

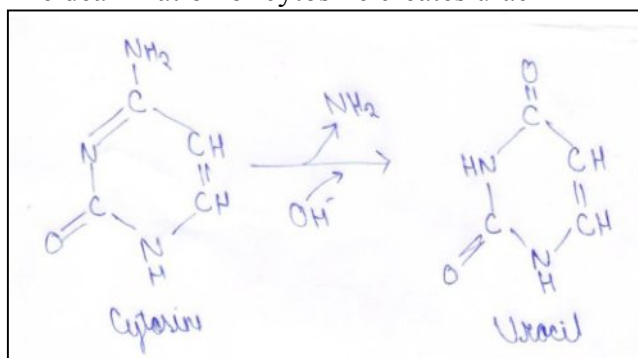
CHEMISTRY OF NUCLEIC ACIDS

1. The solution of DNA is highly viscous at pH 7 at 25°C. When such solution is heated beyond 80°C or subjected to alkaline pH, the viscosity decreases. This is due to denaturation of DNA (separation of two strands of DNA). The denaturation of DNA is called melting of DNA. Once the DNA is brought to the temperature of 22-25°C or the normal pH of 7, the separated strands rejoin. This process of rejoining of strands of denatured DNA is called renaturation or annealing.
2. The nucleic acids maximum light when the wavelength of light is 260 nm that is the UV light that is λ_{max} of DNA is 260 nm (the λ_{max} of proteins is 280 nm).
3. Hypochromic effect:
 - The native DNA can absorb less light than denatured DNA. The denatured DNA absorb less light than free nucleotides.

Light absorption:

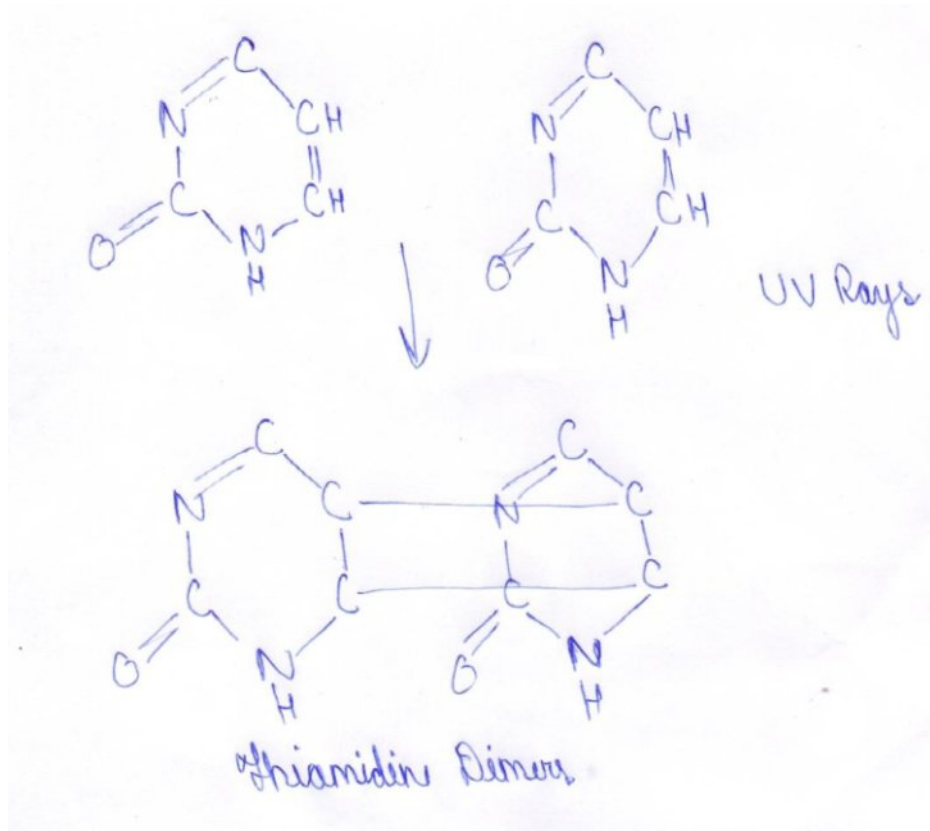
ds DNA < ss DNA < free nucleotides

4. The deamination of cytosine creates uracil



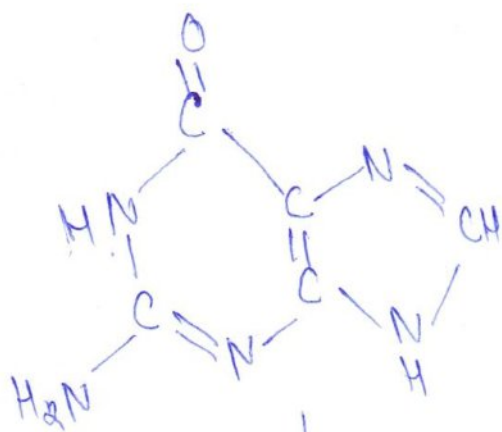
5. Non-enzymatic hydrolysis of the bond between nitrogenous base and ribose sugar. This creates abasic site in DNA. Occurs in one in 10^5 bases in 24 hours.
6. Formation of thymidine dimers:

The thymidine dimers are formed between two thiamine bases present on the same strand.



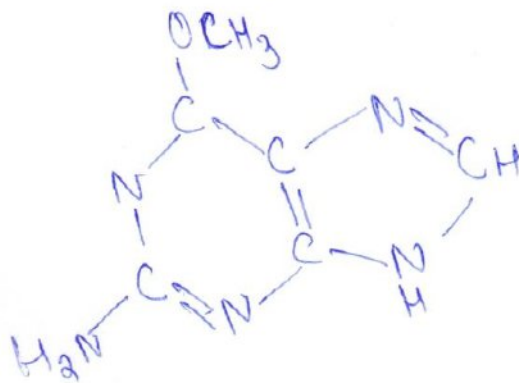
7. Environmental agents causing mutation:

- Nitrous acids causes the demethylation of bases.
- Alkylating agents such as dimethyl sulphate can methylate guanine to yield methyl guanine (O⁶-methyl Guanine)



Guanine

Alkylating Agents



O⁶-Methyl Guanine