

## QUERY

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a

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R H LI L N S $\square K F N V K K A K T L G Y T K V V L C D N A K S G Y W R R D F A$


TNAVYGFTSMLINVLRDEQPTHVAVAFDRSE
$\square$ D A V F G F T K M L L K L M A D L

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$V N A V Y G G T S M L D N L$
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 T N A V F G Y V Q M L R S $\quad$ L









T N A V Y G F TMMMLL K V L E D E K P T H M V V A A F D A G K T T F F R H D T Y




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SDNVTVLYPKR
S D A V T TV L Y P K K R
DK VTVLYPRK
DRVQMFDAMKNRT $\square G$
SATTVLYPMK
E PGVTLVNTMT
GEERVITVLYYPRK
$\qquad$
D D VTVLYPVR
DTVVMWDPMKNK
SDRVTILYPVR
DGEVVLFDAMKNKEDR
GPSVTMYDPMKDRRIG
A GTTLLYPRK
DK VTVLYPMR
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D D VTLLYP
PGVTLLDP L K Q K P $\square \mathrm{G}$
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D D VTVLYTLK
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D HVF MYR P
S HSTLLYPGRK
DK VSLLDTMKNKRD
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E HVSLINTMSNYSMD■
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D
DNVTVLNTMTN

GPGVCMLDP | C |
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P H I KLVNTMTNEILD
ENITLINTMTN
D H V S M L D P V K G T P VK K

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D HVKI YKPGMK
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| UniRef90-A3VEY4 | G D GVEMLDPMKNKR!D |
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| UniRef90-U2K229 | EQVRMYRPMQGGGYEV |
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| UniRef90_UPI00047187AA | S P EVRVI M T K K Gl |
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| UniRef90-G8QSP9 | EHTFALRPAKKKFYKL |
| UniRef90-M7NRN2 | E EHTWLYK |
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| UniRef90-A9DPB4 | SENIFMYR |
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| UniRef90-UPI00038241DA | DQTTLFDSMKNKD\G】 |
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| UniRef90_UPI00035F8EA8 | S NVF F M R PRHGGGYDI |
| UniRef90-W8ZH26 | SEQVTI AVTRKGV |
| UniRef90-UPI0004683667 | D NITV |
| UniRef90-R4VA03 | G D V T L L T M N |
| UniRef90_UPI00036173C9 | EQI TIV C TMPNAFRK |
| UniRef90-UPI0003736D9B | D HVTLLVNTMSQ |
| UniRef90-IOJPM8 | D RVVV S L T K K G $\square$ T |
| UniRef90-F9DF48 | ENVYMYRPRHGGGYD $\square$ |
| UniRef90-A1HPM3 | GPRTKVMLTRK |
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| UniRef90－R7J3M2 | DSTL MLRPATR |
| UniRet90－M5DG23 | PQVTLINT |
| UniRef90－R7P9N0 | P HITMCRP |
| UniRef90－SOJGJ6 | SEHIK R |
| UniRet90－E3PRM3 | DK K KVL FTKKG口 |
| UniRef90－C2FSE3 | S D N：Fly |
|  | SPQV GNTMNKKRMTV |
| UniRef90－R6B617 | S DKVTIRTPRTK |
| UniRef90－WosL10 | QHVTLVNT |
| UniRef90 UP1000310 | S |
| UniRef90 R4KNA5 UniRef90 R5CL99 |  |
| UniRef90－UPI000428EA65 | ENCT |
| UniRef90 C8PXQ5 | PCVIVENSFDDKRYDI |
| UniRef90 S2DF | E E N |
| UniRe990－10R3L7 |  |
| UniRet90－D1BM52 | HS HVFL |
| UniRef90－S6FAS2 | H NINVV DTKKGVT |
| UniRef90－R6N837 | S HIC |
| UniRef90－W7WEW6 | A HVTLINTMSGERLDV |
| UniRef90－K8EEW2 |  |
| UniRef90－Q47UA6 | K HVRLINTMT DVEMDV |
| UniRet90－A8FG44 |  |
| UniRef90 UPIIOOO380D | A HTTLTNTMNNETLDD |
| UniRef90－E3DNP8 | SENVNLLYTKK |
| UniRef90－R5PJ21 |  |
| UniRet90－F9D3A1 | PCVMMED |
| UniRef90－R41184 |  |
| UniRef90－A6FZM5 | GPTVRMT |
| UniRef90－F1W332 | DD VMLINT |
| UniRef90－Q9PJP8 | SQ V S |
| UniRef90 UPIO00472459B | d ${ }^{\text {a }}$ |
| UniRef90 UP100031E3953 | ERVRV1 |
| UniRef90－I3BT48 | ERVGHLTN T |
| UniRef90－M4VA87 | K NVFLY |
| UniRef90－10GJV5 | KNVK |
| UniRef90－D7UYX3 | S HITVY T TKKGIT |
| UniRef90 KOP2A0 |  |
| UniRef90 SgUDE3 | ER |
| UniRet90－UPIO0036F1 | SDRVKVVI |
| UniRef90－D1C458 | GA VRII LPGRQ <br>  |
| UniRef90－F8F． | SDRVS |
| UniRef90－UPIOOO3642588 | DP STMMNTMTHQDFD |
| UniRef90 R6QVoo | D E H |
| UniRet90 A8USN7 | SENVV |
| UniRef90 BoK4F5 | DK VKV |
| UniRef90 U7PAK5 | SDNVTTYY TKKGVT |
| UniRef90－UP10003B54DD8 | GDRVMLDNTMSE |
| UniRef90－UP1000303FB80 | SENIYMYKP |
| UniRef90＇UPIOOO47510E4 | DEGSVGY |
| UniRef90－UPIO0047486D3 |  |
| UniRee90－F7NDW7 | $\mathrm{PGVQVM} \square \mathrm{T}$ RKG】T |
| UniRef90－14MFO1 | D N |
| UniRet90－E6PR | D H |
| UniRef90＿S7VZN4 | DD VLLLYP |
| UniRef90－Q11NX3 | EPG NMLVPTMKNQTI |
| UniRet90－E4U783 | E HVFV ${ }^{\text {a }}$ |
| UniRef90－A6TSU6 | SEKVKIL |
| UniRef90－Q892J4 | SDTTKIL |
| UniRef90－10G | PNLKVL LTKKGIT |
| UniRef90－C8PA | GEHVTVMMVTKKGV |
| UniRef90－UPIOOO34L | Qryval |
| UniRef90－UP10003B35B4А | D ${ }_{\text {dil }}$ |
| iRee90－G6FR42 |  |
| UniRef90－UPIO00462983E |  |
| UniRef90 UP100034A864C |  |
| 7BV | SP |
| UniRef90－R6CTNO | DKHVKRTPKK |




|  |  |
| :---: | :---: |
| UniRef90 K2GCY0 | LAKEVV |
| UniRef90- B114C0 | QEYKAQRPPMPDDLRPQL Prit |
| UniRef90-E016E9 | YKGNRGEPPNELDPQFD LVKEVVAE |
| UniRet90-R6190 | QRKPTPSELSEQF PLARR |
| UniRef90-U70 | ATYKANRSETPEDFIED\RHD |
| UniRef90-UPIO0047141FD | SEYKGGRQKTPPELSEQFPY P P P |
| UniRef90-V2V664 |  |
| UniRet90-R6XYH3 | YKANRHGMPEELAMQM PILKETLKAMNVC |
| UniRef90-R5E1H7 | YKGTRKGMPDELREQ VPLIKELLHAMNV |
| UniRef90-F4FWA3 | YKGGRAKTPTELSEQF PFLK |
| UniRef90-U4W | TEYKGGRAKTPSEL |
| UniRef90_UP100046E | SDYKANRPPMPDDLRAQIEELH |
| UniRef90-TOTDG5 |  |
| UniRet90-R7HSK8 | YK CNRPAMPDSMAQMGND |
| UniRef90-R7LNP3 | YKANRKGMPTELAEQM |
| UniRet90-EOQL | A ${ }^{\text {PKGTRKGMPEEL }}$ |
| UniRef90-Q30VC | ANRSATPEPLVQQL |
| UniRef90 R2SB56 | AEYKGGRSKTPSEFREQL |
| UniRei90-UPIO0047BD9B5 | YKANRPPMPDDLAAQVEPMCR PVITE |
| UniRef90-D2AKW2 | PQYKAHRKDDDDEL |
| UniRef90-U2TFZ1 | ADYKGTRDKTPED |
| UniRef90-W0T | RPPVPEDKAQ DRLH |
| UniRef90-G9Y | RKGMPDELAAQL PVLKDVLDAM |
| UniRef90-K9V88 | ADRKETPEDFİDLANL |
| UniRet90-R5K4VO | GTRKPMPEELREQ |
| UniRef90-W7CUK3 | QDYKGGRSKTPSEL |
| UniRet90_R4U51! |  |
| UniRef90 R5LC84 UPI00047 |  |
| UniRef90-F41 | ADYKATRQKTPED |
| UniRef90 R9C2N7 | KANRSDAPEL |
|  | GQRSKTPSEL |
| UniRef90-EORNU2 |  |
| UniRet90-G8N8 | AGRAPTPEDFPRQLS LI |
|  | A |
| UniRef90-UPI0003B6 | YKGNRSPMPEELRSQIDY PLIKDIL |
| UniRet90-G5GC17 |  |
| UniRet90-UPIo0028A0 | AGRKKMPPEAEOF PVV |
|  |  |
| UniRef90 R6JS UniRef90-N9W | AEYKGTRKPMLPELKQQ VMPGMKELLKAMN: |
|  | KANRADTPEDFIPDLVNLY DLLEALNI |
| UniRef90_V2YG67 | ANRKRMPEELASQL P PLKDVLRAMNI |
| UniRe990-J9R | PEYKAQREETPE |
|  |  |
| UniRef9-UPIO0047546D4 |  |
| UniRef90-KONH | KKGGRDKTPVELSEQL PYTREMLKD |
| R6DO |  |
| UniRef90-R78N2 |  |
| UniRef90 ${ }^{\text {B7GFD9 }}$ | ANRGEPPHELDPQFD LAKEV |
| UniRef90-M1ZII | R |
|  |  |
|  | L |
| UniRef90-Q11885 | KNYKADRPEPPEDLIDDLGNL |
| UniRef90 R5V5 |  |
| UniRef90-UPIOOO47 | VNYKSDRKET |
| UniRef90-UPI0003B65D65 |  |
| UniRef90-A0A010PM71 | AEYKGGRAKTPEE FRGQDDLIKQVAEGM |
| UniRef90-B4SN | KANR |
|  | NR |
| UniRef90-Q3YT | R |
| UniRef90-W4PXS8 | ANRGEP |
| UniRef90_W0EL20 |  |
| X1 | KAHRKKMPDELIS Q |
| UniRef90 U2 UniRef90 T1D | LHAQVPVIE EN |
| UniRef90-E7NP 8 | KATRDKTPED L |
| UniRef90-K9SJ15 | AGRPETPADFDPDLKNL |
| UniRef90-P52027 | KSGRAQTPED |
| UniRef90- Kgulti | ADRVETPEDFTTDIQNLYQ PRLALKAHNL |
| UniRef90-E8LEE0 | YKAQRKPTPSELSEQF PLAMKVLECMG |
| UniRef90-M1 | SDYKSNRPSMPEELVERD |
| UniRef90 W6K3G7 | S SYK |
| UniRef90-UPI0002EE3762 | PSYKAHRMVTAVAVGVD |
| UniRef90-Q824L7 | ADYKSNR EQKEENLYQQIPVV |
| UniRef90-D1ATJO |  |
|  | SDYKSNRQSTPEDLVTQU |
|  |  |



|  | 170 |
| :---: | :---: |
| $\begin{aligned} & \text { UniRef90KKGCYO KOGC } \\ & \text { Uniref90 W3AFE } \end{aligned}$ | SPSTTVY $\square$ TRKG $\square$ T |
| niRef90-B14C0 |  |
| UniRef90-E016E9 | SENVKVV |
| UniRef90-R61901 | DRVKVY FTKRG】 |
| UniRee90-U7QC56 |  |
| UniRef90-V2VV64 | DSFKERSLDV |
| UniRef90-V9G9x5 | SPTTSV11 MKK |
| UniRef90-R6XYH3 |  |
| RE1H7 |  |
| UniRef90-F4FWA3 | DKTTVQ VSKKGVT |
| UniRef90-UPIOO046E9915 | QHTTLVNTMKNET पDV |
| UniRef90-TOTDG5 | ENTV |
| UniRef90-R7HSK8 | K D |
| UniRei90-R7LNP3 | DNVRTNT |
| UniRef90-E | SDKIKIL FTKKGV |
| $\begin{aligned} & \text { UniRef90_Q30VQ3 } \\ & \text { UniRef90_R2SESE } \end{aligned}$ | SEKVVYVDDTGAK |
| UniRet90 |  |
| UniRef90 UP100047BD9B5 | EPAVELVNTMT |
| UniRef90 D2AKW2 | D N 1 |
| UniRef90 U2TFZ1 <br> UniRefo WOTJAc |  |
| UniRef90-G9YMN7 | STRVKLVST |
| iref90-K9V8 |  |
| UniRet90_CLDGG3 |  |
| UniRet90-r5K4V |  |
| UniRef90 W7CUK3 | S D |
| $\begin{aligned} & \text { UniRef90_R4U519 } \\ & \text { UniRe90_R5LC84 } \end{aligned}$ |  |
| UniRef90-UP100047B075F |  |
| UniRef90-FLLK29 | D T TQ L |
| UniRefao-R9C2N7 UniRef90 V7HX16 | D H S |
| UniRef90 U5N8L7 | DKHVTIVDTLQGKRRDT |
| UniRef90-EORNU2 | KGVKIVRMDKDDFV |
| UniRef90-G8N | SERVSIL |
| UniRefo |  |
| UniRef90-I7KSB6 | PNVEIW ${ }^{\text {dithkgFsT }}$ |
| UniRet90-G5GC17 | EPNLLMQRPGH |
| UniRef90-UPI00028 |  |
| A0AO | TD VNI W LTKKGFNT |
| UniRef90-R6JST8 UniRef90-N9WKK7 |  |
| UniRef90-D4TR36 | EKGLSVLN |
| UniRet90_V2YG67 |  |
| UniRet90_- ${ }^{\text {aFLV2 }}$ | GEHVYMYRPKHKMG |
|  | EHTN |
| UniRef90-R5N950 | EDDVK ${ }_{\text {A }}$ |
| UniRef90-KONHH3 | SDHVTVY VTKSGVT |
| UniRef90_R6DQ2 |  |
| UniRef90-UPIO00463D38A | DQVTLLDTMK |
| UniRef90-B7G | SERVTV |
| UniRef90 M1ZIT1 <br> UniRef90-A0A011QT42 |  |
| UniRef90-R6AN36 | SNRTTVE LTQKGlT |
| $\begin{aligned} & \text { UniRef90-Q118S } \\ & \text { UniRef90_R5V5A } \end{aligned}$ | EKGUSVZ |
| UniRef90-UPIOOO475F940 | D ER |
| UniRef90-K2C081 | DHTFVY |
| UniRef90 UPIOOO3B65D65 UniRef90 A0A010PM71 | S DRVRLYDPDKEAFLD |
| UniRef90-B4SNMO | PG Gelvidm |
| UniRet90-UPIOOO2FEBE50 | DGVRV |
| UniRee90-A0AO23CU11 | E |
| UniRef90- W4P XS8 |  |
| UniRef90-W0EL | HSSVL |
| UniRet90-X1R7 | P HTK K |
| UniRef90 - 2 KQ |  |
| UniRef90-E7NPX8 | EKHSKMYKPSKNAWT |
| UniRef90-ENP\88 | DK ${ }^{\text {d }}$ TMLKPNKDAWI |
| UniRet90-K9SJ15 | DKQVS |
| UniRef90-P52027 UniRef90 - 668909 |  |
| UniRef90-K9UJT1 | DDRVSVL |
| UniRef90_E8LEE0 | KRTKVF |
| UniRet90_M1L212 |  |
| UniRef90-DES4U3 |  |
| UniRee90-W6K3G7 | DA A R |
| UniRer90-OP10002EE3762 |  |
| UniRef90-D1AT | GEHVQVFDPDRNRY■T |
| 31 | EKN |
| UniRef90_O828F5 UniRef90_D0LO66 | DEGGRVL |



## UniRef90 R6PLU5 UniRef90_W4EAH1 UniRef90_Q3AU68 UniRef90_UPI000477E983 UniRef90-K2EB51

 UniRef90_UPIO004766702 UniRef90_U2UER1 UniRef90_C5NXG5 UniRef90_UPI00047E7048 UniRef90_A1SK27 UniRef90_R5EPJ5 UniRef90_S6T7Y8 UniRef90-W1Q513 UniRef90-G7WIK5 UniRef90_WODF40 UniRef90_F8C5C2UniRef90_R6Q7W3 UniRef90_C2CPH3 UniRef90_K9YI75 UniRef90_UPI000412D15D UniRef90_I1D312 UniRef90_UPI0003B4FBB4 UniRef90_R7C0B0 UniRef90-UPI0002E09D6E UniRef90_UPI000476021F
UniRef90-B9Y7P1
UniRef90_UPI000248FFE7 UniRef90_UPI0004788FCF UniRef90_U4WT83 UniRef90_A0A017T455 UniRef90_F8A4N6 UniRef90-E8LN58 UniRef90-W8K1S6 UniRef90_B5IQ46
UniRef90_S3DJX7 UniRef90_R5D0X7 UniRef90_UPI0004674114 UniRef90-R5YEV4
UniRef90-R7PRD4 UniRef90_M1M1G1 UniRef90-W4RHE1 UniRef90-W0FKV4
UniRef90-Q03GC3 UniRef90_UPIO0037327CE UniRef90_E3DUZ4
UniRef90 E6QKM7 UniRef90-E3GJN4 UniRef90-W6AA70 UniRef90_R6ML54 UniRef90-I3IJW7
UniRef90-J0X1I9
UniRef90_A0A031G0Q3
UniRef90_D4LAD7
UniRef90 U1SH86
UniRef90_U1SH86
UniRef90_G6CCI9
UniRef90_G8PDR9
UniRef90_J5HUV7
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UniRef90_Q3Z6P9
UniRef90_J2P102
UniRef90_Q2GD93
UniRef90_-Q3EMS6
UniRef90-R5VP85
UniRef90-U4KN58
UniRef90_UPIO00408BB3D
UniRef90-D2MP19
UniRef90_Q4L6E6
UniRef90_UPIO002D396DA
UniRef90_I4YSK6
UniRef90_B0VJ17
UniRef90_B8ING7
UniRef90_R5PTX2
UniRef90_QOIBN1
UniRef90_A9NF42

TNGVVGFLNDFFRLFDEDQPEYCAVCFDVHQ
TNAVYGFLQYFFDAVSTFEPSHVVCCWDMGKGTFRSEKY



 T G A L F G V V V N M L





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




 | $V$ | $N$ | $A$ | $V$ | $R$ | $L$ | $L$ | $D$ | $F$ | $L$ | $R$ | $L$ | $L$ | $R$ | $D$ | $H$ | $R$ | $P$ | $D$ | $A$ | $L$ | $V$ | $A$ | $C$ | $M$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

 T S V CF GFFK SLLLDVMASHKP DY L A A A F D L K K QPTFR HEA D



T S VT Y GF L K AL LDDHCK GLEPNGLVVAFDTDDVPTFRHDAD


T N A L Y GF I N M I N K I L K E EN P S Y I M V A F D

T N A I H GFIIK HFATAVVANFKPTHTAVVCWDMG SKTFRTEMF




TNAVYSFINMLTSLLNQNDYFDVVVAFDMGK KTFRHEKM
 TGMITGFMNFIASLGRDFPTVYVVFTLDSKEKETFRKEMF T NALYGFTSMVLKLLDSDEELGI GVVWWGGLBAFRTEVY
TNGTQGF DRHVI QAVMDDIKPTHVVAVCWDMGQQKTFRNDMF


TNA AVFGFTSSLLARKLQKTYTPEYYVVAMDSAAAPSFRKAWF






$T N A \operatorname{Y}$ T F



 R H L V L N Sl K K NI K D FKK Q G Y N QLII CVV N S K S G Y WRRRYS

 TNGIIH GYMKHLLTTATQADEPTHIVTCWDMGGSTTFRTESF T N A L Y GF VN MMMK I I GEEKPEY Y MVAFD DGK NFRKEKY










| UniRef90 R6PLU5 | S D T\|I |T|I K\PP K T K |
| :---: | :---: |
| UniRef90－W4EAH1 | DSVKVVIMMK |
| UniRef90－Q3AU68 | E GVQILK K G K N |
| UniRef90－UPI000477E983 | DERLKVI I MKK |
| UniRef90－K2EB51 | D K |
| UniRef90－UPI0004766702 | R NVRDED T M |
| UniRef90＿U2UER1 | G P GVTI L R P A K |
| UniRef90－C5NXG5 | S ENI TII YY TKRGVT |
| UniRef90＿UPI00047E7048 |  |
| UniRef90－A1SK27 | DEDVRVLY |
| UniRef90－R5EPJ5 | G N HVKL |
| UniRef90－S6T7Y8 | G HI TLVNTMTGSVLDV |
| UniRef90－W1Q513 | SDQVTVY $\quad$ TTKKGV |
| UniRef90－G7WIK5 | PKNVYL TKKG |
| UniRef90－W0DF40 |  |
| UniRef90－F8C5C2 | KNI AI Y DPVREKFLDL |
| UniRef90＿R6Q7W3 | REGVHVLDPSKGELV |
| UniRef90－C2CPH3 | EDTTVLYPMR |
| UniRef90－K9Y175 | E EQ\SVL |
| UniRef90＿UPI000412D15D | GPLVKVLY T K K |
| UniRef90－I1D312 | D D |
| UniRef90－UPI0003B4FBB4 | A P R IR V D DT K S GVK |
| UniRef90－R7C0B0 | G R I RLVNTMTR QVLD |
| UniRef90－UPI0002E09D6E | D S TV I Y Y K K |
| UniRef90－UPI000476021F | D R GVVRI L Y P VK |
| UniRef90－B9Y7P1 | ETTSVWL MKK |
| UniRef90－UPI000248FFE7 | K R GVT DVEH Y T P E F V／K |
| UniRef90－UPI0004788FCF | EKNITVL |
| UniRef90－U4WT83 | D Q HVKILK |
| UniRef90－A0A017T455 | E ERVMLWDAMRDKVYG |
| UniRef90－F8A4N6 | DERVRVLY TVR |
| UniRef90－E8LN58 | DK VTLI DTMND |
| UniRef90－W8K1S6 | GPDVII I N P WK N |
| UniRef90－B5IQ46 |  |
| UniRef90－S3DJX7 | D N $\square$ T L $\square$ N T T N N E F |
| UniRef90－R5D0X7 | P H TKV |
| UniRef90－UPIOOO4674114 | DK VS MY DP |
| UniRef90－R5YEV4 | S D DVTV |
| UniRef90－R7PRD4 | D K V TVFLDT Q K |
| UniRef90－M1M1G1 | N RVVSIVNTMNNE！LD |
| UniRef90＿W4RHE1 | D R V S V I |
| UniRef90－W0FKV4 |  |
| UniRef90－Q03GC3 | EKTVV A VTKKGV |
| UniRef90－UPI00037327CE | EHVLVLNPAKDNLV |
| UniRef90－E3DUZ4 | D G NVALL |
| UniRef90－E6QKM7 | D RVRVLNPQKENLI |
| UniRef90－E3GJN4 | D YVNVLYTATR |
| UniRef90－W6AA70 | H NTKILIPKT |
| UniRef90－R6ML54 | S DKTKVILTVTKSGY |
| UniRef90－131JW7 | SPQVRIFNI KKNDM\D |
| UniRef90＿UPIO004639322 |  |
| UniRef90－Q1AUF6 | G R V R V L R T TR |
| UniRef90－K9AN58 | E HVEIWW LITKKGFK】 |
| UniRef90－UPI0002D7B27F | D RVV M Y D L R K K |
| UniRef90－G1URI1 | GPNVYMWD P |
| UniRef90－R5IZP9 | E HVTV |
| UniRef90－A8DJA8 | E GI SIL L |
| UniRef90－Q73GF2 |  |
| UniRef90－T0DJD6 | GDNIKMLDTMKD |
| UniRef90－W7D701 | P T NVWIL |
| UniRef90－N0AVD9 | DNIHVIL MKK |
| UniRef90－I3DWI1 | ENISV |
| UniRef90－UPI00046784D2 | GPHVSVRDAT T K |
| UniRef90－M5J9X3 | D NCTV W VT K K G $\mathrm{D}^{\text {T }}$ |
| UniRef90－E4L9T8 | SEKVTVFLT Q |
| UniRef90－Q054V6 | KKNIKMLRGKKGEFVE】 |
| UniRef90－H1AQ68 | DNI SVY LTK K GVG |
| UniRef90－J0X119 |  |
| UniRef90－A0A031G0Q3 | S RGVRVIYT |
| UniRef90－D4LAD7 | GEHVRV D L A NK |
| UniRef90－U1SH86 | DK $\quad$ TVLYPGH |
| UniRef90－G6CCI9 |  |
| UniRef90－G8PDR9 |  |
| UniRef90－J5HUV7 | P GLDVL $\quad$ T K K G $\square$ |
| UniRef90＿UPI0003F4B610 | DPGGALVNTM |
| UniRef90＿D7RMP4 | F P GVVK W S P M Q K K F VK |
| UniRef90－Q3Z6P9 | GPDIRIL L P |
| UniRef90－J2P102 | SERVSV |
| UniRef90＿Q2GD93 |  |
| UniRef90－Q3EMS6 | K NVTV |
| UniRef90－R5VP85 | P EVEMK L L K T K D Y $\square \mathrm{K}$ |
| UniRef90－U4KN58 | H NVTI |
| UniRef90－UPI000408BB3D | SEYTKVY $\quad$ DTKKGV |
| UniRef90－D2MP19 | EKTTVML MKK |
| UniRef90－Q4L6E6 | N NVEVW |
| UniRef90＿UPI0002D396DA | DKTKVLL TRKG口T |
| UniRef90－14YSK6 | GPKVCFYD |
| UniRef90－B0VJ17 | ERSV M LDPMKD |
| UniRef90－B8ING7 | GDLVRFYD |
| UniRef90－R5PTX2 | DKTFVML |
| UniRef90－Q0IBN1 | SRNIAVLY |
| UniRef90 A9NF42 | E HIITV H M L K K G M R V |


 UniRef90-I3ZEW9 UniRef90_R7KB09 UniRef90_A1UFW2
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${ }^{60} \mathrm{P}$ D Y F|V V $A$ F D $\mathrm{V}^{70} \mathrm{H}^{70}$
APTFRHKMF

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 T NAVFGF LTTMLCKFI EMASPDAVVCAFDAGK PVHRDEAM





 T NGVQQGFLK H L LMASSDHFAPQHVVAVCWDMG SKTFRSEMF $T N V V Y G F V R M I L K I L$ A E K P D Y F V I I A WD S P VKTHRHESF
 T NAIY GF L N I L L S L L K E C Q P D EVVAV A F D L K A P T F R H KM Y T A A A L I I I T R M L Q G L L K K K F E G S K F I V V V F D A A K E K S F R H Q L
 T NAVYGFLNDI LKLI SDEKPNYLYAAFDKGHKNGRHDKY $T N G V Y Q F M R Y F L D A V Q T F T P T H V V C C W D M G S K T F R T D M Y$
 TSVLYSYAHTI CSLL EMRPTHLLAVCMD AKGKTFRHEMF

 T GAV F

## GKT <br> T N V I H G F L S M $\quad$ I N K

 KTRTYRN













 ANAAHGFVR F V H T L L Q S ERPARI AFAFDESRGTSYR HA L Y R H L I L A S SL K F NVI K A R S E G Y E K I I L A LIDNAKN GYWR R DEA $V N A V H G I L S M F M K M F S V Y R P T H I L L A R D T \quad K G G S F R N Q D Y$ $V N A V R G L L D V L A R Q D G E V R P K R V V A C F D A D W R P A F R V A L L$

 VWVI Y GVINMI RSLLIDKYRPDHMGIVFDSP GKTFRNDLG


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

 T N A I F GF TNMMN K I I S S L N E E D L L F V S F DT G H K T FR H Q EM




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| UniRef90-D5E5Y1 |  |
| UniRef90_P75403 |  |
| UniRef90_UPI00036135FE | GRRVRVHRPRT |
| UniRef90_S5M160 | CDDVRIVSQQSKK |
| UniRef90_UPI000467A18C | D P P V R V F Y |
| UniRef90-U6E114 | A NIT TV |
| UniRef90-F4GM90 | E HVELVNTMS GERQDI |
| UniRef90_N9VMQ5 | DENVRAW |
| UniRef90-UPI0003B67654 | Y TRVWLIQTKQE |
| UniRef90-17J7W5 | S DAVTVIQPQK |
| UniRef90-E6J818 | ATTTVVYA GMKKR |
| UniRef90-W6A8H5 | DKTSVIVKGNKNE |
| UniRef90-X1EBR7 |  |
| UniRef90_Q98PK2 | \|V|Y|I |

 UniRef90 Q7RNY0 UniRef90 UPI000407B29F UniRef90-B1IOA8 UniRef90_UPIO0034A2D42 UniRef90 I1TQF4 UniRef90-UPI000371A860 UniRef90_K2FU00 UniRef90 H5V0D9 UniRef90-UPI00040AA418 UniRef90_N9TZNO UniRef90_I2F4A9 UniRef90 E3SPV7 UniRef90 K2E33 UniRef90-C5BHA5 UniRef90_Q21SR9 UniRef90-UPI000305AC3A UniRef90-AOKHE3 UniRef90_D3P9M8 UniRef90 UPIOO0476491D UniRef90 K2C3D0 UniRef90-D2TIL8 UniRef90_G3MB70 UniRef90-I3ULK9 UniRef90-H6SUF1
UniRef90-C4UJ38 UniRef90-R6G350 UniRef90 UPI00035E6C4A UniRef90-A6F619 UniRef90_UPI00034B240C UniRef90 UPI00037B33A\& UniRef90-D3FST6
UniRef90-M7YR14
UniRef90-TORNG4
UniRef90 A0A022FYZ2
UniRef90-UPI00047A31F1 UniRef90_H8MT51 UniRef90 M4BMX8 UniRef90-UPI000248D803 UniRef90_R7XWU4 UniRef90 Q0RJA9 UniRef90-J8TFN0 UniRef90_C9Q850 UniRef90_U5VXU5 UniRef90 F4CVY8 UniRef90_R6KR06 UniRef90_G9W996 UniRef90 UPI000417680D UniRef90_A6SUA5 UniRef90-B8EAT2 UniRef90_UPIO0037F8291
UniRef90 F7KCI9
UniRef90-UPI00037B1324
UniRef90-IOEKS7
UniRef90-U6GU92
UniRef90_Q3ICC5
UniRef90-B1KQX1
UniRef90 K2F058
UniRef90 K1SH97
UniRef90-UPI00036AA19C
UniRef90_IOL1U6
UniRef90_J1YE31
UniRef90 V4HX96
UniRef90-R9PJ87
UniRef90-UPIO004756EA4
UniRef90 B0TPG7
UniRef90-U5NGA5
UniRef90-L8M5L4
UniRef90_UOG2G4
UniRef90_UPIO0042B4C0F
UniRef90-G7FPQ1
UniRef90-FOQQQ0
UniRef90 L8D4K0
UniRef90_B3H623
UniRef90_W9RAE0
UniRef90 Q07ZE8
UniRef90-I1NTV0
UniRef90-W4FQX2
UniRef90 A9PAR9
UniRef90 A5KBI7
UniRef90-D3F2X8
UniRef90-S8CV81
UniRef90-H3ZHA7
UniRef90_X1FG08
UniRef90_E7THY9
EKALI I D GNYLMFQSFYATYRGDI RTSNGTP

SEEKKTETF D GS SLLEKNYF GMP F L K NENDVNL S
SEEKKTETFLS TV
ENWLLVDGDNGLNRTFHATKYEYKTAPDGRH
NHLLIVVDADNLIRRDHADQGSPCCQQ
TL L SVDGTNTMHRAHHAIRY MEHKGTP
K Q K

| $I$ | $Y$ | 1 | $D$ | $D$ |
| :--- | :--- | :--- | :--- | :--- |
| $L$ | $L$ |  | $V$ | $D$ | WH

DALNLI RR\|HAVQGSPC ADTC
ELNEETFI LI DGFNLLSRCYFATAYGKELHEQRNS



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

L L I I D A L N I I R RI HEA $\square$ A EP D S E EKV
N P R P
R RVHAA QPDP
D GAA LV
HL V I

MPKTFDKE $R R L H A$
$R \| F$
$R$
MPK TF DK_PLLAVDGHHLLYRSWWGF SERRITSRRDGTD


ETLLVVVDGSIAARGAFVAKPTMTNSKGRE


DKLL I I DAESSIDERAFYAII PNMSNDESLYY MI I V D I N Qi MI S NLMVTNRDNLELSEDLV TQNHLLI I DALDNLI R RVHAVQLNQSNDPVASAT PLLLVDGHNLLWRAAFGFPAE DRSRDKSRD
PRMVLVDGNSLAHRAWYGYAPSGITAPDGKP
TQP T L L L I D GF NL LSR GYFATSYGRSKNSDGDY PADPSKSRQMLVDGTSVMYRSYYAQLQHGQLEHADGN LS H K K T S A QCLLVD GNNLLY EMY DARCQLLSWN G GP

K Q T LL L I D G L N I L R RVYEANPSED\|P A KV


RKKSVLVDGNNALY HYYDPLSTLEHQGVP
 SDPSARKLLLVVDAPSMLHRNHHARAHTRVMDRAGRP NEHNKLLVVDGFNLLSRGYFATSYGREKNSNGQY
 MLLDAASMYFRAYYGVPESITAPDGTP
EKLLI I DGSSLLSTSFYATATRLMKTSDGRY

## LLD GFNLLSRTYFATAYGKEPNNEGRY

 KLLAI D GLNIVRRVYEANM E EDTAAKA NKFLI D GLNLVRRIYAA $\quad$ VPDETDMQSTERV P L L L V D G H NL L WRAWF GFPAR $\quad$ R SR D K T R D NRLLI I DGSNLLFQMFFG MPARIVNKQGKP HLLIVDALNLI R R $\square H A D V Q S P C A Q$ $R F V \vee V D G S C V M F R C Y H A M P T L R N R E G D N$ K P H LL L I D A L NLIRR I Y A VDANQKHHSDE QML NTFLLIDDGLNLVRRLHAA QPNENDV

LP S A P E P CP L L L VD GHN L L WGAT FGFPAE DRSRDK T R L


FF $\square L D A T S F L Y R S Y Y S K Y Q L N D Y E E T D R P$
K P H L L LID A L N L I R R $\square Y$ A VDA N QK H S NEEQL V MNEFEGREVI I I DGSAI ARKCFHAVTSDKKDQKDYEN

P N P ELLI I D A L NLLI I
K K R VF F LDDN P L C Y A NKLLI I D GLNLL S R R DHA S S S L H S F GY W P A K P AKPRVFFLDVNPLCFR $R \square H A V L P D E N D \square A S V Q E$ K R QRDTTLLIDDGNNLLY DVYDARCTLSWNDQA
$R$ VF F LDD V PLLCYAGSTPS
ETFLIVDGSS L LFKNFFG MPHLKNESE』N



## UniRef90 Q057H2 UniRef90-Q6D8F6 UniRef90-F5YSW0 UniRef90_DOKVP7 UniRef90_Q4A5N5 UniRef90-C5ZZ02 UniRef90-I6ZED3 UniRef90-Q7RNYO UniRef90 UPIOOO407B29F UniRef90-B110A8 UniRef90-UPI00034A2D42 UniRef90-I1TQF4 UniRef90_UPIO00371A860 UniRef90-K2FU00 UniRef90-H5VOD9 UniRet90-UPIOOO4OAA418 UniRef90_N9TZNO UniRef90-12F4A9 <br> UniRef90-E3SPV7 <br> UniRef90-K2E331 UniRef90 C5BHA5 <br> UniRef90-O21SR9 UniRef90-UPI000305AC3A UniRef90-AOKHE3 UniRef90-D3P9M8 UniRef90_UPIO00476491D UniRet90-K2C3D0 Uniinefolo-D2TIL8 UniRef90 13ULK9

 UniRef90-H6SUF1 UniRef90-C4UJ38UniRet90 R6G350 UniRef90-UP100035E6C4A UniRef90-A6F619 UniRef90-UPIO0034B240C UniRef90_UPI00037B33A8 UniRef90-D3FST6
UniRef90-M7YR14
UniRef90-TORNG4 UniRef90-A0A022FYZ2 UniRef90-UPIO0047A31F1 UniRef90-H8MT51 UniRef90 ${ }^{-}$M4BMX8 UniRef90-UPIO00248D803 UniRef90-R7XWU4 UniRef90-Q0RJA9 UniRef90-J8TFN0 UniRef90-C9Q850 UniRef90-U5VXU5 UniRet90-F4CVY8 UniRef90-R6KRO6 UniRef90-G9W996 UniRef90_UPIo00417680D UniRef90-A6SUA5 UniRef90-B8EAT2 UniRef90_UPIO0037F8291 UniRef90-F7KC19 UniRef90-UPIO0037B1324 UniRef90_10EKS7 UniRef90-U6GU92 UniRef90_Q3ICC5 UniRefofo-B1KQX1 UniRef90-K2F058
UniRef90
K1SH97 UniRef90-UP100036AA19C UniRef90-10LIU6 UniRef90-J1YE31 UniRef90-V4HX96 UniRef90-R9PJ87 UniRef90-UPIOOO4756EA4 UniRef90-BOTPG7 UniRef90_U5NGA5 UniRef90-L8M5L4 UniRef90_UOG2G4 UniRef90-W7TPYO UniRef90-UPIO0042B4C0F UniRef90-G7FPQ1
UniRef9- FOQQQ0 UniRef90-L8D4K0 UniRef90-B3H623 UniRef90-W9RAEO UniRef90-Q07ZE8 UniRef90_1NTV0
UniRef90_W4FQX2 UniRef90-A9PAR9 UniRef90-A5KB17 UniRet90-D3F2X8 UniRef90 S8CV81 UniRef90 H3ZHA7 UniRef90_1FG08
UniRef9O_E7THYY R
 QHA VNAVRGFFDSVATLI TRHEPGRLAVCLDDDWRPQWRVDLV VGALQGFADALLTLLESEHGPVIVCTFDAPCNRSFRQT Y TNALTLELLKQLVKYLVFYKPDYLFIAFD AKERTKRHELL ENFFDLDFTSQLKKLKLNSYGYGLGALDVDRSKFRTEGL TNGVQGMDRHFKLDEDTGAKNVIIAWDMGSKSVRNEWF TNGVSAFLKMVFGYQRKFSAN IVVFFDQGKG FRKELY V H A TNATVGFFNIVRSNLKITGATHALASFDRPGENFRHKLH TNMI HGWLRSFWRMVDEFKPDLVWVFFDLGGCPQ REG1 L TNAVFGLAKMFMMWYEQDKPDKLIFVLDSKWDNY RHQI Y VHA RGLITNGLRTLVQLIKNYNPTHMAIAWDVKREETDRRQKF TNTVVLFFSTLFNLIKENKPTHLLIAFDAKKETFRHKIYY RHMVLNSDRSYEQKY GEKYGEMVLAYDS KQYWRKQVF VNAVYGFMAYLRKAVLVVKPSHLIVVFDSETGDTSKVQEN RQLVGHTTGSKRALKTHRPSHAVAVFDDDRAESWRHRLL
 TITRANLINTCRKLLAASEPTHVIAVFD GEVHSWRKEVY LTGVFGFLALLRKTHLEAAPDHIVVAFDGENSHAARKAQD VNALYGFMANLRKAVKLMSPSHVYVIFDSETGDEKKVQKN TGGSFRFFSMLDKAMRMVRATHVVVSWDVG GQTFRNVID RHMVLSSLRMYRRKFG EKFGELVLCYDS KNYWRKKIF SGTUFRIIEELLENYRDYKYNTMVICDDDHSVPYWRKSLY TNATYGFTKMFFATKNEDQ RHMVLNSLRGHNKKFRKE RETVKHAVRKLLSI LTAVFGFFALLRVAVRDTATHVVAVFDAEQTG WRHDSY LHAVYGFFALLRVAVRDEFPDEVLVVFDGEHGSDDRKQDD TNALRVFFQKLMNLI HE HDVTHAAVGVDDHTSSQRRRWD GDWVLTIFKALSLLLDEFDPSHVAVAVDDVKREDSVRRQYA EGAVLSALASFRRALAECRPTHALAAFDAGGKTWRHALY RAAVGNAGRAMLKNL CAPSHVIAVFDSPEAPSWRKQLH VKATAGVMDSLLALLHDEQVTHVAVAFDNPDRSSFRNALF TFAM HUFFNTVFKLIKLVEPNNIYFAFDFG STTNRHQSY VWALHGMLRQI DESVDGFAPDAVIFGLDDRTSSDRRERY TNGLRVFFQKLFQLVRLEPDSHMVVAWDVKREESDRRQYA
 VNAVRGFTGMVARAAAHLRPSGVVVGCCPDSARKVDY TNGVFPFMRTLSLKKNOPTHLVVWDVSR ORFRVDAL TNGVFPFMRTLLSLIKKNQPTHLLAVVWDVRAQTFRQEDG VQATRDFMTKLHQLERQHRASYVHIAWDGKRGDTHRQQEH DAALRHSLASFRKLLNTHDPTHVLPAFDFG GHTWRHDLY SSACT VTGVFGFFALLRVAVRELPAPEIAVVFDGENAWDQRLDI D
 TGLLTGLVGMVKKFYKDRKNMPFVVFALDESQTKTKRAEKL VGALLMGFFRSLVQTRRRVSPSHMAVVFDHPTGRSSRLAVS KASCARVAHACSKLLSSTKATHALAVFDGDKS WRYHFY
 MLNKA!VDFKPDYLISCFDTPE KTFRNELF RHE DTGVFAFFALLRVADREDDQPEVIVVEDGQYGGSDRKEVD RAQIQSNTRQMLKLRQEDQPSHGLMVFDGG GSQWRQQLC QSCYQRVKNATRKLLKTSQASHAI AVFDGDKS WRYHLY DNATTMALGSACKIIASLKPSHII AVFDGERCAWREQLF LTAPFGFFALLRVAI RDELPPEVIVVFDGEHGSVERQDSD VNG
 GLGNRINNESQPH1LAVFDHHQERGWRADVL位 HMCSERVAQACKKMDRDTDATHA AI FDGDKS WRYHFY RARVHNAVQRLLKLKSFQYG AVFDG RNSWRHEFY SQAFGHWl SGLFSQVSLTDP VIVAV DGEEGNQRRRELL

VLAASKKMLLQHQPTHCMVVWD GNEP
VLAASKKMLLQHQPTHCMVVWD GNEPSWRKTLY TGAAVRFVQRVRLIVAHVSRDPRVAVLDGEGGNEYRRRLL LHSFAHWI SLFFSQVSLTDP V AVLDGDGGSEHRRQLL LSTMYGFIQSLNKLYKLFCPSYVVVVFSKTSNDGKKKIV STVTFN
$R Q Q \| S N T R A \square K R \square R Q D \square Q P$

## UniRef90_Q057H2

 UniRef90-Q6D8F6 UniRef90-F5YSW0 UniRef90-DOKVP7UniRef90 Q4A5N5 UniRef90-C5ZZ02 UniRefefo-I6ZED3 UniRef90-Q7RNY0 UniRef90_UPI000407B29F UniRef90-B110A8 UniRef90-UPIo0034A2D42 UniRef90-11TQF4 UniRef90-UPIOOO371A860 UniRef90-K2FU00 UniRef90-H5VOD9 UniRet90-UPIOOO4OAA418 UniRef90_N9TZNO UniRef90-12F4A9 UniRef90-E3SPV7 UniRef90-K2E331
UniRef90 UniRef90-O21SR9 UniRef90-UPIO00305AC3A UniRef90 AOKHE3
UniRef90 D3P9M8 UniRef90-UPIO00476491D UniRef90-K2C3D0 UniRef90_D2TIL8 UniRef90-G3MB70 UniRef90-13ULK9 UniRef90-H6SUF1 UniRef90-C4UJ38
UniRef90 R6G350

DRYKANRПKAPQELFTQFD
PLYKANRPEVPQDLKLQLEET
PGYKANREPMPQELVDWFPED
$A Q Y K T \square R K K N P E E Y E Q L$
DGYKANRPAPPEELKPQFD
PEYKDGRKEKPEELTQQF
PDYKAGRPPMPDNLLTEM
PDYKGHREKNPEKSAA
PDYKANRGSPPEGFVEQLE W
PDYKANRGSPPEGFVEQL
SEYKATRDRMPSD
 QAYKEGRDKMPKELIEQYETAIS ESYKATREAMPDALVAQDKD PYYKQNRKKDRQRSGHDWSSTFEVLNKTRDEIKEYFPYKV EFYKSNRNYQ PGYKAGRQAMPDADAQEMESLRAAF TAQGVAC DGYQANRKPMPQ PLRDGLLTLKRELHD PEYKQGRKPMPE TREGTLQHGLNKIQDAFWD PAYKEGRTPMPTEREGRNELQDAFWE
KEYKAQREKTPENLDPQENL
KEYKANRATADHSPIRSLL
DSYKANRDHS
ADYKAGRPPMPDELQQEMPSGRAAF
ETYKANRLPKGDSLYHQFDD
POYKASRKKDRENSNONWGTEEVINKDRDEKDAVGIKH
PDYKAQRKTQREESEVNFKEVYKHINTLTRELNDYTPYRV
PDYKAGRSPMPDNLQQEMPQLRQAFADL RTMDTPFKA
NGFKVTRENAPKA
PNYKAGRKANREKSEHDWTMDFDILSKVKNEIKEFLPYKV

PHYKAKRAATHDDVHVQLADVTT
PTYKETRNDDPAPLDEQYETCTR
PAYKSNRTSTPDTVVQGMQYL
PNYKQTRKPMPDALRAQFDVTLH

PSYKGDEGRPTPASLVPQFAQ
PDYKKGRQKPPESLFLQ ID
PDYKAGRAEKHPELIDQLER
ASYKAHRVAVPAGRAEEVADEDTVQLP\|ADA


PSYKAHRVAGPYGVPEEVPDTLAPQVP\|LELVRAAG CT
GTYKGTRKATPHPLKEQFISTQNLLQGIIPQFLSG
PDYKAGRPPMPDDLHNEMPALRAAF
AFYKAQRADDPAPLDDQYH
PRYRENRAPMPEVLRERLPDFYVQ
PNYKKGRKPMPEPLAQGLVAL
PTYKAHRPTDDEAMAP
ADYKANRTDYPEEENP
PEYKAGRTPPPATLIQEL
GAYKQNRKDTPEEMLLQI
KDYKHSRAPMPQ
EDYKKGRKPMPEA $\square$ AKS $\square P$ A L
KEYQSQRPK $\begin{gathered}\text { DDD } \\ \text { D }\end{gathered}$
K
ADYKANRPSMPEDLRAQVQPMC
ADYKANRPSMPEDLRA
PTYKAQRPTDPAALAP
CYKANRKPMP
ALLAEVLPELL

EDYKKGRKPMPEAARKALEAPDVQCG
PEYKANRDPMPQEL NWLAEATSKVSE
PEYKQNRDHTPEDFLDDLRNLRC LLGEMNMTV
PEYKQNRKPMPEPLLNGLDA QQAWWEL LLGEMNGCN
PAYKRNREAQPPEL LLALVPRAMAYLEAGGCRV
PSYKAHRRKFPTTSRKFVRSQVGRSQQLIMDVLRKCNVPV
EHYKHSRAPMPETLKSALHHFKSAI
PEYKANRKKVDESF
PNYKASRAPMPTSLAHNDDKDASGF ELGAI ET
PSYKAHRKS PNHGRYSKRPHQFVDEVLRKCNVPV
PSYKAHRWKFSRQFS RGHVGRAHR\|ITDVLGKCNVPV
SDYKKGRKPMPTALSDGLVN

## PSYKAHRPRGPG

PSYKAHRPRGPG
PSYKAHRRKFS
SKARRRKSRKSSAPQKYPA
AKYK MMRKNPEELYEQL
AGYHADRPPVPDGLAAQFAR
PSYKAHRRRPNRERS
PLYKANRKPM
$P$ LYKANRKPM
KEYKAHRPKAPDELVSQUIEAHA
PDYKAGRPPMPEELHDEMPALRAAF

$\mathrm{K} N|\mathrm{~V}| \mathrm{F} \mid \mathrm{V} \square \quad 17$
PHI QIRDYFQKRWLDL EQPV
GPDDRWFNPMRQK KNTRVF FKDEEVT K D T FLFNP H
Y N D
NTNKILLTKKGYT
S D D VTV I R K G N K
P T I FI RDYF QKRWLD AK HVVRLNPNKKLTVT
EPGVS QL LP
W NVVAY DTMKRR
SPAllQIRDYFRKRWLD
AK T S S I K K $\square$ K N A Y
DK V H L R
Y P GVV QYNP $\square \mathrm{AKK}$
GK I Y I V K M G K K
S P Q I Q R D Y F Q K R W L D L
D Q V C I Y D H F K E V W WR D
$P$ T L R R R F Q Q RW W
$C \begin{array}{llllllll} & P & Q & Q & R & D & Y & F \\ R & D & Y & N & K & R & W & L \\ D\end{array}$

| $D$ | $R V L I$ | $Y$ | $D$ |
| :--- | :--- | :--- | :--- |
| $D$ | $Y$ | $Q$ | $N$ |
| $V$ | $E$ | $E$ |  |


$D N \vee \underset{R}{R} \vee \mathrm{~L} Y \mathrm{P}$ LT
YP FVVK Q Y N PVKK S F V E

PR R Q QR D Y F Q K R WL D L
D D NI KVIGY

| $R$ | $I$ | $K$ | $Q$ | $Y$ | $N$ | $P$ | $V$ | $L$ | $N$ | $K$ | $F$ |
| ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $V$ | $G$ |  |  |  |  |  |  |  |  |  |
| Y | $I$ | $Q$ | $I$ | $R$ | $D$ | $Y$ | $F$ | $N$ | $K$ | $R$ | $W$ |

TT
$\begin{array}{lllllllllll}S & P & S & L & R & L & R \\ S & P & H & V & V & I & Y & K & \text { P } & R & G \square Y \\ D & G & A & & \end{array}$
D G A I A A Q Y D Y F K R E Y L Q L

GED
K K T T T I N K $\square \mathrm{KN}$
SDHTQVLR
D A GVRVRYAVEK

D
$N T R V W$
S P G L R R R D Y F Q K R WLD
$P Q T S Q V F V R K K K E$
HGAV I WDHFKGEW
H R QI S Q WD H F N Q Q Y LD $\square$
PRVVKLNTARR
DK V SVLRYRGDK TV
SPQ RLRDYFQKRWLD
$\mathrm{D} K 1 \mathrm{~V}$
E H I A VY D Y F K K H Y LD
HTNI ERWDHFNQAY!TI
DNVFVAAP
S D HI T I C IP K T K K
P GII E L V N T M
D R V R V L N T
Q GVQI Y DAF GRNFASV
GEHI QVY DYFKQQGI
$\mathrm{N}, \mathrm{G} V \mathrm{~V} \mathrm{~N}_{\mathrm{N}} \mathrm{L} Y \mathrm{Y}$ D Y F F R R E Y I S $\square$
E QARVLNT

S D R RV S $\mathrm{S} V \mathrm{H}$ Y TH G K
$\begin{array}{lllllllllll}S & D & R & V & V & H & Y & T & H & G & K \\ S & P & T & L & Q & R & R & D & Y & F & Q\end{array}$



SENVQUVDP
$S E R D V Q M \vee M P$
$K ~ N L T L W D H F N Q Q V F D V$
SEDVQLVMP $\square$
H H S V V $T V Y R P M A R Q S \square R$
SEDVQQIVLP $\square A N R W$
Y N D
D TVTVVLY
S E R V Q I V A P V
Q GV LI YDAFARHF $\square \mathrm{D}$

| $N$ | $D$ | $T$ | $T$ | $V$ | $L$ | $T$ | $P$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $P$ | $T$ | $L$ | $R$ | $R$ | $R$ | $D$ | $Y$ |


| LLLIDALNNLIRR】YAVDSNQNKGS |  |  |
| :---: | :---: | :---: |
|  |  |  |
| NNAVNILI DGNSL G G M H Q Q P K K |  |  |
|  |  |  |
| VDSSNLLKRSYHGA |  |  |
| V DVS N M M K K A M H $\quad$ d |  |  |
|  |  |  |
| SKDRVFFLDVNP\\|CFR GSQRSLGAA |  |  |
| I VID S D F L C Y Q K H A M K S L S W |  |  |

LLLVDAHS QGYYHQQSAATLKVGDME
PSKPTKPRVFF $\square D V \operatorname{DVCFR} \quad G S Q R N L G A$
VVLIDGPALIHRWYYRWDYTNRNNPVDVK $R \vee H L V D G T Y E L F R Q H F S A A R H S D S H P M A A A$ DKKVLHVVDMSPCIYAGSFHSF $\square Q G D \| V N T G N G$ EKA \VLIDGPA LVHRWYHRWSYTAERYGTSGVV

DLIGENADRRRVI I ID FNHDAWRYAFSNAKGLS $\square$ NRLVNG RKRUVLI DGSSMVKEAFYSLDANG MAGGV PNFI LIDDGSYYCFYRYFAAKKDEKDDDPSQH

LLDDCDY VVYKCCAAAETEDDFGDDVIV KGILVMDGDWLVFKAMAAAEVETDWGDDKAA KKLLI FDGESILEKAWLLLPRATKEYSSG

LIVDGDLWAYRDAAATEKSTDFGDGQFV MSKPLVNHALILDADYLVYQA MSAAEDETQWSDDVW DRVVI IDGDILAYQ DA AREEKPIHWGDGFW

MEDTKVSKKRLLLVDGDMVAFSHCAAEEYGKDSED\NFA LLIDGDII AYKVACACEHATEWSEGVWT LI 1 D GAAL YYSLYYTSDPKLDQRCGGDY
ILI DADILRYKAAHPFDPKEYPAPEGEI
LLID GDMVVHRSTVAVEKDTRFDDR



[^0]


QHYKSSRAPMPATLLQNALDKFKHAD $100 \quad 110$
10
120
PDYKANRDDNAEMK QMKEGFAVQKPFDKKADTQLGVDV DGYKTG $A G M D P A L W Q Q F P L A E R V S E A L G L V V$

AQGMQY KAS SAYKANRKTKEWHKRLEMEDSILKQRKRDQAYAEELFLRQ ■DYKAGREKSP ETEDRLAQTEDAVHDLTGHFTK
PGYKTG
$A G V D S N L D A Q F P L A E E A V S A L G L V V$ PSYKAHRT RGVGTGADSRVVDVLCECNVPV PGYKAGRTEKDAALVEQLER AGALLDALGLAT
 PSYKAHRRKFLSQSSAFQKFSHVTRSEVVMDVLTKCNVPV
PSYKAGRRKFPLDPSFKWTRGLEASFSRFQRFLRQCNI PVV ADYKK REPNPD MEAMKEKFKLQRPY $\square Q K A F S Y \square G V E Q$

 PKYKLNR EGREVGEELGVIQKVATKVFLGEPKNT HGYK
HGYK
PDYKGSRTH
PEYKANRQT
ADYKANRQEKT
PEYKDNRKSTPE
DGEGMDPAGLLDQUPVVMEDAALEAAAGFTV

SEYKKNRKMT
 $K V A V A D S W R Q Q Q P L A S A L L L H M G V I Q Q$
PDYKGDRKTPNGDF $\square Q Q \square E$


PGYKGNRV
HDDMUEKE
LDYKANRVCNPA
VVS Q $\square E S$ LIWD G $\qquad$ LSAS
PQYKTNRKGVRK
PEYKGHRNRKKP
PEYKANRKATRKPVGY
KSYKKNSDFFVKELKKQ PTYKANRANVRRPGK PTYKANRANVRRPII $\quad$ LIGELLDHIRAE
PTYKANRKATRKPTGYRAFDNKVMQYPEWESFLR
PKYKSNRKGKRKPM
PTYKENRKGVRKPVGLQ
PSYKSNRKKTRKPVGLQ YKALVEWVEQLSE HYET
ENYKGNRDDRPENLKNAKAHLMVAWNGVWMKGLEADDLAV PEYKANRKDKR
SKHKGEKAKTR SKHKLEKAKTVAETEPDAAPGCNVLPPLLVKEQLKEKD KQYKGNRDPN EQRPFHYATVGDYVIK
PDYKSNRKSSRK

[^1]


[^2]

| UniRef90_UPI0002D54651 | $N \quad Y\|I\| N \mid V Y O Y \text { F K K E Y } \mid \text { L } \mid \text { D }$ |
| :---: | :---: |
| UniRef90-F3Q633 | EKWVSLREDAKHKRIS $\square$ |
| UniRef90-A6GKG6 | G S K V VLFD |
| UniRef90-A0A022R8K7 | SPSLRLLR |
| UniRef90-X0Z9S6 | L N ITI I F P D K D VPVT |
| UniRef90-H9EB58 | EADTKL |
| UniRef90-D6TCU6 | GS R VGWDRRRD $\\|$ L $\mathrm{D}^{\text {d }}$ |
| UniRef90-M8AP38 | S EDVQLVMPI |
| UniRef90-UPI0003C7FF4D | S D H TRVLR |
| UniRef90-X0T821 | T NAFI Y NPRKKKRFT $\square$ |
| UniRef90-B9SLH3 | SEDVQ\\|VLPVTK ${ }^{\text {V W }}$ |
| UniRef90-D8RZ77 |  |
| UniRef90-W1IV26 | ENVS FIN |
| UniRef90-A1SKK9 | SEHTQVLR |
| UniRef90-K7VAN8 | D D |
| UniRef90-L7TM10 | F NVRQYNPVQEMMYT |
| UniRef90_D0A103 | ESRCYYYDIRTKHLI |
| UniRef90-M4ZVS1 | GDRVVQFDRRKREIID |
| UniRef90_H1CDF7 | D NVSIL |
| UniRef90_A7AUC4 |  |
| UniRef90-E9BFI8 | E |
| UniRef90_F8XP40 | S ERVDWF TP $\ddagger$ T D K A M T L |
| UniRef90_G8DB35 | S T RVRLIFNPHTYK R K I |
| UniRef90_C3GTM3 | EQVSVY MKSK |
| UniRef90_UPI000465656A | A E HV TVVQ $\square$ P |
| UniRef90_UPI00037ED7D5 | S D KVKIY N |
| UniRef90-R5W9N6 |  |
| UniRef90_UPI000305FD64 | $\square G N$ A WLF N P A K |
| UniRef90_UPI0002FEB63B |  |
| UniRef90-B4YQG1 |  |
| UniRef90_UPI000406AA7E | S ENVVIENTS T |
| UniRef90-A0A037Y172 |  |
| UniRef90_H9YAH3 |  |
| UniRef90-UPI000368E3D1 |  |
| UniRef90-E1DNZ3 | WTY N P A K D |
| UniRef90-D5BQR9 | $\square \mathrm{P}$ G QLYR P T K E R M T $~ \square$ |
| UniRef90-A9Q1U3 |  |
| UniRef90-D1Y7C6 |  |
| UniRef90_UPI0003EC5DBF |  |
| UniRef90-G0X4X8 |  |
| UniRef90_-V7H2H1 | D E I I T I |
| lupas_21 |  |
| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
| conf | 8845888537772333 |
| sol25 | B B B B B B B |
| sol5 | $B \quad B$ |
| sol0 |  |
| jhmm |  |
| jpssm | $\xrightarrow{\longrightarrow}$ |


[^0]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    ssm

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

