

## QUERY <br> UniRef90_V5HN84 UniRef90-H21BPO UniRef90-F7YLM UniRef90 ${ }^{-}$F2JNE2

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RRKDYAGCALRFSAKEAFAKALGTGNPVTWQDIEVSNDS RRMYGCAR GHKFPERFLAKRFAAKEAAVKALGTGDGNSFQDVEVVNLS KKKEP LQSLAARFAAKEAVAKALSAPAGMNWQHCQMGREP QHKQPVRF AKRFAVKEAASKALGTGQGLAFNQFEVSNDS GLKLRARFVAKRFAVKEAASKALGTGCGVSFQDFSVTNDV GERRSDQSLAARFAAKEALVKALGGPGGLRWHDCQVDSDS GNPRSYESLAARFAAKEAVAKALGAPGGLHWHDCEIVADP QHSQAVRFLAKRFAVKEAAAKALGTGMGVAFNQFELINDS FKSNTYECLAGRFAAKEAFVKMLGTGFKHYFKDПEVRSDE EHARPVRFLAKRFAAKEAAVKALGTGNGDSWQHIEVRNNN PQDDPAPSLAARFAAREAVMKSLGLGLGFGFHDVWVERAE SQHDPAAFLARRFALKEAVSKALGVGIGMSLQDAWLEYTD NADNAARYFAKRFAVKEAAAKALGTGIGRSFQHFHVSNNS SLKDKARYLAKRFAVKEAASKALGTGCGVSFQDFIVSNDE QKSQPAAFLAKRFAAKEAFVKALGLGHGMQWCDIQVLNDA QLKQKGRYLAKRFAAKEAASKALGTGQGVTFHDFVISNDE SHQQPVRFLAKRFAVKEAASKAFGTGПGLAFNQFEVYNDE PVRSLAARFAAKEAVAKALGAPAGMSWQHCEVVVDD NRNDRPEFVAGRFAAKEAVVKSLGSGFGFDFKDDEIDRTA ASAQPVRFLAKRFAVKEAAAKALGTGПGLAFNQFEVCNDA TKKNAAQHFAGRWAAKEAVMKSFGTGFGIHWTEMEVVTQP AKGNPSRRFAMLFAAKEAVSKADGTGFGVAPRDI ETIHDP SQRSSYACYAARFTAKEAFLKAFGTGKGMRWRDI EVCTDE ESAKPASY LAKRFAAKEAVAKAFGTGПGKSFQHIEIRNNS RNLRSQAVRFAAKEALAKVLGAPAGLNWQDCEVASTE ASNEPVRYLAKRFAAKEATVKALGTGIGNSWQHIEVRNNA GSGQRELYLAKRFAAKEAVAKALGTGI GRSFQHIETYSDE KRAFPA 1 HYAARFAAKESFLKSLGMGIGMPGKDIEVRNDP ASAKPYRFLAKRFAAKEAVAKALGTGI GRSFQHIEVSNNV AHRQPDRFIAKRFAVKEAAAKAFGTG\|GLAFNQFEVYNNA HRVDRATALAGRFAAKEAVVKAMAGAPGVSWHHLEVRGAP TSRDQARYLAKRAAKEAAVKALGTGDGRSWQHLEVGHDA GAPRPLRSLAGRFAAKEALIKALGDSTGVWHDMRVVTDS EKKHCAQHYALRFAAKEAFLKALGTGDGLSWKDMEVVNDS

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K PHSLAARYAAKEALIKALGGSDGLHWTEDEVASEP SKANPAQHYAARFAAKEAVGKALGVGDGLRVQDVEVVRDF ASARPAAHYACRFAAREAVLKSLGTGFGQGRNDVCTSRDS RSKEPARLLAKRFAVKEAAAKALGTGDGRSFQHIELQHNE ADLPVESLAARFAAKEAVAKALGAPPGLRHRDAEVVTGA ARHRPGASLAARFAAKEAVMKALGDGLGCSWQDIEITREQ KKPMNFQYIAGRFAAKEA】SKALGTGFQFGLKDLVI INDE GRKNRAESYAKRFAAKEACSKALGTGMGVFWKDMGVVNQP RRAQRAASYAKRFAAKEACSKALGTGFGVYWRDMGVVNDP GKRRTDASLAARFSAKEALKKAIGFPGWLPWQSAEVVPAR RDSNPHRYLAKRFAAKEAAVKALGTG $\mathrm{C}_{\mathrm{G}} \mathrm{QGWH} \mathrm{HFEIVKDA}$ SRGNPVAFVATRFAAKEADAKALGTGUGHSFQDMQUSDD PRKCAAQHLAARFACKEAFVKALGLGMGMTWHDDEVVRDE SRVQQMASYAARFAGKEAVLKALGTGRGGTDHDVEILLDE ARKHADEHFAGRWAAKEALLKAMGTGWSRRWTDLEVRNTG ARMQKFASYAARFAAKEALLKALGTGRGGKLID EVYNDC SKKFRSET IAGNFSAKEA】SKAFGTGINFNFDDIEVLRDK RRNQRAASYAKRFAAKEACAKALGTGQGVFWRDMGVVNDP
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| QUEF |  | A E G |
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Q A ARPA

 V N K N P I K F L A K R F A V K E A A S K A L G T GYGI KFNQI ELLYNNN ASRDPARLLAKRFAVKEAVSKALGTGDPVLLDTAIABVDBA GRGRRAASYGARFAGKEALLKALGTGSGGRWQDIE I L L L P D T A HATPVRWLAKRFAAKEALLVALGTGQGLRWTDMAVLPDA QKNNSIETIAASFFAVKE SVAKALGTGFGFSMKDDEI FHDS ARTQPWRYLAKRFAAKEAIAKSMGTGIGDSWQDI EL R A A P





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 NE QRKIE FLA GRFAVKEAFSKALGTGGGQSFNDIDCYNDD NHNHPERFLSKRFAVKEAASKALGTGFGVAFYQFEVYKDV PVHSLAARFAAKEALIKALGGSEGVRWHDLEIVSDE S GHRQA E F LA GRFAAK EA YSKA L G T G DGKS FR D I E I A K D E S K K K R Y A S Y A G DY A A K E A F DIK A L G T G M R H S WQ D I E I Y Y RKADAAASYAKRFAAKEACAKALGTGMGVFWRDMGVVNMR QKRYNPETDA GYFAAKEAVAKALVTGVVFCFKDDEIQQKG NCN YETLA GNFAAK EAVVKKA IGGTGFGCSPKE I E I I F R H E K H H N Q VRFLAKRFTVKEAALKAFGTGNGDTFNQCEVYNNK ADSNPVVKFLANRFAGKEATAKADGTGFGVTWKDDGVTKHR


 $K R K Q R A A S Y A K R F A A K E A C A K A L G T G R G V W W K D I G V V N D V$ $\square A S D G A R F A A K E A D I K A L G G S D G I S W Q D L E V L R G D$ RRAARAE GYARRFAAKEACAKA LGTGAGVFWRDMEVVVLD

 D S P A P A A F L A K R F A A K E A V A K A L G VG DGMS LQ DACCVDA D P $A$
A K P M A S

 S KRSES I A GYFCAKEAVVKAMGTGFGFKWTDVVEVVMDA

 AK GMRVETIA GNFAAKEALSKALGTGFGYSLQDFEI LDRDQ RRR HEAATLAKRWAAKEACSKALGTGMGDSWKDMAVRNDR SAHDPARFLAKRFAAKEAFSKALGTGPPATGAADGVGHDE

 $N L R K S S C S Y A K R F A A K E A C A K A$ L GTGCGVGWKDI GVIVLL EKLLNCYGHYASRFCAKEAFVKALGWGNRCSWLDIVEV HDE
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HK L

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 H TA ARPAEHYAGRFAAREAVLKA LGGGFGNGDTDVSVVRDD SRGARAASYAKRFAAKEACAKALGTGQGVFWRDMGVVNLA KNHMRA QFLATRFAAKEAFGKALGTGRNMELRNDRVCQNG
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HGKP

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 S F R R K L E F L A G R F T T K E A F S K A L G T G L G K T F H D

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 APRSSAA R FADVKEAAAKA LLAPP GMDWQDCWV SN DE ASTHRARFLAKRFAAKEAFVKALGTGMRHTWHNDNVTHDA PRRNPVPRLAALFACKEAAVKALGTGFGDHCRCIEILHRP SEKRGLAFLCTRFAAKEAFSKGLGMRWPMTWRAMEELENQP S RKAKFQSYAARFAAKEAVSKA FGTGDGKAFNEDEII K D S $P Q N P V P R L A A L F A$ GKEAAVVKALGTGFGDHFHCIIELDH S PLDSLAARFAAKEALAKALGAPDGLDWQDAEVHRGQ K K L S S L A A R F A A K E A I I K A L G K P R GV S LDR E DE I L S D P SRRRRLLEYI A GRFAAKEAFVKAVGTGDSYGWHDLEVLSDE GYPRQI S YLA GRWA GKEAFAKAMGTGI GQTFQDIEILLNDA



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 $G S$ ASMLAGNFADKEAVAKSFGTGFRTFMPDDIVVIRRE A T S R P VG H LAA A R F A A R G A V A R A L G S G P F L G L H D V E V E L D S



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2625EE ED901

A\|AGTGMDLTY\|ISR\|QKAFERHGRFTKR\|LIGAGEREKFE

 MAVLG| GFDVVT SEFEEQMKRPGTAMLSSFRPAERRYCE MS VGAGODLV
 1 LGVGSDICHIPRAKKALENPRFAARVYTAGEIAYAR

 1 IGVGTDLVDVARLAQSVERGERFIDRULTAREKKRWS VGTDIVEVERTKNAIDRSESFLPRVFTEAEISKDG
 MQUGGGID AYVPRFIGUFERYGRFLKRAYHKNEIDFHKK MTLISAGVDLCDMRRDAQALERFGRFTQRVFTQQERAKAE
 VGVDVELVSSADS DDNETFIERNFTDTERKYCF $\square F G H G 1 D Q E D S A V E Q A$ DRHHRFAEKVLTPSERFDNL

$\square$

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RGI GVDVELI KTFNVS I K Gll GII D A V E L D R M A KI I E A K
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 IGVGTDSIDEVRVRAALEKIGSFVRRLETEREEEYCE GUDQ VEVLISAVPSHNSTFVKRNFTDSEADYCR A
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 $M P I V G L G L D L C S I E R I Q R I L D R A E A F L H R V Y T D G E R A Y C A$

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UniRef90 H8MLY7

RRYRGVTFL ${ }^{50}$ R R AAKEAFSKG ${ }^{60}$ G ${ }^{6}$ RSPMR ${ }^{70}$
TV A MQTLINAP KSSSPQASFTGTWSAKEAVFKALGVGAGASLIDDEIIRA QAPRRAAHYAARFAAREAVLKALGTGFGDGRKDVSVSRDD SRTDPARHYAVRWAAKEAVIKAWAASRDNAYADVEVVNDA RTGDDARHLAARWAAREAVIKAWSSSRFGLPNDVEVLSDA SVEPAGFLARRFAAKEALAKALGCGDGMALAEAGVTHDP KAPSPQASFTGKWSAKEAVFKSLGKGAGAPLKDDEI NNDE NKGNSASYCAKRFAAKEAFAKALGTGIGRSFQDLTVRNNE K GKRKMEY LA GRWSAKEAFSKAWGTGIGCTFQDLEI LNDE ARSERWRYMATRFSAKEAFSKAVGMGMPMTWRHCEVI KDP GRGAGAAASFAARFAKEAVMKAFGTGRNGTLLDIEILPDA QDKKKA ADNFAVKEAVVKMFGTGFRKKPDEIEVLRDA ARRNRLAYDCTRFAAKEAVSKALGMRSPMTWRAVQTLNAP SKACPEQHFAGYYAAREALAKALTLGWDMGLKNAWVVHGK DLADNVERLAGFWAAKEAAVKALGTGFGILFHNDEIVHDE SFKRKLEFLAGRFATKEAFSKALGTGLGKTFNDDDCYNDE A CVGGRPESLAARLAAKEAVLKALGSPQGWSYQEVEVTSAP SDQPDYARASGFWAAKESIVKALGFRNGDCFHDVEIIHDE
 RRAKAPRAFAKRFAAKEACAKALGTGUGVWWRDMGVVNDP STRSKAHFDASRWAVKEAVYKAF QHHRISFPEDRVVSSA
 NNRRKMEFLAGRFAVKEATSKALGVGDSFSFHDVEVKKDE A APNPQASFAGRWSAKEAVFKSLGGGAAAPDKDI EIISSE RGKRQ 1 TY YA GRWSAKEAFSKAMGTGDGKSFHDVEVLNDE SAPHPAASFAGRWAAKEAVIKADSSGAGAPDREIEI FMTA S D $\quad$ RKA KASNFAVKEAVVKMFGTGFRDAPNEVEVGRDN

 RRSERWRYMATRFSAKEAFSKGLGMRMPMTWRNCEVINDP GKKDPYSSYAARFAGKEAVFKALGLGGGCKWTDVEI I NEA DKTGHAVFDAKRFAAKEAVSKAFGUGQGDNDKDITVLNDN SQPHPEASFAARWAGKEAVFKAGGVGAGAAMSDVEDAPDE RHKQPIRYGAKRWAAKEAAAKALGTGUGVTFHNFEVSSDQ KYTNQVRHFAKRFAAKEAYVKALGTGFGKSMSDNEISNND QRAARSEFLATRFAAKEAFSKGLGMRMPMTWRAMQTLNDV RKRNTESFLAGNFAAKEAFVKALGLGFGDKDKDFEVLRDE NNTRQDEFLAGRFSAKEAFAKALGTGDGCSFQDDKVLSND KYHRQVEFLAGRFSAKEAYAKASGTGFGQSFTDVEILTGK APQRGVRFLATRFAAKEAFSKGLGMRLPMTWKRVQALNAP
 ARRRGIAYLGTRFAVKEAFSKAIGMGMPMTWRACETLNAP
QSSDFNASLAGKWTAKEAAMKTLSKGAGAAMKEIETLSGP NEKRQDEFVAGRWAAKEAFAKAYGTGDSSHFHDIEVSNDD KKPDMMASVAARFAAKEALSKALGRGISFGWQSVEVLNDG RGKRRVEFVSGRFAAKEAVSKAFGCGIGMSFTDIVVLPDE GRGRGAEHLAARFAAKEAVFKALGGALP WRDVEVVNGA G

## A

 RRPDPARFLAKRFAAKEAFGKALGTGVPATLHAVAVGHDS NYRRQLEFLAGRFSAKESFSKAYGTGDGKSFSNIEILTDH R $\square$ HENYHRVAGFWAAKEAAVKAI GTGFGILDHDI EI RHDE A SKQPARYLAKRFAAKEAAAKALGTGMGRSFQHIEISNDT RESRKTEYLAGRFAAKEAFAKALGTGIGKSFRDIEEQTDP KYRDPTEHYAGKFAVKEALMKAIGAGQHVTFRDIEVLNAE
 SKARPEQHLAGCFAAKEALSKALAVGWDLGLKNAWVVRGN RKKKTAAAARFAAKEAAAKALGTGISHGI GWLEDEVMREP SSARPAARFASRFAAREAVLKAMGTGFGUGRKDVSVSHDE SGKRLVEFTAGRFAAKEAFVKAAGTGDQTGFHDITVSNGE

 SRKRK $\square E F V A G R F A A K E A F V K A A G T G I R F G W H D I E V L S E E$ AHAQPARFLAKRFAAKEAFAKAVGTGIPVSDRFI GVAHDG GKPDRAEHLAGRWAAKEAFIKAWSQAMYGRWSEUEVQPDR AKPSPVASIAGRFAAKEAVVKALGTGDGVFWKSFEVLNDS AA LSMPSQAARFAAKEALAKALRDEHGLGWHDAEVVCDQ SRRQTTEQFAALDWAAKEAVLRALGTTWGMSWTDVEVLCEP RTGADDRHLAARWAAREAVIKAWSSSRFTAVNEVEVQSDA RKGGGVASLAARFAAKEAFAKALGTGRGFSLNEVQVENDP RRPFTI ATYAKRFAAKEAFSKAVGTGFGVFMKDIGVVNAP PKNPVSRDAADFAAKEAAVKALGTGFGVTFQCVEVLHGS

## ST

 KRGNRTETYAGDFSAKEAVSKAI GTGREFADTDLEILNDD SQPSPPSSFAARWVGKEAVFKSLGVGAGAAMKDIEILPNE SNVKRDQY LT GRFATKEAILTVLGQQWGQSWLDVEVQRMP GT $\square$ A K ATYY


UniRef90 G3AQN7 UniRef90＿UPI000349A31E UniRef90＿E4WJI1 UniRef90＿UPI0003B34ED8 UniRef90＿UPI0003F873CC UniRef90＿UPI00037AA1EF UniRef90＿M2M9H7 UniRef90＿D1KC95 UniRef90＿S6B5AC
UniRef90＿D0J1I5
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 N G K P F $\square$ E Y G DF
S GAPEVVLH GEAAKAAT TAGVK SVSV VGRPY Y SQSPF L $\qquad$ $\square$ V／F G K

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 S GVIP TVSLH GEAQAAAQSKGワKQVLI SLSHSETVAlAFA

 $\qquad$ | H T | $R$ | $H$ | $Y$ | $A$ | $L$ | $A$ | $Q$ | $V$ |
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| $D$ | $E$ | $R$ | $D$ | $Y$ | $A$ | $V$ | $A$ | $F$ |
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 S Y K R L A Q F TA G R F A A K E A V V K A L G C G I GVVGF T D I Dill R G P
 KRKVEFIAGRFAVKEAFSKAMGTGIGYGFHSINCLPDE K K G N T A E F L A G R F A V K K A $\square$ T K T LDD K A TP P FNQ E I I Y N E AKADRAAFLASRWAVKEATYKAFQQYFPEDRVTKQHTKDA SHHRKFEHYAGRFAVKEAFYKADSPEERDRFKNDEVKHLP
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 SRRTHIATYAKRFAAKEACSKALGTGFGVFMRDIGVVNDS

 K Y N R KY E F L A GRFS AK E A FS K A Y G T GI GK GFQ D I I E I L N D Q




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 S PKRQ GE $S K \square Q K Y Q H Y A$ A G

 K RK N P Y E R I A G M Y A A K E A V S S Q NAAGF WAAKEAFSKALGTGIGCSF LDDIEI SKDQ
$P$ LES LA GRFAVKEALAKALGSPGGLAWTDAEVQRGE KRGFPPQSVAASFSAKEAFSKAIGTGRGFSLADVELLRQE
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VR S LA ARFAAKEAAAKALKAPPGMIWQHCWI EK DP AVEFRAETLAGRFAADEAVSKVLDAHHGLVPADDAVSTSA STLTRAA A S DFAAKKATAKALGTGFGVEADQIEVLRRS S
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 GYSDPAPHLAATFAGKEAVVKSDGTKHGTLLLGSIEILRNG S LER K DE F L A G R F A VK E A Y S K A I G Y G L G R T F Q MI E CL P S Q

 S GHRKNEFLA GRFAAKEAFAKALGTGDGASFDDIEI GYEG NQDQRAK WL GVRWSVKEAAFKA LQ P T HY YYMPFME YA H N E SFNRQVRYLAGRWAAKEAFTKAMGTGGGKGFQDI E LIDTDD

 ARPERATFLASRWAVKEATFKAF QRYRVLFPEI HAVRRG QSSMPA A F L A KRFAAKEAAA K A L L G T GFGGLSLQ H I A V RK DE N S K R K L E Y L A GRFSAK EAYAK A RGTGG $\quad$ G K S F Q D L S I V S GV KQGTPPQHYAARWAAKEAFYKTLDTESPADPLDSIEVIRE AVDRLVERLAGRFSAKEATCKVLGRGFGQRWRDVELDAR
 T Q K E K A V Y V S K K F A A K E A I L K S M GR G Y GL S MN DidE I KN D K KKANPARHLAASFAAREAFAKAAGLDFGKVVLQGMWLHRT T T EMADMAPSLDAARWAAKEAFVKA WSTAEENLDWSQI EVI ND R


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| UniRef90-C6D | EGKPECTLSGSAWERLELVPERRGHIT | THDRSITASAVAl |
| UniRef90-S7C | SDPPRLLYHPEDRERTKKıG KLFVSVS | SHDGNYVVAQVV |
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| UniRef90 UPIO00471E376 |  |  |
| UniRef90-W1WJJ4 UniRef90-R6ECF7 | L Lik |  |
| UniRef90-G9RP93 | NGAPYFSFSGRAAALMQARGLTA HLSLT | THEGGTAAAFVV |
| UniRef90-D7N344 | WLKEQGI ARV |  |
|  | APVLHLHGAAAALAAEQGLVTWSL | SHertoavarvil |
| UniRef90-L8DG | WGRPSIKLHGMAQEFLPT T WKMVHLS | THDGDİAAVA |
| Ref90-R5XQ46 |  |  |
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| UniRef90 Focini |  | V |
| UniRef90-E017H9 | KPEVRLSSSTKKLREALRQQL | THERGLASAFVV |
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| UniRef90-C8N9 | L | SDEHDYAVAFVW |
| UniRef90_A7H) | GGQPTMALLTGGALERLKEMTPAV | TDDHPQAQAFVI |
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| UniRet90_O5FMB3 |  |  |
| UniRet90_S3XY |  | $\bar{M}$ |
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| UniRef90-K2EUP1 | APQLCFHGKAWERLSSCHKESLHVSFS | SDEPPYSTAFVV |
| UniRef90-E2SE | WNRPAI RLHGKVATHLADH TVMVS | A D Y A Ta ${ }^{\text {a }}$ VT |
| UniRet90-A0A059N | KGKPIIK | HTKEYAAAQVL |
|  | VLAGKAKKAAHSAGIKHIN | SHSGS |
| UniRet90_UP10004 |  |  |
| UniRef90_V20 | HGKPYVYLK SQKKE N | SHSRMNAVAVClI |
| UniReigo - UnAOS $^{\text {a }}$ |  | TNTRTEATAFVL |
| UniRef90-N1ZPQ9 | RPYFSHHPLEDE | SHTKEHVATMVV |
| UniRef90 R7A494 | VED\DIS | SHCKKYAVATVV |
| UniRef90-FOSXB8 | T ${ }^{\text {a }}$ | - |
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| UniRef90 UPI0003089D3C | K | HEKNYAVAVA |
| 析 |  |  |
|  | HGAPRLVVRGTVAACAARRGAEEFLVS | SHDGGIATAI |
| UniRef90-R6NBZ6 | LGQPVVVSHPF | Her |
| UniRef90- SOKGT4 | GAPKMTASP ${ }^{\text {a }}$ HNGQVFVSIT | THTDET |
| UniRef90-U5MXK1 | KPVVKLSDK |  |
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|  | GGRPGIRLSGRAAELARDAGLGP |  |
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| UniRef90-B9E8C4 | DTNAHVS | H |
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| UniRef90 Xos | APYVCVNGVESD E | SHSRNHAVAV |
| UniRef90-K1L | KPLI T | SHTKTMVQASVL |
| UniRei90 UPI0003690F61 | FGKPKVTIKEADKIVLGRDKLTKI DIS S S | SDNYPVAl AFVI |
| UniRet90-A9A1R7 | DNSPYVNLKNFDN | SHSDQYAlaFVL |
| UniRef90-R9C9Y6 | KPFIL KPFSEG | SKQYAFAQV |
| UniRef90-S9PTV3 | QGMPV1 | HDGDYUVA All |
| UniRee90-3E060 | APYVS | HSGHFVQASVI |
|  | LGKPKLRFFKNADKKSKEDKCKSDHVSIS |  |
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| UniRef90-F3YC42 | TGCPY | A V Q V |
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| UniRet90-D5EEE1 | PEGPVPCFSANDEQWMDEQKLGKVALS SKS | SHDGdYal arl |
| UniR | R | THDADLATAFVV |
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TGMGTD EEGRRFENFQERQFA
【IGVGVDI LE I DRV

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VIGVGDVVDI SFAEOTAMPGSFARNYTEDEITVAR
IHGI GTDLLDARRIRAGLARYGHYADRILAPAEHTRYY YGI G円DLTEDERVKRVVTKQPQFVERVLTPNEQQQMA $\square A G V G U D V E D V K A F Q Q D E T P G S F A K K V F T A R E M R Y A R$


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 Q K P QV I A S I A G R F A A K E A VVVK A L G T G F G V QKKRKME WLS GRFSAK EAMSKA IGTGGCFGFHDGEIL S DK
 NYNLK LE RLA G I Y A A K E A FA K A L G V G I D F G F LDDV E L L K N D K K A K N L S F L G K R F A VVK E A V W K A L S P G L G L K F K E I Q T L N T N Q H Q Q PVVRFLAK RFAVVKEAAAKA LGTGNGLAFNQEEVVYDE


 K R K HQME F LA GRFSDKEAYSKA I GTGDGVHWHDL E V V V N E K S A DVVRA A Y A S R WC A K E A V F K K C L Q T G A G A A M K E I E I I E B G G K QARTA QH LAA ARWAAKEAFYKAWTP GAKMDWA QI EVVVKD R ASRDPAGFLAKCFAAKEAFAKALGTGAPVTVRNI AVMRDA QF QRKWE YL S GRWS LKE SFAKA FG DGAQVGFQDI EII D NA KAPNP QASFA GRWSAKEAVFKS LIHSGPGAPMQDIVVLSHC



K R
ND AS LA G $\quad$ DWA AKEAASKALGCGIGASFDDI EI YKDK

 QAPNPRSTHAGRWSAKEAVFKSFSMGAGAAMQDDE I LI LE E
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NKS $\quad$ D QKPQ V A SVA GRFAAKEA VVKALGSGFGVHWKSFABLDNA A A AKKVETLA GYWAAKEAI AKAFGCGDGAAFHDDMI AKD S NYKDKAEFLAKRFSVKEAVSKALGTGMGDFFNQIEI LHEK


 Y HKKPSSSLAVRFA GKEAVIK A LDGTQKGVVSWKE I E I L S D P K P H SVA GAWAAKEACSKALGVG $\operatorname{CBCARFLDMCLSKNT}$ GTGEDARHLAARWAAKEAF\|KAWSVSRFDRHGDIEVVTDT S GA A RA QHLA GRWAAKEAFI KA WS QA LY GRWAEI EVVRPDA
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K P A S L A GA WA AK E A CAK A L GVG IG S N F LD MQ L S K N P TAHAKVEFLA GRFAGKEAFSKAYGTGIGDSFHDIKILLTGD ALPHHAAFLAKRFAAKEAAAKALGTGFGITLAGIAVVHDQ ALLRSQARFLADVWSLKEAGYKALYPADMPTWKEFSVGRBV
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 GK GEPA Q H Y A A R WA A K E A F C K V L A E E S P P D S L D S


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| UniRef90-R5QA23 | 1 E |
| UniRef90-V5EL33 | AE |
| UniRef90_K0DF65 | $\square \mathrm{E}$ |


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$\square \mathrm{G} \square \mathrm{DVT}$ K $\square \mathrm{D}$ Y F $\quad$ VN K S D K F $\square \mathrm{K}$ R
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 A P Q Q L E Q Y L A N R WS A K E A A Y K A L Y P N Y VV V WK D L

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 S K K T Y I E CL S A R FA A K E A CDK A I Y Q H C F TRRLEMM QI EEI IG TD A ATLA GLDWA AKEATAKALGCGIGAGFHDMHVVKDE RKRNWPERLA GFFAAKEATRKAFGHADP WRDVEVVHEP

 SKNQRASFYSGRYAAKEAFLK ALDDGRRNFNYA ELEELNDDE
 K Y TREVEHLLA GRWAAKEAFIVA WSAPEALDDWSEI EVVRADA QS LDD QKMAFASRWAAKEAVFKCDHTGAGAAMKDIDEVVK D S KKKQKY QHYA A R F A A K E A I $\operatorname{S}$ SK S L L N G K Y D

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 S NK K YA C S LAAKRFAAKEAFAKA LGGTGFGVFMK DI A VVVHQK S
$R$
 S M QR QV Q Y L T G S WA S K E A V F K T L D I E LDQK K F I F NE WY H D S GP NRAQRLGARFAAKESVDKTLGIVDDATPLREDEVVMN
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 K H D DE S L HLAAARWA GK EA V L K A WC T L D D F P P WR E V





 NYMEK I DA L G S MLLA A K E A A V K A L G T G F T D S V V Q DVQUV I N E



 MAARWAAKEAVAKAFGTGFGVTWKSICIVNAP
 ENPRSAQRFAVRFATREAFFKAWNSAAPEQY DPFLTCCNS AR A A A AR H A G GL WA A KE A F DK A WS CA LDF GS WHE DEVS H DE

 $P G P G V A A F L A R R F A A K E A A L K A L G T G A G L R W V D L E V V V D S$ GQKRKKEYAA GRFAVKKESLI KCFKRFDPYS QQIMVLDK Q S E Q R K L E F A A G R WA V K E A I I K $\square$ N R Q I E Y L A GR WA A K E A I I K A I N H KKRNKYQHLAARFAAKEAFFKAI GRR $\square$ S WKE V E L F F NL P K $\square$ D N K P R F F KP DRAAS L A A R WA AKEAYDKAWSQSLYGSFAQIVVVA DA K P Q TVA GF WA A K E A VAKA L G $\square$ G K E L G F H D I F I Y K T E
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K GVPEVILHGEAKSAADGEGLGEITVSISHSD
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NGKPFIKKDEYPLAA

SGQPYLVFSNELKSK DEDY
WGRPALQLHSHLAQSFYSSMDEHLLH
NGKPFI WNDNY GLRDEEFHLS

KKGPKAII DGK QFSTDFLIDRVEIKISISHTAQAAVSNAV

NGKPLVYLHGGAQQKARGLGLGEDAISSLSHSRDYADASVII

LDRRPSVYVTGDVQEKDSAEQSVRCHISASHHDGSMASAVVL
RGRPSVNLKSSVRAK DHESLPLTWHI ALSHDGPVASAVVL


NSEGKI EFLDNKAKSFADELGVTETHLABDDTENKLVVAIVA HGVPAVQLRGEAALLADRAGLRHWSLSTSHDGGFAMAVAA
DGAPEIVIH E EDGFHPFDFGGDHVSDSHTDSVAMAMVM
S GAPTVQLHGKADEEAKRVGVKSVSISVSHSDEQAVSVAII





KNRPR $\quad$ K $\square$ NGR $\square$ N KKYAF $\quad$ K
LGRPELQFAGAAQQRDRALARRGVWLS
SGEPYLDEESVKYLDEKFGGNGTI HIS SDERAYALATVV
NQTPD1 LTPG
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F GRVAVVLRGE】A
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 K GAPYVKLTGRAEK



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| UniRef90-U2VGE0 |  |
| UniRef90-J9Z2S5 | $\square \mathrm{E}$ |
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| UniRef90-R5L105 | V |
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| UniRef90-UPI0003B4F4FD | $\square \mathrm{E}$ |
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| UniRef90-C0W3K1 |  |
| UniRef90-Q2FUH7 | V |
| UniRef90-A8ZKQ0 |  |
| UniRef90-C4FGV3 | LQ |
| UniRef90-X0XCI7 |  |
| UniRef90-R7FMF0 |  |
| UniRef90-R9PC00 | A E |
| UniRef90-U1R8E5 | L E |
| UniRef90-I5CA85 |  |
| UniRef90_UPI000404DACB | L |
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| UniRef90-B2GH23 |  |
| UniRef90-F819G8 |  |
| UniRef90-B2WF93 | A Q |
| UniRef90-E7NCG2 |  |
| UniRef90-UPI000478FADA | L |
| UniRef90-M4RTF2 |  |
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| UniRef90-H1QJP0 |  |
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| UniRef90-E5VSX0 |  |
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| Ref90-A0A037 |  |
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$\square \mathrm{IG} \square \mathrm{G} \square \mathrm{DLVQLKD} \mathrm{\square SGGLDHYKELL}$ AHGERLAVRLLAPAELAEYQ $\square L G \square G N D V D E \square H R D R A A D E R R G A F V Q R V L A P E E R R R A R$ $V G V D V T G V E R D A R L S S R R P G F A A K M F S P E E D D Y C Q$ I GVDIVQNIRFQSFLDNDQKK DDK LLSPEEKEDFN ПAGIGHDLVNVAQFAEQMHDGDGFSQRELRQCAMRANS $M R V L G H G V D I V R I E R F Q R L V G K N P R D T R R I M H E E A L R A A G$



 VGADIVSI HRFQEFVGDNHPALKKI FTRDELD YCF I G G D D

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








VGVDVEETASVN $\quad \square N N K V F L E R N F T R A E R D Y C Q$




 SVLGIGGSIVYTPRFFRLLRKFPRLTSKFMHPVETECLN
$G V G V D \quad V E L I T S \square N V E N D T F D E R N F T P Q E \square E Y C N$ MKGI GI D IVDI S RLLSEKVAD K I L CKKEMLEFKGY L N S
 I GADLL YVGELD RLLAR LDWFRAYVYAESELATAA L G N DVVFFLPDFK $\operatorname{L}$ L S F N PLLF K QKVYS ETEMA Y CE

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



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

$V G V D V E D L D R V V$ R $V$ REALAKHAFHPEEFQTWQ I GVVVE K K V R A R EALARHAFHPRELDALE $\square N V G T D I V H I P R \square Q R L V A R S S R F V R R I L C E Q E Q A Y F K$



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


 $\bigvee G \square D V M D C T R P R A S L D Q F F T T M R R Q F T E R E W H Q L R$

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| UniRef90-UPI0003685693 | T GRRRQEYLAGRFAAKEAVLKALGGRGGVAPRDILVGRAV |
| UniRef90_A0A016Q0F0 | AMWSCAAFI A GRFAAKEAAMKA HPHRRLTFHDVVIEKRP |
| UniRef90_F2LU\} | S R K N PYPSLCGGRFCAKEAVVKVYAGKLLISS DVVKIVNAE |
| UniRef90_S8AJ | K S DPRTRFLATRWAAKEAAYK STTREQWMGWKNFEI SR GP |
| UniRef90_V5BCB0 |  |
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| UniRef90-R4VNT3 | DTESKAAFLARRFAAKEAAAKALGCGDGGRFHDLVVTHTP |
| UniRef90-B7DM71 | A $\square$ S D GAEFVAGRFA AKEAVAKA A G C GL A R L S M P HVAVLL |
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| UniRef90-A5DL89 | RFEKSVVYLA GTWAlIKEAI YK S I D D A D Q K K Q F NRWYRVY |
| UniRef90_A0A024HWY8 |  |
| niRef90_B2UT23 |  |
| UniRef90_UPI000408 | S ETRKVEFVAGRFAAKEAFAKAMGTGIGSSFLLDISILDNDE |
| UniRef90-H2AZ | GMMVKVRYA A G D W A A K E A T Y K A LCCSYVPA A AMPL NKTNSE |
| UniRef90-D4K9K5 | L N A HRLASAAADFAAKEAFLLKAAGTGEPFSLCEIEAVRQE |
| UniRef90-B61 | CRFNEI R WLA GRFAAKEAARKAAPSGASDGWKDVMVRVQE |
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| UniRef90_Q6KHG5 |  |
| UniRef90_14E1A7 |  |
| UniRef90_19WLW8 |  |
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| UniRef90_S4G2E7 | RA H L K A DHVA ARWA GKEAVI K A WCEAMNTPWASIIEILDD S |
| UniRef90_UPI0004785D36 | GRPRSLLAARWAAKEAAAKALGVGLSGPGARWHEIEVRRPA |
| UniRef90-A0FJY8 | A A D PAASFA GRWA AKEALVKALSSSGGHAPLVVDIEIVVPNP |
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| UniRef90-C2GJ81 | KKMDVF Q HLA ARWAAKEAFIKAWSASERVVWRDIEVERSDH |
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| UniRef90_UPI00035EC80A | SAPYQAECFATHFAAKEAVFKALAAHFTKEKRFD M |
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| UniRef90_S7ZKC2 | TRFEMTRWLAGRFAVPEAILEGGRGTSTGMEGNVMREQEGT |
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| UniRef90-R5VCR2 | NKTRAMEFLGGRLAAKEAFLKAVGVGNG\SLTELQVVKDQ |
| UniRef90_R5ZDF6 |  |
| UniRef90-R4T418 | GF DRCREFLA GRFAAKEAVAKADGTGFGVTPRQIAVERAD |
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| UniRef90-X1IRU2 | M K A L G T G K GVG WREI EIILA D N |
| UniRef90_B5ZBN9 | S LK E K N R Y LA S $\quad$ F A S K E A VM K A FK LK Y G Y N D L I L K T K N E |
| UniRef90_U5H0Q5 | KI DK D A T F L A VR WA A K E A TY K A |
| UniRef90_Q6YQD4 | II Q N P Q S L A GRWASKEALFKA FQ T P Q CQNYCNWS L N DK |
| UniRef90_M9W9U4 | SKNRQEEFL S GRWAVKEAIITKTLDTPVSMSK】E\SYID |
| UniRef90_S4GHM5 | KHDDESLHIA ARWA GKEAVVKAWYT LDNTPWSNIE L L D N A |
| UniRef90-A0A024JKC | A A LDRA A HLLANAWACKEALYKALDETEDQPDCRFNA WYKHK |
| UniRef90_R7FCL7 | NSRNPAKCFLTDWTAKEAYVKRLGTGLHTPFDSFDTCDQP |
| UniRef90_J6EKH9 | NHLS P Y QY I A Gl WA LK E CSLK A LIC CLI S K H A GMLLYK T Q E E |
| UniRef90-I1A7D2 | KLS DKSLFLARSWAIJKEAIFKADNQYFNFS |
| UniRef90-W7S1H7 | AV HLA A K WA GKEAFLKKAWCDF L GFPWREDEDLDD S |
| UniRef90_I2GYM6 |  |
| UniRef90_F9QDN6 |  |
| UniRef90-J31 |  |
| UniRef90_UPI000248602D | DLD F DLA Y WF KVWT T K E AVLK A S GLGI RLS LNELNHPDND |
| UniRef90_N9DMJ5 | SLEDPSSDYWFKVWT A K E AVLK A S GLLGldr M |
| UniRef90_D4D1R4 |  |
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| UniRef90-N1QI74 |  |
| UniRef90-N8WXT9 |  |
| UniRef90_D1J7H8 |  |
| UniRef90_L8LMX9 | NCPDKSPAFF Q GWT SKEAVLK A T GEG\GGGGLEKI EVVELD P |
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| UniRef90_R7VKZ3 |  |
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| UniRef90-N8WF90 | Q Q D Q DLE Y WF RVWT TKEAIL K A S GLGldr LDL |
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| UniRef90_A0A010G0W4 |  |
| UniRef90-J11807 | QAPQPFLAFA QLW WMKEAAYKRLGAPLGYYPKKISLQART |
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VGRPRLLSIVIE G W
100 NHGAHPLLALUS $I \backslash$ SHAGPNAVADCV

TGEPRVFVAQG
DKVFRR\|SLSFSHSRD
GGAPHVELRGSAAEAAP GTTVLISDTHKGDAVAAVAL VEGPRLGSGPP】AR $\quad$ RS GEGDTSALVSISHDGDYATAVCL SGKPMVFIRNKPSD\|A RGEPVLA KNG $N G Q P L V R L L G E A L A L Q Q Q$ LGKPKLRLWDEAERLAARKRISNLFVSI TDEGDDAMASAT DG A GAPLLKFSGVARETAAALEVTATHLSDTDEQDHAMAFVV GREGLQVLWQPPSALWEQFGPVRVHLALTHSAGDAFAVAV GGAPEVLINGR
NGKPYV KNKKD $\square E \square$ I $\square$ SHETDYS $\square$ TFVI RGCPSVHDNDAVNEKLMQSLSTRWHVSLSHDGADASAFVI GSRGQPIVGSDVFDKNQQ FLVSVSHDGGTLIASVI
 NGAPFI E A A AVKEKMNIFVSI THSREYAVA QVV


 WGRPSLSLTGRIADAVEAGLPEHWPVSLTHDGDWAAAIVL K DNYYWF K GAPIFTKSPFS KNAPLDTDSKEKWl I L RGVDGRKPTLEFHPSMPS GQVGKLHASVSHDGEYVFTTVL SGKPVVFDHDAPSD DA HGCPSVRLSEDVNQKLNRVNHPNWHVSLSHDGADALAFVV GQPPQLLLHGAAARRAAALGWRVVALSLSHGRQF SGAPVVQLHGHPQQVSEMLAVNTLSVSISHT

 GARTETLGSGRI RAVAEADEDESALISIVSHDGDYATAVCL



 G

RGSPTTPDHSLFYNEVIYKRKDKALLSDSHDKDYLVAF






FGNPTF KDNQSCFLSDTHDA
TGRPHLYVDG VEVGQVSLTHDF DASAVVL SGAA LVMLTGAAAARAAALGVVDVQVSVTVVDLVLAVALL AGKPQVVLPHDYKNLD $I S L T U S H D A D Y A A A L V$ LGKPEYFYAAP $\square Q$
RGKPVVRLYGRAKDRAEELNLEEFSISLSDTRQFADAVII R Q V

Y L
KGAPY VKNNTCTTFFNP LIDSTHTDNYALALVI HGCPRVODSEKPIILNAELQNIAISISHEKKFSVGLAI TTRNTGKPADACDAYAAAHPAETFWLSVSHDGDYLTAFVV
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S I DLDK IDNKRWTFKDFSI SISHEGDLLIAFV
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