

Running BLASTp locally

Use this to find sequence similarity of your favorite protein in a database of proteins, for example, in the proteome of another organism. Alternative to the [NCBI BLAST](#) server, it can also be ran locally with the command line. Example sequence for BLAST.

```
>HSP70B
MPVQQMTSMRSQSLAGAPVAPVKAGRAGVSRRGLAVSVRAEKVVGIDLGTTNSAVAAMEG
GKPTIITNAEGGRTTPSVVAFKTGDRLVGQIAKRQAVVNPENTFFSVKRFI GRRMSEVG
SESTQVPYRVIEDGGNVKIKCPNAGKDFAPEEISAQVLRKLTEDAAKFLNDKVEKAVITV
PAYFNDSQRQATKDAGKIAGLEVLRINEPTAASLAYGFDKKANETILVFDLGGGTFDVS
VLEVGDGVFEVLSTSGDTHLGGDDFDKRIVDFLADDFKKSEGIDLRKDRQALQRLTEAAE
KAKIELSGMAQTSINLPFITATADGPKHIDTQLTRAKFEEMCNDLLERCKVPVQQALRDA
KLSISDIQEVLVGGSTRIPAVQEIVRKL SGGKDPNVTVNPDEVVALGAAVQAGVLAGEV
SDIVLLDVTPLSLGLETGGVMTKLIPRNTTLP TSKSEVFSTAADGQTSVEINV LQGERE
FARDNKSLGTFRLDGIPPAPRGVPQIEVKFDIDANGILSVTATDKGTSKKQDIRITGAST
LDKGDVERMVKEAEKFAGEDKKRRESVETKNQAETMVYQTEKQLKEFEGKVPADIKAKVE
AKLGELKAALPADDAEATKAAMNALQQEVMAMGQAMYSQAGAAPGGAPGAEPGAGAGAGG
APGGKKDDDVIDAEFTDKK
```

Locally with the command line

Create BLAST database in a folder with the same name as the database. As an example here, the database would be the proteome of Chlamydomonas.

```
makeblastdb -in chlamydomonas.fa -dbtype prot -out chlamydomonas
```

Run BLASTp from the database folder

(Note: adjust the parameters to your needs; i.e. `eval` & `max_target_seqs`)

(Note II: there are different ways to run blast locally. See BLASTall, BLASTn, etc; the parameters are not the same as in BLASTp)

```
blastp -query ../secuencias_query.fasta -db chlamydomonas -out
../resultados_blastp.txt -eval 0.05 -outfmt "6 std qcovs"
```

BLASTp output by column. Information of BLAST terms can be found in the [glossary](#).

1. query
2. hit
3. identity
4. alignment length
5. #mismatch
6. #gaps
7. start query
8. end query
9. hit start
10. hit end

11. e-value → we want this close to zero
12. bit score
13. Coverage

Noted issues

- In BLASTn, sequences with a repeated pattern of nucleotides may not always be found through BLAST due to the low complexity filter.
- Keep in mind the [limitations of BLAST](#).

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