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Hands-On Four

Human Genome Project Primer and GenBank Sample Record

Problem 1

A) The U.S. Human Genome Project formally began in 1990 and was coordinated by the U.S. Dept. of Energy and the National Institutes of Health.

Please read the first 3 pages of the article found under the following link:

http://www.ornl.gov/sci/techresources/Human_Genome/publicat/primer2001/primer11.pdf

Answer the following questions:

- How many genes does a human DNA contain? _____
- What is the name and size of the largest human gene? _____
- What is the percentage of nucleotides that distinguishes the DNA of one person from the DNA of another person? _____
- Are the functions of all discovered human genes known?

- Which human chromosome has the largest number of genes, and which human chromosome has the fewest?
_____ has the largest number of genes and _____ the fewest.
- Is it possible to have different proteins from the same human gene?
_____. Explain:
_____.

Problem 2

NCBI has a sample GenBank record at:

<http://www.ncbi.nlm.nih.gov/Sitemap/samplerecord.html>

Please go to that site, read the example and answer the following questions:

- What does PLN stand for?
_____.
How many divisions does GenBank have? _____.
- What does CDS stand for? _____. Explain.

- c) There are three occurrences of “CDS” under “Features”. Consider the first occurrence of “CDS”. One of its subfields is “/translation”. Explain why “/translation” starts with the specific sequence of amino acids: **SSIYN**.

- d) Consider the second occurrence of “CDS”. One of its subfields is “/translation”. Explain why “/translation” starts with the specific sequence of amino acids: **MTQLQ**.