QUERY
UniRef90_G5BS21 UniRef90-C3YGE4
UniRef90 V5GQ24 UniRef90-H3AKS6 UniRef90-MOQW21 UniRet90-BOW802 UniRef90-M3YY06 UniRef90-EOVNI1 UniRef90-H3BWX8 UniRef90_K7E1G6 UniRef90-K9J833 UniRef90_UPIOOO3FOCC41 UniRef90-UP1000
UniRef90_UPIOOO3C29A1D UniRef90_UPIOO042ABC42 UniRef90-UPIO0038F06F9 UniRef90-BoWJD4 UniRef90-A0A044QUN1 UniRef90_B5XF51 UniRef90-B7PCN1 UniRef90-UPIO002246DEA UniRefefo-G1TLAS UniRef90-Q8K023 UniRef90-UP10003C37E72 UniRef90_B3M497 UniRef90_D2A296 UniRef90_G5BS22
UniRef90 UP10002 UniRef90-O9NA15 UniRef90-UPIIOOO22F356C UniRef90-UPIO002746593 UniRef90-UPI00042AB106 UniRef90-UPIo003BD1B23 UniRef90-X1YG79 UniRef90-F1PYG1 UniRef90-UPIOOO441B646 UniRef90-G4LXS0 UniRef90-A0A034WFV2 UniRef90_UPIO00347FA7F UniRef90-Q28FD1 UniRef90-R4UN63 UniRef90-UPIO0036F1EEB UniRef90-TOJDO1 UniRef90_V4IHT9 UniRef90-U5L6V1 UniRef90_UPIO002C69428 UniRef90_U5L766
UniRef90-U61703 UniRef90_OO3H48 UniRef90-W6NEFO
UniRef90 O8EST2 UniRef90_UPI0002897CC0
UniRef90-UPIO0032AEC4A
UniRef90-U6NZT5
UniRef90-G9F9F4
UniRef90-G8RPB4
UniRef90-E3E1J1
UniRef90-Q7QDK4
UniRef90-UPI00047DBA54
UniRef90-W9XC38
UniRef90-B41Z35
UniRef90-H6NIU4
UniRef90-W7BR73
UniRef90_C5C608
UniRef90_UPIOOO29A9005
UniRef90_UPIOOO47160D5
UniRef90-Q6YOZ3
UniRef90-V6IYW5
UniRef90-UPIOOO349714B
UniRef90-FoZW57
UniRef90_A8F915
UniRef90-H2M3F7
UniRef90 UP10004438B1A
UniRef90-U2T5W3
UniRef90-LODCZ5
UniRef90-M7A4N3
UniRef90-B8IHU3
UniRef90 U4UOUO
UniRef90_W9YO38
UniRef90_G4FI97
UniRef90-A8xLW5
UniRet90-Q0S6N1
UniRef90-H8LEY6
UniRef90 S3AXP6
UniRef90-S3AXP6
UniRef90_UPIOOO3F5B973
UniRef90_H2WQR5

UniRef90_H2WQR5

MASRILLNNGAKMPVLGLGTWKSPPGQVTEAVKVA DDVGY
 HILLNDGNSTPVTGLGTYASPEGACAEAVKVAI DAGY QRVKLNDGHFIPVLGFGTAEVPKSEALEVTKFAIEVGF MTARVKLSNGQSIPLLGLGTWGSPPGEVAQAVKDA:DIGY

VRLNDGHFMPMLGLGTSQVPKSKVEEAVQTAADDVGY RIPLSDGNHIPVLGLGIYMTPKGTALECVKYAIDVGY MATFLVLKNQAKMPIVGLGTWKSPPGKVASAVKAAIDIGY SYVVLNDGHKMPVLGFGTFKGPKSLAEEGTKVAVDVGY $K$ PKIKFYNGNETPAFGLGTWKSKPGEVTQAVKDAI DIGGY VELNDGHF PRLGFGTVKVPKSKTTEATKLA EAGF MAAFLQLRGAKMPVVGLGTWQAPPGKVAEAVKFAADVGY
 APTVTLNNGQKMPVLGLGTWLSREGEAVTAVKAAIDAGY MVSTVKLNSGHSDPSLGLGTWLSQPGQVGNAIKDALNNGY KPTVTLNTGASMPIVGLGTWRAEPGKVAEAVKAAISAGY APFVTLSSGRQVPVVGLGTWKSEPGKVYEAVKTAIIDAGY
 $\square \mathrm{LA}$ Q K K V $R\|P L N D G N S\| P V \mid G G G$
$\qquad$
NGYEMPVLGRG MGHTLKLNNGHELP!VGLGTYKSP

VTLNDGNFMPVLGFGTSASDE MVQSLKLNSGYS IPAIGGGTWQSKPGKAGEATKVAIDVGGF
 MNSRVRLNDGQFIPALGFGTYKVPKSKSVEAANLAIG\|GY
 MNTFV TVDGRRMPV GLGTWKSTSSRVVKQAVHTA EVGF MACTVVPNNRNSPM GGLGT WKS MACTVVPNNGNS MES LKMNNGRS DP I G GGTWNSPGKVGDAVKA $P T T K D N N D V E M P M I G Y G T W R M P A N D V T R L V K E A I D V G Y$ $M Q H V T L N N G L T M P Q L G F G V W Q V P D D E A Y T S V T T A I E A G Y$ MATAVTLYTGQK $\square P L I G L G T W K S A P G Q V K D A V K Y A L G V G Y$ $M V P T V T L N N G H Q F P V T G L G T Y N A G K G E V E Q V V K D A I D A G Y$ IIADTTVLNNGVKMPWVGLGVWKTKEDEVIQAVKHAI RAGY LQSTITLNGLKMPQLGFGVWQVPNDEAVPAVEKALEVGY LQSTTTLANGVKMPWLGLGVYKVEDGEVVDSVKYAIKAGY
 DRVKLNDGHFIPALGGGTYKVPKSKAFETTKLSLDAGF DQDKTVLNNGVEMPWMGLGVFKVEEGELVNAVKSAI KLGY

PSLVLNSGYQDPQDGFRTFDAPKEDVIKSVECAADTGF
 MEYVTLNNGLKMPQLGFGVWKVPNEEVVSPVEHALKVGY LQDTLTLHNGVKMPCVGFGVFKVDGEEVVNSVKAALENGY

T P T FKLIS GYEMPMVGLGTWQS PKLSSGCEMPLIGLGTYKADPAQFREAVEWGUDAGY SPSITLNDGNAIPQVGFGVFQTPPDETERAVTIAFEAGY Q D
$P N V T L N N G V T M P Q L G F G V F Q V P D Q E V E K A L N Q A L E A G Y$ APTFTLNTGTKDPAVGFGTWQAAPHEVEKAVEDAGRAGY
 TVELANGVKMPQLGFGVWKVDGEEAVNSVKWAIEAGY PTLTLNNGVEDPALGFGVFQTPPDETVAAVEEALRVGY APSLTLNNGVVMPQLGFGVWQVPDAEAVEAVGTALAAGY LS DTI LL N NGVAMPCFGLGTYKAA GDEVEHAVTAALELGY
 LNDTVKLNNGLSIPGFGLGVWKVDGEEVIDHVVSALKAGY MQ HVTGNNGLRMPQWGFGVWQVADDQAHASVAAALEAGGY
 $M$ M $\square P S V T L S T G A K M P I V G \square G T W K A E P G Q V C E A V K V A I G N G Y$ MTFDLTLNNGVVMPALGLGVFQSPAAELKEAVKLA DVGG MLT TIKLNSGDEMPLVGLGLWKDDRADAAGSVREALVNG
 MQPTLTLNDGKRIPQLGFGVWKL
$K T K F Q L N T G A E \square P A \square G F G T W Q D K E A Q$ EDAVVFAALKVGY MQYA SLSNGDQMPLLGLGTWKSESRQVYAAVREAIKGGY
SPTITLSNGHKMPQVGLGTWQSTPEEVISAVKAAINAGY $\square P T V T L N D G N S I P A L G F G V W Q V P D D E S H A A V I E A L K A G Y$

 EHSIALHNGVKMPQLGLGVWRVSPEDGVDAVRTABEVGY

QUERY UniRef90_G5BS21 UniRef90-C3YGE4 UniRef90- H3АКS6 UniRef90-MOQW21 UniRef90-BOW802 UniRef90_Q6AZW2 UniRef90_M3YY06 UniRef90-EOVN11
UniRef90 UniRef90-K7E1G6 UniRef90-K9J833 UniRef90-UPIO003FOCC41 UniRef90-UPIO001A46D43 UniRef90-।3M2J8 UniRef90-UPIO003C29A1D UniRef90-UPIIOOO42ABC42 UniRef90-UPIO0038F06F9 UniRef90-BoWJD4 UniRef90-A0A044QUN1 UniRef90_B5XF51 UniRef90-B7PCN1 UniRef90-UPIO002246DEA UniRef90-G1TLAS UniRef90-Q8K023 UniRef90-UPIo003C37E72 UniRef90-B3M497 UniRef90-D2A296 UniRef90-G5BS22 UniRef90-UPI0002C65E3F UniRet90_O9NA15 UniRef90-UPIOOO22F356C UniRef90-UPIOOO2746593
UniRef90 UPIOOO42AB106 UniRef90-UPIOOO3BD1B23 UniRet90-X1YG79 UniRef90-F1PYG1 UniRef90_UPIO00441B646 UniRef90-G4LXSO UniRef90-A0A034WFV2 UniRef90-UPIO00347FA7F UniRef90_O28FD1 UniRef90 R4UN63 UniRef90-UPIOOO36F1EEB
UniRef90-TOJD01 UniRef90-G2RTP3 UniRef90_-V4IHT9 UniRef90-U5L6V1 UniRef90 UPIO002C69428 UniRef90-U5L766 UniRef90-Q03H48 UniRef90-W6NEFO UniRef90 Q8EST2 UniRef90-UPIOOO2897CCO UniRef90_UPIOOO32 UniRef90-G9F9F4 UniRef90-G8RPB4
UniRef90_E3E1J1 UniRef90-Q7QDK4 UniRef90-UPIOOO47DBA54 UniRef90_W9XC38 UniRef90_B4IZ35
UniRef90_H6NIU4 UniRef90-W7BR73 UniRet90 C5C608 UniRef90_UPIOOO29A9005
UniRef90_UPIO0047160D5 UniRef90-Q6YOZ3 UniRef90-V6IYW5 UniRef90-UPIO00349714B UniRef90-FoZW57 UniRef90_A8F915
UniRef90-H2M3F7
UniRef90-UPIOOO4438B1A UniRef90-U2T5W3 UniRef90-LODCZ5
UniRef9O-M7A4N3 UniRef90-B8IHU3 UniRef90-U4UOUO UniRef90_G4FI97 UniRef90-A8XLW5 UniRef90-OOS6N1 UniRef90-H8LEY6
UniRef90 S3AXP6 UniRef90-S3AXP6 UniRef90-UPIO003F5B973 UniRef90_H2WQR5

70
80
 RHI DCAYTYQNENEVGEAIQEKIREKAVRREDLFIVSKLW

 RHI DCAHVYQNEEHVGQAI RSKI ADGTVKREDIFYTSKLW RHI DCAHVYQNEHEVGEGVNAKIKEGVVKREDVFVTSKGW

 RHODCAHVYQNENEVGEATIQEKLKEKAVSREDLFVVSKLW RHI DSAFFYGNEVEVGRAI RAKIADGTVKREDVFYTGKLW RHI DSAYFYQNEKEIGEAI REKIADGTVTREEI FYTTKLW RHLDCAHVYGNEKEVGAAI AAKI AEGVIKREDLFDTSKLW RHDDCAYSYEVEEEVGLAVASKIADGTVKREDIFYTSKLW
 RHFDGAYLYKNEHEVGEALREKIAEGKVKREE:FYCGKLW RHIDTAYLYANEQEVGQAI REKIAEGVIKREDVFVTTKLL RHI DCA RHI DCADAYQNEDEIGRAI EEKI KEGVVERKDLWVTSKCW

 CHMDCSHLYQNEEE:GQA:LSKIEDGTVKREDI FYTSKL W




 RHDDSAYTY LNEEAVGQAV RKKI ANGTVKRKDMFYTTKVW RHFDCAAAYENEKEVGEALLASVGPGKAVQREEVFVTSKLW RHDDCAHVYONEHEVGEGIAAKIAEGVVKREDLFVTSKLC RHVDCAYVYENEEEVGNGI QDRI QAGVVKREDLFIVSKLW RHLDCAYVYRNEAEVGGALECSLKSLNLKREDVFVTSKLW
 RHI DCAFVYGNETEVGEATKEVGSDKGLSREEVFVTSKLW RHI DGAMI YENEEEVGAA\NAKIAEGVIKREDIFVTSKLW

R

## K <br> $R$ $K$

RHIDCAYAYGNEEGVG $\quad$ GA R DA A AYSNEREVGLIRSKVEDGTVKREDLFCNSKLW RIVREGIAEAGISREDLFITSKVW



ND CAYI YKNEEEVGQAIRSKI E
 RHVDTAAAYRNERGVGKAVAES GLPREDLYITTKLW RSIDTAAIYGNEEGVGKGI REGLKEAGI SREDLFVTSKI W
 RHLDCAA Y Y N ETEVVGG RHIDTAYFYENEGEVGNAVRQKI KEGVI KRDDI F I T T K K L RSIDTAA DYGNEASVGQGIREALQEGGLSREDLFVTSKVW RSIDTAAAYRNEEGVG RAI KESGVNREDLFITTKLW RHIDTAAAYGNEREVG QAI RSSGIPRAELFVETKVW RSVDTAAVYENERG RGIDTASLYGNEHEVG RLFDGAEDYANEQEVGEGIKR KMIDTAA $\square Y$ RNEAGVG RSIDTARAYDNERG
TGG

 RSIDTAAAYQNEEGVGKA I QQSGISRDDLFI TTKVW RHID GAYAYENEQEVGKGTHAMI DQGVVKREDLVIVSKLW RHFDCAY $\begin{array}{ll}\text { R } & \text { C } \\ \text { R } & \text { D }\end{array}$ RHLDSACDYGNEVEVGEGDRQALLARGTCRRDELWVTSKLW
 RSI DTAAAYGNEAGVG

 RS DTAKGYENETGVG RHI DTAQGYKNEESVG
RSIDTASGYGNEGG
 RHID T A A VY Q N E E QV G G E A



## QUERY UniRef90_G5BS21 UniRef90-C3YGE4 UniRef90-H3AKS6 UniRef90-MOQW21 UniRef90-BOW802 UniRef90_Q6AZW2 UniRef90-M3YY06 UniRef90 EOVNII UniRef90-H3BWX8 UniRef90-K7E1G6 UniRef90-K9J833

 UniRef90-UPIOOO3FOCC41 UniRef90-UPI0001A46D43 UniRef90-।3M2J8 UniRef90-UPIOOO3C29A1D UniRef90-UPIO0042ABC42 UniRef90-UPI00038F06F9 UniRef90-BoWJD4 UniRef90-A0AO44QUN1 UniRet90_B5XF51 UniRef90-B7PCN1 UniRef90-UPIO002246DEA UniRef90-G1TLAS UniRef90-Q8K023 UniRef90-UPIO003C37E72 UniRef90-B3M497 UniRef90-D2A296UniRef90-G5BS22
UniRee90-UPI0002C65E3F UniRef90-Q9NA15 UniRef90-UPIIO0022F356C UniRef90-UPIO002746593 UniRef90_UPIO0042AB106 UniRef90 UPIOOO3BD1B23 UniRef90 - X1YG79
UniRef90 F1PYG1 UniRef90-UPI000441B646 UniRef90-G4LXSO UniRef90-A0A034WFV2 UniRet90-UPIO00347FA7F UniRet90_Q28FD1 UniRef90-R4UN63 UniRef90-UPIOOO36F1EEB UniRef90-G2RTP3 UniRef90-V41HT9 UniRef90-U5L6V1 UniRef90_UPIO002C69428 UniRef90_U5L766
UniRef90-U61703 UniRef90 ${ }^{-}$Q03H48 UniRef90 W6NEFO UniRef90-Q8EST2 UniRet90 UPIO0032AEC4A UniRef90-U6NZT5 UniRef90-G9F9F4 UniRef90-E3E1J1 UniRef90-Q7QDK4 UniRef90-UPIOOO47DBA54 UniRet90_w9XC38 UniRef90_B4IZ35 UniRef90-H6NIU4 UniRef90-C5C608 UniRef90_UPIO0029A9005 UniRef90_UPIO0047160D5 UniRef90_Q6YOZ3 UniRef90-V6IYW5 UniRef90-UPIOOO349714B UniRef90-FoZW57 UniRef90_A8F915 UniRef90-H2M3F7 UniRef90-UP10004438B1A UniRef90-U2T5W3 UniRef90_LODCZ5
UniRef90_M7A4N3 UniRef90-B8IHU3 UniRef90-U4UOUO UniRef90_W9YO38
UniRef90_G4FI97 UniRef90-A8XLW5 UniRef90-QOS6N1 UniRef90-H8LEY6 UniReffo-S3AXP6 UniRef90-UPIO003F5B973 UniRef90_UP10003F5
UniRef90_H2WQR5


## QUERY

UniRef90_G5BS21 UniRef90-C3YGE4
UniRef90 V5GQ24 UniRef90-H3AKS6 UniRef90-M0QW21 UniRef90-B0W802 UniRef90_Q6AZW2 UniRef90-M3YY06 UniRef90-EOVNI1 UniRef90-H3BWX8 UniRef90_K7E1G6 UniRef90-K9J833 UniRef90_UPIO003F0CC41 UniRef90-UPI0001A46D43 UniRef90-13M2J8 UniRef90_UPI0003C29A1D UniRef90_UPIO0042ABC42 UniRef90_UPI00038F06F9 UniRef90-B0WJD4 UniRef90-A0A044QUN1 UniRef90_B5XF51 UniRef90 ${ }^{-}$B7PCN1 UniRef90_UPIO002246DEA UniRef90-G1TLA5
UniRef90_Q8K023 UniRef90_UPI0003C37E72 UniRef90_B3M497 UniRef90_D2A296
UniRef90_G5BS22
UniRef90_UPI0002C65E3F UniRef90_Q9NAI5 UniRef90_UPI00022F356C UniRef90_UPIO002746593 UniRef90_UPI00042AB106 UniRet90-X1YG79 UniRef90-F1PYG1 UniRef90_UPI000441B646 UniRef90_G4LXS0 UniRef90-A0A034WFV2 UniRef90_UPI000347FA7F UniRef90_Q28FD1 UniRef90-R4UN63 UniRef90_UPI00036F1EEB UniRef90-TOJD01 UniRef90-G2RTP3 UniRef90-V4IHT9 UniRef90-U5L6V1
UniRet90_UPIOO02C69428
UniRef90_U5L766
UniRef90-U6I703
UniRef90-Q03H48
UniRef90-W6NEF0
UniRef90-Q8EST2
UniRef90-UPI0002897CC0
UniRef90_UPIO0032AEC4A
UniRef90_U6NZT5
UniRef90-G9F9F4
UniRef90 E3E1J1
UniRef90-Q7QDK4
UniRef90_UPIO0047DBA54
UniRef90-W9XC38
UniRef90_B4IZ35
UniRef90_H6NIU4
UniRef90-W7BR73
UniRef90_C5C608
UniRef90_UPIO0029A9005
UniRef90_UPIO0047160D5
UniRef90_Q6Y0Z3
UniRef90_V6IYW5
UniRef90_UPIO00349714B
UniRef90-F0ZW57
UniRef90_A8F915
UniRef90-H2M3F7
UniRef90_UPIO004438B1A
UniRef90-U2T5W3
UniRef90-LODCZ5
UniRef90-M7A4N3
UniRef90-B8IHU3
UniRef90-U4U0U0
UniRef90-W9Y038
UniRef90_G4FI97
UniRef90-A8XLW5
UniRef90_Q0S6N1
UniRef90-H8LEY6
UniRef90 S3AXP6
UniRef90_S3AXP6
UniRef90-H8X972
UniRef90_UPIO003F5B973
UniRef90_H2WQR5
 HSKGITVVTAYSPLGSPDRPWAKPEDPSLLEDPKIKEIASK KSKGVVI TAYSPLGSPGRDFAQPGEARMVEDPAVLDIAKN TSKKIVITAYSPLGSPDRPWAKPGDPQLLDDPKIVALGKK REKEI I I VGYSPLGTCRDSWVNVKLPPLLEDKLLNSIGKK KSHDIVLVAYGALGQRVKEWVNLNLPVLLEDSVLCAI AKK
 K S K D K NHDILLI TS S S SPLGSAGRPWATPEEPKLLLQDPKLNE:AAR
 K SKDIVLVAYGVLGSTRDKKWDDQSTPFLENAVLNAIAKK K SKDIVLVAYSALASHRDPNWIDKD DPHLEEPILNTIAKN KQRDIVITAYSPLGSPDRPWAKPEDPKLMDDKKLDELSKK K SKDIVLVAYGALGQRYKDWVDPSSPVLLDDPVLGALAKK

 KQWNITITTAYSPLGRPNYYEKDPDNMPKPDDPRVLKIGKK QEHGI MMTAYSPLANPAMPFRKPTDAVLLDDAVILKKLAEV
 KKHDUTVTGYSPLGRPGNRYGIPGDTNAWDDPII QELVKK HEKLITSDLQCPGGSPDKEEVNTSDPPDLKDTLLNSLGKK QSHDIVIVAYSPLGTNRDPMWVNTDPPLLEDPLLDSLGKK KMNDIVLVAYGALGTQRYKYCINEDTPVLDDPVLCAMAKK KERNI TLTTAYSPLGRPK PDDEKKPEFYYSEKTKALAADK K SKDIAI TAYSPLGSPNRPWAKEGDPVILEEPKDKELAAK KDRDIVVVGFCPLGRSNYVGRPNFPTPTI HDPKVDEMAKK

 K SKDIVLVAYGALGTQRYKWVDQNSPVLLNDPVLCDVAKK KSKDIVMTAYSALGSDDKDWVKKGNPVLQEDPILNAIAEK K SNDIVLVAYGVLGTQRYT WVDQNSPVLLDEPVLCSMAKK RSVGVCVTAYSPLGSGDRPWASANEPSLLADPRLGAlAQR

 QS $\square G L T V T A Y A P L G S P A$ A ASPGRVDLLMEPWVLQi AKH SKYNIVITAYSPLGSPHSPYDKPGTHKLLQHPLIVELAQK AAEGVLTEAWSPLGQ GKGLLEDPVLVELGAK HAHGLVFTGYSPLGSPDRSWRKPEDPVLLEEPGIIAMAKK
 A K H D: Y Y
AKHDI YVEAWSPLMQ
CKQGI QVEA A WS
KQKGI QTEA A WS

| $P$ | $L$ | $A$ |
| :--- | :--- | :--- | :--- |
| $P$ | Q |  |

GGDVLNNEVITNIAAN
GELLDNEVLTRIAEK $\square L G Q Q L L D E P V I T E I A A R K$ K SKEIVLVAYSALGSQRPKEWVEESALVLEDPVLCAVAKK

HSKNI QVEAYAPDGSPGFMKGQVLPLVKQ, PNVDEIAQK KEHGI LSEAYSPLGT GK】FTDPELKDIAAK KKHNI SVTSYASLGSPGRVNFWEPAPSCMEDPNVKKLAEK EKHNI YLESYS

K SKDIVV KKHGIAVTAYSSLSNPGSFFRKDGDPNLLTEPII KKIASA
 LTHGI QLEAWSP LMQGQLLDHPVLKEIAHO KANGITVTAYSPLGSKDEKLLNDEVPDLLDNPVVKEIAQR AEHGI ATEAWSPLAQ GAVLGDEAVVRIA GA NEKGILVQAYSPLGNN MTGELLKTVDDPEVHAIAKS KEHDIIVTAYCPLGRPDPSKKQPGGFI YDAKVQAIADK CEQGIQLEAWSP $\quad$ Q A SHGI L S Q A WS P I G G $\square T$ F Y Y E G Q G A R H GI ATEAWSPLGQ NGQLLQDAKLKAI AEK QLNN QDEAWAP $\quad$ LMKGQLQDNEILTSIAAK YKK G Q T GYS SFGPQMDLKRALDTPVLLEEPTVKSIADK SGGLI DHPTLKAI GEK ADHRLLTEAWSPLGQ GKGLLEDQTLRGLGDK DQK GKI AYSPLGQ TIDHSPVIEEIAKS HSKGISVTAYAPLGSPERPWATRDOKAKAK
 EQHGIVTQAWSPIGGGDTFYPGWDKRRSVMDDPELAAIAGAD HEEGI AVTGFSPLGAPSYVPAASLEESVMEQQVVRDLAQR
 HSKGI AVTAYSPLGSPDRPWAQPGDPQLLDDSKLLALLSKK K E K GII HVVT Q Y S P F G N N P V Y D K G K N DP K L I D D P V L T D I G R K A S E G I LI TA Y S P LGG S M D RP E A F K D AP V V L E N P V I R S I A E T K K H G V SVVT S Y S T L G S P G R V E F T L P N G I M K P F G P A V I S I A E K T GK GI A TEA WS P L G Q
K K H D M I LEA Y S P L T
 QSQNI Al T GYSSFGPQSFSKKALDTPTLFDHQTIKSIASK


|  | QUERY |
| :---: | :---: |
|  | UniRef90_G5BS21 |
|  | UniRef90-C3YGE4 |
|  | UniRef90-V5GQ24 |
|  | UniRef90-H3AKS6 |
|  | UniRef90-M0QW21 |
|  | UniRef90-B0W802 |
|  | UniRef90_Q6AZW2 |
|  | UniRef90-M3YY06 |
|  | UniRef90-E0VNI1 |
|  | UniRef90-H3BWX8 |
|  | UniRef90-K7E1G6 |
|  | UniRef90-K9J833 |
|  | UniRef90_UPI0003F0CC41 |
|  | UniRef90-UPI0001A46D43 |
|  | UniRef90-13M2J8 |
|  | UniRef90_UPI0003C29A1D |
|  | UniRef90_UPI00042ABC42 |
|  | UniRef90_UPI00038F06F9 |
|  | UniRef90-B0WJD4 |
|  | UniRef90-A0A044QUN1 |
|  | UniRef90_B5XF51 |

HNKTTA 250 VM $\frac{260}{2}$
270
280
 HKKTTAQVLIRFHIQRNVAVIPKSATPTHIMENFQVFDFK
 YNKTAAQI SLRYNI QRGVVVI PKSFNPQRI KENAEI FDFC HKQTPALVVLRYQI QRGVVVLAKSYNKKRIKENDQVFDFE
YKKTPAQLI RYQI QRGHVVIPKSVNKARI QSNFEVFDFE
YNKTPAQVII RWHI QRGVVCI PKSVTPSRIKQNDEVFDFK
HGRTPAQVALRFQLQRGLVALVKSFNEKRI QENFQVFNFQ
TGKSVAQVILRYLI QLDTI PI PK STNPNRLKENDNI FDFK

HNCTPAHVAMRYLLQRGVVVLAKSFNPARI KENFKVFNF

YNKSPAQVLI RYQLDRGHVVI PKSVTKSRILDNSQVFDFK
HNRSPALI ALRYQLQRGVVVLVKSLNEKRIKENDQVFDFE
HNKTSSQVLI RFHI QRNVAVI PKSDKPHRI EENFKVFDFE
Y NKTAA QI A L R F NI QR G MVVI PK S F N H K RI Q E N F Q I F D F S
HHKSAAQIVLRWGIQHGFVVIPKSVTEKRIDENIN:FDFK
HNKTTAQVLI RFQI QRNVIVI PKSATPSRI KENFQVFDFE
HGKTPAQVLIRYQLERGVI AI PKSVTKERIVSNLDVFDFK
YKKTAAQ ACRFVSQLGAI PI
UniRef90-UPIO002246DEA UniRef90-G1TLA5
UniRef90_G3VPF5 UniRef90-Q8K023 UniRef90_UP10003C37E72 UniRef90 в3M497 UniRef90_D2A296 UniRef90-G5BS22 UniRef90_UPI0002C65E3F UniRef90-Q9NA15 UniRef90_UPIO0022F356C UniRef90-UPIO002746593 UniRef90_UPIO0042AB106 UniRef90 UPIO003BD1B23 UniRef90-X1YG79 UniRef90-F1PYG1 UniRef90_UPIO00441B646 UniRef90 G4LXSO UniRef90-A0A034WFV2 UniRef90-UPI000347FA7F UniRef90_Q28FD1 UniRef90-R4UN63 UniRef90-UPI00036F1EEB UniRef90-TOJDO1 UniRef90-V4IHT9 UniRef90-U5L6V1





UniRef90 K2SPK1 UniRef90-H2XUY3
UniRef90 G7M2L2 UniRef90-D7B399 UniRef90_G5EB57 UniRef90-B5YCB8
UniRef90_UPIOOO388C5B7 UniRef90- GOS725 UniRef90 G1RIZ1 UniRef90-W2TV28 UniRef90-B8LVJ8 UniRe99-AgVBD UniRef90_UPIooo2C432F7 UniRef90-X5LLN6 UniRef90- G6D5J8
UniRef90_UPIO003C2597C UniRef90_Q6FR41
UniRet90 A8XMY4 UniRef90-D2VDU9 UniRef90_UPIo0021A85F0 UniRef90-C3ZC67 UniRet90-R7WH89 UniRef90-D6XTF1 UniRef90_UPIOOO47258C4 UniRef90-GPIOOOA
UniRef90-B1LZF5
UniRef90 Z5X7J2
UniRef90-C5DJI1
UniRef90_UPI0002897A9E
UniRef90-R7Z4G7 UniRef90-ROFXM6 UniRef90-10 KW40 UniRef90-D7U5G1 UniRef90-V5C6T2 UniRef90-R7Y101 UniRef90-UPI00047ADA62 UniRet90_S1RM76 UniRef90-C9SDH7 UniRef90 $\mathrm{XoSL13}$ UniRef90-D2CGM7 UniRef90-UPI00041FE286 UniRef90 H6CB71 UniRef90-B8NB66 UniRef90-UPIOOO4667970 UniRef90_F3JTY5 UniRef90-W5WE24 UniRef90-V4AP16 UniRef90'UPI0002F22A9D UniRef90 ${ }^{-}$X5DUL6 UniRef90 UPIOOO373BC39 UniRef90-B1MWF7 UniRef90-R3WN96 UniRef90_C5KHV3 UniRef90-A1CXF1 1 UniRef90-N9XNQ2 UniRef90-A3U9Y0 UniRef90-G6CDM5 UniRef90-17KFZ1 UniRee90-UPI000350ADE8 UniRef90-E9G3Z0 UniRef90-A0A017SKB9 UniRef90 UPI000421F778 UniRef90-C7YQ01 UniRef90-Q6RZX1 UniRef90-UPI00035F46B2 UniRef90-C1BAS8 UniRef90-D9TD36 UniRef90-UPI00042B23B6 UniRef90 FOR2X0 UniRef90_UPIO0042B0E86 UniRef90-UPIO003B2E618 UniRef90-W2T2C1 UniRef90_J7T2V4 UniRef90-F8A517 UniRef90-M4REL2 UniRef90_C3ZC93 UniRef90_O041G9 UniReffollin2M6 UniRef90 UPIOOO477B4A7 UniRef90_UPIO00381585E UniRef90-A0A059kNS7 UniRef90-UPI00036C1E2B UniRef90_UPIO00424AOF4
 PGVLELIENGKSVEDIDYVTVWKNMQKYLESGKARALGVS VKGKYKEGYKALEHEYKEGRVKAI GVS QDKPKDGPDGKYVILKDLTEDWQAMEKLYEDKLARSIGGVS SWKAMEELYKDGFVRAAGVVS MKKHYD NGMIVPSNTDVDTWEAMEE EELLPK DWDFVDTWREMQKLAGTGKVRSLGVS DLACFNHDMTEQNHSVTVEDVWKGLEGVYKKGLTKAIGIS MFPDEADGKYSSDNESHYVDTWHAMENLLQTGKVKAIGVS GPDVYGEWRAMQDLYKEGKIRAIGVS NPFPKNADGTDRYDSTHYKETWKAMEALVAKGKVRALGGLS EDVADD

TLYDGDFVGTWRVLEEF
YLINTWKSMEQAVNLGLAKSIGVS
VTYP FEEKY TEK ${ }^{-1}$ IVPREESGKDAKVDF

EPDDDTYRADQ DLFPKNADDSPALSN VYYPKDENGRAD

QDSERILPRT
GTETFEDTWRAMET
GTDKYKATWRALERL
TQGRYVDT
MEERYPPQMYTGK ADEPLLD

## ■Y

S $\square$ GNPENFDP FEERYPPGFYTGAEDEKVLD

DRTVA A
DWFPDDKHGFEDRE VGINLDP
VGTTDEDGVLD $\square D T$

TDPDDTSKH PDWDF K
VHFRENWQE
K WF PLEDNGVFALADGANSEAWRAMEEAVEAGKIKSI GVS
KWFPDEDNGVFA
T पS A DN LTP S
NGKCAYHKTDLCAT

sQKYKD DNFVET
VGSFWPTTADGKPAFKRTPD Y WK AL
FKETWKAL
GRYVDA
a a Lrneqenawesanadt
GKLEAD
GNEAFEESWKAL
DTFQPLDPVTKRF
PSVKLTDTWKAL

DWETANAET DLFPTDDAQGQNAWETANAET GLLPVDDEGKLIYSHVVYVET
$K W F P L N D E G V F Q L A D I V Y V T T$ D PAWWMDEQGTVKPDNTP R RET DRTVKПGPDGKYVINKALTEN HWREGNAAA
QDDDRLLAR
VVTPESFTQP
TRYDGDFVST VGFKPENLLQP PFPKREDSDKMKYS DVRYM

SRDTYas
TNRKQFGDRAQELNA NLLPYDDKGQASTMD\|HFMDT HWAEANA VGFKAEN【VPSD $\square P N T$
$\qquad$ KGKYKATWKALEEKLKKDGKVRS: GVVS
QLGDYYSSWHAMEKAYGEGLVKAVGVS
GTDKYDESWQEMEELKGDKLAHSIGVS
EVYPKDENGKWLYHNVNLCATW


## UniRef90 K2SPK1

 UniRef90-H2XUY3UniRef90 G7M2L2 UniRef90-D7B399 UniRef90_G5EB57 UniRef90-B5YCB8
UniRef90-UP1000388C5B7 UniRef90- GOS725 UniRef90 G1RIZ UniRef90-W2TV28 UniRef90-B8LVJ8 UniRef90-UPIO0046EBAC2 UniRef90-UPI0002C432F7 UniRef90-X5LLN6 UniRef90- G6D5J8 UniRef90-UPI0003C2597C UniRef90_Q6FR41
UniRef90-A8XMY4 UniRef90-D2VDU9 UniRef90_UPIo0021A85F0 UniRef90-C3ZC67 UniRef90_R7WH89 UniRef90-D6XTF UniRef90-UPIO0047258C4 UniRef90-UPI0002F4D523 UniRef90-GoV6X6
UniRef90-B11ZZF5
UniRef90-W5CQD5
UniRef90-C5DJI1
UniRef90-UPI0002897A9E
UniRef90-R7Z4G7 UniRef90-ROFXM6 UniRef90-10 KW40 UniRef90-D7U5G1 UniRef90-W0RDY4 UniRef90-R7Y101 UniRef90-UPIO0047ADA62 UniRef90-S1RM76 UniRef90-C9SDH7
UniRef90 XoSL13
UniRef90-D2CGM7
UniRef90-UPI00041FE286 UniRef90-UPI00044414D4 UniRef90-H6CB71 UniRef90-B8NB66 UniRef90_UPIOOO4667970 UniRet90_-_3JTY5 UniRef90-W5WE24
UniRef90-UPI0002F22A9D UniRef90 X5DUL6
UniRef90-UPIO00373BC39 UniRef90-B1MWF7 UniRet90_R3WN96 UniRef90-C5KHV3
UniRef90 A1CXF1 UniRef90-M3KEF7 UniRef90_N9XNQ2 UniRef90-A3U9YO
UniRef90-GGCDM5
UniRef90- UPI000350ADE8 UniRef90-E9G3z0 UniRef90-A0A017SKB9 UniRef90-UPI000421F778 UniRef90-C7YQ01 UniRef90-Q6RZX1 UniRee90-UPI00035F46B2 UniRef90-C1BAS8 UniRef90-D9TD36 UniRef90-UPIO0042B23B6 UniRef90 FOR2X0 UniRef90-UPIO0042B0E86 UniRef90_UPIOOO3B2E618 UniRef90-W2T2C1 UniRef90-J7T2V4 UniRef90-F8A517 UniRef90-M4REL2 UniRef90-Q041G9
UniRef90-I1N2M6
UniRef90-E3H5G2 UniRef90 UPIOOO477B4A7 UniRef90_UPIOOO381585
UniRef90 AOA059KNS7 UniRef90-UPI00036C1E2B UniRef90_UPIO00424AOF4 Uniref9_UP10002740C9E
























 NSk
 NSk






 NSk






















 QSRHI AVVAYCPLGSAERTNVSTLGSPLLDDPELNHIALR KNNNI QVEAWSP LIMTGKLLDNEVLKEAATK AKHGIVTEAWSPLGQGKLLG WKNDILPEAYSPLG SQNQVPTTGERVSENKTLNEIAQK RRNNVQPEAWGPFA EGRNNIFQNEVLLSIAEK QSKGISVTAYSPLGSPDRPWAKPGDPTLLEDPK KEIADK





 N KK
 (ass











$\qquad$




240


[^0]





[^1]
 N








 -
UniRef90_K2SPK1
UniRef90_H2XUY3
UniRef90_G7M2L2
UniRef90_D7B399
UniRef90_G5EB57
UniRef90_B5YCB8
UniRef90_UPI000388C5B7
UniRef90_G0S725
UniRef90_G1RIZ1
UniRef90_W2TV28
UniRef90_B8LVJ8
UniRef90_A9VBD1

L G K E P A Q|V L V|Q W A V Q R G TVVV|P K S V T P S R|I|E S N F Q D F 280


H GRTPA QVLLR WHI QLLGNVVI PK SVTPERI RSNF QVFDFE


Y



Y N K S V A Q V V L R WL T Q R G V V A Dl P K S V R K E R M E E N F N S L D F K




Y S K S P A QVVVI R WA L Q R G S I I V $\operatorname{P}$ K S


H G K T E A QVI L R W ML Q K E I V T I P K S V T V
HGKTVSQVILRWGLQNGIVIIP


LGGK S P A Q V V L


Y A RT P A Q I ML R WH LQ Q G R S A I P K S T N P T R I A E N FA V S D F T
LGVDA GQLLASWGVQRGTVVLPKSVTESRIKSNMQI FE
$L G K S P A Q V A L R W G L Q M G H S V L P K S T N D G R M R E N F D V F D W S$

HGRTPAQVVI RWHLDSGLVVIPKSVHAKRLRENFASLDFR


Y Q K S VP QL L L R WS L Q K GF L P L PK S V T P S RI E Q N F QVF D F I
$L G V D R G Q L L A A W G V Q R G T V V L P$
LGKSPAQVVLRWHVERGDIVFPKSVTPSRMEENFALEDFE
HHK S P A QVII R WHL Q N N T IVIPPK SVTPSRDQENFDVVEDS


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


Y N R T A A QVII RWHI E L G NIVAI PK S IT P ARI KENFHVVDFS
H GK T A A QV ML A WH L H Q G R S A I P K S V K P E R I A E N F D V F D DA
Y K K S P G Q C C L R S L L D R D L L V I P K S S N P D R V V Q
Y S K T P A Q I L R WDL Q T E V I TIIP K S S N VIE R L K E N A D I F D F E
H GVNPAQVIVRWHLQQGIVVFPRSRQPERVRQNLDVNGFE

 | $Y$ | $N$ | $K$ | $S$ | $\square$ | $Q$ | $Q$ | $L$ | $I$ | $R$ | $W$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $H$ | $D$ | $K$ | $G$ | $F$ | $L$ | $P$ | $L$ | $P$ | $K$ |  |  |
| $H$ | $K$ | $S$ | $P$ | $A$ | $Q$ | $I$ | $L$ | $R$ | $W$ | $A$ | $Q$ |
| $l$ | $Q$ | $D$ | $I$ | $L$ | $L$ | $N$ | $V$ | $K$ |  |  |  | $\begin{array}{ll}H N K & P \\ L & A \\ L & \text { G }\end{array}$

HGK SVA QVI L R WHI ETGNVVI P K

Y HK SVPQVLL RWS L K G F LP P
PK STHHA E Y I Q Q N A Q V


 YS KTPA QI LL R WATQR GI AAVI PKSNNPNRLAQNLDVVAFD RGS S LA QVLLA WGLK R G YVVVLPK S S T P S RII E S N FII P
NGKTVA QVALRWSLQKGFLPLPKSVTPKNIESNLNIFDFE HSKSAA QVLI RWHLQS GLIVIPKSVHESRIRENIDVVDFE

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

 HGKTPAQVCLKWQVQRNVVVIPKSVSLARDQENSQLFDFE VGK S P A QV LI R WS L E H GFLDP PK S V H DK Y I Q A N V EVVF D F N


 HGRTTGQQVVL RWQL QHGFAAAP

42B23B6
042B0E86 UPI0003B2E618
O-W2T2C1
UniRef90- J7T2V4
UniRef90_F8A5I7
UniRef90_M4REL2
UniRef90_C3ZC93
UniRef90_Q041G9
UniRef90 I1N2M6
UniRef90 E3H5G2
UniRef90_UPI000477B4A7 UniRef90_UPI000381585E UniRef90_A0A059KNS7
UniRef90_UPI00036C1E2B UniRef90_UPI000424A0F4
UniRef90 UPI0002740C9E





EKNDF ${ }^{140} 150$
俋

UniRef90 АзРХто UniRef90-A0A024H1G7 UniRef90-A4A284 UniRef90-UPI0003B3вBB8 UniRet90_B5DPD4 UniRef90-Q8G4T2
UniRef90 B8N195 UniRef90-UPI00046FB581 UniRef90-W4BWQ1 UniRef90-N1VNV2 UniRef90_C9SNS2
UniRe990-14EYS4
UniRef90-P14065
UniRef90-W7J1H3
UniRet90-M2V3S4
UniRef90-V4S4T3
UniRef90 B7FEZ2
UniRef90-UPIOOO4784925
UniRef90-K7J408
UniRef90-M5J7H6
UniRef90-D5U692
UniRef90-D6TUE5
UniRef90_C5KHV1
UniRef90 A0A024PM1
UniRef90 ${ }^{\circ}$ RTWQY3 UniRef90-UPIo004217B41
UniRef90-W5XHAO UniRet90-V5WIN8 UniRef90-LOMMZ6
UniRef90 M3B390 UniRef90-B8LWB9 UniRef90-R5QRU1 UniRef90-F6FR87 UniRef90-W3WY15 UniRef90_UPIO003B37371 UniRef90_M8ATT2 UniRef90-s22J5B9 UniRef90_UPIOOO2492DA9 UniRef90-M2RSN6 UniRef90_UPI000255C51E UniRef90-R4ZMH8 UniRef90-UPIOOO3C7EA41 UniRef90 FOXN50 UniRef90-D3FXG5 UniRef90-UPIOOO2197175 UniRef90-UPI0002D3A7C7 UniRef90-W7BMN1 UniRef90_KONEG1
UniRef90 R9SLO6 UniRef90-F4PWY2 UniRet90-Q1WVF3 UniRef90-D8RE61 UniRef90_UPIO00456166B UniRef90_UPIO00219722C UniRef90-IOH9Z6 UniRef90-K7MT94 UniRet90_R7XTK6 UniRef90-F4GUY5 UniRef90-DOWND4 UniRef90- UPIOO02490139 UniRef90-C5P034 UniRef90-UPIO00415F060 UniRef90_Q6C177 UniRef90-R6DOW7 UniRef90-E8JK89 UniRef90_UPIO0046B00C7 UniRef90_F7YBI2 UniRet90-W5XUD3 UniRef90-UPIO0046369CD UniRef90_UPI00042A54EF UniRef90-UPIO00287DD7A UniRef90-R9WHE2 UniRet90-L1PHR6
UniRef90_UPIO00379F66B
UniRef90-UPIO003F53156
UniRef90-C3YA12
UniRef90-A0A017HV24
UniRef90 Q6BMS8
UniRef90-A0A0151209
UniRef90_B2VG17
UniRef90 F4BRV7
UniRet90-W6AIH4
UniRef90-G4RGT6
UniRef90-UP10003ADC3E5
UniRet90_G308E1
UniRef90-W1 QC37
UniRef90-UPIO0046225C8
UniRef90-R9PBM1
UniRef90_A9D6S7
UniRef90_D7TH11

F E
RGLFPDTYRALETLYREGKVRAI GVS E ET
EETPKDDEGNLQLS DVDYLDTYKAME $W D D L Q$
PAVRYPPGWN $\square$ EF S NAT TQETWTAMES AKDLYVESWKALI HL

GKYRETWKALI HL RKGGRVR S GV S
PSK LP YPAWWTDTDK GK R N E S WK A L EK I D T T V GEDKWQQPWKALEQ $\square$ K N K K D G S R A VD $\square$ T N Q Q DK YV DTFKAFEK
 D D TVAA AR ALEAL

N S S K Q DKDGND L F T DV A R G

VAFRDENWEAHLQD
V Y G A
P A QDPD WK WPMNAKGEFLS D K G L Y K E
s GRYVDSFRADOK
Q Q F G D Y VGGA Y Q A M E E A V K A G K V G D Y Y G S WR A L E EL Y Y D G K I K A I G L S A ERNAAVYEAMEDAVDAGTVRSI G
PS V $V$ R YPP G F Y DEN DK A T L L Q E T Y H E M E K L K RMPK $\quad$ MGPDGKY I 1 T ENPEET WRAMES I $S K D D Y G$ RFPDNPDTEQDDVIDDV $T L S P E N L L P P$ Q G GL Y Y N E S N F P K T E D G K $\square$ A L D S T S F V D $\quad$ T EGKYKD
KALRENDAWK

| K AGNAGT |
| :--- |
| R GLFA |

GWHFDDAGTE $\square R T S K$
E GK F I
GTDYGFEA
H WAEANA
VT G K Y
ECNPVDENGNTKLAR D Y Y G A
 GD

ATDAY

R G WD PE $\square$ MAP L | $A$ |
| :--- |
| $C$ |
| $C$ |
| L |

Q K G GDVYGS
AFEE D GYV
NHPLFPK LPD GSRD DD WH I D ELFPHNADGTVALGEV

D
$\mathrm{Y} Y \mathrm{G}$
$G N \square R A$ A WK
S Q D K Y V $\underset{\text { E A WK T L }}{ }$ I
MA HY $\square \mathrm{GK} \square \mathrm{N}$
R G DVK G S WK A ME D TYQDTYRAI GAVDEA WKAV E
MFYGGDI MP TWRAME
REKRLDTWRALE

Q
KQPYSDW R
GTSKLK P S DPMHAEN R LK T T Y WK E A L L
QK D NYVA A WQQMI A
N Y V E T WKA I VE
$K T G N F V D T F K A F I T$
E $\square$ MPNSANGEVILE
A DKRNP
ADKRNP GNRAQ
FEEKYPPGFYCGPNGWEFEDTWRAME E
NKGFEPEDPN RPGWE VT LVDT WKAMDA








UniRef90＿A6WG73 UniRef90＿A7A8T2
UniRef90＿R8BMM1 UniRef90＿UPI0004664EAE UniRef90＿S3WZ75 UniRef90－UTUVE4 UniRef90－MORWJ6 UniRef90－J1HLH0 UniRef90＿UPIO0036F5580 UniRef90 J1F3N0
UniRef90 G3AMX2 UniRef90－G3AMX2 UniRef90－S9VCJ2 UniRefto－KOVA99 UniRef90－E1VSZ1 UniRef90＿UPI000369658B UniRef90－D3BR73 UniRef90－UP1000255E6AD UniRef90－UPIO0035FEBA3

UniReffo＿C2CYJ3 UniRef90＿U2N2LO UniRef90＿V4TLF5 UniRef90－W1Y25 UniRef90－A1A394 UniRef90＿C2D2E5 UniRef90－W4Q7X9 UniRef90 U3GZ07 UniRet90＿UPI0003B575A6 UniRef90－ 2 IN
Un8
UniRef90 U3QRA1 UniRef90－S8FXY6 UniRef90－UPI0003F497DC UniRef90 C7YWB5 UniRef90 W4QKV2 UniRet90－U6FUY5 UniRef90－I6TPR7
UniRef90－D5GIK3 UniRef90－F6V2L5 UniRef90－Q5BOE4
UniRef90 C6CVV1 UniRef90－B5RSX0 UniRef90－W5PKY2 UniRef90－G1QFJ8 UniRef90＇UPI00037DF067 UniRef90－G9PJZ5 UniRef90＿UPIo00262A97E UniRef90－S8FVE3 UniRef90－A7TK86 UniRef90－UPI000287AE9B UniRef90－Q47P97 UniRef90＿I2GVC9 UniRef90＿R6OIX5
UniRef90＿M2L4R3 UniRef90－UPIO00463D5B8 UniRef90 M7TL87 UniRef90－R5WG74 UniRef90－SODEC5 UniRef90－K9EV70 UniRef90－B1IFK8 UniRefofo－D6R259 UniRef90－UPIO003AB8B68 UniRef90－K8EH38 UniRef90＿V4CJ52 UniRef90－UPIO00403E41D UniRef90－U2QUR6 UniRef90＿W6TBG0 UniRef90－UPIO001C37AE7 UniRef90－B3E8C2 UniRef90－M7YAJ6 UniRef90 14X906 UniRef90＿UPI0004410FFC UniRef90－FONYF9 UniRef90－UPI0004415F76 UniRef90＿B2V313 UniRef90－Q4L7C5 UniRef90＿F8D507 UniRef90＿Q49UJ5 UniRef90－B8MDI3
UniRef90－ $\mathrm{X2H6N9} 9$ UniRef90 ${ }^{\text {A }} 0 \mathrm{AO} 058 Z 8 \mathrm{H} 5$ UniRef90－UPIOOO3811924

路 PGWHYDGVSEVRTSKASTQETWTAMEALVGKGLARS：GVS YGA WRA GDVMGAWRADEEAYHAGK】RAI GVS EAGFVRTWETMQEFSSDGRATHI GVS T DPSWKSASEYRQFS GDYYGTYRAMEEAVKKGQVRA： GDYYGTYRAMERA RGLDVETYRALERLRSEGRVRA GV S NDPKFPTDPDGNRDDKTYLESYHAMERLYREGKIRA：GVS （DETRYPPEWFYEPDP KQSYLDTWRADEKLLYEEKKVRA GVC QEGKYVDSWGGMMRSKEVGLTRS GLS KRGTYVDTWKALIQLOKDGKAKS GQGQYVEAWKALVRL
GTSGRQPTDP $\square$ GKGLAPQTWEVFQELYAEGAVRA GVVS $\square G \square K$ PENFAQPD $\square$ P WQAMEAVYDSGKARAI

GFPYNKEDTEPGD NDYYGTYRAMED EELPRNEKGELIYE Q YEGVWEAME Q ${ }^{\mathrm{D}} \mathrm{H}$ YVD GETWKAF TGDFHETWRAFEA GDYYGSWRALEEL YDKAMLELRDRGLVRTVGVS YFSAWRAMEDAYEEGKLKAAGVS PGWFYDGESQTRHSKVP VRKHNDKIIVIDVAl有DDVSE GWHDDDAQTE $\ R W G K A T N Q E$ GDYYGAWRAMEK

## EKDQFVD

VLVPTDENGNTDFDD KPVPLDEGSRDLQTDWTYIKTYKEMEKLLSTGKVKAI GVS KPDPLFPKSGSMVPSDTNILDTWAAMEELVDEGLVKAI GIS

LFPT LPDGNRDTSQD ELLPKDENGKMI LDSWDFTKTYNLMQKLLDSGKTKSI E
TFPTMPDGKRDDLY
CEESGNYLTFPDLD
ITPKKDGEADDDYP
DYUEKN

KAYRHD

```
DRF
```

GEALG

PRDSQGKMILGKTTFVD
DKYVAT
GDVYG
KASKNN
DPHSNDFPKENGECKIDNVE AWWMDPEQTLIERANVPVQE

TDSNTRY


KQDMYVE
GDYHGS
WDKFGQSDRFFAGNQD E $\square$ SPENFVHP $\mathrm{D} \| \mathrm{PK}$ PEWFFDGKSQVEDQNTPYQE

ANAKQHPSDWAKMNSE
tnea


TETWEMEALYNGGKVKNIGVS Q $\square$ NDFFPREAGNEKVVA DDEDS IIDTWTAKSKARAVGVS TKNGHLTKPDIPS VTAEAGNVNQALASD GSARGDDGVLDपDTT
Unepoldgro





## UniRef90 A3LZK0

 UniRef90-STRI79UniRef90
M5AGK UniRef90-I1BJ26 UniRef90-R4W839 UniRef90-V5E5C5
UniRef90- 0 OPK15 UniRef90-R9P365 UniRef90 UPIIOO047EA778 UniRef90-FOXBT4 UniRef90-F9G5HO UniRet90-R6P2L3 UniRef90-SONRO8
UniRef90 D7GIC5 UniRef90-UPI000462D695 UniRef90 C1EGK3 UniRef90-UPIO002E8C53C UniRef90-C7ZGZ8 UniRef90-W7C2W6 UniRef90-UPIOOO40D1848 UniRef90-R5S9Z1
UniRef90_S2J553
UniRef90-J3NZ96
UniRef90-E3D8R3
UniRef90 - UPIoon UniRef90_l3R2W9
UniRef90-U2E6X4
UniRef90-UP10001CBB1D3 UniRef90-10YNV4 UniRef90-UPIo0035F1720 UniRef90-M4H382 UniRef90_V5I4Z5 UniRef90-F8PUD8 UniRef90-B8PDN7 UniRef90-D4MORO UniRef90-B9DSD6 UniRef90-G2RL72
UniRef90 $\mathrm{S} 2 \times \mathrm{H} 86$ UniRef90-R7PQR6 UniRef90-U2SAV8 UniRefigo-F9JHFO UniRef90_J7L7W0
UniRef90_K41QQ2 UniRef90_UPIOOO36A8081 UniRef90-H0DG89 UniRet90-M7CVW2 UniRef90 UPIO002FF7E7A UniRef90-UPIIOOO378D9A5 UniRef90-X5DIH1 UniRef90-D1NU24 UniRef90-E4RM36
UniRef90
H8L341 UniRef90-UPI000365F25C UniRef90_UPIO0002F9B2F4 UniRef90OUPIOOO4684BD1
UniRef9-UPOO3B372A1
UniRef90_UPIO003B372A1
UniRef90-LOEB52
UniRef90_B6WA29
UniRef90-Q8ET73
UniRef90-A0A009ZUD3
UniRef90_D5CRJ4
UniRef90-CONBLO
UniRefofo-KOJOOZ
UniRef90_J4VX40

UniRef90_K9D9V2
UniRef90-V2WB81
UniRef90-V7B6V6
UniRet90 $05 K 8 C 5$
UniRef90-A0A059AVN2
UniRef90-K1WWE5
UniRef90-UP100037071C0
UniRef90-C9SSB1
UniRef90-M5VZB4
UniRef90-F7Q137
UniRef90-S7ZNP9
UniRef90-X8GWA9
UniRef90-SOB3T2
UniRef90_W3XPG2
UniRef90-UPIooo35A184D
UniRef90-C5ZYE7
UniRef90-M5J5K1
UniRef90 - U5HIE5
UniRef90-UPIOOO429B439
UniRef90-R9JEW9
UniRef90-G6EZX4
UniRef90-UPIO004272DFB
UniRef90-C3Q847
UniRef90-W2QUT3
UniRef90-X5DBR3

50
RHIIDTAATYKNEEEVIGQG LLKDSGLLKREEVIFIITTKLLW RHI DSAEWYENERECGHA DDFCKETDTPRSAI FYTTKLK RHLDCAHDYGNEPAVG ABEAKASGDDRSDLFMTSKVW RHIDTAMAYGNEAEVGRGDRDGLKESGLSRKDIFVTTKLA RHVDTAQDYGNEEAVGNG AAGIAAANVDREDIFLATKVW RHIDCAWAYRNEDAV AAG:KKSGVPREQLWL TSKLW RLIDTAQYYRNEKMLG DAI RNLGVPRQDVFIDDKVT RHFDCAEWYYNEQAVGSADNRFLESCPIIKRSDIFYCTKL

 RLIDTAQAYGNERGVGEGVRN CGGLRNEIFVTSKVA

 RHLDCACDYGNEREVGAGLRAALEDPTISRDDLWVTSKLW RLLDTAYNYENEGTVGKA RHL DLAKVYGNQVEVAEGLQKALKEPGLKREDVEVTSKLW

 RHIDTAAAYGNERDVGAG RHI DAAAGYNNENELGEVLRETGFNTGELRENLWVTTKVR


 RHI DCAADYGNEKHIGAVLKKAFNQ YPRKDLWITSKLW RHI DTAWVYGNEEDVG KMAKASGVPREEIFVTSKLW
$\qquad$
RHLDTAWMYGTEKAVG
CSEAAKKSGVDRSKIEFYTYK RHIDGAWVYGNEAEVG GEA:KASGVPREELWLTSKLW RH:DAAFVYENEQEVGEGDQKAIDAGVVTRDQ1 FVTTKVF RHLDTAFYFNEEAVG RHIDTAQAYGNEVGVGKGLF IISGPREEVFVTSKVA


 RNIDTAQAYGNERGVGHGVSTADIA REDLFVSTKLA RAI DTAQAYGNEQAVG DALAQSGLDRNQVFLTKKW RHIDTAQMYRNEAGVGQG QEALRDSGLAREDVFVTTKLA RHI DTATRYGNEQAVGEGDQEALQESDLTREDLFVTSKCLW


HMI DTAMIIYGNERDVSDGFRNSGLD
NHIDTAEGYKNEEGI GRADK
RHI DTAADYGNEEGVG
RHVDTAQFYGNEAEVG
RHVDTADVYGGNEVEVGGRGLAG RHIDTAEAYENEEGVGVG
 EYI DTAKLYENEDMI G AELKNS
RLIDTAYNYENEGTVGEAVRRSGLE
 RHIDAASYQNETQVGNG

RHIDCAMDYYNOEEVGAAGKAIADSGIPREEIFVTTKVW

 RLI DTAASY品NEAAVGNG IRNGGVARDELFVTSKLW

 RHFDTAADYGTEEADGRAVAEALHRGLIKRNQUFTVTKLK
 RHI DAAAVYDNEEEVGAG RQ: DCAQMYGNEKEIGFADKKLFSDGAVKREDLWITSKLW
 RHI DTAQAYGNERGVGEG AEA RACGVPREQI FVTSKVA
 QEKIKEKAVKREDLFIVSKLW
R【FDTAQMYGNEHKVGTADR RHIDTASLYKNEAGVG QA: KK M RLLDGAADYGNSKEAGEGDARAUKDGVVTREEVFVTSKLW TLIDTANAYMNEKAV ARGMKASGLKRETIYLSTKLW RLI DCASVYQNEDRI GEVLQRIFKESEIKREELFITSKVW HFILDSAFNYENEGAVG TLLDSAYNYENEGTVG RHIDTAAVYGNEQSVGEG

R
DYDREK
 DLADSGly GSGAD RADWF R $G \| A R$
$G$
$G K K R$ EDLFVTTKLD IAESGMPREEIFVTKKVA RAIKRS DKLF S



## UniRef90 A3LZK0

 UniRef90 S7R179 UniReffo-M5AGK4 UniRef90-I1BJ26 UniRet90-R4W839 UniRef90-V5E5C5UniRef90- 0 OPK15 UniRef90-R9P365 UniRef90-UPI00047EA778 UniRef90-FOXBT4 UniRef90-F9G5HO UniRet90-R6P2L3 UniRet90-SONRO8 UniRef90-D7GIC5 UniRef90-UPI000462D695 UniRef90-C1EGK3 UniRef90-UPIo002E8C53C UniRef90-C7ZGZ8 UniRef90-W7C2W6 UniRef90_UPIO0040D1848 UniRef90_R5S9Z1 UniRef90_S2J553 UniRef90-J3NZ96 UniRef90-E3D8R3 UniRef90-UPIOOO249042C UniRef90-13R2W9 UniRef90-U2E6X4 UniRef90-UP10001CBB1D3 UniRef90-_10YNV4 UniRef90-UPIo0035F1720 UniRef90-M4H382 UniRef90-V514Z5 UniRef90-F8PUD8 UniRef90-B8PDN7
UniRef90-AOAO24JK UniRef90-A0AO24JK
UniRef90-D4MORO UniRef90-B9DSD6 UniRef90-G2RL72
UniRef90 $\mathrm{S} 2 \times \mathrm{H} 86$ UniRef90-S2XH86
UniRef90_R7PQR6 UniRet90_U2SAV8 UniRefigo-F9JHFO UniRef90-J7LTWO UniRef90_UPIO0036A8081 UniRef90-HODG89 UniRet90-M7CVW2 UniRef90-UPIO002FF7E7A UniRef90-UPIIOOO378D9A5 UniRef90-X5DIH1 UniRef90-D1NU24 UniRef90-E4RM36 UniRef90-H8L341 UniRef90-UPI000365F25C UniRef90-UPIOOO2F9B2F4 UniRef90-UPIOOO4684BD1
UniRef90-UPIOOO3B372A1 UniRef90-LOEB52 UniRef90_B6WA29 UniRef90-Q8ET73 UniRef90-A0A009ZUD3 UniRef90_D5CRJ4 UniRef90_CONBLO
UniRef90 K0JoO7 UniRef90 K5W427 UniRef90- J4VX40 UniRef90-UPIO003B55ADE UniRef90-K9D9V2 UniRef90-V2WB81 UniRef90_VB66V6
UniRef90_Q5K8C5 UniRef90-A0A059AVN2 UniRef90_K1WWE5 UniRef90-UP100037071C0 UniRef90-C9SSB1 UniRef90 M5VZB4 UniRef90-S7ZNP9 UniRef90-×8GWA9 UniRef90-SOB3T2 UniRef90-W3XPG2 UniRef90-UPIOOO35A184D UniRef90-C5ZYE7 UniRef90_U5JKIE5 UniRef90-UPIO00429B439 UniRef90 R9JEW9 UniRef90-G6EZX4 UniRef90-UP10004272DFB UniRef90-C30847 UniRef90 W2QUT3
UniRef90
x5DBR3



| UniRef90_A3LZK0 |  |
| :---: | :---: |
| UniRef90 S7RI79 |  |
| UniRef90_M5AGK4 |  |
| UniRef90_11BJ26 |  |
| UniRef90_R4W839 |  |
| UniRef90_V5E5C5 |  |
| UniRef90_X0PKI5 |  |
| UniRef90_R9P365 |  |
| UniRef90_UPI00047EA778 |  |
| UniRef90 F0XBT4 |  |
| UniRef90_F9G5H0 |  |
| UniRef90 R6P2L3 |  |
| UniRef90_S0NR08 |  |
| UniRef90_D7GIC5 |  |
| UniRef90_UPI000462D695 |  |
| UniRef90_C1EGK3 |  |
| UniRef90_UPI0002E8C53C |  |
| UniRef90_C7ZGZ8 |  |
| UniRef90_W7C2W6 |  |
| UniRef90_UPI00040D1848 |  |
| UniRef90_R5S9Z1 |  |
| UniRef90_S2J553 |  |
| UniRef90_J3NZ96 |  |
| UniRef90_E3D8R3 |  |
| UniRef9 | -_UPI000249042C |
| UniRef9 | -_I3R2W9 |







 Y GVFTVQLCIRYVIQLGTVALPKTGNPAHMKDNANV DFE








## 1CBB1D3

35F1720
YKKTKSQULI RWNI QNDVVTIP Y N K

 HNKTTAQLLVRWSLQKGYVPLPKSVTDSRMIDNAQVFDFE


 Y GVV VA QL CL RYDI QLG L AVVPKTANPNHMKDNAELDDFV
 YDVSVAQLCL RYDLQLGLVALPKTANRAHMEQNAALDFT

 HGRTAAQVALRFLVQDGVIVIPKTTHRERMRENLDIWDFQ


 HSRTAA QTVLRWVLQKGAVPIVKTSHRDRMLENAELFDFS
 Y GK S S S QVIVR WHI QRGVI PLPK STSPSHDAQNDDVFDFE



| UniRef90_A3LZK0 | LIPEEDFEALL ${ }^{290}$ KILSEKHRWADPS 300 |
| :---: | :---: |
|  |  |
| UniRet90-M5AGK4 |  |
| UniRef90-11BJ26 | LNDKEIQEINDISKTKRFVR |
| UniRef90-R4W83 | LDDEDVEQIESIEHRERQV |
| Ref90-V5E5C5 | PEDEIKHLEALS |
| UniRef90-XOPK15 | LSDDEMSMLDVMNRNQRTGNEPELV |
| UniRef9 R9P365 UniRef90-UPI00047EA778 |  |
|  |  |
| UniRef90-F9G5H0 |  |
| UniRef90-R6P2L3 | SDEDMKALEHTDNYGEFNVFPVFSG |
| UniRef90-SONR08 | LRSEDMMLI ASLDK |
|  | LTDGQMAEUTALNRNERQ |
| UniRef90-UPI000462D695 | LEKEDMEYLDSMNDNKKL |
| UniRef90-UPIO002E8C53C | DSNDTEKINALTRTDGRRKDQDPATYEEF |
| UniRef90-C7ZGZ8 | LSEEDLAVINRLEKPKRFN |
| UniRef90-W7C2W6 UniRef90-UPI00040D1848 | TSEEMET AKLTQPDGRTKNQDPAV |
|  | TEVEMQEIDSLTQEEGRIDNQNP |
| UniRef90_R5S9Z1 | S |
| UniRef90_S2J553 UniRe90 J3N96 | LGEDDVKALDGMEDYKACGDGWLPNTVFY |
| UniRef90-E3D8R3 |  |
|  | EEIDKLRELD |
| UniRef90_I3R2W9 | D ET D A E E |
| UniRef90-U2E6X4 | EMRKVEALHEDGR\\|INPSFAPDWDN |
| UniRef90_UPI00010 UniRef90- IOYNV4 | LSEEDYNRITS M D Q |
| UniRei90- UPIO0035F1720 | LDANDMRVI AELDMGARIIDGKV |
| UniRef90-М4Н382 | SDEDGQUENGKEVRGGC |
| UniRef90-V5I4Z5 UniRef90- F8PUD8 | EDMVII SSSLD |
| UniRef90 F8PUD8 UniRef90 ${ }^{-}$B8PDN |  |
| UniRef900 A0AO24J UniRef90 ${ }^{\text {D4MORO }}$ | D DLEYLDK |
| UniRef90-D4MORO UniRef90-B9DSDE |  |
|  | NV |
|  | LS SEQMGRLDALN |
|  | L S N S |
| UniRef90-R7PQR6 UniRef90 U2SAV8 | GEDD |
| UniRef90-F9JHFO |  |
| UniRee90-J7LTW0 | SDQEMDRLRAMDTGK MRDYEHSGFPV |
| UniRef90-UPIO0036A8081 | LDEAELAAIDGLDEGRRL |
| UniRef90-H0DG89 | LSEEEMERINQLDTDQRFGPDPTT |
| UniRef90-M7CVW2 | EDIKAIDALDRGERIADPGFA PDW |
| UniRef90_UPI0002FF7E7A | LTKAHLERLDS ${ }^{\text {T }}$ |
| UniRef90-×5DIH1 | LSAEDFERIATLDMKT SCFFDHRD |
| UniRef90-D1NU24 | TPEEMHT: SNLGLNQRVGASGHTFNF |
| UniRef90-H8L341 |  |
|  |  |
| UniRef90-UPI0002F9B2F4 | LSDEEMQAIAELDRGERIDAPDFA |
| UniRef90-UP10004684BD1 | DTDDLHALDALDEGPEAGVDSD |
| UniRef90-UP10003B372A1 | - |
| UniRef90-L0EB52 | D $M$ M |
|  | EDMKAl K S DLK |
| UniRef90-Q8ET73 | LSDEEMSUINQLSK |
| UniRef90 D5CRJ4 <br> UniRef90 | LSDFDMNRITAMDT ATSAFFSHRD |
|  |  |
| UniRef90_CONBLO | LSNEDMEKIESLNSGNRLGTDPDTVSपDSF |
| UniRef90-K5W427 | LTQEDYDSVS GKNNH |
| UniRef90-UPIO003B55ADE | LSEEETGRIDALRSPKRLI DP DWA PS PW |
| UniRef90-K9D9V2 | LDGDDMAAIAALETG ASSFFSHRD |
| UiRef90-V2WB81 | EEDKELNDISK |
|  | Q ${ }^{\text {a }}$ ( SKMQDQGRILDGEEFVNKSDGPFR |
| UniRef90-Q5K8C5 | LSSEEMKELDGLDEY LVTDWD |
| UniRet90-AOAOC5AVN2UniRef90 K1WWE5 | LSQENSDK |
|  |  |
| $\begin{aligned} & \text { UniRef90_K1WWE5 } \\ & \text { UniRe90_UPIOOO37071Co } \end{aligned}$ | MHRMQMLHT |
| UniRef90-M5VZB4 | P DDLFAKFSETKQVKLVPGTGFVH |
| UniRef90-F7Q137UniRef90S7ZNP9 | SDEDMNYLDGL |
|  | LSEEDMATL ALDEYAPVCWD |
|  | EDMEILKHLEK |
| UniRef90-X8GWAA UniRefo-SOB3T2 | Q |
|  |  |
| UniRef90-C5ZYE7 | K |
|  | EEMAKIFALK |
| UniRef90-U5HIE5 | EDKAIEKLD\GLRFNNPGD |
|  | T DEE |
| UniRef9_UPIoou429B439 | LTPEEMEK1RKADKNCR |
| UniRef90-G6EZ |  |
| , |  |
|  | EYLVT CWD P $\quad$ K ${ }^{\text {d }}$ |
| X5DBR3 | LS S D S D M K TI A AlL D |

UniRef90 J5LOK0 UniRef90-B6TKQ4 UniRef90-UPIOOO2E69157 UniRef90-C5B5H1 UniRef90-F4F7C3 UniRef90-W4G1N7 UniRef90-M4UBD4 UniRef90-M1D2A4 UniRef90-M3CXQ9 UniRef90-UPIOOO3B34627 UniRef90-UPIOOO2191542 UniRef90-LoG5U7 UniRef90-I3NBJ2
UniRef90 13 KKG6 UniRef90 $\mathrm{G6CHQ} 9$ UniRef90_UPIO003707A40 UniRef90-bgS7D2 UniRef90-G2J136 UniRef90-B2GAR8 UniRet90_W9X4A7 UniRefefo-O7G767 UniRef90-K1PNR5 UniRef90-D8L856 UniRef90-G5HRT4 UniRef90-A0A024HGR1 UniRef90-UPI00006CADAC UniRef90-A6D553 UniRef90-D8Q885 UniRef90-UPI0002191981 UniRef90-K6VQU4 UniRef90_UPIO0037AEE57 UniRef90-UPIO002EOADF6 UniRef90-UPIO0042CD750 UniRef90 MOCMJ7 UniRef90-F8P154 UniRef90-K1JRX8 UniRef90-G9RZB2 UniRef90-W5KIV1 UniRef90_UPI0003B586B0 UniRef90-IOR.J84 UniRef90-13Z7A1 UniRef90-UPI00041ADC40 UniRef90 МОНМН7 UniRef90-11PLN8 UniRef90_UPIo001D36281 UniRef90_A11HM7 UniRef90-J6UBL4 UniRef90-K6V3H55
UniRef90 M3VJ26 UniRef90 ${ }^{-}$A0A034WTR8 UniRef90-H3RS01 UniRef90-K5XDG6 UniRef90 C5Y9A7 UniRef90-UPI00047AD6F0 UniRef90-Q03110 UniRef90-K0FM58 UniRef90-Q11DV1 UniRef90-B3RAGO UniRef90-O5V663 UniRef90_G7XEZ7 UniRef90_UPIOO0044185BF UniRef90-C4LHX2 UniRef90-G4Z501 UniReffoccoD532 UniRef90 ${ }^{-}$MGAN5 UniRef90-R619K7 UniRef90-UgST17 UniRet90_B8M9U2 UniRef90-D5H353
UniRef90-H1VBN6 UniRef90-Q0V660 UniRef90 UPI0003176979 UniRef90-R7FL46 UniRef90 E8XNO1 UniRef90-M2USX5 UniRef90_U2YEW9 UniRef90-F7PH13 UniRef90-K2PUQ9 UniRet90_V7B059 UniRef90_C5DM41
UniRef90_S1P3E1 UniRef90-F4ACJ8 UniRef90_A9TH82 UniRef90-UPIO0044078A9 UniRef90-F1C780 UniRef90-LOK367 UniRef90_R5A7V4 UniRef90_D8QCH9

LNQTFTLIANGV|KTPK\| GLGTWLVIDDDKVAAAVIREA\|INILGY PCVVLNTGHAMPVLGFGTSSSTPEDLPATILHAVRLGY MEY VTLNDGNKMPLAGFGVFQMPPKEAAQSVSDAMNSGY QPTALLPGDVRIPLLGFGTWQATGETAFKAVLAALDAGY TLRLRNGVEMPFLGLGTSHNGGYSHDAVVVSLRHGL PEVVLNSGYKMPLLGMGTAAMPIDDLTSILVDAMETGY LASRI ALNNGRSMPRLHLGVYLMNGKEASEAVKYALDAGY SPTVRLSSGGALPQFGFGTYKVPADETEALVRTALEVGH KK $\square K L N G L E M P L L G F G V F Q D P D K E C E R A V M D A I N D G Y$ KEAIKVA:DAGY LLINGARVPADGFGTWQDTGRACVRAVRTALDGGY LGPSELRMPRLGFGTWPMTGAECEAAVRQALELGGY PRADNOLPALGLGTFRLQGQHVIDSVSMGLELGY LNTTYRLKSGHEDPVLGYGVYQTPPATCEEVTTYALRVGY LRGKPMPLVGMGTASFPPATVRDAVLRAIDAGY
$\qquad$ LNNGKTMPSI GLGTWQSPKE KMGFKLSNGLELPQVAFGTFNADGDETVEIVERAIKTGY

TRFPLLHGAAMPAVGFGTLFRDLSVTTEALTAALDAGF GGSMPQUYGTYELRQNDCIIGVTEALKIGY
 T YKLNN GVEIIPKI GFGTWMIT DDDAALAVKTAA QVGY
 LNDGTDTPASGLGTVGLKGARGVGSIVTAAVEGY SQKVKLNDGHFПPVLGFGTAEVPKNEALEATEFAIEVGF PTKTLPSGDELPQUGGTWNIGGETVQEGVRAALDAGY MSYT TTPNSAGR $\ P R$ RGGGVYRSPASQCVQSVLKALLAGY LADKLVLSNGVQMPGIGFGTWQVPDSTLENAVSAALKLGY ITLNNGLKMPGEGFGVFQLPPTQCEQAVLDAASVGY NGARIPKIGFGTFQLDADVARARVRDALDAGY LIPPSTLNDENTMPVLGVGVAELSDTETERAVSAALETGC ILLNNGDEMPLLGFGVFQUPGKECEQAVNDAGELGY GVAVPALGLGTARMRGDECRQAVTAGLELGY $R \Pi P V$ GMGSAPTCKKDTRDA ПIEA TKQGY NGATIPAI GLGTWELRGRTCTRTVEQALRAGY PTVALSNHVQUPKLGLGTWFIDDDKAARAVGDAVETGY LTLNDGNKMPS GVNTWNLDTEDLDFVIKEALYVGF LQPKVRLNNGLLMPQUGLGVWKTPLETTRQMVCDALTNDY KTVTLSNGAKMPRUGLGTWQSKPHEVENAVEDAVRNGY HVVNSNGANVPAVGLGTASFPEDDVRAAVLAALELGY EESYKLSNGVKiPKLALGTWETDDDQVADAVRSALEMGY MVGLGVFLI SNDNVSHIVKTAI EMGY
GAT PALGFGVFRMSDAEVERIIPAALEAGF
KIPAFGLGTFRLQGQVVIDSVRNGLELGY LASKVKLSSGYFMPILGFGVYQNYD AKPSCLEAFKVGY LQSTKKMISGYETPVLGYGVYKTPPDVTESVTLKALELGY LVKTLKLSSGYQUPVLGLGVALADD CVATCLAALKKHY

PПKTLPSGAEMPALGFGTYRLWGQSGAKSVEALTMGY $M M N T M P L N N D \square Q M P M L G F G T F L M G G A E C E E S V L T A L R S G Y$

STPALGLGTFRLKDQVVIDSVSTALELGY GOTLPM GLGTYAGPTEDLQSASKPWI QVGY LSSTATLNDGRKIPLIGLGVYQAPKGDTTQAVTWALEAGY KT LMLNNGVEVPRIGLGTWLIDNNDDRKVIRQAINVGY LA QSFKLLSGHEVPAVGLGTWQSKPNEVKNAVEHALK SGY STYRMNSGYDDPVLGYGVYQTPADVASEVVHHALKTGY NSQYKIPAFGLGTFRLKDDVVKASIVATAVELGY NSQYKiPKIGGGVYLSPKDVCVKSCKKAFEAGY PTTRLPSGDEMPRLVGLGTWENDPDACANAVETALLETGY पTDTYELINGVKIPKLGFGTWLLDNEQAARAVKEALQAGY YKLSSGYVLPSLGLGTYDTPRAETAEVVYQALKKGY PNFVLNDGNY:PAGGFGTYK, RGDEGMQQDLSAMHEGY MEYFNLNDGNRIPKIGFGTYKLNGSRGDFAGQAALKNGY $\square P S H F D L P S G D R \square P S V A L G V W M A G K G E V G A A V K T A L K A G Y$


RHFDTAAAYGSEQALGEALKEALDLGLVSREELFVTSKLW
$R L I D T A A A Y G S E Q A L G E$ $R N L D T A Q A Y G N E R G V G E G V R T G \| R A S G V K R A E V F L T T K I W$ RLI DTAPRYCNELSSVGEMGV RHIDTSVFNLNERLLGMGLKKLVVKSTTRRDELIIQTKLS VLLDTAKQYGNESAVGQGMQDAFQSTGRTRASVFLTTKI Y RHLDLAMDYQNQDEVGRADKKVIPS VVKREELFIGTSKLW RNIDTAQAYGNEHGVG DGVRSCGVPREELFVSTKLA RHLDTASLYRSERAVGEAVAEAARGUVASREEVFVTTKMW
 RHIDTAQAYANERGVGEGVRTA

 RADDTA QUYGNEAEIGG


 RLI DSAYNYENEGTVGAGIRAADDKGIVSRDDVTVVSKLPD RHIDTAQYYENEADVG RMI DTAEAYGNEEAVGNTT
RAI DTAQ $\square Y$ GNEAEVG
RHI DTAYSYHTEKYVG
RHI DTAQAYGNEAGVGEG
RHI DTAADYKNEADVGDAVN
RHIDTAQFYGNEKEVGEAFRRSGDKSGIPREEIWITTKIW W W W
RAFDTAKDYGNESGVGKGDWN
RAFDTAKDYGNESGVGKGDWNSDVE
RHDDAAAVYDNEKEVGEG AVKASGVPRKDI F IVTSKLW RHVDSAVAYRNE QQPSADGMKKSGI PREELFFTTKIP KHIDTAQ】YGNEAQVG QATSDSGUPRADIFTTTKVW
SHI DTAMAYGNEEQVGKA
RAA D T A Q I Y D N E A A V G
RHIDTAQAYGNEEDVGRGLAN
THVDTAEGYMNEPALGEVLAE

RHIDTAEAYENEAGVG
RHFDAASAYGVEQSVGEATAEALQLGGASRDELFVTSKGW RHLDTAVLYGNEREVGEGVEKWLKEDNHRRHDVFYTYKLW






UniRef90 J5LOK0 UniRef90_-B6TKQ4 UniRef90_UPIOOO2E69157 UniRef90-C5B5H1 UniRef90-F4F7C3 UniRef90-W4G1N7 UniRet90-M4UBD4 UniRef90_M1D2A4 UniRef90_M3CXQ9 UniRef90-UPIOOO3B34627 UniRef90-UPIOOO2191542 UniRef90-LoG5U7 UniRef90-I3NBJ2 UniRef90-l13TKG6 UniRef90-G6CHO9 UniRef90_UPIO003707A40 UniRef90-B9S7D2 UniRef90-G2J136 UniRet90_B2GAR8 UniRef90_W9X4A7
UniRef90_-Q7G767 UniRef90-K1PNR5 UniRef90-D8L856 UniRef90-G5HRT4 UniRef90-A0A024HGR1 UniRef90-UPI00006CADAC UniRef90-A6D553 UniRef90-D8Q885 UniRef90-UPI0002191981 UniRef90-K6VQU4 UniRef90-UPIO0037AEE57 UniRef90-UPIOOO2EOADF6 UniRef90-UPIO0042CD750 UniRef90-MOCMJ7 UniRef90-F8P154
UniRef90- $88 B H 16$ UniRef90-K1JRX8 UniRef90_G9RZB2
UniRef90 W5KIV1 UniRef90-W5KIV1 UniRef90-IORJ84 UniRef90-13Z7A1 UniRef90-UPIO0041ADC40 UniRet90 MOHMH7 UniRef90-11PLN8 UniRef90_UPIo001D36281 UniRef90-A1HM7 UniRef90-J6UBL4 UniRef90-K6V3H55
UniRef90 M3VJ26 UniRef90-A0A034WTR8 UniRef90-H3RSO1 UniRef90-K5XDG6 UniRef90 C5Y9A7 UniRef90-UPIO0047AD6F0 UniRef90-Q03110 UniRef90-K0FM58 UniRef90-Q11DV1 UniRef90-B3RAGO UniRet90-Q5V663 UniRef90_-V2YXVO
UniRef90 G7XEZ7 UniRef90_UPI00044185BF UniRef90-C4LHX2 UniRef90_G4Z501 UniRef90-coD532
UniRef90 W5IMP9 UniRef90-M5GAN5 UniRef90-R619K7 Uniinefol ugST17 UniRef90-B8M9U2 UniRef90-D5H353
UniRef90-H1VBN6 UniRef90-Q0V660 UniRef90-UPI0003176979 UniRef90-R7FL46 UniRet90 E8XNO1 UniRef90-U2YEW9 UniRef90-F7PH13 UniRef90-K2PUQ9 UniRef90-V7B059 UniRef90-C5DM41
UniRef90-S1P3E1 UniRef90-F4ACJ8 UniRet90_A9TH82 UniRef90_UPIO0044078A9 UniRef90-F1C780 UniRef90-LOK367 UniRef90-R5ATV4 UniRef90_D8QCH9

NFERTDIIENN10 ${ }^{170}$ NFSAAKMSRLLA NFERDRVTDLATFNN FN $\begin{gathered}\text { F } \\ N \\ V\end{gathered}$

KPMVNQVLSHIGNTPFELIDYC FNNVKP

180
190
200 NFSTGQ1 DELIQA TEEAPAIVNQVELHPYFPQAEQRAFD NFMHSHLEQLQADSLASGMPHVNQVECHCFNHPVQUIAYC NFTVALLEREADETVGATAQATNQVERHPYDQNRKVAAFA NYGEKH1MELC AYSPRILPSVNQLEVHPFNTRTALTAFC
 NFQPDRVVDLLDADNSGFAPAINQIETHPFHQQQESHDFL NFNHFQIENIVNEPGLKYKPVTNQVECHPYDTQEKLIQYC NFPVALMKRVVEELGVDVAADQVEY HPYLNQDPVLAYA NFNSSQ1 NDIVVSSKTRPA AVNQIEVNPTYTNDDLVAYC

 NYSMIHLQYL ATQAREMPVVDQLERHPWLQETPMIKYN NYGUHHLEELEEYDKSTGSSSVDQWELHPWLPRQDVVDWC NFTCKKLNTLDS FAT TPPAANQVEUNPYCRQNKLREFC LVNYDQELTRDCLAYAK KPAVNOTETHVYWPQKELEDAC NFLPRHLQPLDQK ADIKPMIVQQEEBPCYHQRENVEFC NFNINHLQHLIEKSEFKPEM NQFEGHPLCFNKKTI EFC
 NFDEVDLQNILDN GRVKPAVDQVLAHDGNVPFGLFDYA NHSERHLQDVIGA GGVVPAVNQVELHPAFPQEKMLRVA NFLTEHLEKLIDE TGVTPATNQI ERHPYFNNNELVEDN NFNHKQLEKILNKPGLKYKPVCNQVECHPYLNQSKLLDFC NFSAYQLSCAHHTSDVPDMAVNQUEFHPWLQRPDVVEYC NYGVQHI EEMKPYAKVWPPH VNQIELHPWCQQRTIDAYC NFLPHHLVPLLAR ARTRPMVNQLEIHPGYPQFAAVNFC NFYPSRLADLCET SVDVIPAVDQVELHPFFQQEDAMALM NFNVALIREAVAATSEAPLVTNQVEYHPWLSQDPVRQEL
 NFSVNQLREAMQASVTP ILTNQVEY SPFKSQPDLLEFC NFTTKHLDKLLAVATIPPA VNQQVEMNPVWQQRTLBEYC NFNHLQVERLLNKPGLKYKPAANQIECHPYLTQEKLDQYC
 NFNQNQition NFDVERMRDLDD
NFTVEHLKGIFDA
NFRQHDLENILE NFTTKKLQQLLDTAEDPPAVNQVAVEN NFNTAQMEEAARLSDAPDATNQVEYEMNPTWQQKRLSEFC SFQKEDGDNLDKNSDTKP MVNQDLSHDAATPMDLI NYS $N Q N I A Q M R E S T A R S A A P \| V T N Q V E \quad$ LHPYLPQHSLVAA NFNDALTRQALAAVGGKDIDATNQDELSPYGQNREVAFLD NYAVKHLEEIKNAGY NYGAKRHLEELKE K K G GGGMMP
NFTPEHEDELGRE

 NLSVKTLELLLKKT SKKVPAVNQVEIHPLCAQFELQKYC
 NYGVGHIEEMKSYAKVWPPH VVQIELHPWCQQRQTVRYC NFLQEDVAN VNN SSTNPVVNQIEVHDGNVPTDLMKYC NFTKEKLEALWETMKAELKPAVNQLEAHPYLQQPDLLAWS NFTVDLLKQAM THLPNGELFTNQVEVHPYLANESLRGFC
 NFTVALMQEAIDAVGADQLAATNQEELSPFLQNQTVVDFA
 NFETIDLENGMV
NY SKKKLQKLLS WE F
NYGKHHLDELLA WEELL
NFNVKL NELMS
 NFNARQIDDIUSNMARHTPVVNQVECHPYLSQTDLLSHC

| UniRef90_J5L0K0 |  |
| :---: | :---: |
| UniRef9 | 36TKQ4 |
| UniRef90 UPI0002E69157 |  |
| UniRef9 | C5B5H1 |
| UniRef90-F4F7C3 | F4F7C3 |
| UniRef90 W4G1N7 |  |
| UniRef9 | M4UBD4 |
| UniRef90_M1D2A4 |  |
| UniRef90_M3CXQ9 |  |
| UniRef9 | UPI0003B34627 |
| UniRef90_UPI0002191542 |  |
| UniRef9 | 0G5U7 |
| UniRef90-I3NBJ2 |  |
| UniRef90_13TKG6 |  |
| UniRef9 | G6CHQ9 |
| UniRef90_UPI0003707A40 |  |
| UniRef90_B9S7D2 |  |
| UniRef90_G2J136 |  |
| UniRef9 | B2GAR8 |
| UniRef90 ${ }^{\text {W }}$ WX4A7 |  |
| UniRef90_Q7G767 |  |
| UniRef9 | K1PNR5 |
| UniRef90-D8L85 |  |
| UniRef90_G5HRT4 |  |
| UniRef90 UPI00006CADAC |  |
|  |  |
| UniRef90-A6D553 |  |
| UniRef90-D8Q885 |  |
| UniRef90_UPIO002191981 |  |
| UniRef90_K6VQU4 |  |
| UniRef90_UPI00037AEE57 |  |
| UniRef90_UPI0002E0A0F6 |  |
| UniRef90_UPI00042CD750 |  |
| UniRef90-M0CMJ7 |  |
| UniRef90-F8P154 |  |
| UniRef90_S8BHI6 |  |
| UniRef90_K1JRX8 |  |
| UniRef90-G9RZB2 |  |
| UniRef90_W5KIV1 |  |
| UniRef90-UPI0003B586B0 |  |
| UniRef90-I0RJ84 |  |
| UniRef90-I3Z7A1 |  |
| UniRef90-UPI00041ADC40 |  |
| UniRef90-M0HMH7 |  |
| UniRef90-I1PLN8 |  |
| UniRef90_UPI0001D36281 |  |
| UniRef90-A1IHM7 |  |
| UniRef90-J6UBL4 |  |
| UniRef90-K6V3H5 |  |
| UniRef90-M3VJ26 |  |
| UniRef90-A0A034WTR8 |  |
| UniRef90-H3RS01 |  |
| UniRef90_K5XDG6 |  |
| UniRef90-D9UQN7 |  |
| UniRef90_C5Y9A7 |  |
| UniRef90-UPI00047AD6F0 |  |
| UniRef90-Q03110 |  |
| UniRef90-K0FM58 |  |
| UniRef90-Q11DV1 |  |
| UniRef90-B3RAG0 |  |
| UniRef90-Q5V663 |  |
| UniRef90_V2YXV0 |  |
| UniRef90-G7XEZ7 |  |
| UniRef90-UPI00044185BF |  |
| UniRef90-C4LHX2 |  |
| UniRef90-G4Z501 |  |
| UniRef90_C0D532 |  |
| UniRef90_W5IMP9 |  |
| UniRef90-M5GAN5 |  |
| UniRef90-R6I9K7 |  |
| UniRef90-U9ST17 |  |
| UniRef90-B8M9U2 |  |
| UniRef90_D5H353 |  |
| UniRef90-H1VBN6 |  |
| UniRef90-Q0V660 |  |
| UniRef90_UPI0003176979 |  |
| UniRef90_R7FL46 |  |
| UniRef90_E8XNQ1 |  |
| UniRef90-M2USX5 |  |
| UniRef90_U2YEW9 |  |
| UniRef90-F7PH13 |  |
| UniRef90-K2PUQ9 |  |
| UniRef90_V7B059 |  |
| UniRef90-C5DM41 |  |
| UniRef90_S1P3E1 |  |
| UniRef90-F4ACJ8 |  |
| UniRef90-A9TH82 |  |
| UniRef90_UPI00044078A9 |  |
| UniRef90-F1C780 |  |
| UniRef90-L0K367 |  |
| UniRef90_R5A7V4 <br> UniRef90 ${ }^{-}$D8QCH9 |  |

QKA G|I LIE A Y S P V $\mid$ A H $\quad$ GA LI Q N T Q|V|A D|I A K G



 RQHGI AFEGYCPLA | $K$ | $T$ | $S$ | $D$ | $L$ | $S$ | $D$ | $V$ | $L$ | $V$ | $I$ | $A$ | $A$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $G$ | $Q$ | $L$ | $L$ | $D$ | $E$ | $P$ | $T$ | $V$ | $D$ | $M$ | $A$ | $K$ | Q S Q G 1 $\begin{array}{ll:l}\text { K E K G } & H \\ \text { Q K H D } & \text { V } & \text { S A Y S P } \\ \text { E A Y A P } & \text { L } & \text { A R } \\ \text { R }\end{array}$

 EANGLLVQAYSPIGTGRLLRM
 ASWNSPII NDIA TT

 HSKGINNVTAYSPLSFPDRPWSKPEDPSLLEDPKI KEI A AR R A H GMMVTAAYSPDLAR



 K E K E I QL CA Y S PL GAS GT $\square$ WGSNAVLDC K K Q GV T I T A Y A P I G
QKHGI CVTAHTPLGGSTANTEWFGTVSCLDDPVIKSLAEK QQEGILVQAWSPFMR GNVFQLPLLHHMAEK




 K S H D I V LVD Y S A LGG Q R $\square K G W$


TEVVFDEAVQTLADE $\boxed{L V} \mathrm{RGGFDNPVIQELAKK}$ (
K E Y GVVVPEA WGPFA E GKF G $\square F T$ G G L T H H P LL I E GE K HPVLTMGIGSK
K E A Gll HFQA YS S LGG

AEHNVVTQAYSPLA $\quad \square G R L L D N P T V T S V A A B$
 $\qquad$ $G R L L$
GEALKDE VLAA A G K IENDV LITAYSPLAY $\quad$ LD DG SAGKDETIA GI AT K
 A A K GI R R A A A Y S P L G G Q N W $\square$ G $\quad$ G QSKGIVVTTYSSPLGSPDRPWAKPKDPSLLEDPRIMAAIADK SANGIVLTAFSP LDRKGGSRGANEVMENDMLKEI A EA R RHGMAVVAYS PMAR GAVLSDDLVKEIAAA ESLNDLVEAYSPDGHGEDLL HPDLVAMAER AARGI HAQAWHPTGRKQGLLAADVILDRAR D
 QQHDI QMEAWSPLG
 K DKGIVHLTAYSPLGGQSMSMANPVLQS KVGLQEVAKA
 $K K K$ S I QL E A WS PLMQGYLM NNNDLDEDARK $R D S A V A V T A Y Y G M A \quad D G A V P K D P V L Q Q I G A R$

QREGIHVTS YMTVAYGKVLG
AEQDYELVAYSPLARGEVFG

RERGAVV EAYAP
KKHGIVVEAYAP
NEHGII TEAWSPLAR
QEHGILLQAYSPLAR
EK Y HV RHMA YAP L G
E R H GI R ITTSYMTLGY GKVLG
E S K GV HVIGGYSATGY
NKNGGQTEAYSPDAH
LQ N D V V V E A Y S P
QEHGIVI EAYCP

| $K$ | $N$ | $L$ | $G$ | $Q$ | $E$ | $A$ | $Y$ | $S$ | $P$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $H$ |  |  |  |  |  |  |  |  |  |
| $K$ | $E$ | $K$ | $G$ | $V$ | $V$ | $T$ | $A$ | $Y$ | $S$ | $P$ |
| $L$ | $A$ | $N$ | $N$ |  |  |  |  |  |  |  |
| $K$ | $\square Y$ | $N$ |  |  |  |  |  |  |  |  |

K K R GVLLEAY

SENNI HVVTGYMPFA
Q A N N: LVEA Y S P LA T
R Q NG:AV T S Y M TLA Y
K K R N I VVEAYCP
EETDI ELVAYSPLAR
REHDI T V EA A A PLAR
K K H DVLVEAYSPFGH
K E N GI TVVTAFS PL


A LA A WS P A GEAFQEKEI DDLAAQK
 RSVAV CVVTA Y S P L G S G DRPWASPD E P S LL L D D P QL GA I A QR ESYDVVVVAYSPLAR GQVFNHDGLEEVASR
 VGKVLKDKTIDEIANS GRLLNKVE E KEI A K K GDALKDSTI DE I A A R $\square V R N E K A N D A T L A A B A K K$ GDVFGDDVLADIAED TKVLDDPVVI E ELLAEK GDMFKHEALKEIADK

N K N S \| V V|Q A Y C P \| \|

| $D$ | $A$ | $V$ | $G$ | $A$ | $A$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| H | $D$ | $V$ | $E$ | $A$ | $A$ | $D$ |

$\square R G K L D N E V I V S L A N K$ LVQAKRMQEPVLRRLASS LVRAKRMDHPVLVELSRK GAVFE EDTIVSI AKN ARTMNDPTHLEVANE QGRKNEMFENPALVEIARA DAGI GGI A QR APTQNHPEVKKI AEK GEALKNKA I A D I A A K
 GRLLKDPRIVTYAEK $\square$ VRAQKNDDP LLQPLAKK

UniRef90 J5LOK0 UniRef90-B6TKQ4 UniRef90_UPIOOO2E69157 UniRef90-C5B5H1 UniRef90_F4F7C3 UniRef90-W4G1N7 UniRef90-M4UBD4 UniRef90-M1D2A4 UniRef90-M3CXQ9 UniRef90-UPIOOO3B34627 UniRef90-UPIO002191542 UniRef90-LoG5U7 UniRef90-I3NBJ2 UniRef90 13 KKG6 UniRef90 $\mathrm{G6CHQ} 9$ UniRef90_UPIO003707A40 UniRef90-B9S7D2 UniRef90-G2J136 UniRef90-B2GAR8 UniRef90-W9X4A7 UniRef90-OZG767 UniRef90-K1PNR5 UniRef90-D8L856 UniRef90-G5HRT4 UniRef90-A0A024HGR1 UniRef90-UPI00006CADAC UniRef90-A6D553 UniRef90-D8Q885 UniRef90-UPI0002191981 UniRef90-K6VQU4 UniRef90_UPIO0037AEE57 UniRef90 UPIIOOOOEOAOF6 UniRef90_UPI00042CD750 UniRef90-M0CMJ7 UniRef90-F8P 154 UniRef90-K1JRX8 UniRef90-G9RZB2 UniRef90-W5KIV1 UniRef90-UPI0003B586B0 UniRef90-IOR.J84 UniRef90-13Z7A1 UniRef90-UPIO0041ADC40 UniRet90 MOHMH7 UniRef90-11PLN8 UniRef90-UPIO001D36281 UniRef90-A11HM7 UniRef90-J6UBL4 UniRef90-K6V3H55
UniRef90 M3VJ26 UniRef90- ${ }^{-10 A 034 W T R 8 ~}$ UniRef90-H3RSO1 UniRef90-K5XDG6 UniRef90-D9UQN7 UniRef90_C5Y9A7
UniRef90-UP100047AD6F0 UniRef90-Q03110 UniRef90-K0FM58 UniRef90-Q11DV1 UniRef90-B3RAGO UniRef90-O5V663
UniRef90 V2YXVO UniRef90-G7XEZ7 UniRef90_UPIoo044185BF UniRef90-C4LHX2 UniRef90_G4Z501 UniRef90_COD532 UniRef90-M5GAN5 UniRef90-R619K7 UniRef90-U9ST17 UniRef90-B8M9U2 UniRef90-D5H353
UniRef90-H1VBN6 UniRef90-Q0V660 UniRef90- UPI0003176979 UniRef90-R7FL46 UniRet90 E8XNO1 UniRef90-U2YEW9 UniRef90-F7PH13 UniRef90-K2PUQ9 UniRef90_V7B059 UniRef90-C5DM41
UniRef90 S1P3E1 UniRef90-F4ACJ8 UniRet90_A9TH82 UniRef90-UPIOOO44078A9 UniRef90-F1C780 UniRef90-LOK367 UniRef90-R5A7V4
 RGKTI AQVALRWLHEQGVCFVARSFNKERLKQNMELFDWE
 HDVSPAQVVLRWHLDHEIVAIPKSVTPERTRANADVFGFS YACTPAQLCIRWNLQHGYICI PKSTKPERVVENACVFFFS
 YGCTSGQLLVRWSLQ

HDASPAQVVLRWLI DQPMVSDPKAGSEAHDRANLAALDTR HGATPAQVALKWLLQDGVSAVPKAASRANQQANLDSLKGQ KGKTVAQVSLRWVYEQGVSVVVKSFNKERMKENLEDFEWE HDVTPAQI ALAWLLQQGCSVIPSSTQRANLAANLQAQADS HDRSVAQVILRWHLQSGTSFIPKSVHEARISQNAADYDFS


YGKTPAQLVLRWGLQRNTVVIPKTSKLERLQENFEVFDFD YQRSTSQICLWCLQRGIQPIPKASNEKRMTENLGPFDFF

$\left.\begin{array}{llllllllllll}H & R & A & T & P & A & Q & V & L & A & W & M\end{array}\right)$




 H N K A P S EVVI A WALANGLTTIPSSTKRSNLITNLAGPDLT
 H N A T P A Q I V L A WA L Q L G Y A V I P S S T K R E N L Q S N L L A Q Q L T




 Y H K S P A Q I L R WE T Q L N V VP I P K A S S Y E H Q I S N L D I I F D F K HQKTTAQI A CRWIFECGCSSVPKSFNRDRMSQNFAIIFDWQ





UniRef90_UPIO004223FB2 UniRef90-Q2JOH1 UniRef90-17M894
UniRef90 G0W4We UniRef90-C4Y8R5 UniRef90_UPI000372F8D7 UniRef90-E5VGQ0 UniRef90-K5BBN9 UniRef90_Q7VHE1 UniRef90-B6H2Q7 UniRef90_LOALC4
UniRef90 R7DCIO UniRef90-C5RD60 UniRef90-H5TTS5 UniRef90-D8JBE6 UniRef90-F1L4Q3 UniRef90-A9CGD9
UniRef90 E3Q8L1 UniRef90-B1CBI7 UniRef90_W6MMK5 UniRef90_Q6CLG2
UniRef90 C4YP55 UniRef90 ${ }^{-}$M8BWE6 UniRef90-F7W943 UniRef90-E6VCQ0 UniRef90-K9NGR9 UniRef90_17M4P8 UniRef90-MOCGN0 UniRef90-I1LNU9 UniRef90_R9ALK0 UniRef90_K7H989
UniRef90_H0HRI2 UniRef90 F2Q1Q9 UniRef90_C1BJT8 UniRef90_V9D0H9 UniRef90-M0PB82 UniRef90_M2Y2X3 UniRef90-A5DRJ7
UniRef90 F9WKX7 UniRef90-B7FHX8 UniRef90-R5QUH7 UniRef90_A8TPG1
UniRef90-F9U7R1 UniRef90-S8BBR5 UniRef90_UPIO0035EA0E1 UniRef90-U5KCB7 UniRef90 T2F6A8 UniRef90_D6WWT5 UniRef90-R7S242
UniRef90 B1MYB8 UniRef90-V4HE86 UniRef90-W6LAM2 UniRef90-C8V4X2 UniRef90_R1EJF8 UniRef90_A2FPE2
UniRef90 B1MYL7 UniRef90_UPI000360FC8F UniRef90_F6HG12 UniRef90_UPIO0037870AA UniRef90-A0L1A2 UniRef90-W6ML22 UniRef90_18R3Y1 UniRef90_G2XST5
UniRef90-D0X115 UniRef90-DOXI15 UniRef90-H0A946 UniRef90-Z9JNZ6 UniRef90_A7EW94 UniRef90-A0A023E8N0 UniRef90_UPIO0047840D2 UniRef90-H2YBFO UniRef90-S7W7H1 UniRef90-F2L850 UniRef90-G6CHR1 UniRef90-F7YR20 UniRef90-W6MIM8 UniRef90-UPI000455EFE4 UniRef90_Q4WI64 UniRef90_UPI00001F3748 UniRef90 G2MIT1 UniRef90_UPIO00388DE7E UniRef90_C4S2P9 UniRef90-K1QVW0 UniRef90-A0A022QBH7 UniRef90_H4GJX1 UniRef90_U2E4S5 UniRef90-J7SC30 UniRef90_G0N9V3 UniRef90_F9XFP9

FS $\square R$ RGHEMPSLGTSTWRNFKENVYSSISTALENGY
NGAATPALGLGTWTLKGDDCAKLVTEAALIGY PSFKLNTGHDIPGLGFGTFPRYPEKAYDATLHALHAGY PCLILNTGARMPILGLGTYEVKGSEMHLIIDAALETGY AEMPPVGLGLWNSKDKDASNAVQDAFKAGY LKTTLKLRSGAELPQLGFGVWDSPSHDTTKSCLEALKVGY THKLPMRNGAKII PAVGLGAYLISPASAAKMVEQALDTGY
 MQTIT

STLRLHNGVVMPTI AFGCAFGDPEQAWRAVSLALDNGY STLRLASGYEIPRLGFGVYKTPPEVTERCCREALEADY

MNY FTLNNGLE $\square$ PAVGFGVLESDVANFEEVYENAWSAGY
PHFT $\backslash N D G T R \square P S V G M G C W M G G G E S A E \square M C K K A \square K Y G Y$ $S V V S L S D G F K I P R I G F G T Y K L N G F S G A Q A D S S A L T V G Y$ MPMLGLGTWENDPEECRTAVETALETGY $R L I M R N G E T I P Q L G F G T Y R L H Q S E V E A A I T Y A I S C G F$ F L N T GARIPAAVGGTWKAGPGEAAAAVQAAFDAGY ( EERYELNDGHFLPKI GLGTFQVRGAQGVNQILNAIQSGY TYF $\square$ TKLAMPKLGFGTWALKGADCARAVAEA GLGY (I GLGTWQSGGDLCVEAVKRALSEGY PTHTLNDGTTLPALGGLGTWPMTDDEARRAVREAALESGY

LTLNTGAKMPTMGFGTWSAEDRSVIGACVAMLEAGY PSLTLNNHRLIPQEGLGVFQMTDNTCKQAVLSALHSGY SPTLKLNSGHEMPQVGGGLWKVDNATCADTVYNA 1 $M K T V K T \quad D H V E I P A L G F G T Y Q L E P A D A R R M V A E A L R I G Y$
 DS SKLRMNSGYEIPILGYGVYQTPASQCEDLVAKAFDAGY LS T R IS LANGLS IPQUHLGVYLMSGREAGDAVKHALSAGY

 LRLYNNNTMPIVGLGAWKTGDNDVYRITKEALE GY
 $K N\|L L N D G A\| M P P \| A F G T A A S D L D D V V S S V I T A I T E T G F$
 FKLNNGKTVPALGLGTVASDPKDVKDQVITAMVKAGY

$P T D D L P D I G L G T S G M T G D E C V E S V R T A L E T G F$ $P T L P L S N G L H 1 P V L G L G T S H Q G G Y S H D A V V Y A L Q K C G D$ $S V P L F G L G T F R Q Q D Q V V D D S V S Q A L K D G Y$
 $T V R L N N G V T i P L L G Y G T Y Q L P Q S T G P E L L E E A C K G G Y$ TSATLPVPGLGTYSANREQWVETVRTALDVGY TSVRLLS GYDMPLLGLGVYENDD CVPACLTALKHGY


|  |  |
| :---: | :---: |
| UniRef90 |  |
| UniRefofo- $22 \mathrm{JOH1}$ |  |
| UniRef90-17M894 <br> UniRef90-GOW4W6 |  |
| UniRef90-C4Y8R5 | RHLDCAEMYGNEKEVADGIT S WL |
|  |  |
| UniRef90-E5VGO | R H |
| UniRef90-K5BBN9 | RHIDTAAAYANEREVGLIA |
| UniRef90 O7VHE1 |  |
| UniRef90_B6H2Q7 UniRef90 LOALC4 |  |
| UniRef90-R7D | RMFDCAACYGNEHQIGEVFKTAFDEGVV |
|  | DTAQAYGNEQGVGAG $\quad$ 俍ATGL |
| UniRef90-H5TTS5 | RLLDTASRYSNELSVGMG L RESG\| D |
| UniRef90 D8JBE6 | RHLDTAQMYGSEEAVGSA |
| UniRee90 F144C | RMIVIAQVYGNEKA GDALITLCLPKYNLK |
| UniRef90 E308L1 | DHIDAALI YRNEDQ TGKGIADSGVAREKLWVTSKLW |
| iRef90-B1CB | RHFDTAAFYNNEHDTKEVMF KSNVKREDLFLSSKVW |
| UniRef90-W6N | QVYKNEHESAQGLLK WI NEGLGKRSEVFFTTKVG |
| UniRef90-C4 | DTAVLYGNEEEVIEGISKFLRENNTPRSEFFYTTKLW |
| UniRef90-M8BWE6 | ARVYGNEK IGGLALKKLFEEGVVKREDLFDTSKLW |
| F7 | $\checkmark$ d A SaY R N |
| 6V |  |
|  | RVI DTAQUYENEAE |
| UniRef90-17M4P | DTAQMYENEQFIGAALKTIFGEGKYKRED F F |
| UniRef90-I1LN | RHFDTAKIYGSEPALGKALNEALCEEEVEREDIFLTSKLW |
| UniRef90-R9ALK0 | VGQG\| ThWLKATGTPRSEIFVTSKLW |
| UniRef90-K7 |  |
| iRef90-H0 | - |
|  | RHLDCAALYYNEELVGKAIHEFLERPDVQRKDLFITKAW |
|  |  |
| UniRef90-M0PB82 |  |
| UniRef90-M2 | RHI DTAQVYGNEAEVG EATKKADTPRKDLFITSKV |
| UniRef90_A5DRJ7 | RLI DTAQEYGNEREVGEGMAWLEKDPKHKREDVIVYTKL |
|  | NEKEIGSILKKLFAEGVV |
|  | RLIDTANRYTNEKSVG RGISKSGLDRKEIFIETKLA |
|  | RHVDTAEMYGNEEPVGAG G I A A AGLPRGDLHVTTKAW |
| ee90-F9U71 |  |
| UniRef90-UPIO0035E | DTAEGYGNEKGVGHALKNAQKELSGPRE |
| -U5 |  |
| T2F6A8 | RLFDTAASYGN QUALGKWLKNSDHARKEYFLTGKVA |



RHVDTAQMYDNEPAVGAG TRLADVDRDVVLASKVH RHIDTAKRYGCES LLOKAIKESDVKREDLWITTKLW RAIDTAQDYENEAADG QA:AQSGIKRDELFITTKIW RHIDTAYTYKNEDAI GEELQEYLKNGKVKREDLFIVTKLG
 RHFDSAQEYQTEAAVGG RHIDSARYYMNEDQVG RSFDTAKYYENEKELGGDAGK
RHDDGAQVYGNEAEVG

RHDDGAQVYGNEAEVG $\quad$ QAVKQSSVNRSEVFITVKVL


140 150

UniRef90 UPI0004223FB2 UniRef90-O2JOH1
UniRef90-17M894 UniRef90-Gow4W6 UniRef90 C4Y8R5 UniRef90-UPIo00372F8D7 UniRefol UniRef90-K5BBN9 UniRef90-Q7VHE1
UniRef90_B6H2Q7 UniRef90-LOALC4 UniRef90-R7DCIO UniRef90-C5RD60
UniRef90 H5TTS5 UniRef90-D8JBE6 UniRef90 F1L4Q3 UniRef90-A9CGD9 UniRef90-E308L1 UniRef90 B1CB17 UniRef90-W6MMK5 UniRef90-Q6CLG2
UniRef90
C4YP55 UniRef90 ${ }^{-}$M8BWE6 UniRef90-F7W943 UniRef90-E6VCQ0 UniRef90-K9NGR9 UniRef90-17M4P8 UniRef90-MOCGNO UniRet90_11LNU9 UniRef90_R9ALK0 UniRef90-K7H989 UniRef90-HHRHI2 UniRef90-F2Q1Q9 UniRef90_C1BJT8
UniRef90_V9DOH9 UniRef90-MOPB82 UniRef90-M2Y2X3 UniRef90-A5DRJ7 UniRef90-F9WKX7 UniRef90-B7FHX8 UniRef90-R5QUH7 UniR Refo-A8TPG1 UniRef90 S8BBR5 UniRef90-UPIOOO35EAOE1 UniRef 90 -U5KCB7 UniRef90_T2F6A8 UniRef90_D6WWT5 UniRef90-R7S242 UniRet90-B1MYB8 UniRet90-V4HE86 UniRef90- W6LAM2
UniRef90 C8V4X2 UniRef90-C8V4X2
UniRef90 R1EJF8 UniRef90-A2FPE2 UniRef90-B1MYL7 UniRef90-UPI000360FC8F UniRef90-F6HG12 UniRef90-UPI00037870AA UniRet90 AOLAA2 UniRef90 W6ML22
UniRef90_18R3Y1
UniRef90-G2XST5
UniRef90-U2YV41 UniRef90-H0A946 UniRefofo-Z9JNZ6 UniRef90 W2S6Y2 UniRef90-A0AO23E8NO UniRef90-UPIOOO47840D2 UniRef90-H2YBFO UniRet90-S7W7H1 UniRef90-F2L850 UniRef90-Q9C1X5 UniRet90_G6CHR1 UniRef90-F7YR20
UniRef90
W6MIM8 UniRef90-C4YKA7 UniRef90_UPI000455EFE4 UniRef90-Q4WI64 UniRef90-UPIO0001F3748 UniRef90 G2MIT1 UniRef90-UPIO00388DE7E UniRef90-C4S2P9 UniRef90-K1QVW0 UniRef90-AOAO22QBH7 UniRef90-H4GJX1 UniRef90_U2E4S5 UniRef90-J7SC30 UniRef90-GON9V3 UniRef90_F9xFP9
130 DDRVPLS ${ }^{140}$ PRALLCELQKKQGLTRHI G|VV ${ }^{160}$ FDGSVAVNHRP DMNLASALETLMRIRDDGGARAAV C NSQGNII GLPRDKDGNALHEKWADLEECVELGMIRS: GVA QTNKEDLFEKDADLEFAVQAGKUKA GVS NDKYVDTWRAFEEIYSSGRAKAIGVS WAKVNQCEDRYVEGNRAAWKALEDAYMAGKLKAAGVS RNLF KAMYRAMESFYKQGLLRVIGGIS KEARLGSWDALVEAQKSGKVKSIGVS
SDRVPLEETLGAMNDLQSEDVVDHI GVS FCDVDSRNPDSRPFSEEFMDTYRQCEELVEKGKIRYIGIS GENHYF
$S$ GGR ENV V VWR
SWR
GLCAKKANDPLNAK $\square$ RA NEAKLRAESWTVMEHMYRMGKLRAGGVVS NEAVSLAEQDGALNEVKEAGKVRHI GVS
PGNADDRK
(LTDKEKRTASWKALQDLKDKGLIRSIGVS GKKLRLETYEAMQEAVDAGKVRSIGVS
$R$ VK K G T N N N P E N F GKTKRLE GSANRKG
DDQVP
APSDDYQQWNHKPVHQ LVSFRD PWVNYPVPNEDDFEKLLDLETTWAGMEKCLEMGLCRCTGVS AQIPQDDKGFPLKDHNVEEKDTWAAMETQVPQKCKNIGIS CEMFPNDGTQFUHSDVDYLETWEALEEAVESGTVRSIGLS KGGEAVGADGKYIVKRELTENWRAMEKVARDGLTRAIGVS GDVKNSQNRAQSW

AIVLEELHGQGAIRSI
QEDGRTVIDQDTSTHDTWAMEDVVRNLTRYVG
HNGQTQGARGIKALWPVMEKLHQEGKLKSIGVS
EFNTDEDKYPKDSNDKKRLDETWRALQEMVVDGGVVKAVGVS
VGFKAENLVQP
NLASTWKAMEVL
DGKARALGV
S S DPD
DMDLGATLTTLARLLQEEGRIRALGVA GSENRKGAWKALVEAVEAGKVRSIGVS DPFPSDANGKVIVSDVDYVDTWKAMEKLVEKGLVKS:GVS S $\square H P \square D P K T G F \square P S E K P F E T W K A L E H L Y D E G L V R A D G L S$

$\qquad$ DTV TWRNMEKMLETGKVKTVGV S
 DVNYGKEDRTVHATGWDFRDTWREMEKLLDTGKVKTUGVA
 KRDNYDEAWQALIGEKKRGEVRSGGVS TDPPSNSGNDHRQFDNRLKKAWKAMEGLIDGGLVRAAGVA

NSDEDKYASWRAMVKLREEGLVRSMGVS
 GWQYSDKEGDVQQSKASTQETWQAMEKLVDEGLAKSIGVS

GEGTDVNEYMPELLKAKELGLTKSIGVS EPALEETVKALNDARVRGFAKNIGLS SRGLADDTWRTLDDLREEGL GHAGVS GRAARKGAWKALVEAQEEGKIRSLGVS NDEVPMAVYLEQLVEAKSDGLTREIGVS
RFETNLGDMLELLYKLKDAKKVKEVGVA


GNGVPLAATLEALADAKARGLTREVGIS
HTSENVPTGTPKDRILASWKAMEEFVDSGDIRSVGVS
GKNENVEEYMQALLEAKSLGLTKEIGVS
LCYVRDTFTDVENADHLDTWKEMIGQYKTTMKAKS GVGC NGELIYDDDPTPNGTKYIDVYHKLEDI LETTTKVRSIGVS LRAW RGLLEAKKKGLIKTAGVS

KEGRDGAWRALVEAQKAGHVRSMGVS
YPRDENGR【IYDKTNLCATWEALEACKDAGLVKSLGVS
GI CRSI GVS
NDEDSVAEFMAEDMKAKEMGLTRQUGIS DDENTEDGKFKTAEKSDLDETWKAMEELVDGGLTKSiGVS PWVSHPLPKEEDFDKLDLETTWAGMEKCLEMGLCRG|GVS

THTYEASETLAALEKLHODGAMRNIGLS GKEKRLDTWRALLKARDDGKLRTVGVS


## UniRef90_UPIO004223FB2

 UniRef90-O2JOH1 UniRefefo-17M894 UniRef90 C4Y8R5 UniRef90_UPIo00372F8D7 UniRef90-E5VGQ0 UniRef90_K5BBN9 UniRef90-O7VHE1UniRef90-B6H2Q7 UniRef90-LOALC4 UniRet90-R7DCIO UniRef90-C5RD60
UniRef90 H5TTS5 UniRef90-D8JBE6 UniRef90-F1L4Q3 UniRef90-A9CGD9 UniRef90-E308L1 UniRef90-B1CB17 UniRef90 W6MMK5 UniRef90-O6CLG2 UniRef90-M8BWE6 UniRef90-F7W943 UniRef90-E6VCQ0 UniRef90-K9NGR9 UniRef90-17M4P8
UniRef90 MOCGNO UniRef90-I1LNU9 UniRef90-R9ALK0 UniRef90-K7H989
UniRef90 UniRef90-F201Q9 UniRef90-C1BJT8 UniRef90-V9DOH9 UniRef90-MOPB82 UniRet90_M2Y2X3 UniRef90-A5DRJ7
UniRef90
F9WKX7 UniRef90-B7FHX8 UniRef90_R5QUH7 UniReffo-A8TPG1 UniRef90-F9U7R1
UniRef90
S8BBR5 UniRef90_UPIOOO35EAOE1 UniRef 90 -U5KCB7 UniRef90-T2F6A8 UniRef90_D6WWT5 UniRef90 R7S242
UniRef90 B1MYB8 UniRet90-V4HE86 UniRef90-W6LAM2 UniReffo-C8V4X2 UniRef90-R1EJF8 UniRef90-A2FPE2
UniRef90 B1MYL7 UniRef90-UP1000360FC8F UniRef90-F6HG12 UniRef90-UPIO0037870AA UniRef90-AOLAA2 UniRet90 W6ML22 UniRet90_G2XST5 UniRef90-DOXI15 UniRef90_U2YV41 UniRef90-HOA946 UniRef90-A7EW94 UniRef90-W2S6Y2 UniRef90-AOAO23E8NO
UniRef90-UPIOOO47840 UniRef90-UPIOOO47840D2 UniRef90-H2YBFO UniRef90-S7W7H1 UniReffoc-F2L850 UniRef90-G6CHR1 UniRef90-F7YR20
UniRef90
W6MIM8 UniRef90-C4YKA7 UniRef90-UPI000455EFE4 UniRef90-Q4WI64 UniRef90_UPI00001F3748 UniRef90-G2MIT1 UniRef90-UP1000388DE7E UniRef90-C4S2P9 UniRef90-K1QVW0 UniRef90-AOAO22QBH7

UniRefgo-UniRet90-H4GJX1 UniRef90_U2E4S5 UniRet90-J7SC30 | UniRef90-GONOV3 |
| :--- |
| niRefolegfel |

UniRef90_F9XFP9

N F N|I $|\mathrm{AN} \mathrm{N}|$
170
V E A K K H A D VP $\frac{180}{\square V}$ NQIVEFHP ${ }^{190}$

200
NFPAALLKQALADNADACNOVEY HALLGQDSLQTFLL
 NYGVHMLELLKWKELKKKPVVNQVLHPWMMRTELVNFC
 NFGAK AYSEFVKSCEVIPAINQCETHLLLQQKPLREAM NYGRHHLEELYUQGGGGGQDDVGQYELHPWLDHSDVVEWLC NMTIPKLEAVLPLM KIKPAACELEDHPCFQQQEQYDYL NFLQTDLANLLENGSVKPMPVNQLLTHDGNTSFDLLEQA NFSVQQTAEAMKYSETPIVT NQVKYHPYKSQADLLAFC NFNTELMAESVKLSRAPIVTNQDEY HPYLSQDVVIAAA NFARADVEAVLAA AELPPFAHELEAHPYLQQQAFVDWH NFLPHHLINILDKCDTKPMVDQLEDHPGYIQKAAIDFL NYGNHHI KELEEWDGLKYLPAVNQ| EDNPWLRRED TKYD NYGFQH: EEELNWEKLKYKPVVNQ:E: SPWCMRQELADCC NFSSKKLGDLDAV ARVPPAVDQVECHPCWQQTKLHNFC NYGVHHLDELEQHIKQLEAERVGQWEVHPWCARSDIVEWC

 NFRRWRLRRAREKSTVPIDADQV RFHPFYTHGALREYC NYTKSEI ADLLKTAKDRPSSLQVE LHVYNQQPELVKYA NFTEEQVRRVWDSANIKP TVLQVEVTPYVTQKNLEDFC NWSVSRLRSLLK FASSPPATNQ1EDHPFFPNTKVVQFC
 NFSAYQLSCAHDSDVP A
 NCSEKHYNEVMS DGSLYAPVINQIELHPALVQRDLLNVH
 NYGVAHLRQLLQQHVREPEXERVNQLEMHPYCRDPELESGC NFNKSH1 E E KSA RGLP MPDANQUELHPWSQKSELVSYL NFNSVQLTRGLNAATIKPVTNQVEC HPYGNQSRLFNFC
 NFLPEHI RLLQRESTG NFRTEDLKEALDVADVPIF AHQFECHPLLPQKALLREIT $N C N E K H L K E V M K$
$N F S T V N L K S L E N A P V L N Q I E F H P A L V D H G L V A C N$
$R$ NYGVKHLQELLDSKPRIHPAVNQTEVHPFNTRTDITMFC NFSIEQLERMRYDPGVKIQPYCNQVESHMYDQQQPMLDYG
 NFTAAGI KRLEKE FAGVLPSVNQMELHPLFPQEELRAFH NFTNAQLAQAL_ALGEGVDYTNQVEVHPYLINRKVTDFC NFDAGQLLDLS HQMSUQPAVNQVELNLYQQQAPLRRYQ
 NFPSARABALS $N F E V P Q \mid E E A L N$
$N F R P E Q L Q E L Y D A$ HVDVYANQUEMHPLLSQEEVREFC NFGVKHLEELI ASK RLEEERVGQWELHPWLARSDITSWC NFTVAQLKEALDALGPGATAHQQVEIGPLLQNRKVVEFC
 NFGFDNLNLILKN CEIQPAVNQTEVHPYYQEKELREFC

N
N
N
 NYS:PFLERLFKENTVVVPVVNQVELHPRLPQLELVKKFC NFGVRHEEELREAVGLEQPAVNQLELHPQDQQREVVEYC

$$
1
$$

N N
N
N $\stackrel{N}{N}$ NFSSKKIENLLALTASVTPALNQVEMHPMWKQKKVRDYC


N




YHKTTSQ ILK WHTQMGFSAVPGSRSANH LENDEDFDFV HNASPAQVALKWLLQDGVAAIPKAQRPQSQQANLDAWTVT HGKTPGQVVLRWHVQSGRTALPKTTKAVRMVENRDDYDFT Y NKTPAQI LI RWSLDKGF DPLPKSVTPERIVANADVFDFK YFVT EA QVLL RWGVQKGYPVLPKSTNEERI RLNMDLESFE
1 YGKSPAQI LLRYNVQLGGVVI PKSSNRNRLVENMSIGFDT
 YDTNEGQVSLA WLREKGVTTI PKATSEEHDRDNWGSLDLD

 YNKNNGQLIIKWLLQRGULPVVKSASPQNQRANLNVFDFQ HGATGAQVALA WLLEQDRVAIPKSGRVENMRANLAALDLR

HQATPAQ VLA WLRQLGFATDPSSTKRDNVRSNDAAASDN Y GVTPS TVLLSFPLNLGVSTIPKSFKKERMDANFKTDD HGKTPAQI LLRYLTQLGAIVIPKTVHVTRMRENQALWNFT TKKTPAQVLLRQ
K GA $\square$ A A QVALA WAMQKG $\square$ AVIPSSTKRENDASNLKALEDT HGKTPGQVTLRWFVQQDVITIPKTASEKRAAENLDDFDFE HGVSEAQVSLA WDMEKGVTPIPKASTENHDEDNFKARELE HGASTAQQSLRWAlDRGUVVIPKSSSTPERQRSNAELDGGUA YNCTPAQLMVRWSLQNGFIPLPKSVSKERIKSNGKVNFFE HKVSAAQVSLAWLLAQGMTVIPSSTKREHQAANLAALEVS

 HGATPA QVALA WALQQGHAVIPSSSTKRANLASNLLARDLIK
 YKVTPAQIVLAWALAKEFAVI PSSTKRENLDSNLQAQQDQ YKVTAADVLVSFHVCKGNVVLARTQNLERLKQGWEF VK YQVTENEI ADAYNILDGRVTLPRSSNLERIKTIIRLPD LQKTVPQVLIRWSLQHDFVPLPKSEHEERI KANMEVYGWE
 YNKTQAQI VLRFNI QRGIVVIPKSFTPERI KENFQUFDFS

 H GKTPAQVH
 HGVSPAAVSLA WDTKENVVPI PKASSREHLEANLAALKVGS Y NKDPAQVLVRWSLQHG PLPKSSQPTRVVSNADVYDFE



E D R D I LIE I EKMEE
LSTAELASLRQFDRGLQSMHWPSW
LDPEDVAAI DAMGREHRVIDPDFA
I A CEDMARLDSLD


UniRef90 G7YBQ4 UniRef90_WOPBW
UniRet90_EORJK5 UniRef90_U6MY69 UniRef90 MOD5G1 UniRef90-C7P4S1
UniRef90-TOLBG8 UniRef90-UPIo002191AFO UniRef90_W9WZ01 UniRef90-FOXUF8 UniRef90-T1JXC1 UniRef90-UPIIOOO3F09DD1 UniRef90-K2JM67 UniRef90-R7SHA4 UniRef90-UPI000225AB4D UniRef90-D7U7F8 UniRef90-U1HH22 UniRef90 UPI000393FCA4 UniRef90-K4BIK4
UniRef90-L1JON7 UniRef90-LONG12 UniRef90_16SUG9
UniRef90 MOIHX6 UniRei90-UPI000428ACB4 UniRef90_S4XHI4 UniRef90-A0A017IMM2 UniRef90_UPIO0015832EF UniRef90-M7A9A4 UniRef90- J9FU43 UniRef90_UPIOOO3770370 UniRef90-НЗКС67 UniRef90-UPI00047B9FEB UniRef90 C9SUK0 UniRef90-UP10004449CDC UniRef90_W5LVS6 UniRef90_G1XV66 UniRef90-G3XS83 UniRef90-H3DSD9 UniRef90-E7H204 UniRef90-H3DSEO UniRef90-R5KU61
UniRef90 UniRef90 E1QRB9 UniRef90-A2DSYO UniRef90 UPIO003B672A9 UniRef90_G5IMW2 UniRef90-S3B345
UniRef90 UPIO003F4DAOC UniRef90_J5QTT6 UniRef90 M2NAQ1 UniRef90-UP10003447F66 UniRef90-W2FQ47 UniRef90-UPI000369BF55 UniRef90-UPIO001F2AB3A UniRef90-A8BLJ4 UniRef90-UPI0002B4B4D5 UniRef90-UPI000476587E UniRef90-K9XH77 UniRef90-UPI0003C1A91A UniRef90_D3SYT7 UniRef90-L8GKL7 UniRef90-UP100030BCC6E UniRef90-W4VFK8 UniRef90-CVLSS5 UniRef90-F6U9B1 UniRef90-UP10001BF7AAC UniR Ref90-l4YJN3 UniRef90_R9AJo9 UniRef90-UPIOOO3FOA4F2 UniRef90-B8HL74
UniRef90-X0QFN2
UniRef90-O97914
UniRef90-UPIo0046FE7DA
UniRet90_E8N164

UniRef90-A0A016SY43
UniRef90_UPIO0047835F6
UniRef90-R5E6K0
UniRef90-J3GZH1
UniRef90_B1M8B3
UniRef90-AOA010QGW8
UniRef90 M7BSH3
UniRef90-UPIO003B554AF
UniRef90-V7PXG7
UniRef90-W7TYC4
UniRef90-J3ZFB3

UniRef90 R5KJJ7

MK LTTES TRNE $\square G$ IP SFGLGTFRLK NEAKKVVR ALLEAGY
 $\left.\begin{array}{c|l|lllllllllllll|lll|lll} & R & L & G & Y & G & T & Y & K & L & D & G & E & E & C & A & A & G & V & A & H\end{array}\right]$
 L T E T F K L A N GVV


S G Y T LP V L GFGT GLLS D K T Y Q A VK Y A LEVGY


 $G \perp S L P Q L G L G T F R M Q G D A C R A A V E S A L G L G Y$ S Y QAMLN NGETLP IIGMGTYENDRETTEKAIMAADIKM GY


 VELAN GVQMPVI GYGTWQIVVNERFSTI HTAIQQLGY EK F L T L H N GLLKMPIL G $\square$ G TY R S Q DERTEEALK FA L K I G Y
 $\square M G$ GTSHHGGYSHRAVVYA LQECG $\square$
 F TFND GND $\square P$ K $\quad l$ G $L$ $T L A N G D T M P R L V F G T Y Q I D P K D C Q K A V E D A L E A G Y$
 MS R S L L L N S CHK IPQLGGFGTF DVMK TVVSKAVQVAI S TGF



 $M E K M V A L P D G T L V P A G G Q G T W L L G E E K E A E A L L K A G L D A B M M$
$P N L K \square N D G N S \square P M L G Y G T W Y K S G D E C D D S V K L A L K L N Y$
 P T L K L N D GNEI P QL GL GTARFKDAD LVELTRKA I D D I G Y

 MEK R RL G T T D I Q I T P I L M G T WQ I E D K E S I K A I R A A V D A A - QLPOPGLGTSGHEGESCTDAVVTALASGY Q A K VL L N N G V R MP VI GL G T Y R L Y N Q H R I S EV LA WA D F G Y




$M Q T R Q L G Q T D \square Q \square T P L L I G T W Q \prod E D N E T \prod A A \prod R A G L E A G \square$
 MEYKEF GNTGVKV S SVGI GTYYDP GEKKI Q A I R T A I D A G V



| $V$ | $T$ | $L$ | $N$ | $D$ | $G$ | $Y$ | $K$ | $L$ | $P$ | $A$ | $L$ | $G$ | $L$ | $G$ | $T$ | $Y$ | $Q$ | $I$ | $R$ | $G$ | $G$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

 $M L Y K \quad T L N N G V K M P M L G F G V F Q V D P E E C R K A V L C A L L E N G Y$



 SLI I G I T S N A D A A E K V A D A A V

## UniRef90 G7YBQ4 UniRef90_WOPBW UniRet90_EORJK5 UniRef90_U6MY69 UniRef90-MOD5G1 UniRef90-C7P4S1 UniRef90-TOLBG8 UniRef90-UPIo002191AFO UniRef90-W9WZ01 UniRef90-FOXUF8

 UniRef90-B7S4G6UniRef90 -T1JXC1 UniRef90-UPIo003F09DD1 UniRef90-K2JM67
UniRef90-R7SHA4 UniRef90-UPI000225AB4D UniRef90-D7U7F8

## UniRef90-U1HH22

UniRef90_UPI000393FCA4 UniRef90-K4BIK4
Uniref90-LIJQN7
UniRef90-LONG12
UniRef90_16SUGG9
UniRef90-MOMHX6
UniRef90-UPI000428ACB4
UniRef90_S4XH14
UniRef90-A0A017IMM2
UniRef90-UPIO0015832EF UniRef90-M7A9A4
UniRef90-J9FU43
UniRef90-UPIO003770370
UniRef90-H3КС67
UniRef90-UPIO0047B9FEB UniRef90-C9SUK0
UniRef90-UPIOOO4449CDC UniRef90_W5LVS6
UniRef90-G1XV66
UniRef90_G3XS83
UniRef90_H3DSD9
UniRef90-E7H204
UniRef90 H3DSEO
UniRef90- 5 KU61
UniRef90
W6UPD2
UniRef90-E1QRB9
UniRef90-A2DSYO
UniRef90-UPI0003B672A9
UniRet90_G5IMW2
UniRef90_S3B345
UniRef90-UPIO003F4DA0C UniRef90_J5QTT6 UniRef90-UPIOOO3447F66 UniRef90-W2FQ47
UniRef90 G9MM88 UniRef90 UPIO00369BF55 UniRef90-UPIO001F2AB3A
UniRef90- ABBLJ4 UniRef90-UPIO002B4B4D5 UniRef90-UPI000776587E
UniRef90-K9XH77
UniRef90_UP10003C1A91A
UniRef90 D3SYT3
UniRef90_L8GKL7
UniRef90-W4VFK8
UniRef90-V4JVT1
UniRef90-F6U9B1
UniRet90_V4XQ19
UniRef90-UP10001BF7AAC
UniRef90-14Y YN3
UniRef90_R9AJo9
UniRef90-UP10003F0A4F2
UniRef90-B8HL74
UniRef90-O97914
UniRef90-UP100046FE7DA niretgo-E8N164 UniRef90-A0A016SY43 UniRef90-UPIO0047835F6 UniRef90_R5E6K0 UniRef90_J3GZH1
UniRef90 B1M8B3 UniRef90-A0A010QGW8 UniRet90_M7BSH3 UniRef90-UPIO003B554AF UniRef90_V7PXG7 UniRef90-W7TYC4 UniRef90_J3ZFB3
 RADDTAQIYGNEAEIGGQALSASPVSRDQLFLTSKIW RAD DSAEAYYNEAG G TGRGUKAAGVSRDELGFVTYKL ALI DTASVYGNEEETRQLLKEAGNP RHVDTAQGYDNEASVGG DG


 RLIDTSQGYPRSEEDTG KATKDSGDPRSEDIVDKVH RLI DTAEMYANGRAEQIT GEAMKGRRDDVFLVSKVL RHIDTAAAYGNEEQVGKG GKMSDVPREDI FLTKLA
 RHIDTAKRYGCE HLLQRAI RDSGVKREDLWITTKLW RHFDTAKDYGSEDALGNALRRAI HDGLI EREDIHVTSKLW RFLDCAQFYGNEREVGLA VGVDSGPREELFLASKVW RLFDTAAAYGNEKALGEADHEALEQGLVTRNELFITSKLW RHVDTAEHYGNESAVGGDS
T

$\stackrel{R}{R}$



## 

## 





VHI DCA GAY GNE D LV G Q A L E Q C WK A
TLI DTAEMYGDGKA E E LVGAA I R


YHQDGAEVYKTETELGTA
RHFDCAYLYHNESEI GAGDQ




R
$\begin{array}{llllll}R & A & D & T & A & Q \\ R & H & G & \text { I E A E V } & G\end{array}$
RH D A QMYDNEEAVG


HVI DTAEMYGEGESE
RHFDTSPS
RLIDD T A K N Y E WT E S S E VA I
RHID T A Q
 RHFDCARVVYRNEREELGGE TLGGGSD

$T T I D T A E E Y G D G H S E Q \| V A T A V G K Q \quad R D Q V V Y A T K V F$ RAI DT A QAY D N E E A IGGIAA $\quad$ I K N S GDVS S D S I Y L T T K I W





 NTWDTADTYSNGKSEVI IGKALKKFNDPRQKDVILSSKIFN

R H F D T A $\square$ S Y R NE S V VGG K A YRFD TA EMYAK GY SEE I L GK A L K M Y Y D R S K L F I T S K V S KYVDCSSDSQNEKQ IGNAL
$R L V D T A Q V Y G N E Q A V G$



SNHLKYDQVIA ACDRSLKNLNTDY DDLYQDHWPS GSFRSE VDNLSKEKLI PSLKASLKKVR
I N HLRYDKVIKACKASLSRLNTKYVDLYQ
PSNASAEGVAKACRSSLRRLGTDRIDLY LLHWRGS
DRGLSRKHIFSAIDASLKRLGTDYVDLYQIHR
GK Y H Q Y D E A T K A V
GSNLRRDAVLRAAEKSLRLLDDDVI DLYQI HWSNR
$\square$ D DVYYEGAKKAFAASLEKL GDDYLDLYLI HQPYH
PHNASRKG IPEACERSLRRLNTDYI DLYLLHW
$P S N A S R A G T V A A C E R S L A R L R T D R L D C Y L L H W P G P H$
$P V P D D D S R P A S V N D G P L V N Q M G L S R K H V Y H A V D Q C L E R L G$
PYNSNEEEVKKAVNDSLEALQTDYDDLYLIHHPW
PANLGYDDVISHCKDSLARLQMDYLDLYLIHAPNS
CCDAAPEDVTEACKRSITELGVSYLDNYMMHWPVQDKSDS


UniRef90 G7YBQ4 UniRef90-WOPBW1 UniRef90-E0RJK5 UniRef90-M0D5G1 UniRef90-C7P4S1 UniRef90-T0LBG8 UniRef90 UPI0002191AFO UniRef90-W9WZ01 UniRef90-FOXUF8 UniRef90-B7S4G6 UniRef90 T1JXC1 UniRef90-UPI0003F09DD1 UniRef90-K2JM67 UniRef90-R7SHA4 UniRef90-UPI000225AB4D UniRef90-D7U7F8 UniRef90_U1HH22 UniRef90 UPI000393FCA4 UniRef90 ${ }^{-}$K4BIK4
UniRef90-L1JQN7
UniRef90_LONG12 UniRef90_I6SUG9 UniRef90-MOIHX6 UniRef90_UPI000428ACB4 UniRef90 S4XHI4 UniRef90 A0A017IMM2 UniRef90_UPI00015832EF UniRef90 M7A9A4 UniRef90- J9FU43 UniRef90_UPIO003770370 UniRef90-H3KC67 UniRef90-UPI00047B9FEB UniRef90 C9SUK0 UniRef90_UPI0004449CDC UniRef90-W5LVS6
UniRef90 G1XV66 UniRef90_G3XS83 UniRef90-H3DSD9
UniRef90-E7H204
UniRef90-H3DSE0
UniRef90-R5KU61
UniRef90 E1QRB9
UniRef90-A2DSY0
UniRef90_UPI0003B672A9
UniRef90 G5IMW2 UniRef90- S3B345 UniRef90_UPIO003F4DAOC UniRef90_J5QTT6 UniRef90 M2NAQ1 UniRef90_UPI0003447F66 UniRef90-W2FQ47 UniRef90-G9MM88 UniRef90_UPIO00369BF55 UniRef90_UPI0001F2AB3A UniRef90-A8BLJ4 UniRef90_UPI0002B4B4D5 UniRef90-UPI000476587E UniRef90_K9XH77
UniRef90_UPI0003C1A91A UniRef90_D3SYT7 UniRef90_L8GKLL7
UniRef90-UPI00030BCC6E UniRef90_W4VFK8 UniRef90_C4L5S5 UniRef90-V4JVT1 UniRef90_F6U9B1 UniRet90-V4PL19 UniRef90-_14YJN3
UniRef90-S3JKZ3
UniRef90 R9AJ09
UniRef90_UPIO003F0A4F2 UniRef90_B8HL74
UniRef90_X0QFN2
UniRef90 Q97914
UniRef90_UPI00046FE7DA UniRet90_E8N164 UniRef90 X0PGX6 UniRef90-A0A016SY43 UniRef90_UPI00047835F6 UniRef90 R5E6K0 UniRef90-J3GZH1 UniRef90-B1M8B3 UniRef90_A0A010QGW8 UniRef90 M7BSH3 UniRef90-UPI0003B554AF UniRef90-V7PXG7 UniRef90-W7TYC4 UniRef90-J3ZFB3


 VDANSPANRQRRLESWRALEQLYEKKKASCEWFVRAIGVS
 E $\square$ SEKDKEGHDKVGTYDVLEVWNKMESVVSKSMTRSI GVA KNCDQEN RDALENANNR SYVPTWQAMQRLVSTGKTRAVGVS

 DCDDFLLTCDMDKLE GTWKDTWKALEALTKEGKDRSIGVS KADKGRDWLETWKDME KVYETLLAGFEALMQAGKIRHWGVS EKEQLRNTWEVFEEYYEAGKLKA G GV E WA CYPVPKEDDFEQLDLDETWS GMEKCDDAGGLCRGI GVVS DAQVPGKSNREVRAETWRAMEELYEKGLCKSIGVS DYPVPAEEDFEELDMENTWSGMERCLEM G GLCKS GVVS

RGEHPDA
पG LDD Y LDD $\square \mathrm{Y}$ LL H
EYEAD
DNNEEDAKVLWSYAEREYVEADRVRHIGVVS
PLEETFRAFKDLRAQGKIRYFGV GDVHGAWRAMEELHQAGKI RAMGVVS NNVDYERSRKYTETWQAMEKLVDSGKAKAIGLS $D H K V P L H V L W T Q L E S L D D Q G L V K S L G L S$
LWQ S A N A
NCGES
RTLAPDESP
 QRQTLWQVLERLHTEGKAKSI GVS GYVDDDCSPGRSNREVRAETWRALEELHDKGVCRAI GVS GYVDLFLVHTPASGREGRE ILWRALELLKKEGGTDDI GVS
 A D DDP ADLDP $\square$ NKEKRRMVYGILEEYVGKESAAYKSGCARSGVS HQSFGDYYGS YRAMEEAYKS GCARAAIGGVS GAGFDVNGPNSLTFEYHLEDTWKAMEELITAGLVKSIGVS PGGDKFPLIDQWDDTVSSIDTWKEMEKLVEKGLVKRIGVVS $G G K Y V D A W R S L V E L R E Q G L A R S U G V S$ VP LA A TVVEAFEDLVVREGS I RHWGVS TNEMFPVKEDGSRNDDRQWDQWRAME KVVLAEGKKVKADGVS FSESKEEHQQKWRDMESLKAQGKAKAVGGVS EDMPLDPSGMVIPSDTDF LDTWEAMEDLVVMGLVKAIGVVS $R Q \square E L L N$

YFAENDEDLQQ DYASSDGKGGTAKSDGELQQAWAAMEKV

FETENGVNTGYNA
VPVEETMRALNDLKQQGKI RAI GVVS
NDKV
DVME
$\square$

CEEDDTDCSATGTLDEGWKNMAAMVNE
GRTNRDDAWKSLCEAYDA TALAETDACLEELKAK
NDKKYPTKPSGERDVLIDRKLEDTWEQLEDKGKIRAWGVS
DKKYPTKPSGERDVLLDRKLEDTWEQLEDTNKVRSTGLS
T
RCCFSPNPDASASSPVAVEEYMTALLEAKTDGLTKKI GVS
TANLQETFKAMEKLVDDGLVKFIGVS

KRDHYVEAFQAMIDAKKRGLIRSIGVS
RDRKAGSDDAYETNKKSRREAWKKLEQLKEEGLI RSI GVV SVPDAETMGAMEELVDRGMVRYIGVS
RGQYPLEETVEAFERLREAGKGGRWGVS

DDLDGUVAVWKTMEKKVDEKTLKAAIGVVS KPVSLDGGDTYELVQDGDMDCDMATYEAMDQGLVRSLGVS NDYYGTWRAMER LYKEGRI RAIGVS

## UniRef90_G7YBQ4 UniRef90-WOPBW1 UniRef90-E0RJK5 UniRef90_U6MY69 UniRef90_M0D5G1 UniRef90_C7P4S1 UniRef90_T0LBG8 UniRef90_UPI0002191AF0 UniRef90_W9WZ01 UniRef90_F0XUF8 UniRef90_B7S4G6 UniRef90_-UPI0003F09DD1 UniRef90_K2JM67 <br> UniRef90-R7SHA4 UniRef90_UPI000225AB4D UniRef90_D7U7F8 <br> UniRef90_U1HH22 <br> UniRef90_UPI000393FCA4 UniRef90_K4BIK4 UniRef90 L1JQN7 UniRef90_LONG12 UniRef90_I6SUG9 UniRef90_MOIHX6 UniRef90_UPIO00428ACB4 UniRef90_S4XHI4

 UniRef90-A0A017IMM2 UniRef90_UPIO0015832EF UniRef90_M7A9A4UniRef90_J9FU43
UniRef90_UPI0003770370
UniRef90_H3KC67
UniRef90_UPIO0047B9FEB
UniRef90_C9SUK0
UniRef90_UPIO004449CDC UniRef90_W5LVS6
UniRef90_G1XV66
UniRef90_G3XS83
UniRef90_H3DSD9
UniRef90_E7H204 UniRef90_H3DSE0 UniRef90_R5KU61 UniRef90_W6UPD2 UniRef90_E1QRB9
UniRef90_A2DSY0 UniRef90_UPI0003B672A9 UniRef90_G5IMW2 UniRef90_S3B345 UniRef90_UPIO003F4DA0C UniRef90-J5QTT6 UniRef90_M2NAQ1 UniRef90_UPI0003447F66 UniRef90-W2FQ47 UniRef90_G9MM88 UniRef90_UPI000369BF55 UniRef90_UPI0001F2AB3A
UniRef90_A8BLJ4 UniRef90_UPI0002B4B4D5 UniRef90_UPI000476587E UniRef90_K9XH77
UniRef90_UPI0003C1A91A UniRef90_D3SYT7 UniRef90_L8GKL7
UniRef90 UPI0003 UniRef90-W4VFK8 UniRef90_C4L5S5 UniRef90_V4JVT1 UniRef90_F6U9B1
UniRef90_V4XQ19
UniRef90_UPI0001BF7AAC
UniRef90-I4YJN3
UniRef90_R9AJ09
UniRef90_UPIO003F0A4F2 UniRef90-B8HL74
UniRef90_X0QFN2
UniRef90_Q979I4
UniRef90_UPI00046FE7DA UniRef90-E8N164 UniRef90_A0A016SY43 UniRef90_UPIO0047835F6 UniRef90_R5E6K0 UniRef90_J3GZH1
UniRef90_B1M8B3



UniRef90-R5KU61
UniRef90-W6UPD2
UniRef90-A2DSYO
UniRef90_UPI0003B672A9
UniRef90-G5IMW2
UniRef90- 33 B345
UniRef90-UP10003F4DAOC
UniRef90_J5QTT6
UniRe990M2NAQ1
UniRet90_UPIOOO3447F66
UniRef90-W2FQ47
UniRef90-G9MM88 UniRet90_UPIO00369BF55 UniRef90-UPI0001F2AB3A UniRef90-A8BLJ4 UniRef90 UPIO002B4B4D5 UniRef90-UPI000476587E UniRef90-K9XH77
UniRef90-UPI0003C1A91A UniRef90_D3SYT7
UniRef90 L8GKL7
UniRef90-UP100030BCC6E
UniRet90_W4VFK8
UniRef90-C4L5S5
UniRef90-V4JVT1
UniRef90-F6U9B1
UniRef90-V4×Q19
UniRef90-UPIO001BF7AAC
UniRef90-14Y JN3
UniRef90 R9AJo9
UniRef90_UPIOOO3FOA4F2 UniRef90 B8HL74
UniRef90 X0QFN2
UniRef90-Q97914
UniRef90-UPIo0046FE7DA Unirefo-E8N164
UniRef90-A0A016SY43 UniRef90-UPIO0047835F6 UniRef90_R5E6K0 UniRef90-J3GZH1 UniRef90-B1M8B3 UniRef90_AOAO10QGW8 UniRef90 M7BSH3 UniRef90-UPIo003B554AF UniRef90_V7PXG7 UniRef90_W7TYC4 UniRef90_J3ZFB3
UniRef90-R5KJJ7

RSKN L LIEGYAP IGSPGF $\quad$ HLLKEHPEYPFHDEY
RKNGMAV DA Y Y P L G H GKLI SR F P R D A L E M I S R N H HKNGMLIGYSTLG TADLKKPGAPIFLEDEELVRTAKE AARGIVTQSWSPLGQ GATLKDERIVAIAAA NMHGVPVMAYCPLA QGGDLKRGLYENRVLTSIAQS RELSVPVMAYSPV EQGRLDGHEALRAVADA
 KSKG\|ATEAYGPLSPDTKGQGGP VDDVASLAKK
KEHD LLQAYSPLAR
KKHNI AIA S Y GPLVP $\square$ T TVK G GP HK L GVPLTGF FVMAM REKDI KI A S Y GPLTT NSNGIYVTAYRPLGGRCRV

ARKMDNPTDREDAND DAKAPLTDPALEELAKK KEKGISIMAYTSLGNVNMFKYTCEDPVLLEDPVVKKVAER IENGHKFEEGDHRADNKLFQGENYQRALAAVDKLRPI ADR VENGHQFDPQDNRAKNKLFQGENYERAQQALEKLRPIAER

REHD Q T VA Y C P $\square$ A
KADVAEDGVLQEDADD
 KQ NENLIQLEAYSS
EEQGI PVMAYAPLA EGSDVKKDVFENETVNRDAEA KSKGIVVTAYSVLGSRGAFW GTHKIMESDVHKEIAEA AKNGI AYTGYSTLGVVWTDEGVKENP VV FDSTIKQi ADR AEHGYELVAYSPLAR GTVFKDETLAEIAET


A S RWS D D TVI QRIVSQK
KENNVLVQAYCPNG GSGSPVLTNPTLQHIAAR ESKNIVMTAYSPDGSPARPWDKEEDPFPLKDPIVGTIAKA $\square E H Q I T I L A Y S P L A Q G L L T G K F K P N H T F D P D E Q L R P F A D R$ DQQGINVTSYMTLAY
ENNGMAVLA WYPLEHGSLVRESDYPSEILARDK AKA A RFRHVMTMAYSPIGQGGSLLRNAADRTVAARHTTABH RDQGIG IIPYSPLAKGRLARKPTSEEAKTMRARVAEVAEK



G QK TVA Q VLN WII QEHVFP\PRASNPDHVGENLGVAGWR TGRTVSEVELRFSI EPGAALLAKLVTPERIYKNNHLDDFD A GATPAQVII A WHLAKGFSVI PKAGDLDHLASNWQAQDVR HNATVSQILLAFAI RSGQVIIPRTATPAHAAENSSAMNLV



VGASPA QV
YGVTDSDVGLRWVLDQGLVTLTTSSKESRLTGYERLPKFK HGKNAAQVVLRWAHQKGDVPLTRTTKPTRIAENDAIFDFA YKVTEGEVLLRWS DDRGDVAVTTSSKESRLQEFLQVLTFQ ANLTVA WHWTRWGTSGTYSVI PKSSDRERQKQNLESVKLRR NNATVAQVLLA WALATGFGVI PKSVREERIKENLDTLKVN $H Q C S L A Q L A L A W L I Q P Q T C A I A G A R N A E Q A V G N A G A A Q V Q$ HQASLANLA A A WLI A QPQTQUVGARNAEQAVGNAKAAEVVK
 YHTTLGNLALA WLMQPQTTAIVGARNGEQAKENAQAAAVS

Y S A SVA Q L L LA WT $\square$ RS GHVI IPKAGQAEHVEENAAALLLD RGKTVAQVVSMRWAYEEGVSMVVKSFKKERLEENLK FDDWS RNCAPSDVVLKWAVTRGVAVIPGSTNSTHLRMNYNSLKVK HDASAAQSVWRASRK GVTADRRPRARRTSATTGRA A GATPAQVILA WHLQQ G LLGVI PKASSRARIEENLAAEKVT
 HGANVGQVILSWVLARGISALPKSYNEERIKSNLVLTH HNKTPAQVLIHFQLQRGLIVLAKSVTPARIKENFEVLDFE HHTSVGNI ALAWLI QPQTCAI TGVRNPDQI RQNAQAAADQ NQQTPAQVILA WALAKGYAVI PSSTKRENLASNLAAQSIT


 IDKTPAQVALNWCLSRPNVI IPKSNSVERTVENCRASGWS YGKSIA QVVLR
HAATPAQVALAWDLQDGVDA IPKAVRPEHVQLNAHAAQLK HGATARQVALRFLVRRPSTFI PKASSPEHAADNAGASALS $K G V S M A L V S T A W V L Q Q G C W P I V G L S S E K R I K E T D G A L K V K$ HSKTSAQVLIRFHI QRNVAVI PKSDKPHHIEENFKVFDFE YHKTWAQVILRYQI ERNVVVIPKSHSRVRQAQNDDIFDFE Y NKTPAQI AI NWLI QKNVITTLTKASNDKHLEENFGSVGWN




## UniRef90 C4XX07 UniRef90_C2ESK9 UniRef90-J1SJJ1

 UniRef90 UPI00046AAAD2 UniRef90-UPI00047A9396 UniRef90-MON912UniRef90 A3LTR2
UniRef90-IOK2K4
UniRef90-E2G419
UniRef90_V2WUE3
UniRet90 B1M6R4
UniRef90-J3PA26
UniRef90-A0A017T3U5 UniRef90 UPI0003450307 UniRef90-V2YDR7 UniRef90-K9SX05 UniRef90-UPI00029AA524 UniRef90 A6VPJ5 UniRef90-Q0CDP9 UniRef90_G7VG13 UniRet90_V5U338 UniRef90-A5DPD5 UniRef90-I3S0Z2 UniRef90-W9YQE0 UniRef90-UPI00037616E7 UniRef90-19TC60 UniRef90-UPI00047DDE06 UniRef90- UPI0002885696 UniRef90-C8WU59 UniRef90_UPIO00347C2F2 UniRef90-UPI0003A85464 UniRef90-UPI0003A0ABC1 UniRef90-H1PRL7 UniRef90-UPIO0037E8660 UniRef90-19BY05 UniRef90-A9UUX6 UniRef90_R6A225 UniRef90 A0A023B0X2 UniRef90_U6JCW0 UniRef90-X1JWL9 UniRef90 R6JE47 UniRef90-E3HVA7 UniRef90_H2FZJ5 UniRef90_J4UI84 UniRef90-F5L515
UniRef90-B8IM82 UniRef90_UPIO0026C74A9 UniRef90_C6B984 UniRef90-S7PU55 UniRef90_UPIOOO252C8A5 UniRef90_Q2L9S6 UniRef90_UPI0002D74722 UniRef90_A0A023FGP5 UniRef90_UPI00047CA893 UniRef90-G0W3K0 UniRef90-J2GNG6 UniRef90-H1SE73 UniRef90_UPI0004728EFC UniRef90_E8WA99 UniRef90_B9JBN6
UniRef90 K0R159 UniRef90-D4DWC2 UniRef90-UPI0003625073 UniRef90_UPI0003094BCD UniRef90-UPI0004764747 UniRef90 H2JV94 UniRef90-UPI000479535F UniRef90_UPI000455EDBD UniRef90-A0A023X5V1 UniRef90-A0K067 UniRef90-LOA8E5 5 UniRef90-A1CYI6 UniRef90-C9SER2 UniRef90-F8NQUO UniRef90_G3JK30 UniRef90-R4K631 UniRef90-E8THF5 UniRef90-UPI00037B8F49 UniRef90_TOMR00 UniRef90-M5FP56 UniRef90-UPI00047287A4 UniRef90_TOUCG9 UniRef90-UPIO003A958B6 UniRef90_UPI00045E20CB UniRef90_M5C670 UniRef90-C2FW27

1
10
20
${ }^{20} Y \mathrm{~K}$ L P K N E A 30 MEYVKLGKTGLEMVSKL GALGCWQVPDESQAEQAVTDALETGY


 ME Y R QLGN S GLLQV P V L S F G T W G S T Q D E A T R M V D L
 $P$ Y L K L N D GHEI P ML G L G TA R V P S K E II E L M K LAA L K L G F
 METRSLGTSD』QITPI LMMGWQIE DEESDKAIRAAAETGII



## KELSNGVLFPAVNLGTWQLQASDAGEDFSASFASGC

$M K Y R F L G R T G L K V S E L C L G T W G A D E A T A H A L A D R F V E A G G$ $R V A L P D G S T V P A L G Q G S W K L G E A A E A R V L R L G L D L G L D$ $P \square I T F P N G Q T V C P L G Q G T W K M G Q S E E D R A L Q H G I E L G M$ MKYRKL GRT DLDV SLI GLGTMMNTEAEAHQQLDYALERGI M D S T VT L R A A V $M K Y R R L G R S G L F V V E L C L G T M E T D K E T S D R M D H Q F L D D A G G$
 $M K T T R L G K T G L D E V S$ T TVKLDNGNEMPAI AF GTSALVRKDATEYVEAALETAF MK T R QL GQ S A Q C Q L $M K T R Q L G T S D I Q$

M M

 MEYVKFGK T G LE $M K P N L L S N G V R M P A L A I G T A P L S P E R V T R S V R L A L D A G L$
 $M K Y R R L G T C G L V V$ V
MESARTLPSGEEIA MESART A ALGQGTWY WY GEDPARRAA R L B B L




|  |  |
| :---: | :---: |
| Un |  |
| UniRef90_C2E | Q WV ${ }^{\text {T S S }}$ |
| UniRef90-D5U357 | NFFDTAMVYGRGMSEEFLGK ALRELGVKRDDVVIATKIP |
| UniRet90 | RLIDTAE |
| UniR | TTVDTAE円YGEGHSEQLVAQA |
| UniR | RLLDSAE |
| UniRef90 A31 | R |
| UniRef90 10K2K4 | NFFDTANVYSRGMSEELLGARRDKALISTKATFKMGDGPN |
| V2WUE3 | Y |
| UniRe990-B1N | F |
|  |  |
|  | NFFDTADVYNEGASE RMLGQ\\|LGARRKDVVIATKVG |
| UniRef90 UP | T |
| UniRef90 V2YDR Uni e90 K9sX05 | RHLVDGAQVYANEDSLLGGVADGGIKASGVPRSELVY |
| ef90-UPIO0029A | GHIDTAQMYGNEASVGEG DERADVPREDVT |
|  |  |
|  | NFFDTANLYSNGDSEVILG RAIKEYNWRRESLVIATKVN |
| UniRef90-G7V | Y |
| UniRef90-Q6 | TLFDTANVYSAGASEEILGKALKGKRISTKATFKVGDKAN |
| UniRef90-A5DPI |  |
|  |  |
| W9YQEO <br> UP10003 | $\mathrm{R}_{\mathrm{R}}^{\mathrm{R}} \mathrm{H} \mathrm{V} \mathrm{L}$ |
| UniF | TMVDTAEMYDNERFDGRADDGV |
| UniRef90 - | F |
| UniRef9- UPWU5 | NFFDTANVYSDGASEEILGRALGDALAGRRDEVVIASKVH |
| UniRef90-UPIO00 |  |
|  |  |
| UniRef90-UP10003AOABC1 | G |
| iRef90-UPIO0037E8660 |  |
|  |  |
|  |  |
| X2 | YYTNEEEEYNANFVLPHGKPSDDRR】FVTTK |
|  |  |

NFFDTSNDYNKGRSEDMDGNWLKRRGN RHQFVIATKVN TLIDTAEMY AEGGAEEVVAEA $\square$ AGRRQEVFLVSKVY NLVDTAEMYDNEELVGEAVRD CREKVLLVSKVL NLVDVAEMYPVPQGLTETYDGTWDARSKRRQDIVLASKVLG

 RLVDTAAQYGNEAAVGQG LRDSGLDPDEALITTKIA NFFDTANVYAQGTSEETELAPRQEIVLATKVFGRMRPGPN SHIDTAAIIYGNEDSVGKG IDRGSGLDRSDLYMTTK

NFFDTANSYSDGSSEEVVGRALRDYGARRDQVVIATKVY NFYDVANSYAEGQSERIMKGKRDKLIVATKVFNPMGTDIN
NFFDTANVYHEGAAEELAKYERSSYVLATKVYFPMGEGPN TLIDTAEMYGDGAAE ALVGEAI AGRRDEVFLVSKVL TVVDTAEMYGDGAAEEL VGEALLGRREEVFLVSKVL NFFDTANVYSDGTSEEYLGRALQEYAN RDEVVI ATKVH

 NFFDTANVYSNGDSEVILGK ADKKYNWRRENIVIATKVW RHDDLAKIYQNQPEVAEGIKKAKDDPGLKREDIFITSKLW

 NVI DTANVYSNGDSEEIGGKRKGDVLDASKARMRIGKGPN TFI DTADVYSTGASEATIGRWLG SAQQRDDLVIATKVR
 TLLDTADAYGNGHNEELLGKALKGRRDQAIVATKFSYGPN RLIDAAQDYDNESGTGQGIKEGLAATGLTREEREVTSKVW
QTFDTANMYSGGDSERTLGK ATKQLNपPRDE \VVMTKVN NFFDTANVYSQGASEEV GGAALKGRREKTIIATKGT



## UniRef90 C4XX07 UniRef90_C2ESK9 UniRef90_J1SJJ1 UniRef90_D5U357

 UniRef90_UPIO0046AAAD2 UniRef90_UPI00047A9396 UniRef90-MON912UniRef90_A3LTR2 UniRef90_IOK2K4 UniRef90-E2G4I9
UniRef90-V2WUE3 UniRef90-V2WUE3
UniRef90-B1M6R4 UniRef90_J3PA26 UniRef90_A0A017T3U5 UniRef90_UPIO003450307 UniRef90_V2YDR7 UniRef90_K9SX05 UniRef90_UPI00029AA524 UniRef90_A6VPJ5 UniRef90_Q0CDP9 UniRef90_G7VG13 UniRef90_V5U338 UniRef90_Q6MDT2 UniRef90_A5DPD5
UniRef90-I3S0Z2
UniRef90_W9YQE0 UniRef90_UPIO0037616E7 UniRef90_I9TC60 UniRef90_UPI00047DDE06 UniRef90_UPIO002885696 UniRef90_C8WU59 UniRef90_UPIO00347C2F2 UniRef90_UPI0003A85464 UniRef90_UPI0003A0ABC1 UniRef90_H1PRL7 UniRef90_UPIO0037E8660 UniRef90 - I9BY05 UniRef90-A9UUX6 UniRef90_R6A225 UniRef90_A0A023B0X2 UniRef90_U6JCW0 UniRef90_X1JWL9 UniRef90_D5RNE7 UniRef90_R6JE47 UniRef90_E3HVA7 UniRef90_H2FZJ5 UniRef90_J4UI84 UniRef90_F5L5I5
UniRef90_B8IM82 UniRef90_UPI00026C74A9 UniRef90_C6B984 UniRef90_S7PU55 UniRef90_UPIO00252C8A5 UniRef90 ${ }^{-}$Q2L9S6 UniRef90_UPI0002D74722 UniRef90_A0A023FGP5 UniRef90-UPIO0047CA893 UniRef90_G0W3K0 UniRef90_J2GNG6 UniRef90_H1SE73 UniRef90_UPIO004728EFC UniRef90_E8WA99 UniRef90_B9JBN6
UniRef90 K0R159 UniRef90_D4DWC2 UniRef90_UPIO003625073 UniRef90_UPIO003094BCD UniRef90_UPI0004764747 UniRef90-H2JV94 UniRef90_UPIO00479535F UniRef90_UPI000455EDBD UniRef90_A0A023X5V1 UniRef90_A0K067 UniRef90_LOA8E5 UniRef90_S7U2V1 UniRef90_A1CYI6 UniRef90-C9SER2 UniRef90_F8NQU0 UniRef90_A5FLP8 UniRef90_G3JK30 UniRef90-R4K631 UniRef90_E8THF5
UniRef90_UPI00037B8F49 UniRef90_TOMR00 UniRef90_M5FP56 UniRef90_UPIO0047287A4 UniRef90_T0UCG9 UniRef90-UPIO003A958B6 UniRef90_UPIO0045E20CB UniRef90_M5C670 UniRef90_C2FW27

N Y G|V|E HLK
170
180

## 190

200
NMTPKL
SMYSWQL
 WKKFVPDFDVMPAVNQVEFNPYFQQKELRQDM

N
N

 NF GVDHLEEILNWDGLLVKPVLNQLELHPWDPRDELREYL NFSGWHLMKAERYGWAKYVVHQAYYSLLSREFEWELMPLGG NFTCSMLEELLS FAE DPPAVNQLEMNPAWQLKKLRDFC NTGLEDLQKLVKTARDKPAVNQIQLHPYNYHEQKPVIEYC
 $R F V A A Q M Y Y S L V C R D L E H E V L P F A Q D A G D G T M D W S P L A G G$ NFSRAQLEEAVENDAAPYCI ANNDSILAYSSLAQGLLTGK NYSLEDLK ETLDGATVVPAVNQIEFHPYVWDTVQPDYD
 NCYA WQLAKANALAEREGLTRFVSLQSHYREDERELGFGLC SMFAHQLYTARLHGWTEFVSMQNLYNAVYREEEREMFPAC NFPLPRLEYARTCSRTDVVTSQNRYNLVEREADKELLPYGL NFSGWHLMKSLATSEKYGLARYVVYQGYYRDYEEELMPLG NYGKRHLQELBDWDGF
NFSVKKLQDLLDVGTC
 NLDLSDMKEL QEADKADECMNQVLYHLGSRGIEYDLLPWQ NI DVPDMEEIENDSQGFACDAQVLYNLQERGVEYDLI PWA
 NFDVDELDSLVILPGGSECAVQVLYHLGSRGIEHALRPRM SMYAWQFDK QHHGWTKFVSMQNYYNLLYREEEREMMPQC $N F D D D D L Q E W Q E A G G S A C A T N Q V L Y H L A S R G \quad \square E Y A$ $N L D L P S M E D A$ VGYGAPATDQVLYNLLKRGDEFDLLPWC NFDPADMTELFGTSGARVQTDQVLYNLTRRGPEFDLLPWC

 NFK QQLLHELMMGDHAMQPHVQNEGHPYNQQWRQLEYVFC
 NFMPQHLTPLI ED DK K K RAA D $\quad$ TA P SVVPVMCNQVE GSP W $\square Q$ N F N K R QL E R I L A V $\operatorname{V}$ C T I PP PAVN Q I E V N N P H C L L N T K L I E F C


 NC D L S E M Q E L A D T P G G D Q C A V QVLY H L G S R G IE Y A L L P W Q NF LA WQL MKAD FNNY VRF ISS IQPQYS VNREMDREVL SLC
 NFRPEQLLQQLDDE T GVAPEVNQDQLSPA LQRREAVAFH S MWA WQFSKL QHN GWTKFVSMQNQVSLTYREEEREMLPDC
 N F D 1 A D ME E L WQLP S GKNVAAAN E D Y N L E T R G I E Y S




 LWS R R E VE DE E LPP L CR E L GI G F VA Y S P L GR G F L T G Q I Q S F D
 NFHEVHLQHLMD DGARVRPHVNQ DETSVY DRHDGDVRYC SMYA WQL YTAADLHGWTRFATMQNQYN LI QREEEREML P LCC
 S WEA H H DA DAVVHTA R Q F N LDD R VV SN QP H Y N M


 RF V S M Q N Q Y S L M Q R E E E R E M F P L L A D Q GV G S il P W S PL A A C
 S M WA H QLYT ARMNGWTEFDSMQNFHNPDYREEEREMFPAC NFTVEHLEKVISSA TGVVPVVNQDERHPLLQQNDVIKYA NFAVEHFKEI FEVAS DPPSVVNQLELDPYVWKALQPVLEDH NENSWGMMRLLREESKYRDKTVQNPYNLLNRLFEVNSAEVS

 $N$ F T G WQ L Q K A


 E WT A E QL Q RL AR E LH DP L VS NQP QYS MLDWRV DEAEVVPAS NFNHFQ I E RLLDNKPGLKHKPVVNQDECHPYLMQGKLICQYC NCAAY QFHAMQNYAINPPGSVVNQYNLICREEEREMMPTL UniRef90_H6CLA5

UniRef90 C4XX07 UniRef90_C2ESK9 UniRef90-J1SJJ1 UniRet90-D5U357 UniRef90-UPIO0047A9396 UniRef90_MON912 UniRef90-A3LTR2 UniRef90-10K2K4 UniReffo-E2G419 UniRef90-V2WUE3
UniRef90
B1M6R4 UniRef90-J3PA26 UniRef90-A0А017TЗU5 UniRef90_UPIO003450307 UniRef90-V2YDR7 UniRef90-K9sX05 UniRef90_UPI00029AA524 UniRef90-A6VPJ5 UniRet90_OOCDP9 UniRef90-G7VG13 UniRef90_V5U338 UniRef90_O6MDT2 UniRef90-A5DPD5
UniRef90-13SOZ2
UniRef90-W9YQEO UniRef90-UPIO0037616E7 UniRef90-19TC60 UniRef90-UPI00047DDE06 UniRef90-UPI0002885696 UniRef90_C8WU59 UniRef90-UPIO00347C2F2 UniRef90-UPI0003A85464 UniRef90-UPI0003A0ABC1 UniRef90-H1PRL7 UniRef90_UPI00037E8660 UniRef90-19BY05 UniRef90-A9UUX6 UniRef90-R6A225 UniRef90-A0A023B0X2 UniRef90-U6JCW0 UniRef90-X1JWL9 UniRef90-D5RNE7 UniRef90-R6JE47
UniRef90 E3HVA7 UniRef90_H2FZJ5
UniRef90-J4U184 UniRef90-F5L515
UniRef90
U8IM82
UniRef90_UPIOOO26C74A9 UniRet90-C6B984 UniRef90-S7PU55 UniRef90-UPI000252C8A5 UniRef90 Q2L9S6 UniRef90_UPI0002D74722 UniRef90-A0A023FGP5 UniRef90-UPIO0047CA893 UniRef90_GoW3K0 UniRef90-J2GNG6 UniRef90-H1SE73 UniRef90-UPIO004728EFC UniRef90_E8WA99 UniRef90-B9JBN6 UniRef90-KOR159 UniRef90-D4DWC2 UniRef90-UPIOOO3625073 UniRef90OUPIOOO30998CD UniRef90-UPIOOO4764747 UniRef90 H2JV94 UniRef90-UPIO00479535F UniRef90-UP1000455EDBD UniRef90-A0A023 $\times 5 \mathrm{~V} 1$ UniRef90-A0K067 UniRef90-LLABEE5 UniRef90-S7U2V1 UniRef90_A1CY16
UniRef90_C9SER2 UniRef90-F8NQUO UniRef90-A5FLP8 UniRef90_G3JK30 UniRef90-R4K631 UniRef90-E8THF5
UniRef90 UPIOOO37B8F49 UniRef90-TOMROO UniRef90-M5FP56 UniRef90-UPI00047287A4 UniRef90-TOUCG9 UniRef90-UPIOOO3A958B6 UniRef90-UPIO0045E20CB UniRef90 M5C670 UniRef90_C2FW27
पKHGILAEAYSP 220 पTRGTKFKDPELDALLSKK ${ }^{230}$ AKNGVALEAWAPLGQGNAELFHK EDQKIAV1PWSPLARGRLTRDWDEDADRKVEKVAEMARA EANDLTFIPWSPRGGEAVFHPENFAKLEKLLNTLRDVAAK LRHGIPLMAYCPLGQ

 MDQHVSTMVWSPLSAGRDGGKYRRENPMPADDVLDQLAEE KAKGI HVTAYSPLGAARTKW GDNRVLGSDVI EEIACA AKHNIAIEAYSSLTPDTRYPGGSVDTP EKHGVAMVGYSPFGS GDFPDPASAGGRVLAGIAQN REKNLAVSAYGP FLSGKYTRENDKDADNRLSGFHDKEEGFRLVDAMRPIAEA FGLDHQFAEGDHRAKNKLFQGENYQRAQNALEQLRPIAKS FAKEKGIVLESYGGLVPVTKAPGGPVDPVLDSIAARLSKD LEHGHOFVEGDHRVANKLFNGENYERAQRALEKLQPGADH ANHDVAPVAYSPLCR REDNLAMTPYSALASGRLSRLLRNDSKCALQDERVAELAEK RREGVVLI AWSPLAKGVLTGKYTPDVVWPVVEEVRGVAKA YREGVAVIP WSPLARGRLTRPWTEENDAKIAERLAFIAGD VDQGVGLMAWSPLGWGRLTPPVDDEYLYNVIDALDQLAKE

K NKD $\square R$ VA A Y A P LT P LI RAKGGP QTQDMPIMAYCPLAQAGRDRKKLV N S A EGKLKDEEVAIADT RRYEMPVIAYSPIG
QQLGMPLMAYCPLAQAGQDR QQLGMP MA CPLAQAGQLR EQDLFSHPVVREVAAD QADGDGVIPWSPLARGRLTRDWDEESDRRDVERVKGVAER VLPECQQRQDPVMAYCPLAQAGRLRRDLFGNATLLQLAQQ RARGMPVMAYSP
RRRDLPVMAYSP
RGGREQAALLGHPALRTVADA DSRNLPTMAYCPLAQGGRLKDKLERSKS GEPVVAKMSEK GERQMPVMAYSPLGQGGRLLR HPVLREVAER EDQGLGLTPWSPLAGGFLTGKYPEDRAYATLDEVQRIASE
 AGKEVAMEGWAPFAEGRNDDFRGGRRRPEKGEVLARYGEAA HSKNILVEGYAPIGSPGFIQG KDKALLEEESVLEI AER RSEGI GVICWSPLAGGWLSGKYRRERTWRTDDALIEIGKA ARLKMPVMAYSPVGQGGALLR AARRMPLMAYSPIG EGRLLHHHTLVEIARR HHEGVGLLAYSPLAMGMDCGRYSNEQAEAATRAYVELARA RERGLPTMAYCPLA QGGRLRRELFGHPELQAMAGD EKHGI ALEVRPPCCHQNE GEVWEV LEEEVGVIPWAPLAGEYMWERKATDRNFKIDDKVKSIADE VQHRMPIVAYSPLG GEGSRVLRNPAVQRIASS REHGVVTAWGPLGGREGDGEQF SDQGI AVLPWSPLAGGKLTRPWGTETKRATTDRYNAVAKA AKHGIVTEAYSSLTPIVTKTPGGPVDAPVAAAAR
RKHHLPLIAYSPLG RGPKMGSTMTQDPAVMAVAQN AAQQISILAYSSLAQGLLTGKFGPDHDHRSHNRLYAIATT VDNDHQFVEGDHRYQNKLFAPEHYGRVQDADDQLRPUAAR KEHQVVLQAYSPLG
EEDGUSQUVWSPKGGADMDKRWMSDDVLTGVQKLQPDAEE QDHDLLVEAYSPGGPLRKKPTDRDPGPFYQGYGEELAKK REQG GAVMAYSPADWNEPPVRNWEKLYNIVEVLVEIAALL DLDESDYRFSP
TALGIVVQGHSPFS EDOKI AV Q WSPGARGRDTRDWDEENDLRHPALRAAAGH RENGI AVSAFSPFGRGIMT RDWDEESDRKVVEAVGVIAKA AAEGIAVMPWSPDARGRLTRPWGESTDQUIAERVATIAEQ YLTGKYKAGEPPPEDSRFARRAESSMDRYLDPRIQKIAQG
 REAGVTVMAYSPD EQGRLLKVGALGAVARA KEEGI GITPYSPLASGRLTRDWSEDADRLVVERVAAI AEK KMFGVGAMPWSPLSRDKVLGYFTRGAYEEVINRVEEVSKK VEEGVGVLPWGPLGFEEAWHRRAVERNWRTLDVVEEIAEE RLTRPWGEATKRADSDPMQHRFFSDGDQPDADAVQHVARD REKGIVVMAYSPMAQGILTGKFGPTPQFEKGDHLRPIAEE AKFGMGAlTPWSPDAMGLLTRPWKTETDKKISETIEEIASK KEKNDHITAYSAFGNN SDDAPLLLVNDTIKAVAEK KEHGLVTSSYGGGSPLFRGESGPLNEVVESDRERLQATRG KHENVGLLAYSPLAFFPQYTRYKSDQCTQATKLYQEIAKK DYVP WLRESGUQVGSFKGLTPAFRCPDGPLREPLANMATA LLSGKYRRDSPTAAGWSEPP $\square R D E D R \square W R I V D V L V E I G A Q$ QNEGLGVIPWSPEGWGESWSNYNNEHTWGVLDALFEVAED RDKGLSVIJYTP $\square S^{\prime}$ K KQHGLLVESFG FIGERHINENLLQADDIRYQGDNFKEN\|SIVDRLAEIAKE

EELGTGQVVFSPTGGANFDGRYDNDDVTRVQELKPTADE QSKGI AVTAYSPLGSPDRPXAKPEDPSLLKDPNIKEITAK KMFGVGMIPWSPNSFASGMTKKAKDGNKEVIGRIEKIARD KDQNMGLMVWSPDGWGRLTGKDKRNQPYTVVDALERIANE


UniRef90-I3S0Z2
UniRef90-W9YQE0 UniRef90_UPI00037616E7 UniRef90-I9TC60 UniRef90-UPI00047DDE06 UniRef90-UPI0002885696 UniRef90_C8WU59 UniRef90_UPI000347C2F2 UniRef90-UPI0003A85464 UniRef90_UPIO003A0ABC1 UniRef90-H1PRL7 UniRef90-UPIO0037E8660 UniRef90_19BY05 UniRef90-A9UUX6 UniRef90_R6A225
UniRef90-A0A023B0X2
UniRef90_U6JCW0
UniRef90 X1JWLI
UniRef90-D5RNE7
UniRef90-R6JE47
UniRef90-E3HVA7
UniRef90_H2FZJ5
UniRef90-J4UI84
UniRef90-F5L515
UniRef90-B8IM82
UniRef90_UPIOOO26C74A9
UniRef90_C6B984
UniRef90_S7PU55
UniRef90_UPI000252C8A5
UniRef90-Q2L9S6
UniRef90_UPI0002D74722
UniRef90-A0A023FGP5
UniRef90_UPI00047CA893
UniRef90_GOW3K0
UniRef90-J2GNG6
UniRef90-H1SE73
UniRef90_UPIO004728EFC
UniRef90_E8WA99
UniRef90-B9JBN6
UniRef90-KOR159
UniRef90-D4DWC2
UniRef90-UPIO003625073
UniRef90_UPI0003094BCD
UniRef90_UPIO004764747
UniRef90-H2JV94
UniRef90_UPI000479535F
UniRef90_UPI000455EDBD
UniRef90_A0A023X5V1
UniRef90_A0K067
UniRef90_LOA8E5
UniRef90-S7U2V1
UniRef90_A1CYI6
UniRef90-C9SER2
UniRef90-F8NQU0
UniRef90-A5FLP8
UniRef90-G3JK30
UniRef90_R4K631
UniRef90 E8THF5
UniRef90_E8THF5
UniRef90_UPI00037B8F49
UniRef90_TOMRO0
UniRef90_M5FP56
UniRef90_UPI00047287A4
UniRef90-TOUCG9
UniRef90_UPI0003A958B6
UniRef90_UPI00045E20CB
UniRef90-M5C670
UniRef90_C2FW27
UniRef90_H6CLA5

YAVSPGE LLRWSTDQDVLPDT TSSSEQRLSDYDRVFTFK $Y Q V S S Y Q V L L A W V L R K R Q I A I P K A S Q A D H V D Q N A K T A S L Q$ HGATPVQIALAWTVRPGDIAIPKAGTVEHVRENFGALSVA HGVSVAQLALAFLLDRGVIABPKSGHAGHVEENAGALGVV



 $H G R L P A$
$R G V S P A$
R



 HDVSPAQI A SWTMRQPGII AI PKAGNVTHVEDNFRSLSI H


 H GVSTSQI SLRWAVDQDIVVIPKSQDPTRQRTNATLEGUS RKTSMAQVAMAWVLQKPVVTSPGVSKMSHLEDADAAVGFE LGATPVQAILKWVQQKGVVIVTTSSRKEHLTEYLABAGLP
 Y DCSLA QLALA WLMQPQTCAIAGARYASQAVDNAQAAAIE
A G LT MA Q $L A \square A W V L Q N P N V A S A \square A S R P E Q V E S N V A A A G V K$ YGKSEGQVLLRWVTKRK LLPITTSGKEERIKDAQDLDSFD

 HGRSVH Q LL R WHVVEHGVPVVAKAASPAHLAANLRVHEFA RGDARAQVATAWDLQKSAVTAPDASKPGHDTAAVASLAVK HGATPGQVALAYLLHQGFAVTFYSGKDERMRGNIEACDID

 HDATPAQVALAWVMRDGVNVIPRAGTREHVLENRAAVDLR LGATPTQVALAWVLEQGVAGIPRSGSPDHVRQNRGAVDLH



 NSATPAQV
QPVSDSQVLSKWLQQKGVLVITTSSKAERVREYDDTTNVP HGLT LTELAMGFVLQQPFSAIDGATTMEQLKENIAADDVE HGTTPAVVLLA WAMQSSVVVTVTTTTTRPEREEEYARALEI T HSVKPLQI ILA WCMRRNIIAI PKASQAEHVLENAEAASIV RGVSAAQVALA WLLGRPSISVIGGRTETAFLDNDAAASLV


$A G L S L S Q L A D A W V L Q N P N V S D T G A S R P E Q V T E N V K A A G V K$ HNRTPAQVLI QFHI QRNGAVIPKSMTPKHI PENFQVFDFQ RGDSMSKVAI A WHLSKS GVSAPVVTSDERLKDTVDAVDVK



## UniRef90_GOVRI9

 UniRef90-W1N9I8 UniRef90_A1WZD6 UniRef90-F4L1R9 UniRef90_UPIO00426B1A5
UniRef90_UPIO00219758F UniRef90-XOPCVO UniRef90_UPIO00455E617 UniRef90-M2PEB2 UniRef90 A5W317 UniRef90_D4GG28 UniRef90- X 5 Q 3 B 1 UniRef90_S0EUQ8 UniRef90-S6JAZ4
UniRef90_R6P2W4 UniRef90-l4YN06
UniRef90-K9W6W1 UniRef90_UPI0002625ED5 Ref90_LODJV6 UniRef90-B3QEP0
UniRef90 A9NFM2
UniRef90-M5E7V7 UniRef90_W4CG07 UniRef90-G0L3U8
UniRef90 C9RTD8
UniRef90 B2T2N1 UniRef90_E3I718
 UniReo-Q UniRef90-A6GVQ7 UniRerg-G5SWE UniRef90-W7BAM4 UniRef90 X6NDZO UniRef90-UPI000440E120 UniRef90-EOIES9
UniRef90 WOZBFO UniRef90 W4DIK2 UniRef90-R2TEY8 UniRef90 A3ZXX UniRef90-U9T855 UniRef90_W9W6NC UniRef90 ${ }^{-}$MOCYH2 UniRef90-E6S7S5 UniRelab UniRef90-K6A296 UniRef90-M0BCP2 UniRef90 WORCC UniRef90-G4Z4Z8 UniRef90 UPI000471BB17 UniRef90-B8H798 UniRefo- W71X6 UniRef90 C9A772 UniRef90-D0LJ26 UniRef90 H5XCTO UniRef90_UPI0003623EE1 UniRef90-B8KIT2

1
 MKMRKLGNQGLTVSEI GLGGCMGMSDRESDATI HRALDLGV MQYRTLGRSGLKVSAA GMGTFQQDASEAARLVDCCLDHGV $M Q T R P L G Q T G M E V S R L C L G T M Q N T E S E A H E Q L D R A V A F G I$




TVPAVGVGTWYMGEDSA】KAlQTAVHAGA
Y VR DGKSGDKVSK ILLGTMQYDEEEAFKHIKFAYDHG\|
 $M A Q R V A G H Q G$ I P TII GLGTWYMGEDSARRALQA GLD A G L $M E Y R Q L G R S G L K V S A L T L G T M T F G G A G A K R Q V D M C L D A G V$ MDYRNLGAS GLKVPALSFGAWGNS DAEARREVDDCLAEAGV MHYRRLGHS GLMVSE』CLGSWAVEDERAERCIDKA YELGI
 MNMKKLGTS GVVVSEMILGCWGADDNESDRAIHAAYA A GII MEARQLGRTGPLVSALGLGCMQSNDEEAVSLI RYALDQGV



ME Y $\qquad$
$M Q Q R\|L G N S N\| L V S S \| G L G \square M G M S P E D$
 MKYRKLGRTGLJVVSEI SLGGSWSVEKETADRVIDKA YE LGGI MEYRHL GASGFKVPVLSFQAWGATDAEARRLLDICFDAGV

 MEYVHL GRS GLKV S RL C L G T M N T S DEESFR IMNRALE LGI





#### Abstract

 $M K Y T Q L G Q S G L I V S K L A F G V Y K V A D N E A A T M V D Q A D L D A G I$ MNYTKLGESGLTIISRLVLGCWSLDEDASRPFFRAAVEAGI MQMRKL GNS GLEVVSAI GLGGCMGMDHAEMVKLIRRAVELGC MKERQLGKNGLVTSEI GFGCMGLDKNEMI EVVRTAIIDAGI     MEYTTLGGTGMEVSQI CLGCWMLDEEEGREVI ERAI DLGV  $M D Y R Q L G A S G L H V P V L S F G T W G S T Q D E A A R L V N L C L D A G V$     


MEHRRLGRS GLNVSEDSYGNWQVEEDAAQACVRAALDAGT MDYVKFGNTGLDVSPLCLGTWVLEEDDSREVIKKALDLGI $M K R R K L G A E G P E V S A Q G L G C M G M D D A E S D A V M H R A L E L G V$ MTYVRLGNSGLKVSRMILGLWVLDEEEGIKHIKAAYDIGII M DTRALGGHGLSVSAIGLGCMGMDDTESVEVVRRADDLGV
 MQYRKLGSTNI DISLI CLGTMQNSYEEAAEQMDYAVDQGV

[^2]UniRef90_GovR19 UniRef90-UPIO003451ED8 UniRef90_U2Z473 UniRef90-W1N918

UniRef90 A1WZD6 UniRef90-K9CK84 UniRef90-F4L1R9 UniRef90_UPIo00426B1A5 UniRef90-UPIO00219758F UniRef90-X0PCVO UniRef90_UPIO00455E617 UniRef90-M2PEB2 UniRef90-A0A017T8G4 UniRef90-A5W317 UniRef90-D4GG28 UniRef90-W9HD11 UniRef90-X5Q3B1 UniRef90 SOEUQ8 | UniRef90-FOYDD9 |
| :--- |
| UniRef90 | UniRef90-R6P2W4 UniRef90-14YNO6

UniRet90
K9W6 UniRef90-UPIO002625ED5 UniRef90-LODJV6 UniRef90-B3QEP0 UniRef90-A9NFM2 UniRef90-W4CG07 UniRef90-GOL3U8 UniRef90-C9RTD8 UniRef90_B2T2N1 1
UniRef90 E31718 UniRef90-UP100031C4E5C UniRef90-Q11JA6 UniRef90-|6ZNY1 UniRef90-A6GVQ7 UniRef90_G5SWE7 UniRef90 Q65UR6 UniRef90-W7BAM4 UniRef90- X8JNR2 UniRef90 UPIOOO440E120 UniRef90-EOIES9 UniRef90-WOZBFO UniRef90 W4DIK2 UniRef90-R2TEY8 UniRef90_UPIooo3629C30 UniRet90_A3ZXX5 UniRef90_C3BLD1 UniRef90-U9T855 UniRef90-W9W6NO UniRef90-T1A152 UniRef90-MOCYH2 UniRef90-E6S7S5
UniRef90 E8NCL8 UniRef90 D2QMC8 UniRef90-K6A296 UniRef90-UPI000378EAC9 UniRef90-M0ВСР2 UniRef90-W0RCC7 UniRef90-G4Z4Z8 UniRef90-H8XRJ9 UniRef90_UPIO00471BB17 UniRef90_B8H798
UniRef90 K17B66 UniRef90-W71X60 UniRef90_C9A772 UniRef90-DOLJ26 UniRef90-X81Y17 UniRef90_UPIOO03623EE1 UniRef90-UPIO004146EEB UniRef90_B8KIT2

NFFDTATVY ${ }^{50} N G T S E E Y V G R A D R D$ FAR ${ }^{70} E D V A V A T K F{ }^{80}$ NFFDTAIVYQNGTSEEYVGRALRDRFARREDVAVATKFL TMLDTADMYGNEQLVGQAIGDRRDRVIVATKFANMRGSF NF DTAEMYPVPQGRTEQY GSWLKQRGVRDDVILATKDA NFIDAAEMYPVPAGRTEAYLGNWLARQPRREDLVIATKIG NFFDTADAYQSGTSERYVGRALRDKGARREKVVLATKFL NHFDLADVYAGGRAEE VGQRRADAVDATKARWPMGSDPN NVIDTAEMYGEGKSETLIGNVIKD YSRSDFQLISKFY
 QSFDTANVYSNGLSEVILGKAIKKLNLPREEVVVMTKVH
 KIVDTAEMYADGRAEEVEGAVGEALKGRRDSALLVSKVY NFYDTADVYSNEEILGEAVAGKRDRLLITTKARFPMGKGP
NLFDTADVYSNGASEQVLGAADKGRRDSTKTSLPMGDGPN
 RLLDTAMAYGNHADIG GNWKRGLRESGVPRDEVWITSKIS NTLDTAEAYNDGYSESD GDGKADQGHPNDYVDSSKAL TLLDTADMYGNEELVGRAMAARRSEVVLATKFGQVRSKGQ TTFDTADVYANTLAESVLGRGLA GQRRESLEICTKVF NLLDTSDAYGNEELVGKADRGRRDEVRVATKFGFVGKGGG THIDTAEMYGDAEPL RHFDTAALYQNEALVG AKSIK KAHMNRKDVMVTSKIP TMFDTADVYGNGHNEKLLGRALRREQAIDATKFSYTPNYE NSFDTANVYARGEAEKIVGEALRK YPRESYVIATKVF TMFDTADIYSSGASESVLGEKRDKA ITSTKATFRFDDGPN TLFDTAEMYGNEVLVGKALKDRRDEALIATKFGFVVVRQY RAVDTAQUYGNEAEVG $N$ GFDQADAESGVKRDDDFVTTKDW NFFDTANVYGWDKGAGYTEQLIGKWDPSRRDKVVLATKVY


QTFDTANAYSNGESEVILGK A TKQLEDPREEDVVMTKVY QTFDTANAYSNGESEVVGGKRADKQLELDREEVVVMTKVY NFFDTADAYADGQGEVILGRRRHETITATKVGNRVGSGLV NFFDTAAFYGNEELVGEALAPQRDKFGLDGQEAVDGQPQL $K M F D T A E V Y G N E E L V G E A L A G K R N Q V Q I V A K G G F K D D G L N$
$N C F D T A E A Y G M G R S E L G N R K D V I V V K G G N Y D N R L K$ NCFDTAEAYGMGRSEELGNRRKDVIVVSKFGDNYDNDRLK TTVDTADVYSDTKAEEVLGRSLKDQGIRRESVEMCTKVC NFWDTSDVYGNGANEELLSKVLKD QUGKRDKVGLCTKFG RHDDTAELYNTEREVGGEDREDKQSGVPVSELYVTGKVGT NFFDTANAYSDGESEEDLYDRDEQVVATKVRFPVGEDTPN STFDTADVYANTAAEVVLGEADK GGERRESLELLTKVY NLFDTADVYSDGLSEEILGKARDKVLISTKATFTFGEGPN NLFDTADVYSNEEILGKADHGLRNRLLTSTKATFNDSSRN NFIDTAEIYNSEEVIGAGAKDEGYNREKLFIASKVW TFI DTANVYRDGESESVIGDVIAD YDRDDLVVASKVY
 NFIDTAEMYPDGGNEHTYTGTWLAKNKHKRDQLVIATKIA RLIDTAEMYGEGGAEQVALAEALRAGTLARDELEVVSKVY
tTFDTADVYANTKAESVLGRALK GQRREGLETFTKVE NFFDTANVYSYGASEEIVGRAL NDFAPRDEIVVATKLY NFFDTADMYGNEKLVGRAIDADRRDQVFLATKFGIVFDPER QTFDTANVYSNGDSERILGK ADKQLDLPRDEDVVMTKVF TLIDTSMSYGNEELVGRAITAGRRDEVVLATKFG। WRGDPP NFIDTAELYPVPPMEETRGRTESDIGTWRRDRVVLASKVS



| lupas_21 lupas_14 |
| :---: |
| lupas_28 |
| jnet |
| cont sol2 |
| sol5 |
| solo |
| hmn |
| jpssm |



| UniRef90_GOVRI9 UniRef90-UPI0003451ED8 |  |
| :---: | :---: |
|  |  |
| UniRef9 | U2Z473 |
| niRef90-W1N918 |  |
| UniRef90_A1WZD6 |  |
| UniRef9 | K9CK84 |
| UniRef90-F4L1R9 |  |
| UniRef9 | UPI000426B1A5 |
| UniRef90-UPI000219758F |  |
| UniRef90_XOPCVO |  |
| UniRef9 | UPI000455E617 |
| UniRef90-M2PEB2 |  |
| UniRef90_A0A017T8G4 |  |
| UniRef9 | A5W317 |
| UniRef90-D4GG28 |  |
| UniRef9 | W9HD11 |
| UniRef90-X5Q3B |  |
| UniRef9 | S0EUQ8 |
| UniRef90 FOYDD9 |  |
| UniRef90-S6JAZ4 |  |
| UniRef90-R6P2W4 |  |
| UniRef90_14YN06 |  |
| UniRef9 | K9W6W1 |
| UniRef90-UPI0002625ED5 |  |
| UniRef90_LODJV6 |  |
| UniRef90-B3QEP0 |  |
| UniRef90-A9NFM2 |  |
| UniRef90_M5E7V7 |  |
| UniRef90-W4CG07 |  |
| UniRef90_G0L3U8 |  |
| UniRef90 C9RTD8 |  |
| UniRef90-B2T2N1 |  |
| UniRef90-E31718 |  |
| UniRef90-UPI00031C4E5C |  |
| UniRef90-Q1IJA6 |  |
| UniRef90_I6ZNY1 |  |
| UniRef90-A6GVQ7 |  |
| UniRef90-G5SWE7 |  |
| UniRef90-Q65U |  |
| UniRef90-W7BAM4 |  |
| UniRef90-X8JNR2 |  |
| UniRef90-X6NDZ0UniRef90 UPIO00440E120 |  |
|  |  |
|  |  |
| UniRef90-W0ZBF0 |  |
| UniRef90-W4DIK2 |  |
| UniRef90-R2TEY8 |  |
| UniRef90_UPIO003629C30 |  |
| UniRef90-A3ZXX5 |  |
| UniRef90_C3BLD1 |  |
| UniRef90_U9T855 |  |
| UniRef90-W9W6N0 |  |
| UniRef90-T1A152 |  |
| UniRef90_M0CYH2 |  |
| UniRef90-E6S7S5 |  |
| UniRef90-E8NCL8 |  |
| UniRef90-D2QMC8 |  |
| UniRef90-K6A296 |  |
| UniRef90-UPI000378EAC9 |  |
| UniRef90_MOBCP2 |  |
| UniRef90-WORCC7 |  |
| UniRef90-G4Z4Z8 |  |
| UniRef90-H8XRJ9 |  |
| UniRef90-UPIO00471BB17 |  |
| UniRef90-B8H798 |  |
| UniRef90-K1TB66 |  |
| UniRef90-W71X60 |  |
| UniRef90-C9A772 |  |
| UniRef90-D0LJ26 |  |
| UniRef90-X8IY17 |  |
| UniRef90-H5XCT0 |  |
| UniRef90-UPI0003623EE1 |  |
| UniRef90-UPIO004146EEB |  |
| UniRef9 | B8KIT2 |

UniRef90_G0VRI9 UniRef90-UPI0003451ED8 UniRef90-W1N9I8 UniRef90-A1WZD6 UniRef90-K9CK84 UniRef90-UPIO00426B1A5 UniRef90 XOPCV0 UniRef90_UPI000455E617 UniRef90-A0A017T8G4 UniRef90 A5W317 UniRef90-D4GG28
UniRef90 W9HD11 UniRef90- X5Q3B1 UniRef90_S0EUQ8 UniRef90_FOYDD9
UniRef90- S6JAZ4 UniRef90-R6P2W4 UniRef90-14YN06
UniRef90-K9W6W1 UniRef90_UPI0002625ED5 Ref90_LODJV6 UniRef90-B3QEP0
UniRef90 A9NFM2 UniRef90-M5E7V7 UniRef90_W4CG07 UniRef90 C9RTD8 UniRef90 B2T2N1 UniRef90-E31718 UniRef90-Q1IJA6 UniRef90 I6ZNY1 UniRef90-A6GVQ7 UniRerg-G5SWE UniRef90-W7BAM4 UniRef90 X6NDZO UniRef90_UPIO00440E120 UniRef90 WOZBFO UniRef90 W4DIK2 UniRef90_R2TEY8
UniRef90_UPIO003629C30 UniRef90_A3ZXX5 UniRef90 C3BLD UniRef90_U9T855
UniRef90 W9W6NC UniRef90 T1A152 UniRef90-M0CYH2 UniRef90-E8NCL8 UniRef90 D2QMC8 UniRef90_K6A296 UniRei90_UPI000378EAC9 2 UniRef90 G4Z4Z8 UniRef90-UPI000471BB17 UniRef90-B8H798 UniRefo-K UniRef90 C9A772 UniRef90-D0LJ26 UniRef90 H5XCTO UniRef90_UPIO003623EE1 UniRef90_B8KIT2

PRSTGQEH|IEKSLLDMS|L|KH|L|GMDYV|D|L|Y
GVNGKPEYVRQACDASLQRLGVDVIDLYYQHRVDP
DEGASRWHLDRECERSLKRLRRDHI DIYHI
GPGMAHEHI HAA IDTSLKRLQTDYVDLYQLHWPDR QTN QRAYTPEQLREAVDGSLQRLRTDYI DLYQLHWPERPANYF PRTQGQEHI RRMI EGSLTNLGMDYVDLYYHMWDYNTPMEE PFNFSKEQI HAALDGSLSRLQTDYI DLYQLHWPERKMNMF

 W H HPGYVLES I DESLRAAKLDYFDLYLVHYPQAVGGDR GA ${ }^{\text {TT T E E Q AKS A DE } \square G L V N Q H G L S R K H I F D S V Q A S L K R L Q}$ PHNASREGTRRACEQSLKRLRTDHLDLYMLHWPGA】 FPANMWEA $\square$ MAN $\square D A S L S R L G T D Y V D L Y I H R W D Y H T P \square E E$ PWNAGEDDA! A A CEASLRRLQTDRI DLYLLHWRGS NDRGSRHHLI EACEASLKRLRTDHI DLYQL DAGSSRSRLIKAVEDALGRLGTDYI DLLQLHAFDAA NQGLSRKHIMEQCHASLKRLGVDYI DLYQCHRYDPNDDLI PSRANYKQCAKATADLLEELGVAFVDLLLIHTPK NLKHNRTHIVQALDASLKRLQTDWI DLYQLHWPERSTNFF NCHSKYDQLKAACENSLKRLGRDYLDVYFLHWP GVNGRPEYVRQACEASLRRLNDDVIDLYYQHRVDPH GINGSPDYVHQACDASLQRLGTDY DLYYQHRVDP
 PSNASRRGTDA ACERSLARARTDRLDCY LL H W TKKEDPRLEDDEKAMEQSSIDNGGGGYVDDYLIHHP S $\square$ S GHPDYVKKVVEDSLRRLNTDYI DLYYQHRVDPQ TTGFTPDSI RSAVDASLERLQTDY DDYQLHWPERNTNYF WPMGDRKHVFEQLHASLKRLQLDYVDI Y Y NVGSSRFHLIQAVDSALKRLQTDYI DLIGQHGFDA


 GPDSRPEMDRYSVEESLRRLQTDRI DLYYQHRDDPKDSPE PNNANKRKMEQACNNSLKALNTDYLDMYLYHW


F T GLSRKHTFDSVKASLKRLDLDY DDVL
QTGLSRKHI DRSVEDSLTRLGGTVYIDLYIVHKTDPF DRGLLSRAI MTQVDASLQRLGTDYI DLYQIHRYDPH ILNSTPDSI REQI EGSLNRLRVNCI DLYYQHRVDPNVEP QPDSSSKA I DSAVEGSLKRLKTDY DLYYDHRIDPNTPDE KRDSRPEMAHAAIDRRLKALNTDYVDVYLVHWPDR DVGSSRHHLIQAVESSLRRLGTDYI DLYQLHGFDA
 $F$ TMSDVQGAFDRTLQRLGVDYVDLYLLHHP
GRNRGPQHI RRAVEGSLKRLGVEMIDLLYQHRVDP AS GLSRKTI EQELDDSLERLGLDTIDLYQTHRVDPNTPPE WT GLSRKHI MESI NGSLTRLQTDYVDVYQAHR FTGLLSRKHLDSINGSLKRLGTDYVDLYQAHR NQGSSRFHLI RQCESSLKRLKTDYI DI Y A IG SS RFHLI QACEASLRRLNTDHI DI Y
PSHLKYNDVIKACKRSLKKLNDKYVDLYQDHFPNR FSMLSRKAI EQEDSNSLDRLGLDTLDLY IHRWDYDTPDAE PTNGRPEYVREACEGSLRRLGTDHIDLYYLHRVDP $\square F N W G E Q R$
$G P N R G M S Y \Pi R Q A V E L S \square K Q A R Q L G H I$
$D$ PHNASRAGVVAACERSCKRLGLARI DLYLLHWAGSF GKNLSSRKHIMDSVNGSLRRLQTDYUDLYQAHR

WPGLGRKHVMESAHASLQRLGTDYLDLYQAHR
SKMKSRKAI FYQVEQSLKRLQMDYI DLYIIHR
PRDGSPAYLRNACDASLQRLGVDHIDLYYQHRVDA
HA WVGDGDSPESDAKGYANQYGLSRKHIFESVKHSLDRDQ SLLNARPENTRGFCEASLARLGTDHIDLYYLHRVDP GPGEWVNYI RDALDDSLARLNTDYLDLYQVHWPAR PTN WT GLSRKHIMEGIN GSLRRLQMDYVDLYQAHR GPRLS KE QIHAAUDASLERLQTDYVDLYQVHWPER DT

[^3]| UniRef90_GOVRI9 UniRef90-UPI0003451ED8 |  |
| :---: | :---: |
|  |  |
| UniRef90 |  |
| UniRef90_W1N918 |  |
| UniRef90-A1WZD6 |  |
| UniRef90-K9CK84 |  |
|  |  |
| UniRef9 | JPI000426B1A5 |
| UniRef90-UPI000219758F |  |
| UniRef90 XOPCV0 |  |
| UniRef90_UPIO00455E617 |  |
|  |  |
| UniRef90-A0A017T |  |
| UniRef90-A5W317 |  |
| UniRef90-D4GG28 |  |
| UniRef90-W9HD11 |  |
| UniRef90-X5Q3B1 |  |
|  |  |
|  |  |
| UniRef90-S6JAZ4 |  |
| UniRef90-R6P2W4 |  |
| UniRef90_14YN06 |  |
| UniRef90-K9W6W1 |  |
| UniRef90-UPI0002625EDUniRef90-LODJV6 |  |
|  |  |
| UniRef90-B3QEP0 |  |
| UniRef90-A9NFM2 |  |
| UniRef90_M5E7V |  |
| UniRef90-W4CG07 |  |
| UniRef90-G0L3U8 |  |
| UniRef90_C9RTD8 |  |
| UniRef90-B2T2N1 |  |
| UniRef90-E31718 |  |
| UniRef90_UPI00031C4E5C |  |
| UniRef90_Q1IJA6 |  |
| UniRef90-16ZNY1 |  |
| UniRef90-A6GVQ7 |  |
| UniRef90-G5SWE7 |  |
| UniRef90-Q65UR |  |
| UniRef90-W7BAM4 |  |
| UniRef90-X8JNR2 |  |
| UniRef90-X6NDZ0 |  |
| UniRef90_UPIO00440 |  |
| UniRef90-EOIES |  |
| UniRef90-W0ZBF0 |  |
| UniRef90-W4DIK2 |  |
| UniRef90-R2TEY8 |  |
| UniRef90_UPI0003629C30 |  |
| UniRef90-A3ZXX5 |  |
| UniRef90_C3BLD1 |  |
| UniRef90-U9T85 |  |
| UniRef90-W9W6N0 |  |
| UniRef90-T1A152 |  |
| UniRef90-M0CYH2 |  |
| UniRef90 E6S7S5 |  |
| UniRef90-E8NCL8 |  |
| UniRef90-D2QMC8 |  |
| UniRef90-K6A296 |  |
| UniRef90-UPI000378EAC9 |  |
| UniRef90-M0BCP2 |  |
| UniRef90-WORCC7 |  |
| UniRef90-G4Z4Z8 |  |
| UniRef90-H8XRJ9 |  |
| UniRef90_UPIO00471BB17 |  |
| UniRef90-B8H798 |  |
| UniRef90-K1TB66 |  |
| UniRef90-W7IX60 |  |
| UniRef90-C9A772 |  |
| UniRef90-D0LJ26 |  |
| UniRef90-X81Y17 |  |
| UniRef90-H5XCT0 |  |
| UniRef90_UPI0003623EE1 |  |
| UniRef90-UPIO004146EEB |  |
| UniRef9 | 38IT2 |




[^4]UniRef90_GOVRI9 UniRef90_UPI0003451ED8 UniRef90_U2Z473 UniRef90_W1N918
UniRef90_A1WZD6 UniRef90-K9CK84 UniRef90-F4L1R9 UniRef90_UPI000426B1A5 UniRef90_UPI000219758F UniRef90-XOPCVO UniRef90_UPIO00455E617 UniRef90-M2PEB2 UniRef90-A0A017T8G4 UniRef90_A5W317 UniRef90-D4GG28 UniRef90-W9HD11 UniRef90-X5Q3B1 UniRef90 SOEUQ8 UniRef90_FOYDD9
UniRef90 S6JAZ4
UniRef90-S6JAZ4
UniRef90-R6P2W4 UniRef90-14YN06 UniRef90-K9W6W1 UniRef90_UPI0002625ED5 UniRef90-LODJV6 UniRef90-B3QEP0 UniRef90-A9NFM2 UniRef90-M5E7V7 UniRef90-W4CG07 UniRef90-GOL3U8 UniRef90_C9RTD8
UniRef90-B2T2N1 UniRef90-E31718 UniRef90_UPIO0031C4E5C UniRef90_Q1IJA6 UniRef90 ${ }^{-16 Z N Y 1}$ UniRef90-A6GVQ7 UniRef90_G5SWE7 UniRef90-Q65UR6 UniRef90-W7BAM4
UniRef90-X8JNR2 UniRef90-X6NDZ0 UniRef90_UPIO00440E120 UniRef90-EOIES9
UniRef90 UniRef90-WOZBF0
UniRef90 W4DIK2 UniRef90-R2TEY8 UniRef90_UPIO003629C30 UniRef90_A3ZXX5 UniRef90_C3BLD1 UniRef90-U9T855 UniRef90-W9W6N0 UniRef90-T1A152 UniRef90-M0CYH2 UniRef90-E6S7S5 UniRef90-E8NCL8
UniRef90 ${ }^{\text {D2QMC8 }}$ UniRef90_K6A296 UniRef90_UPI000378EAC9 UniRef90-MOBCP2 UniRef90-W0RCC7 UniRef90_G4Z4Z8 UniRef90-H8XRJ9 UniRef90_UPI000471BB17 UniRef90-B8H798 UniRef90-K1TB66 UniRef90-W7IX60 UniRef90-C9A772 UniRef90-D0LJ26 UniRef90-X8IY17 UniRef90-H5XCTO UniRef90_UPI0003623EE1 UniRef90_UPIO004146EEB UniRef90_-B8KIT2

 NYTGWQI MKS LMASERGGFQRFVTQQI HYREAEYELLPLS NETPWGLQLAERLGDPRVASVQNPYSLLNRSYEDGLAEIAA NETPWGUA EAERLGLPRIVSI QNPYNLLNRSYEVGLAEVS NEAPWGLQESEKHNLDRVASUQNPYNLLNRLFEVGLAEMA NFMAWQVMKCDRNGWVRFVAAQYQYSLVERGIEAELEALC


 NFDVGDDEQLADAGKGRDACNQVLYHDQERADEHALIPFC NFDSDDMDELWAEPGGEACTNQVLYHLASRGDEYDLLPQC
 NLLGRGIEKDVIPVCEREGIGQIVFSPLAQGVLTGKYKPG NFNGPEVDALEKATGVQPEVNQUQYHPWSSKEWHATVAACD NETPWFLQLAESRGWPRAVSQQNPYNLLNRSFEVGLAEMA EARPETDRRAHSVH PI STVQTEFSLLYRQEAEETLQTT EAAPATIRRAHQVH EWNAEE ITRLARELRDPFVSNQPQY LWSRDPEDELIPTVRELGIGFVAYSPLGRGFLTGQLRRFE
 DWSR LKKAKIVPAVNEVETHPYNQEQELVDLC


 NF S GWHLMKADRYGYPRYI ANQTYYSLVGRDYEWELMPLG $\begin{array}{ll}E A S P A T L R R A H K E F \\ N & P N D S A L D Q S E Y S \\ N\end{array}$
 NFAAWNLYKAKERNFLGIISEQSIYSLRNRNDELEVDPAC
 NFDLLEDMQELLALPNGNQCQLNEVLFHLGS RG SMYTFQFQKANYIAEKNGWTKFVSMQNHYREEEREMLPYC
 NFNSKQU LIVI KNGKIRPAVLQCESHPYMTQEKLIKKC
 NWPA WMAAQAVQMQKDRGWAAFINGQMYYRDDEHEDTPFM
SMWAWQFARMQHVGWTPFVSMQDQYNP DMREEEREMHPFC NAPDDYMKRAHAV CSITATQNQYSMMWREPEKELFEDC

 EWTAEQI ATLSRELNDPLIASQPQYSMLWRVIETDVIPTC EYSA WT A D SETN GUMETCREQGVTVVAYSPLGRGFLTGK
 SMWVEQLRTSEREDLIGYETMQNHYHVAYREEERDMLPGAC
 NFSGWHLMKSLAVSEKQGWNRYVGHQVYYREYEWELMPDG NFSGWHLMKSERYGWSRYVAQQVYYSLLNREFEWELMPLGG $N F S D Q Q M D K A Q E A M K Y E L V S T Q M P F S M A N R R D E K D I D P Y S$
$R F V S M Q N H Y N P V Y R E E E R E M L P G L C E R E G D G V I P W S P M A R G$
 EAFAPD H L R R K L L K T A NENPWGVMKFLNESEKHGDPRQNPYSLLNRDFEVGLSE CC NFDVDEMESLAAATGGQRCAAQVYYSLGQRAPEFALLPWQ EWTADQLHKLSRELGFQLDSNQPQYSMLWRVDEAEVVPAS NFYPDRLVDICS FSRRIKPMVNQVEVHPFYQQEEAKKWM E WT A DQUTRLAAREDNVPFISNQPQYSMLWRVIEKQVVPTS
 EAGPKTLRRACEVH
 SCHAYQFHAMQNYNLTPFISSMQNQHSLLYREEEREMMPTLL NETPWYLRLARERDWPRMVSIQNPYNLLNRSFEVGLAEMA


lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm


| UniRef90 G0VRI9 |  |
| :---: | :---: |
| UniRef90-UP10003451ED8 | L T D D ELQQQi EA |
| UniRef90_U2Z473 | LS A DELTRLDEVSRPPEDYPLW |
| UniRef90-W1N918 | LS DEVLEAI DAI H |
| UniRef90-A1WZD6 | L D GALLQEID TLHQ |
| UniRef90-K9CK84 | LT A DEI A Y L E E |
| UniRef90-F4L1R9 | LS A EVLKEI EAVVH |
| UniRef90-UPI000426B1A5 | FAPEEI A ALTA |
| UniRef90_UPI000219758F | FSADELELLLDK |
| UniRef90-X0PCV0 | LS P A ELK K I D Gll |
| UniRef90-UPI000455E617 | FTY S AVLA M A L D CNLRLCKYP |
| UniRef90-M2PEB2 | LT DEEVKYLEEPYKPLRTAG |
| UniRef90-A0A017T8G4 | LSPEEQLRLET |
| UniRef90-A5W317 | LSEDEVARLQA |
| UniRef90_D4GG28 | L S DEACFLL DKAFPPPRHKMPLDVV |
| UniRef90-W9HD11 | LS QEERSRLDE |
| UniRef90-X5Q3B1 | LTAEQMKKLDTA ASEVTAPYPYFPYR |
| UniRef90-S0EUQ8 | LSPD\LK A I D E |
| UniRef90-FOYDD9 | L S A DEMRRI E |
| UniRef90-S6JAZ4 | LS DEVLIA GI EA ITHKEQ |
| UniRef90-R6P2W4 | MEQSDFEKI NTLSKDF |
| UniRef90-14YN06 | LS A E DV ${ }^{\text {L }}$ I SE |
| UniRef90-K9W6W1 | LTQAELQRIDE |
| UniRef90-UPI0002625ED5 | L D A D L T EI D S |
| UniRef90_L0DJV6 | LTREDLERINE |
| UniRef90-B3QEP0 | LSEEEIDAI D |
| UniRef90-A9NFM2 | L S L E D MRKI E E |
| UniRef90-M5E7V7 | L T DA QMERI R R $\square$ S R HCRFCAVYD |
| UniRef90-W4CG07 | L MKEDLERI D |
| UniRef90_G0L3U8 | L S EEVLKGI D El\| ${ }^{\text {H }}$ |
| UniRef90_C9RTD8 | LSEDVLEKI E Gl |
| UniRef90-B2T2N1 | LTPEQMAKLDA |
| UniRef90-E31718 | L S A D L A ALDE |
| UniRef90-UPI00031C4E5C | L D A D D M A Al A A LD R N GREVNP P |
| UniRef90-Q1IJA6 | L S TEQVRRLDA |
| UniRef90-I6ZNY1 | L DEDTLKKLDEI |
| UniRef90-A6GVQ7 | LTEAVLSEI NKI |
| UniRef90-G5SWE7 | LTTEEI R RIIDA |
| UniRef90-Q65UR6 | LTQQQLARLN |
| UniRef90-W7BAM4 | LT LDD D Q Y L ENPYVPHK V V |
| UniRef90-X8JNR2 | L S NEELR SI ET |
| UniRef90-X6NDZ0 | LS DEEMRHVGSLNRNWRACLPSRDDKHSFWPF |
| UniRef90_UPI000440E120 | L S P E DIM K L D E |
| UniRef90-E0IES9 | L T T E EI A K L L LT R P Q P L Y P N WF T |
| UniRef90-WOZBF0 | LTADEVARIEAPYTPRR |
| UniRef90-W4DIK2 | LTKEDVDRLNE |
| UniRef90-R2TEY8 | FSPDERVII SKA L E Q $\square$ R 1 VG D |
| UniRef90-UPI0003629C30 | LT D DVKAEI D S |
| UniRef90-A3ZXX5 | LTAEQ1 A RLDA |
| UniRef90-C3BLD1 | LKPE\MNQIDKVLE GF |
| UniRef90-U9T855 | LTPKELLEVRQ |
| UniRef90-W9W6N0 | L LEKEVALISRFGAEKHFRGRWNDKFAPD |
| UniRef90-T1A152 | L S K D L R El E |
| UniRef90-M0CYH2 | LS A S DVAYLEEPYEPQP I IG |
| UniRef90-E6S7S5 | L APELMALLVE |
| UniRef90-E8NCL8 | L D A D TLA A 1 D E |
| UniRef90-D2QMC8 | LT TEQVKRLDA |
| UniRef90-K6A296 | L S PEQVKRL DMASQT T P $\square \mathrm{Y}$ P Y WH Q A Q F P E |
| UniRef90-UPI000378EAC9 | MDKE IL D FVDK |
| UniRef90-M0BCP2 | LLS S DLEYI A E |
| UniRef90-W0RCC7 | LTADDLARLDAVGQGERYADMSS |
| UniRef90_G4Z4Z8 | LTPAQI AKLAALDE |
| UniRef90-H8XRJ9 | L T DEVLNEINKI |
| UniRef90-UPI000471BB17 | L GEDELVA I D K L |
| UniRef90-B8H798 | L EPDVLKKI D |
| UniRef90-K1TB66 | L S A E D A RI A A LD T K MSAFFSHYD |
| UniRef90-W7IX60 | L D A D LLK A I D G |
| UniRef90-C9A772 | LTAEEI A Y L E E |
| UniRef90-D0LJ26 | LS DEDKARI E |
| UniRef90-X81Y17 | LTEEETKQLEE |
| UniRef90-H5XCT0 | L S A D DL REI E E |
| UniRef90_UPI0003623EE1 | L G D EVLEAI E T 1 H T R H |
| UniRef90-UPI0004146EEB | \| P A L M T A I DE |
| UniRef90_B8KIT2 |  |

lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm



[^0]:    >

[^1]:    

[^2]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^3]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^4]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

