

## QUERY UniRef90 R1CPT3 UniRef90-E3HCF9 UniRef90-H2JTF2 UniRef90-R7BSC4 UniRef90 BOK268 UniRef90-B0PDC2

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 KDI DKCSRRDYPYIIANKLNGATTVATSII TASLAGIKKL SDIEKVSRRDLPYVVAKKKHGATTVAATMICAAMAGIINVF SGVAKTSRRDIAALVARKADGATTVTTTMMIAHMAGIISIF
 KEIVKVSRRDLIPYVIAMKKHGATTVAATMI CANMAG: KVF KDVAKASRRDMAYLLATKKDGATTVAATMI AAELAGGELF


GLSGGTTVSGT
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| $M$ | $A$ | $R$ | $E$ | $V$ | $E$ | $K$ | $V$ | $V$ | $M$ | $R$ | $N$ | $G$ | $A$ | $V$ | $P$ |
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TALNAEKVI LENGAVPAT: MAKNVEQIIRNNGAIPATI

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 MALHVENVVREAGAVPATI

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TALNVEKIIRENGAVPATI
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 TALDVVQEVHKHGAVPAT1

TALAVEEEVRKTGAI PVT
TALKVEDAVRAGGAIPAT
TAAAVEQVVRDHGVTPAT1

TAKEVEALVKANGATPATI


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 TARKVEAVIRENGATPAT TAREVEHVVRENGAVPAT MATEVEQVVRNGAVPATMAARVEALI VAAQVEQDIRDAGAVPAT
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RVAAK $\square$ A VEL $R \quad \mathrm{~L}$ G
RLAAKTAQEI RLASAI AKAYS RLATHIALALS AI GAQLARHYA KLGAQI AAEYS KLAGEIAVKYN RLGAAVAVQYA RLGAELACAM K IGAQUASKL

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K VG S QI A CALA SVAA EI AVNLA F I GGKI A K ELA A RVAAEIAVELAA KLAA A MA V A YK K V GALIAVELS $A\|G A R\| A V A L S$ AFGAQMAVSHA
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 UniRef90_Q55FH2 UniRef90-R5V4Y1UniRef90- W4KMF7 UniRef90_E8UBQ2 UniRef90_D8TVS8 UniRef90_A5IXG3 UniRef90-T0PJ38 UniRef90_A9TWE2 UniRef90_Q1J1H4 UniRef90-A0C8M8 UniRef90_R7UQT5
UniRef90_B9R0H7 UniRef90-A8LQIO UniRef90-Q67N11
UniRef90_C3XZF3 UniRef90_UPI00040ECA03 UniRef90_M3D463 UniRef90_E1R959 UniRef90_E9HD67 UniRef90_R7DQF3 UniRef90_K1ZKD9
UniRef90_I8AEA4 UniRef90-Q24FS1 UniRef90_B6Q3B7 UniRef90_U2UAT9 UniRef90_F2QXB8 UniRef90_LONEXO UniRef90_UPI0003B5A1F8 UniRef90_J2UXW5 UniRef90_A3K9Q3 UniRef90-N1QTA8 UniRef90-W6MGX4 UniRef90_14YKT2 UniRef90_A9D6F3 UniRef90_UPI0004416BFA UniRef90_G8PS41 UniRef90_UPI000465AC7D UniRef90_H2XTN4 UniRef90_L1IL63 UniRef90_UPI0004794F1C UniRef90-UPI00035FA80B UniRef90_K1 X6C1 UniRef90-B0X7U7 UniRef90-S3L324 UniRef90_14Y809 UniRef90_G4R5Y7 UniRef90_M2LND8 UniRef90_H0HS55 UniRef90-UPI0004684071 UniRef90_UPI00047C40CE UniRef90_Q9USY1 UniRef90_UPI000379F4A2 UniRef90_D8LLN3
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 T H A LLK TSS R R D L A WV L S Q S N A V K V
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## UniRef90 H2V1W8

 UniRef90-Q55FH2 UniRef90- 5 V4Y 1 UniRef90-E8UBQ2 UniRef90-D8TVS8 UniRef90-ASIXG3 UniRef90_QOFA4 UniRef90-OPJ38UniRef90_A9TWE2 UniRef90-Q1J1H4 UniRef90_AоС8M8 UniRef90-R7UQT5
UniRef90-B9ROH7 UniRef90_A8LQIO UniRef90-Q67N11 UniRef90-C3XZF3 UniRef90-UPI00040ECA03 UniRef90_M3D463 UniRef90-E1R959 UniRef90-E9HD67 UniRef90 RTDQF3 UniRef90-18AEA4 UniRef90-Q24FS1 UniRef90 B6Q3B7 UniRet90_U2UAT9 UniRef90-F2QXB8 UniRei90 UPIO003B5A1F8 UniRef90-J2UXW5 UniRef90-A3K9Q3 UniRef90-N1QTA8 UniRef90-W6MGX4 UniRef90-14YKT2 UniRef90-A9D6F3 UniRef90-UPI0004416BFA UniRef90-G8PS41 UniRef90-UPIo00465AC7D UniRef90_H2XTN4 UniRef90 L1 LIL63 UniRef90-UPIOO04794F1C UniRef90_UPIO0035FA80B UniRef90-K1X6C1 UniRef90-B0X7U7 UniRef90-S3L324 UniRef90-14Y809 UniRef90_G4R5Y7 UniRef90-M2LND8 UniRef90_HOHS55 UniRef90-UPIOOO4684071 UniRef90-UPIo0047C40CE UniRef90- Q9USY1 UniRef90_UPIoo0379F4A2 UniRef90-D8LLN3 UniRef90-A5EO14 UniRef90_UPIO003655C34 UniRef90_UPIO002C36FE8 UniRef90-G8BB13 UniRef90_Q6BN21 UniRef90-N1P124 UniRef90 - WORSA8 UniRef90-V2XZG6 UniRef90 O7CYB9 UniReffo-R6Y1Q7 UniRef90_UPI000479E05D UniRet90-D5BNL3 UniRef90-F4Q2S1 UniRef90-UPIO0035E9EFO UniRef90 UPIO0025593EB UniRef90-B61RJ4 UniRef90_UPI0004407C95 UniRef90_C7D5F1 UniRef90-KOKGP6 UniRef90-UP1IOOO475C81C UniRef90 EOMJL4 UniRef90-ADAO17HGV3 UniRef90-D8PNU0 UniRef90-D6WM31 UniRef90-S9QE32
UniRef90-W4XZQ8 UniRef90-B9WF09 UniRef90-V4KGU3 UniRef90-EOVFW8
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UniRef90_A3GET4 =

GRT|L|E F|L|ETQG|V|C|VTYGTKNFPAFFSPQSGFSSPHVVDP GKTLEYLETQGVTVVTFGSDEFPAFFTKHSGVKTPRLDTV PLTLEYLETFGVPVIGYQSDELAAFYSVSSGLKDDAMKDE GSYND DQETLGVPVFTYGTDDFPAFYSTRSGFKSPRVDSP PLTLEYLETQGVPVDTLGAREFPAFYSRASGYASPTLATP PRTLEVLETRGVAVASYGTDDFPAFFTPHSGCRSPRVDSP GLTLEYLETKGVEVAGYNSDKAPAFYSSSSEFNVTYVHSA

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 GLT EFLETQGVTVIGYGTDEFPAFFTPRSGCKAPRVNTA GKTLEVLETHGVPTLTLGSEEFPAFYSRRSGFASPTVQTE GLTLEYLETMGVTVVGYGTDKLPGFYVRETQWNVDRADSP PKTLEVLETKGVPVVAYGTDELPAFWSRESGLSAPRADTP GATLEVLETGGVTVLGYRTDRFPGFYTRDTGFGVDRVDTP

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UniRef90 F4Q2S1 UniRef90_UPI00035E9EF0 UniRef90_UPIO0025593EB UniRef90-B6IRJ4 UniRef90_UPIO004407C95 UniRef90-C7D5F1 UniRef90-KOKGP6 UniRef90_UPIO00475C81C UniRef90_UPI0003C283C8 UniRef90_EOMJL4 UniRef90-A0A017HGV3 UniRef90-D8PNU0 UniRef90-D6WM31 UniRef90_S9QE32
UniRef90_W4XZQ8 UniRef90_B9WF09 UniRef90-V4KGU3 UniRef90-EOVFW8
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EEAAQLI A GALSLGLIS S GL DQCAKLLYSNQLLQLKSGMVVAVPPR RDNEHSELI DRAI
 E EVARAMHAQQALGLPGGMLVANPIPEGAEIPASDINPHII A EAAAMLK S IQQLGLGSGILVAVPIPREQAAEGEEVEAAI


 QEASELIKAQFELKLKNGI LFCVPVPQDQAADGQUVQQAI
 EEAAAVIHARQQTMLPGGVLVVNPVPEEHAMDPDEVERHV



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| UniRe90- O 55 FH 2 | R GSOUSKHY |
| UniRef90-R5V4Y1 | Kl GARIACEYN |
| UniRet90-W4KMF7 | LVGGQ】AVAYA |
| UniRef90-E8UBQ2 |  |
| $\begin{aligned} & \text { UniRef90-DBTVS8 } \\ & \text { UniRe90 A5MCG3 } \end{aligned}$ | RVGSAVARQYA |
| UniRef90-Q0FA44 | LLAAK |
| UniRef90-TOPJ38 | VIGAKI |
| UniRef90-A9TWE2 | RVGSE\A\A |
| UniRef90-Q1J11 | RVGAEI |
| UniRef90-R7UQT5 | RLAAQI ACD |
| UniRef90-B9ROH7 | RLAAR1AAEL |
| UniRef90-A8LO10 | RLLAADI AVA |
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| UniRet90 - MPIOOO40ECA03 | V |
| UniRef90-E1R959 | TVAAGl A |
| UniRet90-E9HD67 | AVGAAI A |
| UniRet90-KTDQF3 | RLGAE A |
| UniRef90_K1ZKD9 |  |
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| UniRef90_B603B7 | QR |
| UniRet90-U2UAT9 | ALGAQVA |
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| UniRef90-UPI0004416BFA | K G |
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| UniRef90-H2XTN | K G A Q A |
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| UniRet90-UP1000499, | RLAAD A |
| UniRef90-K1 $\times 661$ | TMAARVA |
| UniRef90_B0X7U7 | SVAAE |
| UniRef90_S3L324 | R |
| $\begin{aligned} & \text { UniRef90-H9UDN } \\ & \text { UniRefol-l4Y809 } \end{aligned}$ |  |
| UniRet90-G4R5Y7 |  |
| UniRet90_M2LND8 | VRGAKVAVELA |
| UniRee90 H0HS55 |  |
| UniRef90 UPI0004684071 | RLA A SLIA |
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| UniRef90-UPIO00379F4A2 | RLAAE! A |
| UniRef90 D8LLN3 | A |
| UniRef90 C4Y4D3 | DAASKI |
| UniRef90-UPI0003655C34 | AFGAQL |
| UniRef90-UPI0002C36FE8 | A |
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| UniRef90-O6BN21 | V |
| UniRef90-N1P124 |  |
| ef90_WORS |  |
| UniRet90_V2XZ |  |
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| UniRef90_R6Y1Q7 | YLA ALI AKEL |
| UniRef90_U4LEK2 | KMGAQVAVELS |
| ef90-UPIO00479E05D | LVGAQVATALA |
| UniRef90-D5BNL3 | K1 G S Q |
| UniRei90 UPIO0035E9EF0 | RLAAQIA |
| UniRef90-UPIO0025593EB | RLAARIA |
| UniRe990-8611 | AVGARIA |
| UniRet90_UPI0004407C95 | VIGGQVA |
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| UniRet90-KOKG |  |
| UniRet90-UP1000475C81C |  |
| UniRet90-UPI0003C283C8 | RVGSR!AVAL |
| UniRef90-EOMJL4 ${ }^{\text {UniRefo-AAO17GV3 }}$ |  |
| UniRef90 AOAO17HGV3 | A A R |
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| UniRef90-D6WM31 | KTA SL |
| UniRef90-S9QE32 | R |
| UniRef90-W4XLQ8 | K A G E AL ELEA |
| UniRef90 B9WFO9 |  |
| UniRef90-V4KGU3 |  |
| UniRet90_EOVFW8 | K |
| UniRef90-E4 | EVGTKVADELA |
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| UniRef90_A3GET4 |  |



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UniRef90 A9NGD7 UniRef90－UPIOO03645861 UniRef90－D3HPG6 UniRef90＿UPI0004646A31 UniRef90＿UPIO00365AFCB UniRef90－W0TAT5 UniRef90－I0GJL7 UniRef90－C5DFS6 UniRef90＿X8JN45 UniRef90＿UPIO0047191D0 UniRef90－W7UCE5 UniRef90＿UPIO0035F4D7C UniRef90－JON7X1 UniRef90＿UPIO003693603 UniRef90－D6TNN2 UniRef90－A0A024JJT9 UniRef90－UPI0003B3DDBE UniRef90－A4EMT6 UniRef90＿UPI0003B763EE UniRef90－X6GEC7 UniRef90－A0A026X1D7 UniRef90＿Q28PY7 UniRef90＿S5YAK0 UniRef90＿A3JSP0 UniRef90－A0A024KJ23 UniRef90－K2HMR6 UniRef90－F9XDU7 UniRef90＿IOYT19
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UniRef90－UPI00031 UniRef90＿S3CM00 UniRef90－J4GJ61
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UniRef90＿L7IX93 UniRef90＿G6D0Q2 UniRef90－U6PUFO UniRef90－A8PUH8
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MAEGVEQ REERATPATI AVIDGRIKI GLTDKERVALAQ

TA L A V VEREVVNRNGAVPAT：
MAKNAESII RNNHAVPAT GILDGEIIIGLSQDEI ETLGK
TADSCEENVRANGAVPATI
TALCTVEKVVEQEGAVPATI VGLELEDTVRREGAVPATVAVMDGHCCVGLSPSQLEALAR


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A V MA G K I H I GL S P Q QL E KL G Q A V V $\begin{array}{lllllllllllll}A & M D & G R M H & G & L & T & G & T & E & L & E & V & L \\ A & Q\end{array}$ A V M G G R I H I GLLE T D QL E TLA A E

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 A V I G GVI CVGGLS DKELLE WLAA A V I E G RL
 $G V V N G R V K V G V T S D E L K V L A B$ A

 G I I G G R V K I G L E P H E L E F L A D
 A 1 $A V T D G K I R V G L T R Q E I E T A B A$
 A V MD G Q I GI I G G R I K I GLLHPN E L E H L A A D
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 M A L ALLKVESCVREN GAIIPATIADI KGRLLKAGISSAEEIDDYFGK D L GLE S IV REHGAVPAVI GII DGTPTVGMTPAERDRIVS

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 T A L K V E A AVRVSGSVPATIGIDDGKILVGMNHQQIEAKAT
 TATALEDAVRAEGAVPATVAVLDRRIRVGLDGEALERLAK

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






## UniRef90 I1KZR9 UniRef90-H2W8SO UniRef90-C5LSL4 UniRef90 UniRef90_B2WNV7 UniRef90-K2NOP5 5 UniRef90 E9CJ4 UniRef90_UPI0002C3D533 UniRef90-R4XCC3 UniRef90-J9VXPO UniRef90_UPI000367B099 UniRet90_A0A016RZ33

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## UniRef90-C5DFS6

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UniRef90-K2HMR6
UniRef90-F9XDU7
UniRef90-10YT19
UniRef90-UPIOOO3655500
UniRet90-Q01RY8
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UniRef90-U4UUC1
UniRef90-T1HTB9
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UniRef90-Q2CHU6
UniRef90-N1JE94
UniRef90-V7ELT6
UniRef90-K6PRJ4
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PKT EYL ETEGVGISTFGNVDFPAFWSRDSGVRSPTDADE

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| TARMVEADVRAAGAVPATIAVLDGVLH GMSTDTVELEAN TARRVEAAVRAEGAVPATVAVLKGRIKVGMSEAELEALVK LADAMEQEVRDQGAVPATVGLVAGVPTVGMDAAALRRFAH TARMVEQDIRDAGAVPATIAVLDKRLRIGLEPEDLDRLAQ MARKVENTVRDEGAVPATI AVIDGTLCVGLDAQLEALAQA LIAAELEE\|ANRLDVTPVHIALIDGRIKI GLSADDLHLLLH TTARAVEADIRDAGAVPATI AVLEGRLKVGLEPGQLDWLAR TAQRLEAAVREEGAIPATIAVLGGEVVAGLGSQELEQLAD LLKTLEELCQELDVEPATHVLDGKIVHGMTEAEKEVLQC TASRLVEALVRVGGGVPATVGVLDGVARVGMDAEEVLRLGK TATDVEATVRSRGAIPATVGVYQGRLHVGMGSQLLEELAK MARDVCGVVRDNGAVPATIAILDGQIHVGLTDDKLKKLAQ TARQVEAVVRAHGAVPATIAVLRGVPHVGLTAAQLERLAR LAKRLESVVRENGGVPATVGLLNGVARVGMSTAEETEELTE |
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 TARAVEAVVREAGAVPATI
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 AADQVEDAVRAGGAVPAT TALKKEAAVRESGAVPATI TARNVEQAVRRGGAVPAT|
VAAELEEEVVRSAGAVPAG| TALRIEDAI RKQGVVPATI LGVDVEAAVRTHGAVPATVGIDGKIYGLNKGQLEVLSK LPKDCEAILRSQGVTPATIAALNGRIKVGLQEKDLVHLAE VAGEMEEVIRGYGVVPATVAMIKGKIVVGLTRGELEFMAT TADEVEALVRTLGATPATI GVLNGVARVGMAPEDLAELAS AVVEGKILVGMTDSDIERFAT GLVHGRVK GGEEHELERLAT AVLDGVPHVGLAEQVDRVAD Gi DDGRILGMSDSAKERFAA AVLDGRV四 GDDRARWERTSD

 VCLRLEHLIRDQGAIPATVGLIDGQALVGLSQAELIRLAE AAKEFEQQLDDAEVVPATVGIDGGVPTVGLSQDELAQUAS VGVRLEKVIRAAGAVPATIAVLDGVPRVGLGDGELERVCS TVKDVEQUVKQNGAVPATVGVLEGRVHVGLSDSELHMMAR FPHALDRLVREHGAIPAVCGVYAGVPTVGLQPAEIMRMVS VABEGEEDIRAAGAVPATIGVHHGTPVVGLTADQARELGD LALATEQQVREAGVVPATIGVVEGRPTVGLSSDEIVQLSR VAVELEELLARARGVTPATIGAVI GVVPRVGLDEPDLRRIAD VARGAEAAVRAGGAVPATIAVLGGVPRIGLGEAELEQLGR VAARLERVVRDAGAVPATVAVLGGVAKVGLTAEEDHVCD TALAVEAAVRRSGAVPATIGICDGEILVGMHREODERFAT MDLRLEATVRENGGVPAVIGVLDGVPRVGLSPDEVNRMVE TALEVEDVIRRKGAVPATVAVLDGKIKVGANQKEIERLAK AARDAEALLRDAGVVPATVGVVGGRPT GLSAEED DRLA




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 TNVMKVSRADMPVCIALGATGATTVAATMI AAEIAGI KVF T N KTAVKVSRRDI GHVMAKKLYGATTIASTSILSCMAGISVF ENVLKCSRADLA LAALTTGQPGATTVAATMMAAHAAEI SVVF











 T GILKASRRDLPTAMAKGLHAATTVAATMFLARQAGIISIV



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P ANARKAADRDLPAALSCCDPSGTTVSSTSFAAHFAGUHVE KDILKAGKRELAAAVVKRLLNGGATVAGTMAVABLAGII ■
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 SSKQKVSRRDLAACLASRTLGGTTVS
 PGLAKLSDRDLGAAI AMRRDGATTVASTATLAHKAG|RVF


## E

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

P A TLE ML E T L G VVPVVGYGTETFPAFYSVSSGLRSARVVSP
P ATLQRRLETRQVTVVGYRTDHFPGFY LIHSS GEPIWRI ETP

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UniRef90 ${ }^{\text {D6RK3 }}$ UniRef90-14F129 UniRef90-U1LQU7 UniRef90-F2LMD2
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UniRef90_NOCLH7

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## A <br> A

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Q R A T R V V A VE L $\backslash \mathrm{A}$

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UniRef90_K2IQK9
UniRef90_UPIO0035F4A3A
UniRef90 A5UT22
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UniRef90_N0CLH7
$R L A A R \square A R E L A$
RIA A QVATA A
KCATKIASEL
R
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RLAARTAGAL
II GAQI AKELQ KRGTLVAKEL

KlGGSUAVEFS
E $\square$ G T K $V$ A $\square \mathrm{E} \square$
$\stackrel{R \square}{L} \mathrm{~V}$ GSK $\mathrm{K} \square \mathrm{AMEY}$


 KMATKVAVELS KKAAQVAVELS SLA GEI A V A L S

RMGTQVAQEL TVAADI AVA WS RFAGQLAVAYA

$R \vee G A Q I A G A L A$
KAGAQLAVHLS
RVAA E I A V A Y A ERAAKVAVELS RLA A QUALAL
A $\square$ G A S $\square$ ARAMA
$\mathrm{K} \square \mathrm{GAD} \square \mathrm{ACE} \square \mathrm{A}$
K I G A QMAVEFS

RLA A QVAVA W | $V$ | $A$ | $T$ | $R$ | $A$ | $S$ | $D$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $K$ | $L$ | $A$ |  |  |  |  |
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LVGGQDAKEFA
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 $R \vee A G Y L A D A H A$ R



Q $\square G G R \prod A A A H A$ RIGAAI A VELA VRGTKVAVELA TVAAQLARTYS

$R$ VA A EVADQLS DVGSRIACALS

GRAARTAVELA
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A L GALI A A EL AVASDI ALDA WA


E $\square$ A GQLAMVY
A RAAKVAVHLS
EVGGILAAA A A
A $\square$ ASHVARAL
$R \vee A A Q L A T A L$
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UniRef90
B8BQB6 UniRef90-B6AUV3 UniRef90 - 12 F5F1 UniRef90_UPIo0036B5C01 UniRet90-O5AW59 UniRef90 V9XQ33 UniRef90-UPI00047DD9BE UniRef90-UPIIOOO37921B9 UniRef90-UPI00036B1B98 UniRef90 E3NS67 UniRef90_UPIO00440A4F8 UniRet90_B7RQ50
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 UniRef90-E91LA4 UniRef90-W7HR57 UniRef90-S4Y2L5 UniRef90_UPI000319AB5F

## B

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MS【PVVISGEVIRRAVIAEGRPVVILIESTII THGLIPRPDNGE DHLSVTPEVADALSAGQGVVALESTLLAHGLPPGRNRE
$\qquad$ $N L L Q V S S E V A D$
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 $\begin{array}{ll}G A P & V \\ N & A L E S T \\ N\end{array}$ , F F R

 KYLVINPEVQRALENGQAVVALESNVITHGMPYPKNLEL LDMDPQVAETLRQGGPVVALESTVIAHGLPWPGNLE
 MVLSEAVADALLAE
LHLSSAVAKALSAPHPLAL FKVSDEVREALIETGKPVVALL S P MQLTDEVARARAQGQPVVA

 TVITHGLPPYPYNLD TTHGMPWPQNLE

LSVSDEVAEAVATNKPVVAL

 $\begin{aligned} & L L \\ & N L \text { R }\end{aligned}$ $\begin{aligned} & L L \\ & N L \text { R }\end{aligned}$
 DRVADYVREADAAGRPVVAESTMFTHGLTRPRNVE MTVAPEVAEALAAGQAVVALESTLVSHGLPRPQNDE LQYSEEVLEALNSGKPVVALESTVISHGLPYPENAA GEPLVALESAVLTHGLPYPLNLIR






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NKYL
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| $T$ | $Y$ | $T$ | $H$ | $G$ |
| :---: | :---: | :---: | :---: | :---: |
| $T$ | $I$ | $S$ | $H$ | $G$ |

$$
\begin{array}{lllllll|l}
S & H & G & L & P & R & P & D \\
N & L & R \\
A & H & G & L & R & P & N & L
\end{array}
$$

I Y T H
$\qquad$

$\begin{array}{ll}P & P \\ P & Q\end{array}$ A A | $T$ | $L$ |  |
| :--- | :--- | :--- |
| $T$ | $L$ | $L$ |
| $T$ | $L$ | $A$ | | L | I |
| :--- | :--- |
| Y | A |
| Y |  |
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 $\begin{array}{ll}\text { GRNL } \\ \text { Q } & \text { A } \\ \text { R } \\ \text { RA }\end{array}$ L L R
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a HGYSYPENAQ
HGMPYPQNLE

GGMPYQNLE | $T$ |  |  |  |
| :--- | :--- | :--- | :--- |
|  |  | $A$ |  |
|  | 1 | 1 | $T$ |
|  |  | 1 | $A$ | V 1 T I F T HGLPRGV GFPRPRNL


FKFQTEVADALAE GQPVVALESNVDTHGLRYPHNDA MSS $M R V$ H E EVVRAA LVVVSDC V S A A V R A G R P V V V A L
 N F H H L L R Y G T E E V
 MP HPNNL
IDA EVVKEALAEGRAVVALESTLVAQGLPWPANLDE
 $R$ P D L I H V S S E 1 V $M P H P Q N L G$

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UniRef90 L8D3F7 UniRef90-UPIO003B7833D UniRef90_E4U520 UniRef90-F2NKV1 UniRef90-A0A021VV18 UniRef90 F7YTS1 UniRef90-UPIOOO45607B6 UniRef90-L8FUF2 UniRef90-UPIO0040E9AC0 UniRef90_UPIO003621877 UniRef90-J4KL00 UniRef90_UPI000370B687 UniRet90-V6KZSS UniRet90 E3Q5W8 UniRef90-UPIOO0262829A UniRef90_H5XBK6 UniRef90 A8LDS9 UniRef90-A7EX22
UniRef90
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UniRef90-B6AUV3 UniRef90-12F5F1
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UniRef90
K6WBC2 UniRef90_D7CQW7 UniRef90-R8BRH1 UniRef90-UPIo0047D5F74 UniRef90_bgLGZ1 UniRef90-UPIO001FFEDBB UniRef90-A9GT78
UniRef90 N8P115 UniRef90-G5ZY36 niref90_C0GKM7
UniRef90_E3PX83 UniRef90-KотоR7 UniRef90 M1 W616 UniRee90_M7AW55
UniRef90_UPIO002B4A72E UniRef90-B4V7Y2 UniRef90_J6EXOO UniRef90-B9K8C2 UniRef90-101151 UniRef90-M4HXH2 UniRef90-U2R4S8 UniRet90-C8XG73 UniRet90-FOXKE8 UniRef90-Q1AYR4 UniRet90-W7J208 UniRef90-F4FDU2 UniRef90-W2SUW4
UniRef90-D0MHD5 UniRef90-K1SOB2 UniRef90-LOD6W6 UniRef90-UPIO00364891D UniRef90-E9ILA4 UniRef90-W7HR57 UniRef90_S4Y2L5
UniRef90_UPI000319AB5F


VARAAEQQVIRAAGAVIPATI VAQRLEHIVVRAGAIPATIAVIDGVAHVGTGAGLD VALEAEAGLRARGITPATVGVYKGVPTVGLSEEQI EELSN
 VAHELEELVRAQGAVPAVVAVLDGRLHVGLDKSG TTMCD VAHELEELVVARGAVPATVAVGDGRLHVGLDKSGLERVAS
 TQLELEDIVRSKGAVPASIGVHDGTLHVGNKEKLDSLAK
 TAFEVEAVVRRAGAIIPATI TSREVEAAVRRGGAVPATI

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## T <br> 


 VAKVFEQTLVDADVTPAT:



 VAAR EDTVRAAGAVPATV VAVELEEMLRERGVTPATVAVIDGVPTVGLADATVRVA LALDLEDVRANGGIPATIGVLDGVACVGLTKEELIAVAK LAKDVSQLLRSKGVVPATVAVKDGVFKAGLHPDEMLNLAK TALNMERAVRKNGGEPKTIGILNGEITVGLREEQI MRLGT VALEAEARVRALGVVPAT:GLVDGRPTVGLTPDELERLGT VALGAEKRLRDSGVLPATIGVVDGTPTVGLSEQQ1RMLGA IARQUEQAVRDGGAVPAT:ALVDGEVRIGLDDEALEADAR tVEALEEAVRGEGAIPRTIALVRGEVRVGLTPEEREALAR TARSLEQKVRASGSQPATIALFDGKIHVGLDDEKLQKLAS
 LPLEHEDLVRSLGGDPADIAIVDGVPTVGVSGKEMMRIVE

 TAVELEELAAETGCSAKTIGIIAGQIKVGLSREEIVQIAR TASALEDVVRAHGAVPATVAVLDGRPRVGLDAEALDRICA VAQDAERLTRSFGVLPATVGVVDGRPTVGLSAEELDVLAD LPAFLESVVRDNGAIPATIGVLDGVPVVGLTPAEI ERMVN MARRVEALIREEGAVPAT:AVADGRIHVGLDDALLERLATV
 MVRRVEAVVRRNGAVPAT:A:MDGKLRVGVKGEDLERLAR
 LAMEVEDDIKSSGAYPATLGU DDGKLIAGGLTSSEVAYLSM LASDVADLLRSKGVVPATIAIVDGVFRAGLHQDEVLDLEAK MAREVEEIVRTNGSVPATVGULNGRIHHGLNDEELQFLAK
GMEDEALVAEGAVPATVA AASLETI IRGHGVVPATIALMDGKVQVGLSDAQLEELAS AAQDMEHLVRSHGAEPRTVAILGGELRAGLNDEELTHLDAN AAQDIEAAVRANGAVPATIFIEDGAIVYGSDPQRLERYAT

 EDLRLEADVRENGAVPAVIGVLDGRPTVGLQPDEVARMVD VARALEEAVRREGAVPATVGVVGGVARVGLGPEELELLAS VGRRLEDVVRAAGAVPATHALLDGRARVGLDDGRLQRLCD
 AARRCEAAIRAEGARPCT:|ALLKGQ
taQgaea AVRAAGATPATIAVVAGRTRVGLSADELEHLAR DARQDEETVRAQGAVPATVGMIGGRLVAGLDDEQLTHLAT





UniRef90 UPIo00237B33A UniRef90_UPI0003A0A6BC UniRef90_UPI0004255793 UniRef90_A9B4S4 UniRef90_B2A8Y0 UniRef90_UPI00035C369A UniRef90-B0CPP9 UniRef90_UPI0003806747 UniRef90-A0A023G7L5 UniRef90_C8RZ49 UniRef90-D1A3Q3 UniRef90-K4AE02 UniRef90-UPI000476343B UniRef90-A0A024SMR7 UniRef90-UPI000476AF84 UniRef90-I6H0F1 UniRef90-D9W598 UniRef90_UPI00029B203A UniRef90-A0A059MU58 UniRef90-M5X1Q1 UniRef90-L8D3F7 UniRef90_UPI0003B7833D UniRef90_E4U520 UniRef90-F2NKV1 UniRef90-A0A021VV18 UniRef90_F7YTS1 UniRef90-UPI00045607B6 UniRef90-L8FUF2 UniRef90_UPI00040E9AC0 UniRef90_UPIO003621877 UniRef90-J4KL00 UniRef90_UPI000370B687 UniRef90-V6KZS5 UniRef90 E3Q5W8 UniRef90_UPIO00262829A UniRef90_H5XBK6 UniRef90_A8LDS9 UniRef90_A7EX22
UniRef90-B8BQB6 UniRef90-B6AUV3 UniRef90-I2F5F1 UniRef90_UPIOO036B5C01 UniRef90-Q5AW59 UniRef90 V9XQ33 UniRef90-UPI00047DD9BE UniRef90_UP100037921B9 UniRef90_UPI00036B1B98 UniRef90_E3NS67 UniRef90_UPI000440A4F8 UniRef90_B7RQ50 UniRef90-E9EW23 UniRef90_FOY317

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A A T|L|ER|L|ETLIN|IVVLGYRTLRRPGFY|V|ADSGHA\|HSV|GAP A ATVEVLETRSVPVVGYGTNHFPGFYLRESAHTVPRVDTA A ATLERFETDNIPVIGYKTKKYPGFYVSDSGFEIGYVDTA PATLEVLETYGVPVVGYTTEEDPAFYSAHSGLQLRRVDDP PKTLEVLETQGVLVATFADGDFPAFWARESGVKSPVVWDE
 PATLEVLETMGVPVIGLATDEDPAFFSDESGLALQNASNV

PATLQRLET LNVTVVGYRTSTFPGFYLHSSGLPVDWLHSP
GLTGEFLETHCVPVVSYQFDDFPAFYCRSSGHASPRLDAP
P R T L E F L E T Q GA Y V GT Y A D G DFP A A F WA R D S GVVK S P S V V S E
 GLTLEYGLETGCVPVVGYQS DSLPAFFCRTSPFDVSRLDSA KLTMEYLETQCVPVISYGSDDFPAFYCASSGVKSPRIDDE PATLERLETLSIPVVGYRTTSFPGFYDRDSGCPLHSVGSP KATLAER R PATLLQRLC AATLEVLETNSVPVATGYGTVDEFPA
A ATLEVLESRSVPVLGYRTDDFPAFYRRTSGFEVPRVDDP
GATLERMETLGITLLGWRTSEFPGFYLRGSGHRLWRVDDA

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## A P

AATVEQLRKTLE Y LP A T LGKT L$P K T L E$
$P K T M E$

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 $R Q V A Q V M R A Q D A L G G P A A L V V A N P V P P D R Q L D P A L H D R V L$

 A EAA AVFAQARRLLGPSATVVMNPVSQGLEW AQVQSWI KEDARAMAVKWQTGLNGGLVVANPIPEQFAMAEEKLTR
 A EV A A LV R ARDALGGKSVVLLANPVSEDAQLDPALHARVL
 QDAAELLJRAHWQVSSQQGLLLAQPVPE GAALSGVQLDGWL AEAAAAWRAARALGLESATLVFNPVSEPYRQVMAWVDQAN

 S Q A A A S I L I N S QL A L G S GQQVF G VP I P
 $A Q \square A Q A H L I R A N L G L A G G Q L V A N P V P R A D E I P Q S E M R P V I$ $G Q V A A V L R A Q R E L D V P S A V V V A N P V P$

$R T V V G A M R A Q E S L G G P S A L V V A N P V P$ R E A A A M L LA QE RLG $\square$ E S G ML F A N P I P
 R QVA GTMAARDRLGLT S


 A E A A A A E AAAVARARDGLGBD E E DA A V L G A R G E L G L


KEAAS MILAQERLGIES GLLFANPIP
 E QIA RA WRAHRAL GRESAMLVVQPPPADVAIPADIVDAA E E A A K LIDAST LGLLGLS S GVLI AVPCPQKQAASGQVI EAAT

 TEAA A MI LAA Q Q L G I E T GLL FPNPI P E $E E V A A L L A A Q A A L G F P A G A V I A N P I P$ $E$ QVAVAWRAAR GVGLDGSALLV ANPVP E E A A RVIAA LDQ F E L G M



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| UniRef90_UPI000237B33A | $\mathrm{A} L \backslash \mathrm{~A} T \mathrm{E} \square \mathrm{~A} T \mathrm{~A} \square \mathrm{~A}$ |
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| UniRef90_A0A023G7L5 |  |
| UniRef90-C8RZ49 | $\mathrm{R} \square \mathrm{G}$ A A $\square \mathrm{A} \square \mathrm{D} \square \mathrm{A}$ |
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LVLDEEVAEALHEGRPVVALESSADPQGPAFPANLD $L V V$ H A E V $Q$ A A A D A G E P V V
$L T \square H P E V E D A L A H G R P V V A L E S T V I T H G L A Y P Q N L K$
 EALVALES ALLTHGLPYSLNLR


SPEVVAAALKAGKPVVALESTVISHGLPRPSNLE $R$ LA E EVVRA ALA A G GPVVAL E T S V V A Q GL P P P H NL E $L Q \mathrm{~L}$ S P E V Q D A L K N K K PVVVALLESTI I SHGMP FP Q N A Q

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## - F


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KAPVK $\square$ SRRD $\quad$ APAMS $\square G R N G G T T \prod A G T T$

GGAEKAS LWNLPALLVQKKSAGTTVAATVHLAHRHG S S VLKVSRRD $\square G Y \square C G \square G M A G K R$ $M \vee L A R L A G U R V F$ MNGGTTDAGTM!LAHLAGTKVF MATGASGATTVSATARLAALAGVRVF DDDAKASSRDLA IITATKKSAATTVAATAHLAVLAGIVVEF PARRKASARDLAALCAAGRDAGTTVAATAAVAALAGIVVVF



$K \square K \square R V N Y K N D D E M L E K K V P G A D T A S G T M E A C R R D E D P T A$ S GRQKTARRD\|AHVVASGGNGATTVSATMFFAHKVGIPDF M M $\square \mathrm{A} Q \mathrm{R}$ A G $\square \mathrm{RV} \mathrm{F}$
QSA $\square R \square D C S T L E N A L K N G V S G A L T A S G T M A V C K K \square G \prod P A A$ A A A P R DCDLLEKALVEKQSGALTAS GTMAVCVKMGUPVAB


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EETARCMKTKWELGTAGGLVTGNPVHPEDAMDNFLTEEAT KTLAKMLKUHWQLGLPSGVLITNPIPSEDEDPAEKIEPA｜
 REIAAVAATHWQVGNDTSLLVTHPISEADGDPTADUDATA
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AAAARVLR $\square H$ WA $\square G R R E G V L L A V P P P E A V P R E V V E A \square A A$
RDAAATILAQERDGVESGMLFANPTPEEAGПPRKEMELVI KEAAKLIAGALELGLGSGLLDAVPVPPDQAASAQEDEAAI AEAAAIVYAQSKLPVSSGIHFANPVPGEYSDSKAEMDLVI EEAAHTIARNEELGLENGLVFGVPIPNEFESDGADIQKAV AEAAATIYAQSRLNISSGLVFANPVPGEFSFPKKELDD】I EDCARVI
QEVAATMAAADQLGLHGATVVANPVPFEHQDDPAVHASAL EDCAQLIYANDKLKLGTGULIAVPIPKEHAASGSLIESAIC

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E A ALA GVQQRELLTP YL L A R V
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A ERVPDTRGAEVTPALLARLAEATRGKTLRANRALLVANA DEANNK $\square K G K E L T P F L L S E G A S V T K G K S V D C N \square S L V$
S DA LA EAK
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NEKENS $\square$ EGKD L T P Y L I K $\| V N \square L S K N K T L K A N M E L I I N N A$
AEASREA
EQAEQGVIGKESTPF LLARVAELTGGDS $\square$ NAN $\square Q L V F N N A$
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## D $\square$ A $\square \mathrm{K}$ N N A

AEANRQVAGKALTPY LLRRLSELSDGETDRVNERLL L
TQA $\square$ QH $\square K G K A V T P F L L K Y \square A E H S Q G E S \square E A N \square A L \square R H N A$
$Q \square A \square K K \square R G Q A \square T P F W L H V A K T T K G \square S M R T N V A L L E N N A$ A SADAGVTGPAVTPYVLARIEKETDGQSIPANL
 EQALDHITGGKDVTPYLLQKVVENTSGNSMQANLGLLRNNA

 QCDQEGVVGNAVSPYLMKALARASGGMLDKAGRSLLLSTA
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 EAALLMEVTSKNVTPFLLKRVNELTAGASLCKTVALLENNA $\square A E A A G V S G P A L T P Y L L K A L A E A T E G R T S A A N R A V L L S T A$
QQS LQK I IGNT $\square T P F I L D R V K V L T G G S S L E A N \square A L V K N N A$ DKAVLEKSGRDATPWLLSHV

ALLENNA
ERAEQG $\square$ T GKA LTPFLLSQ $\square$ AR $\square$ TEGRS $L$ AAN $\square$ A LLR N N
QLAVAEDTGSANTPYVLKDKELTQGRSVSANKALVQSNV


A $\square E D R G \square R G K A V T P F L L E A V S R A T R G R A R T A N L A L L E R N A$
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R V G G Q I A NQYA
ARATTIAVELS
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NAAAQ $\downarrow$ A RS $\square$
RVAGEFAVALA
RLAAEVAVELS
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A $\square$ A A D $\square$ A MA $\square K$
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$R \square A G A T A V A \square A$
QTAAK】ACA】A
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TRATNDAVELS
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$R \square G A E \square A D A Y S$
R VA A QLA N L A
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$R \square G A K T A D A Y Q$ KMGAELAVA $\square Q$
HTA AKDANVLA
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ARAAK $\ln$ AVELA
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KRATLVAVELA
RYAAECAVALS


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lupas 28
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sol0
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