Practical 1 – BLASTP searches within Oracle

Step 1 – connecting to the database

Connect to the database through Isqlplus – address = http://behemoth.rcs.manchester.ac.uk:5560/isqlplus

Username and password = [see whiteboard]

Connection indentifier = [see whiteboard]

Step 2 – look at the objects (tables) that have been created in the schema

In SQL Plus box – type the following and press execute afterwards

```
Select table_name from user_tables
```

This shows the tables that the schema owns. One of those tables is the table “swissprot”. Enter the following and press execute. This describes the table detail.

```
Describe swissprot
```

To list some of the data in the swissprot table execute the following

```
Select * from swissprot
```

The table query_db contains 1 row which is the query sequence we'll user later to do a BLASTP search against all human proteins in the swissprot table. Execute the following statement

```
select * from query_db
```

Perform a BLAST search of the given query sequence against all human proteins in SwissProt and return the seq_id, score, and expect value of matches that score > 25. From your terminal window, execute the following commands

```
Select T_SEQ_ID, score, EXPECT as evalue
 from TABLE(BLASTP_MATCH (
    (select sequence from query_db), -- query_sequence
     CURSOR(SELECT seq_id, seq_data
      FROM swissprot
      WHERE organism = 'Homo sapiens (Human)'),
       1,
      -1,
       0,
       0,
 'BLOSUM62',
      10,
       0,
       0,
       0,
       0,
       0))
 t where t.score > 25;
```

Step 3 – BLAST queries through a developed web application

A web application has been quickly implemented through Oracle Apex to show how the above queries can be submitted in a more user friendly way. The address of the web site is http://behemoth.rcs.manchester.ac.uk:7777/pls/apex/f?p=105

username and password = odm

The default query is the sequence used in the example above (feel free to change it!)

Some other options for the BLASTP search are available for the user to change.

Pressing submit will execute the BLAST query. Results of the search will be shown on a separate page

Clicking on the links of the matched sequence Id's will show details about that amino acid sequence.

If you wish , go back to the home page and repeat the search changing some of the input options.