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Bs(MLT 4th semester)

Paper molecular biology

Fill in the blanks

1. **James Watson, Francis crick and Maurice Wilkins**
2. **1962**
3. **DNA**
4. **Genes**
5. **Replicating forks**
6. **Topoisomerase**
7. **Genetic code**
8. **Amino acylation**
9. **DNA helicase**

**Q 02**

**Ans:**

* **01) Common tools of molecular biology:**
* Nucleic acids fractionation
* Polymerase chain reaction
* Probes, hybridization
* Vector, molecular cloning
* Nucleic acid enzymes
* Microarray
* Dna sequence
* Electrophoretic separation of nucleic acid
* **02) nucleic acid:**
* Nucleic acid are the bio polymers, are small biomolecules, essential to all known forms of life.
* The term nucleic acid is the overall name of DNA and RNA.
* They are composed of nucleotides, which are the monomers made of three components.
* A) Five carbon sugar
* B) Phosphate group
* C) nitrogenous base
* **03) Chargaff’s rules:**
* The rules state that there is a 1:1 of purines (A, G) to pyrimidine’s (T, C).
* This is true because a binds with T and G binds with c.
* Mismatches of pairing leads to improper folding and alignment which must be refereed.

**States:**

The dna any cells of all organism should have a 1:1 (base pair rules ) of pyrimidine purine bases and, more specifically, that the amount of guanine is equal to cytosine and the amount of adenine is equal to thymine.

* **04) Wobble hypothesis:**
* It refers to a theory to explain degeneracy is when a single amino acid may be specified by many codons.
* It is due to the last base in codon.
* Last base is said to be a wobble base.
* Therefore, the first two codons acts as important once to determine the amino acid and the third one is different which does not affects the codding.
* This theory is called wobble hypothesis.
* **Main steps translation and transcription:**
* **Translation:**

**Initiation:**

* The ribosome assembles around the target MRNA….

**Elongation:**

* The tRNA transfers an Amino acid to the trna corresponding to the next codon…

**Terminology:**

* **When a peptide trna encounter a stop codon, then the ribosome folds the polypeptide into its final structure.**
* **Transcription:**

**Initiation:**

* Initiation is the beginning of transcription.

**Elongation:**

* Elongation is the addition of nucleotides to the MRNA strand.
* Termination

**Ans03**

* **Process of DNA Replication:**
* DNA replication occurs when a strand of DNA is unzipped down the middle between its hydrogen bonds.
* When the double-stranded DNA is unzipped, each side serves as template, and free nucleotides bind to each of single strands.
* Two double strands of DNA are made each containing the same nucleotide sequence.
* Each is composed of one original strands and one new strands
* During cell division in eukaryotic cells, the replicated genetic material is divided equally between two daughter cell.
* It is important that each cell gets an exact copy of the parent cell’s DNA.
* DNA replication is the process by which Dna makes the copy of its self during cell division.

**Six steps of DNA replication:**

* Helicase unzips DNA strands.
* Ssbp make sure strands do not close again.
* DNA polymerase attaches new nucleotides.
* Subunit of DNA polymerase that proof reads DNA.
* DNA ligase seals strands together.
* DNA molecule winds up.

**Replicate a DNA sequence:**

* DNA replication occurs through the help of several enzymes.

These enzymes “UNZIP”DNA molecules by breaking the hydrogen bond that hold the two strands together.

* Each strand then serves as a template for a new complementary strand to be created.
* Complementary bases attached to one another (AT and CG).

 **THE END**