***Group B - Kobilov Ilkhomjon - 201923250***

* **Why Phosphate bonds important in DNA or RNA structure?**

The sugar-phosphate backbone is an essential component of the structure of a DNA double helix. DNA structure is related to its function. The combination of the nitrogen bases associated with the sugar-phosphate backbone is a central part of the DNA's ability to store and relay genetic information.

Structured RNA molécules form compact architectures that mimic folded proteins superficially. This near kit is notable because each RNA nucleotide is absolutely negative. Therefore, RNA molecules must compactly overcome important electrostatic self-repulsion.

* **Why does G-C form three hydrogen bonds while A-T forms only two?**

In hybrid DNA and DNA-RNA produced during replication and transcription, cytosine and guanine pairing can be detected. Three hydrogen bonds hold the two nitrogen pillars together. With a more hydrogen bond between G-C than A-T, the nitrogen foundations require more energy to break down.

The hydrogen bonding occurs in seas, DNA base-pair interactions, protein folding, protein structuring, and the protein bonding. The formation of hydrogen bonding is caused by the pull of various electron atoms. The sequence of electricity is O > N > C = H.

* **Briefly explain the importance of poly A tail of mRNA.**

The poly (A) tail prevents mRNA from degradation and exports of the mature mRNA to the cytoplasm and is associated with the binding of translation-induced proteins. Until the mRNA is exported to the cytoplasm, the introns are separated from the mRNA.

* **What is nonsense mutation? Describe with an example.**

A mutation of nonsense is the substitution of a single base pair that corresponds to a stop codon presence, which formerly contained an amino acid codon. A premature stop codon leads to a shortened, possibly non-functional protein being formed.

Examples : Cystic fibrosis caused by the G542X mutation in the CFTR Hurler Beta Thalassaemia (ß-globin) syndrome. Transmembrane conductance (CFTR)

* **Write the importance of polypeptide bonds.**

In order to perform their regular tasks, the cells use different molecular forms. Proteins are one of the leading groups of molecules. There was a mistake. Amino acids are used as polypeptides' building blocks and polypeptides act as protein building blocks.

* **Is this possible to create a DNA sequence from an RNA and how?**

The parts of DNA transcribed into RNA are known as "genes." RNA looks very much like DNA. In the position of the transcribable gene, the DNA strands are taken apart and enzymes generate RNA from the DNA sequence based on the simple pairing laws.

* **Which gene mutation is much more severe and why?**

The nonsense mutation is named whether a point mutation turns the amino acid into a "stop." Deleting and inserting will lead to a change in reading window, which is called a “frameshift”. These mutations are usually one of the most severe.

* **What are the possible outcomes of Chromosome mutation?**

Firstly, it may contribute to an abnormal number or location of chromosomes. Second, if chromosomal mutation requires a split of chromosome, as is typically the case, a break will happen with a gene that disrupts its role.

* **Define the domain and motif of protein. Why are they required?**

The domains are different functional and/or structural protein units. They are typically responsible for a specific function or activity that leads to a protein's overall role.

Protein motives are thin, 3D protein structure or amino acid sequence regions exchanged between various proteins. They are observable protein structure regions that may or may not) be characterized by a single chemical or biological function.

A 3D-structure is identical to that of the various proteins that have a similar role. Domains, however, are protein regions that have a particular role and can act independently of the other protein.

Thank you

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