## QUERY

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UniRef90 UPI000472DE5F UniRef90-UPI00047ACDFF UniRef90_UPI00046D6E3D UniRef90-W8PU36 UniRef90-Q13PY2 UniRef90-B9R3H7
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UniRef90- F3KU77 UniRef90-M4UBH4 UniRef90-B8ICT5 UniRef90_UPI00037E0D9A UniRef90_UPI00046ADEF2 UniRef90-UPIO0038056C7 UniRef90-UPI0004762601 UniRef90-F0E5A3 UniRef90-A1WG78 UniRef90_A1WG77

1

T D

SD

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

 VRKQQLIVEEI FHEGGPPPDVPLRKAAMLSVIANPF

 DI RKLMVVVDE
 KI R K IV V T V V D E T L L T E M G Q Q KV I RKTA I L TTE
 VVHEGGPPANGPQKRGAVVAVI ANPY

 L M E V R K Y V T I L E E I H S D G G R P M D P P GK R A A AVAVIVNP F L I K V R K IV T H V E N I Y H E G GP A H G NP D $\quad$ K K G A I L I V L E N P Y
 FH $I$ R T W WF L QI E DTVAESGKEADAPIRKVVIAACLHNP F


$\qquad$


$\square \mathrm{D} V \mathrm{R}$ K T S L T V V

| E | I | R | R | I | I | T | I | V |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| K | E |  |  |  |  |  |  |  |
| R | K | I | V | T | T | I | E |  | $\left.\begin{array}{ll|lllllllll}D & F & A & L & R & K & T & M & L & L & L \\ E & E \\ D & V & I & V & R & K & M & I & Y & S & V\end{array}\right]$


$M \vee |$| $R$ | $V$ | $K$ | $T$ | $Q$ | $L$ | $S$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $R$ | $R$ | $G$ | $L$ | $T$ | $V$ |  |

ME AK VTIVI FH
H $\begin{array}{ll}\text { I K WY S F V }\end{array}$
$S \quad L$
E I R K IVVAYE
$D \xrightarrow[F]{L}$

F N RKV L

IEI R KTVLTVEDDFHDGGPVLEQPLQCAVAFAVVVNPG
DV R K T AL S V E E I WHERGPRLLEKPLLVGTAVAII RNPF
M K I R K WY T Q I E D T L A E S G E A D G E P L R K IV I A A A V I H N P Y


FTLRKTQLEDTLT


D D TLA
L S L R K L V T Y T E
E



FEI RKIVSYVE ETLDE GGKATVKPVTMVGLAVVMKNPW
FEVRKLAYYREE IWWIEGGKKLDKPITMLGVAAIIKNPW


$M \backslash$| $R$ | $R$ | $R$ | $V$ | $F$ | $T$ | $Q$ | $L$ | $E$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $i$ | $R$ | $R$ | $T$ | $L$ | $L$ | $Q$ | $M$ | $E$ | $T$ |

40


 $P \mathrm{~F}$

$P \mathrm{Y}$ | P F |
| :--- |
| P |


 $\begin{array}{llllllllll}A & S & I & M & A & V & E & N & P & Y \\ A & A & A & V & A & I & E & N & P & F \\ G & A & I & L & C & V & R & N & P & F\end{array}$ G A K A A A V A V FT NP F
 $\begin{array}{lllllllll}\text { K A A } & \text { A } & A & V & I & K & N & P & F \\ \text { A } & A & A & V & A & V & \text { I } & A & N\end{array}$ Y
F
F



$\qquad$ LHE G

GKAAP VP LIKMFAAAAAAVLMKNPW



 GP E A A S P R L L R G A I $L$ L A A L
 GPVASSP LIVVATALAAVI RNPY GREVVTPPARRRAAAALAAV I R N P F








 $G P V A N P P$ L GPPAA H P L




 GRAAPGP FK LIFGTAAVLAANPW




 | 1 | $R$ |  | $E$ | $G$ |
| :--- | :--- | :--- | :--- | :--- |
| $V$ | $R$ | $V$ | $E$ | $M$ |
| $I$ | $R$ | $H$ | $E$ | $F$ |

## QUERY

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A GRYEPDLMP FMAELRS LGTLLATELVDTVGKDNDEVYS K

 A GRYEPEI A GFMEDLIK PLGLLSMANRLI EALGGDAVVEYGK

 A GRYEE DLT T P L I E TGAELGALLGRRCVVALGPDQAESYGK






 A G R Y V E DL T P LT D A S V K L G D M L A K QV V A A L G G K QV E S Y G K


A
A G A GRY Y V E D L Q P A M E D L K P L A G Q Y V E D L T P LMMD I GDALGGDI L GRRAAVAA L GPEKAE GY G K S G S YVE DI TPMMEALK PVGLDAANQLI ELLGGKQDQSYGK


V A G

A GTY S A E L L
A GRF V DD D L K P E I H A I A A P L


 VGTYVEDLSALSAVGEALGEILPRRAVAALGGRRVESFGK A GKYVVEDLSELLSEIGEWLGEHLSKAAAEILDDGHVVETYGK


 A GRY V VA D L S D F M T A L L R P L G TA L A E ELLV EA L G G D R V E S Y G K


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A GKYVEDL

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$A G R Y E P E I L P M M D A L G P V G V D M A R Q L R A A M D V D T V Q G Y G K$
 HGKFVDDLKPE\|LDGSELGALIVDKLVGDMGGENIEAYGK A GRYEPDLLP FMSELRQLGAELSSRLVAQLGGAKVQAYGK
 A GQFVVEDL R P GI H DVA PVGK L L T DMII NFAGGEAV E

 A GRYV EDL SEMAAAARELARSSVPELLAALGGDRIIEAYGK


 A GRYV E NL DALAA I GEELGALL GQRCVQALGPEQAHS Y GK


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UniRef90_A8I9J0 UniRef90_TOIJB6 UniRef90_UPI000365F417 UniRef90_G7W7T9 UniRef90_Q2W792 UniRef90_B6B153 UniRef90_A6FMK6 UniRef90_Q5LV75 UniRef90_H0HJ96 UniRef90_A6UFP5 UniRef90_UPI00037AB72B UniRef90_K2NZ68 UniRef90_UPI0003B7B1C0 UniRef90_D8ISK2 UniRef90_B2A7K2 UniRef90_B0UBH0 UniRef90_UPI0004663C4B UniRef90_B9Z2S9 UniRef90_UPI0003B3925C UniRef90_A6VY72 UniRef90_UPI0003B5D01B UniRef90_L7EN89 UniRef90-N8Y6D5 UniRef90_L1KLF3
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UniRef90_Q13PY2
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UniRef90-W0PEP7
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A A VVGVDGEMEHGAVWHEAGGWAMRSVLGEPKAMVPAVKA ASVVGEGGELEHGALWHAPGGYAMREVLGGAKAIVPSSKK GSSII G T A G E L E H G A C WHVVP G GY A M R E L L
 GAIVGTNGELEHGALWHVPGGYAMREALGGAKAIV$P$ S S TKK
 GAA V G EA G E L E H G A L WH V P G G Y A M R E G L G D A K A AALVGENGELEHAALLHPKMGAPLRKEVEKGAALVPSSKK







GA $A V G A A G E L E H G A L W H V P G G Y A M R E D G G D A K A 1 V P S T K K$


AAVVGENGELEHAALLHPKLGAPLRKAVEKGAALVPSSKK
GSIV GTA GELEHGALWHAPGGYAMRELL GDAKAIVPDSTKK

GA V G VDGE

GAIVGENGEREHAAILDHPKLGKPFRDSVGGGKSLIPSAKK
GSIV GEA GELEH GALVHVPGGYAMREALGGALDAVPSAKK

A A I A G LA G E R E H A A L M H PA L L G K P D R A N V G G G K A L L P S A K K


GAIVGTAGEI EHGALWHVPGGYAMRERLGATKAIVPSAMK A AVVGTDGEVEHAALDHTRFGNFYRKAVGAKSYLSFTNV GAIVGAAGEI EHGALWHVPGGYAMRERLGTSKAIVPSAMK

 GAIV G GNGELE HAA L L H P KL L G K P F R D A V D G GK A II P S A K K A L L V GMNSEYE HGAFLTNPAANPVREAIGGGKSWVPSTGK AAAVGADGELEHAAILDPKLGAPFRDVLGKGAALIPPSSKK

 GAMI GEGGELE HGALWHAPGGYAMRQVLANSNAIVPS A AVV GLD GE A AIVGED GELE HAADLHPKLGAPVRAVLEKGAALIP SAK K GAIVGEDGELEHGALWHEAGGWAMREVLGQPKAIVPAAKT AAIVGVNGELEHGAVWHEAGGWAMRSALGEPKAIVPSAKA GAIVGFEGELEHAAILLHPKLGKPFRETVGGGKAIIPSAKK A C L V G S Q GE Y E H G A L LTVNPAADPDRVAL GGGK S WV P S T GK AAVVGLDGEIEHASLDHTRFGNFYREAVGAKSYLAFSNT
 $A M V G \square D G E Y E H G A L L T N P A A N P V R D A V G G G A S W V P S T G K$ AAVVGAEGEDEHAAIIHTRFGNHFREAVGAKSYLSFTNK A AL AGENGELEHTALWHVPGGYAMRQRLSNSKAVVPSAMK
 AAVVGLNGEAEHGAVWHEA GGWAMREVL GNPKAMVPAS QV
 A A LV GEN GEELEHAALLLHPKLLGAPL RADVI G GGRAALVPSAKA GAIV GARGELE H GALWHVPGGYAMRELELKTNAIVPSTKK
 ACVVGTDDGEYEHGALLTTDFAEPVRAALGGGKAWVPSTGK GGI A GEAGELEHAALWHVAGGYSMREVLGESLAIVPSSKK GAIVGVA GELEHAAVWHEAGGWALREVLGEPKAIVPANKA
 GAI I GAA GELEHGALWHVPGGYAMRELLGNALAIVPSTKK AAVVGVDGEVEHAAFIHTKFGNKFRDAV QGKSILIFTNK A AI I GL G GELE H GA ILHPKFGRGLREECGGQKAII PSSAK GA IV GVVD G E L E H G A V WH E A G G WA M R TVVLGEPKMAMVPS A K L SAVVGMEGEIEHASV1HTRFGNHYRDAVNAKSYLCFTNK GAIV GED GELEEHGAVWHEAGGWAMRETLGGPKAVVPSAKT A C I V

 GAIV GTE GELE H GAVWHEAGGWSMREALPRAKSLVPAVKA


 A AVVGADGEI EHAAVI HTRFGNHYREAVGPGTSILSTMNK AAIVGEAGELEHAAVLHPKLGAALRSVLGKGAAIVPSSKK
G A IV G A A G E L E H G A L WHVVP G GY A MR E L L G N A L A I V P A T K K







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UniRef90_M8EKD2

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UniR Refo-K9AT71
UniRef90-M3EKT2 UniRef90-UPIO00477A029 UniRet90-HORDX6 UniRet90_T1BEP5 UniRef90-UPIOOO421D401 UniRef90-UPIO003B66F9D UniRef90-B6JG19 UniRef90 UPIOOO36BF121 UniRef90-S4XFG7 UniRef90-UPIO004639EFF UniRef90-UPIO001FFDAE1 UniRef90-A1TSL
UniRef90
HORDX7 UniRef90-UP1000367DD64 UniRef90 UPIO00462CAB8 UniRef90-A4JR04 UniRef90-UP100035ECOB4 UniRef90UPIO00288C3AF
UniRef90-UPIO003B60E6A UniRef90 UPI0003B60E6A UniRef90-B4E177 UniRef90-A3W6A1 UniRef90_B2T030 UniRef90-B1FE00 UniRef90-B6JJL1 UniRef90 G8MFN2 UniRef90_M8EKD2


 A GSF TS DFS EVVIAKSAALGEEFGRRIVAALAARKAAS YGK A GK WQE DLSELLTEYGEY L G DLLLARK GAELLGGADAVVETYGK
 AGKYVDNLRPEIMEDAPLGGLEMTDRLIALMPADRIIEAYGK
 A GQFV EN L R P E L L R L A P L GYEMTRRLTALLMPGDKVVAAFGK A GDYVNEI E GF QDDLK $P$ L G L E MA K LAAAALGGA GAI E GYGK


## A

## F



## A



A GRFVVEDLRPEDDRDADLSHEMTARLLLRQMDAEKI EACGK

 S GRYV E DLLAEL I DL GE QL GDL L PR HAVALLLGGDQVES FGK

A A G R WV V
 A A GK F V A D L S A LTTA
A GK F V A E L S D L

A GR Y $V$ V |  | E | $D$ | $L$ | $G$ | $P$ | $E$ | $R$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $L$ | $Y$ | $E$ | $L$ | $G A$ | $V$ |  |  |

V H GYVE DLKPLVDASPNV
 A G K F $\operatorname{V}$ V




 AGQFVEDLGPGIASCADLGALLAPRVMEALGA PLEAYGK AGSAVSDLAPETERLAPLAKLLTDRLTEALGGAEVEAFGK VGTGPAADLSAAADAPQLAKMLTDRLVADLGGEALEAFGGK VGTSTDDLQPETKRIAPLSKLLSDRLLAALGGEDVEAFGK
 AGQFAQDLSVLTKPSRELAFELGRRAKALLGGSEVEGYGK AGRYSDDLAADTDDNYELGRLLASTAAETLGLEVVEGYGK
 A GQFVVEDLAPGI DAHAS DLDGALLAPAAALDALDEAPAAAAYGK

 AGQFVENLNAGILDEAPLGQLLAPRVMEALGVPLEAFGK LGGQGTANLTDYAAYAAPLAKELGGRLIDHLDGAQ1 EAFGK AETYHEELQSGMENLKGLGLMLTDRLI DTLGGNGIDGYGK AGQTDADLNDATQKIAPVAKLLADRLLTALGGENIEAFGK RGRGQDDLSPEVAGLAPIAHELSDRLLTALGGAAVEAFGK AGRWQEELSALYPAGHAI GERLTAEALRQI GAAAVEAYGK VGTGPRDLSREVEAVAPLARLVTEKLIDALGGEAVEAFGK GDGYVEDLVSIADELGEIGELVGPACVELLD DEVEVFGK ADESLAALEPLYELGAELGTLLTGRARWALDPSAM QAYGK品GKAFSKKLLKYLDGESAESYGK LGEESRDLSRHYHLGGQTGELLAPRVVSALSEPAYTYGK AGRLDDPLEPLYELGAELGTSLTEHARCALGVQADQVYGK


 A GQGAD DLARLAAGLVVEVGALLTERAL RFAGGERPRAYGK
UniRef90 D5BRT3 UniReftol-UPIOOO45E8E2s UniRef90-B9JI52 UniRef90-F2LNN4 UniRef90_F3WZ50 UniRef90-BOPCM7
UniRef90-W5Y6V4 UniRef90-D3P1E8 UniRef90-F6AC00 UniRef90-UPIO0036AC88D UniRef90-J2S6Q8 UniRef90 UPIO0046A806A UniRef90-UPIO0045E8A87 UniRef90-UPIooo37BABOF UniRef90-A9ATA3 UniRef90-W5Y805 UniRef90_UPIo00289B684 UniRef90-B5WH41 UniRef90 LIKIJ4 UniRef90-Q13PH3 UniRefefo-LOKMC1 UniRet90_B9L3H2 UniRef90_UPIOOO47712BA UniRef90 LOMCD8
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UniRef90 UPIOOO2378A63 UniRef90-F7ZG38 UniRef90-U2LZD8 UniRef90-N1 UZD8 UniRef90-14AE50 UniRef90_UPI0003B4AF5E UniRef90-88H8B1 UniRef90_UPIOOO4754274 UniRef90-UPIO003FCD694 UniRef90-W9APN2 UniRef90-UPIO0047AA19B UniRef90-UPIOOO374E6C2 UniRef90-UP10003B5C5F5 UniRef90-L7FA41
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UniRef90_M3EKT2
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UniRef9O_M8EKD

A A|IV|GMNGE 90
A A|IV|GMNGE 90
A A|IV|GMNGE 90
A A|IVGMNGE 90 $\quad 100$ GAVVGVNGELEHAALLHPRFGAPVRAAVGTGKDIIPGTKK AALVGEDGELEHAALLHPSLGKPLREAVEKGAALVPSSKK AAIVGVNGEYEHGAFLTTDFANPIRRAVGGAESWVPSTGK GCLVGTDGEREHSAMLHPKAGKPIRAAIGGGKSIIPSNEK GAIAGEDGEIHAAAWHEAGGWAMRAALGAPRALVPAAKT AAVVGTSGEIEHAALIHTRFGNHYRNAVGAKSYLSFTNT AASVGTNGEI EHASLIHTRFGNKFREA AEGTAFLSFTNV SADVGLKGEIEHASGUHTRFGNFYREAVGGKSYLSFCNU AAAVGVNGEIEHASLIHTRFGNLFRDAVGQGTAYLSFTNT AALCGTSGEDEHAALTHTLFGNHFRRAVGAKTYLAFTNV ACLVGTSGEYDHGAFITTVFAEPGRAAVGGAKAWI PSTGK GAIVGERGALEHAALLHPAMGTPLRASLGGGRALIPSAKK GAIVGGDGELEHAALLHPRGKPVRAAVEKGDDIPSTKK AAVVGVNGEIEHAALIHTRFGNVFRHAVEGTAFLSFTNT ACLVGANGEYEHGAFLTAVFADPVRDAVGGGKSWVPSTGK SAVVGGAGEDEHAAVI HNRFGNHYRNAV SAESFLSFTNK AAAVGVAGEDEHAAMI HTRFGNVFRDAVGGTTYLEFCNT AATVGLAGEQEHAACITSTFGNAFRTAIGGGKAWIPSNTK AAVVGMSGEVEHAALIHTLFGNVFRSAVGATTYLTFTNT CAVVGUDGELEHAALIHTLFGNHYRQAVGQAKSYLAFNNT A ALVGLDGEVEHGAII HTLFGNEFRKVCGNAKTLLPSAEK CAAVGLDGEIEHGALI HTRFGNLFREAAGGTAYLSFTNT AATVGLNGE EHGALIHTPFFGNVLRELTEGTSTIVFSDD AAVVGMGGE:EHAALTHTLFGNQYRDAVGAKTYLAFTNC AAAVGDNGEDEHAAMDHTRFGNPFREAI G GTNYLEFANT AGLVGTSGEQEHVAALTSTFGNAFREAGGGGAAWITSVTK AALVGEDGELEHAALLHPKLGAPLRAVLGGGKALVPSAKA AVIVGAEGEFEHAAAIHPKLGAPFRAVLGKGDALIPSAKK GAVVGVNGEDEAAVWHAPGGHGMRQLL DARGFVTSGQI AGLAGLDGEQEHVACVTTVFGNAFRDAGGGGDAWISSATK AAVVGGAGE EHAAMIHTRFGNHFREAV NAKSYLSFTNK ASVVGMGGEDEHAALTHTDFGNQFRDAV NAKSYLAFTNT GGIAGVAGEQEHVACVTTVFGDPLREAIGGGAAWISSASK GGl AGTSGEQEHVACITTVFGDPLRQQVGGGKAWISSVSK GAIVGLDGEIEHAAILHPKFGAPVRRAVHKGEAIIPGSKK GGVVGLAGEQEHAALLTTAFATPFRDELPGSAAWI SSFTK AAIVGLDGEVEHGALIHTKFGDHFRRA ANATTLLPAVEK AAVVGLDGEIEHAALIHTRFGNHYRQAVGAKSYLAFCNT AVVVGTAGEGEHGATKTTRFGDPFRAAFGGGKAWLPSTTK GGLAGLAGEQEHVACVTTVFGNADREADGGGAAWISSATK AANVGLNGELEHAALIHTKFGNKFRDAVGHGSTLPFSSR AA I GMNGDLEGGAVIHPKLGAPMRAAVGGGEAVIPSNAK AAIVGSAGSMEHGAVLHPALGKPVRAAVGGGKSLMPSNHK GGLVGSGGEAEHAALLTTAFANPIREAIGGADAWISSFQK AALVGTAGEDEHGALIHTPFGNLVREFLEGSSWICFADD GCLVGEDGEAEHAAVLHVRFGKSFRDETNGGLLAMMMNAK SAVVGLKGEVEHAALIHTPFGNLVREFLAEGTSLSAGSD AAVVGTAGEI EHGALIHTPFGNLVEAL HGESIICFADT AA VGTAGEIEHGALIHTPFGNLMRDFLQGESIICFADA
 AAVVGTAGELEHGALIHTPFGNLVREFLEGTSVLCFTDG GGVAGINGEQEHVACVTTMFGDGFRDAI GGGKAWI SSMTK ASLVGVGGEDEHG VAHKIFGKGVRDAVG GEAWI SSVSK AAVVGTAGELEHGALTHTPFFGNIMRELDEGTSVLCFADG GAIVGGRGELEHAALIHPKFGAPVRKRLGRGPAIIPSTKK AAIVGLDGELEHGALIHTKFGDHFRKA ANATTLLPAVEK AA VGTDGE:EHGAL:HTDFGDHFRNA TDATTLLPAVEK AAIVGLNGEI EHGSLIHTKFGDHFRKA ADATTLLPAVEK GAIVGMAGELEHAALLHPKFGTPGREACGGGKAIIPSAKK AAIVGLNGELHGSLIHTKFGNYFRDA ANASTLLPAVEK AAVVGLEGELEHGAFIHTPFGNLFREALEGSSIICFSES AAAVGTAGEYEHAALLHTLFGDPCRKSMNGSAWMVGNQK AA VGGNGELEHTALWHVPGGYAMRQRLKNSKAAVPSAMK AALVGIGGDLEGAMIHPRLGMAMRGAGKGRVII PGHAK AAIVGLDGELEHGALIHTPFFGNVLRHRTEGESIIVFSDQ GAIVGYGGDMEHAALLHPDFGRAVRAGLPGAQSIMPSTAK AA VGSAGEDEHALI HTPFGNLMREFLEGESI ICFADT AALVGIDGELEHGALI HNRFGNVFRDA AQGTELLPAAEK AALVGIAGETEHGALIHNRFGNVFRQA AQGTELLPAAEK AALVGSEVPREAALHPRMGKAMRASDPGATSLIPSVTK AAIVGLDGEIEHGALIHTPYFGDVLRHRTEGEAIIVFSDQ SCIVGTLGEYEHGAFLTTTFANPILRALGGGKAWI PSTGK AALVGTAGSHKCAALLHPRMGKAVRACLPGTESLIPSVIK ATVGAHGAAEHGAALLHPRLGKPVRAAGGGQALMPSIVK AALVGTGVPLEWGALLHPRLGKAVRSCLPGASSIMPSVTK AALVGTAVPLECAALLHPRLGKAVRAGGPGATS:MPSVTK GVIVGSNGDSEHGALIHPRIGLAMRGLGAGPALDPGNAK AVIVGTQGESEHGALIHPRLGLAMRTGLGAGPALIPGNAK

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UniRef90_X0QRT5
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