**Lab sheet#2 (Check Manual)**

**Nucleotide database, Gene Databases and Gene/phenotype interaction database (OMIM)**

**Objectives:**

* Searching for sequences in **nucleotide database**.
* To be familiar with **Gene database**.
* Searching for human genes, genetic disorders and phenotypes using **OMIM**.

**Use Nucleotide database to answer the following questions:**

1. Retrieve the transcript sequence for the human ***APP*** gene**.**
2. What is the accession number for the human **APP** mRNA sequence?
3. How many times was the record updated?
4. How many base pair does it contain?
5. What are the main functions of this gene?
6. What is the location of the CDS?
7. Get the amino acid sequence.
8. Display the FASTA format and graphical view of the sequence.
9. Search for **CFTR** mRNA in **Bos taurus** using **RefSeq database**.
10. Using the GeneBank accession number “**NM\_198253.3**”, Get the mRNA transcript sequence of the gene.

**Exercise:**

* Retrieve the mRNA transcript sequence for the Mus musculus factor IX in FASTA format.
* What is the accession number of the transcript?
* What is the range of the coding sequence?

**Use Gene database to answer the following questions:**

1. What is the official gene symbol of human **telomeric repeat binding factor 2** gene?
2. What is the **type of the gene**?
3. What is the function of the gene?
4. What other names used for this gene?
5. What is the **genomic location** of the gene?
6. Get the FASTA format of the gene, mRNA and protein sequence.
7. Find a **citation** focusing on the human TRF2.

**Use OMIM databases to answer the following questions:**

1. Using the **OMIM Website**, can you find any **disease** associated with **APP**?
2. What is the **type of inheritance**?
3. Give a brief **description** of the disease.
4. Using the **OMIM Website**, can you find any records associated with ataxia telangiectasia? Make sure your strategy does not result in a number greater than 300 hits.
5. What is the other name for this syndrome?
6. Using the **OMIM Website**, find the gene that associated with **fanconi-bickel syndrome**.
7. What is the **function** of the gene?

**Exercise:**

* What is the genomic location of the human **ATM**.
* What is the official full name of the gene?
* Get the FASTA format of the gene.
* Which gene is associated with **Angelman syndrome**.