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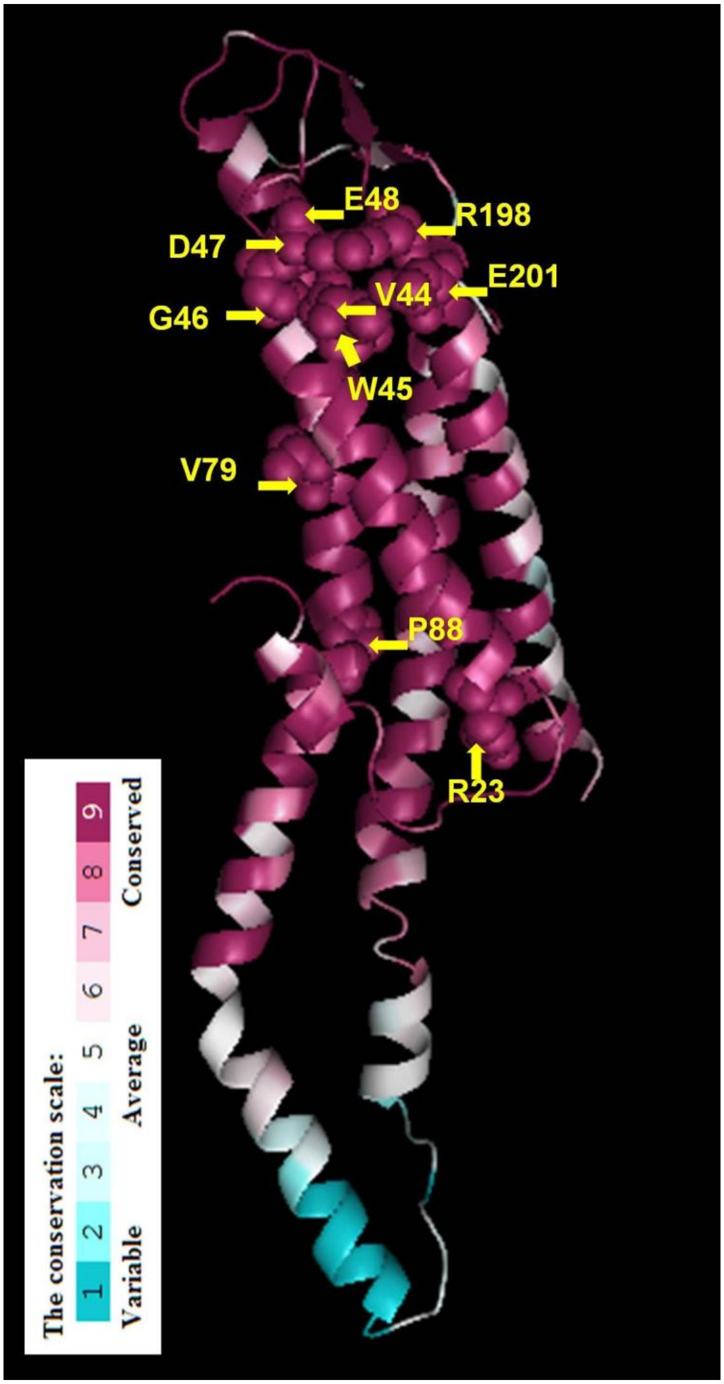

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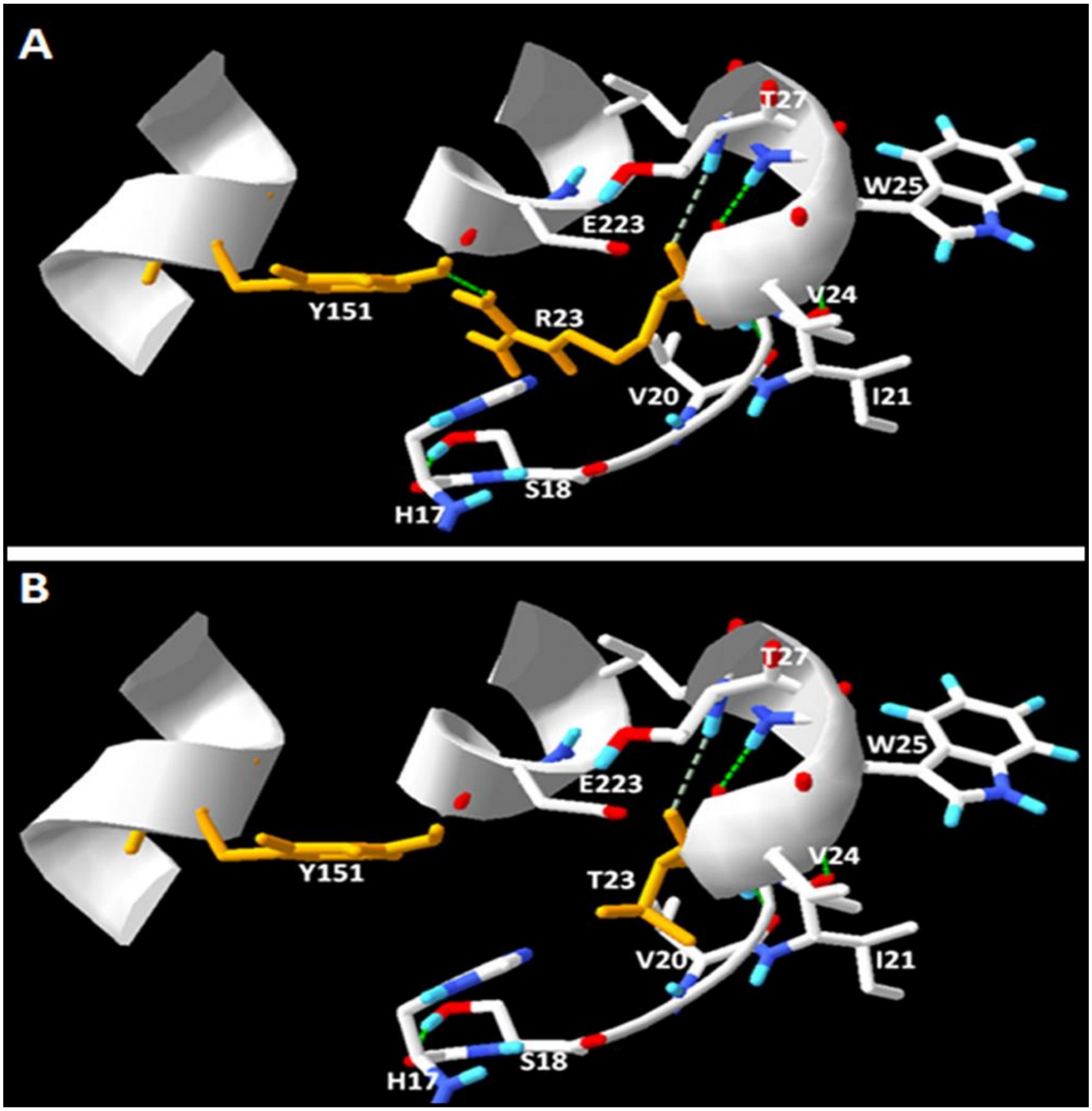

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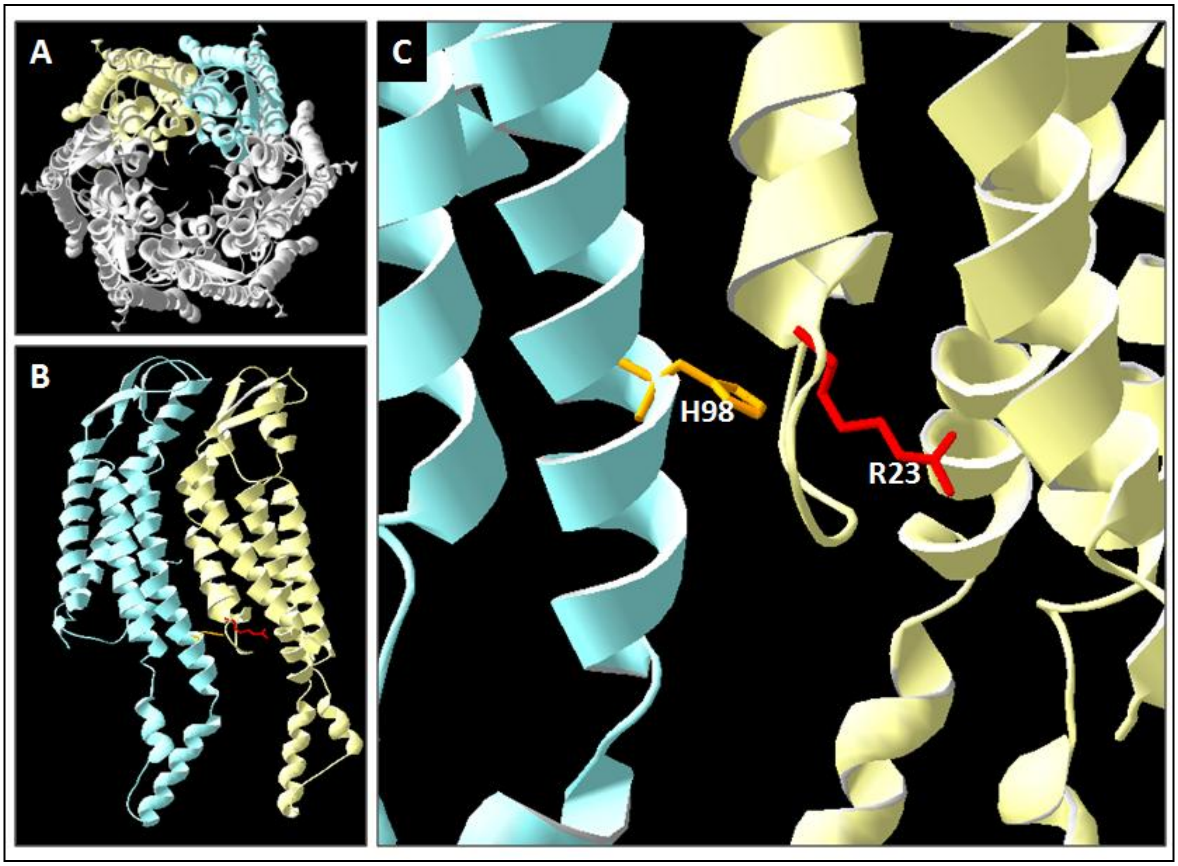

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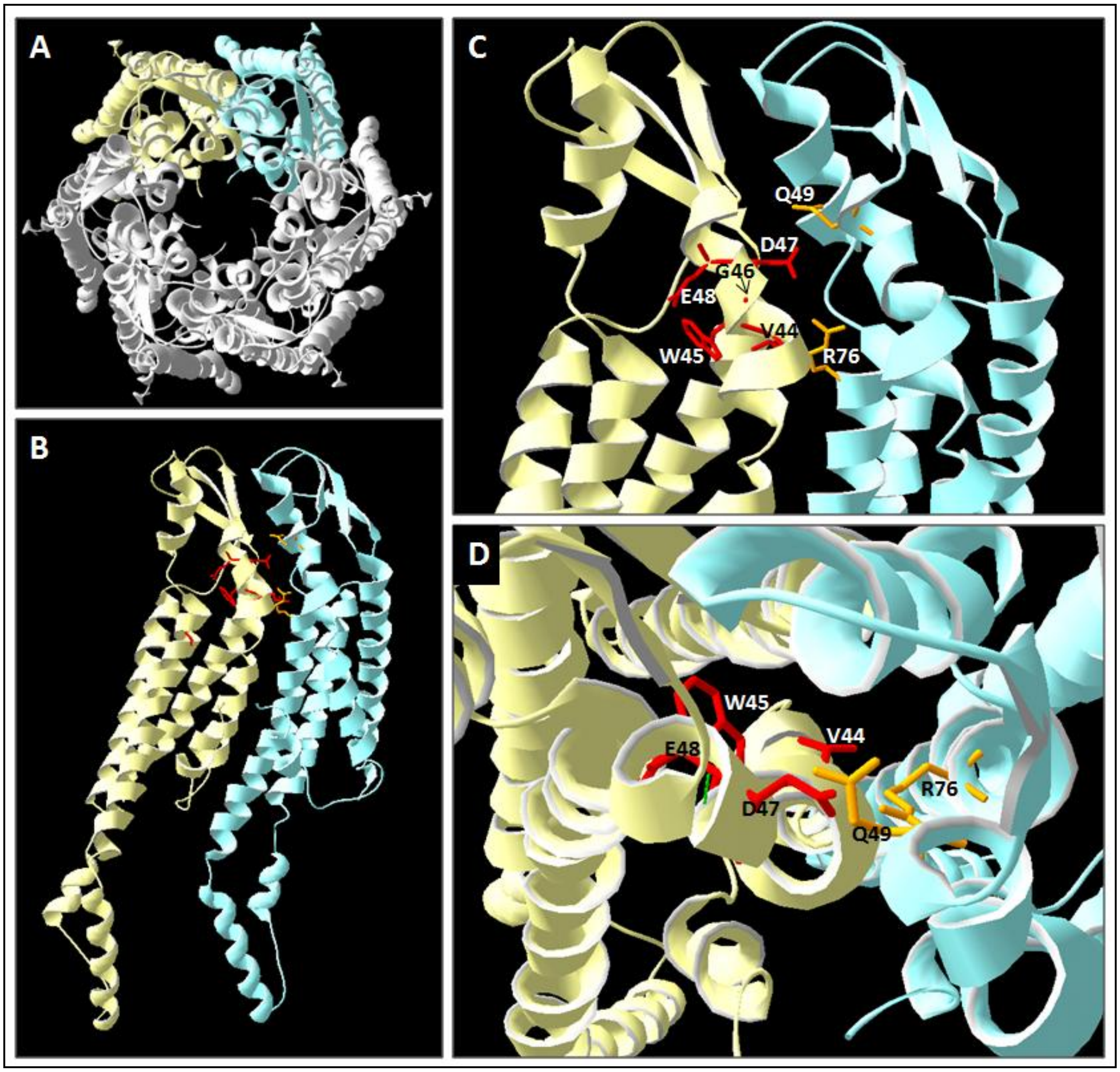

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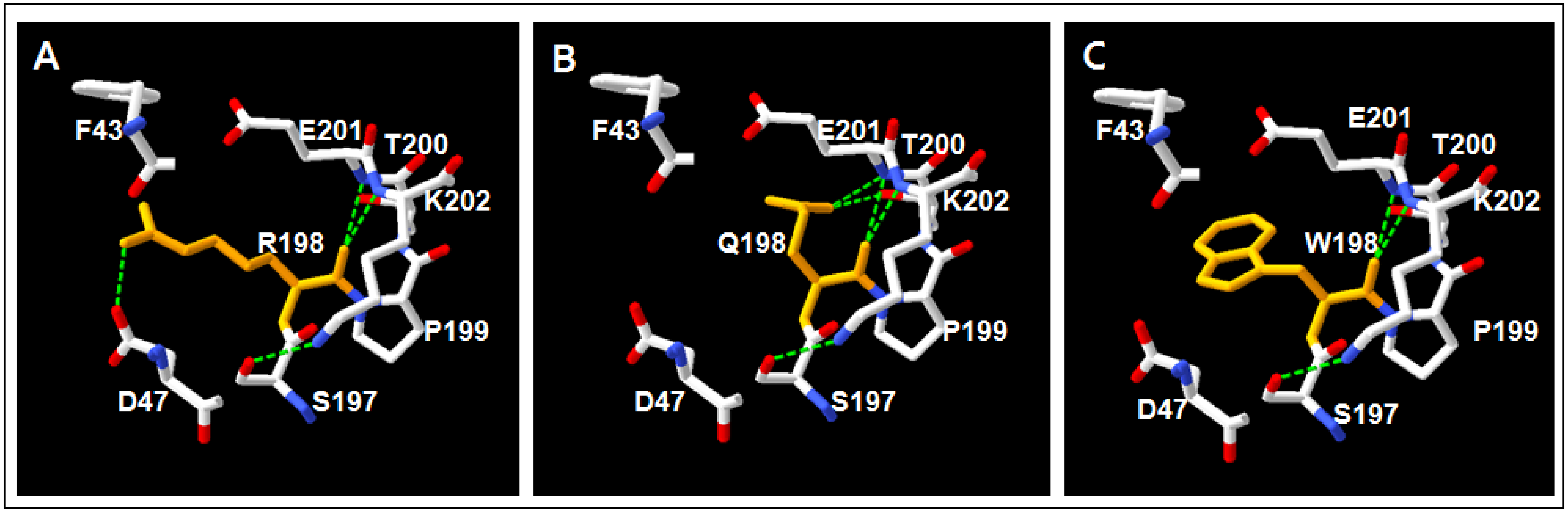
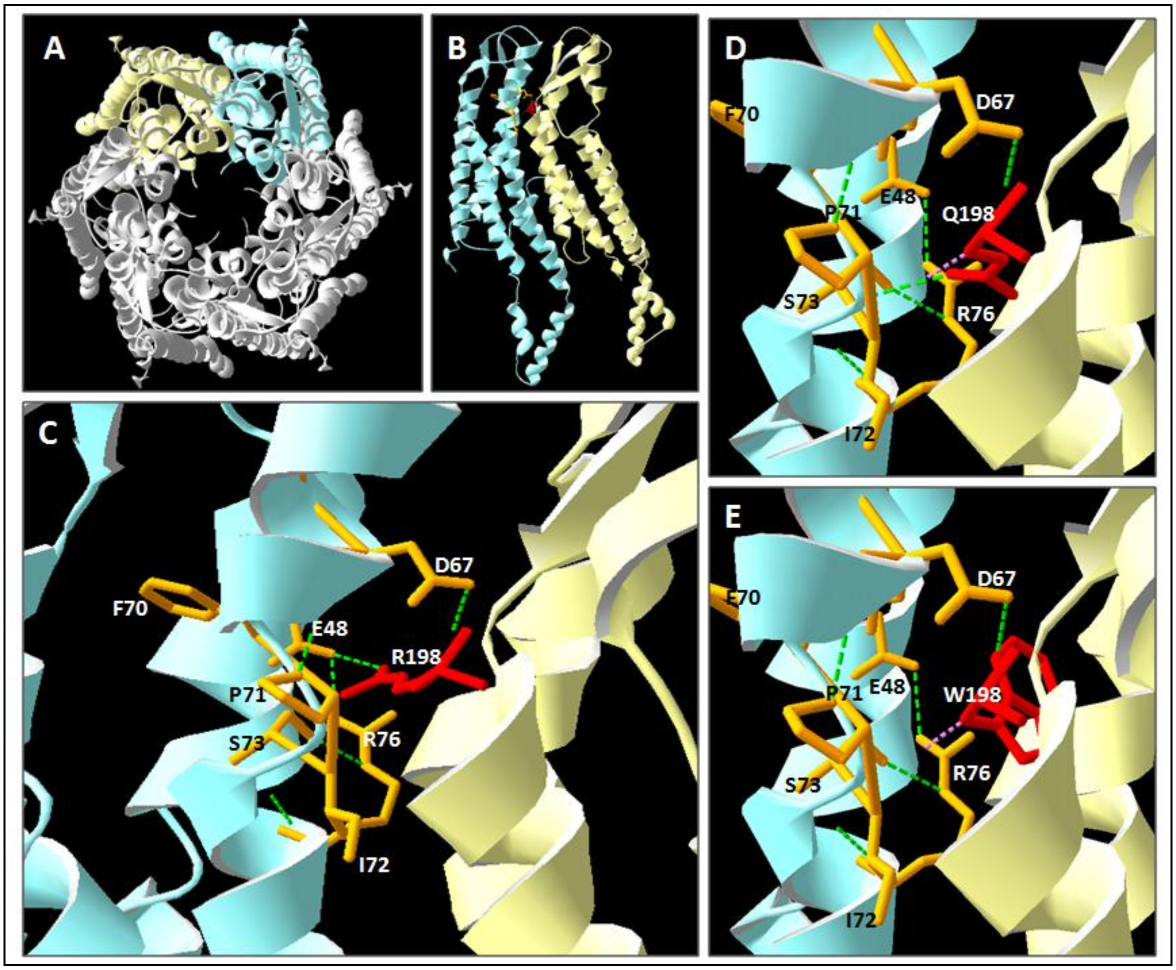


Supplemental Figure 5.



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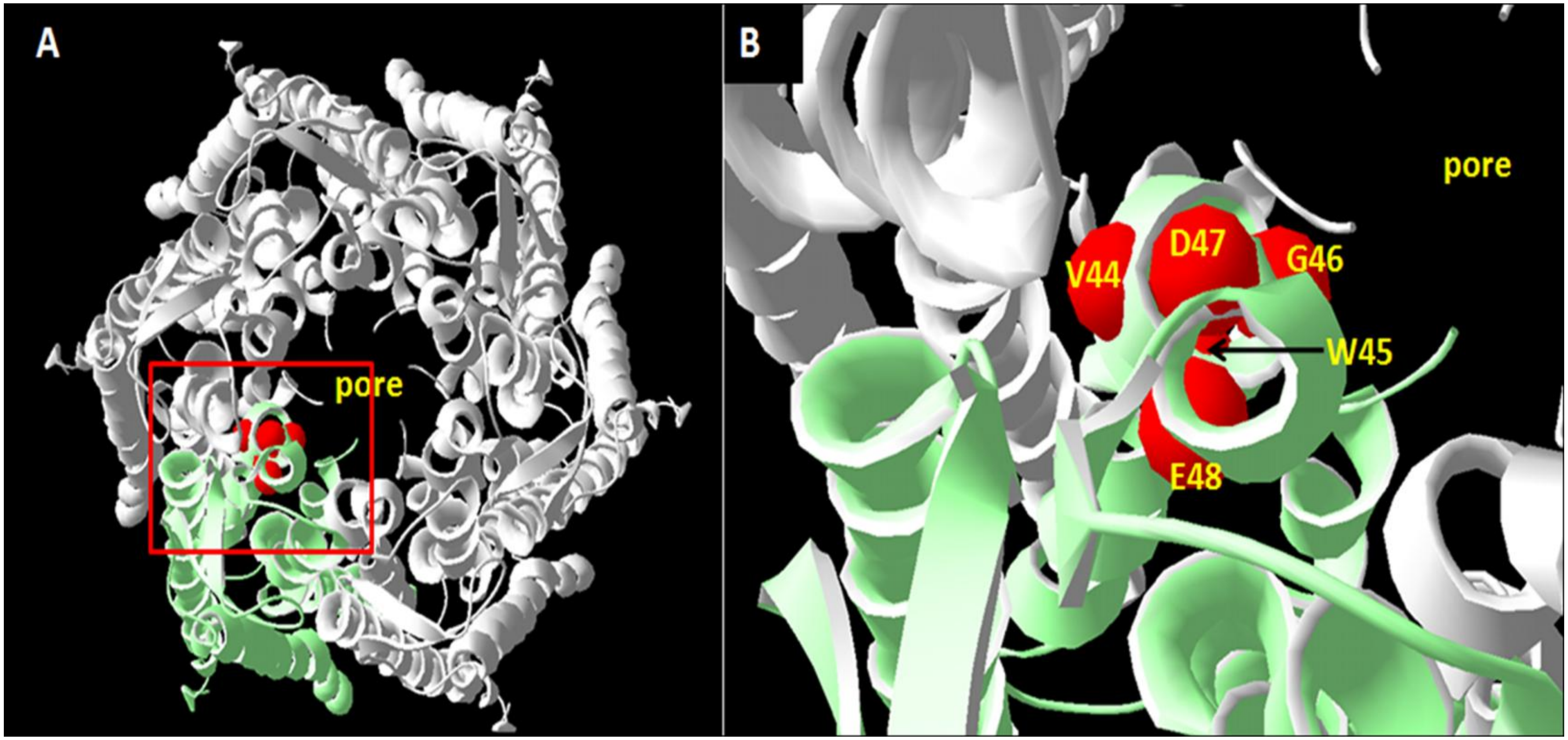

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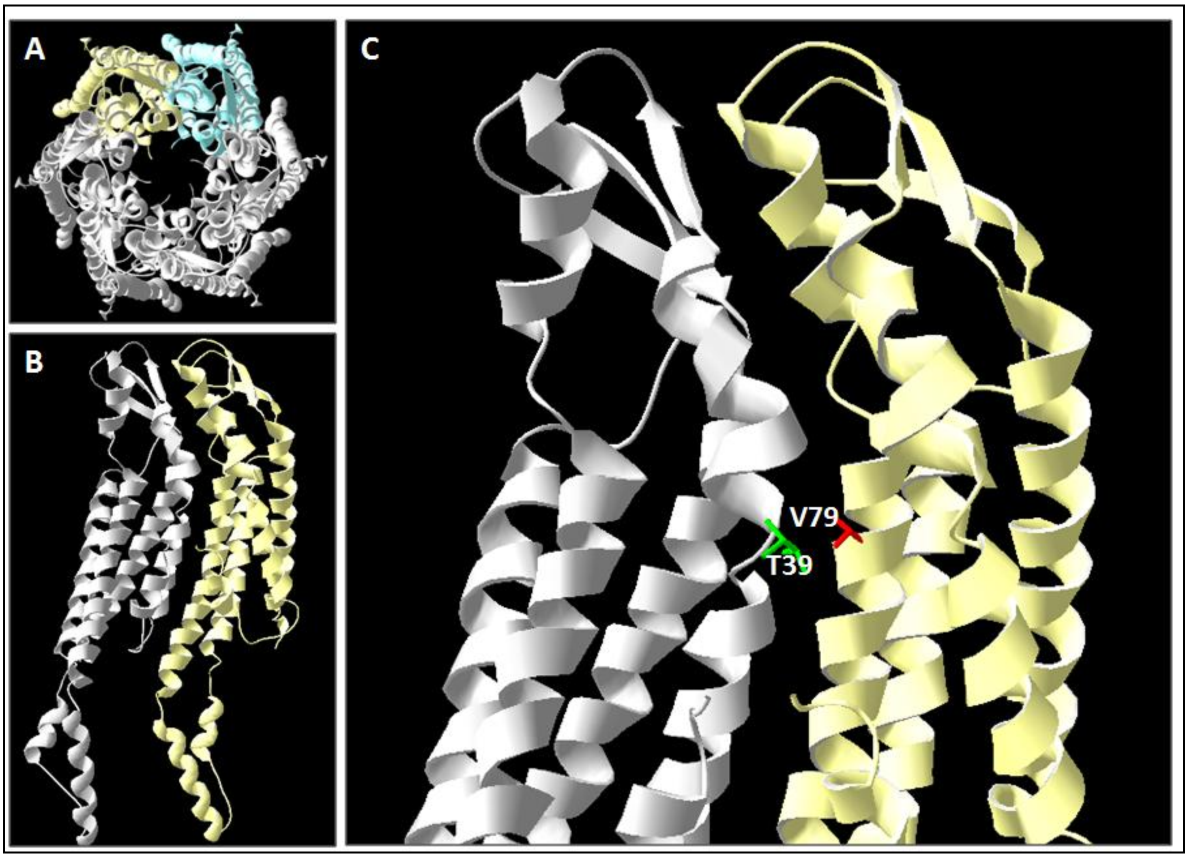

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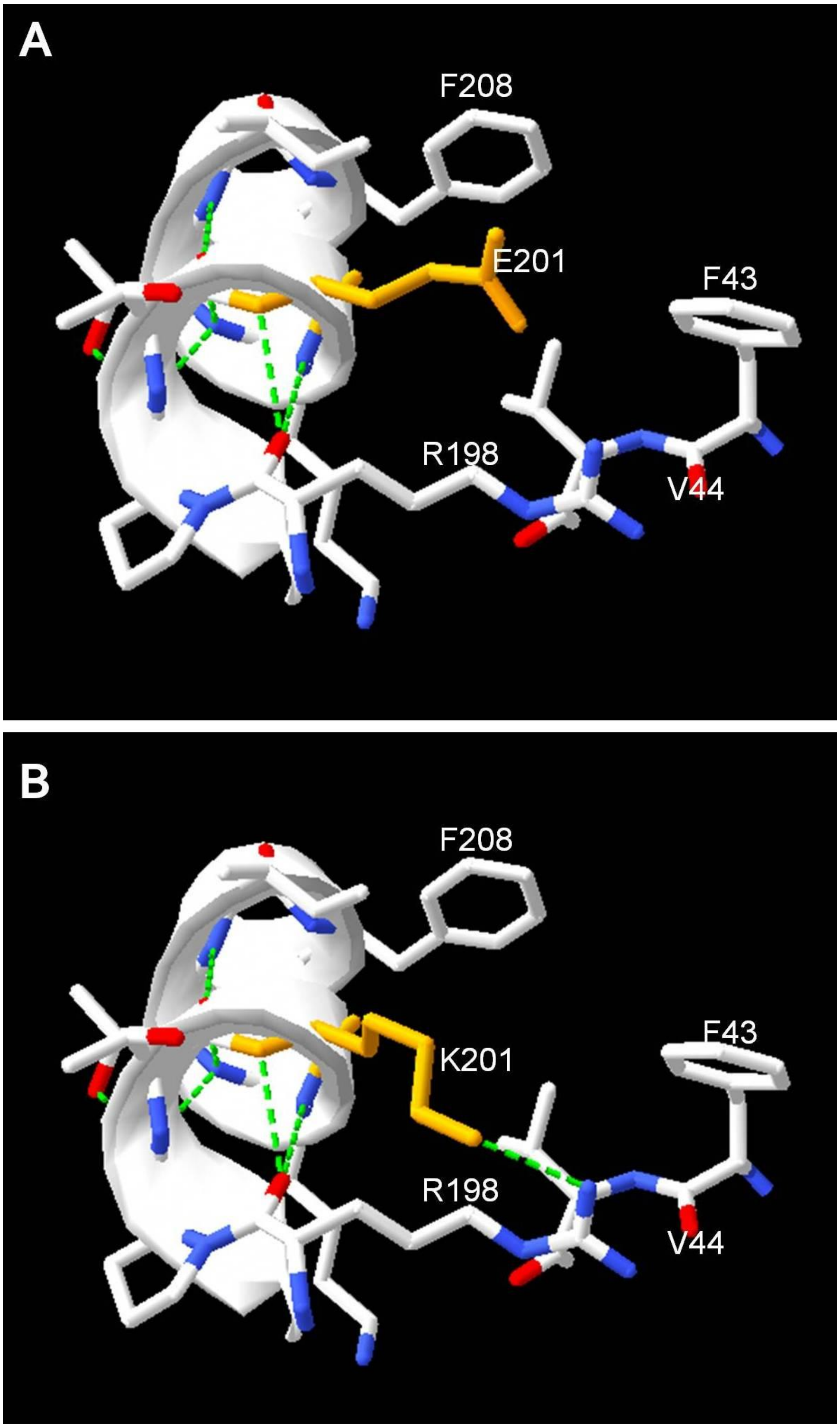

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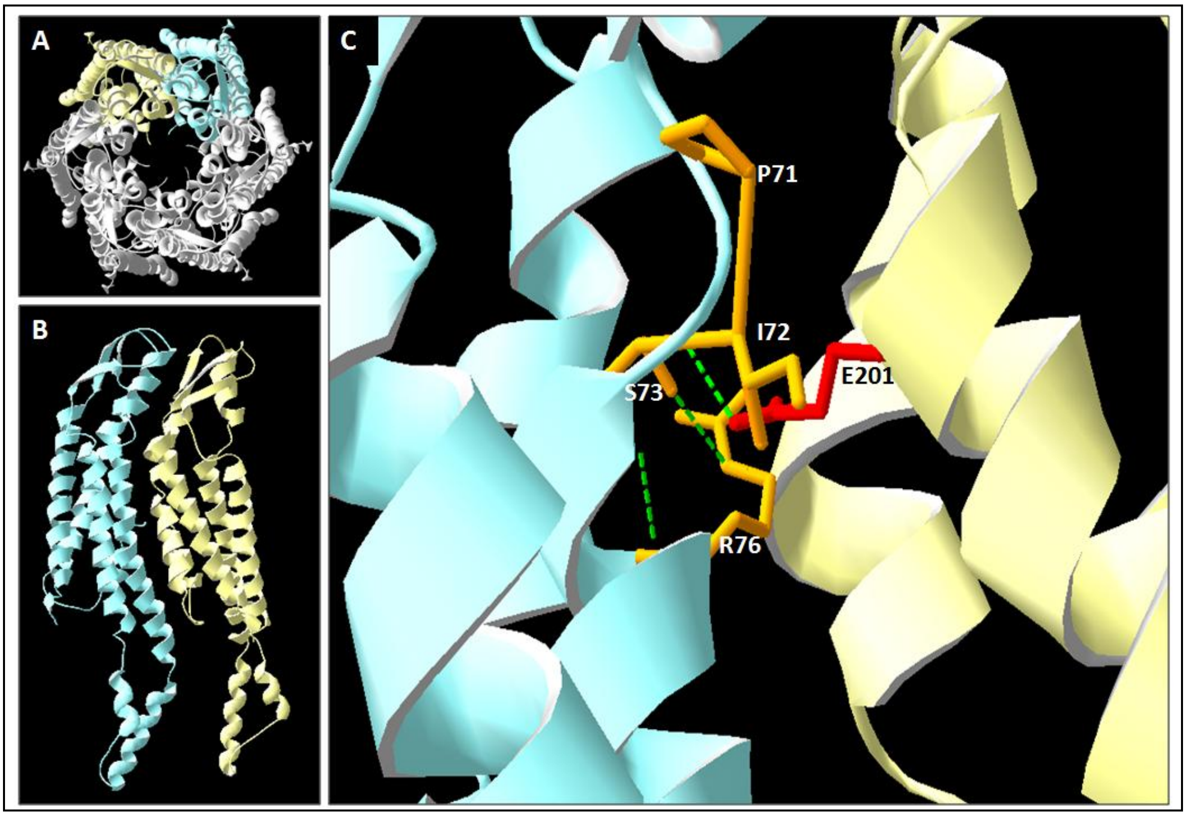

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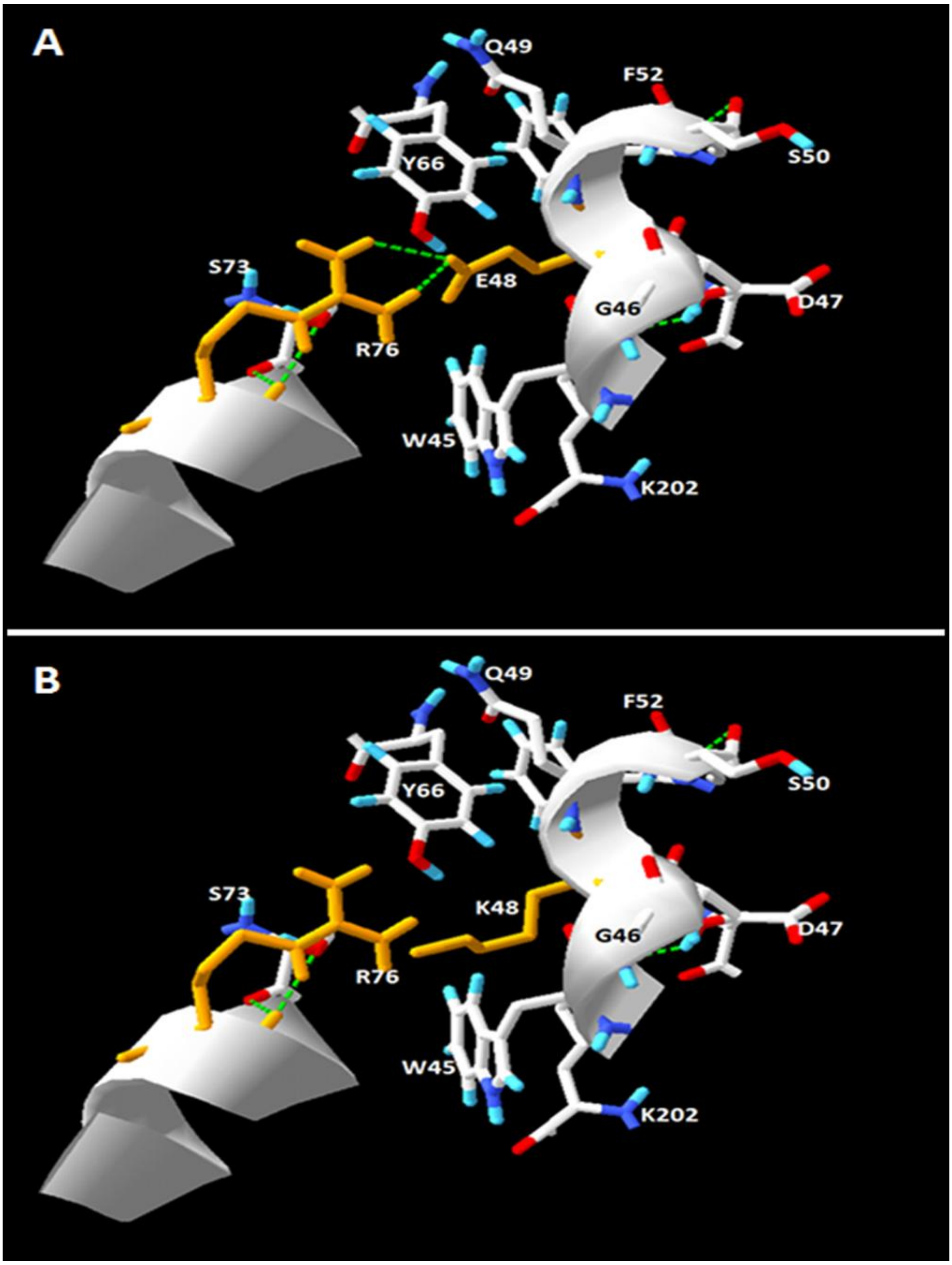

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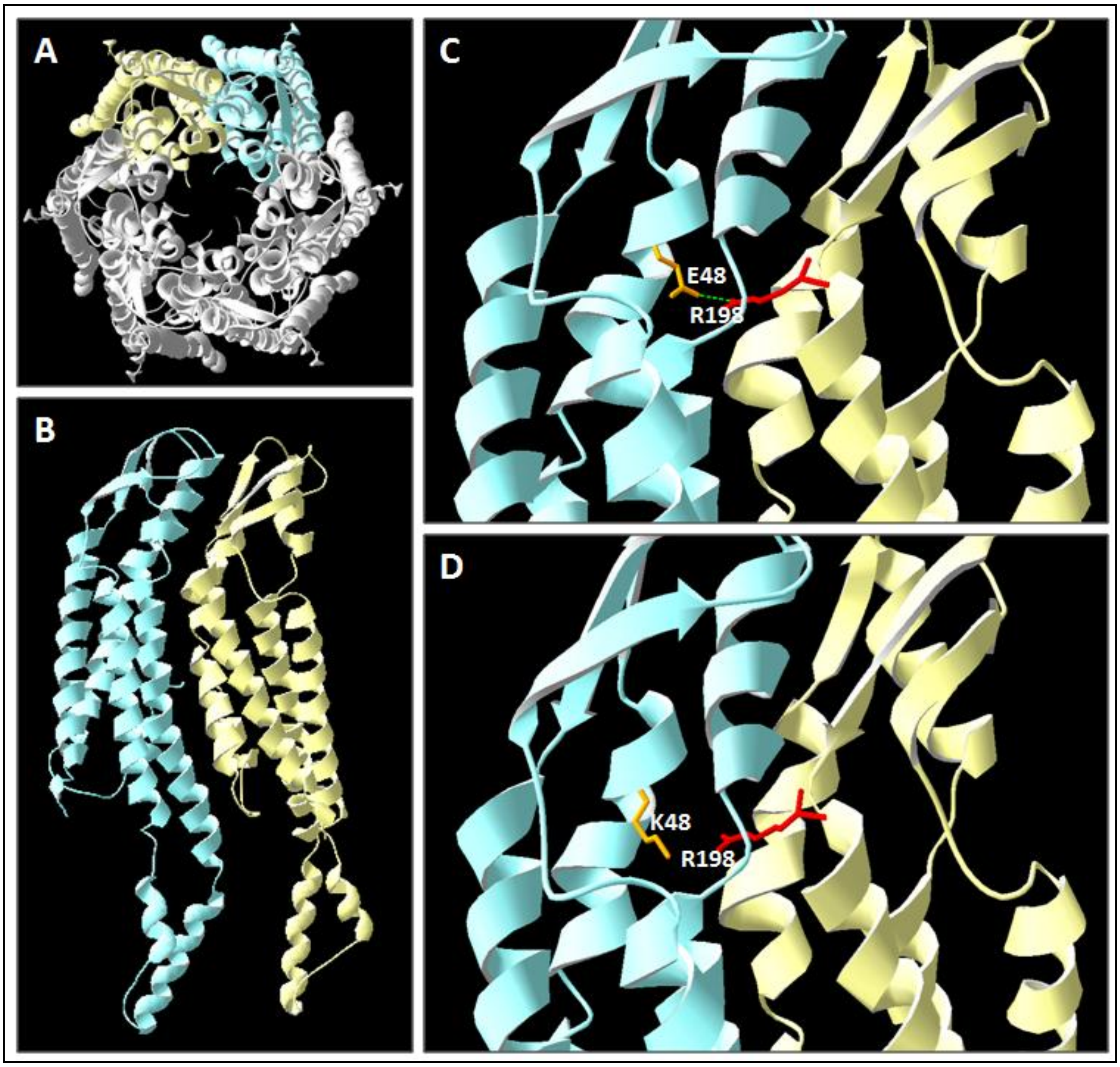

Supplemental Figure 12.

SUPPLEMENTARY FIGURE LEGENDS:

Supplemental Figure 1. The homology model of Cx50 color-coded according to evolutionary conservation.

Ribbon view of the Cx50 homology model is shown with the mutation-involving residues plotted on it. The structure is color-coded according to evolutionary conservation using the ConSurf server, with turquoise-through-maroon corresponding to variable-through-conserved positions (see color bar). PyMOL was used for visualization. All of the functionally characterized Cx50 mutations involve highly conserved residues. *Check supplementary text for multiple sequence alignment*.

Supplemental Figure 2. The 3-dimensional neighborhood (surrounding 4Å space) of R23 in normal Cx50 protein (homology model).

A. Residues lying within surrounding 4Å space of R23 are shown. R23 (TM1) has inter-helix H-bonding with side-chain of Y151 (TM3). B. The H-bond of R23 with Y151 is lost in the mutant R23T. Green and grey dotted lines indicate potential H-bonds (strong and weak, respectively) - computed using the SwissPDBViewer.

Supplemental Figure 3. The 3-dimensional neighborhood of R23 in the oligomeric complex.

A. Docked model of hemichannel – viewed from the top. Two adjacent Cx50 subunits are colored. B. Two adjacent Cx50 subunits are shown to be arranged in similar relation as in the hexameric complex – viewed from outer lipid-facing side. C. Mutation-involving residue R23 (red) in one subunit (yellow) and H98 (orange) of adjacent subunit (blue) lie within 4Å space.

Supplemental Figure 4. The 3-dimensional neighborhood of V44, W45, G46, D47 and E48 in the oligomeric complex.

A. Docked model of hemichannel – viewed from the top. Two adjacent Cx50 subunits are colored. B. Two adjacent Cx50 subunits are shown to be arranged in similar relation as in the hexameric complex – viewed from pore side. C. Mutation-involving residues 44-48 are shown (red) in one subunit (yellow); two residues (R76 & Q49 - orange) in adjacent subunit (blue) within surrounding 4Å space of the mutation-involving residues are shown. D. The intermolecular interface (involving residues 44-48 of one chain and R76 & Q49 of adjacent chain) is shown – viewed from the top. Side-chains of V44 & D47 point outwards, facing adjacent subunit; side-chains of W45 & E48 are directed towards the subunit. There is no inter-subunit H-bonding involving the residues.

Supplemental Figure 5. The 3-dimensional neighborhood (surrounding 4Å space) of R198 in normal Cx50 protein (homology model).

A. Residues lying within surrounding 4Å space of R198 are shown. B. R198Q leads to loss of 1 H-bond with D47 and gain of another H-bond with T200/E201. C. R198W leads to a loss of 1 H-bond with D47. Green lines indicate potential H-bonds - computed using the SwissPDBViewer.

Supplemental Figure 6. The 3-dimensional neighborhood of R198 in the oligomeric complex.

A. Docked model of hemichannel – viewed from the top. Two adjacent Cx50 subunits are colored. B. Two adjacent Cx50 subunits are shown to be arranged in similar relation as in the hexameric complex – viewed from outer lipid-facing side. C. Neighbouring residues in adjacent subunit (orange) that lie within surrounding 4Å space of R198 (red) are shown. R198 might form H-bond with E48 of adjacent subunit. Green dotted lines indicate potential H-bond - computed using the SwissPDBViewer. D. R198Q – the H-bond with E48 is replaced with a new H-bond with S73; steric clash induced (pink dotted line). E. R198W – the H-bond with E48 is lost; steric clash induced.

Supplemental Figure 7. The 3-dimensional neighborhood of G46 in the oligomeric complex.

A. Docked model of hemichannel (constructed by SymmDock server) formed by symmetric docking of Cx50 subunits (Cx50 homology models). A single Cx50 subunit is colored light-green. Mutation-involving residues (red spheres) in the junction of TM1 and EC1 are localized in the docked model. B. Zoomed view of the residue-positions. G46 is a pore-exposed residue.

Supplemental Figure 8. The 3-dimensional neighborhood of V79 in the oligomeric complex.

A. Docked model of hemichannel – viewed from the top. Two adjacent Cx50 subunits are colored. B. Two adjacent Cx50 subunits are shown to be arranged in similar relation as in the hexameric complex – viewed from pore side. C. Mutation-involving residue V79 (red) in one subunit (yellow) and T39 (green) of adjacent subunit (grey) lie within 4Å space.

Supplemental Figure 9. The 3-dimensional neighborhood (surrounding 4Å space) of E201 in normal Cx50 protein (homology model).

A. Residues lying within surrounding 4Å space of E201 are shown. B. A new H-bond with side-chain of R198 is formed by the mutation E201K. Green dotted line indicates potential H-bond - computed using the SwissPDBViewer.

Supplemental Figure 10. The 3-dimensional neighborhood of E201 in the oligomeric complex.

A. Docked model of hemichannel – viewed from the top. Two adjacent Cx50 subunits are colored. B. Two adjacent Cx50 subunits are shown to be arranged in similar relation as in the hexameric complex – viewed from outer lipid-facing side. C. P71, I72, S73 and R76 (orange) of adjacent subunit (blue) lie within surrounding 4Å space of E201 (red). E201 forms inter-molecular H-bonding with S73 of adjacent subunit.

Supplemental Figure 11. The 3-dimensional neighborhood (surrounding 4Å space) of E48 in normal Cx50 protein (homology model).

A. Residues lying within surrounding 4Å space of E48 are shown. E48 (TM1) has inter-helix H-bonding with R76 (TM2). B. The H-bond of E48 with R76 is lost in the mutant E48K. Green dotted lines indicate potential H-bonds H-bonds - computed using the SwissPDBViewer.

Supplemental Figure 12. The 3-dimensional neighborhood of E48 in the oligomeric complex.

A. Docked model of hemichannel – viewed from the top. Two adjacent Cx50 subunits are colored. B. Two adjacent Cx50 subunits are shown to be arranged in similar relation as in the hexameric complex – viewed from outer lipid-facing side. C. R198 (red) of adjacent subunit (yellow) lies within surrounding 4Å space of E48 (orange). E48 has inter-molecular H-bonding with R198 of adjacent subunit. Green dotted line indicates potential H-bond - computed using the SwissPDBViewer. D. The H-bond of E48 with R198 is lost in the mutant E48K.

SUPPLEMENTARY TEXT:

CLUSTAL 2.1 multiple sequence alignment constructed by CLUSTALW2 server – 52% sequence similarity between human Cx50 protein sequence and human Cx26 protein sequence, which was used as template *(PDB: 2ZW3)* for homology modeling

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Cx50            MGDWSFLGNILEEVNEHSTVIGRVWLTVLFIFRILILGTAAEFVWGDEQSDFVCNTQQPG 60
                  **. * .**  **:*** **::**********:** .**: ******:****** ***

2ZW3            CKNVCYDHYFPISHIRLWALQLIFVSTPALLVAMH-VAYRRHEKKRKFIKGEIKSEFK-- 116
Cx50            CENVCYDEAFPISHIRLWVLQIIFVSTPSLMYVGHAVHYVRMEEKRKSREAEELGQQAGT 120
                *:*****. *********.**:******:*: . * * * * *:***  :.*  .:

2ZW3            ----DIEEIK-------TQKVRIEGSLWWTYTSSIFFRVIFEAAFMYVFYVMYDGFSMQR 165
Cx50            NGGPDQGSVKKSSGSKGTKKFRLEGTLLRTYICHIIFKTLFEVGFIVGHYFLYG-FRILP 179
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2ZW3            LVKCNAWPCPNTVDCFVSRPTEKTVFTVFMIAVSGICILLNVTELCYLLIRYCSGKSKKP 225
Cx50            LYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVASVSLFLNVMELGHLGLKGIRSALKRP 239
                * :*. *****.************:* :**::*:.:.::*** ** :* ::   .  *:*

2ZW3            V 226
Cx50            V 240
                *
```

CLUSTAL 2.0.10 multiple sequence alignment constructed by UNIREF90 – 150 non-redundant sequences homologous to human Cx50 were selected by PSI-BLAST and aligned

Input_protein_seq denotes human Cx50 protein sequence (NP_005258.2)

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UniRef90_UPI00035A19E6_1_466      EFICNTEQPGCRNVCYDEAFPI-SLIRYWVLQVIFVSSPSLVYMGHALYR
UniRef90_F6WA84_1_463             GFVCNTEQPGCRNVCYDRAFPI-SLIRYWVLQVIFVSSPSLVYMGHALYR
UniRef90_G1SG18_1_430             AFTCNTQQPGCNNICYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_UPI00032B0E64_1_413      AFACNTQQPGCNNICYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_UPI0002C65D9D_1_412      AFACNTQQPGCNNICYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_F7CF28_1_383             AFACNTQQPGCNNICYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_Q969M2_1_435             AFACNTRQPGCNNICYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_L9JVZ3_1_406             AFACNTQQPGCKNICYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_I3M407_1_414             AFACNTQQPGCNNICYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_L5JMB7_1_435             AFACNTQQPGCNNICYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_L8J083_1_417             AFACNTQQPGCNTVCYDTAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_UPI0002BCCFF6_1_421      AFACNTQQPGCNTVCYDDAFPI-SLVRFWVLQIIFVSSPSLVYMGHALYS
UniRef90_F1RY20_1_421             AFACNTQQPGCNTVCYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_UPI0002C59166_1_412      AFACNTQQPGCNNICYDAAFPI-SLIRFWVLQIIFVSSPSLVYMGHVLYR
UniRef90_G3TBX7_1_436             AFACNTQQPGCNNICYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_G3GSS7_1_405             SFACNTQQPGCNNICYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
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UniRef90_UPI0003316158_1_413      AFVCNTQQPGCSNVCYDDAFPI-SLIRFWVLQIIFVSSPSLVYMGHALYR
UniRef90_G3WUN4_1_443             AFTCNTRQPGCRNICYDGAFPI-SLIRYWVLQVIFVSSPSLVYMGHALYR
UniRef90_F6W379_1_264             EFICNTEQPGCRNVCYDQAFPI-SLIRYWVLQIIFVSSPSLVYMGHALYR
UniRef90_M7BL54_1_431             EFICNTEQPGCSNVCYDKAFPI-SLIRYWVLQIIFVSSPSLVYMGHALYR
UniRef90_UPI0002B44362_1_276      EFICNTEQPGCNNICYDKAFPI-SLIRYWVLQIIFVSSPSLVYMGHALYR
UniRef90_UPI000298933C_1_429      EFVCNTEQPGCKNVCYDQAFPV-SLIRYWVLQIIFVSSPSLVYMGHALYR
UniRef90_H3CDZ2_1_426             EFVCNTEQPGCKNVCYDQAFPV-SLIRYWVLQIIFVSSPSLVYMGHALYR
UniRef90_I3IZH7_1_440             EFVCNTEQPGCKTVCYDQAFPI-SLIRYWVLQIIFVSSPSLVYMGHALYR
UniRef90_E7F3P4_1_389             EFVCNTEQPGCKNVCYDQAFPI-SLIRYWVLQIIFVSSPSLVYMGHALYR
                                   : *:: ***     **  *.  .       :: :  :*:*:*  :  :

UniRef90_UPI0002C691BE_1_358      VRMQKKRKL-REAER----AKDVRGAGS---------------YEYPVAE
UniRef90_F7BKC0_1_358             VRMQEKQRQ-REAER----AKHVQGAGS---------------YEYPVAE
UniRef90_Q0VCR2_1_359             VRVQEKRKLLREAER----AKEARAAGS---------------YEYPVAE
UniRef90_G3TUX5_1_358             VRMQEKRKL-REAER----AKGVQGSGS---------------YEYPVAE
UniRef90_L9JKN2_1_358             VRMQEKRKL-REAER----AKEVRGAGS---------------YEYPVVE
UniRef90_P36382_1_358             VRMQEKRKL-REAER----AKEVRGSGS---------------YEYPVAE
UniRef90_UPI0003315E33_1_350      VRMQEKRRL-REAER----AKEVQGAG----------------YEYPAAE
UniRef90_UPI000333FB64_1_358      MRMQEKRRL-RAAER----AKEVRGAGS---------------YEYPVAE
UniRef90_UPI000334540D_1_357      VRVQEKRRL-REAER----ARDVRAAG----------------YEYPAAE
UniRef90_L5K3R8_1_358             VRMEEKRKL-REAER----AREARGAGP---------------CEYPVGE
UniRef90_G1TQ37_1_358             VRMQEKRKM-REAET----GKEVQGAGS---------------YEYPAAE
UniRef90_UPI0001776F40_1_352      VRMQEKRKL-RETQG----TKEGRGAGS---------------YEYPAAE
UniRef90_G3H2Q9_1_358             VRMQEKQKL-RDAEK----AKEAGATGS---------------YEYPVAE
UniRef90_Q01231_1_358             VRMQEKQKL-RDAEK----AKEAHRTGA---------------YEYPVAE
UniRef90_G5BBL6_1_357             VRMQEKRRL-REAER----AKEIHRPGS---------------YEYQVAE
UniRef90_H0WCZ7_1_358             VRMQEKRKL-REAER----AKEIHRPGSP--------------YEFQVAE
UniRef90_G3X1A3_1_358             VRMEEKRKL-KEAEK----SKESKGADT---------------YAYQT-E
UniRef90_H0ZTI1_1_370             VRMEEKRKMKEAEIE----ARENKNGGDTY-----------YQQKCSVAE
UniRef90_P18860_1_369             VRMEEKRKMKEAERE----AQEMKNSGDTY-----------YQQKCPVAE
UniRef90_G1KPB5_1_370             VRMEEKRKLKEAKEG----SKAIQSKSDVF-----------HQQEYPPPE
UniRef90_K7FWT6_1_369             VRIEEKRKIKEAEMR----AKGIRSSGDSY-----------HQQEYPAAE
UniRef90_F1QL21_1_400             VRMEEKRKQK---------EQEEKAEAGK--------------GEKEYLE
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Input_protein_seq                 VRMEEKRKSREAEEL----GQQAGTNG--------------G------PD
UniRef90_UPI00027FC10C_1_397      VRKEEKRRGR----------------------------------------
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UniRef90_P28236_1_440             VRMEEKRKDREAEEL----CQQSRSNG--------------GERVPIAPD
UniRef90_G5BBL7_1_440             VRMEEKRKDREAEEV----SQQSRSNG--------------CERGPLAPD
UniRef90_M3XED1_1_440             VRMQEKRKEREADEL----CQQGAAEG--------------GDRAPLAAD
UniRef90_L5K685_1_440             VRMEEKRKEREAEEL----CQQAAGDS--------------GERGPLPAD
UniRef90_F6VG96_1_441             VRMEEKRKEREAEEL----GQQPPGN---------------GERAPPAAD
UniRef90_P55917_1_440             VRMEEKRKEREAEEL----SQQSPGNG--------------GERAPLAAD
UniRef90_UPI000329268E_1_442      VRMEEKRKEREAEEL----CQQSGGNG--------------GDRAPLPPD
UniRef90_G3UBH4_1_410             LRMEEKRKEREAEEL----CQQPGGNG--------------PEKGPVAPD
UniRef90_I3N7I6_1_431             VRMQEKRREREAEEP----PAEAER-----------------------AD
UniRef90_G3X210_1_429             VRMEEKRKEREAEEV----CQQSGSN---------------GERLPLALD
UniRef90_F7BI06_1_372             VRMEEKRKEREAEEV----CQQSGGN---------------GERLPLALD
UniRef90_UPI000333FA9E_1_424      VRMQEKRKEREVEEL----CPQPGGNG--------------AERGPLGPD
UniRef90_K7EY71_1_406             VRMVEKRREREQAER----QQQAEMD---------------EERLPLTPD
UniRef90_M7BCA4_1_394             VRMAEKKREREQAER----QQQAEMD---------------EERLPLAPD
UniRef90_P36381_1_400             VRMEEKRKEREEAER----RQQAEVD---------------EEKLPLAPN
UniRef90_H2MUH4_1_428             VHMEEKRKEREEAEL----SRQQELS---------------EERLPLAPD
UniRef90_UPI00022B4A0D_1_396      VHMEEKRKEREEAEL----SRQQELS---------------EERLPLAPD
UniRef90_H3D8V1_1_361             VHMEEKRKEREEAEL----SRQQELS---------------EERLPLAPD
UniRef90_G3NHJ7_1_420             VHMEEKRKEREEAEL----SRQQELS---------------EERLPLAPD
UniRef90_Q503J6_1_391             VHMEEKRKEREEAEL----NRQQEN----------------EERLPLAPD
UniRef90_F6QCF2_1_438             VRMKENWKEREEAEM----SRQQEMN---------------EERLPLAPD
UniRef90_UPI00034FAB61_1_453      VRMEEKRKEREEAEM----SRQQEMN---------------EERLPLAPD
UniRef90_UPI0001DE8510_1_439      VRMKENWKEREEAEM----SRQQEMN---------------EERLPLAPD
UniRef90_H3A837_1_370             VRMEEKRKEREEAEI----SRQQELN---------------EERLPLAPD
UniRef90_G1KPB7_1_391             VRMEEKKRAREEAER----ALQQQDERE-------------DEKSSLDPE
UniRef90_B0S6Z4_1_382             IHMEEKRKEREEAEV----SHQQELCE-----------------ERQAMD
UniRef90_G1PZ72_1_426             ARAEEKRASRVAWVW----LGGGIWLS-----------------------
UniRef90_UPI000155FB82_1_448      VRMEEKKKEREEEPL----KGDNLHHEPA------------GPCGLSSDS
UniRef90_F6U7L2_1_428             VRMEEKKKEREEEPL----KGDNLHHEPA------------GPCGLSSDS
UniRef90_UPI0002C6341D_1_440      VRMEEKKKEREEEQL----KGGHLPPKPA------------GPCG-----
UniRef90_M3Z8M0_1_445             VRMEEKKKEREEELL----KSD----GPA------------ARCGSGSHS
UniRef90_G1Q1M8_1_411             VRMEEKKKGREEEKL----KGGSLHLRPD------------GQCGPRNHS
UniRef90_G1PYG2_1_394             VRMEEKKKGREEEQA----KGES------------------------DHG
UniRef90_L5L5Q1_1_430             VRTEQKRKERDAEQP----NGDG------------------------DRG
UniRef90_UPI0002BCF55A_1_410      VRMEEKRKEREEERL----KADGP------------------------PL
UniRef90_P41987_1_407             VRMEEKRKEREEEPP----KAAGP------------------------EG
UniRef90_J9JHI9_1_433             VRMEEKKKEREEELL----RAELPHPGPA------------ARCG---PG
UniRef90_Q9Y6H8_1_435             VRMEEKKKEREEEEQ----LKRE------------------SPSPKEPPQ
UniRef90_G3QHB2_1_399             VR---------------------------------------SPSPKEPPQ
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UniRef90_F7B1T8_1_432          VRMEEKRKARQEEEP----PKTD------------------SPSPPEPPQ
UniRef90_L9L2D3_1_460          VRMEEKKKEREEELL----KRDNPHPGAAGPCVPSGREALGGTSPEKPPV
UniRef90_Q64448_1_417          VRMEEKKKEREEELL----RRDNPQHGR-------------GREPMR-TG
UniRef90_G3H8J5_1_417          VRMEEKKREREEELL----RRDNPQHGR-------------GREPMR-TA
UniRef90_UPI0003333DA4_1_405   VRMEEKKREREE----------NPQHS---------------HEPLR-IG
UniRef90_I3NC37_1_417          VRMEEKKKEREEELL----RRENPHLER-------------GQESLDGAG
UniRef90_H0XD37_1_430          VRMEEKKKEREEELL----KRDSLQQG--------------VASPKD---
UniRef90_G1U3S9_1_407          VRTTPHHDAAELCVP--------AGHQE-------------PLGSPGTQD
UniRef90_UPI00032AEFC1_1_413   VRMEEKKKEREEELL----RRNHGGHGE-------------SLDTTGAQD
UniRef90_UPI00034F30A8_1_402   VRREEKRKEREEELL----RRDSPHPAR-------------ARALRGGPG
UniRef90_UPI0003340A67_1_370   VRMEEKRKARAEVPQ----RADSPHAA---------------WALQAAVD
UniRef90_UPI0002234D0E_1_449   VRREEKKKEQEEELL----SRDSPHPGAG------------DQEPPDRTG
UniRef90_G3TTN5_1_429          VRREEKKKEQEEELL----SRDSPHPGAG------------DQEPPDRTG
UniRef90_UPI0002C457ED_1_447   VRREEKKKEHEEEQL----SRDNPQPGAG------------GPEPPDRTM
UniRef90_UPI000333D50E_1_427   VRMEEKQQRGEE--------------------------------PLARTG
UniRef90_UPI0003343FBC_1_423   ARVEEKKKEREEELQ----KGAGLH-----------------------PS
UniRef90_F7G5V2_1_446          VRMEEKKKEKE-DLL----KKDNLH------------------QGESARM
UniRef90_G3VY19_1_428          VRMEEKKKEKEGEQL----KKNHLQG----------------VGNEGTRM
UniRef90_UPI000155BBAC_1_459   VRMEEKKKEKEEELL----KKTDPQAGPV------------GQGAPGSPR
UniRef90_F7ETY8_1_425          VRM----------LL----KKTDPQAGPV------------GQGAPGSPR
UniRef90_I3KXW1_1_474          VRMEEKRKEKEEEMR----KANRLQEEKELLYR-----------NGGDVG
UniRef90_UPI00022B3AE8_1_449   VRMEEKRKEKEEEMR----KANRLQEEKELLYR-----------NGGDVG
UniRef90_UPI0002A48057_1_447   VRMEDKRKEKEEEMR----KANKFHEEKELLYR-----------NGDDAG
UniRef90_H2MCD5_1_421          VRMEDKRKEKEEEMR----K------------R-----------NGDDAG
UniRef90_H2UTF3_1_420          VRMEEKRKEKEEELR-----------------------------NGGDAG
UniRef90_UPI000298F1F6_1_460   VRMEEKRKEKEEELR----KANRLQEEKELLYR-----------NGGDAG
UniRef90_H3DE08_1_376          VRMEEKRKEKEEEMR----KANRFQEEKELLYR-----------NGGDAG
UniRef90_Q8JFD2_1_434          VRMEEKRKEREEELR----KASRLQEEKELLYR-----------NGGGGE
UniRef90_H2T4Y1_1_438          VRMEEKRREREEDLR----KAGRHQEDHDPLYH-----------NGVSNG
UniRef90_H2T4Y2_1_428          VRMEEKRREREEDLR----KAGRHQEDHDPLYH-----------NGVSNG
UniRef90_H3BZL0_1_378          VRMEEKRREREEELR----K------------------------NGVSNG
UniRef90_I3K1N0_1_478          VRMEEKRREREEELR----KAGRHQDDHDPLYH-----------NGVGD-
UniRef90_H2LFL5_1_470          VRMEEKRREREEELR----KAGRLQGDHDPLYH-----------NGIGDG
UniRef90_M7BWJ7_1_486          VRMEEKKKE--EELK----KKGSSRDSNHQGG--------AAAAGGRGSS
UniRef90_K7F163_1_492          VRMEEKKKE--AELK----KKGSSRXXXXXXXXXXXXXX-XXXXXGRGSS
UniRef90_H0ZM32_1_512          VRMEEKRKEK-EELK----KKGNSKDGNYPVAA-------ASVSGGGGAS
UniRef90_H3AH16_1_396          VRMEEKRKEK-EELA----KCNKSQEDKELLLK-----------KGGG--
UniRef90_B0BM18_1_388          VRMEEKRKEKEEELK----KCIKGASEKEHLIK-----------GGE---
UniRef90_Q4S8R0_1_345          VRMEEKEKQKEKE-------LAAQSEKQ----------------QQLLGN
UniRef90_I3KYH7_1_341          VRMEEKEKQKQKE-------LEDQ--------------------QQVLCH
UniRef90_H2M0G7_1_345          VRMEEKENQKLKE-------LEIQNENQ----------------QQLLSK
UniRef90_H3A471_1_360          IRKEEKEKQREKEGQ----EKSGHHGDK----------------QPLLGE
UniRef90_Q6GLA5_1_353          VRLEEKRKQKEKLRQ----SSRDPQDDK----------------QLLLVP
UniRef90_UPI0002A4A1D5_1_346   VRMEEKHKEREHL------------LDQ----------------QGLIGA
UniRef90_S4RXA6_1_456          MRMESRRKEELEEWR----KLHPNEDEDDCKALLD-------GGKGRKGG
UniRef90_P16863_1_360          MRKEEKLNRKEEELK----MVQNEGGNVDMHLKQI-------EIKKFKYG
UniRef90_H2LU51_1_404          LRALEKERHCKKVALRRELEGVDTELVEVKR--------------RIEKE
UniRef90_I3KYL3_1_401          LRALEKERHCKKVALRRELEAVDAELTEVKK--------------RIEKE
UniRef90_G3NC44_1_402          LRALEKERHCKKVALRRELEAVDAELVEVRR--------------RIERE
UniRef90_H2SSL2_1_392          LRALEKERHCKKVALRREMEAVDVELVEVRK--------------RIEKE
UniRef90_UPI0002C46B7E_1_433   LRVLEKERQEMKTQLRRELEGAESEVPGDRW--------------RLEQE
UniRef90_G3ULF1_1_432          LRVLEKERQEMKTQLRRELEEVEFEVTGHRR--------------RLEQE
UniRef90_C9IYK1_1_407          LRVLEEERQRMKAQLRVELEEVEFEMPRDRR--------------RLEQE
UniRef90_H0Y0G7_1_436          LRVLEEERQRMKAQLRGELEGVEFEMSGDRR--------------RLEQE
UniRef90_L9JD22_1_408          LRVLEKERQRMKAQLRAELEGIEFEMLGDRR--------------RLERE
UniRef90_F1N617_1_436          LRVLEKQRQMKKEQLRGELEEAELETPGDRR--------------RLEEE
UniRef90_F1SV25_1_385          LRVLEKERQVKKAQLRGELEGVELEMPGDRK--------------RLEQE
UniRef90_L5JUH5_1_307          LRVLEKERQREKAQLRGELKGLEFEVSGDRR--------------KLEKE
UniRef90_UPI00020369CA_1_441   LRALEKERQKKKAQVRVELESTELEMTEYRK--------------RLERE
UniRef90_R4GLX1_1_405          LRALEKERQKKKAQVRVELESTELEMTEYRK--------------RLERE
UniRef90_UPI00035A19E6_1_466   LRALEKERQRKKAQVRVELESTELEMTENRK--------------RLERE
UniRef90_F6WA84_1_463          LRALEKDRQRKKAQLKGELEATEFEMVEDRR--------------KLERE
UniRef90_G1SG18_1_430          LRDFEKERQRKKSYLRAQMENPELDLEDQQ---------------RIDRE
UniRef90_UPI00032B0E64_1_413   LRDFEKERQRKKSYLRTQIENPELNIEEQQ---------------RIDRE
UniRef90_UPI0002C65D9D_1_412   LRAFEKERQRKKSHLRAQMENPELDLDEQQ---------------RIERE
UniRef90_F7CF28_1_383          LRAFEKERQRKKSHLRALMENPELEFDEQQ---------------RIDRE
UniRef90_Q969M2_1_435          LRAFEKDRQRKKSHLRAQMENPDLDLEEQQ---------------RIDRE
UniRef90_L9JVZ3_1_406          LRAFEKERQRKKSHLRAQLENPELDLEEQQ---------------RIDRE
UniRef90_I3M407_1_414          LRDFEKERHRRKSHLRVQMENPELDLEEQQ---------------RIDRE
UniRef90_L5JMB7_1_435          LRAFEKERQKKKSHLKDHREKPGLELEEQQ---------------RIDRE
UniRef90_L8J083_1_417          LRAFEKERQRKKSQLRAQMENPELELEDQQ---------------RMDRE
UniRef90_UPI0002BCCFF6_1_421   LRAFEKETRRKKSELTAQMENPELELEEQQ---------------NINRE
UniRef90_F1RY20_1_421          LRAFEKERQRKKSQLRAQMENPELELEEQQ---------------RLDRE
UniRef90_UPI0002C59166_1_412   LRAFEKERQKKKSHLRVQLGNPELELEEQQ---------------RIDRE
UniRef90_G3TBX7_1_436          LRALEKERWRKKSYLRTQMENPEVDLEEQQ---------------RIHRE
UniRef90_G3GSS7_1_405          LRDFEKQRQKKKSHLRAQMEDPRLELEEQQ---------------RVERE
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UniRef90_UPI0003316158_1_413      LRTFEKERQKRKAHLRAHLEDPELEWEEQQ---------------RIERE
UniRef90_G3WUN4_1_443             LRAFEKEKQRKKVQLRAQLEEPELDQEEYQ---------------RIERE
UniRef90_F6W379_1_264             LRALEKERQKKKAQLRAELEELEVVVDEHR---------------KLERE
UniRef90_M7BL54_1_431             LRALEKERQKKKTHLRAQLEELEPVPEEHK---------------RMERE
UniRef90_UPI0002B44362_1_276      LRALEKERQNRKAHLRAQLEGLEPMLEEHK---------------RVERE
UniRef90_UPI000298933C_1_429      LRTLEKERHRRKVCLKAELEGTDPIQEDHK---------------RIERE
UniRef90_H3CDZ2_1_426             LRTLEKERHKRKACLKAELEGTDPVQEDHR---------------RIERE
UniRef90_I3IZH7_1_440             LRTLEKERHRKKACLKAELEGTDPVLEDHK---------------RIEKE
UniRef90_E7F3P4_1_389             LRALEKERHKKKVQLKVELEESE-ALEEHK---------------RIEKE
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UniRef90_F7BKC0_1_358             K-----------TALSCWEEGNEKIVLQGTLLNTYVCSILIRTTMEVAFI
UniRef90_Q0VCR2_1_359             K-----------TELSCWEEVNGRIALQGSLLNTYVCSILIRTTMEVAFI
UniRef90_G3TUX5_1_358             K-----------TELSCWEEVNGKVVLQGALLNTYVCSILIRTTMEVTFI
UniRef90_L9JKN2_1_358             K-----------TELSCWEEVNGKIVLQGTLLNTYVCSILIRTTMEVAFI
UniRef90_P36382_1_358             K-----------AELSCWEEGNGRIALQGTLLNTYVCSILIRTTMEVGFI
UniRef90_UPI0003315E33_1_350      K-----------TGLSCWEEVNGKIVLQGTLLNTYVCSILIRTTMEVAFI
UniRef90_UPI000333FB64_1_358      K-----------TELTCWEEVNGKVVLQGTLLNTYVCSILIRTTMEVAFI
UniRef90_UPI000334540D_1_357      K-----------PELSCWEEVNGRIVLQGTLLNTYVCSILIRTTMEVAFI
UniRef90_L5K3R8_1_358             K-----------AELSCWEEANGRIVLRGTLLNTYVCSILIRTTMEVAFI
UniRef90_G1TQ37_1_358             K-----------AELSRWEEVNGRILLRGTLLRTYVCSIVIRTTVEVAFI
UniRef90_UPI0001776F40_1_352      K-----------TELSCWEEVNGRIVLQGTLLHTYVCSIIIRTTTEVAFI
UniRef90_G3H2Q9_1_358             K-----------AELSCWKEVDGKIVLQGTLLNTYVCTILIRTTMEVAFI
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UniRef90_G5BBL6_1_357             K-----------PELSCWEEMNGKVVLQGNLLNTYVCTILIRTTMEVAFI
UniRef90_H0WCZ7_1_358             K-----------PELSCWEEMNGKVVLQGNLLNTYVCTILIRTAMEVAFI
UniRef90_G3X1A3_1_358             K-----------AELSCREELDGKIILQGTLLNTYVCSILIRTAMEVAFI
UniRef90_H0ZTI1_1_370             KE----------TKLSGWDEAGGQIILRGSLLNTYVYSILIRTAMEVAFI
UniRef90_P18860_1_369             K-----------TELSCWDESGGKIILRGSLLNTYVYSILIRTAMEIAFI
UniRef90_G1KPB5_1_370             K-----------AELSCWDDSNGRIILQGTLLNTYVCSILIRTGMEVAFI
UniRef90_K7FWT6_1_369             K-----------AEFSSREESNGKIILQGSLLNTYVYSILIRVAMEVTFI
UniRef90_F1QL21_1_400             H------------KEKFENTKT-KIHLKGALLQTYVLSIVIRLVMEVTFI
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UniRef90_L9JGQ0_1_441             QGS-------IRKSS-SSSKGTKKFRLEGTLLRTYICHIIFKTLFEVGFI
UniRef90_P28236_1_440             QAS-------IRKSS-SSSKGTKKFRLEGTLLRTYVCHIIFKTLFEVGFI
UniRef90_G5BBL7_1_440             QAS-------IRKSN-SSSKGTKKFRLEGTLLRTYVCHIIFKTLFEVGFI
UniRef90_M3XED1_1_440             QGS-------VKKGS-NSSKGTKKFRLEGTLLRTYICHIIFKTLFEVGFV
UniRef90_L5K685_1_440             QGS-------IKKSS-SSSKGTKKFRLEGTLLRTYICHIVFKTLFEVGFV
UniRef90_F6VG96_1_441             QCS-------IKKGG-GGSKGTKKFRLEGTLLRTYICHIVFKTLFEVGFI
UniRef90_P55917_1_440             QGS-------VKKSS-SSSKGTKKFRLEGTLLRTYVCHIIFKTLFEVGFI
UniRef90_UPI000329268E_1_442      QGS-------LKKSS-SSSKGTKKFRLEGTLLRTYICHIIFKTLFEVGFV
UniRef90_G3UBH4_1_410             QGS-------IKKSS-SS-RSTKKFRLEGTLLRTYICHIIFKTLFEVGFI
UniRef90_I3N7I6_1_431             QGS-------VRKGS-GSSQGAKKFRLEGTLLRTYLCHIVFKTLFEVGFV
UniRef90_G3X210_1_429             QGS-------TKKSS-NSTKGTKKFRLEGTLLRTYICHIIFKTLFEVGFI
UniRef90_F7BI06_1_372             QGS-------TKKSS-NSTKGTKKFRLEGTLLRTYICHIIFKTLFEVGFI
UniRef90_UPI000333FA9E_1_424      QGS-------LKKGS-SCSRSTKQFRLEGTLLRTYVCHVIFKTLFEVGFI
UniRef90_K7EY71_1_406             QED-------IRNTNEINPKGAKKFRLEGTLLGTYICHIIFKAIFEVGFI
UniRef90_M7BCA4_1_394             QES-------TRNTNEINPKGAKKFRLEGTLLGTYICHIIFKAIFEVGFI
UniRef90_P36381_1_400             QNK-------GN-----NPDGTKKFRLEGTLLRTYILHIIFKTLFEVGFI
UniRef90_H2MUH4_1_428             QGS-------VRTTKETSTKGSKKFRLEGTLLRTYICHIIFKTLFEVGFV
UniRef90_UPI00022B4A0D_1_396      QGS-------VRTTKETSTKGSKKFRLEGTLLRTYICHIIFKTLFEVGFV
UniRef90_H3D8V1_1_361             QGS-------VRTTKETSTKGSKKFRLEGTLLRTYICHIIFKTLFEVGFV
UniRef90_G3NHJ7_1_420             QGS-------VRTTKETSTKGSKKFRLEGTLLRTYICHIIFKTLFEVGFV
UniRef90_Q503J6_1_391             QGS-------VRTAKETSTKGSKKFRLEGTLLRTYICHIIFKTLFEIGFV
UniRef90_F6QCF2_1_438             QGS-------IRTTKETSTKGTKKFRLEGTLLRTYICHIIFKTLFEVGFV
UniRef90_UPI00034FAB61_1_453      QGS-------IRTTKETSTKGTKKFRLEGTLLRTYICHIIFKTLFEVGFV
UniRef90_UPI0001DE8510_1_439      QGS-------IRTTKETSTKGTKKFRLEGTLLRTYICHIIFKTLFEVGFV
UniRef90_H3A837_1_370             QGS-------VRTTKDTSTKATKKFRLEGTLLRTYICHIVFKTLFEVGFV
UniRef90_G1KPB7_1_391             QKS-------P-----VSTKGTKRFRLEGTLLRTYICHIFFKTLFEVGFI
UniRef90_B0S6Z4_1_382             QGS-------VRTAKETSTKGSKKFRLEGTLLCTYICHIIFKALFEIGFV
UniRef90_G1PZ72_1_426             ---------------LSWALPLRAPRLEGPLLRTYVGHIACKSLLEAGFV
UniRef90_UPI000155FB82_1_448      Q------------DTPPVRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_F6U7L2_1_428             Q------------DTPPVRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI0002C6341D_1_440      ---------------PPVRDDRGKVRITGALLRTYVFNIIFKTLFEVGFI
UniRef90_M3Z8M0_1_445             Q-----------KDKPPVRDDRGKIRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_G1Q1M8_1_411             Q-----------KDKFILQDNRGKVRIAGALLRTYIFNIIFKTLFEVGFI
UniRef90_G1PYG2_1_394             Q-----------KNRPLVRDDQGKVLIAGALLRTYIFNIIFKMLFEVGFI
UniRef90_L5L5Q1_1_430             Q-----------RDRSPVRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI0002BCF55A_1_410      G-----------QDRPPVRDDRGKVRLAGALLRTYVFNIIFKTLFEVGFI
UniRef90_P41987_1_407             H-----------QDPAPVRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_J9JHI9_1_433             G-----------QKDRPLRDDRGRVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_Q9Y6H8_1_435             -------------DNPSSRDDRGRVRMAGALLRTYVFNIIFKTLFEVGFI
UniRef90_G3QHB2_1_399             -------------DNPSSRDDRGRVRMAGALLRTYVFNIIFKTLFEVGFI
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UniRef90_F7B1T8_1_432             -------------DRPSSREDRGRVRMAGALLRTYVFNIIFKTLLEVGFI
UniRef90_L9L2D3_1_460             R-----------EDPGKVRDDRGKVRIAGALLRTYVFNVIFKTLFEVGFI
UniRef90_Q64448_1_417             S-----------PRDPPLRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_G3H8J5_1_417             S-----------PRDPPLRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI0003333DA4_1_405      G--------------IPVRDDRGKVRIRGALLRTYVFNIIFKTLFEVGFI
UniRef90_I3NC37_1_417             S-----------QDKTVVRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_H0XD37_1_430             --------------KLPVRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_G1U3S9_1_407             K-----------PAAP-VRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI00032AEFC1_1_413      L-----------PAAP-VRD--GKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI00034F30A8_1_402      A-----------PDQAPGSEERGRVRMAGALLRTYVFNVIFKTLFEVGFI
UniRef90_UPI0003340A67_1_370      T-----------QELA-GREERGRVRMAGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI0002234D0E_1_449      K-----------REKLPVRDDRGRVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_G3TTN5_1_429             K-----------REKLPVRDDRGRVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI0002C457ED_1_447      K-----------RKKPPVRDDRGRVQIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI000333D50E_1_427      K-----------RQKLPIRDDRGRVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI0003343FBC_1_423      A-----------KDRPPALDELGRVRIAGALLRTYVFNIVFKMLFEVGFI
UniRef90_F7G5V2_1_446             E----------KKERPPIRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_G3VY19_1_428             E----------KKEKPPIRDDRGKVRIAGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI000155BBAC_1_459      EPLLGREVAGGGKERPPVRDEWGKVRIAGALLRTYVFNIVFKTLFEVGFI
UniRef90_F7ETY8_1_425             EPLLGREVAGGGKERPPVRDEWGKVRIAGALLRTYVFNIVFKTLFEVGFI
UniRef90_I3KXW1_1_474             GGGGG---GGGKKEKPPIRDEHGKIRIRGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI00022B3AE8_1_449      GGGGG---GGGKKEKPPIRDEHGKIRIRGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI0002A48057_1_447      --------GGGKKEKPPIRDEHGKIRIRGALLRTYVFNIIFKTLFEVGFI
UniRef90_H2MCD5_1_421             --------GGGKKEKPPIRDEHGKIRIRGALLRTYVFNIIFKTLFEVGFI
UniRef90_H2UTF3_1_420             --------GGGKKEKPPIRDEHGKIRIRGALLRTYVFNIIFKTLFEVGFI
UniRef90_UPI000298F1F6_1_460      --------GGGKKEKPPIRDEHGKIRIRGALLRTYVFNIIFKTLFEVGFI
UniRef90_H3DE08_1_376             --------GGGRKEKPPIRDEHGKIRIRGALLRTYVFNIIFKTLFEVGFI
UniRef90_Q8JFD2_1_434             PGGRG---GGGKKEKPPIRDEHGKIRIRGALLRTYVFNIIFKTLFEVGFI
UniRef90_H2T4Y1_1_438             GSR-----GGGKKEKPPIRDEHGKIRIRGALLRTYIFNIIFKTLFEVGFI
UniRef90_H2T4Y2_1_428             GSR-----GGGKKEKPPIRDEHGKIRIRGALLRTYIFNIIFKTLFEVGFI
UniRef90_H3BZL0_1_378             GGR-----GGGKKEKPPIRDEHGKIRIRGALLRTYIFNIIFKTLFEVGFI
UniRef90_I3K1N0_1_478             --------GGGKKEKPPIRDEHGKIRIRGALLRTYIFNIIFKTLFEVGFI
UniRef90_H2LFL5_1_470             --------KGGKKDKRPIRDEHGKIRIRGALLRTYIFNIIFKTLFEVGFI
UniRef90_M7BWJ7_1_486             NNSSTNKEPFPKKEKPPIRDERGKIRISGALLRTYVFNIIFKTLFEIGFI
UniRef90_K7F163_1_492             NNNSTTKEEPPKKEKPPIRDERGKIRIGGALLRTYVFNIIFKTLFEVGFI
UniRef90_H0ZM32_1_512             SNVKDQSIVKRGKEKLPIRDERGRIRMGGALLRTYVFNIIFKTLFEVGFI
UniRef90_H3AH16_1_396             -----------KKQKLPIRDERGKIRISGALLRTYVFNIIFKTLFEVGFI
UniRef90_B0BM18_1_388             -----------KKEKPPIRDERGKIRIGGALLRTYVFNIIFKTLFEIGFI
UniRef90_Q4S8R0_1_345             -----------KPKKAPIKDNQGHVRLQGALLRTYVFNIIFKTLFEVAFI
UniRef90_I3KYH7_1_341             -----------KDKKPSVKDKQGHARLQGALLRTYVFNIIFKTLFEVAFI
UniRef90_H2M0G7_1_345             -----------AAKKTSVKDNQGHVRLQGALLRTYVFNIIFKTLFEVAFI
UniRef90_H3A471_1_360             P----------KNPKVSIRDDQGKIRMRGAILRTYVFNIIFKTLFEVGFI
UniRef90_Q6GLA5_1_353             N----------KPAKPPVKDDLGKVRLRGALLRTYVFNVIFKTMFEVGFI
UniRef90_UPI0002A4A1D5_1_346      A----------KPNKPPIRDEKGRVRLQGELLRTYVFNVIFKTLFEVGFI
UniRef90_S4RXA6_1_456             P----------PKLRKTYVNDQGKVCIKGALLRTYVLSIFSRTIFEVGFI
UniRef90_P16863_1_360             ------------------LEEHGKVKMRGGLLRTYIISILFKSVFEVGFI
UniRef90_H2LU51_1_404             MK------------QLE-QGKLNKAPLRGSLLCTYVAHIVTRSVVEVSFM
UniRef90_I3KYL3_1_401             MR------------QLE-QGKLNKAPLRGSLLCTYVAHIVTRSVVEVSFM
UniRef90_G3NC44_1_402             MK------------LLE-QGKLNKAPLRGSLLCTYLVHIVTRSVVEVSFM
UniRef90_H2SSL2_1_392             MR------------QLE-QGKLNKAPLRGSLLCTYVAHIVTRSLVEVSFM
UniRef90_UPI0002C46B7E_1_433      LC------------QLE-QRKLNKAPLRGTLLCTYVIHIFTRSAVEVGFM
UniRef90_G3ULF1_1_432             LC------------QLE-QRKLNKAPLRGMLLCTYVIHIFTRSAVEVGFM
UniRef90_C9IYK1_1_407             LC------------QLE-KRKLNKAPLRGTLLCTYVIHIFTRSVVEVGFM
UniRef90_H0Y0G7_1_436             LC------------QLE-KRKLNKAPLRGTLLCTYVTHIFTRSVVEVGFM
UniRef90_L9JD22_1_408             LC------------QLE-QRKLNKAPLRGTLLCTYVIHIFTRSVVEVGFM
UniRef90_F1N617_1_436             LC------------QLE-QRKVNKVPLRGTLLCTYVIHIFTRSVVEVGFM
UniRef90_F1SV25_1_385             LY------------QLE-QWKLNKAPLRGTLLCTYVIHIFTRSVVEVGFM
UniRef90_L5JUH5_1_307             LY------------QLE-RRTLNKAPLRGTLLCTYVIHIFARSVVEVGFM
UniRef90_UPI00020369CA_1_441      LR------------QLD-QRKLNKAPLRGSLLCTYVIHIFTRSAVEVGFM
UniRef90_R4GLX1_1_405             LR------------QLD-QRKLNKAPLRGSLLCTYVIHIFTRSAVEVGFM
UniRef90_UPI00035A19E6_1_466      LR------------QLD-QRKLNKAPLRGSLLCTYVIHIFTRSAVEVGFM
UniRef90_F6WA84_1_463             LR------------QLE-QRKLNKAPLRGALLCTYVIHILTRSAVEIGFM
UniRef90_G1SG18_1_430             LR------------RLEEQKRIHKVPLKGCLLRTYVLHILTRSVLEVGFM
UniRef90_UPI00032B0E64_1_413      LR------------RLEEQKRIHKVPLKGCLLRTYVLHILTRSVLEVGFM
UniRef90_UPI0002C65D9D_1_412      LR------------RLEEQKRIHKVPLKGCLLRTYVLHILTRSVLEVGFV
UniRef90_F7CF28_1_383             LR------------RLEEQKRIHKVPLKGCLLRTYVLHILTRSVLEVGFI
UniRef90_Q969M2_1_435             LR------------RLEEQKRIHKVPLKGCLLRTYVLHILTRSVLEVGFM
UniRef90_L9JVZ3_1_406             LR------------RLEEQKRIHKVPLKGCLLRTYVLHILIRSVLEVGFM
UniRef90_I3M407_1_414             LK------------RLEEQKRIYKVPLKGCLLRTYVLHILTRSVLEVGFM
UniRef90_L5JMB7_1_435             LS------------GLEEQKRIHKVPLKGCLLRTYVLHILTRSVLEVGFI
UniRef90_L8J083_1_417             LR------------KLEEQKRIQKVPLKGCLLRTYVLHVLTRSVLEVGFM
UniRef90_UPI0002BCCFF6_1_421      LR------------KLEEQKKIQKVPLKGCLLRTYVLHILTRSVLEVGFM
UniRef90_F1RY20_1_421             LR------------KLEEQKRIQKVPLKGCLLRTYVLHILTRSVLEVGFM
UniRef90_UPI0002C59166_1_412      LK------------RLEEQKRIHKVPLKGCLLRTYILHILTRSVMEVGFM
UniRef90_G3TBX7_1_436             LR------------MLEEQKRIYKVPLKGCLLRTYILHILTRSMLEIGFM
UniRef90_G3GSS7_1_405             LR------------RLEEQKRIHKVPLRGCLLRTYILHILTRSMLEVGFM
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UniRef90_UPI0003316158_1_413      LR------------RLEEHRRVQKVPLRGCLLRTYVLHVLTRSVLEVGFM
UniRef90_G3WUN4_1_443             LR------------SLEEQRKVHKAPLKGCLLRTYILHILIRSVLEVGFM
UniRef90_F6W379_1_264             LR------------KLEEQRKVNKAPLRGSLLRTYVLHILTRSVVEVAFM
UniRef90_M7BL54_1_431             LR------------KLEEQKKVNKAPLRGSLLRTYILHILTRSAVEVGFM
UniRef90_UPI0002B44362_1_276      LR------------KLEEQKKVNKAPLRGSLLRTYVLHILTRSVVEVGFM
UniRef90_UPI000298933C_1_429      LR------------KLDEQKRVRKAPLRGSLLRTYVLHILTRSAVEVGFI
UniRef90_H3CDZ2_1_426             LR------------KLDEQKRVRKAPLRGSLLRTYVLHILTRSVVEVAFI
UniRef90_I3IZH7_1_440             LR------------KLDEQKKVRKAPLRGSLLRTYVFHILTRSVVEVGFI
UniRef90_E7F3P4_1_389             LR------------KLEEQKKVRKAPLRGSLLRTYVFHILTRSVVEVGFI
                                                              * :* **:  :  :   *  *:

UniRef90_UPI0002C691BE_1_358      VGQYLLYGIFLNTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAGLS
UniRef90_F7BKC0_1_358             VGQYLLYGIFLDTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAGLS
UniRef90_Q0VCR2_1_359             VGQYLLYGVFLDTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAGLS
UniRef90_G3TUX5_1_358             VVQYLLYGIFLDTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAALS
UniRef90_L9JKN2_1_358             VGQYLLYGIFLSTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAALS
UniRef90_P36382_1_358             VGQYFIYGIFLTTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAALS
UniRef90_UPI0003315E33_1_350      VGQYLLYGIFLAPLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAALS
UniRef90_UPI000333FB64_1_358      VGQYLLYGILLDTLHVCHRSPCPHHVNCYVSRPTEKNVFIVFMLAVAGLS
UniRef90_UPI000334540D_1_357      VGQYLLYGIFLDTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAGLS
UniRef90_L5K3R8_1_358             VGQYLLYGVFLDTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAGLS
UniRef90_G1TQ37_1_358             VGQYLLYGIFLHTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAGLS
UniRef90_UPI0001776F40_1_352      VGQYLLYGIFLDTLHVCRRSPCPHPVNCYISRPTEKNVFIVFMLAVAGLS
UniRef90_G3H2Q9_1_358             VGQYLLYGIFLDTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAALS
UniRef90_Q01231_1_358             VGQYLLYGIFLDTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMMAVAGLS
UniRef90_G5BBL6_1_357             VGQYFLYGIFLNTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAGLS
UniRef90_H0WCZ7_1_358             VGQYFLYGIFLNTLHVCRRSPCPHPVNCYVSRPTEKNVFIVFMLAVAGLS
UniRef90_G3X1A3_1_358             VGQYFLYGIFLETLHVCRRKPCPHPVNCYVSRPTEKNVFIVFMLAVGGLS
UniRef90_H0ZTI1_1_370             VGQYVLYGIFLETLYICQRAPCPHPVNCYVSRPTEKNVFIVFMLAVAVLS
UniRef90_P18860_1_369             VGQYILYGIFLETLYICQRAPCPHPVNCYVSRPTEKNVFIIFMLAVAVLS
UniRef90_G1KPB5_1_370             VGQYMLYGIFLETLYVCNRQPCPHPVNCYVSRPTEKNIFIVFMLAVAALS
UniRef90_K7FWT6_1_369             VGQYILYGIFLKTLYICHREPCPHPVNCYVSRPTEKNVFIIFMLSVAALS
UniRef90_F1QL21_1_400             VIQYMMYGIFLDALYPCSMLPCPNPVNCYMSRPTEKNVFIVFMLVVAAVS
UniRef90_UPI0002A497DC_1_408      CLQYIMYGIFLNPLYVCKAWPCPHTVNCYVSRPTEKNIFIVFMLAVSAVS
Input_protein_seq                 VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVASVS
UniRef90_UPI00027FC10C_1_397      VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVASVS
UniRef90_L9JGQ0_1_441             VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVAFVS
UniRef90_P28236_1_440             VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVAFVS
UniRef90_G5BBL7_1_440             VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVAFVS
UniRef90_M3XED1_1_440             VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVASVS
UniRef90_L5K685_1_440             VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVASVS
UniRef90_F6VG96_1_441             VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVASVS
UniRef90_P55917_1_440             VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVASVS
UniRef90_UPI000329268E_1_442      VGHYFLYGFQILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVASVS
UniRef90_G3UBH4_1_410             VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTVFILFMLSVASVS
UniRef90_I3N7I6_1_431             VGHYFLYGFRILPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLSVASVS
UniRef90_G3X210_1_429             VGHYFLYGFRILPLYQCSRWPCPNVVDCFVSRPTEKTIFILFMLSVACVS
UniRef90_F7BI06_1_372             VGHYFLYGFRILPLYQCSRWPCPNVVDCFVSRPTEKTIFILFMLSVASVS
UniRef90_UPI000333FA9E_1_424      VGHYFLYGYHILPLYRCSRWPCPNVVDCFVSRPTEKTIFIVFMLSVASVS
UniRef90_K7EY71_1_406             VGQYFLYGFRILPLYRCGRWPCPNLVDCFVSRPTEKTVFIMFMLAVASVS
UniRef90_M7BCA4_1_394             VGQYFLYGFRILPLYRCGRWPCPNLVDCFVSRPTEKTVFIMFMLAVASVS
UniRef90_P36381_1_400             VGQYFLYGFRILPLYRCGRWPCPNLVDCFVSRPTEKTIFIMFMLVVAAVS
UniRef90_H2MUH4_1_428             VGQYFLYGFRILPLYKCSRWPCPNTVDCFVSRPTEKTVFIIFMLAVACVS
UniRef90_UPI00022B4A0D_1_396      VGQYFLYGFRILPLYKCSRWPCPNTVDCFVSRPTEKTVFIIFMLAVACVS
UniRef90_H3D8V1_1_361             VGQYFLYGFRILPLYKCSRWPCPNTVDCFVSRPTEKTVFIIFMLAVACVS
UniRef90_G3NHJ7_1_420             VGQYFLYGFRILPLYKCSRWPCPNTVDCFVSRPTEKTVFIIFMLAVACVS
UniRef90_Q503J6_1_391             VGQYYLYGFRILPLYKCSRWPCPNTVDCFVSRPTEKTVFIIFMLAVACVS
UniRef90_F6QCF2_1_438             VGQYFLYGFWIKPLYRCSRWPCPNTVDCFVSRPTEKTIFITFMLAVAAVS
UniRef90_UPI00034FAB61_1_453      VGQYFLYGFWIKPLYRCSRWPCPNTVDCFVSRPTEKTIFITFMLAVAAVS
UniRef90_UPI0001DE8510_1_439      VGQYFLYGFWIKPLYRCSRWPCPNTVDCFVSRPTEKTIFITFMLAVAAVS
UniRef90_H3A837_1_370             VGQYFLYGFHILPLYRCGRWPCPNIVDCFVSRPTEKTVFIMFMLAVACVS
UniRef90_G1KPB7_1_391             VGQYFLYGFRILPLYRCGRWPCPNLVDCFVSRPTEKTIFIMFMLVVASVS
UniRef90_B0S6Z4_1_382             VGQYFLYGFRILPLYKCSRWPCPNTVDCYVSRPTEKTIFIIFMLAVACVS
UniRef90_G1PZ72_1_426             AGHYLLYGFRIPPLYRCSRWPCPNVVDCFVSRPTEKTIFILFMLCVAAVS
UniRef90_UPI000155FB82_1_448      AGQYFLYGFQLKPLYRCDRWPCPNTVDCFISRPTEKTIFIIFMLAVACLS
UniRef90_F6U7L2_1_428             AGQYFLYGFQLKPLYRCDRWPCPNTVDCFISRPTEKTIFIIFMLAVACLS
UniRef90_UPI0002C6341D_1_440      AGQYFLYGFELKPLYRCDRWPCPNTVDCFISRPTEKTIFILFMLAVACVS
UniRef90_M3Z8M0_1_445             AGQYFLYGFELKPLYRCDRWPCPNTVDCFISRPTEKTIFIIFMLAVACVS
UniRef90_G1Q1M8_1_411             AGQYFLYGFELKPLYHCDRWPCPNIVDCFISRPTEKTVFIIFMLVVACLS
UniRef90_G1PYG2_1_394             VGQYYLYGFQLKPLYHCNRWPCPNMVDCFISRPTEKTVFIIFMLVVACLS
UniRef90_L5L5Q1_1_430             AGQYFLYGFQLNPLYRCDRWPCPNTVDCFISRPTEKTIFIIFMLAVACLS
UniRef90_UPI0002BCF55A_1_410      AGQYFLYGFQLKPLYRCDRWPCPNTVDCFISRPTEKTIFILFMLAVACVS
UniRef90_P41987_1_407             AGQYFLYGFQLKPLYRCDRWPCPNTVDCFISRPTEKTIFILFMLAVACVS
UniRef90_J9JHI9_1_433             AGQYFLYGFELKPLYRCDRWPCPNTVDCFISRPTEKTIFIIFMLAVACVS
UniRef90_Q9Y6H8_1_435             AGQYFLYGFELKPLYRCDRWPCPNTVDCFISRPTEKTIFIIFMLAVACAS
UniRef90_G3QHB2_1_399             AGQYFLYGFELKPLYRCDRWPCPNTVDCFISRPTEKTIFIIFMLAVACAS
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UniRef90_K7F163_1_492             LLLNMLEMYHLGWKKLKQGMTNQYR-PDPHPAAMTPATTVRDSKPLTLPL
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UniRef90_Q4S8R0_1_345             LLLNLVEMYHLGFTKCHQGL--RYRRSKTRKQSPKALHEP-----VMPFV
UniRef90_I3KYH7_1_341             LLLNLVEMYHLGFTKCHQGL--RYRSSKAAREGSKALSEP-----VMPFV
UniRef90_H2M0G7_1_345             LLLNLVEMYHLGFTKCHQGL--RYRRSRATNAAPKSPNEA-----VPPFA
UniRef90_H3A471_1_360             LLLNLIEMYYLGFTRCCQGLTNRYGSETGSKPCSEAPSEN-----AVPFV
UniRef90_Q6GLA5_1_353             LLLNLIEVYYLGFTKCRQGLS-PSHNETVTKLPTKTSSTT-----LTHII
UniRef90_UPI0002A4A1D5_1_346      LLLNLVEIYHLGFTKCRQGITFRRRQE-VAKSVSKQTNEA-----VVPIV
UniRef90_S4RXA6_1_456             LLLNLLEMYHLGWKKIRKGLGKRYEKMSQQQQQQQQQSAMKHHPPSLDQ
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UniRef90_I3KYL3_1_401             LFLSLLEIMHLSFKRIKKGILD--YYPHLKDDLDDYYVSKSKKDSVVHQV
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UniRef90_F1SV25_1_385             VFLNVLEICHLGFKKIKRGIWG---QYKLKDKQNEFCTNKSKQNLAKYQN
UniRef90_L5JUH5_1_307             LFLNVLEIFHLGFKKVKRGLWG---RYKLKDEHNEFYK--SKQNLAKYQS
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UniRef90_Q969M2_1_435             LLLNILEIFHLGIRKIMRTLYKK--SSSEGIEDETGPPFHLKKYSVAQQC
UniRef90_L9JVZ3_1_406             LLLNILEIFHLGIKTITRALYEK--SSSEGIEYESGPPFHSKKNAVPQQC
UniRef90_I3M407_1_414             LLLNVLEIFHLGIRKIMRALYEK--SSSGSIENERGPPFHLKKYSGIQPC
UniRef90_L5JMB7_1_435             LFLNVLEIFHLGIRKIMRALYEN--PSKEGIEDERGPPFHFKKYSVVQQC
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UniRef90_UPI0002BCCFF6_1_421      LFLNVLEIFHLGVRKIMRALYDK--SGGEGIEDERGPPFHLKKYSAAQQC
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UniRef90_G3TBX7_1_436             LFLNVLEIFHLGIRKIGRALYEK--PNSEVTEDERGPPFHLKKCSVAQQS
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UniRef90_F6W379_1_264             LFLNVLEIFHLGIRKIKQGLSGK--SN-----------------------
UniRef90_M7BL54_1_431             LFLNILEIIHLGIRKIKKTLHGR--QRREAVMAEETSICTLKKNSVVQQV
UniRef90_UPI0002B44362_1_276      LFLNILEIAHLGIKKIRKSLCG----------------------------
UniRef90_UPI000298933C_1_429      LFLNILEIFHLGVKRIKQSLYGY--KYRD----DESVYRSKKNSTVQQVC
UniRef90_H3CDZ2_1_426             LALNILEILHLGVKRIKQSLYGY--KYRD----DESVCRSKKNSTVQQVC
UniRef90_I3IZH7_1_440             LFLNLLEISHLGVKKIKQILYGY--KYGD----DESLCRSKKNSMVQQVC
UniRef90_E7F3P4_1_389             LFLNLLEIFHLGVKKIKQTIYGS--MYSD----DDSICRSKKNSMVQQVC
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UniRef90_G3TUX5_1_358             ----------------------------CTPPPDFNQCLENGPEGKFFN-
UniRef90_L9JKN2_1_358             ----------------------------CTPPPDFSQCLDNGPGGKFFN-
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UniRef90_G5BBL6_1_357             ----------------------------CTLPPDFTQCLENGPRGKFFS-
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UniRef90_G1KPB5_1_370             ----------------------------CTPPPDFNQCLAN-PGGKYIS-
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UniRef90_Q503J6_1_391             SSIQKAKG-------------------YKLLEEDKST--SHFFPLTEVGG
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UniRef90_M3Z8M0_1_445             SAPP---------------------TVTIGFPPYYAHSASSLGQATGAGY
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UniRef90_P41987_1_407             SAPP---------------------AVTIGFPPYYAPSASSLGQASAPGY
UniRef90_J9JHI9_1_433             SEAP---------------------AVTIGFPPFSAPSASSPGQATAAGY
UniRef90_Q9Y6H8_1_435             SRPP---------------------AVAIGFPPYYAHTAAPLGQARAVGY
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UniRef90_G3H8J5_1_417          SGLP---------------------SASMGFPPFYTHPACPPVQARATGF
UniRef90_UPI0003333DA4_1_405   PGPP---------------------SVSTGFLPYCTHPGCSPGQSRATKY
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UniRef90_H0XD37_1_430          SGPA---------------------AVTIGFPPYYTQAPSSLGQARPAGY
UniRef90_G1U3S9_1_407          PGPP---------------------SVAIGFPPSYAH-AAALPQ--ERGK
UniRef90_UPI00032AEFC1_1_413   PGPP---------------------AVTIGFPPSYAHAAAALPQGPARAS
UniRef90_UPI00034F30A8_1_402   PGPA---------------------TVAIGFPPYYAHSASAPGQAAPKGY
UniRef90_UPI0003340A67_1_370   -------------------------AVPLGVSPCCVHTS--------QGH
UniRef90_UPI0002234D0E_1_449   SVPP---------------------TISIGFPPYYTHSASSLGQTMATGY
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UniRef90_G3VY19_1_428          SAPP-----------------------TVGFPPYYTQSASSLGQATTAGY
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UniRef90_H2MCD5_1_421          PSSLSYP----------------PNYTD------VTAGSGAFLPPMDPAA
UniRef90_H2UTF3_1_420          PSS--YP----------------PNYTD------VTAGSGAFLQPVAPPA
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UniRef90_H2T4Y2_1_428          PS-----------------------------ARRVAEEGGTYSPPEASLA
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UniRef90_F7CF28_1_383          MICSSLPE-------------------KISLLQANN-----QQQVIQVNV
UniRef90_Q969M2_1_435          MICSSLPE-------------------RISPLQANN-----QQQVIRVNV
UniRef90_L9JVZ3_1_406          MICSSLPE-------------------RMSLLQANN-----QQQVIQVNV
UniRef90_I3M407_1_414          TICSSLPE-------------------RISPLQTNN-----QQKVIQVNV
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UniRef90_F1RY20_1_421          MISPPFPE-------------------RISLLQANN-----QQQVIQVNV
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UniRef90_F6W379_1_264             --------------------------------------------------
UniRef90_M7BL54_1_431             CIMSNSSP-------------------QSSYKLLPN-----QQGGLPVYL
UniRef90_UPI0002B44362_1_276      ---------------------------------------------QPLWP
UniRef90_UPI000298933C_1_429      VLTNSSPQ-------------------RLVQLTQMTCSALPDTHGETLAI
UniRef90_H3CDZ2_1_426             LLASSSPQ-------------------RLVQLTQVTCSALPNTN----AT
UniRef90_I3IZH7_1_440             VLSNSSPQ-------------------RLIQLTQMTCSAMPETQVESQPL
UniRef90_E7F3P4_1_389             FLTNSSPQ-------------------KQLHLTHTSLAMAPDGQMVPLPI


UniRef90_UPI0002C691BE_1_358      PFSNK-------------------MASQQNTDNLAT--------------
UniRef90_F7BKC0_1_358             PFSNK-------------------MASQQNIDNLAT--------------
UniRef90_Q0VCR2_1_359             PFSNK-------------------MASQQNTDNLST--------------
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UniRef90_L9JKN2_1_358             PFSNN-------------------TASQQNTDNLAT--------------
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UniRef90_Q01231_1_358             DFSNN-------------------MGSRKNPDALAT--------------
UniRef90_G5BBL6_1_357             PLKNN-------------------MASQQNTDNMAT--------------
UniRef90_H0WCZ7_1_358             PFSNN-------------------TVSQQNTDNLAT--------------
UniRef90_G3X1A3_1_358             HFSNN-------------------LASRQNTDNLAT--------------
UniRef90_H0ZTI1_1_370             PFSNK-------------------MASQQNTANFAT--------------
UniRef90_P18860_1_369             PFSNK-------------------MASQQNTANFAT--------------
UniRef90_G1KPB5_1_370             PFSNK-------------------MASQQNTANFAT--------------
UniRef90_K7FWT6_1_369             PFSNK-------------------MASQQNTANFAT--------------
UniRef90_F1QL21_1_400             LHSHH-------------------LHHIHQTCQPFT--NH----------
UniRef90_UPI0002A497DC_1_408      FPSHL-------------------LVHQQNSENTVTEKNK----------
Input_protein_seq                 VETSP------------------LPAKPFNQFEEKI--------------
UniRef90_UPI00027FC10C_1_397      VETTP------------------VSAKPFNQFEEKI--------------
UniRef90_L9JGQ0_1_441             VETSP------------------LSAKPFSQFAEKM--------------
UniRef90_P28236_1_440             VETSP------------------LSAKPFSQFEEKI--------------
UniRef90_G5BBL7_1_440             VQTSP------------------LSAKPFSQFEEKT--------------
UniRef90_M3XED1_1_440             VETSP------------------LSAKPFAQFEEKM--------------
UniRef90_L5K685_1_440             VETSP------------------LSAKPFGQFEEKM--------------
UniRef90_F6VG96_1_441             VETSP------------------LSAKPFSQFEEKM--------------
UniRef90_P55917_1_440             VEASP------------------LSAKPFSQFEEKV--------------
UniRef90_UPI000329268E_1_442      VETTP------------------LSAKPFHQFEEKI--------------
UniRef90_G3UBH4_1_410             VETSP------------------LSAKPFSQFEEKI--------------
UniRef90_I3N7I6_1_431             VETSP------------------LAAQPFGQFEEKV--------------
UniRef90_G3X210_1_429             VETRP------------------LAATPFSRFEEKI--------------
UniRef90_F7BI06_1_372             VETRP------------------LAATPFSRFEEKI--------------
UniRef90_UPI000333FA9E_1_424      VESSP------------------LADKPFSQFEEKM--------------
UniRef90_K7EY71_1_406             VETAP------------------PPS-SFNDLDEKL--------------
UniRef90_M7BCA4_1_394             VEAGP------------------PPS-SFKDLDEKL--------------
UniRef90_P36381_1_400             VEPSP------------------LPS-AFNEFEEKI--------------
UniRef90_H2MUH4_1_428             MEAGR------------------GAS-PFHGLEEKG--------------
UniRef90_UPI00022B4A0D_1_396      MEAGR------------------GAP-PFQGLEEKV--------------
UniRef90_H3D8V1_1_361             MEAGR------------------GSP-PFQGLEEKP--------------
UniRef90_G3NHJ7_1_420             MEAGR------------------GPP-PFLGLEEKA--------------
UniRef90_Q503J6_1_391             MEAGR------------------LPA-SYEPFEEKSD-------------
UniRef90_F6QCF2_1_438             LEASP------------------LPA-HFNGYDK----------------
UniRef90_UPI00034FAB61_1_453      LEASP------------------LPA-HFNGYDK----------------
UniRef90_UPI0001DE8510_1_439      LEASP------------------LPA-HFNGYDK----------------
UniRef90_H3A837_1_370             VETTQ------------------LPA-PFAGFEEKE--------------
UniRef90_G1KPB7_1_391             AETTP------------------VPP-SLNEFEEKM--------------
UniRef90_B0S6Z4_1_382             MEEGQ------------------FFLPQLEKEQKSSQEAI----------
UniRef90_G1PZ72_1_426             GEASP------------------RSAQPFRRLEERR--------------
UniRef90_UPI000155FB82_1_448      PGAPP-------------------PPTDFKMVALS-----------EAHR
UniRef90_F6U7L2_1_428             PGAPP-------------------PPTDFKMVALS-----------EAHR
UniRef90_UPI0002C6341D_1_440      PGAPP-------------------PATDFKMVALS-----------EAHG
UniRef90_M3Z8M0_1_445             PGAPP-------------------PATDFDMAALS-----------EAPG
UniRef90_G1Q1M8_1_411             --APP-------------------PATDFNMAGLS-----------QTQG
UniRef90_G1PYG2_1_394             --APP-------------------PATDFNMAALS-----------QTQG
UniRef90_L5L5Q1_1_430             PGAPL-------------------PATDVTKEALS-----------EAQG
UniRef90_UPI0002BCF55A_1_410      PEPPP-------------------P------AALP-----------GTPG
UniRef90_P41987_1_407             PEPPP-------------------P------AALP-----------GTPG
UniRef90_J9JHI9_1_433             PGAPP-------------------L------AADF-----------HPAA
UniRef90_Q9Y6H8_1_435             PGAPP-------------------PAADFKLLALT-----------EARG
UniRef90_G3QHB2_1_399             PGAPP-------------------PAADFRMLALT-----------EARG
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UniRef90_F7B1T8_1_432             PGAPP-------------------PAADFKLLALT-----------EARG
UniRef90_L9L2D3_1_460             PGAPPG------------------PAADFKVGALT-----------EAQG
UniRef90_Q64448_1_417             PGAPL-------------------SPADFTVVTLN-----------DAQG
UniRef90_G3H8J5_1_417             PEAPP-------------------PPADFTVVTLN-----------DAQD
UniRef90_UPI0003333DA4_1_405      PGTPP-------------------PAADFTVVSLK-----------EAQG
UniRef90_I3NC37_1_417             PGAPP-------------------PAADFKMVALN-----------ESQG
UniRef90_H0XD37_1_430             PGAPPP------------------PAADFKVVALS-----------EVPE
UniRef90_G1U3S9_1_407             G-QAL-------------------PTTEQNWAPTP-------------VA
UniRef90_UPI00032AEFC1_1_413      P-PAG-------------------DSTEVALVAEPEKGRL------LPTS
UniRef90_UPI00034F30A8_1_402      PGAPL-------------------PTADFRTVAQG-----------EAHG
UniRef90_UPI0003340A67_1_370      SGTPL-------------------PATDLGLEAPG-----------EACV
UniRef90_UPI0002234D0E_1_449      PGAPP-------------------PPADFKMVPLS-----------EEQG
UniRef90_G3TTN5_1_429             PGAPP-------------------PPADFKMVPLS-----------EEQG
UniRef90_UPI0002C457ED_1_447      LGAPP-------------------PPTDFKMVALS-----------EEQG
UniRef90_UPI000333D50E_1_427      PGAPP-------------------PPTDFKMVALA-----------EERG
UniRef90_UPI0003343FBC_1_423      PGTTL-------------------PATNFKTVALA-----------EVHG
UniRef90_F7G5V2_1_446             PGAPP-------------------QPTEFRMVTLP-----------EERS
UniRef90_G3VY19_1_428             PGAPP-------------------QPTEFRMVTLP-----------EEHS
UniRef90_UPI000155BBAC_1_459      PGAPG-------------------PPTEFKMAGLP-----------KERS
UniRef90_F7ETY8_1_425             ----------------------------FKMAGLP-----------KERS
UniRef90_I3KXW1_1_474             VPSA-----------------AEFKMDDLQQEESLQSSP-----------
UniRef90_UPI00022B3AE8_1_449      VPSA-----------------AEFKMDDLQQEESLQSSP-----------
UniRef90_UPI0002A48057_1_447      LSSA-----------------EE--MEALHQEESIHQAPP----------
UniRef90_H2MCD5_1_421             LSSA-----------------EE--MEALHQEESIHQAPP----------
UniRef90_H2UTF3_1_420             VPST-----------------TEFKTDDLQREPPRHQPS-----------
UniRef90_UPI000298F1F6_1_460      VPST-----------------TEFKTDDLQREPPRHQPS-----------
UniRef90_H3DE08_1_376             PP------------------------------------------------
UniRef90_Q8JFD2_1_434             APST-----------------AEFKMDPLREELEE---------------
UniRef90_H2T4Y1_1_438             VMSS-------PTGLKMD--GTVFHPDDFLLEALPPSFCS----------
UniRef90_H2T4Y2_1_428             VMSS-------PTGLKMD--GTVFHPDDFLLEALPPSFCS----------
UniRef90_H3BZL0_1_378             VMSS-------PASLKMD--GSAFHPDDLLLEALPASFCG----------
UniRef90_I3K1N0_1_478             VTSLNAATTPVPAGMKMD--STMFHPDDFLLDAA--SFYS----------
UniRef90_H2LFL5_1_470             GASS-------PAVIFNPNMATTPTPSELNLEVRSPSFST----------
UniRef90_M7BWJ7_1_486             LADYP---------------GAPPFSEEQHNTATPTPTSIPIPTPTSIPT
UniRef90_K7F163_1_492             LAGYS---------------GALPFAEELHKTATPIPASTPIPTPTLVPT
UniRef90_H0ZM32_1_512             MASYP---------------AAPQVPEERHHAVTPTPISTPVTIPTPIPT
UniRef90_H3AH16_1_396             AADFK---------------AMPPPAEEPHKPS-----------------
UniRef90_B0BM18_1_388             APDFK---------------ITSVPEEALESPS-----------------
UniRef90_Q4S8R0_1_345             SVT----------------------EPGSAYSPYS---------------
UniRef90_I3KYH7_1_341             GMP----------------------EPNSAYSPYN---------------
UniRef90_H2M0G7_1_345             NVA----------------------EPNSAYNPYN---------------
UniRef90_H3A471_1_360             PLPSM-------------------NENNSSFHPYN---------------
UniRef90_Q6GLA5_1_353             PLSP---------------------SKTTSNVMDS---------------
UniRef90_UPI0002A4A1D5_1_346      DLSPLS------------------KSTDSSFHPYH---------------
UniRef90_S4RXA6_1_456             ATRDLVAGGR----------LVAQGVDGQNWANWE------------EEE
UniRef90_P16863_1_360             YNKQASE---------------------QNWANYS------------AEQ
UniRef90_H2LU51_1_404             NGPN-------------------YPLLSASSAFVPIQ-------------
UniRef90_I3KYL3_1_401             NGPN-------------------YPLLNASSAFVPIQ-------------
UniRef90_G3NC44_1_402             NGPA-------------------YPLLNASSAFVPIK-------------
UniRef90_H2SSL2_1_392             NGPN-------------------YSLLNASSAFIPIQ-------------
UniRef90_UPI0002C46B7E_1_433      HTTV-------------------YPSLNSSSALQVDP-------------
UniRef90_G3ULF1_1_432             HKTV-------------------YPSFNSSSALQVDP-------------
UniRef90_C9IYK1_1_407             HTAV-------------------YPSLNSSSVFQPNP-------------
UniRef90_H0Y0G7_1_436             HTAE-------------------YPSLNSPSVFQANL-------------
UniRef90_L9JD22_1_408             HPAV-------------------YPSLNSSSAFQADP-------------
UniRef90_F1N617_1_436             HTAG-------------------YPSLN-PSAFQTDP-------------
UniRef90_F1SV25_1_385             HRAV-------------------YPSLN-SSVYQTDP-------------
UniRef90_L5JUH5_1_307             HTAV-------------------YPSLN-LSAFQADP-------------
UniRef90_UPI00020369CA_1_441      DTAI-------------------YPVLNSAPMFQSIQ-------------
UniRef90_R4GLX1_1_405             DTAI-------------------YPVLNSAPVFQPVQ-------------
UniRef90_UPI00035A19E6_1_466      DTML-------------------YPVLNSPSVFQSVQ-------------
UniRef90_F6WA84_1_463             NPTV-------------------YPGFSSPSVLQALQ-------------
UniRef90_G1SG18_1_430             PKSK--------------------TMWQIPQPRQPEA-------------
UniRef90_UPI00032B0E64_1_413      PKSK--------------------AMWQIPQPRQSEE-------------
UniRef90_UPI0002C65D9D_1_412      PKSK--------------------TMWQIQQPRQLEV-------------
UniRef90_F7CF28_1_383             PKSK--------------------TMWQIQQPRQLEV-------------
UniRef90_Q969M2_1_435             PKSK--------------------TMWQIPQPRQLEV-------------
UniRef90_L9JVZ3_1_406             PKSK--------------------SMWQIPQPRRLGI-------------
UniRef90_I3M407_1_414             PKSK--------------------SIWQIPQPPQLDV-------------
UniRef90_L5JMB7_1_435             PKSK--------------------TSWQIPQPRQLEV-------------
UniRef90_L8J083_1_417             PNSK--------------------TTWHIPQARQLDV-------------
UniRef90_UPI0002BCCFF6_1_421      PNSK--------------------TTWQIPQPRQLEV-------------
UniRef90_F1RY20_1_421             PKSK--------------------TTWQPPQPRQFEV-------------
UniRef90_UPI0002C59166_1_412      PKSK--------------------TMWQSSQPMQLGV-------------
UniRef90_G3TBX7_1_436             PKSE--------------------TIWQIPQAKRLEV-------------
UniRef90_G3GSS7_1_405             PRSK--------------------SMWQIPHPRQHEV-------------
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UniRef90_UPI0003316158_1_413      PKFN--------------------TMRQIPQPRQLEV-------------
UniRef90_G3WUN4_1_443             TEHK--------------------PAWQPNQHNQSEG-------------
UniRef90_F6W379_1_264             --------------------------------------------------
UniRef90_M7BL54_1_431             PPVQGYK-------------VLQAPADHCQQAVGMGA-------------
UniRef90_UPI0002B44362_1_276      P-------------------------------------------------
UniRef90_UPI000298933C_1_429      NVSHQ---------------NQEGSGA-TNQHPSHIG-------------
UniRef90_H3CDZ2_1_426             SLSHQ---------------NQEGSGN-ANQHPSHAC-------------
UniRef90_I3IZH7_1_440             NLALV---------------APQNLEG-HNISCRPSQ-------------
UniRef90_E7F3P4_1_389             YMQTAGHVVS--------NINPNGSVQPLRQDRLPSQ-------------


UniRef90_UPI0002C691BE_1_358      -------------EQVQDQEQIPGEG-FIHIRYAQ---------------
UniRef90_F7BKC0_1_358             -------------EQVRDQEQIPGEG-FIHIRYAQ---------------
UniRef90_Q0VCR2_1_359             -------------EQVRSQEQIQREG-FIHIRYAQ---------------
UniRef90_G3TUX5_1_358             -------------EQVRGQEEIPGEG-FINIRYAQ---------------
UniRef90_L9JKN2_1_358             -------------EQVQGQEQIPMEG-FIHVRYGQ---------------
UniRef90_P36382_1_358             -------------EQVRGQEQTPGEG-FIQVRYGQ---------------
UniRef90_UPI0003315E33_1_350      -------------EQVRGQDPLSRDG-FIHIHYDQ---------------
UniRef90_UPI000333FB64_1_358      -------------EQVRGHEEMPGEG-FTHLRYAQ---------------
UniRef90_UPI000334540D_1_357      -------------EQVRGQEQAPGDG-FIHVRYAQ---------------
UniRef90_L5K3R8_1_358             -------------EQVRGQEQVPGEG-FIHVHYSQ---------------
UniRef90_G1TQ37_1_358             -------------ERVRGREQVPGEG-FIHIRYDQ---------------
UniRef90_UPI0001776F40_1_352      -------------EQVQGQE--PG-----HIHYDQ---------------
UniRef90_G3H2Q9_1_358             -------------EEMPDQELISRDG-FIHMHYGQ---------------
UniRef90_Q01231_1_358             -------------GEVPNQEQIPGEG-FIHMHYSQ---------------
UniRef90_G5BBL6_1_357             -------------EQVQGHERIPGEG-FIHIHYGE---------------
UniRef90_H0WCZ7_1_358             -------------EQVRGQERIPGED-FIHIHYGE---------------
UniRef90_G3X1A3_1_358             -------------EQVQGREEAAGRA-FLHMQYAE---------------
UniRef90_H0ZTI1_1_370             -------------ERVHGQEDAAGEGPFIKSSYVE---------------
UniRef90_P18860_1_369             -------------ERVHSQEDAAGEGPFMKSSYME---------------
UniRef90_G1KPB5_1_370             -------------ERVQSQDDIIGEGPFIQVNYTQ---------------
UniRef90_K7FWT6_1_369             -------------ERVHSQEDAAGEGQFIQINYAQ---------------
UniRef90_F1QL21_1_400             LAHQQNSVNMAAERHHHSHDGLEPAVDFLQMHYGSPEARVR---------
UniRef90_UPI0002A497DC_1_408      IVAAVEEANFLQMSYYSPEWQSAQNGQIQDGVYLKSDSKCY---------
Input_protein_seq                 --------------STGPLGDLSRGYQETLPSYAQVGAQEVEGE------
UniRef90_UPI00027FC10C_1_397      --------------STGPLGDLSRGYEETLPSYAQVGVQEVEGE------
UniRef90_L9JGQ0_1_441             --------------STGPLADLSRGYQETLPSYAQVGAQEVEAE------
UniRef90_P28236_1_440             --------------GTGPLADMSRSYQETLPSYAQVGVQEVERE------
UniRef90_G5BBL7_1_440             --------------GTGPLADISRSYQETLPSYAQVGAQEVEGE------
UniRef90_M3XED1_1_440             --------------GPGPLGDLSRAYQETLPSYAQVGAQEGESG------
UniRef90_L5K685_1_440             --------------GTGPLGDLSRAYQETLPSYAQVGAQEVEAE------
UniRef90_F6VG96_1_441             --------------GTGPLGDLSRAYQETLPSYAQVGAQEVEGEG-----
UniRef90_P55917_1_440             --------------GPGPLGDLSRAYQETLPSYAQVGAQEGVEE------
UniRef90_UPI000329268E_1_442      --------------GTGPLGDLSRAYQETLPSYAQVGAQEVEGE------
UniRef90_G3UBH4_1_410             --------------GTGPLGDLSQVYQETLPSYAQVGALTTDGQ------
UniRef90_I3N7I6_1_431             --------------GAGPLADLARGYPETLPSYAQVGAQEGAGE------
UniRef90_G3X210_1_429             --------------GTGPLGDLSRAYTETLPSYAQVGEQEVEAER-----
UniRef90_F7BI06_1_372             --------------STGPLGDLSRAYTETLPSYAQVGEQEVEAER-----
UniRef90_UPI000333FA9E_1_424      --------------TAAPLGDLSQVCRAKLPSYAPVEVEDVEQP------
UniRef90_K7EY71_1_406             --------------GMGPVEDLSRTFDERLPSYAQAKEQKE---------
UniRef90_M7BCA4_1_394             --------------GMGPLEDLSRAFDERLPSYAQAEEQKE---------
UniRef90_P36381_1_400             --------------GMGPLEDLSRAFDERLPSYAQAKEPEE---------
UniRef90_H2MUH4_1_428             -------------EEVLPMEDITKVYDETLPSYAQTTATV----------
UniRef90_UPI00022B4A0D_1_396      -------------EEVLPMEDISKVYDETLPSYAQTTETG----------
UniRef90_H3D8V1_1_361             -------------EEVLPMEDISKVYDETLPSYTQTTETG----------
UniRef90_G3NHJ7_1_420             -------------EEVLPMGGISKAYDETLPSYAQTTETA----------
UniRef90_Q503J6_1_391             -------------EAMAPKKDMSKMYDETLPSYAQTTVIGPSAS------
UniRef90_F6QCF2_1_438             -------------GSTGLLEDISKGYDETLPSYRQAEELDG---------
UniRef90_UPI00034FAB61_1_453      -------------GSTGLLEDISKGYDETLPSYRQAEELDG---------
UniRef90_UPI0001DE8510_1_439      -------------GSTGLLEDISKGYDETLPSYRQAEELDG---------
UniRef90_H3A837_1_370             -------------NATGPLEDISKVYDETLPSYGQMTEQE----------
UniRef90_G1KPB7_1_391             --------------SMEHLEDIPSAFEEQLPSYVQRDEQEE---------
UniRef90_B0S6Z4_1_382             -------------LPTAPPVEETIICDETQPSFLQVTETLP---------
UniRef90_G1PZ72_1_426             --------------GAGLPGGLGGADPEALPSYAQVGAPGCELG------
UniRef90_UPI000155FB82_1_448      NGHPANFCNGNH-HLLMTEQNWANQEAEQQRSVRKASLPASTSASLTPPG
UniRef90_F6U7L2_1_428             NGHPANFCNGNH-HLLMTEQNWANQEAEQQ--------------------
UniRef90_UPI0002C6341D_1_440      KGHAAKFYNGNH-HLLMTEQNWANQEAEQQSSARKASPPVSASASLTPPG
UniRef90_M3Z8M0_1_445             KDHPAKFYNGNH-HLLMTEQNWANQEAEQQTSARRASLPASGSASLSPTG
UniRef90_G1Q1M8_1_411             KGHPDKFYNSNH-HLIMTEQNWANQEPGQQILP-----------------
UniRef90_G1PYG2_1_394             KGHPDKFYNSNH-HLIMTEQNWANQEPGQQAAP-----------------
UniRef90_L5L5Q1_1_430             KGHPDKFYDSSQ-HLLTAEQNWATQEAEQQLSVRKATPPPLS------PS
UniRef90_UPI0002BCF55A_1_410      KGHPVGSPGGHQ-HLLATAPNWAGREAEQQTSAGKASPP-----------
UniRef90_P41987_1_407             --TPGG--GGNQ-GLRARAQNWANREAEPQTSSRKASPP-----------
UniRef90_J9JHI9_1_433             --LPEAR-ARDQ-HLLMTEQNWANQEAEQHTSARKASG------------
UniRef90_Q9Y6H8_1_435             KGQSAKLYNGHH-HLLMTEQNWANQAAERQPPALKAYPAA----------
UniRef90_G3QHB2_1_399             KGQSAKLYNGHH-HLLMTEQNWANQAAERQPPALKAYAAA----------
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UniRef90_F7B1T8_1_432             RCPSAQLYHGHH-HLPLTEQNWAGRAAEQQRHELRAYPAA----------
UniRef90_L9L2D3_1_460             QGHPTKLYNG-H-HLLMTEQNWANQAAEQQSPARKDSPAA----------
UniRef90_Q64448_1_417             RNHPVKHCN--G-HHLTTEQNWTRQVAEQQTPASKPSSAA----------
UniRef90_G3H8J5_1_417             RGHPAKHCN--G-HHLITEQNWASRMAEQQTPASKASSAT----------
UniRef90_UPI0003333DA4_1_405      EGHPGKHN------LLMTEQNWASPAAEQQTLGSKAFPAA----------
UniRef90_I3NC37_1_417             KGHPAKLYNN-Q-HLLMTEQNWANQAAEHQTPARKASSAA----------
UniRef90_H0XD37_1_430             KGHPAKLYNGHH-HLLMPEQNWVNQAAEQLAPVLAPSLAS----------
UniRef90_G1U3S9_1_407             EGQP----------SSRKASPAASS-AAAPSPAG-SSASS----------
UniRef90_UPI00032AEFC1_1_413      EPNW----------ASPAAEPQAPSRKAAPSPGGSSSASS----------
UniRef90_UPI00034F30A8_1_402      EGHP----------LPMTAQNWASP--AWAPDAPIPPGRT----------
UniRef90_UPI0003340A67_1_370      QGHP----------LPVTAQTWVPPASAWVSTTPSPSGRA----------
UniRef90_UPI0002234D0E_1_449      KGHPARYYNSCH-HLLMTEQNWANQEAEKQASGRKPYPPVSTPAAPSPLS
UniRef90_G3TTN5_1_429             KGHPARYYNSCH-HLLMTEQNWANQEAEKQASGRKPYPPV----------
UniRef90_UPI0002C457ED_1_447      KGHPARYYN-CH-HLLMTEQNWANQEAEQQASGRKPCPLTPTPAAPCPLS
UniRef90_UPI000333D50E_1_427      KGHAARYCNRCH-HLLMTEQNWANQEAEQQASGRKPCPPVPTPVAPSFPS
UniRef90_UPI0003343FBC_1_423      KGHPAKVFSGSR-CLLGTEQSQAKQEVKQQASARSSSLLV----------
UniRef90_F7G5V2_1_446             KAAPAKYYGGNHHHILMTEQNWANQEAEQQTFERKSSPSNTTPGTPTTPS
UniRef90_G3VY19_1_428             KAAPAKYYGGNHHHILMTEQNWANQEAEQQTFERKSSPPDTAP-------
UniRef90_UPI000155BBAC_1_459      RAASAQAFSSNQ-HILTAEQNWANQEAEQQTLERKSLTAPGAP---SSPI
UniRef90_F7ETY8_1_425             RAASAQAFSSNQ-HILTAEQNWANQEAEQQTLERKSLTAPGAP---SSPI
UniRef90_I3KXW1_1_474             --SSHYYISNNNNHRLATQQNWANLATEQQTREMKATSPSSSCSATSSDN
UniRef90_UPI00022B3AE8_1_449      --SSHYYISNNNNHRLATQQNWANLATEQQTREMKATSPSSSCSATSSDN
UniRef90_UPI0002A48057_1_447      --SSHYYISNNNNHRLATQQNWANLATEQQTREMNGTSPSPSASSSTSNK
UniRef90_H2MCD5_1_421             --SSHYYISNNNNHRLATQQNWANLATEQQTREMNGTSPSPSASSSTSNK
UniRef90_H2UTF3_1_420             --ASHYYISNNNNHRLATQQNWANLATEQQTREMKATSSSSSSTNDEQR-
UniRef90_UPI000298F1F6_1_460      --ASHYYISNNNNHRLATQQNWANLATEQQTREMKATSSSSSSTNDEQQQ
UniRef90_H3DE08_1_376             ---PHYYISNNNNHRLAAQQNWANLATEQQTRSSSPGSASNAGS------
UniRef90_Q8JFD2_1_434             --SSPFYISNNNNHRLAAEQNWANLATEQQTREMNATSPCSSSSSCSSDN
UniRef90_H2T4Y1_1_438             --SNDKV---SHGQLTEVEQNWSNMALELRTLNGKNSSYP----------
UniRef90_H2T4Y2_1_428             --SNDKV---SHGQLTEVEQNWSNMALELRTLNGKNSSYP----------
UniRef90_H3BZL0_1_378             --SSDKV---SHGQLTEVEQNWSNMALELQNLNG----------------
UniRef90_I3K1N0_1_478             --SGEKVGVGSQGQLVAMEQNWNNMVLEVHNLNGKNSASASS--------
UniRef90_H2LFL5_1_470             --NGEKVSIGSHGQLSEMEQNWRNMALELHNPNGNSSSSSSSSYAEPLPS
UniRef90_M7BWJ7_1_486             PMQAITPCFNGSSQVLAVEQNWANLAVEQQRKPPASSSAASSAPSSIGQQ
UniRef90_K7F163_1_492             PVQAITCYFNGSSQALAAEQNWANLAVEQQRKPPAR-SATSSSPSSTRQQ
UniRef90_H0ZM32_1_512             PTPAVINYFNSSSRALTSEQDWVNMAAEHQGKVSSS-SAGSSTPSSVRHP
UniRef90_H3AH16_1_396             ------YFINSNNHRLTTDQNWANLAAEQQTQERKP-ASSSSTNSSVGN-
UniRef90_B0BM18_1_388             ------LMSHHEHLIAASEQNWTNLAVERERMSRSS-SGSSCSATTSALD
UniRef90_Q4S8R0_1_345             -------------NKVVYKQNRDNMAVER-KGKPEDEVVMERKP------
UniRef90_I3KYH7_1_341             -------------SKVAYKQNRDNMAVER-KGKAEENDMKGRKI------
UniRef90_H2M0G7_1_345             -------------SKAVHKQNRDNLAVER-KSRAEGDDSEKTKS------
UniRef90_H3A471_1_360             -------------SKAAHKQNRDNLAVER-NGRSSDSN-HSPKE------
UniRef90_Q6GLA5_1_353             -------------SQAARKQNRDNQAVER-NGIHDLNVASESSS------
UniRef90_UPI0002A4A1D5_1_346      -------------SKAAYKQNKDNLAVERGNSKQEECDLKEKKG------
UniRef90_S4RXA6_1_456             RRRVAQATSGDARHARHAPQPVSRSLAMRTPPPPHGAPPPP---------
UniRef90_P16863_1_360             NR-MGQAGS---TISNTHAQPFDFSDEHQN--TKKMAPGHE---------
UniRef90_H2LU51_1_404             -------------GDPGGKPDCHKDVKEGALSRMEQNSNSNNTSS-----
UniRef90_I3KYL3_1_401             -------------GDPGGKPDSQKEGKEGVPSPTEHNNNSNNTSS-----
UniRef90_G3NC44_1_402             -------------GDPVAKPDLHKDGKEGVPSPTEQNSNSNNTSS-----
UniRef90_H2SSL2_1_392             -------------GDPGAKSDRRKDGKEGIPSPTEQNSNSNNTSS-----
UniRef90_UPI0002C46B7E_1_433      -------------ENYSGNDEKCILDEQETVLSNEMHTINTICSQ-----
UniRef90_G3ULF1_1_432             -------------DSYSGNDEKCILDEQETVLSSKMHTISTTGSH-----
UniRef90_C9IYK1_1_407             -------------DNHSVNDEKCILDEQETVLSNEISTLSTSCSH-----
UniRef90_H0Y0G7_1_436             -------------DNHNMK-KKYSLDEQETELSNEIYTLSTTCSH-----
UniRef90_L9JD22_1_408             -------------DNHSVNNEKCIVDEQETVLSNEMCTLSTSCSP-----
UniRef90_F1N617_1_436             -------------DNHIGNDDKGILDEQETLLS-EMCTFSTACGH-----
UniRef90_F1SV25_1_385             -------------DSHRGNDERGISNEQETVLSNKMCTLSTACGH-----
UniRef90_L5JUH5_1_307             --------------------------------------------------
UniRef90_UPI00020369CA_1_441      -------------NNHTENRGNYTHHNQENKLPKKKPATNALAGQ-----
UniRef90_R4GLX1_1_405             -------------NNHTENRGNYTHHHQENKLPKKRPATNAVAGQ-----
UniRef90_UPI00035A19E6_1_466      -------------NACTESSSNYTHCNQGSKSPKKRPATNALDNQ-----
UniRef90_F6WA84_1_463             -------------ET----GKKSPASDERNKPSDETCLSSIVEGY-----
UniRef90_G1SG18_1_430             -------------DSSFSKKEWAEKDQHSGQLHVHSPCPQDASTR-----
UniRef90_UPI00032B0E64_1_413      -------------DSSFSKKEWAEKDQHSGQLHVHSPCPHEARPR-----
UniRef90_UPI0002C65D9D_1_412      -------------DPCS-KKDWAEKDQHSGQLHVHSPCPWDDDAR-----
UniRef90_F7CF28_1_383             -------------DPCS-KKDWPEKDQHSGQLHVHSPCPWDDDAR-----
UniRef90_Q969M2_1_435             -------------DPSNGKKDWSEKDQHSGQLHVHSPCPWAGSAG-----
UniRef90_L9JVZ3_1_406             -------------DPSRSKKDWSEKDQHSGQLHTHCPSPWDGGAR-----
UniRef90_I3M407_1_414             -------------DSSCSKRDCTEKDQHNGQLHIHSPCPQDGKAR-----
UniRef90_L5JMB7_1_435             -------------DPCCSRKDWTGEDQHSGQLHVHSPCPQHGCAK-----
UniRef90_L8J083_1_417             -------------DPCYSKKDWAEKNQHNGQLHVHSPCPWDDSAR-----
UniRef90_UPI0002BCCFF6_1_421      -------------DPCCSKKDWAKADQHRGQLHVHSPCPWDDGAR-----
UniRef90_F1RY20_1_421             -------------DPCFSKKDWAEKDQHSGQLHVHSPCPWEGGAR-----
UniRef90_UPI0002C59166_1_412      -------------DSCCVKEEWAEKDQHSGQLHARSPCLWEAGTQ-----
UniRef90_G3TBX7_1_436             -------------VPCYDKKDWAQKDQHSGQLLVHSPCTWNSSVR-----
UniRef90_G3GSS7_1_405             -------------DVSCSKRDWAERVTNSGQLHVHSPCPQDGNGR-----
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UniRef90_UPI0003316158_1_413      -------------DACCSQEDSAEKDQHGGQLHVHEPGLWTHSAT-----
UniRef90_G3WUN4_1_443             -------------AFPLGKKNWSRRDQHHRMLQFSSVCPQDLDCC-----
UniRef90_F6W379_1_264             --------------------------------------------------
UniRef90_M7BL54_1_431             -------------EQRRCSTDRPRSEQHHGQVPRLHKHPENPRER-----
UniRef90_UPI0002B44362_1_276      ----------------------------------------GPSEE-----
UniRef90_UPI000298933C_1_429      -------------MPAQGLHQVPPVEQQCAVGTRKPSYSSEESSE-----
UniRef90_H3CDZ2_1_426             -------------VPIQGVQQVAPAEQHRLSGLRKPSCSSEESSE-----
UniRef90_I3IZH7_1_440             -------------AEIQGLHQLGAMERRYTLENRKPSCSSDDSNG-----
UniRef90_E7F3P4_1_389             -------------PEIQVLQQLGIKERRSIPDNRLQSCSSEDS-G-----


UniRef90_UPI0002C691BE_1_358      --------------------------------------------------
UniRef90_F7BKC0_1_358             --------------------------------------------------
UniRef90_Q0VCR2_1_359             --------------------------------------------------
UniRef90_G3TUX5_1_358             --------------------------------------------------
UniRef90_L9JKN2_1_358             --------------------------------------------------
UniRef90_P36382_1_358             --------------------------------------------------
UniRef90_UPI0003315E33_1_350      --------------------------------------------------
UniRef90_UPI000333FB64_1_358      --------------------------------------------------
UniRef90_UPI000334540D_1_357      --------------------------------------------------
UniRef90_L5K3R8_1_358             --------------------------------------------------
UniRef90_G1TQ37_1_358             --------------------------------------------------
UniRef90_UPI0001776F40_1_352      --------------------------------------------------
UniRef90_G3H2Q9_1_358             --------------------------------------------------
UniRef90_Q01231_1_358             --------------------------------------------------
UniRef90_G5BBL6_1_357             --------------------------------------------------
UniRef90_H0WCZ7_1_358             --------------------------------------------------
UniRef90_G3X1A3_1_358             --------------------------------------------------
UniRef90_H0ZTI1_1_370             --------------------------------------------------
UniRef90_P18860_1_369             --------------------------------------------------
UniRef90_G1KPB5_1_370             --------------------------------------------------
UniRef90_K7FWT6_1_369             --------------------------------------------------
UniRef90_F1QL21_1_400             --------------------------------------------------
UniRef90_UPI0002A497DC_1_408      --------------------------------------------------
Input_protein_seq                 ----------------GPPAEEGAEPEVGEKKEEAERL------------
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UniRef90_L9JGQ0_1_441             ----------------GPPVEEAAEPEVGEKRLEAERL------------
UniRef90_P28236_1_440             ----------------EPPIEEAVEPEVGEKKQEAEKV------------
UniRef90_G5BBL7_1_440             ----------------QQPVEETTEPEVEEKKPEAEKV------------
UniRef90_M3XED1_1_440             ----------------EQPVEEGAEPEVGDKRQEAERV------------
UniRef90_L5K685_1_440             ----------------EPPAEEGAEAEVAEKRQEADRV------------
UniRef90_F6VG96_1_441             ---------------EEQPVEEAAEPEAGEKSQEAEKV------------
UniRef90_P55917_1_440             ----------------EQPIEAAAEPEVGDKSQEAERV------------
UniRef90_UPI000329268E_1_442      ----------------EQHVEAGAEPELGEKRQEAERV------------
UniRef90_G3UBH4_1_410             ----------------E---------------------------------
UniRef90_I3N7I6_1_431             ----------------EPPAEEGAEPEVGEKPREGERA------------
UniRef90_G3X210_1_429             ---------------EEEEGEVPPEEEEKRQEPEAVTP------------
UniRef90_F7BI06_1_372             --------------------------------------------------
UniRef90_UPI000333FA9E_1_424      -------------------ADQGAESE-----ERAAQV------------
UniRef90_K7EY71_1_406             -----------------EKVEAGEEEQDQEEEEEHQEP------------
UniRef90_M7BCA4_1_394             -----------------EKVEAGEEEQ---------EP------------
UniRef90_P36381_1_400             -----------------EKVKAEEEEE---QEEEQQAP------------
UniRef90_H2MUH4_1_428             ------------------GVTLHEDEVEEEQVQPPEAE------------
UniRef90_UPI00022B4A0D_1_396      ------------------GVTLHEEEPEE---------------------
UniRef90_H3D8V1_1_361             ------------------GVTLPR--------------------------
UniRef90_G3NHJ7_1_420             ------------------GVTLRQEAEEVQPAEAEAER------------
UniRef90_Q503J6_1_391             -----------------SGILRRDEDEDE---------------------
UniRef90_F6QCF2_1_438             -----------------VKVQASDAFEQASSERAASVR------------
UniRef90_UPI00034FAB61_1_453      -----------------VKVQASDAFEQASSERAASVR------------
UniRef90_UPI0001DE8510_1_439      -----------------VKVQASDAFEQASSERAASVR------------
UniRef90_H3A837_1_370             -------------------EEIPDPQAEPTEIAAADTR------------
UniRef90_G1KPB7_1_391             --------------------EKVEQPEQEVAEEVQDEQ------------
UniRef90_B0S6Z4_1_382             --------------------------------------------------
UniRef90_G1PZ72_1_426             ----------------EQPGEEGADPERVAVAERLDAE------------
UniRef90_UPI000155FB82_1_448      -----------------SPQQLPQLGGAGSKAPALLA-------------
UniRef90_F6U7L2_1_428             -----------------SPQQLPQLGGAGSKAPALLA-------------
UniRef90_UPI0002C6341D_1_440      -----------------SPQQLPQGDRAGSKVPVLLA-------------
UniRef90_M3Z8M0_1_445             -----------------STKELPQEGGVGSSAPGLLE-------------
UniRef90_G1Q1M8_1_411             -------------------LQAPQEGREGSKESVSLE-------------
UniRef90_G1PYG2_1_394             -------------------CKPLKR-----AEEAALE-------------
UniRef90_L5L5Q1_1_430             -----------------SSLTPPGSPQPPPQEPVPVE-------------
UniRef90_UPI0002BCF55A_1_410      -----------------LSAPAAPKPPAG-PQQPPPE-------------
UniRef90_P41987_1_407             -----------------APTPPAAESPGGGPQQSLPE-------------
UniRef90_J9JHI9_1_433             -----------------AAAPSASPSPAGSTGQLPPD-------------
UniRef90_Q9Y6H8_1_435             -------------------STPAAPSPVGSSSPPLAHEAEAGAA------
UniRef90_G3QHB2_1_399             -------------------STPAAPSP-----------------------
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UniRef90_F7B1T8_1_432             -------------------PTPAAPSPTGSSSQPPTHEAEAGAA------
UniRef90_L9L2D3_1_460             -------------------SSPAAPSPTGSGTQPALQEGRAGATGAT---
UniRef90_Q64448_1_417             -------------------SSPDGRKGLI---------------------
UniRef90_G3H8J5_1_417             -------------------SSPEGRKGLT---------------------
UniRef90_UPI0003333DA4_1_405      -------------------FSPLGGEDTPG--------------------
UniRef90_I3NC37_1_417             -------------------SRGTAPQLLE---------------------
UniRef90_H0XD37_1_430             -------------------SSPQPLPPEGEGDGE----------------
UniRef90_G1U3S9_1_407             -------------------QPPRPEAGPGGSAPLLLG-------------
UniRef90_UPI00032AEFC1_1_413      -------------------LPPPREAGPGGSAPLLLGG------------
UniRef90_UPI00034F30A8_1_402      -------------------PQPLQEAGPG---------------------
UniRef90_UPI0003340A67_1_370      -------------------PQPVQEAGLR---------------------
UniRef90_UPI0002234D0E_1_449      -----------------STPQLPLEVRAGSQAPLLLV-------------
UniRef90_G3TTN5_1_429             ---------------------------AGSQAPLLLV-------------
UniRef90_UPI0002C457ED_1_447      -----------------STPQLPLEGMAGGQTPLLLV-------------
UniRef90_UPI000333D50E_1_427      -----------------SSPQPSLESRARSGVPLLLV-------------
UniRef90_UPI0003343FBC_1_423      -------------------SIPAGLTTPGNTQQAPRE-------------
UniRef90_F7G5V2_1_446             -----------------SVRQLLQERGDSGGGSKVPLL------------
UniRef90_G3VY19_1_428             ------------------------------GGSKVPLL------------
UniRef90_UPI000155BBAC_1_459      -----------------STQQNPPEVGGGGEGSEAPLL------------
UniRef90_F7ETY8_1_425             -----------------STQQNPPEV------------------------
UniRef90_I3KXW1_1_474             --------------EQHQSVNGALLLPTSNTTSNTNITNATANAASSGSS
UniRef90_UPI00022B3AE8_1_449      --------------EQHQSVNGALLLPTSNTTS-----------------
UniRef90_UPI0002A48057_1_447      --------------NKYQQHDAATSGGRPGSPSN----------------
UniRef90_H2MCD5_1_421             --------------NKYQQQ------------------------------
UniRef90_H2UTF3_1_420             -------------------------SSSPGSASN----------------
UniRef90_UPI000298F1F6_1_460      PVDAELLPSASSNITNTTTTVTASGSSSPGSASN----------------
UniRef90_H3DE08_1_376             --------------------------------------------------
UniRef90_Q8JFD2_1_434             ---------------VRQSKDAAQLASTPSSAG-----------------
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UniRef90_H2T4Y2_1_428             -------------------------PTLPSPP------------------
UniRef90_H3BZL0_1_378             -------------------------ETMEEP-------------------
UniRef90_I3K1N0_1_478             --------SPQVEKTPTPEEQQSAFPTLPRNTPLSSLMPKETAMKEE---
UniRef90_H2LFL5_1_470             SPTSASSFSPEDEAALQQENQLSMFPTLPRNTP-----------------
UniRef90_M7BWJ7_1_486             ----------------SPKQEAASEQPLPSPPLLPP------------VA
UniRef90_K7F163_1_492             ----------------SPKQEEASELPLPLPPLLPP------------VA
UniRef90_H0ZM32_1_512             ----------------LPEQEEPLEQLLPPPAVLP-------------IA
UniRef90_H3AH16_1_396             --------------------EGAQEAPTP---------------------
UniRef90_B0BM18_1_388             ----------------SLRNDGGCEEMLT---------------------
UniRef90_Q4S8R0_1_345             --------------------------------------------------
UniRef90_I3KYH7_1_341             --------------------------------------------------
UniRef90_H2M0G7_1_345             --------------------------------------------------
UniRef90_H3A471_1_360             --------------------------------------------------
UniRef90_Q6GLA5_1_353             --------------------------------------------------
UniRef90_UPI0002A4A1D5_1_346      --------------------------------------------------
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UniRef90_P16863_1_360             ------------------MQPLTILDQRP---------------------
UniRef90_H2LU51_1_404             --------------------------------------------------
UniRef90_I3KYL3_1_401             --------------------------------------------------
UniRef90_G3NC44_1_402             --------------------------------------------------
UniRef90_H2SSL2_1_392             --------------------------------------------------
UniRef90_UPI0002C46B7E_1_433      --------------------------------------------------
UniRef90_G3ULF1_1_432             --------------------------------------------------
UniRef90_C9IYK1_1_407             --------------------------------------------------
UniRef90_H0Y0G7_1_436             --------------------------------------------------
UniRef90_L9JD22_1_408             --------------------------------------------------
UniRef90_F1N617_1_436             --------------------------------------------------
UniRef90_F1SV25_1_385             --------------------------------------------------
UniRef90_L5JUH5_1_307             --------------------------------------------------
UniRef90_UPI00020369CA_1_441      --------------------------------------------------
UniRef90_R4GLX1_1_405             --------------------------------------------------
UniRef90_UPI00035A19E6_1_466      --------------------------------------------------
UniRef90_F6WA84_1_463             --------------------------------------------------
UniRef90_G1SG18_1_430             --------------------------------------------------
UniRef90_UPI00032B0E64_1_413      --------------------------------------------------
UniRef90_UPI0002C65D9D_1_412      --------------------------------------------------
UniRef90_F7CF28_1_383             --------------------------------------------------
UniRef90_Q969M2_1_435             --------------------------------------------------
UniRef90_L9JVZ3_1_406             --------------------------------------------------
UniRef90_I3M407_1_414             --------------------------------------------------
UniRef90_L5JMB7_1_435             --------------------------------------------------
UniRef90_L8J083_1_417             --------------------------------------------------
UniRef90_UPI0002BCCFF6_1_421      --------------------------------------------------
UniRef90_F1RY20_1_421             --------------------------------------------------
UniRef90_UPI0002C59166_1_412      --------------------------------------------------
UniRef90_G3TBX7_1_436             --------------------------------------------------
UniRef90_G3GSS7_1_405             --------------------------------------------------
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UniRef90_UPI0003316158_1_413      --------------------------------------------------
UniRef90_G3WUN4_1_443             --------------------------------------------------
UniRef90_F6W379_1_264             --------------------------------------------------
UniRef90_M7BL54_1_431             --------------------------------------------------
UniRef90_UPI0002B44362_1_276      --------------------------------------------------
UniRef90_UPI000298933C_1_429      --------------------------------------------------
UniRef90_H3CDZ2_1_426             --------------------------------------------------
UniRef90_I3IZH7_1_440             --------------------------------------------------
UniRef90_E7F3P4_1_389             --------------------------------------------------


UniRef90_UPI0002C691BE_1_358      ------------------------------------KPEEL--NEVSPGH
UniRef90_F7BKC0_1_358             ------------------------------------KPEVP--NGVSPGH
UniRef90_Q0VCR2_1_359             ------------------------------------KPEVP--NEGSPGP
UniRef90_G3TUX5_1_358             ------------------------------------RPEVP--NGVSPGH
UniRef90_L9JKN2_1_358             ------------------------------------KPEVP--NGASPGP
UniRef90_P36382_1_358             ------------------------------------KPEVP--NGVSPGH
UniRef90_UPI0003315E33_1_350      ------------------------------------KPEVP--NEVSPGH
UniRef90_UPI000333FB64_1_358      ------------------------------------RPEVP--HEVPPGH
UniRef90_UPI000334540D_1_357      ------------------------------------KPEVP--NGGAPDH
UniRef90_L5K3R8_1_358             ------------------------------------KPEVP--SEVSSGH
UniRef90_G1TQ37_1_358             ------------------------------------KPDVP--DGVSPGH
UniRef90_UPI0001776F40_1_352      ------------------------------------KPEVP--TEVSPGH
UniRef90_G3H2Q9_1_358             ------------------------------------KPEEH--NGASPGH
UniRef90_Q01231_1_358             ------------------------------------KPEYA--SGASAGH
UniRef90_G5BBL6_1_357             ------------------------------------KPDVP--HGVSSGH
UniRef90_H0WCZ7_1_358             ------------------------------------KPDVP--SGVSSGH
UniRef90_G3X1A3_1_358             ------------------------------------GPEMA--NGVPNAH
UniRef90_H0ZTI1_1_370             ------------------------------------SPEVA--SECAAP-
UniRef90_P18860_1_369             ------------------------------------SPEVA--SECAAP-
UniRef90_G1KPB5_1_370             ------------------------------------NPEVR--NNSAPG-
UniRef90_K7FWT6_1_369             ------------------------------------SPEAP--NDSAPH-
UniRef90_F1QL21_1_400             ------------------------------------SEMTP--STPSTPS
UniRef90_UPI0002A497DC_1_408      ------------------------------------SPESRDNNCLQIQN
Input_protein_seq                 ----------TTEEQEKVAVPEGEKVETPGVDKEGEKEEPQSEKVSKQGL
UniRef90_UPI00027FC10C_1_397      ----------TTEGQEKVAVPEGEKAETPGVEKDGEKEELQS-EVAKQGL
UniRef90_L9JGQ0_1_441             ----------ATEGQEVVPVAEGEKVETAGVGQESEKDELLAEKASKQGL
UniRef90_P28236_1_440             ----------APEGQETVAVPDRERVETPGVGKEDEKEELQAEKVTKQGL
UniRef90_G5BBL7_1_440             ----------TLEVQEAITEPEGERVETPGVGKEGEKEELQIEKVTKQGL
UniRef90_M3XED1_1_440             ----------STEGQETLAVLEGEKVETPEVGKEGEKDELQAEKVAKQGL
UniRef90_L5K685_1_440             ----------STEGQETNDELEGDRVETPGAGKEGEKEELPAEKASKQGL
UniRef90_F6VG96_1_441             ----------STEGQETTAVLEGEKVETPKVGKEAEKEELQAEKVSKQEL
UniRef90_P55917_1_440             ----------STEGEETLAVLEEEKVEPPEVEKEAEKEETPPEKVSKQEL
UniRef90_UPI000329268E_1_442      ----------STEGQEMVVVPEGEKIEPPEGEKQGKEEELQAEMVSKQRV
UniRef90_G3UBH4_1_410             ------------------AVLEGEKGETPKVGKESEKEELQAEQISKQGL
UniRef90_I3N7I6_1_431             ----------TLEGQDAVAVPDGDKVETPAVGKEGDKEELQAEKMTKPGL
UniRef90_G3X210_1_429             ----------EMQEATVEQEEEKEKVGTP-ERKAGE----------KQEL
UniRef90_F7BI06_1_372             ------------------QEEEKEKAGTPVEMKAGD----------KQEL
UniRef90_UPI000333FA9E_1_424      ----------TTEGQE--AVLEGENAESFPASAQAEKEELPAEKASKPGP
UniRef90_K7EY71_1_406             ----------EEELE-----------VKKMAAEQELPGEELPAVP-----
UniRef90_M7BCA4_1_394             ----------EEEQE-----------VEKVVEEQEPPGEELPSVP-----
UniRef90_P36381_1_400             ----------QEEPG-----------VKKAEEEVVSDEVEGPSAP-----
UniRef90_H2MUH4_1_428             ----------AEKVEEMADEDEEEEVEEAENGEDAAPAEAGLEAT-----
UniRef90_UPI00022B4A0D_1_396      ---------------------------------GATPAEAGTEAA-----
UniRef90_H3D8V1_1_361             ----------------------------------------AAEAP-----
UniRef90_G3NHJ7_1_420             ----------VEKG-----ADEDLEVEEAGNGEGVNPEETRMEVT-----
UniRef90_Q503J6_1_391             -----------------------------------LAVEADMEAS-----
UniRef90_F6QCF2_1_438             ----------SPSVRAPSDRAPSERALSERAPTRAASEHAGSEHTPSVRT
UniRef90_UPI00034FAB61_1_453      ----------SPSVRAPSDRAPSERALSERAPTRAASEHAGSEHTPSVRT
UniRef90_UPI0001DE8510_1_439      ----------SPSVG--LDQSPNE-----PTPLRALPEQGNPNHTFPDPE
UniRef90_H3A837_1_370             --------------------------------------------------
UniRef90_G1KPB7_1_391             ----------GAEG-----------------FKEKAGVKVGEEKH-----
UniRef90_B0S6Z4_1_382             ---------------------------------ELPTEEPPREGD-----
UniRef90_G1PZ72_1_426             ----------RVSTEGRETPAVEGEGEASQVGKEGEEGELPAEKVAKQRL
UniRef90_UPI000155FB82_1_448      ----------NGNG------------SPLGESKLEVTPDE-EEWAVTTAV
UniRef90_F6U7L2_1_428             ----------NGNG------------SPLGESKLEVTPDE-EEWAVTTAV
UniRef90_UPI0002C6341D_1_440      ----------NGNG------------SPWGEKKLEVTPDE-EERAVATVV
UniRef90_M3Z8M0_1_445             ----------NGNG------------SSLGESKLEVTPDDGEEQPVTTAV
UniRef90_G1Q1M8_1_411             ----------NGDS------------SLLGESRLEVTPDE-QQQAVT-AV
UniRef90_G1PYG2_1_394             ----------NGDS------------SLLGESRLEVTPDE-QQQAVT-AV
UniRef90_L5L5Q1_1_430             ----------NGNG------------HSLGESSLAVTPDQ-GVPAVTSPV
UniRef90_UPI0002BCF55A_1_410      ----------GGAG-------------SSGDS-------D-GEGAVT-AV
UniRef90_P41987_1_407             ----------GAAG-------------SSGDS-------D-GEGAVT-AV
UniRef90_J9JHI9_1_433             ----------DGTGGGEPGLLLTGSRSSLGDSKLAVTPDD-AEQPVTTPA
UniRef90_Q9Y6H8_1_435             ------PLLLDGSG------------SSLEGSALAGTPEEEE-QAVTTAA
UniRef90_G3QHB2_1_399             --------LLDGSG------------SSLEGSALAGTPEEEE-QAVTTAA
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UniRef90_F7B1T8_1_432             ------HLLLDGSG------------SSLEGSALAGTPEEEE-QAVTTAA
UniRef90_L9L2D3_1_460             ----APLLLVDGSG------------SSLEDSALAVTPEEEE-QAVTTAA
UniRef90_Q64448_1_417             ----------DSSG------------SSLQESALVVTPEEGE-QALATTV
UniRef90_G3H8J5_1_417             ----------DSSG------------SSLEESALVVTPEEGE-QALATTV
UniRef90_UPI0003333DA4_1_405      ----------DGSG------------SSLEESALAVTPEEEEEQALATTV
UniRef90_I3NC37_1_417             ----------DRSG------------SSLEESALAVTPEEEE-QALTTTA
UniRef90_H0XD37_1_430             ---------VEGSG------------SSLEDSALAVTPEEEEEQAVTTAA
UniRef90_G1U3S9_1_407             ----------DASG------------SGSEEVPLGATPEEEE-PAVTTAA
UniRef90_UPI00032AEFC1_1_413      ----------DASR------------SSSEEGPLGATPGEEE-PAVTAAA
UniRef90_UPI00034F30A8_1_402      ----------DGSG------------SSLEGRVRVGTPEAE--------A
UniRef90_UPI0003340A67_1_370      ----------DGSG------------SSLAGSARGGTPG-----------
UniRef90_UPI0002234D0E_1_449      ----------NGST------------SSLGENKLEVTPEE-KVQAETTRV
UniRef90_G3TTN5_1_429             ----------NGST------------SSLGENKLEVTPEE-KVQAETTRV
UniRef90_UPI0002C457ED_1_447      ----------NGST------------SNLEESKLEVTPEE-EVQAGTTRV
UniRef90_UPI000333D50E_1_427      ----------NGST------------SSLRGSKLEVCPEE-EVQAGATSV
UniRef90_UPI0003343FBC_1_423      ----------GRAG--------NRVLLVNGNGRSSADTPDAGEPAAITNI
UniRef90_F7G5V2_1_446             --------VINGSSS------------SLGATKSEVTSEG-EKQPGTTTV
UniRef90_G3VY19_1_428             --------LINGSSS------------SLGAAKSEVNSEG-EKQPGTTTV
UniRef90_UPI000155BBAC_1_459      --------LVNGGS--------------LGGGSGGEAEAG-EEWPGTTRV
UniRef90_F7ETY8_1_425             ----------NGGS--------------LGGGSGGEAEAG-EEWPGTTRV
UniRef90_I3KXW1_1_474             PGNASNAGSWDGGKS----------------EQDEGHV-------TTT-V
UniRef90_UPI00022B3AE8_1_449      --------SWDGGKS----------------EQDEGHV-------TTT-V
UniRef90_UPI0002A48057_1_447      ------ADIWGSGRS----------------MQEKGHI-------TTTTV
UniRef90_H2MCD5_1_421             ------SNIWGSGRS----------------MQEKGHI-------TTTTV
UniRef90_H2UTF3_1_420             ------TGSWGGGRK----------------ERGENGV-------STTRV
UniRef90_UPI000298F1F6_1_460      ------TGSWGGGRK----------------ERGENGV-------STTRV
UniRef90_H3DE08_1_376             ---------WGGGTN----------------EQEGRRV-------STTRV
UniRef90_Q8JFD2_1_434             ----------GGLST----------------GPEEGHV-------TTT-V
UniRef90_H2T4Y1_1_438             -------NSSSSSLQ----------------VPHDDVT-------VVTKA
UniRef90_H2T4Y2_1_428             -------NSSSSSLQ----------------EETNPPL-------PQGEQ
UniRef90_H3BZL0_1_378             ---------STASCD----------------VPPDDVT-------VVTKA
UniRef90_I3K1N0_1_478             ------TTVITAPSK----------------VLHNDFT-------VVTRA
UniRef90_H2LFL5_1_470             ------LSIIAPEVR----------------AADEESP-------AVQNE
UniRef90_M7BWJ7_1_486             AVNSSSSTSLSRGSSS-----------KWDVEGEEEATKEWPVSAACTTV
UniRef90_K7F163_1_492             AVSSSSSTSLSRGSSS-----------KWDAEGEEEATKAWPLSVACTTV
UniRef90_H0ZM32_1_512             SANSGSSTSLSGASGS-----------KWDVEGEAELSGARPVSAACTTV
UniRef90_H3AH16_1_396             ----GSSGSLGGGK-----------------QGQEDGN--------VTTV
UniRef90_B0BM18_1_388             -------TEASGSS-----------------ARAEDRP-------VTTRV
UniRef90_Q4S8R0_1_345             ---------------------------------------------TCPAF
UniRef90_I3KYH7_1_341             ---------------------------------------------SSPVL
UniRef90_H2M0G7_1_345             ---------------------------------------------SSPAS
UniRef90_H3A471_1_360             ---------------------------------------------GKAAP
UniRef90_Q6GLA5_1_353             ---------------------------------------------ELDQF
UniRef90_UPI0002A4A1D5_1_346      ---------------------------------------------AGSAP
UniRef90_S4RXA6_1_456             --------------------------SSAAVAAALAAALEDEAEVLTATV
UniRef90_P16863_1_360             --------------------------------------------------
UniRef90_H2LU51_1_404             --------------------------ETRSPAADKQGEAEEARSPHHDDM
UniRef90_I3KYL3_1_401             --------------------------ETRSPPSDKQEEREDQSPPHHEDL
UniRef90_G3NC44_1_402             --------------------------ETRSPPSDKQEEPEEQSSPPLERM
UniRef90_H2SSL2_1_392             --------------------------DTHSLPVDKHEEPEEP--------
UniRef90_UPI0002C46B7E_1_433      --------------------------IQHISSSNNEGTHKIFGKEVNDNQ
UniRef90_G3ULF1_1_432             --------------------------LQHINS-NNDGTHKISGKDVDDNQ
UniRef90_C9IYK1_1_407             --------------------------FQHISSNNNKDTHKIFGKELNGNQ
UniRef90_H0Y0G7_1_436             --------------------------LQPIGSNNNKDTHKIFGKEVNDSQ
UniRef90_L9JD22_1_408             --------------------------LGHIGSNNNKDNHKIFEKEVNDKQ
UniRef90_F1N617_1_436             --------------------------LQNISSSNKEDTHKLSGKEVNGNQ
UniRef90_F1SV25_1_385             --------------------------LQNVSSSNKEDTHKISGKEVNGNQ
UniRef90_L5JUH5_1_307             --------------------------------------------------
UniRef90_UPI00020369CA_1_441      --------------------------TQNASTNCTEGLLARPGTEMRNSQ
UniRef90_R4GLX1_1_405             --------------------------TQNAGINCSEGLLGRPGTERRSSQ
UniRef90_UPI00035A19E6_1_466      --------------------------TQNASTNNNEGFLGQLWTEMHDAQ
UniRef90_F6WA84_1_463             --------------------------PANANLSHSEGIISVVRAEIGGTH
UniRef90_G1SG18_1_430             --------------------------IQHSGQQPDH-SSFAVQNTTIQSW
UniRef90_UPI00032B0E64_1_413      --------------------------IQHLGQQPNH-SSFALQNTASQSC
UniRef90_UPI0002C65D9D_1_412      --------------------------IQHLGQQPDH-SSFGLQNTLSQSC
UniRef90_F7CF28_1_383             --------------------------IQHLGQQPDH-SSFALQKTTSQSC
UniRef90_Q969M2_1_435             --------------------------NQHLGQQSDH-SSFGLQNTMSQSW
UniRef90_L9JVZ3_1_406             --------------------------IQHRGQQQTH-SSFGPHNTVPQSW
UniRef90_I3M407_1_414             --------------------------IQHPGQQPCH-SSFGLRNTVSQSW
UniRef90_L5JMB7_1_435             --------------------------IQHSGQHPDL-SSFGLQNTMSQSW
UniRef90_L8J083_1_417             --------------------------IQHPGQQPDH-SLFGLQNIRPHSW
UniRef90_UPI0002BCCFF6_1_421      --------------------------IQHSAQQPDR-SPFGLQTTTPQSW
UniRef90_F1RY20_1_421             --------------------------IQHSGQQPDH-SSLGLQNPTSQSW
UniRef90_UPI0002C59166_1_412      --------------------------SQHPGQQPDL-SS-GLHNAKSHCC
UniRef90_G3TBX7_1_436             --------------------------MQDHGQQPDHPSSFGFQNTVSQSW
UniRef90_G3GSS7_1_405             --------------------------IQHPGQQPCH-SLFGSKNVMSQSW
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UniRef90_UPI0003316158_1_413      --------------------------LQHPGQHSGK--PFGPQNAKCHSW
UniRef90_G3WUN4_1_443             --------------------------VQYFQQCKHQYQGQHPQSSFSRGG
UniRef90_F6W379_1_264             --------------------------------------------------
UniRef90_M7BL54_1_431             --------------------------EQHYRQLSNQHLGQPSRHPSSSSE
UniRef90_UPI0002B44362_1_276      --------------------------D-------------PSAYNSKKS-
UniRef90_UPI000298933C_1_429      --------------------------PH--VRPQYAG-PRATLVASHMEI
UniRef90_H3CDZ2_1_426             --------------------------PH--VKPQYAG-PRATLVASHMEI
UniRef90_I3IZH7_1_440             --------------------------PHGSGKPHYAG-PRPTLTGGHMEI
UniRef90_E7F3P4_1_389             --------------------------PKGSEPPKYSQQPRASFRASHIEI


UniRef90_UPI0002C691BE_1_358      RLPRG-----------------YQSDKRCLSK------ASSKARSDDLSV
UniRef90_F7BKC0_1_358             RLPHC-----------------YQNDKPRLSK------ASSKARSDDLSV
UniRef90_Q0VCR2_1_359             SLPHG-----------------YQSDKRRLSK------ASSKARSDDLSV
UniRef90_G3TUX5_1_358             RLPHG-----------------YHSDKRRLSK------ASSKARSDDLSV
UniRef90_L9JKN2_1_358             RLPHG-----------------YHSDKRRLSK------ASSRARSDDLSV
UniRef90_P36382_1_358             RLPHG-----------------YHSDKRRLSK------ASSKARSDDLSV
UniRef90_UPI0003315E33_1_350      RLPQG-----------------YPSDKRRLSK------ASSKARSDDLSV
UniRef90_UPI000333FB64_1_358      RLPQA-----------------YHGDKRRPSK------ASSKARSDDLSV
UniRef90_UPI000334540D_1_357      RPPQG-----------------FGGDKRRLSK------ASSKARSDDLSV
UniRef90_L5K3R8_1_358             RLPHS-----------------YQSDKRRLSK------ASSKARSDDLSV
UniRef90_G1TQ37_1_358             PNPHG-----------------YQSDKRRLSK------ASSKARSDDLSV
UniRef90_UPI0001776F40_1_352      HPTHG-----------------YHSDKRRLSK------ASSKARSDDLSV
UniRef90_G3H2Q9_1_358             RLPPG-----------------YHGDKRRLSK------ASSKARSDDLSV
UniRef90_Q01231_1_358             RLPQG-----------------YHSDKRRLSK------ASSKARSDDLSV
UniRef90_G5BBL6_1_357             CLPHG-----------------CHSEKRRLSK------TSSKARSDDLSV
UniRef90_H0WCZ7_1_358             RLPHG-----------------YYSEKRRLSK------TSSRARSDDLSV
UniRef90_G3X1A3_1_358             RLPHS-----------------YHTDKRRLSK------ASSKARSDDLSV
UniRef90_H0ZTI1_1_370             AFPEN-----------------YFNEKRRLSKAS---RASSKARSDDLSV
UniRef90_P18860_1_369             ALPES-----------------YFNEKRRFSKAS---RASSKARSDDLSV
UniRef90_G1KPB5_1_370             LLSNG-----------------YLPDKRRLSKTS---HASSKARSDDLSV
UniRef90_K7FWT6_1_369             QVSNG-----------------YFNEKRRLSKTS---HASSKARSDDLSV
UniRef90_F1QL21_1_400             SHPG------------------FFRDKRRLSKTSG--TSSNRLRPSDLAV
UniRef90_UPI0002A497DC_1_408      CSPDGL----------------LVKDKRRFSKASG--TSS-RTRADDLSV
Input_protein_seq                 PAEKTPSLCPEL----------TTDDARPLSRLS---KASSRARSDDLTV
UniRef90_UPI00027FC10C_1_397      PAEKTPSLCPEL----------TTDDARPLSRLS---KASSRARSDDLTV
UniRef90_L9JGQ0_1_441             PAEKAPSLCPEL----------TADDARPLSRLS---KASSRARSDDLTI
UniRef90_P28236_1_440             SAEKAPSLCPEL----------TTDDNRPLSRLS---KASSRARSDDLTI
UniRef90_G5BBL7_1_440             SAEKTPSLCPEL----------TADDTRPLSRLS---KASSRARSDDLTI
UniRef90_M3XED1_1_440             PVEKSPSLCPDP----------SRDDTRPLSRLS---KTSSRARSDDLTV
UniRef90_L5K685_1_440             PAEKAPSLCPEL----------TGDDTRPLSRLS---KASSRARSDDLTV
UniRef90_F6VG96_1_441             PAEKAPSLCPEL----------SGDDTRPLSRLS---KASSRARSDDLTI
UniRef90_P55917_1_440             TPEKAPSLCAEL----------PGEDTRPLSRLS---KASSRARSDDLTV
UniRef90_UPI000329268E_1_442      PAEKAPALCAES----------TSDDTRPLSRVS---KTSSRARSDDLTV
UniRef90_G3UBH4_1_410             PAEKAPSLCAEV----------TTDETRPLSRLS---KASSRARSDDLTV
UniRef90_I3N7I6_1_431             SAEKAPSLCPEL----------TAEEARPLSRLS---KASSRARSDDLTI
UniRef90_G3X210_1_429             PVEKAP-LCPEL----------AADDSRPLSRLS---KASSRARSDDLTV
UniRef90_F7BI06_1_372             PVEKIP-LCPEL----------AADDTRPLSRLS---KASSRARSDDLTV
UniRef90_UPI000333FA9E_1_424      ------LLCAEL----------AADDPRALSRLS---KASSRARSDDLTV
UniRef90_K7EY71_1_406             --------------------AET--DTRPPSRLS---KTSSRARSDDLTV
UniRef90_M7BCA4_1_394             --------------------VELTADTRPPSRLS---KASSRART-----
UniRef90_P36381_1_400             --------------------AELATDVRSLSRLS---KASSRARSDDLTV
UniRef90_H2MUH4_1_428             ---------------------DTIDDSRPLSRLS---KASSRARSDDLTI
UniRef90_UPI00022B4A0D_1_396      ---------------------ETIEDNRPLSRLS---KASSRARSDDLTV
UniRef90_H3D8V1_1_361             ---------------------DTIEDTRPLSRLS---KASSRARSD----
UniRef90_G3NHJ7_1_420             ---------------------DTIEDTRPLSRLS---KASSRARSDDLNV
UniRef90_Q503J6_1_391             ---------------------ETIEDTRPLSSLS---KASSRARSDDLTV
UniRef90_F6QCF2_1_438             PSNSATPERVPSRAAS-----EHAPYSRSLSRLS---KASSRARSDDLTV
UniRef90_UPI00034FAB61_1_453      PSNSATPERVPSRAAS-----EHAPLDCAPSERAPSRAASEHAPSDRAPS
UniRef90_UPI0001DE8510_1_439      ALEPDIVEYEPLGPEMPLLNLEFIPDSRSLSRLS---KASSRARSDDLTV
UniRef90_H3A837_1_370             ----------------------------PLSRLS---KASSRARS-----
UniRef90_G1KPB7_1_391             ----------------------MEDEQEPLGGNV---ALPSTADTRP---
UniRef90_B0S6Z4_1_382             ----------------------EVDSLKTPTVLPEVLEEHSEGESVEE--
UniRef90_G1PZ72_1_426             PAEKAPSPGAEL----------AGDDTRPLSRLS---KASSRARSDDLTV
UniRef90_UPI000155FB82_1_448      EMHAPPLPPTD------------PGRSSKASKSSG-----SRARPDDLAI
UniRef90_F6U7L2_1_428             EMHAPPLPPTD------------PGRSSKASKSSG-----SRARPDDLAI
UniRef90_UPI0002C6341D_1_440      AMHAPPLPPTD------------PGRSSKASKSSA-----GHARPDDLAV
UniRef90_M3Z8M0_1_445             EMHVPPLLPAD------------PGRSSKASKSSG-----GRARPNDLAI
UniRef90_G1Q1M8_1_411             EMHMPPLLPTD------------PRRSSKASKASN-----SQARPNDLAI
UniRef90_G1PYG2_1_394             EMHMPPLLPTD------------PRRSSKASKASN-----SQARPNDLAI
UniRef90_L5L5Q1_1_430             DMHAPPLLPAE------------PRRSSTASKASG-----GRARPSDLAI
UniRef90_UPI0002BCF55A_1_410      ELHAPPELPAD------------PGRSSKASKSSG-----GRARASDLAI
UniRef90_P41987_1_407             ELHAPPEPPAD------------PGRSSKASKSSG-----GRARAGDLAI
UniRef90_J9JHI9_1_433             ETHAPPLPPED------------AGRLSKASRASG-----GRARPNDLPI
UniRef90_Q9Y6H8_1_435             QMHQPPLPLGD------------PGRASKASRASS-----GRARPEDLAI
UniRef90_G3QHB2_1_399             QMHQPPLLLGD------------PGRASKASRASS-----GRARPEDLAI
```

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UniRef90_F7B1T8_1_432             QMHQPPLLLGD------------PGRASKASRASG-----GRARPEDLAI
UniRef90_L9L2D3_1_460             ELHTPPLLLVE------------PGRASKASKASS-----GRARPGDLTI
UniRef90_Q64448_1_417             EMHSPPLVLLD------------PGRSSKS---SN-----GRARPGDLAI
UniRef90_G3H8J5_1_417             EMHSPPLVLLD------------PGRSSKA---SS-----GRARPGDLAI
UniRef90_UPI0003333DA4_1_405      EMHNPPLLLLD------------PGRSSKA---SN-----RRAKPGDLAI
UniRef90_I3NC37_1_417             EMHEPPLLLTD------------PGRSSKA---SS-----GRARPGDLAI
UniRef90_H0XD37_1_430             EMHVQPSEPADPADPADP---VDPGRSSKA---SS-----GRARPDDLAI
UniRef90_G1U3S9_1_407             EMHAPPLLEAD------------AGRCSKAS--G------GRARPSDLAI
UniRef90_UPI00032AEFC1_1_413      EMHAPPSLSAD------------AGRCSKAS--SS-----GRARPSDLAI
UniRef90_UPI00034F30A8_1_402      QVEAPAPLLGD------------TGRSSKAS--S------GRAKPRDLAI
UniRef90_UPI0003340A67_1_370      -VEAPALLPED------------PRRSSKAS--S------GRAKPGDLAI
UniRef90_UPI0002234D0E_1_449      DMHVPPLLLGD------------VGRASKASKSSS-----GWARADDLAI
UniRef90_G3TTN5_1_429             DMHVPPLLLGD------------VGRASKASKSSS-----GWARADDLAI
UniRef90_UPI0002C457ED_1_447      DTHMPPLLLGD------------VGQASKASKLSS-----GRPRADDLAI
UniRef90_UPI000333D50E_1_427      DMHRPPLLLGD------------PGRASKTSRASSS----GRLRADDLAI
UniRef90_UPI0003343FBC_1_423      ELHRPPLLLRD------------AGQSGKAS--SN------RARPNDLAI
UniRef90_F7G5V2_1_446             EMHAPPLLLVD------------SRRLSKASKASS-----GRARSDDLAI
UniRef90_G3VY19_1_428             EMHAPPLLLID------------TRRLSKASKSSS-----GRARSDDLAV
UniRef90_UPI000155BBAC_1_459      EIHESPLLLLD------------LRRLSKASKASS-----CRARSDDLAI
UniRef90_F7ETY8_1_425             EIHESPLLLLD------------LRRLSKASKASS-----CRARSDDLAI
UniRef90_I3KXW1_1_474             EMHEPPVMVSTD-----------PRRLSRASKSSS-----IRARPSDLAV
UniRef90_UPI00022B3AE8_1_449      EMHEPPVMVSTD-----------PRRLSRASKSSS-----IRARPSDLAV
UniRef90_UPI0002A48057_1_447      EMHEPPVTVRTD-----------PRRLSRTSKSSS-----IRTRPSDLAV
UniRef90_H2MCD5_1_421             EMHEPPVTVRTD-----------PRRLSRTSKSSS-----IRTRPSDLAV
UniRef90_H2UTF3_1_420             EMHEPPATAGVD-----------PRRLSRASKSSS-----VRARPSDLAV
UniRef90_UPI000298F1F6_1_460      EMHEPPATAGVD-----------PRRLSRASKSSS-----VRARPSDLAV
UniRef90_H3DE08_1_376             EMHDPPPAPGVD-----------PRRLSRASKSSS-----VRARPSDLAV
UniRef90_Q8JFD2_1_434             EMHEPP-VIFTD-----------ARRLSRASKASS-----VRARPNDLAV
UniRef90_H2T4Y1_1_438             EMHWPPASATT-----------DIRKPSRASKCS------VRARPDDLAV
UniRef90_H2T4Y2_1_428             HSMFPTLPRHTPL--------YALTPPSRASKCS------VRARPDDLAV
UniRef90_H3BZL0_1_378             EMHWPPASAAT-----------DIRKPSRASRSS------VRARPDDLAV
UniRef90_I3K1N0_1_478             EMHQPPAAAGT-----------DNRKPSRASKSGG-----GRARPDDLAV
UniRef90_H2LFL5_1_470             DATAEMHPPPA-----------DTRRPSRACKYSG-----ARARPDDLEV
UniRef90_M7BWJ7_1_486             EMHEPPLLID----------------------------------------
UniRef90_K7F163_1_492             EMHEPPQLID----------------------------------------
UniRef90_H0ZM32_1_512             EMHEPPLLVDTR-------------RLSRASKSSS-----CRARSDDLAV
UniRef90_H3AH16_1_396             EMHEPPVPTDTR-------------RL-----------------------
UniRef90_B0BM18_1_388             EMHQPP--------------------------------------------
UniRef90_Q4S8R0_1_345             EGSADSQRRNS--------------QSSKHS-------------------
UniRef90_I3KYH7_1_341             EMSIENQRRNS--------------QSSKHS-------------------
UniRef90_H2M0G7_1_345             EAPAESQRRNS--------------QSSKHS-------------------
UniRef90_H3A471_1_360             SSPSDNQRSSS--------------RSTKHGNKAKP----ED--------
UniRef90_Q6GLA5_1_353             EKQRLPSRNSR--------------HSSNRSRPG----------------
UniRef90_UPI0002A4A1D5_1_346      GSP--TQPRPG--------------YSTKRS-------------------
UniRef90_S4RXA6_1_456             QLHDPPLHSGGEH----------DIDLRRLSRASS------RVRSDDLQV
UniRef90_P16863_1_360             --------------------------------------------------
UniRef90_H2LU51_1_404             ECGSSEYPTLPAVDTSSCPALSGIVRKSRRVSP-----------------
UniRef90_I3KYL3_1_401             ERARSEYPTLPVSDASSSTVLSGITRKTRR--------------------
UniRef90_G3NC44_1_402             GCTSSEYPTLPV--ASSCATMSGAARKSRRVSP-----------------
UniRef90_H2SSL2_1_392             -LVTSEYPTLPVADATSCPTLSGITRKSRR--------------------
UniRef90_UPI0002C46B7E_1_433      VRERRENDGKDSERNHYSRG------VTVDLENHMRQSPPKVFSLPANCN
UniRef90_G3ULF1_1_432             VKERRENFGTDSERCHYSKG------VSVDLENHVSQSPQKVFSLPANCN
UniRef90_C9IYK1_1_407             LMEKRETEGKDSKRNYYSRGHRSIPGVAIDGENNMRQSPQT---------
UniRef90_H0Y0G7_1_436             LREKTEIDGKDSKRN--SRGHCFIPGVAIDLDGHIGQLPHTAFSMSATST
UniRef90_L9JD22_1_408             LREKREMNAKGSKRNHYSRDHCSIPGVVIDLENHMGQSPQTT--------
UniRef90_F1N617_1_436             LRGKRETDGKDSKRNHYFKGHCSSPGDAIELNNHVGQSPQTAFSLPANCT
UniRef90_F1SV25_1_385             VRGKRESDSEDSKRNHYPRG------------------------------
UniRef90_L5JUH5_1_307             --------------------------------------------------
UniRef90_UPI00020369CA_1_441      KEADQKHFLADTQNADTKTAR--NHLLLEQLRSGRERRILHKFPHQEQ-Q
UniRef90_R4GLX1_1_405             KEADQKHFLAGAQNADTAPRS--FAEMLSQPP-------LQPFP------
UniRef90_UPI00035A19E6_1_466      EEAEKKHFLLVTQNADTASTF--YLRSFAEMPSQTSLQPGTTFPSTSFRQ
UniRef90_F6WA84_1_463             KQENTTTGHQANFEAAVHLGYR--PEMPLGAALYPSLQPEMTFSPPTDCT
UniRef90_G1SG18_1_430             PGTTTTS---RHCPAYAVGTWKQSQDLEPLGEPLTDLHSDSSVRESGGWV
UniRef90_UPI00032B0E64_1_413      P-DTTAS---RHCPVYAAGTWKQSQDLEPSGEPATDLHS--YCRDSDSSV
UniRef90_UPI0002C65D9D_1_412      LGTTTAP---RHCPSYTIGTWEQPQHPRSSGEPLTDFHS--HCRDSDGSV
UniRef90_F7CF28_1_383             LGSTTAP---RHCPSYAIG-------------------------------
UniRef90_Q969M2_1_435             LGTTTAP---RNCPSFAVGTWEQSQDPEPSGEPLTDLHS--HCRDSEGSM
UniRef90_L9JVZ3_1_406             LGKMTAS---RHCPSYAIGTLEKSQDLELSGEPLTDVHS--HC-------
UniRef90_I3M407_1_414             LGATVAS---QHCPSYALRTWEQSQDLESSGEPLTDMRS--HFKGSDGSV
UniRef90_L5JMB7_1_435             LGETTAP---RHCPSYAIGTWEQSYDLQPSEEPLTDFHN--HCRDSNGSM
UniRef90_L8J083_1_417             LGTKMAP---RHCPSHTTGPWEQSQDLQPSGEPLADLHS--HCRHSDGSM
UniRef90_UPI0002BCCFF6_1_421      LGTTMAP---RHCPSRTTGPWEQSQDLQPSGEPLTDLHS--HCRHSDGSM
UniRef90_F1RY20_1_421             LGTTMAS---RHCLSHTTGPWERPQDLKPSGEPLTDLHS--HCRDSNGSR
UniRef90_UPI0002C59166_1_412      LGTEIAP---RHCPSYAIGTWGQSQDRRPSGEALTDLNS--KCRDSDGSV
UniRef90_G3TBX7_1_436             LERTTAP---EHCPSYVPGTWELPQDLKPPGEPLTDLHS--HCKDSDGSV
UniRef90_G3GSS7_1_405             LGTMTAS---PHCPPSTLGTWERSHGQDASGKPLSDLQS--H--------
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UniRef90_UPI0003316158_1_413      LLTAAPP---RQGASYAPGPWEQAQVRHLAGESLTDAQS--LCRDSEGSV
UniRef90_G3WUN4_1_443             ILSRPQLCNLANCPSCTLHPGEQSQSLWNPTRTSIDLTT--HCKTSKDSM
UniRef90_F6W379_1_264             ------------------------------AETTEDEIS--SCKSKKNS-
UniRef90_M7BL54_1_431             ETHKQPQQDIESCPGNEQHIPEPPRNPVQPAKTPTRAGPLEIPQAPRNIL
UniRef90_UPI0002B44362_1_276      -----------------SVVPPPPCLAS----------------------
UniRef90_UPI000298933C_1_429      PAALRNPQRKMSRVSVYKDLSDMSDSAESEPHPTVRKCSFMSRGLSDGKL
UniRef90_H3CDZ2_1_426             PAALKNPARKQSRVSIYKELSDMSDSAESEPHLPARKCSFMSRGLSDGKL
UniRef90_I3IZH7_1_440             PAALRNPQRKQSRVSVCKELSDMSDSPESEHYPTARKCSFMSRGLSEGKL
UniRef90_E7F3P4_1_389             PAALR----KHSR-------------------------------------


UniRef90_UPI0002C691BE_1_358      ------------------------------------------------
UniRef90_F7BKC0_1_358             ------------------------------------------------
UniRef90_Q0VCR2_1_359             ------------------------------------------------
UniRef90_G3TUX5_1_358             ------------------------------------------------
UniRef90_L9JKN2_1_358             ------------------------------------------------
UniRef90_P36382_1_358             ------------------------------------------------
UniRef90_UPI0003315E33_1_350      ------------------------------------------------
UniRef90_UPI000333FB64_1_358      ------------------------------------------------
UniRef90_UPI000334540D_1_357      ------------------------------------------------
UniRef90_L5K3R8_1_358             ------------------------------------------------
UniRef90_G1TQ37_1_358             ------------------------------------------------
UniRef90_UPI0001776F40_1_352      ------------------------------------------------
UniRef90_G3H2Q9_1_358             ------------------------------------------------
UniRef90_Q01231_1_358             ------------------------------------------------
UniRef90_G5BBL6_1_357             ------------------------------------------------
UniRef90_H0WCZ7_1_358             ------------------------------------------------
UniRef90_G3X1A3_1_358             ------------------------------------------------
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