

BLAST

Talk to a Teacher

<http://spoken-tutorial.org>

National Mission on Education through ICT

<http://sakshat.ac.in>

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Learning Objectives



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- ▶ Run BLAST for the query sequence using Biopython tools



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- ▶ Run BLAST for the query sequence using Biopython tools
- ▶ Parse the BLAST output for further analysis



Pre-requisites



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- ▶ **Familiar with Undergraduate Biochemistry or Bioinformatics**



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- ▶ **Basic Python programming**



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- ▶ Refer to Python Spoken Tutorials at <http://spoken-tutorial.org>



System Requirements



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- ▶ **Ubuntu OS version 14.10**



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- ▶ **Working internet connection**



About BLAST



About BLAST

- ▶ **BLAST- Basic Local Alignment Search Tool**



About BLAST

- ▶ **BLAST- Basic Local Alignment Search Tool**
- ▶ **It is an algorithm for comparing sequence information**



About BLAST



About BLAST

- ▶ The program compares nucleotide or protein sequences to sequences in databases



About BLAST

- ▶ The program compares nucleotide or protein sequences to sequences in databases
- ▶ Calculates the statistical significance of matches



About BLAST



About BLAST

- ▶ **Local BLAST on your machine**



About BLAST

- ▶ Local **BLAST** on your machine
- ▶ Run BLAST over Internet (NCBI servers)



Steps for running BLAST



Steps for running BLAST

- ▶ **Run BLAST for your query sequence and get some output**



Steps for running BLAST

- ▶ Run **BLAST** for your query sequence and get some output
- ▶ Parse the **BLAST** output for further analysis



qblast Function



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- ▶ The qblast function also takes a number of other option arguments
- ▶ These arguments are analogous to the different parameters you can set on the **BLAST** web page
- ▶ The qblast function will return the **BLAST** results in xml format



NCBI BLAST Website



NCBI BLAST Website

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



Summary

- ▶ Run BLAST for the query nucleotide sequence using GI number
- ▶ Parse the BLAST output (xml file) using Bio.Blast.Record module



Assignment



Assignment

- ▶ Run BLAST for a protein sequence of your choice
- ▶ Save the output file (xml file) and parse the data contained in the file



About the Spoken Tutorial Project

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Spoken Tutorial Workshops

The Spoken Tutorial Project Team

- ▶ Conducts workshops using spoken tutorials
- ▶ Gives certificates to those who pass an online test
- ▶ For more details, please write to contact@spoken-tutorial.org



Acknowledgements

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- ▶ It is supported by the National Mission on Education through ICT, MHRD, Government of India
- ▶ More information on this Mission is available at

<http://spoken-tutorial.org/NMEICT-Intro>

