Supplementary Material

Structural modeling of the N-terminal signal–receiving domain of IκBα

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Supplementary Data

- **Supplementary Figure 1**. A comparison of secondary structure predictions of the full length IκBα using different methods.

- **Supplementary Figure 2**. Results from JPRED3 analysis of the full 317 amino acid residues from human IκBα with confidence scores.

- **Supplementary Figure 3**. pDomThreader prediction results.

- **Supplementary Figure 4**. The total energy variation of the three system replicas for the initial (A) and final (B) 100ns simulation.

- **Supplementary Figure 5**. Temperature of the three system replicas for the initial 100 ns (A) and the final 100ns (B).

- **Supplementary Figure 6**. RMSD of the complexed IκBα/NF-κB protein backbone against the starting structure of the three system replicas for the initial 100 ns (A) and the final 100ns (B).

- **Supplementary Figure 7.** Root mean square fluctuations of amino acid residues mapped onto Cα-backbone atoms of IκBα.

- **Supplementary Figure 8.** (A) The total energy variation of the three system replicas for the free IκBα simulations.(B) Temperature of the three system replicas for the free IκBα simulations

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                          MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVPRGSEPWKQQL

SYMPRED                            HHHH      HHHHHHHHH              HHHHHHH     HHHHHHH
JPRED3                         HHHHHHHHHHH   HHHHHHHHHH             HHHHHHHHHH  HHHHHHHHH
JUFO                       H      HHHHHHH      HEEEEEEHH            HHHHHHHHHH  HHHHEEEH     HHH
NetSurfP                           HHHHHHHH    HHHHHHHHH              HHHHHHH   HHHHHHHHH
PORTER                                         HHHHHHHHHHH           HHHHHHHHH  HHHHHHHH
PredictProtein                      HHHHHH  HHHHHHHHHHH       H      HHHHHHHHH  HHHHHHHH
ScratchProteinPredictor               HHHH      HHHHHHHHH              HHHHHHH   HHHHHHHHH

                          TEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVITNQPEIAEALLGAGCDPELR

SYMPRED                          HHHHHHH    HHHHHHHHHHH              HHHHHHH   HHHHHHHHH
JPRED3                           HHHHHHHH  HHHHHHHHHHH              HHHHHHH     HHHHHHHHH
JUFO                            HHHHHHHHH  HHHHHHHEEEHH    H         HHHHHHH   HHHHEEHE
NetSurfP                         HHHHHHH     HHHHHHHHHH              HHHHHHH   HHHHHHHHH
PORTER                           HHHHHHH   HHHHHHHHHHH               HHHHHHH   HHHHHHHHH
PredictProtein                   HHHHHHH   HHHHHHHHHHH               HHHHHHH   HHHHHHHHH
ScratchProteinPredictor          HHHHHHH   HHHHHHHHH    HHH          HHHHHHH   HHHHHHHHH

                          DFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATNYNGHTCLHLASIHGYLGIVELLVSLGADVN

SYMPRED                          HHHHHHH   HHHHHHHHH                   HHHHHHH   HHHHHHHHH
JPRED3                           HHHHHHH    HHHHHHHHH                   HHHHHHH   HHHHHHHHH
JUFO                             HHHHHHH   HHEEEEEEH       HHHH       EHHHHHHH   HHHEEEEEE
NetSurfP                         HHHHHHH  HHHHHHHHHH                   HHHHHHH   HHHHHHHHH
PORTER                           HHHHHHHH  HHHHHHHHH          HH       HHHHHHH   HHHHHHHHH
PredictProtein                   HHHHHHH   HHHHHHHHH            E      HHHHHHH   HHHHHHHHH
ScratchProteinPredictor          HHHHHHHH  HHHHHHHHH     HHHHH         HHHHHHH   HHHHHHHHH

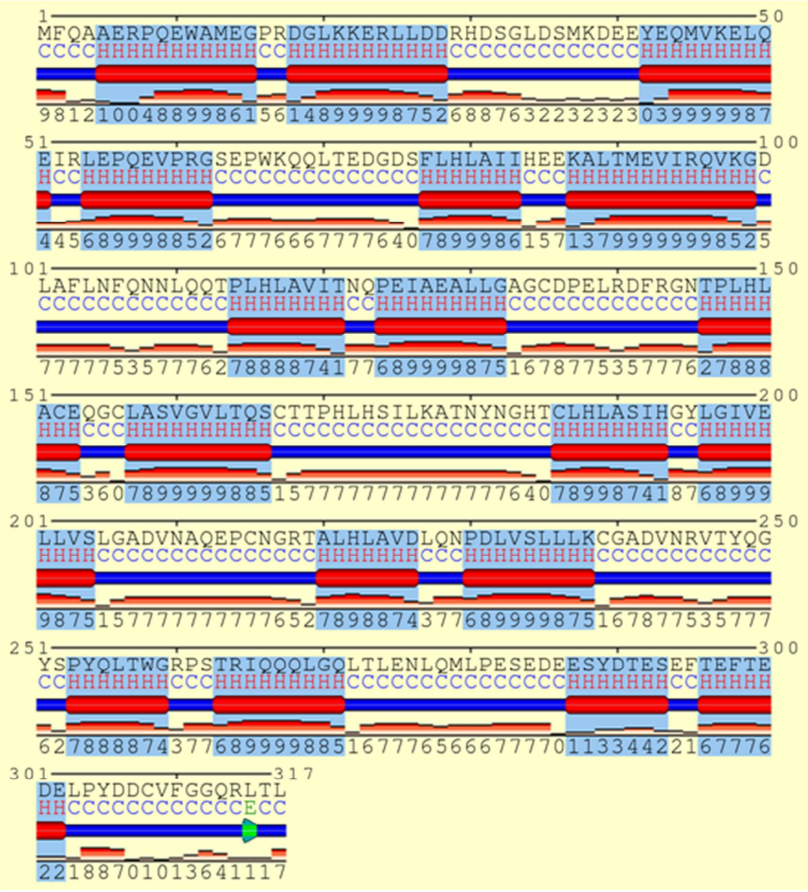
                          AQEPCNGRTALHLAVDLQNPDLVSLLLKCGADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQML

SYMPRED                            HHHHHHH   HHHHHHHHH              HHHHHHH   HHHHHHHHH
JPRED3                             HHHHHHH   HHHHHHHHH              HHHHHHH     HHHHHHHHH
JUFO                              HHHHHHHH    HHHHEHHH    H         HHHHHHH    HHHEEHHH    HH
NetSurfP                           HHHHHHH   HHHHHHHHH              HHHHHHH   HHHHHHHHH
PORTER                             HHHHHHH   HHHHHHHHH              HHHHHH    HHHHHHHHH   HHH
PredictProtein                     HHHHHHH   HHHHHHHHH              HHHHHHH   HHHHHHHHHH
ScratchProteinPredictor            HHHHHHH   HHHHHHHHH              HHHH      HHHHHHH    HHH

                          PESEDEESYDTESEFTEFTEDELPYDDCVFGGQRLTL

SYMPRED                                HHHHHH             EE
JPRED3                           HHHHHH   HHHHHHH      E     E
JUFO                            HHHHHHH   HHHHEEEE         EEEEE
NetSurfP                       HHHHHHHH   HHHHHHHHH
PORTER                                                HHHHH
PredictProtein                   HHHHHHHHHHHHHHHHHHHHHHH   EE
ScratchProteinPredictor          HHHHHH   HHHHHHH     EEE   EEE
```

Supplementary Figure 1. A comparison of secondary structure predictions of the full length IκBα using different methods.



Supplementary Figure 2. Results from JPRED analysis of the full 317 amino acid residues from human IκBα. Two helix-coil-helix motifs can be recognized between residues 5-62 which is indicative of an ankyrin repeat-like organization of the SRD.

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domTHREADER PREDICTION RESULTS:
HTML formatted results can be found at:
http://bioinf.cs.ucl.ac.uk/psipred/result/333460
You can also view the results in a machine printable format at:
http://bioinf.cs.ucl.ac.uk/genthreader_output/333460.html

- Key ------------------------------------------------------------
Conf   = Description of confidence level
Score  = Raw score from SVM
p-val  = Probability of false positive
Epair  = Pairwise energy for model
Esolv  = Solvation energy for model
AlnSc  = Sequence alignment score
Alen   = Length of alignment
Dlen   = Length of PDB entry
Tlen   = Length of target sequence
Start  = Start position of the domain
Stop   = End position of the domain
PDB_ID = PDB identifier (+ chain code + domain code in CATH format)
-----------------------------------------------------------------
Confidence levels:
CERT   p-value < 0.0001
HIGH   p-value < 0.001
MEDIUM p-value < 0.01
LOW    p-value < 0.1
GUESS  p-value >= 0.1
-----------------------------------------------------------------

CERT    11.734  2e-08  -287.9   1.6  549.5  216  216  317   73  293 1iknD00
CERT    11.479  2e-08  -291.4  -1.3  473.4  126  126  317  108  242 1n0rA00
CERT    11.232  3e-08  -203.6  -0.7  408.8   93   93  317  141  242 1n0qB00
CERT    11.142  3e-08  -262.6   0.3  627.0  272  404  317    1  286 1n11A00
CERT    10.815  4e-08  -295.3  -6.7  364.0  153  153  317  108  270 1awcB00
CERT    10.750  5e-08  -373.3  -7.6  470.0  216  228  317   72  317 1k1aA00
CERT    10.541  6e-08  -240.0  -0.6  327.0  131  131  317  100  237 1ympA00
CERT    10.521  6e-08  -336.6  -6.9  415.0  200  285  317   73  287 1wdyA00
CERT    10.505  6e-08  -279.6  -3.1  409.0  152  155  317  112  270 2bkgA00
CERT    10.471  7e-08  -380.9  -5.8  406.0  214  223  317   36  271 1uohA00
CERT    10.469  7e-08  -389.9  -4.5  405.0  204  209  317   55  272 2f8yB00
CERT    10.053  1e-07  -401.7  -4.9  351.0  215  226  317   35  274 2dznA00
CERT     9.872  1e-07  -301.0  -0.3  324.0  155  156  317   73  240 1bd8A00
CERT     9.872  1e-07  -244.9   2.0  320.0  150  162  317   83  242 1s70B01
CERT     9.559  2e-07  -189.0   0.7  299.0  122  124  317  136  267 3c5rA00
CERT     9.433  2e-07  -228.6  -2.2  298.0  123  128  317  114  242 1ycsB01
CERT     9.431  2e-07  -186.3  -0.6  259.0  125  125  317  109  241 1bi7B00
CERT     9.029  4e-07  -110.3  -2.1  244.0   93   93  317   40  136 1n0qB00
CERT     9.016  4e-07  -144.4   2.2  267.0  125  129  317  112  243 1s70B02
CERT     7.289  3e-06  -208.8  -3.0  205.0  215  254  317   15  259 1sw6A00
HIGH     5.818  2e-05  -137.0  -3.9  164.0   96  124  317   35  136 3c5rA00
HIGH     5.697  2e-05    36.1   4.7  164.0   98  126  317    4  108 1n0rA00
HIGH     5.411  2e-05    37.7   7.9  157.0  105  155  317    1  112 2bkgA00
HIGH     4.308  9e-05    22.1   1.4  132.0  103  129  317    6  112 1s70B02
MEDIUM   4.165  1e-04     0.2   1.0  129.0   99  128  317    8  114 1ycsB01
MEDIUM   3.991  1e-04    50.7   7.3  125.0   98  153  317    1  108 1awcB00
MEDIUM   3.163  3e-04    78.3   2.5  108.0   91  131  317    1   98 1ympA00
LOW      2.171  0.001    51.5   0.8   89.0   80  162  317    1   83 1s70B01
LOW      1.936  0.001     0.1   2.7   84.1   15   61  317  303  317 2pw8I00
LOW      1.905  0.001   -28.1   2.8   83.0   34  125  317   72  109 1bi7B00
LOW      1.464  0.002    -0.0   1.9   75.3   16  132  317  302  317 1gupA02
LOW      1.131  0.004    80.0   6.0   69.0   70  285  317    1   73 1wdyA00
LOW      1.061  0.004    -0.0  -0.3   68.7   15   29  317  302  317 1ubdC04
LOW      1.031  0.004    -3.3  -1.0   68.7   14  205  317  301  317 1vg0A01
LOW      0.905  0.005    58.5   1.5   65.0   69  228  317    1   72 1k1aA00
LOW      0.770  0.006     1.0  -1.4   64.2   17  115  317  299  317 2r6fA04
LOW      0.692  0.006    -1.7  -1.6   62.9   15  230  317  303  317 2nvkX01
LOW      0.686  0.006    60.7   1.3   61.0   70  216  317    1   73 1iknD00
LOW      0.427  0.008    -2.8   2.2   56.0   37   93  317    1   40 1n0qB00
LOW      0.380  0.009  -204.1  -9.2   53.0  163  196  317   65  244 1tx4A00
LOW      0.309  0.010   -39.2  -2.1   43.0   72   72  317   62  145 1pveA00
LOW      0.266  0.010   -32.9  -2.6   43.0   52   52  317   19   75 1rquA01
GUESS    0.104  0.012    32.9   4.4   50.0   52  209  317    1   55 2f8yB00
GUESS    0.103  0.012    65.8   5.0   50.0   69  156  317    1   73 1bd8A00
GUESS    0.018  0.013   -31.6  -5.0   39.0   57   57  317  208  301 1tteA02
GUESS    0.011  0.013   -16.6  -1.2   38.0   56   56  317  209  284 1h9eA00



>>> Alignment with 1iknD00:
                 10        20        30        40        50        60
         CCCCCCHHHHHCCCCCCCCCCCCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHCCCCCCCCC
1iknD00  DGDSFLHLAIIHEEKALTMEVIRLAFLNFQNNLQQTPLHLAVITNQPEIAEALLGAGCDP

Query    ------------------------------------------------------------
         ------------------------------------------------------------
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```
                 70        80        90       100       110
         CCCCCCCCCHHHHHHHHCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHHHHHHCCC--
1iknD00  ELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATNYNGHTCLHLASIHGY--
                                                   |           |
Query    -------------------------------------MFQA----AERPQEWAMEGPRDG
         -------------------------------------CCCC----CCCCHHHHHCCCCCC
                                                          10

         120       130       140       150       160       170
         -HHHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCHH
1iknD00  -LGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCGADVNRVTYQGYSPY
                |                                                |
Query    LKKERLLDDRHDSGLDS-MKDEEYEQMVKELQEIRLEPQEVPRGSEPWKQQLTED-----
         HHHHHHHHHHCCCCCCC-CCCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCC-----
                  30        40        50        60        70

         180       190       200       210
         HHCCCCCCHHHHHHHHCCCCCCCCCCCCCCCCCCCCC
1iknD00  QLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTE-

Query    ----------------------------------------
         ----------------------------------------
```

Percentage Identity = 1.9.

>>> Alignment with 1n0qB00:

```
                 10        20        30        40          50
         CCCCHHHHHHHCCCHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCC--HHHHHHHHHC-
1n0qB00  NGRTPLHLAARNGHLEVVKLLLEAGADVNAKDKNGRTPLHLAARNGH--LEVVKLLLEA-
                                             |   |       |    ||
Query    ------------------------------MFQAAERPQEWAMEGPRDGLKKERLLDDRH
         ------------------------------CCCCCCCCHHHHHCCCCCHHHHHHHHHHC
                                                10        20        30

          60        70        80        90
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCC
1n0qB00  GADVNAKDKNGRTPLHLAARNGHLEVVKLLLEAGAY

Query    DSGLDSMKDE--------------------------
         CCCCCCCCCC--------------------------
                 40
```

Percentage Identity = 5.4.

>>> Alignment with 1tx4A00:

```
         ------------------------------------------------------------
1tx4A00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCHHHHHHHHHCCCCCCCCCCHHHHHHHHHCCCCCCCCCC
                 10        20        30        40        50        60

                       10        20        30          40        50
         ----CCCCCC--CCCCHHHHHHHCCCCCCCCHHHHHHHHHHHHHC--CCCCCCCCCCC--
1tx4A00  ----PLPNQQ--FGVSLQHLQEKNPEQEPIPIVLRETVAYLQAHA--LTTEGIFRRSA--
             |   |    | |  ||     |         |          |
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEK----ALTMEVIRQVKGDLAFLNFQNNLQQTPLH
         CCCCCCCCCCCCCCCCHHHHHHHCCCH----HHHHHHHHHHHHCCCCCCCCCCCCHHHH
                 70        80            90       100       110

                       60        70        80             90
         ------CHHHHHHHHHHHHCCCCCCCCCCCCCHHHH-----HHHHHHHHHCCCCCCHHH
1tx4A00  ------NTQVVREVQQKYNMGLPVDFDQYNALHLPA-----VILKTFLRELPEPLLTFDL
                                 ||     |||                 | |
Query    LAVITNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLH---
         HHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCC---
          120       130       140       150       160       170

                 110       120       130       140       150
         HHHHHCCCCCCHHHHHHHHHHHCCCCHHHHHHHHHHHHHHHHHHCHHHCCCHHHHHH
1tx4A00  YPHVVGFLNIDESQRVPATLQVLQTLPEENYQVLRFLTAFLVQISAHSDQNKMTNTNLAV
                |         |                |         |    |  |   |||
Query    --SILKATNYN--GHTCLHLASIHG----YLGIVELLVSLGADVNAQEPCNGRTALHLAV
         --CCCCCCCCC--CCHHHHHHHHCC----CHHHHHHHHHCCCCCCCCCCCCCHHHHHHH
               180       190           200       210       220
```

```
                 170       180       190
         HHHHHHCCCCCHHHHHHCHHHHHHHHHHHHCHHHHC-----------------------
1tx4A00  VFGPNLLWAKDAAITLKAINPINTFTKFLLDHQGELF-----------------------
               |                     ||
Query    DLQNPDL------------------VSLLLKCGADVNRVTYQGYSPYQLTWGRPSTRIQQ
         HCCCHHH------------------HHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHH
           230                          240       250       260


         --------------------------------------------------
1tx4A00  --------------------------------------------------

Query    QLGQLTLENLQMLPESEDEESYDTESEFTEFTEDELPYDDCVFGGQRLTL
         HHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCCCCCCCCCCCCCCCCCCC
         270       280       290       300       310


Percentage Identity = 14.3.


>>> Alignment with 1pveA00:

         ------------------------------------------------------------
1pveA00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCCCCCCCCCC
                 10        20        30        40        50        60


                  10        20        30                  40
         -CCCCCCCCCCCCCCCCCHHHHHCCCHHHHHHHHHHHHC------------CCHHHHHHH
1pveA00  -GSHMPLEFLRNQPQFQQMRQIIQQNPSLLPALLQQIGR------------ENPQLLQQI
          ||      |          ||     |       |                |  |  |
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                 70        80        90       100       110       120


          50        60        70
         HCCHHHHHHHHHCCCCCHHHHCCCC----------------------------------
1pveA00  SQHQEHFIQMLNEPVQEAGGQGGGG----------------------------------
             |     |         |
Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180


         --------------------------
1pveA00  --------------------------

Query    YNGHTCLHLASIHGYLGIVELLVSLG
         CCCCHHHHHHHHCCCHHHHHHHHCC
                190       200


Percentage Identity = 18.1.


>>> Alignment with 1rquA01:
                                  10             20        30
         ------------------CCCHHHHHHHHC-----CCCHHHHHHHHHHHHHCCCCCCCC
1rquA01  ------------------SITKDQIIEAVA-----AMSVMDVVELISAMEEKFGVSAAAA
                            |              |             |
Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


          40        50
         CCCCCCCCCCCCCCC-------------------------------------------
1rquA01  VAVAAGPVEAAEEKT-----------------------------------------
                  |
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                 70        80        90       100       110       120


         ------------------------------------------------------------
1rquA01  ------------------------------------------------------------

Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180
```

```
         ------------------------------------------------------------
1rquA01  ------------------------------------------------------------

Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHCC
                190       200       210       220       230       240


         ------------------------------------------------------------
1rquA01  ------------------------------------------------------------

Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                250       260       270       280       290       300


         -----------------
1rquA01  -----------------

Query    DELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCC
                310

Percentage Identity = 7.7.

>>> Alignment with 2f8yB00:
                 10        20        30        40        50        60
         CCCCHHHHCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCHHHH
2f8yB00  AVISDFIYQGASLHNQTDRTGETALHLAARYSRSDAAKRLLEASADANIQDNMGRTPLHA

Query    ------------------------------------------------------------
         ------------------------------------------------------------


                 70        80        90       100       110       120
         HHHHCCHHHHHHHHCCCCCCCCCCCCCCCCHHHHHHHHCHHHHHHHHHCCCCCCCCCCC
2f8yB00  AVSADAQGVFQILIRNRATDLDARMHDGTTPLILAARLAVEGMLEDLINSHADVNAVDDL

Query    ---------------------------------------------------------MFQA
         ---------------------------------------------------------CCCC


                130          140       150       160       170
         CCCHHHHHHHC---CCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCHHHHHHHHHCC
2f8yB00  GKSALHWAAAV---NNVDAAVVLLKNGANKDMQNNREETPLFLAAREGSYETAKVLLDHF
             ||                      |     |         |   |
Query    AERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLE---------
         CCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHHHHCCCC---------
             10        20        30        40        50


         180       190       200
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHC
2f8yB00  ANRDITDHMDRLPRDIAQERMHHDIVRLLDEY

Query    --------------------------------
         --------------------------------


Percentage Identity = 2.9.

>>> Alignment with 1bd8A00:
                 10        20        30        40        50        60
         CHHHHHHHHHHHCCHHHHHHHHHCCCCCCCCCCCCCCCHHHHCCCCCHHHHHHHHHCCCC
1bd8A00  RAGDRLSGAAARGDVQEVRRLLHRELVHPDALNRFGKTALQVMMFGSTAIALELLKQGAS

Query    ------------------------------------------------------------
         ------------------------------------------------------------


                 70        80           90       100       110
         CCCCCCCCCCHHHHHHHCCC---HHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCHHHH
1bd8A00  PNVQDTSGTSPVHDAARTGF---LDTLKVLVEHGADVNVPDGTGALPIHLAVQEGHTAVV
                   |   |                  |                    ||
Query    ---MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQ
         ---CCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCCCCCC
                     10        20        30        40        50


         120       130       140       150
         HHHHC-CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCC
1bd8A00  SFLAA-ESDLHRRDARGLTPLELALQRGAQDLVDILQGHM
```

```
                |
Query    EVPRGSEPWKQQLTED-----------------------
         CCCCCCCCCCCCCCCC-----------------------
          60        70


Percentage Identity = 3.8.


>>> Alignment with 1tteA02:

         ------------------------------------------------------------
1tteA02  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


         ------------------------------------------------------------
1tteA02  ------------------------------------------------------------

Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHH
                 70        80        90       100       110       120


         ------------------------------------------------------------
1tteA02  ------------------------------------------------------------

Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180


                                            10                  20
         ---------------------------CCC-CCCCCCC----------CHHHHHHHHHC
1tteA02  ---------------------------NVE-ESDLYGI----------DHDLIDEFESQG
                                     |       |           ||       |
Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCC
                190       200       210       220       230       240


                                 30               40        50
         -------------------CCHHHHHHHHHCCC-------CCCCCCCCHHHHHHHHHC
1tteA02  -------------------FEKDKIVEVLRRLGV-------KSLDPNDNNTANRIIEELL
                             |   |  |          | |     |     |
Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCC
                250       260       270       280       290       300


         C----------------
1tteA02  K----------------

Query    DELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCC
                310


Percentage Identity = 21.1.


>>> Alignment with 1h9eA00:

         ------------------------------------------------------------
1h9eA00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


         ------------------------------------------------------------
1h9eA00  ------------------------------------------------------------

Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHH
                 70        80        90       100       110       120


         ------------------------------------------------------------
1h9eA00  ------------------------------------------------------------

Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
```

```
         CCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180

                                                 10                 20
         ----------------------------CCCCCCCCCCC---------CCHHHHHHHHCC
1h9eA00  ----------------------------PEFLEDPSVLT---------KDKLKSELVANN
                                     |     |           | | |
Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHCC
                190       200       210       220       230       240

              30                  40        50
         CCCCCCCC-----------CCCHHHHHHHHHCCCCCCCCCCCCC----------------
1h9eA00  VTLPAGEQ-----------RKDVYVQLYLQHLTARNRPPLPAGT----------------
                            |     |  |  ||  |   ||
Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                250       260       270       280       290       300


         -----------------
1h9eA00  -----------------

Query    DELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCC
                310

Percentage Identity = 23.2.



>>> Alignment with 1vg0A01:

         ------------------------------------------------------------
1vg0A01  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCCCCCCCCCC
                 10        20        30        40        50        60


         ------------------------------------------------------------
1vg0A01  ------------------------------------------------------------

Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                 70        80        90       100       110       120


         ------------------------------------------------------------
1vg0A01  ------------------------------------------------------------

Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180


         ------------------------------------------------------------
1vg0A01  ------------------------------------------------------------

Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHCC
                190       200       210       220       230       240


         ------------------------------------------------------------
1vg0A01  ------------------------------------------------------------

Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                250       260       270       280       290       300


                 10           20        30        40        50
         CCCCCCCCEEEECC---CHHHHHHHHHHHHCCCCEEEECCCCCCCCCCCCCCHHHHHHHH
1vg0A01  DNLPSDFDVIVIGT---GLPESIIAAACSRSGQRVLHVDSRSYYGGNWASFSFSGLLSWL
         | ||   |  | |     |
Query    DELP--YDDCVFGGQRLTL----------------------------------------
         CCCC--CCCCCCCCCCCCC----------------------------------------
                  310
```

```
          60        70        80        90       100       110
         HHCCCHHHHCCCCEEEEECCCCCCCCCCCCCCHHHHHHHHHHHHCCCEEECCCCEEEEEE
1vg0A01  KEYQMWQEQILENEEAIPLSSKDFLFPLYGQGELPQCFCRMCAVFGGIYCLRHSVQCLVV

Query    ------------------------------------------------------------
         ------------------------------------------------------------


         120       130       140       150       160       170
         ECCCCCEEEEEECCCCEEECCEEEEECCCCCCCCCCCCCCCCCCCCCCCCCCCCEEEEC
1vg0A01  DKESRKCKAVIDQFGQRIISKHFIIEDSYLSENTCSRVQYSSDISRDCYNDLPSNVYVCS

Query    ------------------------------------------------------------
         ------------------------------------------------------------


         180       190       200
         CCCCCCCCHHHHHHHHHHHHHHCCCCCC
1vg0A01  GPDSGLGNDNAVKQAETLFQQICPNEDF

Query    ----------------------------
         ----------------------------


Percentage Identity = 3.4.

>>> Alignment with 1k1aA00:
                 10        20        30        40        50        60
         CCCCCHHHHHHHCCCHHHHHHHHHHHHHCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHH
1k1aA00  EDGDTPLHIAVVQGNLPAVHRLVNLFQQGGRELDIYNNLRQTPLHLAVITTLPSVVRLLV

Query    ------------------------------------------------------------
         ------------------------------------------------------------


                  70        80        90       100       110       120
         HCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHCCCCCCCCCCCCCCCCHHHHHHHH
1k1aA00  TAGASPMALDRHGQTAAHLACEHRSPTCLRALLDSAAPGTLDLEARNYDGLTALHVAVNT

Query    ------------------------------------------------------------
         ------------------------------------------------------------


                 130       140       150         160        170
         CCHHHHHHHHHCCCCCCCCCCCCCCCHHHHHHHCC--CHHHHHHHHHC-CCCCCCCCCCC
1k1aA00  ECQETVQLLLERGADIDAVDIKSGRSPLIHAVENN--SLSMVQLLLQH-GANVNAQMYSG
                                   |   | |     |    ||
Query    -------------------MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEE
         -------------------CCCCCCCCHHHHHCCCCCCHHHHHHHHHHCCCCCCCCCCCC
                                   10        20        30        40

         180       190       200       210       220
         CCHHHHHHHHCCHHHHHHHHCCCCCCCCCCCCCCCCCCCCCHHHHHHHCC
1k1aA00  SSALHSASGRGLLPLVRTLVRSGADSSLKNCHNDTPLMVARSRRVIDILRG
                   |         |
Query    YEQMVKELQEIRLEPQEVPRGSEPWKQQLTE--------------------
         HHHHHHHHHHCCCCCCCCCCCCCCCCCCCC--------------------
                 50        60        70

Percentage Identity = 3.5.

>>> Alignment with 2r6fA04:

         ------------------------------------------------------------
2r6fA04  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                  10        20        30        40        50        60


         ------------------------------------------------------------
2r6fA04  ------------------------------------------------------------

Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                  70        80        90       100       110       120


         ------------------------------------------------------------
```

```
2r6fA04  ------------------------------------------------------------

Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180


         ------------------------------------------------------------
2r6fA04  ------------------------------------------------------------

Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHCC
                190       200       210       220       230       240


         ------------------------------------------------------------CE
2r6fA04  ------------------------------------------------------------AK

Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                250       260       270       280       290       300


                 10        20        30        40        50        60
         ECC--CHHHHCCCCCCCCCCCCCCCCCCCCHHHHHHHHHHHHCCCCCCCCCCCHHHHHHHH
2r6fA04  LEV--DLDLVIPNDELTLKEHAIAPWEPYYPQLLEAVCRHYGIPDVPVKDLPKEQLDKIL
          |   | | |     |||
Query    DELPYD-DCVFGGQRLTL----------------------------------------
         CCCCCC-CCCCCCCCCCC----------------------------------------
                 310


                 70        80        90       100       110
         HCCCCCCCCCCCCCCCCCCCCCCCCCCHHHHHHHHHHHCCCCCCCCCCCCCEEC
2r6fA04  YGSGGEPIYFRYTNDFGQVREQYIAFEGVIPNVERRYRETSSDYIREQEKYAEQP

Query    -------------------------------------------------------
         -------------------------------------------------------


Percentage Identity = 6.1.


>>> Alignment with 2nvkX01:

         ------------------------------------------------------------
2nvkX01  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


         ------------------------------------------------------------
2nvkX01  ------------------------------------------------------------

Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                 70        80        90       100       110       120


         ------------------------------------------------------------
2nvkX01  ------------------------------------------------------------

Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180


         ------------------------------------------------------------
2nvkX01  ------------------------------------------------------------

Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHCC
                190       200       210       220       230       240


         ------------------------------------------------------------
2nvkX01  ------------------------------------------------------------

Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                250       260       270       280       290       300
```

```
                    10        20        30        40        50
          --CCCCEEEECCCHHHHHHHHHHHCCCCEEEECCCCCCCCCCCCCCCCHHHHHCHHHH
2nvkX01   --YDYDLIVIGGGSAGLACAKEAVLNGARVACLDFVKPTPTLGTKWGVGGTCVNVGCIPK
              ||  | ||    |
Query     DELPYDDCVFGGQRLTL-----------------------------------------
          CCCCCCCCCCCCCCCCC-----------------------------------------
                 310

                    70        80        90       100       110
          HHHHHHHHHHHHHHHHHHCCCCCCCCCCHHHHHHHHHHHHHHHHHHHHHHHCCCEE
2nvkX01   KLMHQASLLGEAVHEAAAYGWNVDDKIKPDWHKLVQSVQNHIKSVNWVTRVDLRDKKVEY

Query     ------------------------------------------------------------
          ------------------------------------------------------------


                   130       140       150       160       170
          ECEEEEEEECCEEEEEECCCCEECCCCEEEECCCEECCCEECCCCCCCCCCCCCCCCCCC
2nvkX01   INGLGSFVDSHTLLAKLKSGERTITAQTFVIAVGGRPGRKGLVDDLNLPNAGVTVQKDKI

Query     ------------------------------------------------------------
          ------------------------------------------------------------


                   190       200       210       220       230
          CCCCCCCCCCCCEEECCCCCCCCCCCHHHHHHHHHHHHHHHHCCCCCCCCCC
2nvkX01   PVDSQEATNVANIYAVGDIIYGKPELTPVAVLAGRLLARRLYGGSTQRMDYK

Query     ---------------------------------------------------
          ---------------------------------------------------


Percentage Identity = 2.6.



>>> Alignment with 1iknD00:

          ------------------------------------------------------------
1iknD00   ------------------------------------------------------------

Query     MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
          CCCCCCCCHHHHHCCCCCCHHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                  10        20        30        40        50        60


                                 10        20             30        40
          ------------CCCCCCHHHHHCCCCCCCCCCC-----CCCCCCCCCCCCCCHHHHHHH
1iknD00   ------------DGDSFLHLAIIHEEKALTMEVI-----RLAFLNFQNNLQQTPLHLAVI
                      ||||||||||||||||||||||      ||||||||||||||||||||
Query     RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
          CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHH
                  70        80        90       100       110       120


               50        60        70        80        90       100
          CCCHHHHHCCCCCCCCCCCCCCCCCHHHHHHHHCCHHHHHHHHCCCCCCCCCCCCCCCC
1iknD00   TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Query     TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
          CCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCC
                 130       140       150       160       170       180


              110       120       130       140       150       160
          CCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHCCC
1iknD00   YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Query     YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
          CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCC
                 190       200       210       220       230       240


              170       180       190       200       210
          CCCCCCCCCCCCHHHHCCCCCHHHHHHHHCCCCCCCCCCCCCCCCCCCCCCC-------
1iknD00   ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTE--------
          |||||||||||||||||||||||||||||||||||||||||||||||||||
Query     ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
          CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                 250       260       270       280       290       300


          -----------------
1iknD00   -----------------
```

```
Query    DELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCC
                 310


Percentage Identity = 99.1.


>>> Alignment with 1n0rA00:

         ------------------------------------------------------------
1n0rA00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHCCCCCCCCCC
                  10        20        30        40        50        60


                                                                  10
         ------------------------------------------------CC--CCHHHHHHH
1n0rA00  ------------------------------------------------NG--RTPLHLAAR
                                                         |    ||||||
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                  70        80        90       100       110       120


                 20        30        40        50        60
         HCCHHHHHHHHHHCCCCCCCCCCCHHHHHHHHCHHHHHHHHHCCCCC------CCC
1n0rA00  NGHLEVVKLLLEAGADVNAKDKNGRTPLHLAARNGHLEVVKLLLEAGADVN------AKD
             |    || || |    |  | ||||||   | |  |  |               |
Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCC
                 130       140       150       160       170       180


            70        80        90        100       110       120
         CCCCCHHHHHHHCCCHHHHHHHHCCCCCCCC-CCCCCCHHHHHHHCCCHHHHHHHHHC
1n0rA00  KNGRTPLHLAARNGHLEVVKLLLEAGADVNAK-DKNGRTPLHLAARNGHLEVVKLLLEAG
          || | ||||   | |  | ||   ||||||    |||| ||||        | |||  |
Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCC
                 190       200       210       220       230       240


         CC----------------------------------------------------------
1n0rA00  AY----------------------------------------------------------
         |
Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                 250       260       270       280       290       300


         -----------------
1n0rA00  -----------------

Query    DELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCC
                 310


Percentage Identity = 46.0.


>>> Alignment with 1n0qB00:

         ------------------------------------------------------------
1n0qB00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHCCCCCCCCCC
                  10        20        30        40        50        60


         ------------------------------------------------------------
1n0qB00  ------------------------------------------------------------

Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                  70        80        90       100       110       120


                                     10        20              30
         --------------------C--CCCHHHHHHHCCCHHHHHHHHHCCCCC------CCC
1n0qB00  --------------------N--GRTPLHLAARNGHLEVVKLLLEAGADVN------AKD
                               | ||||||   | |  |  |               |
Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
```

```
         CCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180

               40        50        60         70        80        90
         CCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCC-CCCCCCHHHHHHHCCCHHHHHHHHHCC
1n0qB00  KNGRTPLHLAARNGHLEVVKLLLEAGADVNAK-DKNGRTPLHLAARNGHLEVVKLLLEAG
          || | ||||   | |  | ||   ||||||    |||| ||||        | |||  |
Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHCC
                190       200       210       220       230       240

         CC------------------------------------------------------
1n0qB00  AY------------------------------------------------------
         |
Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                250       260       270       280       290       300

         -----------------
1n0qB00  -----------------

Query    DELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCC
                310

Percentage Identity = 47.3.

>>> Alignment with 1n11A00:
                 10        20        30        40        50        60
         CCHHHHHHHHCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHCHHHHHHHHHHCCCCC
1n11A00  LTPLHVASFMGHLPIVKNLLQRGASPNVSNVKVETPLHMAARAGHTEVAKYLLQNKAKVN

Query    ------------------------------------------------------------
         ------------------------------------------------------------

                 70        80        90       100       110       120
         CCCCCCCCHHHHHHHHCHHHHHHHHHHCCCCCCCCCCCCHHHHHHHHCHHHHHHHHH
1n11A00  AKAKDDQTPLHCAARIGHTNMVKLLLENNANPNLATTAGHTPLHIAAREGHVETVLALLE

Query    ------------------------------------------------------------
         ------------------------------------------------------------

                130       140          150       160       170
         CCCCCCCCCCCCCHHHHHHHCCC---HHHHHHHHCCCCCCCCCCCCHHHHHHHCCC
1n11A00  KEASQACMTKKGFTPLHVAAKYGK---VRVAELLLERDAHPNAAGKNGLTPLHVAVHHNN
                |       |   |          |     |
Query    -------MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIR
         -------CCCCCCCCHHHHHCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHCC
                         10        20        30        40        50

         180       190       200       210           220       230
         HHHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCC----HHHHHHHHHCCCCCCCCCCCCC
1n11A00  LDIVKLLLPRGGSPHSPAWNGYTPLHIAAKQNQ----VEVARSLLQYGGSANAESVQGVT
         |                    |   || |         || |       |       |
Query    LEPQEVPRGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQT
         CCCCCCCCCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCH
              60        70        80        90       100       110

             240       250       260       270       280       290
         HHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCHHHHHHHHCCHHHHHHHHHHCCCCC--
1n11A00  PLHLAAQEGHAEMVALLLSKQANGNLGNKSGLTPLHLVAQEGHVPVADVLIKHGVMVD--
         |||||      |    ||       |    | |||||    |      ||
Query    PLHLAVITNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLH
         HHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCC
             120       130       140       150       160       170

                   300       310       320        330       340
         ----CCCCCCCCHHHHHHHCCCCHHHHHHHHCCCCCCCCCC-CCCCHHHHHHHCCCHHHH
1n11A00  ----ATTRMGYTPLHVASHYGNIKLVKFLLQHQADVNAKTK-LGYSPLHQAAQQGHTDIV
             ||   | | || ||  |    |  |    |||||     |   || |      | |
Query    SILKATNYNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLV
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHH
             180       190       200       210       220       230

          350       360       370       380       390       400
         HHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHCCCCCCCCCCCCCCCCCCC--
```

```
1n11A00  TLLLKNGASPNEVSSDGTTPLAIAKRLGYISVTDVLKVVTDETSFVLHRMSFPETVDE--
          |||| ||  | |   |  |                |   | |    |     ||  ||
Query    SLLLKCGADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQML-----PESEDEES
         HHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCC-----CCCCCCCC
             240       250       260       270       280


         ----------------------------
1n11A00  ----------------------------

Query    YDTESEFTEFTEDELPYDDCVFGGQRLTL
         CCCHHCCCCCCCCCCCCCCCCCCCCCCC
                  300       310
```

Percentage Identity = 23.0.

>>> Alignment with 1awcB00:

```
         ------------------------------------------------------------
1awcB00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCCCCCCCCCC
                 10        20        30        40        50        60


                                                                  10
         ------------------------------------------------C--HHHHHHHHH
1awcB00  ------------------------------------------------D--LGKKLLEAAR
                                                            |  |
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                 70        80        90       100       110       120


                20         30        40        50        60
         HCCHHHHHHHHHHCCCC-CCCCCCHHHHHHHHCCHHHHHHHHCCCCCC------CCC
1awcB00  AGQDDEVRILMANGAPFT-TDWLGTSPLHLAAQYGHFSTTEVLLRAGVSRD------ART
           |      |   |      |  |  |||||   |      ||              |
Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180


             70        80        90       100        110       120
         CCCCCHHHHHHHHCCHHHHHHHHCCCCCCCCCCCCC-CCHHHHHHHCCCHHHHHHHHCC
1awcB00  KVDRTPLHMAASEGHANIVEVLLKHGADVNAKDMLK-MTALHWATEHNHQEVVELLIKYG
             | || |   |   ||| |   ||||||       |||| |        | || | |
Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCC
                190       200       210       220       230       240


             130       140       150
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHC-----------------------------
1awcB00  ADVHTQSKFCKTAFDISIDNGNEDLAEILQ-----------------------------
         |||                          |
Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHCCCHHHHHHHCCCCCCCCCCCCCCCCCCCCCHCCCCCCC
                250       260       270       280       290       300


         -----------------
1awcB00  -----------------

Query    DELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCC
                310
```

Percentage Identity = 29.4.

>>> Alignment with 1k1aA00:

```
         ------------------------------------------------------------
1k1aA00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCCCCCCCCCC
                 10        20        30        40        50        60


                            10        20        30        40
         -----------CCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHH
1k1aA00  -----------EDGDTPLHIAVVQGNLPAVHRLVNLFQQGGRELDIYNNLRQTPLHLAVI
                    ||||  || |                      |   ||| |||||||||
```

```
Query     RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
          CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                   70        80        90       100       110       120

                    60        70        80        90       100
          CCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCC--CCCC
1k1aA00   TTLPSVVRLLVTAGASPMALDRHGQTAAHLACEHRSPTCLRALLDSAAPGTLDL--EARN
          |  |     |  ||  |   |  | |  |||||         |  |     |     | |
Query     TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
          CCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCC
                 130       140       150       160       170       180

          110       120       130       140       150       160
          CCCCCHHHHHHHHCCHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCC
1k1aA00   YDGLTALHVAVNTECQETVQLLLERGADIDAVDIKSGRSPLIHAVENNSLSMVQLLLQHG
          | | | || |        | ||   |||  |     ||  |  ||       | |||  |
Query     YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
          CCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCC
                 190       200       210       220       230       240

          170       180       190       200
          CCCCCCCCCCCCHHHHHHHHCHHHHHHHHHCC-----CCCCCCCCC-------------
1k1aA00   ANVNAQMYSGSSALHSASGRGLLPLVRTLVRSG-----ADSSLKNCH-------------
          | ||   | | |       ||        |
Query     ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
          CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                 250       260       270       280       290       300

                   210       220
          ----------CCCCCCCCCCHHHHHHHCC
1k1aA00   ----------NDTPLMVARSRRVIDILRG
                     |
Query     DELPYDDCVFGGQRLTL------------
          CCCCCCCCCCCCCCCCC------------
                 310
```

Percentage Identity = 31.6.

>>> Alignment with 1ympA00:

```
          ------------------------------------------------------------
1ympA00   ------------------------------------------------------------

Query     MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
          CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                   10        20        30        40        50        60

                                                      10        20
          ---------------------------------------CCCCCCCCCCCCCHHHHHHH
1ympA00   ---------------------------------------RATDLDARMHDGTTPLILAAR
                                                 |        ||| ||
Query     RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
          CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                   70        80        90       100       110       120

                 30        40        50        60        70
          HCCCCHHHHHHHCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCC------C
1ympA00   LALEGMLEDLINSHADVNAVDDLGKSALHWAAAVNNVDAAVVLLKNGANKDMQ------N
                 | |     |    |  |   || |          ||               |
Query     TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
          CCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCC
                 130       140       150       160       170       180

             80        90       100        110       120       130
          CCCCCHHHHHHHHCCHHHHHHHHHCCCCCCCC-CCCCCCHHHHHHHCCCHHHHHHHC---
1ympA00   NKEETPLFLAAREGSYETAKVLLDHFANRDIT-DHMDRLPRDIAQERMHHDIVRLLD---
              | | ||   |        |    |          |     |      | | ||
Query     YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
          CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCC
                 190       200       210       220       230       240

          ------------------------------------------------------------
1ympA00   ------------------------------------------------------------

Query     ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
          CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                 250       260       270       280       290       300
```

```
         -----------------
1ympA00  -----------------

Query    DELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCC
                 310


Percentage Identity = 22.9.


>>> Alignment with 1wdyA00:

         ------------------------------------------------------------
1wdyA00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHCCCCCCCCCC
                 10        20        30        40        50        60


                                 10            20        30        40
         ------------CHHHHHHHHHHHHCCC----HHHHHHHHHCCCCCCCCCCCCCCHHH
1wdyA00  ------------AAVEDNHLLIKAVQNED----VDLVQQLLEGGANVNFQEEEGGWTPLH
                                 |  |   |          |     |  |||      ||||
Query    RGSEPWKQQLTED---GDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQ-NNLQQTPLH
         CCCCCCCCCCCCC---CCCHHHHHHHCCCHHHHHHHHHHHCCCCCCCC-CCCCCHHHH
                 70           80        90       100        110


             50        60        70        80        90
         HHHHCCCHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCHHHHHHHHCCCCCC-----
1wdyA00  NAVQMSREDIVELLLRHGADPVLRKKNGATPFLLAAIAGSVKLLKLFLSKGADVN-----
          ||      | | ||  | || ||   | ||  ||   |
Query    LAVITNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSIL
         HHHHCCCHHHHHHHHCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCC
          120       130       140       150       160       170


                  110       120       130       140       150
         -CCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCHHHHHCCCCCCCHHHHHHHH
1wdyA00  -ECDFYGFTAFMEAAVYGKVKALKFLYKRGANVNLRRKTKEDQERLRKGGATALMDAAEK
                | |    |   |       |   || ||
Query    KATNYNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPC--------------------
         CCCCCCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCC--------------------
          180       190       200       210


                  170       180       190       200       210
         CCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCCCCHHHHHHHHHHCCCCCCCCCCC
1wdyA00  GHVEVLKILLDEMGADVNACDNMGRNALIHALLSSDDSDVEAITHLLLDHGADVNVRGER

Query    ------------------------------------------------------------N
         ------------------------------------------------------------C


                  230       240       250       260       270
         CCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHCCC
1wdyA00  GKTPLILAVEKKHLGLVQRLLEQEHIEINDTDSDGKTALLLAVELKLKKIAELLCKRGAS
         | | | |||      ||  ||       |     |     |         |   |
Query    GRTALHLAVDLQNPDLVSLLLKC-GADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLE
         CCHHHHHHHHCCCHHHHHHHHHC-CCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHCCCC
          220       230        240       250       260       270


             280
         -----CCCCCCC-----------------------------
1wdyA00  -----TDCGDLV-----------------------------
                  |
Query    NLQMLPESEDEESYDTESEFTEFTEDELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCHHCCCCCCCCCCCCCCCCCCCCCCC
           280       290       300       310


Percentage Identity = 18.9.


>>> Alignment with 2bkgA00:

         ------------------------------------------------------------
2bkgA00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHCCCCCCCCCC
                 10        20        30        40        50        60


         ---------------------------------------------------CHHHHHHHH
2bkgA00  ---------------------------------------------------SDLGKKLLE
```

```
                                                                  |
Query     RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQ---TPLHL
          CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCC---HHHHH
                  70        80        90       100       110

                   20        30        40        50        60
          HHHHCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHCCHHHHHHHHCCCCCCC----
2bkgA00   AARAGQDDEVRILMANGADVNAEDTYGDTPLHLAARVGHLEIVEVLLKNGADVNAL----
          |    |      |   | |    |  | ||||||   | |  | ||
Query     AVITNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILK
          HHHCCCHHHHHHHHCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCC
          120       130       140       150       160       170

               70        80        90        100       110       120
          --CCCCCCHHHHHHCCCHHHHHHHHCCCCCCC-CCCCCCHHHHHHHCCCHHHHHHHH
2bkgA00   --DFSGSTPLHLAAKRGHLEIVEVLLKYGADVNA-DDTIGSTPLHLAADTGHLEIVEVLL
               | | ||||   | | ||| |   ||||||     | | |||| |      |  ||
Query     ATNYNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLL
          CCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHH
          180       190       200       210       220       230

              130       140       150
          HCCCCCCCCCCCCCCHHHHHHCCCCCHHHCC---------------------------
2bkgA00   KYGADVNAQDKFGKTAFDISIDNGN-DLAEIL---------------------------
          | |||||     |                  |
Query     KCGADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTE
          HCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHCCCCCCCCCCCCCCCCCCCHHCCCC
          240       250       260       270       280       290


          --------------------
2bkgA00   --------------------

Query     FTEDELPYDDCVFGGQRLTL
          CCCCCCCCCCCCCCCCCCCC
          300       310


Percentage Identity = 35.5.


>>> Alignment with 1uohA00:
                                                     10        20
          ----------------------------------CCCCCHHHHHHHCCCHHHHHHHHHH
1uohA00   ----------------------------------CVSNLMVCNLAYSGKLEELKESILA
                                                          |
Query     MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKD---------EEYEQMVKELQE
          CCCCCCCCHHHHHCCCCCCHHHHHHHHHHCCCCCCCCCC---------CCHHHHHHHHHH
                  10        20        30                  40        50

             30                  40            50        60        70
          CHHHHHC-----------CCCCCCCHHHHHHHHCC----HHHHHHHHHHCCCCCCCCCCC
1uohA00   DKSLATR-----------TDQDSRTALHWACSAGH----TEIVEFLLQLGVPVNDKDDAG
                                   |    || |          |           |
Query     IRLEPQEVPRGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQ
          CCCCCCCCCCCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCC
                 60        70        80        90       100       110

                  80        90       100       110       120       130
          CCHHHHHHHHCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCHHHHHHHHHCCCCCC
1uohA00   WSPLHIAASAGRDEIVKALLGKGAQVNAVNQNGCTPLHYAASKNRHEIAVMLLEGGANPD
            ||| |      ||  |||| |          | |||| |            |      |
Query     QTPLHLAVITNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPH
          CHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCC
                120       130       140       150       160       170

                     140       150       160        170       180
          ------CCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCC-CCCCCCHHHHHHHCCCHH
1uohA00   ------AKDHYEATAMHRAAAKGNLKMIHILLYYKASTNIQ-DTEGNTPLHLACDEERVE
                |      |  | |   | |     |    |  | |    | | |||| |
Query     LHSILKATNYNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPD
          CCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCHHHHHHHHCCCHH
                180       190       200       210       220       230

              190       200       210       220
          HHHHHHHCCCCCCCCCCCCCHHHHCCCCHHHHHHHHHCC--------------------
1uohA00   EAKLLVSQGASIYIENKEEKTPLQVAKGGLGLILKRMVEG--------------------
             ||   ||            | |   |
Query     LVSLLLKCGADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDT
          HHHHHHHCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCC
                240       250       260       270       280       290
```

```
         --------------------------
1uohA00  --------------------------

Query    ESEFTEFTEDELPYDDCVFGGQRLTL
         HHCCCCCCCCCCCCCCCCCCCCCCCC
               300       310


Percentage Identity = 22.4.


>>> Alignment with 2f8yB00:

         -------------------------------------------------------C--CCC
2f8yB00  -------------------------------------------------------A--VIS

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


             10         20        30            40        50
         HHHHCCCC-CCCCCCCCCCHHHHHHHCCC----HHHHHHHHHCCCCCCCCCCCCCHHH
2f8yB00  DFIYQGAS-LHNQTDRTGETALHLAARYSR----SDAAKRLLEASADANIQDNMGRTPLH
              |      |    |   ||||                    |  | | |   ||||
Query    ----RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLH
         ----CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHH
                      70        80        90       100       110


                  70        80        90       100       110
         HHHHHCCHHHHHHHHCCCCCCCCCCCCCCCCHHHHHHHHCHHHHHHHHHCCCCCC----
2f8yB00  AAVSADAQGVFQILIRNRATDLDARMHDGTTPLILAARLAVEGMLEDLINSHADVN----
          ||          |      |   |   | ||| ||           |   |
Query    LAVITNQPEIAEALLGAGC-DPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSI
         HHHHCCCHHHHHHHHHCCC-CCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCC
          120       130        140       150       160       170


             120       130       140       150        160       170
         --CCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCC-CCCCCCHHHHHHHHCCHHHHHH
2f8yB00  --AVDDLGKSALHWAAAVNNVDAAVVLLKNGANKDMQ-NNREETPLFLAAREGSYETAKV
           |    |   || |           |   ||    |      | | ||
Query    LKATNYNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSL
         CCCCCCCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHH
           180       190       200       210       220       230


              180       190       200
         HHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHC-----------------------
2f8yB00  LLDHFANRDITDHMDRLPRDIAQERMHHDIVRLLDEY-----------------------
         ||   |           |      |    |   |
Query    LLKCGADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEF
         HHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCHHCC
           240       250       260       270       280       290


         ----------------------
2f8yB00  ----------------------

Query    TEFTEDELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCCCCCCC
           300       310


Percentage Identity = 23.0.


>>> Alignment with 2dznA00:
                                                  10        20
         ----------------------------------CCHHHHHHHCCCHHHHHHHHHC---
2dznA00  ----------------------------------NYPLHQACMENEFFKVQELLHSK---
                                                   |        |
Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLD-----SMKDEEYEQMVKELQEIRLE
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCC-----CCCCCCHHHHHHHHHCCCC
                 10        20        30             40        50


                      30        40            50        60        70
         --------CCCCCCCCCCCCCHHHHHHHCCC----HHHHHHHHHCCCCCCCCCCCCCCC
2dznA00  --------PSLLLQKDQDGRIPLHWSVSFQA----HEITSFLLSKMENVNLDDYPDDSGW
                  |   ||   ||             |            |
Query    PQEVPRGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNF---QNNLQQ
         CCCCCCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCC---CCCCCC
            60        70        80        90       100          110


                 80        90       100       110       120       130
         CHHHHHHHHCCHHHHHHHHCCCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCC
```

```
2dznA00  TPFHIACSVGNLEVVKSLYDRPLKPDLNKITNQGVTCLHLAVGKKWFEVSQFLIENGASV
         || | |       |    |        |        | | ||||          |
Query    TPLHLAVITNQPEIAEALLGA--GCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTP
         HHHHHHHHCCCHHHHHHHHHC--CCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCC
              120       130         140       150       160       170

                     140       150       160       170       180
         C------CCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCCHHHHHHHCCCH
2dznA00  R------IKDKFNQIPLHRAASVGSLKLIELLCGLGKSAVNWQDKQGWTPLFHALAEGHG
                          || |   | |   |||  ||           | | |  |
Query    HLHSILKATNYNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNP
         CCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCH
                180       190       200       210       220       230

           190       200       210           220
         HHHHHHHHHHCCCCCCCCCCCCHHHHCCCCC----HHHHHHCCC---------------
2dznA00  DAAVLLVEKYGAEYDLVDNKGAKAEDVALNEQ----VKKFFLNNV---------------
         |   ||    ||    |   |
Query    DLVSLLLK-CGADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESY
         HHHHHHHH-CCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCC
                 240       250       260       270       280

         ----------------------------
2dznA00  ----------------------------

Query    DTESEFTEFTEDELPYDDCVFGGQRLTL
         CCHHCCCCCCCCCCCCCCCCCCCCCCC
                 300       310

Percentage Identity = 19.5.

>>> Alignment with 1bd8A00:

         ------------------------------------------------------------
1bd8A00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCHHHHHHHHHHCCCCCCCCCC
                 10        20        30        40        50        60

                              10            20        30        40
         ------------CHHHHHHHHHHCC----HHHHHHHHCCCCCCCCCCCCCCHHHHC-
1bd8A00  ------------RAGDRLSGAAARGD----VQEVRRLLHRELVHPDALNRFGKTALQVM-
                           |  |             |      |      |    | |
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGD-LAFLNFQNNLQQTPLHLAV
         CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHC-CCCCCCCCCCCCHHHHHHH
                 70        80        90       100       110

              50        60        70        80        90
         CCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCC------
1bd8A00  MFGSTAIALELLKQGASPNVQDTSGTSPVHDAARTGFLDTLKVLVEHGADVNVP------
               ||  ||  |  |   |  |  | | |   | |    ||
Query    ITNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKAT
         HCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCC
                 130       140       150       160       170

         100       110       120         130       140       150
         CCCCCCHHHHHHHHCCHHHHHHHHC-CCCCCCC-CCCCCCHHHHHHHCCCHHHHHHHHCC
1bd8A00  DGTGALPIHLAVQEGHTAVVSFLAA-ESDLHRR-DARGLTPLELALQRGAQDLVDILQGH
            |    |||   |    |  |     |        | | | ||      |||  |
Query    NYNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKC
         CCCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHC
                 190       200       210       220       230

         C-----------------------------------------------------------
1bd8A00  M-----------------------------------------------------------

Query    GADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFT
         CCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCCHHCCCCCC
                 250       260       270       280       290

         ------------------
1bd8A00  ------------------

Query    EDELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCCC
                 310
```

```
Percentage Identity = 25.0.

>>> Alignment with 1s70B01:

         ------------------------------------------------------------
1s70B01  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60

                                         10        20        30
         ----------------------CCCHHHHHHHHHHHHHHHCCCCCCCCCCCCCCCCCCCC
1s70B01  ----------------------MKMADAKQKRNEQLKRWIGSETDLEPPVVKRKKTKVKF
                                        |    |       |    |
Query    RGSEPWKQQLTEDGDSFLHLAIIH--EEKALTMEVIRQVKGDLAFL---------NFQNN
         CCCCCCCCCCCCCCCCHHHHHHHC--CCHHHHHHHHHHHHCCCCC---------CCCCC
                 70        80          90       100

                   50        60        70        80        90
         CHHHHHHHHHHHCCHHHHHHHHHHCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHCCCC
1s70B01  DDGAVFLAACSSGDTEEVLRLLERGADINYANVDGLTALHQACIDDNVDMVKFLVENGAN
                  |       |    ||  | |        | | || ||       |  |
Query    LQQTPLHLAVITNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTT
         CCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHCCCC
                 120       130       140       150       160

                        110       120       130       140
         CCCC------CCCCCCHHHHHHHHCCHHHHHHHHCCCCCCCC-CCCCCCHHHHC---CC
1s70B01  INQP------DNEGWIPLHAAASCGYLDIAEYLISQGAHVGAV-NSEGDTPLDIA---EE
                   |   || |   ||| | | | | || | |     | | |  |
Query    PHLHSILKATNYNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQN
         CCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCHHHHHHHHCCC
                 180       190       200       210       220

                  160
         HHHHHHHHHHHCCC---------------------------------------------
1s70B01  EAMEELLQNEVNRQ-----------------------------------------------
             ||
Query    PDLVSLLLKCGA-DVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEES
         HHHHHHHHHCCC-CCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCC
                 240        250       260       270       280


         ----------------------------
1s70B01  ----------------------------

Query    YDTESEFTEFTEDELPYDDCVFGGQRLTL
         CCCHHCCCCCCCCCCCCCCCCCCCCCCC
                  300       310


Percentage Identity = 24.1.

>>> Alignment with 3c5rA00:

         ------------------------------------------------------------
3c5rA00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


         ------------------------------------------------------------
3c5rA00  ------------------------------------------------------------

Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                 70        80        90       100       110       120

                                 10        20        30
         ---------------C--CCCCCCCCHHHHHHHHCCHHHHHHHHCCC-------CCCCC
3c5rA00  ---------------P--FTNHRGETLLHIASIKGDIPSVEYLLQNGD-------PNVKD
                              || | || |   |   ||  | |
Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180

           40        50        60         70        80        90
```

```
         CCCCCHHHHHHHCCCHHHHHHHHHCCCCCC-CCCCCCCCHHHHHHHCCCHHHHHHHHHCC
3c5rA00  HAGWTPLHEACNHGHLKVVELLLQHKALVN-TTGYQNDSPLHDAAKNGHVDIVKLLLSYG
           | | || |  || |  ||||    | ||          || |      | | |||  |
Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHCC
                190       200       210       220       230       240

           100       110       120
         CCCCCCCCCCCCHHHHCCCHHHHHHHCCC------------------------------
3c5rA00  ASRNAVNIFGLRPVDYTDDESMKSLLLLP------------------------------
         |  | |   |  |   |      |
Query    ADVNRVTYQGYSPYQLT--WGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEF
         CCCCCCCCCCCCHHHHH--HHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCC
                250         260       270       280       290


         -------------------
3c5rA00  -------------------

Query    TEDELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCCCC
                  310

Percentage Identity = 33.9.

>>> Alignment with 1ycsB01:

         ------------------------------------------------------------
1ycsB01  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


         -----------------------------------------------------CHHHHHH
1ycsB01  -----------------------------------------------------PLALLLD
                                                              |   |
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTP---LHL
         CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHH---HHH
                 70        80        90       100       110

          10        20        30        40        50        60
         HHHHCCHHHHHHHCCCCCCCCCCCCCCCHHHHHHHHCCHHHHHHHHHHCCCCC------
1ycsB01  SSLEGEFDLVQRIIYEVDDPSLPNDEGITALHNAVCAGHTEIVKFLVQFGVNVN------
                            || |    | | || |   |    |  | |
Query    AVITNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILK
         HHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCC
         120       130       140       150       160       170

                70        80        90       100       110       120
         CCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCHHHHCCCCCCCCCCHHHH
1ycsB01  AADSDGWTPLHCAASCNNVQVCKFLVESGAAVFAMTYSDMQTAADKCEEMEEGYTQCSQF
         |    | | || |           ||  || | |        ||
Query    ATNYNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDL--QNPDLVSL
         CCCCCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCHHHHHHHHC--CCHHHHHH
         180       190       200       210       220         230


         HHHHHHC-------------------------------------------------------
1ycsB01  LYGVQEK-------------------------------------------------------
         |
Query    LLKCGADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEF
         HHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCC
           240       250       260       270       280       290


         ----------------------
1ycsB01  ----------------------

Query    TEFTEDELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCCCCCCC
           300       310

Percentage Identity = 22.7.

>>> Alignment with 1bi7B00:

         ------------------------------------------------------------
1bi7B00  ------------------------------------------------------------
```

```
Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHCCCCCCCCC
                  10        20        30        40        50        60

                                                                10
         ------------------------------------------------CCCCCHHHHHHH
1bi7B00  ------------------------------------------------EPSADWLATAAA
                                                                |  |
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                  70        80        90       100       110       120

                20        30        40        50        60
         HCCHHHHHHHHCCCCCCCCCCCCCCCCC-CCCCCHHHHHHHHCCCCCCCCCC-----C
1bi7B00  RGRVEEVRALLEAGANPNAPNSYGRRPIQV-MMMGSARVAELLLLHGAEPNCAD-----P
             |   ||| ||  |      |  |       |       |      |
Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCC
                 130       140       150       160       170       180

           70        80        90        100       110       120
         CCCCCHHHHHHHHCCHHHHHHHHHCCCCCCC-CCCCCCHHHHHHHHCCHHHHHHHCCC-
1bi7B00  ATLTRPVHDAAREGFLDTLVVLHRAGARLDVR-DAWGRLPVDLAEELGHRDVARYLRAA-
                | |   | |     |   ||         ||    ||  |   |    |
Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHCC
                 190       200       210       220       230       240


         C-------------------------------------------------------
1bi7B00  A-------------------------------------------------------
         |
Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                 250       260       270       280       290       300


         -----------------
1bi7B00  -----------------

Query    DELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCC
                 310
```

Percentage Identity = 23.2.

>>> Alignment with 1n0qB00:

```
                                                        10        20
         ----------------------------------------CCCCHHHHHHHCCCHHHHHHH
1n0qB00  ----------------------------------------NGRTPLHLAARNGHLEVVKLL
                                                                  ||
Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCCCCCCCCC
                  10        20        30        40        50        60

                 30        40            50        60        70
         HHHCCCCCCCCCCCCCHHHHHHHCCC----HHHHHHHHHCCCCCCCCCCCCCHHHHHHH
1n0qB00  LEAGADVNAKDKNGRTPLHLAARNGH----LEVVKLLLEAGADVNAKDKNGRTPLHLAAR
                     |   ||||          ||        |  |       ||||||
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHH
                  70        80        90       100       110       120

          80        90
         CCCHHHHHHHHHCCCC-----
1n0qB00  NGHLEVVKLLLEAGAY-----
             |    || ||
Query    TNQPEIAEALLGAGCDPELRD
         CCCHHHHHHHHHCCCCCCCCC
                 130       140
```

Percentage Identity = 23.7.

>>> Alignment with 1s70B02:

```
         ------------------------------------------------------------
1s70B02  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
```

```
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


         ---------------------------------------------------CCCHHHHHH
1s70B02  ---------------------------------------------------GVDIEAARK
                                                                   |
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                 70        80        90       100       110       120


                  20        30        40        50        60
         HHHHHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHHCHHHHHHHHCCCCCC-----
1s70B02  EEERIMLRDARQWLNSGHINDVRHAKSGGTALHVAAAKGYTEVLKLLIQARYDVN-----
                                   | | || |   |       | |
Query    TNQPEIAEALLGAGCDPEL----RDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSIL
         CCCHHHHHHHHHCCCCCC----CCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCC
                130           140       150       160       170


              70        80        90        100       110       120
         -CCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCC-CCCCCCCCCCCCHHHHHHHHHH
1s70B02  -IKDYDGWTPLHAAAHWGKEEACRILVENLCDMEAV-NKVGQTAFDVADEDILGYLEELQ
             | | | || |   |       ||    |  |     | ||   |       |  |
Query    KATNYNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLL
         CCCCCCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHH
          180       190       200       210       220       230


         HHCCCCC-------------------------------------------------
1s70B02  KKQNLLH-------------------------------------------------
          |
Query    LKCGADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFT
         HHCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCCCCHHCCC
          240       250       260       270       280       290


         ---------------------
1s70B02  ---------------------

Query    EFTEDELPYDDCVFGGQRLTL
         CCCCCCCCCCCCCCCCCCCCC
          300       310
```

Percentage Identity = 20.9.

>>> Alignment with 1sw6A00:

```
                                          10                    20
         --------------CCEEECC-----------CCCCCCCCCCC-------------CCCE
1sw6A00  --------------GPIITFT-----------HDLTSDFLSSP-------------LKIM
                      ||                ||   |                   |
Query    MFQAAERPQEWAMEGP---RDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQ
         CCCCCCCCHHHHHCCC---CCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCCCCCC
                 10           20        30        40        50


               30        40          50        60        70        80
         ECCCCCCCCCHHHHHHHHHHHHHHCC--HHHHHHHHHHCCCCCCCCCCCCCCCCCHH
1sw6A00  KALPSPVVNDNEQKMKLEAFLQRLLFS--FDSLLQEVNDAFPNTQLNLNIPVDEHGNTPL
                              ||                        ||        |||
Query    EVPRGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDL-AFLNFQ-NNLQQTPL
         CCCCCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCC-CCCCCC-CCCCHHH
          60        70        80        90       100         110


                 90       100       110       120       130       140
         HHHHHCCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCHHHCCCHHHHHHHHHHHH
1sw6A00  HWLTSIANLELVKHLVKHGSNRLYGDNMGESCLVKAVKSVNNYDSGTFEALLDYLYPCLI
         |        |    |   |       |  |   |  |         |             |
Query    HLAVITNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSI
         HHHHHCCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCC
           120       130       140       150       160       170


                150       160       170       180           190
         EECCCCCCHHHHHHHHHCCCCHHHHHHHHHHHHHHHHHHCCEEECC----HHHHHCC
1sw6A00  LEDSMNRTILHHIIITSGMTGCSAAAKYYLDILMGWIVKKQNRPIQSGD----SILENLD
         |                                          |       |  |
Query    LKATNYNGHTCLHLASIH----------------------------GYLGIVELLVSLG
         CCCCCCCCCHHHHHHHHC----------------------------CCHHHHHHHHCC
           180       190                                     200


          200       210       220       230       240       250
         HHHHHHCCCCCCCCCCCHHHHHHHHCCHHHHHHHHCCCCCCCCCCCCCHHHCCC--
```

```
1sw6A00  LKWIIANMLNAQDSNGDTCLNIAARLGNISIVDALLDYGADPFIANKSGLRPVDFGAG--
             |         || | |  |  | |   |  ||  |||       |  |     |
Query    -----ADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCGADVNRVTYQGYSPYQLTWGRP
         -----CCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCC
                210       220       230       240       250       260


         -------------------------------------------------------
1sw6A00  -------------------------------------------------------

Query    STRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTEDELPYDDCVFGGQRLTL
         CHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCCCCCCCCCCCCCCCCCCC
                270       280       290       300       310


Percentage Identity = 17.3.


>>> Alignment with 3c5rA00:
                                                   10        20
         ----------------------------------CCCCCCCCCHHHHHHHHCCHHHHHHH
3c5rA00  ----------------------------------PFTNHRGETLLHIASIKGDIPSVEYL

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLE-PQEV
         CCCCCCCCHHHHHCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHCCCC-CCCC
                 10        20        30        40        50


           30          40        50            60        70        80
         HHCCCCCCC--CCCCCHHHHHHHCCC----HHHHHHHHHCCCCCCCCCCCCCHHHHHH
3c5rA00  LQNGDPNVK--DHAGWTPLHEACNHGH----LKVVELLLQHKALVNTTGYQNDSPLHDAA
              |        |   || |  |        |        |  |        ||| |
Query    PRGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAV
         CCCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHH
                  70        80        90       100       110


                 90       100       110       120
         HCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHCCCHHHHHHHCCC
3c5rA00  KNGHVDIVKLLLSYGASRNAVNIFGLRPVDYTDDESMKSLLLLP
               |   ||  |
Query    ITNQPEIAEALLGAGCD---------------------------
         HCCCHHHHHHHHHCCCC---------------------------
                 130


Percentage Identity = 13.7.


>>> Alignment with 1n0rA00:
                   10          20         30        40        50
         ---CCCCHHHHHHHCC--HHHHHHHHHC-CCCCCCCCCCCCHHHHHHHCCHHHHHH
1n0rA00  ---NGRTPLHLAARNGH--LEVVKLLLEAG-ADVNAKDKNGRTPLHLAARNGHLEVVKLL
                |   |       |    ||                  ||
Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


             60        70        80            90       100       110
         HHCCCCCCCCCCCCCCHHHHHHHCCC----HHHHHHHHHCCCCCCCCCCCCCHHHHHH
1n0rA00  LEAGADVNAKDKNGRTPLHLAARNGH----LEVVKLLLEAGADVNAKDKNGRTPLHLAAR
                    |   ||||          ||        |  |
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQN------------
         CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCC------------
                 70        80        90       100


                120
         CCCHHHHHHHHHHCCC
1n0rA00  NGHLEVVKLLLEAGAY

Query    ----------------
         ----------------


Percentage Identity = 12.7.


>>> Alignment with 2bkgA00:
                 10        20        30        40           50
         CHHHHHHHHHHHHCCHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHHCC---HHHHHHHHH
2bkgA00  SDLGKKLLEAARAGQDDEVRILMANGADVNAEDTYGDTPLHLAARVGH---LEIVEVLLK
                                                |   |
Query    -------------------------------MFQAAERPQEWAMEGPRDGLKKERLLDDR
         -------------------------------CCCCCCCCHHHHHCCCCCCHHHHHHHHHH
                                                 10        20
```

```
          60        70        80        90       100       110
         CCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCC---
2bkgA00  NGADVNALDFSGSTPLHLAAKRGHLEIVEVLLKYGADVNADDTIGSTPLHLAADTGH---
                                  ||  ||             |   ||||
Query    HDSGLDSMKDEEYEQMVKELQEIRLEPQEVPRGSEPWKQQLTEDGDSFLHLAIIHEEKAL
         CCCCCCCCCCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCCCCCHHHHHHHCCCHHH
                  40        50        60        70        80


             120       130       140       150
         -HHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCCCCHHHHCC
2bkgA00  -LEIVEVLLKYGADVNAQDKFGKTAFDISIDNGN-DLAEIL-
           |         |  | |
Query    TMEVIRQVKGDLAFLNFQNNLQQ-------------------
         HHHHHHHHHHCCCCCCCCCCCC-------------------
                 100       110


Percentage Identity = 9.7.


>>> Alignment with 1s70B02:
                      10        20        30        40        50
         -----CCCHHHHHHHHHHHHHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCHHHHHH
1s70B02  -----GVDIEAARKEEERIMLRDARQWLNSGHINDVRHAKSGGTALHVAAAKGYTEVLKL
                 | |  |  |  |   |                                |
Query    MFQAAERPQEWA-MEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEV
         CCCCCCCCHHHH-HCCCCCCHHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCC
                 10         20        30        40        50


            60        70        80            90       100       110
         HHCCCCCCCCCCCCCCHHHHHHHCCC----HHHHHHHHHCCCCCCCCCCCCCCCCCCCC
1s70B02  LIQARYDVNIKDYDGWTPLHAAAHWGK----EEACRILVENLCDMEAVNKVGQTAFDVAD
                      ||   || |          |  |     |      |   |
Query    PRGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQ-------
         CCCCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCC-------
                  70        80        90       100       110


                120
         CHHHHHHHHHHHHCCCCC
1s70B02  EDILGYLEELQKKQNLLH

Query    ------------------
         ------------------


Percentage Identity = 13.2.


>>> Alignment with 1ycsB01:
                      10          20          30        40
         -------CHHHHHHHHHHCCHHHHH--HHC--CCCCCCCCCCCCCCHHHHHHHHCCHHH
1ycsB01  -------PLALLLDSSLEGEFDLVQ--RII--YEVDDPSLPNDEGITALHNAVCAGHTEI
                |       ||  |     |       ||          |
Query    MFQAAERP----QEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEP
         CCCCCCCC----HHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCC
                     10        20        30        40        50


                  60        70            80        90       100
         HHHHHHHCCCCCCCCCCCCHHHHHHHCCC----HHHHHHHHHCCCCCCCCCCCCCCHH
1ycsB01  VKFLVQFGVNVNAADSDGWTPLHCAASCNN----VQVCKFLVESGAAVFAMTYSDMQTAA
                        ||   || |         |      |        ||
Query    QEVPRGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNN-LQQTP-
         CCCCCCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCC-CCCHH-
           60        70        80        90       100        110


           110       120
         HHCCCCCCCCCCHHHHHHHHHHC
1ycsB01  DKCEEMEEGYTQCSQFLYGVQEK

Query    -----------------------
         -----------------------


Percentage Identity = 13.3.


>>> Alignment with 1awcB00:
                 10        20        30           40           50
         CHHHHHHHHHHHCCHHHHHHHHHHCCCCCCCCC---CCCHHHHHHHHCC---HHHHHHHH
1awcB00  DLGKKLLEAARAGQDDEVRILMANGAPFTTDWL---GTSPLHLAAQYGH---FSTTEVLL
                                                |   |
Query    --------------------------------MFQAAERPQEWAMEGPRDGLKKERLLDD
         --------------------------------CCCCCCCCHHHHHCCCCCCHHHHHHHHH
                                                 10        20


```

```
            60        70        80        90       100       110
        CCCCCCCCCCCCCCCHHHHHHHHCCHHHHHHHHCCCCCCCCCCCCCCCHHHHHHHCCC--
1awcB00 RAGVSRDARTKVDRTPLHMAASEGHANIVEVLLKHGADVNAKDMLKMTALHWATEHNH--
        |     |            |      ||                || |  |
Query   RHDSGLDSMKDEEYEQMVKELQEIRLEPQEVPRGSEPWKQQLTEDGDSFLHLAIIHEEKA
        HCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCCCCCCCCCCCCCCCCCHHHHHHHCCCHH
                  40        50        60        70        80


                120       130       140       150
        --HHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHC
1awcB00 --QEVVELLIKYGADVHTQSKFCKTAFDISIDNGNEDLAEILQ
          ||        |    |
Query   LTMEVIRQVKGDLAFLNFQN----------------------
        HHHHHHHHHHHCCCCCCCCC----------------------
                 100
```

Percentage Identity = 9.8.

>>> Alignment with 1ympA00:

```
                10        20        30        40        50
        CCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHCCCCCCCCCCCCCCHHHHHHHCCC---
1ympA00 RATDLDARMHDGTTPLILAARLALEGMLEDLINSHADVNAVDDLGKSALHWAAAVNN---
                                                          ||
Query   ----------------------------------------MFQAAERPQEWAMEGPRDGL
        ----------------------------------------CCCCCCCCHHHHHCCCCCCH
                                                 10        20


         60        70        80        90       100       110
        HHHHHHHHHCCCCCCCCCCCCCHHHHHHHHCCHHHHHHHHCCCCCCCCCCCCCCHHHH
1ympA00 VDAAVVLLKNGANKDMQNNKEETPLFLAAREGSYETAKVLLDHFANRDITDHMDRLPRDI
                        |     |         |   |   |
Query   KKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVPRGSEPWKQQLTEDGDSFLHL
        HHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCCCCCHHHH
                30        40        50        60        70        80


        120           130
        HHHCCC----HHHHHHHC--
1ympA00 AQERMH----HDIVRLLD--
        |             |
Query   AIIHEEKALTMEVIRQVKGD
        HHHCCCHHHHHHHHHHHHHC
                90       100
```

Percentage Identity = 6.9.

>>> Alignment with 1s70B01:

```
                10        20        30        40        50
        CCCHHHHHHHHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHHHHHHHHHHHCC--HHHHHH
1s70B01 MKMADAKQKRNEQLKRWIGSETDLEPPVVKRKKTKVKFDDGAVFLAACSSGD--TEEVLR
                                                        |
Query   ---------------------------MFQAAER--------PQEWAMEGPRDGLKKERL
        ---------------------------CCCCCCC--------CHHHHHCCCCCCHHHHHH
                                                  10        20


                   70        80        90       100       110
        HHHHC-CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHC
1s70B01 LLERG-ADINYANVDGLTALHQACIDDNVDMVKFLVENGANINQPDNEGWIPLHAAASCG
        |  |                                |    |   || |
Query   LDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVPRGSEPWKQQLTEDGDSFLHLAII--
        HHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCCCCCCCCCCCCCCCCCHHHHHHH--
           30        40        50        60        70        80


        120       130       140       150       160
        CHHHHHHHHHCCCCCCCCCCCCCHHHHCCCHHHHHHHHHHHCCC
1s70B01 YLDIAEYLISQGAHVGAVNSEGDTPLDIAEEEAMEELLQNEVNRQ

Query   ---------------------------------------------
        ---------------------------------------------
```

Percentage Identity = 4.9.

>>> Alignment with 2pw8I00:

```
        ------------------------------------------------------------
2pw8I00 ------------------------------------------------------------

Query   MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
```

```
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


         ------------------------------------------------------------
2pw8I00  ------------------------------------------------------------

Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                 70        80        90       100       110       120


         ------------------------------------------------------------
2pw8I00  ------------------------------------------------------------

Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180


         ------------------------------------------------------------
2pw8I00  ------------------------------------------------------------

Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHCC
                190       200       210       220       230       240


         ------------------------------------------------------------
2pw8I00  ------------------------------------------------------------

Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                250       260       270       280       290       300


                   10        20        30        40        50
         --CCCCCCCCCCEECCCCCCCCCCCCCEEEECCCCCCCCEEEECCCEECCCCCCCCCCCC
2pw8I00  --LTYTDCTESGQNLCLCEGSN-CGQGNKCILG-DGEKNQCVTGEGTPKPQSGDFEEIP-
           | | ||   || | |
Query    DELPYDDCVFGGQRLTL-----------------------------------------
         CCCCCCCCCCCCCCCCC-----------------------------------------
                310


         CCC
2pw8I00  ELQ

Query    ---
         ---


Percentage Identity = 13.1.


>>> Alignment with 1bi7B00:

         ------------------------------------------------------------
1bi7B00  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60


                            10            20        30        40
         -----------CCCCCHHHHHHHHCC----HHHHHHHHCCCCCCCCCCCCCCCCCCCCC
1bi7B00  -----------EPSADWLATAAARGR----VEEVRALLEAGANPNAPNSYGRRPIQVMMM
                   |     |  |          |  |      |  |  |
Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNN-----------
         CCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCC-----------
                 70        80        90       100


            50        60        70        80        90       100
         CCHHHHHHHHCCCCCCCCCCCCCCCHHHHHHHHCCHHHHHHHHHHCCCCCCCCCCCCCH
1bi7B00  GSARVAELLLLHGAEPNCADPATLTRPVHDAAREGFLDTLVVLHRAGARLDVRDAWGRLP

Query    ------------------------------------------------------------
         ------------------------------------------------------------


           110       120
         HHHHHHHCCHHHHHHHCCCC
```

```
1bi7B00  VDLAEELGHRDVARYLRAAA

Query    --------------------
         --------------------
```

Percentage Identity = 6.4.

>>> Alignment with 1gupA02:

```
         ------------------------------------------------------------
1gupA02  ------------------------------------------------------------

Query    MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
         CCCCCCCCHHHHHCCCCCCHHHHHHHHHHCCCCCCCCCCCHHHHHHHHHHCCCCCCCCC
                 10        20        30        40        50        60

         ------------------------------------------------------------
1gupA02  ------------------------------------------------------------

Query    RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
         CCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHHH
                 70        80        90       100       110       120

         ------------------------------------------------------------
1gupA02  ------------------------------------------------------------

Query    TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
         CCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCC
                130       140       150       160       170       180

         ------------------------------------------------------------
1gupA02  ------------------------------------------------------------

Query    YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
         CCCCHHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCC
                190       200       210       220       230       240

         ------------------------------------------------------------
1gupA02  ------------------------------------------------------------

Query    ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
         CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                250       260       270       280       290       300

                  10        20        30        40        50
         -CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCEEEECCCCCCCCCCCCCCCCCCCCCCCCCC
1gupA02  -VLPAHDPDCFLCAGNVRVTGDKNPDYTGTYVFTNDFAALMSDTPDAPESHDPLMRCQSA
           ||  | ||    |  | |
Query    DELP-YD-DCVF--GGQRLTL--------------------------------------
         CCCC-CC-CCCC--CCCCCCC--------------------------------------
                  310

                  70        80        90       100       110
         CEEEEEEECCCCCCCCCCCCHHHHHHHHHHHHHHHHHHHHHCCEEEEECCCCCCCCCCC
1gupA02  RGTSRVICFSPDHSKTLPELSVAALTEIVKTWQEQTAELGKTYPWVQVFENKGAAMGCSN

Query    ------------------------------------------------------------
         ------------------------------------------------------------

                 130
         CCCEEEEEEECCC
1gupA02  PHPGGQIWANSFL

Query    -------------
         -------------
```

Percentage Identity = 6.1.

>>> Alignment with 1wdyA00:

```
                 10        20        30        40        50        60
         CHHHHHHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCHHHHHHHCCCHHHHHHHHH
1wdyA00  AAVEDNHLLIKAVQNEDVDLVQQLLEGGANVNFQEEEGGWTPLHNAVQMSREDIVELLLR
```

```
Query     ------------------------------------------------------------
          ------------------------------------------------------------


                   70        80          90        100       110
          CCCCCCCCCCCCCCHHHHHHHHCC--HHHHHHHHHC-CCCCCCCCCCCCCHHHHHHHCCC
1wdyA00   HGADPVLRKKNGATPFLLAAIAGS--VKLLKLFLSK-GADVNECDFYGFTAFMEAAVYGK
                        |   |         |   |
Query     -----MFQA--AERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIR
          -----CCCC--CCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCCHHHHHHHHHCC
                         10        20        30        40        50


          120       130       140       150       160       170
          HHHHHHHHHCCCCCCCCCCCHHHHHCCCCCCHHHHHHHHCHHHHHHHHHCCCCCCCC
1wdyA00   VKALKFLYKRGANVNLRRKTKEDQERLRKGGATALMDAAEKGHVEVLKILLDEMGADVNA

Query     LEPQEVPRGSEPWKQQLTED---------------------------------------
          CCCCCCCCCCCCCCCCCCCC---------------------------------------
               60        70


          180       190       200       210       220       230
          CCCCCCCHHHHHHHCCCCCHHHHHHHHHHCCCCCCCCCCCCCCHHHHHHCCCHHHHHH
1wdyA00   CDNMGRNALIHALLSSDDSDVEAITHLLLDHGADVNVRGERGKTPLILAVEKKHLGLVQR

Query     ------------------------------------------------------------
          ------------------------------------------------------------


          240       250       260       270       280
          HHHCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHCCCCCCCCCC
1wdyA00   LLEQEHIEINDTDSDGKTALLLAVELKLKKIAELLCKRGASTDCGDLV

Query     ------------------------------------------------
          ------------------------------------------------


Percentage Identity = 1.4.

>>> Alignment with 1ubdC04:

          ------------------------------------------------------------
1ubdC04   ------------------------------------------------------------

Query     MFQAAERPQEWAMEGPRDGLKKERLLDDRHDSGLDSMKDEEYEQMVKELQEIRLEPQEVP
          CCCCCCCCHHHHHCCCCCCHHHHHHHHHCCCCCCCCCCCHHHHHHHHHCCCCCCCCC
                   10        20        30        40        50        60


          ------------------------------------------------------------
1ubdC04   ------------------------------------------------------------

Query     RGSEPWKQQLTEDGDSFLHLAIIHEEKALTMEVIRQVKGDLAFLNFQNNLQQTPLHLAVI
          CCCCCCCCCCCCCCCCHHHHHHCCCHHHHHHHHHHHHCCCCCCCCCCCCCHHHHHHH
                   70        80        90       100       110       120


          ------------------------------------------------------------
1ubdC04   ------------------------------------------------------------

Query     TNQPEIAEALLGAGCDPELRDFRGNTPLHLACEQGCLASVGVLTQSCTTPHLHSILKATN
          CCCHHHHHHHHHCCCCCCCCCCCHHHHHHHCCCHHHHHHHHCCCCCCCCCCCCCCCC
                 130       140       150       160       170       180


          ------------------------------------------------------------
1ubdC04   ------------------------------------------------------------

Query     YNGHTCLHLASIHGYLGIVELLVSLGADVNAQEPCNGRTALHLAVDLQNPDLVSLLLKCG
          CCCCHHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCHHHHHHHHCCCHHHHHHHHHCC
                 190       200       210       220       230       240


          ------------------------------------------------------------
1ubdC04   ------------------------------------------------------------

Query     ADVNRVTYQGYSPYQLTWGRPSTRIQQQLGQLTLENLQMLPESEDEESYDTESEFTEFTE
          CCCCCCCCCCCCHHHHHHHCCCHHHHHHHHHCCCCCCCCCCCCCCCCCCCCHHCCCCCCC
                 250       260       270       280       290       300


                    10        20
```

```
         -CCCCC-CCCCCCCCCCCCCCCHHHHHHHC
1ubdC04  -DRPYV-CPFDGCNKKFAQSTNLKSHILTHA
            ||  | | |      |   |
Query    DELPYDDCVFGG------QRLTL--------
         CCCCCCCCCCCC------CCCCC--------
                310

Percentage Identity = 24.1.
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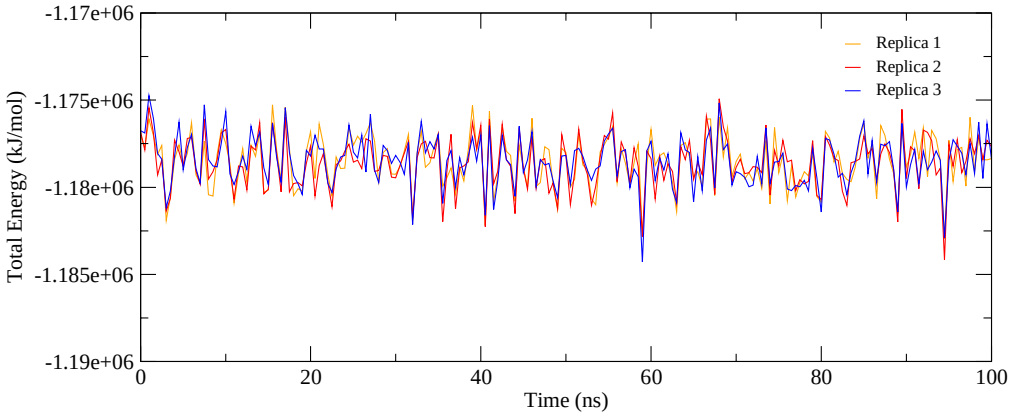
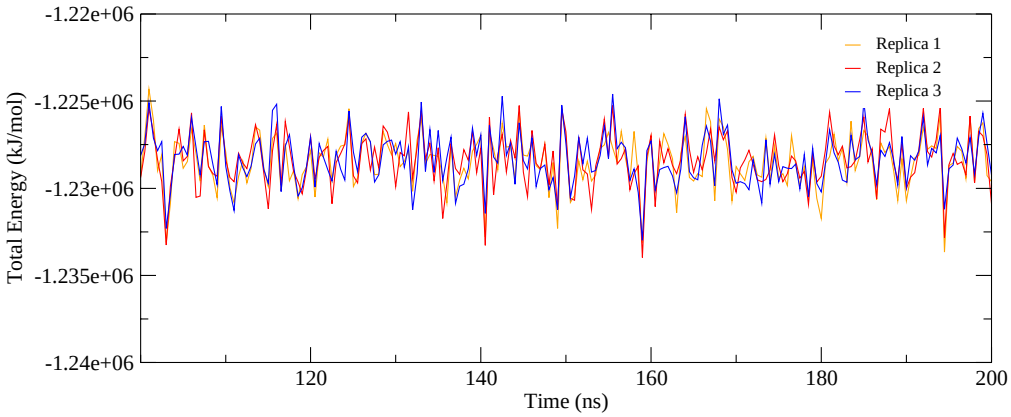
Supplementary Figure 3. pDomThreader prediction results identifying 46 possible structural templates with reliable secondary structural similarity.

A

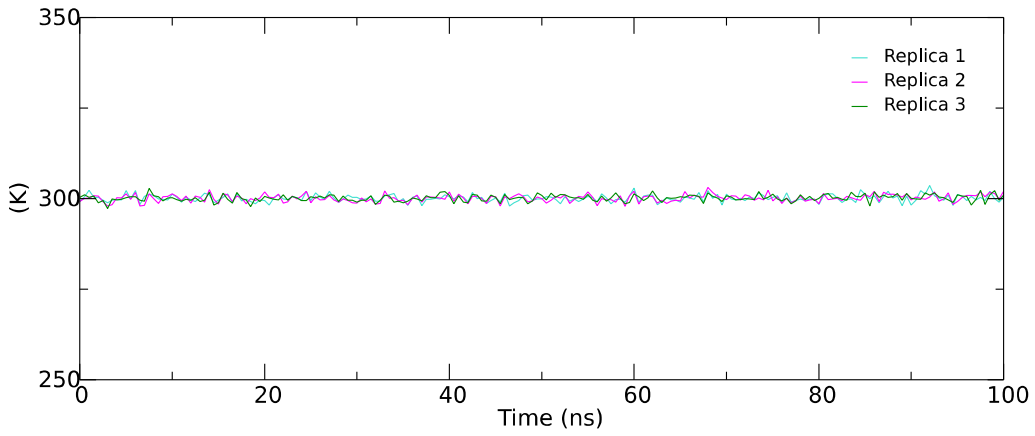


B

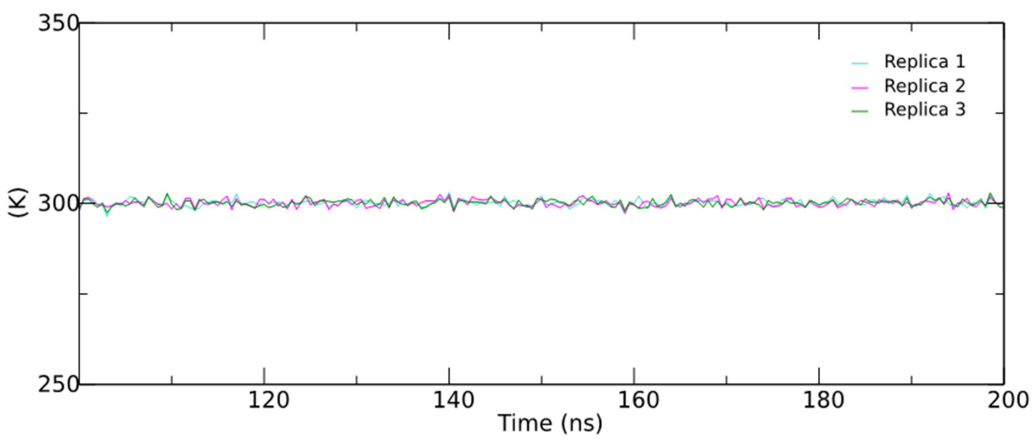


Supplementary Figure 4. The total energy variation of the three system replicas for the initial (A) and final (B) 100ns simulation.

A

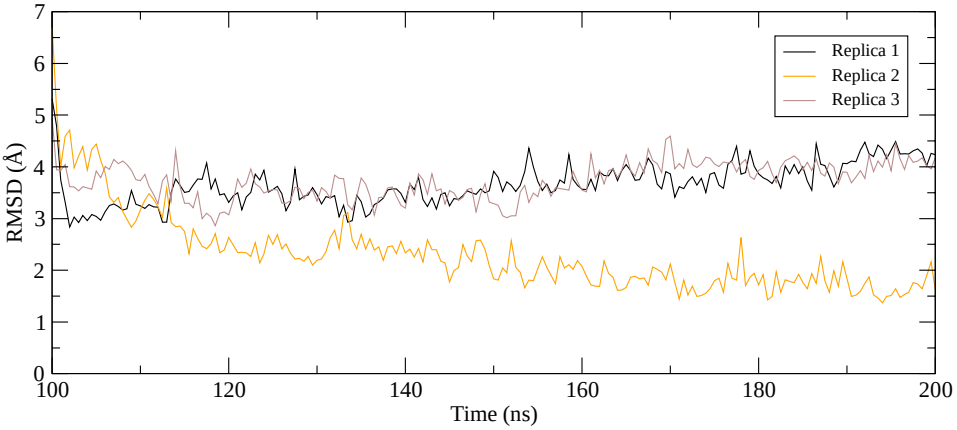


B

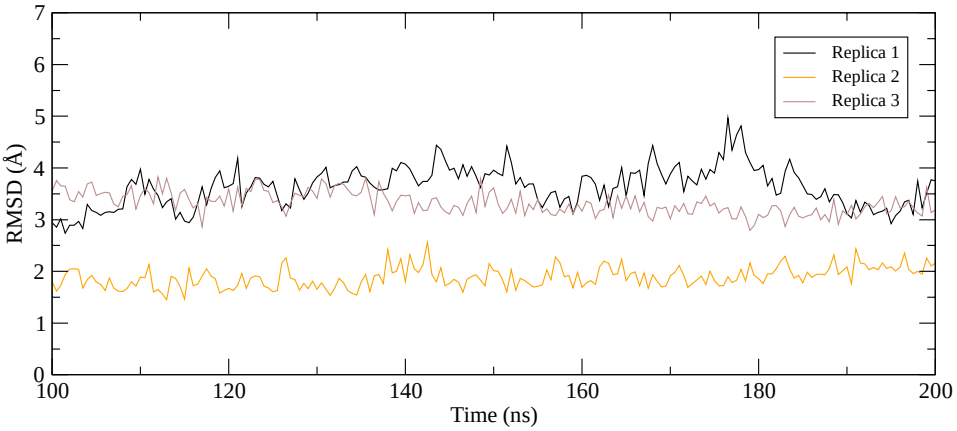


Supplementary Figure 5. Temperature of the three system replicas for the initial 100 ns (A) and the final 100ns (B).

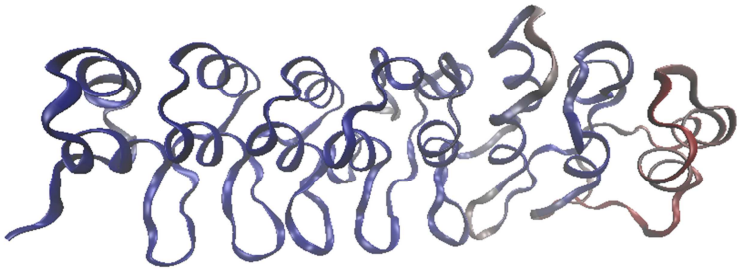
A



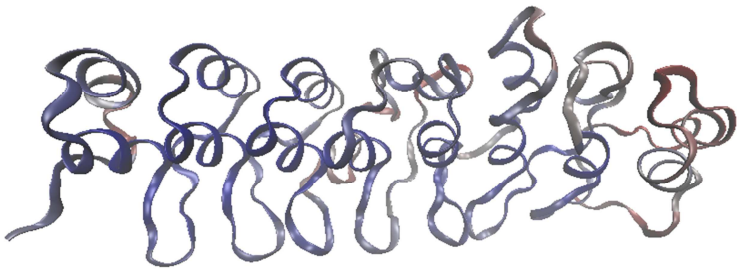
B



Supplementary Figure 6. RMSD of the complexed IκBα/NF-κB protein backbone against the average structure of the three system replicas for the initial 100 ns (A) and the final 100 ns (B).



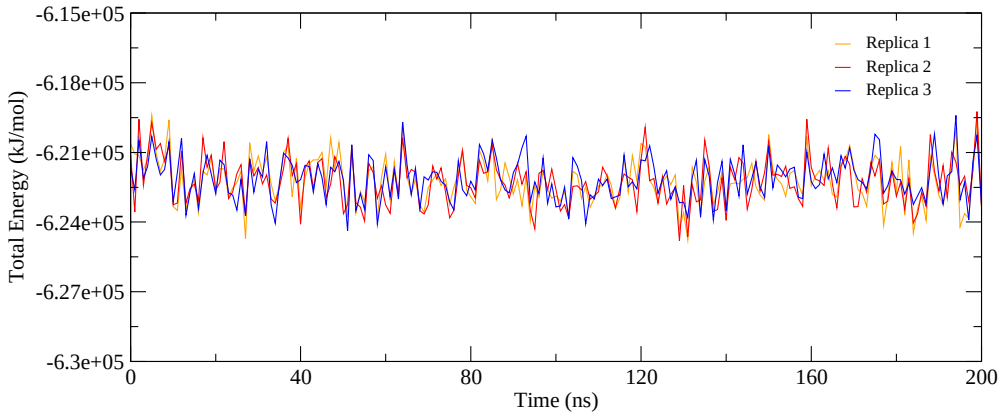
(RMSF after 100ns)



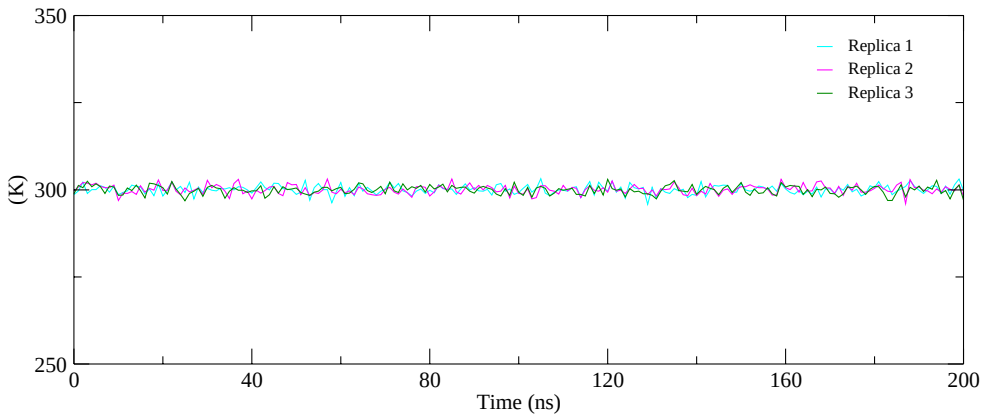
(RMSF after 200ns)

Supplementary Figure 7. Root mean square fluctuations of amino acid residues mapped onto Cα-backbone atoms of IκBα (from blue to red) after 100 ns (top) and 200 ns (bottom).

A



B



Supplementary Figure 8. (A) The total energy variation of the three system replicas for the free IκBα simulations. (B) Temperature of the three system replicas for the free IκBα simulations.