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Project Proposal:

Basic Local Alignment Search Tool (BLAST) is one of most widely used tool to find sequence similarities. Sequence similarity search is a bioinformatics activity and BLAST finds regions of similarity between biological sequences and compares nucleotide/amino acid sequences to a database, and calculate the statistical significance. In this project, we will compare and analyze the amino acid sequences that is in Chado to sequences in NCBI database saved in the folder using BLAST technique.

The user will be asked to submit a product and the displayed output (only one) will be the organism’s unique name and the residue, then the residue will be saved in a file. The user then will be asked to either, copy and paste the amino acid sequence, or is just asked to click a button to get the blast result, which blastp compared with the protein in the nr-database stored in a file and display the results.

Thus, we will develop a tool that takes an amino acid sequence from Chado database for e-coli and compare it the db sequence and outputs the result: e-value, % identity and similarity.

Plan of Action – use the following technologies:

1. The Unix Os and file system – where we install and download:
   1. executables (blastp, etc)
   2. Databases (nt, etc …) from NCBI
2. We will use MySQL Connector/Python to establish connection. The connect () constructor creates a connection to the MySQL server and returns a MySQLcon-obj.
3. We will use Chado\_db – relational database where the sequence information is saved and we will retrieve the unique name and residue from the feature table.
4. CGI and Html templates – user enters data into a form and it is sent to a CGI processing script. Then the scripts are used to access values from the server, process the data and display the result.
5. CSS- Transform the plain pages to visually appealing, meaning apply visual styling.
6. Javascript and JQuery for client side interaction – where the user interaction with the page is controlled. It provides a dynamic interaction on a browser.

References:

1. <https://blast.ncbi.nlm.nih.gov/Blast.cgi>
2. <http://akka.genetics.wisc.edu/sandbox/groups/genetics875/wiki/97fec/attachments/f6cb0/Camacho_BLASTPlusManual.pdf?sessionID=fe2fa4799970fc12052945b0ae494e4c01ff07a9>