## QUERY

## UniRef90＿I3IAN6

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UniRef90＿M1SIJ8
UniRef90＿Q080K8 UniRef90＿E1VP70 UniRef90＿Q5E3L0
UniRef90－X2H1Y2 UniRef90－H5TAA2 UniRef90－UPIOO04662556 UniRef90＿UPIO003794079 UniRef90－F3KBM4 UniRef90＿N9VNY3 UniRef90－A1S5R6 UniRef90＿UPI0002FD0B5B UniRef90＿F7P100 UniRef90－H2FT09 UniRef90－U7NEJ7 UniRef90 EOWUD6 UniRef90－K2JOW8 UniRef90＿UPI00030C0F06 UniRef90＿UPI00037D7515 UniRef90－E1SMV1 UniRef90－Q47YH9 UniRef90＿K4KTL0 UniRef90－Q1N5K2 UniRef90－H3NUI8 UniRef90＿UPI000367BCB1 UniRef90＿V5AFP6 UniRef90－UPI000376E591 UniRef90＿UPIO002559BA0 UniRef90－K2C8U4 UniRef90－H1G2U8 UniRef90－W9V5I7 UniRef90－UPI00034C35FC UniRef90＿B8GTL1 UniRef90＿UPI00046501F7 UniRef90－UPI0000E0E9CE UniRef90－Q2BJC2 UniRef90－K6Y635 UniRef90－UPI00036DF1E8 UniRef90＿UPI000348B95A UniRef90－UPI00035F84C6 UniRef90－A9KCS1
UniRef90＿UPI00047A9CCD UniRef90－UPI00046D8C22 UniRef90＿K2GFY7
UniRef90－UPIO0035C6695
UniRef90＿A6FI29 R 10

20 $\qquad$ 30 Q A GF $\square$ F GDMNワY PEEVLIINVMAHKGEMFKGSDLLDIILKCGMRYGSMDIF

Q P


 K E RE | $Q$ | $E$ | $L$ | $V$ | $N$ | $V$ | $L$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | $I$ | $V$ | $V$ | $N$ | $V$ | $L$ | $A$ | EVLVLHVHANNNEGVF S EVIVI NVLARAGED QPD $V E E$

$K E E$
$K E$
 $\begin{array}{lll}\text { V L I } \\ \text { L I } & V\end{array}$ $\begin{array}{llllllllll}N & V & L & A & R & K & E & H & A & F \\ N\end{array}$

EMQVIVLNVHCSGEEPFVGTKLIFDSMQQNGIIIYGEMAI
IVLVLHVAAYNGTVLYGDSLWQS LLQTGLQFGEMNI F


K Q
PEEVLIL
VAAHS
E EV IV NVMAKKGERF L
P Q
EVLVVNVVAMK GAMFYGS DLLQQVLDNGLDRYGAME
$D V L V L N V S A H H G Q V I D G E R L L N S L L Q L G F H H G E M S I I F$
Q Q Q V L I $V$ V $N$ N V M A P T G E Q F R G D A L L
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K E
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ET
P P E
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G E
QVL

PTDVLVL D HVVMAK GKK P F K
EVI HVVAKEGESLSGAELLPCLLALNFKFGDMNI F

D

E V I I L
$H \vee A A$
。
VEEVIVMNVFSRDDSGFNGADLMRVI ACGMKYGDQD F
VEEVVMNVFSRDDSGFNGADLMRVIACGMRYGEMDIF
PRQ ARSEKKLLVL
$\begin{array}{llllll}\text { Q D } & V & Y & V & I \\ A & E & E & I & I & V \\ K & E & I & L & V & L \\ S & E & L & L & V & L \\ P & Q & E & L & V & L\end{array}$
PDNVLVITAGVSTA







PDCVIVLYLMASDGAVYSGYELLDQLLDSAGLRYGKQHI F
REKLVVLHVVASEDDRFLGVDLATALTAEGMEFGDMNI Y

EDFV I I HV HMPE GLQMQGAKLLDLVLD L GFKYSD DGFF
$P D K L I V L H V A A G P S G H I L G V Q L E A A L D A D G L E F G F M E D Y$
DVYVINI SARDGAYI YGRDLKHALRRILGFRFGEMDI Y

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| :--- |
| P |
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Q P
$P$ D
DKI V L HVVAPN QDRFLGGVNLQAALADMGLQHGDLGI Y
EVIVVHLIAAPRGHRFDGRELLQELLESGMRFGEMN I I
EEKIVVINVLAPNGERFLGPAVQDALQSAGLTFGEHGBF
EAVVVINIMMREGSHIAGAELLQELISAFGFKFGAMDI:F

## QUERY UniRef90_I3IAN6 UniRef90-UPI00037E1D19 UniRef90_C1DN28 UniRef90-E3G9J9 UniRef90_W1IU25 UniRef90_UPI00046EE7A9 UniRef90 Q2SD46 UniRef90_UPI0003799E24 UniRef90_UPI0004710133 UniRef90 M1FET8 UniRef90_N6WQL0 UniRef90_UPI00041BDA68 UniRef90-12JK46 <br> H

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UniRef90_U7NEJ7
UniRef90_J3VUF4 UniRef90_E0WUD6 UniRef90_K2JOW8
UniRef90 UPI0003 UniRef90 - UPI00030C0F06 UniRef90_E1SMV1 UniRef90_Q47YH9 UniRef90_K4KTL0 UniRef90_H3NUI8 UniRef90_UPI000367BCB1 UniRef90_V5AFP6 UniRef90_UPI000376E591 UniRef90_UPIO002559BA0 UniRef90_K2C8U4
UniRef90_H1G2U8 UniRef90_W9V5I7
UniRef90 UPI0003 UniRef90_B8GTL1 UniRef90_UPI00046501F7 UniRef90_UPIO000E0E9CE UniRef90_Q2BJC2 UniRef90_K6Y635 UniRef90_UPI00036DF1E8 UniRef90_UPI000348B95A UniRef90_A9KCS1
UniRef90_UPI00047A9CCD UniRef90_UPI00046D8C22 UniRef90_K2GFY7
UniRef90_UPI00035C6695
UniRef90_A6FI29
UniRef90_A6FI29
50
60
70
80
HR H L S P D GSGPALFS LANMVVKPGTFDPEMKDFTTPGVT TF
HRYSDAKGEGALLFSMANMVKPGTFDLDMDEFETPGVSLG

HRHEEAS GTGEVLFSLANMFNPGTFDIDDEQFTTQGVSLD
HRHESLAGNGEVLFSMANALKPGTFDDDIVHFSTRAVVFF
H R H L S P G G G GP AL F S LA N MVVK P G T F D P EMA D M A T P GV T DF



HRHESMS GNGDVLFSMANALKPGVFDLDMDHTRVRAVSFF



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& \mathrm{H} \\
& \mathrm{H}
\end{aligned}
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$\mathrm{H} R$
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H

H
HRHSD G F D Q GKVVQF

## H R

$H$
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## 






HRHVDPA GNGPVLFSLANMVTPGYDDPEMHEFTTPGVSDF

HR HVVNSN GK G P V L F S L A A NMFK P G S F D D D D L E T F T T R G V
HRE ED GADA A L QFSMANLVKPGTFDLDEMDNFYTPGVVSFF

HCFAQPSDDPKVIFSVVANMMQPGTLEDDPADFTTKGGIVFF




HR HANPAGDGAVLFSLANMIKPGSFDLNMPDFTTPGVSIV

HR HADMSGTGKVLFSVANMLKPGTDSDDPATFTTEGIXSF
HR
$\mathrm{H} R$
$\mathrm{H} Y$

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\begin{aligned}
& H L \\
& H F \\
& H F
\end{aligned}
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$H R$
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$H$

## $\mathrm{H} R$ $H$

## H

HR
H R
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## HR

## H

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H R
 HCHRQEQGEDVLQFSMANAVEPGTFDDEMDREQFAGTTFF


## QUERY

UniRef90_I3IAN6 UniRef90_UPI00037E1D19 UniRef90-UPI0002F2A6A4 UniRef90_C1DN28 UniRef90-E3G9J9 UniRef90-W1IU25 UniRef90_UPI00046EE7A9 UniRef90 Q2SD46 UniRef90_UPIO003799E24 UniRef90 UPI0004710133 UniRef90 M1FET8 UniRef90-N6WQLO UniRef90_UPIO0041BDA68 UniRef90-I2JK46 UniRef90_C0AVK7 UniRef90-UPI00036C6E27 UniRef90-UPI00031A9E0E UniRef90-Q1LU19 UniRef90_UPI0003A35423 UniRef90_R9PR99 UniRef90_A4A3M3 UniRef90 B7RUP9 UniRef90_UPI0002F36555 UniRef90 UPI00036EB176 UniRef90-A0YC56 UniRef90-U3B7F2 UniRef90_C4K4K3 UniRef90-Q21JI9 UniRef90-A3Y9H5 UniRef90_Q12L81 UniRef90-F3LDG4 UniRef90-R8ATV4 UniRef90_UPI0004655133 UniRef90_UPI0002E190E8 UniRef90_J3VSJ7 UniRef90-M0QA50 UniRef90-D2TXD8 UniRef90-UPI0003B3CBEA UniRef90-UPI000377127D UniRef90_UPI00036AB998 UniRef90_UPIO0037245BA UniRef90-UPI000471B8B8 UniRef90_S3DG52
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UniRef90_UPI00047A9CCD UniRef90-UPI00046D8C22 UniRef90-K2GFY7 UniRef90_UPIO0035C6695
$M Q V P S Y G D E L Q L F K L M L Q S A Q H T A D E V G G V V L D D Q R R M M T$ MTLP N AD SMQSFDLMADTARAI AETLNGELKDEQRSVMT
 LSLPVK GDAQQAFNMMHNAAKK A A AEFSGQQLDGQRSVVTI

 VRLPGPDNSMRAFDYMVES
 $M T L P C Y G E P E Q N F K L M L Q T A Q Q I A D E L G G L V L D D A R S M M T$ MS L PGPSSDSLKAFEFMLETAQCVVHNLGGEELKDERRSVMT $M T V P C A G M P T K N F S L M F N T A S S L A K N L G A V L L D D Q R N P L T$
 MHLPGPADSMKAYEAMVETARCLVKNLEGELRDQTHSVAT MMVVSYGDANQNFKLMLLTARRI ASDVGGVVLDDERKLLT MTLPCFGEPDQNFKLMLRTAQQI ADDLGANVLDDKRNLMT



 35 MTV V P GPSEADKAFEYMVETAQCLVTNLGGEMLDESRSAMT $\frac{\mathrm{L}}{\mathrm{L}}$ MLPVEAFSDVAF TTMADAARGLADELGGLVLDDQRQMIT GLPGPKNSMVAFDFMLDAARGLAVRNLDGELRDENRSVMT

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

 MTLPCFWEAHQNFKLMLKTAQQVADDLGGNVLDDSRNLMT

 L P L P



 LS L P GP K N S MKA F D Y M Y E TA Q CVVVK N L N GELLKDEMH S AMT


 $M P L P$ GAEDC GAAFEAMVETAMVIVRHLGGELKDEH HS VMT $M T V P T Y G D S Y Q N L K L M L Q A A N R I T S D C G A R L L D D E R S I D T$ $M M L P S Y G K A S Q N F K L M L Q S A Q R I A D A V G G V V Q D D E H R M M T$

 MSMEEPRDVMHAFECMLATAETLAEHLDGDLLDENRSVLR $M T L P S Q G D P R V C F S M M E G A A K G L A D L H G A E V L D G Q R X P W T$
 MSLPGPENPMAAFDAMSEVALVFARNFSAQLQDESHSVLT


 MS MSEPK DPMTA YECMMLATAETMLAKH LN GELLDDEDRSVVMR

 MS MREPK D P M T A Y E CMMLAT A E TVVA K H L D G D L L D E D R S V M R


 MSMEEPD DVMEAFECMLATAETVAKHLGGEMLDENRSVLRR MMLP DEGEPQQVFNMMHNAARKLADEFSCQILDGSRGVLT MS ME EP R DVMNAYECMLATADAVAK NLHGVLLDDENRSTMR $M P$ LP GA E D S A A A F E A MVVETAMVVVVR H L G GEEVKDENH SVVM T $M T L P G P K K P M Q A Y E L M V K T A Q A I T Q Q L G G R I L D G S R S N F S$ $M V L K H T P D P L M A F D T L L E T A R Q L T E D L G G E V W D E E R R L L N$



 UniRef90_UPI0004756F4E UniRef90-W2UBM7 UniRef90-U1LFN8 UniRef90_UPIO004170C07 UniRef90-DoYzB9 UniRef90-UPIOOO3641135 UniRef90-A4BHE4 UniRef90-G4E888 UniRef90-K2KPD9 UniRef90-C5BHY9 UniRef90-A4BM29 UniRef90-ToZC52 UniRef90-UPIOOO4194404 UniRef90-F7S0Q6 UniRef90_W9A9T1 UniRef90-UPIOOO46A2F52 UniRef90-UPIO003748BC5 UniRef90-F9QBT4 UniRef90-C9PM09 UniRef90-S6GFZ2 UniRef90-L8JC91 UniRef90-K2BV21 UniRef90-B8KS72 UniRef90-U1R2W6 UniRef90-Q2YBB8 UniRef90-LODVT3 UniRef90_UPIO00414550F UniRef90-M4R463 UniRef90-WOEOR9 UniRef90_M5DQD8 UniRef90-LoWEP9 UniRef90-KOFV45 UniRef90_B9CWMO UniRef90-S6ACD4 UniRef90-A1WY81 UniRef90_S6EC89

UniRef90_Q7VMX6 UniRef90-E1W3F8 UniRef90-F3L4U0 UniRef90-UPIO003B439BE UniRef90-B8F313 UniRef90_UPIo003785D11 UniRet90-F9UBP5 UniRef90-Q01212 UniRef90-F8GJ99 UniRef90-Q4QLI9 | UniRef90- $13 \mathrm{BIX6}$ |
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| UniRef 90 M4U4 | UniRef90-G7UTX3 UniRef90_12NDEO UniRef90-R4VES9 UniRef90-A0A011NDQ5 UniRef90-Q82SM8

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UniRef90-HOPTY9 UniRef90-K2DU25 UniRef90-F4HCT1 UniRef90-QOAAV3 UniRef90-A6VR17 UniRef90-UPIOOO35FE5DE UniRef90-G2DF14 UniRef90-UPIo004717E60 UniRef90_13YH17 UniRef90-M7PPE5
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UniRef90_C4ZJJO
 VDRIVTLHVAARPGETIHGASLIVAAEKAGLLFGDKNIF $Q Q Q L L M H L M A P K G E V L S G Q Q L Q E A A L N V G L R Y G E L K I F$
$P Q D F I L G H V D M P E G K M A G S R L D P V L S L G F K Y S E G F F$ QEKILLLHVVAPRNKPFTGVALGAALERAGLKPGAMDIY I SLCVHARSGGVMGRQLFTALENHGLDFGENSVY EEVVVISVMSRDDEGFRGPDLLQLVLACGLRLDERGVF VEDLVVVHVMARRDEEFSGSSVLDLLLTAGLRHGPMDIF
 PQDVIALHVVGK G DEGAVLLQMVTELGLKYGEMDI F PDEVLIINVMAKTGTRFDGQSLLAALMSADMKLGAMDI F EEKLVVINLVAPEDGRFAGPELVHAMEAAGMHYGAHRIF ERIVSLLFVTAREGRVFRGVDLVVAAEKVGLEFGDMNIF DFVIVHI QMPDGLSMQGSKLLPAVNTLGFKYSEEGFF KEEVITLFV

SVCVHARKGKVLRGPSLFACLERNGLIFGENSVF

EVIIISVMARGDSGFSGEDVLGVSLACGLRHSNMGLF FIQLYVIAAHNREFYGYLAQALDNLGFTWGDDGLY PNVVLMVYVVAPENYQFQGEKLAKIVLDELGFLFGERNIVY PPDYLVLNIHARNGEILTGSKLFNTLEQNNLFYGENSVY QDVEI ALYLMAPKNSVYGGYELLQALLSAGLRFGEQRIF KNNVVVALYLMAQEGNTFGGYELLQALLSAGLRFGDQRDF
 QVDVMAGINII SRDNSVFTGAKIRVMAEACGFKLGNEGMF REKILVLHVVAPRNRPFTGVALGAALRRAGLALGEMSMY ENNMLTLYVVAREGKRLGGHELLQFFLTSGFRYGAMNI:F RPDAVLVISVVAPDERPFAGEALMDVAETCGLHPGEME: F ENVIVVHLIARRGEPFDGGELLRLLLESGLRFGDMNIF ENNMITTLYVVAPEGQQFRGDYVVQSLEALGFQYGEYQIF
 EKLLVVFVAAREGERFLGPAI DQALRRVRMVPGEHRIW PQDFLMLYIVSPEDREFNGVTLAKVLDDLGFIFGHQHIY QNNTITYVVAPEGQQFDGHYVVQSLEALGFQFGEYQLY PEHVLLIHLKADEQKPYQGDTLLQLLLACDLRFGDLGFF VDYVITLHVMRQNGFAGQQLLERLLQYGLRFGDMNTF EHNITLYVVAPEGVQFQGNAIVQNLEMDGFHFGEYQI F EPLVV HLMSAADQNCSGQLFLDSVLKQGLRYGEMKI F
 FGQYLIPKSSEEFNGAKLVQALENLGFILGKDEMY EKD FIFNVVAKDDQLLYGHALLQFFLTSGFRFGEMSLF DKI S S Y AAKSGHMLRGEDIVVAAEKTGLTFGHMNVF PADII TLYVVSAEGYQFEGEHVVQCLEADGFEYGEYNIF
 VQDYL 1 VDVQI GI NIVS SGQPFAGTK RALAESNGLVIGNDGAF KKPDFIMLYVVAPENRQFYGVHI QETLEELGFIFGEYN Y EDKIVAI HVAAPEGHVFVADALVDALQRAGLEYGEHGI F PTDFIMLYVVAPENRQFHGPSLAQALDNLGFIFGQGNI Y PHLILQUHLSHRDWFDGEPLERALSAAGMQPGKMKVY EPLLI QVSVSAR GQQFPGPALMKMALACGGLNYSSEGMF DLVIALTIMAPAETMFTGKALKHVLESHDLHFGDMQI Y PQDVFIFNVVAKEGTKLLGHDLLQFFLTSGFRFGERSUF VDIQI GVNVIS QGQVFAGTKLRARAEATGMVIDSSGRF VDVQI GVNLISH NQPFAGTKIRALAEASGMTIGDDGAF VDIVQLSVVAPNDRMFDGAGIVRATSACGLLEPGEMDVF VDIQIGNVVAVQGVFAGTKLRGLAESAGMVLDGDGRF QEIVALNVYPNPRRALSGDKTLKVLEAKGMVLEADGAF PDVI QVSVAAPPGRPLQGPALAKAFADLGLEYGDMEIF LI QLSVSARRGYFKGPELLEVAAGCGLYPGEMD:|

## K E L

 VDVQIGVNVVARDGQ FEGRADQQLAERHGLSLANDGCF VDVQ GVNIVATE RPFEGLELGQFAARHDLTFASDGSF VDVMIGNIISRDNSVFTGAKI QVLAEASGFKLGTNGIF DKIVTLYVAARAGEKLRGPDIVVAAEKVGLVYGYMGVF QLPALI QFSLMAAEDEGFNGTDLALAF SSVGLVYGNDKIY $V D V Q G V N V L A G E R A F E G R D V Q Q A T R H G L S L G A E G S F$

## UniRef90 Q6LTU6 UniRef90-Q5QUKO UniRefe90-KOCEL7

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UniRef90 UP10004 UniRef90-M4R463 UniRef90-WOEOR9 UniRef90_M5DQD8 UniRef90-LoWEP9 UniRef90_KOFV45 UniRef90-B9CWMO
UniRef90- $\mathrm{S} 6 \mathrm{ACD4}$ UniRef90_A1WY81 UniRef90_S6EC89 UniRef90 OTVMX6 UniRef90-E1W3F8
UniRef90 F3L4U0 UniRef90-UPI0003B439BE UniRef90-B8F313
UniRef90-Q01212
UniRetoo-F8G.j9s
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## UniRef90_Q6LTU6 UniRef90-Q5QUK0 UniRef90-K0CEL7 UniRef90 H8KYP9 UniRef90-UPI0004756F4E UniRef90-W2UBM7 UniRef90-U1LFN8 UniRef90_UPI0004170C07 UniRef90-DOYZB9

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MS L H H V $V$ K S A LTTA A L D R M WE TA Q T L L DV P R R V D H GE R V F M Q M S E IIA K R F A D T L






 $L S$ LP H P K A I Q G F D S M M S V V NLIIS N DLL N A LI L D E N N E VL T






 $M T$ T $\operatorname{M}$ C D G D G L A A F N MLLH SAAKK M R M N L







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| UniRef90－O3SL41 | DSGUEK】RSQLTEपYARM |
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| St |  |
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| UniRef90 UPIo |  |
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| UniRef90＿D4E3B2 | A |
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 $L$ L $V$ P F DV P R V A G G L A V F D Y L S D F A Q Q L A G S L G G S LV D D N G R P L A

 L D L P S T V V A P A A M H DL I M M A R K V S QRL E GR L Y N M E R Q I M K


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

 MQLVPD







## L



 FDVPAADEEAFPFRLMCNYATSLSQRIGAHLTDAKQRALS






 MDVVPNTKNDTHAFNEMIVIIDREACS QLNGTLVVDVGGKPMN LDVVPQVAPGLRPFARMREAARQLAQALGARQVDDNGAPDS | $L$ | $D$ | $V$ | $P$ | $Q$ | $V$ | $P$ | $Q$ | $A$ | $L$ | $R$ | $P$ | $F$ | $A$ | $R$ | $M$ | $R$ | $E$ | $A$ | $A$ | $Q$ | $R$ | $L$ | $G$ | $Q$ | $A$ | $L$ | $D$ | $A$ | $K$ | $Q$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $D$ | $N$ | $G$ | $A$ | $P$ | $L$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $E$ | $V$ | $P$ | $Q$ | $A$ | $P$ | $A$ | $A$ | $Q$ | $K$ | $P$ | $F$ | $G$ | $R$ | $M$ | $R$ | $Q$ | $A$ | $A$ | $R$ | $E$ | $L$ | $A$ | $T$ | $A$ | $L$ | $D$ | $A$ | $A$ | $V$ | $V$ | $D$ |
| $D$ | $N$ | $N$ | $A$ | $P$ | $L$ | $P$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



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