

W3.6: アクチンをクエリ配列として PSI-BLAST および DELTA-BLAST を実行した結果

アクチンの配列

```
>6NBW_1|Chain A|Actin, cytoplasmic 1|Homo sapiens (9606)
DDDIAALVVDNNGSGMCKAGFAGDDAPRAVFPSIVGRPRHQGVMVGMGQKDSYVGDQAQSKRGILTLK
YPIEHGIVTNWDDMEKIWHHTFYNELRVAPEEHPVLLTEAPLNPKANREKMTQIMFETFNTPAMYVA
IQAVLSLYASGRRTTGIVMDSGDGVTHTVPIYEGYALPHAAILRLDLAGRDLTDYLMKILTERGYSFTT
TAEREIVRDIKEKLCYVALDFEQEMATAASSSSLEKSYELPDGQVITIGNERFRCPEALFQPSFLGM
ESCGIHETTFNSIMKCDVDIRKDLYANTVLSGGTTMYPGIADRMQKEITALAPSTMKIKI IAPPERK
YSVWIGGSILASLSTFQQMWISKQEYDESGPSIVHRKCF
```

NCBI の BLAST のサイトから予測する。

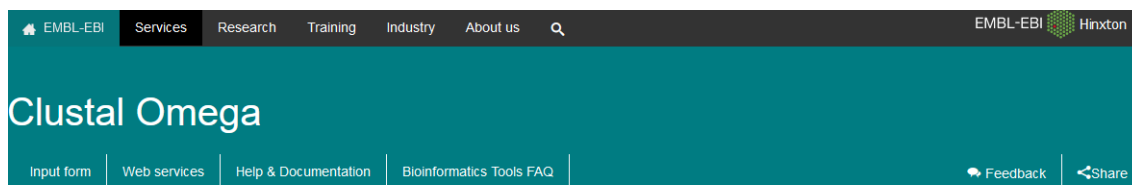
<https://blast.ncbi.nlm.nih.gov/Blast.cgi>

The screenshot shows the NCBI BLAST web interface. The query sequence is the actin protein sequence. The database is set to 'Protein Data Bank proteins(pdb)'. The algorithm is set to 'PSI-BLAST (Position-Specific Iterated BLAST)'. The 'BLAST' button is highlighted.

Annotations in the image:

- Red arrow pointing to the query sequence: ヒトのアクチンのAチェーン)の配列
- Red arrow pointing to the database selection: Databaseは「Protein Data Bank proteins(pdb)」を選択
- Red arrow pointing to the algorithm selection: 「PSI-BLAST」を指定

PSI-BLAST の最初の結果



Tools > Multiple Sequence Alignment > Clustal Omega

Results for job clustalo-E20211015-083905-0229-79202906-p2m

Alignments | **Result Summary** | Guide Tree | Phylogenetic Tree | Results Viewers | Submission Details

Download Alignment File | Show Colors

CLUSTAL O(1.2.4) multiple sequence alignment

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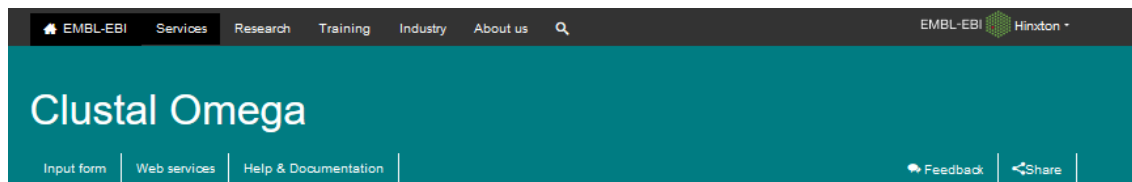
P0A858|TPIS_ECOLI      --MRHPFLMGNWKLNGSRHMVHELVSNLRYELAG--VAGCAVAIAPPEMYIDMAKREAG      56
P48494|TPIS_ORYSA      --MGRKFFVGNWKNKNGITDQVQDKIVKILNEGQIPLASTDVEVWVSPVFLPVKSQL-R      57
P12863|TPIS_MAIZE      --MGRKFFVGNWKNKNGITDQVQDKIVKILNEGQIPLSDVVEVWVSPVFLPVKSQL-R      57
P29613|TPIS_DROME      --MSRKFVGNWKNKNGITDQVQDKIVKILNEGQIPLSDVVEVWVSPVFLPVKSQL-R      55
P00940|TPIS_CHICK      --MAPRKFVGNWKNKNGITDQVQDKIVKILNEGQIPLSDVVEVWVSPVFLPVKSQL-D      56
P60174|TPIS_HUMAN      MAPSRKFVGNWKNKNGITDQVQDKIVKILNEGQIPLSDVVEVWVSPVFLPVKSQL-D      57
P17751|TPIS_MOUSE      MAPTRKFVGNWKNKNGITDQVQDKIVKILNEGQIPLSDVVEVWVSPVFLPVKSQL-D      57
      * * * * * . . . . .
      * * * * * . . . . .
      * * * * * . . . . .

P0A858|TPIS_ECOLI      SHIMLGAGVDMNLGSAFTGETSAAMLKDIGAQVLIIGHSERRTYHKSDELIAGKFAVL      116
P48494|TPIS_ORYSA      PEIQVAAQNCWVKKGGFTGEVSAEMLVNLSPFWILGHSEERRLLGESNEFVGDQVAYA      117
P12863|TPIS_MAIZE      QEFHVAQNCWVKKGGFTGEVSAEMLVNLGVEVWVILGHSEERRLLGESNEFVGDQVAYA      117
P29613|TPIS_DROME      CELGLAQNAKVKAGFTGEISPAMLKDIGADWVILGHSEERRAIFGESDALLAEKAEHA      115
P00940|TPIS_CHICK      AKISVAAQNCWVKKGGFTGEISPAMLKDIGADWVILGHSEERRHVFGEDELIGQVYHA      116
P60174|TPIS_HUMAN      PKIAVAAQNCWVKNGAFGTGEISPGMIKDCATWVWILGHSEERRHVFGEDELIGQVYHA      117
P17751|TPIS_MOUSE      PKIAVAAQNCWVKNGAFGTGEISPGMIKDLGATWVWILGHSEERRHVFGEDELIGQVYHA      117
      . . . * * * * * . . . . .
      . . . * * * * * . . . . .
      . . . * * * * * . . . . .

P0A858|TPIS_ECOLI      KEQGLIFVLCIGETEAEENAGKTEEVCAQIDAVLKTQGAFAFEGAVIAYEFVWAGTIGK      176
P48494|TPIS_ORYSA      LSGSLKVIACVSETELEQREAGSTMDVVAQTKAIA--EKIKDWSNVVYAYEFVWAGTIGK      175
P12863|TPIS_MAIZE      LSGSLKVIACVSETELEQREAGSTMDVVAQTKAIA--EKIKDWSNVVYAYEFVWAGTIGK      175
P29613|TPIS_DROME      LAEGLVIACIGETLEEREAGTEKVVFEQTKAIA--DMVKDWSKVVLAYEFVWAGTIGK      174
P00940|TPIS_CHICK      LAEGLVIACIGETLEEREAGTEKVVFEQTKAIA--DMVKDWSKVVLAYEFVWAGTIGK      174
P60174|TPIS_HUMAN      LAEGLVIACIGETLEEREAGTEKVVFEQTKVIA--DMVKDWSKVVLAYEFVWAGTIGK      175
P17751|TPIS_MOUSE      LAEGLVIACIGETLEEREAGTEKVVFEQTKVIA--DMVKDWSKVVLAYEFVWAGTIGK      175
      * * * * * . . . * * * * * . . . . .
      * * * * * . . . * * * * * . . . . .
      * * * * * . . . * * * * * . . . . .

P0A858|TPIS_ECOLI      SATPAQAQVHVKFIRDHIA-KVDANIAEQVLIQVGGSSVNASNAELFAQPDIDGALVGG      235
P48494|TPIS_ORYSA      VATPDQAQEVHDLRKLWLANVSAEVAESTRIIVGGSSVGTANCKELAAKFPDIDGALVGG      235
  
```

さらに分子系統樹を描くには、Phylogenetic Tree のタブを利用する。



Tools > Multiple Sequence Alignment > Clustal Omega

EMBL-EBI to be HTTPS by default from 1st October
 On the 1st October the majority of services hosted on www.ebi.ac.uk will be served over HTTPS by default. Services that are becoming HTTPS by default will automatically redirect users accessing the site on insecure HTTP URLs to secure HTTPS URLs.
 Users of EMBL-EBI services may wish to update links, bookmarks or API clients to use the HTTPS URLs.

Results for job clustalo-I20171006-093355-0181-84955476-oy

Alignments | Result Summary | **Phylogenetic Tree** | Submission Details

Phylogenetic Tree

This is a Neighbour-joining tree without distance corrections.

Download Phylogenetic Tree Data

Branch length: Cladogram Real



P0A858 TPIS_ECOLI	0.35786
P48494 TPIS_ORYSA	0.06428
P12863 TPIS_MAIZE	0.04244
P29613 TPIS_DROME	0.16719
P00940 TPIS_CHICK	0.05507
P60174 TPIS_HUMAN	0.01553
P17751 TPIS_MOUSE	0.02463

分子系統樹の表示

進化距離を枝長に反映した表示も可能

Tree Data

```

{
  P0A858|TPIS_ECOLI:0.35786,
  {
    P48494|TPIS_ORYSA:0.06428,
    P12863|TPIS_MAIZE:0.04244),
  0.16079},
  {
    P29613|TPIS_DROME:0.16719,
    {
      P00940|TPIS_CHICK:0.05507,
      {
        P60174|TPIS_HUMAN:0.01553,
        P17751|TPIS_MOUSE:0.02463)},
    0.04783}),
  0.11343),
  0.01156),
}
  
```