2) HEAT DENATURATION

DEF :-

loss of the helical structure of the DNA by disruption of the hydrogen bonds between 2 paired base.

CAUSES :-

1. Alteration of PH
2. Heat " UV light absorption at 260 nm "

Features :-

1. DNA contain high concentration of A – T denatured at lower temperature than G C rich DNA
2. Phosphodiester bonds aren't be broken
3. Renaturation : reformation of the double stander DNA after denaturation under suitable conditions
4. Single stander higher absorbed to UV than double stander
5. Melting Temperature : Temperature at which 1/2 of double helix is lost

Fig 8 pg :68

17-Replication in eukaryotes

Differ from replication in prokaryotes in:

1-Multiple origin of replication versus (vs) single origin in prokaryotes.

2-**there are 5 classes of polymerase enzyme** :

***alpha-polymerase**→ has primase activity to initiate DNA synthesis.

***Beta-polymerase**→ DNA repair .

***gama-polymerase** → proof reading & replicate mitochondrial DNA .

***Delta-polymerase** → synthesize leading & okazaki fragments & proof reading activity.

***sigma-polymerase** → repair mechanism & proof reading.

3-**synthesis of new histones occurs simultaneously with Dna replication for formation of nucleosomes** .

N.B :-

The classification according to :

1) molecular weight 3) sensitivity to inhibitor

2) cellular location 4) substrate act on

18-Regulation of Regulation Of Operon Model in presence of glucose

A-lactose operon model :

1-in prokaryotes , the genes involved in metabolic pathway are often present in a linear array called an operon e.g.,the lac operon is a best model for regulation of lactose consumption by bacteria (E.Coli)

2-the lac operon consists of 1 regulatory gene (i gene) and three structural genes (z,y&a)

3-the i gene codes for the repressor (protein) of the lac operon. The repressor has a strong affinity for The operator

4-the z gene codes for B galactosidase (B gal) . that responsible for the hydrolysis of lactose into glucose and galactose.

5-the y gene codes for permease , which increase permeability of the cell to B-galactosides

8-The a gene codes a trans-acetylase.

B-Mechanism of action of lactose operon model:

*Repression state:

1-during normal growth of bacteria on a glucose-based medium , the repressor protein is synthesized . (lac i gene product)

2-the repressor protein binds to the operator ,

.

3. this interferes with progress of RNA polymerase

4. block transcription from Z,Y&A genes (B-galactosidase permease&transacetylase enzymes gene products).

21-POST-TRANSLATION MODIFICATION (FOLDING AND PROCESSING}

1- changes occur in the newly synthesized proteins including folding into tertiary and quaternary conformation.THEN ,proteins under go modification to be active.

3**- The modifications are the following:-**

A)Trimming

1-Many proteins secreted from the cell are large;precursor molecules that are not functionally active.

2-Parts of the protein chain removed by endoproteases,>> release of an active molecule. E.G the trypisinogen, becomes activated to trypsin in the small intestine,

B)Covalent alterations

Proteins,both enzymatic and structural, may be activated or inactivated by covalent attachment of a variety of chemical groups. **Examples of these modifications include** :

B-1)Phosphorylation:-

- occure on hydroxyl groups of serine.

- it increase or decrease the functional activity of the protein

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