THE DERIVATIVE DATABASE Gene

1. Write the following features of the human gene associated with Hemophilia A:
   a. the OMIM accession number of the disease, the pathological phenotype and the number of the allelic variants;

From the NCBI databases report:

   b. the accession number in the Gene database;
   c. the chromosome position (bp) of the gene;
   d. the accession number of the mRNA reference sequence and the length of the coding sequence;
   e. the accession number of the protein reference sequence, the nucleotides from 42 to 50 and the corresponding amino acids;

From the Ensembl database report:

   f. the accession number of the gene;
   g. the accession number and the length of the transcripts and proteins;
   h. the exon/intron composition of the first transcript.

Describe the differences you found between the NCBI and Ensembl database.

2. Write the following features of Dmd gene in *Rattus norvegicus*:
   a. the accession number in the Gene database;
   b. the name of the protein;
   c. the accession numbers, the characteristics and the length of the coding sequences of the mRNA and protein reference sequences;

From the Ensembl database report:

   d. the accession number of the gene;
   e. the accession number and the length of the transcripts and proteins;
   f. the exon/intron composition of the longest transcript.

3. Search for the DMD gene in *Pan Troglodytes* and describe the entries you have found. Of the homologous human gene choose the isoform Dp427p1 and report:
   a. The structure in exons;
   b. The accession code of the reference sequences of mRNA and protein;
   c. The start and end position of the coding sequence;
   d. The amino acids from 157 to 161 and the corresponding coding nucleotides.

4. Report the phenotypic traits associated with deficiency of the XII coagulation factor and the name and the map position of the human gene. Report:
   a. The accession number in the Gene database;
   b. The accession number of the mRNA reference sequence and the length of the coding sequence;
   c. The accession number of the protein reference sequence, the nucleotides from 51 to 56 and the corresponding amino acids;

5. Write the following features of the F9 gene in *Bos taurus*:
   a. the accession number in the Gene database;
   b. the name of the protein;
   c. the accession number of the mRNA reference sequence and the length of the coding sequence;
   d. the name of the flanking genes;
   e. the accession number of the protein reference sequence, the nucleotides from 51 to 56 and the corresponding amino acids.