFLKNPNGKEYKA

E Q Q $\square$ K D Q $\square$ AF K SVSVA A TA A MMPE $\square$ QRALAGVVP R T EQSRRARLAARLTASTDKLGASLHNPSTAADRE TEDTDHQ AKIIAEISGVINALVYKETDYLDY S DADFRDSREDRDRAAAESLAGTAAVQDGLTTPDRDALAF

DQSTRDEVERRAQSTARVFAATA ADDVLS DDLASDQN Q ILRGDADSRAKE!AAVALRRPVIEAIIHNDYUKLQK KERGES $\square A R L V A A D P D V Q E R F A R G D R D G L Q A$ QK $\square \mathrm{DE} \square I L H K S Q V Q A E F L A G N A G Y I L E N S Q Q P L K D L Q A$
 RTSREQLEQRGEAI GRSIAATS IKALLGYDY!SLEQ
 QQTLDRYKDLP QLLASHSELLNALLHQGDARANL
$1 L G E L D T L R A A L Q A P D S V T A Q N$ QVLRGADERTQALPALLADRTDLQQLLAEPDNDGUVP TMQHNNQQLAVNTASQLGQESELITKTLSSPASEELRD

KQVA GQPRLREAVI
Q ILGD LIPGLRAALHAPDDPAVNR
S QEVLIDEKAKE QVFEMAKQVV ET I LNSES DPDS S LQE


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|  |  |  |  |  | UniRef90_A0A031MFD9 UniRef90_A0LBZ8 UniRef90_UPI0003A52AF1 UniRef90_C0Q8Z0 UniRef90_UPI00037EF963 UniRef90_F6CQ07 UniRef90_UPI00041F06F9 UniRef90_UPI000479EF20 UniRef90_A0A037XIE7 UniRef90_UPI0003942B75 UniRef90_17A4Q3 UniRef90_LOGXW3 UniRef90_UPIO003B4BE86 UniRef90_A0A024HNY2 UniRef90_U2ZY42 UniRef90_W6KDJ0

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UniRef90_Q1IJ95
UniRef90_W9AUZ8


 I A E S G R S F S G S T K V M MVVMK G D R R I I V V S T D P L P T N R I V R L Q A K L E R A N G A S Q A S T L T L I D R H G I A V A A S N WN NVGED Y N F R P

 VII S P L A S Q M N I D Q I A V T D S N G L L G R S D DS R Y G D N WK E N Y QLERANTVTRSSTLTLIDTAGLALLAASNWRSANSNVGADY
 LT S L V K G M T G V D Y A NVVF DA S G L CLLA S T N P A A V G K V NVA D R $V L D G A L P A T E V D L M E L A D A Q E V V V Y R H D P Q R H G D Q S A T W G$




 II NGLNKYPD DTHAMVLNLNNQVLAHNDLSHRGQDMPAKP RLMSFVDEIGAAALTLLLDSEGRAVAATNRNEVGNHSDRPY
 YLA R TN Q LA GTMDD Y L M R A D G M T A S SNWDK DGNDFA F R P
 $L L Q N A Q K N D P D N T L E V T D A T G T V L M R G H P E K F G D N K K D H E$

 I LDN FAFSLLGLDTCYGMD RYGKTVASSNRNRVGQDFSFRP

 $L F H Q D L Q Q N H L E N I V F A D A Q Q N V I D A A N P S N D G D R F Q H V Q$
 SANRLHR QTGADVIVGMDLVGTTVASSNWDFVGRNFAFRP $\square I$ F T D A A G RVI Y S T E P D Q I GR D Y S R WN
 Y L E Q V N D V I Q A S D S Y L L D A N G T T I A A S N W N L L G R N FA WR P
 YLEQVNQT $\quad$ GGASDTYLMDTE GNTLAASNWSQVGRNFSFRP









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


 $T$ E L L G K E E S I R Y A II Q D K H GRAL V H SHP H YV G LI F N D A N

 F L D S I R $\quad$ S S N V L D
$A F G R Y A Q D S D I L S D L I I D P D N M I V A A T N P R A Q G Q Q Q L T D E T$ $F A N Q A A Q D P N \perp L Y V V V H D K E D Y V A F S N R P D L Q G Q K L S D E \square$
 YLE KVNTII GTTDAY LMNAAGDTIAASNWTFIGQNFSFRP

 ELVKVRLLQS GALVVYMYNKDGANWDDTEYSPYGTAMENPQ






| UniRef90_B9M1K2 |  |
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| UniRef90-F3FQ30 | VVKVDLD H |
| UniRef90-T0RFJ1 |  |
| UniRef90-Q1Q793 | AVCVDVAE! |
| UniRef90_D5AVB5 | V V G |
| UniRef90_UPI000478E328 | V V T R A Y P SV |
| UniRef90-A0A014MDS9 | AI K $\mathrm{K}^{\text {a }} \mathrm{L} \mathrm{HEL}$ |
| UniRef90-UPI0003B69A6B | VVKTHLDTL |
| UniRef90_F9R837 | EFGMSLNQ |
| UniRef90-B3E4S6 | ELGGQEYDHI |
| UniRef90-A4XN36 | IVGYKLDK |
| UniRef90-D2UBQ5 | VIK@EL |
| UniRef90-10XQB6 | MVGQVVD D |
| UniRef90-G7F9X2 | EFGIDL S Q |
| UniRef90_C4XG97 | NAGMDLESL |
| UniRef90-C7RTI2 | TAGVRLD S |
| UniRef90-E6S8R5 | MVAVE MPS V |
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| UniRef90-E3E3G5 | SVDFLQNE |
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| UniRef90-UPI00037168FC | KAGLYIND |
| UniRef90_UPI00037D6A75 | R V G L |
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| UniRef90-UPI00037EF963 | A V K F T V D |
| UniRef90_F6CQ07 |  |
| UniRef90-UPI00041F06F9 | S VGKPVASV |
| UniRef90_UPI000479EF20 | A A G $\square$ AL E AL |
| UniRef90-A0A037XIE7 | VVSTDLNGI |
| UniRef90_UPI0003942B75 | VVKMDLS SI |
| UniRef90-17A4Q3 | VVKVDLD |
| UniRef90-LOGXW3 | SVGGKPTTSV |
| UniRef90_UPI0003B4BE86 |  |
| UniRef90-A0A024HNY2 | RVVGS T A A V |
| UniRef90-U2ZY42 | VVKMDL |
| UniRef90-W6KDJ0 | ELGGLSAADL |
| UniRef90-W9V5U7 | EFGMS |
| UniRef90-UPI000361690C | VVK\DLND\ |
| UniRef90-UPI00037D0A23 | EFGVDLQK |
| UniRef90-E1R4L1 | D 1 D FMFEEL |
| UniRef90_Q20JY7 | R I G F P VK |
| UniRef90_Q0W406 |  |
| UniRef90-B1J820 |  |
| UniRef90-UPI00037CDEFC | E FGLLSLDE |
| UniRef90-T0JTR7 | Y 1 GV |
| UniRef90-D7WYR5 | GIDI S A T L |
| UniRef90_UPI000470CB95 | G G S |
| UniRef90-E4Q195 | IVGYKLD |
| UniRef90_Q6N5W3 | EAGLTLEP $\square$ |
| UniRef90_UPI0002EA9132 |  |
| UniRef90-A4TVG4 |  |
| UniRef90_U4T8D9 | S V G K P V A S V |
| UniRef90-W0DY74 | S A |
| UniRef90-A0A011MKX1 | A A GVR ${ }^{\text {a }}$ |
| UniRef90-M1PT76 | RIIGFSLEEV |
| UniRef90-E9US06 | V V |
| UniRef90-XOZOH6 | M V E S L F S R |
| UniRef90-D3S7C7 | F V G |
| UniRef90-A0A037ZAE0 | DVGLSLENL |
| UniRef90-E4PHD2 |  |
| UniRef90-H2CAJ9 | R I G M N F D T |
| UniRef90-R4Y7L6 | N S G |
| UniRef90-H6SRS9 | EFGLLS |
| UniRef90_U0FU22 | D I Gl P 1 T E V |
| UniRef90-A6UPU7 | F V G |
| UniRef90-D8PBH4 | R I E F S L |
| UniRef90-V4J3F9 |  |
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| UniRef90_A5I3C5 | NVGI S L E |
| UniRef90-M4X293 | V VKVDLEH |
| UniRef90-Q28RL4 | V V K L RLD |
| UniRef90-W4BIX9 | GIDIS |
| UniRef90-Q7NVN4 |  |
| UniRef90-U1ZSG5 | V VKVDLD H |
| UniRef90-X1L258 | YAGVLEDK |
| UniRef90-R7ZCN7 | D I GVPES G $\square$ |
| UniRef90-Q1IJ95 | AVGYE $\square$ N |
| UniRef90 W9AUZ8 |  | QRMERTSLNTALGLASNAD $\quad$ UAALESGSYEALQK

## AES $\square A G D A R Q R A E D Y A Q S L A \square D P R V R S L L A A P D D P A V N A$

 SYEQTMEMLENRCVNGTNMLAYQ


AN $\square P \square V V T A V K N N D K D T \square Q D$ LERNDSQDKTL
LARDASVIGAAGGDDTGTLNL
$N L L A E L R Q N A \square V P Q L L G R D P T L I A A L E S G D T Q R L I S$ A SVVAGHPSVIKAVSGRDGTGMSE A QTLQQR D DRYRTLPQVLALDPELRDALTHPDTATQQQ LTEQALKQAQNRSTLLASNSSVGWVMANDYEGLEQ TFRSTLDVHAREVRSVAETLGSLIRVRASLAEGDRAQLGP TEGTLNDTATLLAAALARLLSSANPQLAQAFQSLNQQPGNA

QRNS $\|$ VP QLLARDPELIGALSSSDFSRSTQ
EKQSTTHALVVAMT SPPDFKQALLKNDSSELEH SLDDFIQERLQDVATMAQNPVIQN PDSDFDDIQK VDERISVNAVSUTTLLSHSPAVIRSDTNNTNETLNN Q $\|$ VD TGMQRLQQAAQLLTVNSA\|IEIASNPQGARLIP
$\square S N N P Q \square R E A V A K K D H \square K V V_{Q A}^{V}$
LQ T QLLQRGKMDAENLA PLVAPALVSHDPAQLER $N L R H Q L A R R Q D L P R L L A D Q H Q L K A L L N D P D T D E A N R$

VRQSAEETLVDAANLLAETPTLRDALDRYAHRHPQA
A L SMAQ I IA GMPALREAVARRDDKTTET
 RTLVERFSSVPALLAMDGDIRALLRDPRRQALNE RET ILHESQQRALSUANGFAAQSE GYLLSYNFVKLEQ QEARRAAAMSAVVAT $\square P A V Q E A M G R N D R D A L M A$ DKQRAVPAVLAADSDVQAALVSSDPTRLNN GELDAQSLSAVLAHMPVVQRLFAEGDREGLAE $R Y E V V P Q L V A D L D L I M Q L A A D P G N A A L R R$ EQRNLVVATALAQLPEVRE RDTARVEP RRFEALPELLARDDEVRDFFARPQDAAGDA K D T LLEQCKKNARNSAKIAAEDGDULEQIKAGDEEEULS RNQVRDNLHNLVSDAASEM DPTLVSAITRPEQTATAP $Q \square E M D L R S Q A L I I A Q Q V A$ PQ AQRGDASQIDA QSAQRGQERQAQTLAATLAEDPRVLAAMRQLDSDYLDP DKAVEAE $\square$ A

LQETDSTSDSQTLTTLAADPAGIWALRASDFSDITGG

[^4]


70
80 DI WGVRKNAVNHRIYVTDARGIVLLDSAGSAVGQDYSRWN RLEAI NAAAHSSTLQVMNADGLGVAASNWSYVGHDYSFRP KLERLNAAAQSSTLGELDRTGLAGGASNWSYVGHNYGFRP LLARVKS QTGADVIYLMNPRGLTLAASNWDKVAGNFAFRP ELNFIKNVSGAVRAHIHDAQGHSFVRSWRDKHGDDLKSFR IVDELAKNPK IVYALFDDRNGKATAHSDKERDGDELK DEG

 RISKTQHNTDVRYVLITD YTGRILAHTFSDGLPRGLATLR


 LLERANDVTRSSTLTLTDANGVALAASNWSNVGADYSFRP VI QNFQKIYDVIYVAVIDMDGKVIAHTDPS I GQYVSDP
 VFKSLQARTGISQMQVHTPDVHSFLRVNPDQFGDDLSSFR NIS GIRKMRNEYRVYLTDAQGKVVFDSSGQAVGQDYSRWN RLLS F VDE $\square$ GAASLVLYDSDGRIVAATDRNRDGTHRSAPY DTSSYLVVDPKGIIVSATTDENUGQSRADRE YSERLKTDTKYK GVWIIDANGI SIARSWTKKHGDDLSKVR ELKKFVELNSDYFAI FIDTAGI ITVDVDDTVIGTDLSDRK VVNMAAKSCKASVIILDRNKNIRVFH NPTSIGDGEDEA VMRDGAR AIGTRIVSEEV SPLASESTHODGKGLVGRSDSKYGDNMKDDY

 RGVRLY D S RGEDEGKDFS RWN
 MI QEMMAQTGMTQLHFHVPPGIRVHQDDKRGDDLTKTRPM II QSVAHGAGDNYAMLVAPDGRVLAHSQPEHDGQYLQD YL REI DRRFNTVVSFFVSNNTRRYY DPDRINHTLSWFF RLERLNRAAGANVLYLMNLQGEALAASNWREVGHNYAFRP


 QTNEWNEDVQASDI YLILSDGQTIAHSGASFVGQNFSYRP



 A WQA MQPQQGTQLQLFWGADGNVLRMQRPDDYADPAQRPL AF DTMRSVYGFE QLQFHTPDAHAFFRDHPTKFGDDLSS FR



| UniRef90_L8MYI5 |  |
| :---: | :---: |
| UniRef90_A0A024HB97 |  |
| UniRef90 F6ADF6 |  |
| UniRef90-H0JAF3 |  |
| UniRef90 K9FD64 |  |
| UniRef90_A4Y0C4 |  |
| UniRef90_Q31ED6 |  |
| UniRef90-R7RM23 |  |
| UniRef90_A9W255 |  |
| UniRef90_S0JI39 |  |
| UniRef90-G7ZAM2 |  |
| UniRef90_UPI00047A1C77 |  |
| UniRef9 | A1HRV6 |
| UniRef90_UPI0003FFCF8C |  |
| UniRef90_G0H0R7 |  |
| UniRef90_R9J596 |  |
| UniRef90_UPI0002E15658 |  |
| UniRef90_UPI000468D7C1 |  |
| UniRef90_H7EPQ0 |  |
| UniRef90_UPI0003767C4B |  |
| UniRef90_UPI000464BA07 |  |
| UniRef90-E5Y3E1 |  |
| UniRef90_UPI0003658FDA |  |
| UniRef90_A1K2L0 |  |
| UniRef90-L8BLI0 |  |
| UniRef90_X0RBW5 |  |
| UniRef90_U3AEL4 |  |
| UniRef90 F8FAJ7 |  |
| UniRef90_Q31EI0 |  |
| UniRef90-X0RA08 |  |
| UniRef90_R6I8P7 |  |
| UniRef90_V4IUQ2 |  |
| UniRef90-X1N7X9 |  |
| UniRef90-B9MQD9 |  |
| UniRef90_E3PVH0 |  |
| UniRef90_A5YRT8 |  |
| UniRef90_UPI0003718DCF |  |
| UniRef90_A9AA11 |  |
| UniRef90_L0WCB3 |  |
| UniRef90_UPI0003736574 |  |
| UniRef90_D5ATS7 |  |
| UniRef90_UPI000372EAAC |  |
| UniRef90_C6CCZ1 |  |
| UniRef90_UPI00037A5EB0 |  |
| UniRef90_W4LEE6 |  |
| UniRef90_UPI00046F52ED |  |
| UniRef90_V4NT87 |  |
| UniRef90_14MZ88 |  |
| UniRef90-G2E281 |  |
| UniRef90_R5YN87 |  |
| UniRef90_UPI000225F2D6 |  |
| UniRef90_E8WRQ1 |  |
| UniRef90_V7ENI1 |  |
| UniRef90_UPI000288DA5D |  |
| UniRef90_D4KLC7 |  |
| UniRef90-K9P6Z9 |  |
| UniRef90-R6D1V1 |  |
| UniRef90_D1CJ30 |  |
| UniRef90_K5Y839 |  |
| UniRef90_W6WQY1 |  |
| UniRef90_E0Y1G4 |  |
| UniRef9 | H9UMG5 |



ET TAAALRPSETPSWAEGSRAFVVKTFHPKDKGEGRQ
$H M L V Q V N R D R V S G L E D G V S G L A V R G A V P V T G P D G R H V G S L$ YFQRAI A GQA GRHFA DGTTRPGYFVSHPIRDGS EII GVA






 $T A L L Q Q R T G S D A T R Y L L P V F G H H R D D A B$

 $Y F Q D A L R G A R Y F A V G V T T G V P G Y F L S H V V R D D D G S P L G V L$



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







[^5]| UniRef90_L8MYI5 | ETGGLS F S S V |
| :---: | :---: |
| UniRef90-A0A024HB97 |  |
| UniRef90-F6ADF6 | V V K Lef PGl |
| UniRef90-H0JAF3 | V VKLEFPAI |
| UniRef90_K9FD64 | LLGTALD |
| UniRef90-A4Y0C4 | VVKVDLD |
| UniRef90-Q31ED6 | EV |
| UniRef90-R7RM23 | NI GLLS MEAV |
| UniRef90-A9W255 | A TKVS $\mathrm{L}^{\text {D }}$ |
| UniRef90_S0JI39 | FAGIS ME |
| UniRef90-G7ZAM2 |  |
| UniRef90_UPI00047A1C77 | VIKI |
| UniRef90-A1HRV6 | R V G M S E S |
| UniRef90_UPI0003FFCF8C | F VGKS MVS $\square$ |
| UniRef90_G0H0R7 |  |
| UniRef90-R9J596 | F A G\| S VA NV |
| UniRef90-UPI0002E15658 | A 1 K 1 |
| UniRef90-UPI000468D7C1 | AVEVDLKK |
| UniRef90-H7EPQ0 | VFVYSLS |
| UniRef90_UPI0003767C4B | VIK\EL |
| UniRef90_UPI000464BA07 |  |
| UniRef90-E5Y3E1 |  |
| UniRef90_UPIO003658FDA | EAGFLIQD |
| UniRef90-A1K2L0 | VIKIPL |
| UniRef90-L8BLIO | S V G |
| UniRef90-X0RBW5 | S V GKPVA S V |
| UniRef90-U3AEL4 | SVEVDLA KL |
| UniRef90_F8FAJ7 |  |
| UniRef90-Q31EI0 | D V I S Q VN S $\square$ |
| UniRef90-X0RA08 | SPSFDLQ |
| UniRef90-R618P7 | VAGVS |
| UniRef90_V4IUQ2 | A V |
| UniRef90-X1N7X9 | Y V GILEEK |
| UniRef90-B9MQD9 | IVGYKLD |
| UniRef90-E3PVH0 | K IGGYS I D S V |
| UniRef90-A5YRT8 |  |
| UniRef90_UPI0003718DCF | VVKVDLED |
| UniRef90_A9AA11 | F V G |
| UniRef90-LOWCB3 | S L G |
| UniRef90-UPIO003736574 | S V G |
| UniRef90_D5ATS7 | E VGF D M D |
| UniRef90_UPI000372EAAC |  |
| UniRef90-C6CCZ1 | GVGGLPV V R V |
| UniRef90_UPI00037A5EB0 | AVKLELEEL |
| UniRef90-W4LEE6 | RVGFSVAR |
| UniRef90_UPI00046F52ED | E |
| UniRef90-V4NT87 | V V |
| UniRef90-14MZ88 | V VKVDLD H |
| UniRef90_G2E281 | E F GMS |
| UniRef90-R5YN87 | G G G V |
| UniRef90_UPI000225F2D6 | A VK\GVD R $\square$ |
| UniRef90-E8WRQ1 | G V A |
| UniRef90-V7ENI1 | A L K 1 G V D D |
| UniRef90_UPI000288DA5D | GAGLYLNE |
| UniRef90-D4KLC7 | G V |
| UniRef90-K9P6Z9 | Gl D $\square$ S L A QL |
| UniRef90-R6D1V1 |  |
| UniRef90_D1CJ30 | R V A M P T S DV |
| UniRef90-K5Y839 | $\mathrm{E} V \mathrm{GF}$ |
| UniRef90 W6WQY1 |  |
| UniRef90-E0Y1G4 | A VEVDLQK |
| UniRef90_H9UMG5 | T AVYRLTE |
| lupas_21 |  |
| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
| conf | 98863589 |
| sol25 | B B B B |
| sol5 | B B |
| sol0 |  |
| jhmm |  |
| jpssm |  |


[^0]:    

[^1]:    

    ## 

[^2]:    E
    

[^3]:    ##  <br> 

[^4]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^5]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    j̣hmm
    jpssm

