

## Lab sheet 2

### Nucleotide and Gene Databases

#### Objectives:

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

#### Use OMIM database to answer the following questions:

1. Can you find any **genes** associated with sideroblastic anaemia? Give a brief **description** of the disease.
2. What is the **function** of the gene?
3. Show the table of **allelic variants** of this gene.
4. Can you find any records of **other diseases** associated with the previous gene? What is its mode of inheritance? Show its clinical synopsis.

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

5. What is the official full name and official gene symbol of the previous gene?
6. What is the **type of the gene**?
7. Where is this gene mostly expressed?
8. What **other names** used for this gene?
9. What is the **genomic location** of the gene?
10. How many **exons** does this gene have?
11. What are the **pathways** the gene's product involved in?

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

12. Retrieve the mRNA transcript sequence for this human gene.
13. What is the accession number for mRNA sequence?
14. How many base pair does it contain?
15. What are the main functions of this gene?
16. What is the location of the CDS?
17. Display the FASTA format of the sequence.
18. Display the graphical view of the sequence.
19. Search for **the gene's** mRNA in **Mus musculus** using RefSeq database.
20. Get the amino acid sequence of the above coding sequence.

**Exercise:**

- ✓ Search for **DNMT** mRNA transcript FASTA sequence in mouse.
- ✓ What is the range of the coding sequence?
- ✓ Which gene is associated with **angelman syndrome**?
- ✓ What is the genomic location of the human **insulin** gene?
- ✓ Using the GeneBank accession number “**NM\_000133**”, Get the mRNA transcript sequence of the **Factor IX gene**.