Nwifama Stephanie Baridoo
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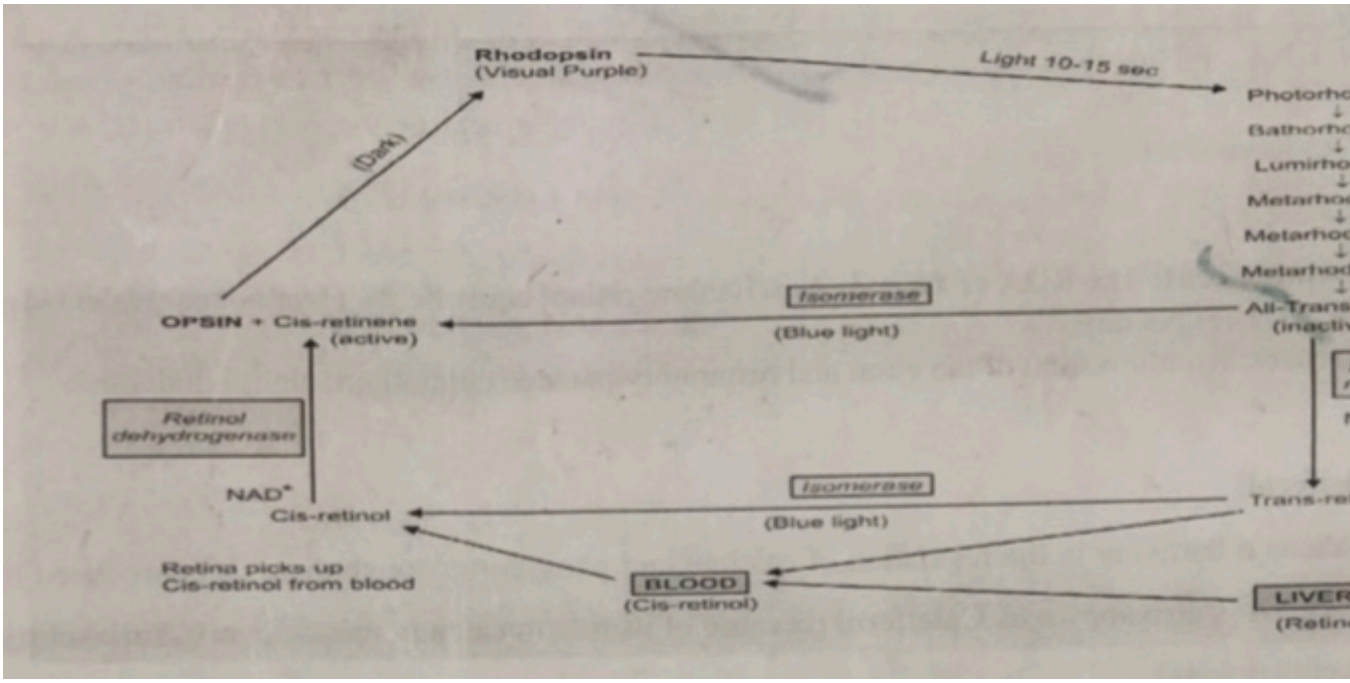
Bch 202
Biochemistry

1. Vitamins can be broadly classified into 2 main categories based on their solubility
   A. Fat soluble vitamins
   B. Water soluble vitamins

Biochemical importance include helping regulate cell growth, reproduction and digestion

2. Thymine– TDP is the coenzyme that is connected with the energy releasing reaction in carbohydrates metabolism; the enzyme dehydrogenase catalyses ( oxidative decarboxylation) the irreversible conversion of pyruvate to acetyl co–A
Riboflavin– FMN  is the coenzyme that participates in many redox reaction responsive for energy production

| Base | Nucleoside | Nucleotide | Abbreviation | Nucleic acid |
|---|---|---|---|---|
| Purine | | | | |
| Adenine | Adenosine | Adenylate | Amp | RNA |
| | Deoxyadenosine | Deoxyadenylate | Damp | DNA |
| Guanine | Guanosine | Guanylate | Gmp | RNA |
| | Deoxyguanosine | Deoxyguanylate | Dgmp | DNA |
| Pyrimidines | | | | |
| Cytosine | Cytidine | Cytidylate | Cmp | RNA |
| | Deoxycytidine | Deoxycytidylate | Dcmp | DNA |
| Thymine | Deoxythymine | Deoxythymidylate | Dtmp | DNA |
| Uracil | Uridine | Uridylate | Ump | RNA |




5. When a person shifts from a bright light to a dim light rhodopsin stored are depleted and vision is impaired. However within a few minutes known as dark adaptation time rhodopsin
is resynthesied and vision is impaired. Dark adaptation time is increased in vitamin A deficient individuals.

6. Vitamin D is the unnamed vitamin and is absorbed in the small intestine for which bile is essential; vitaminD enters the circulation bound to plasma –alpha globulin and is distributed through the body

7. Acid hydrolysis cleaves susceptible Purine N– glycosylbond in both DNA and RNA , when RNA is boiled in dilute acid adenine and guanine are released leaving an apurin acid which maybe further hydrolysis to a mixture of pyrimidine nucleotides. The pyrimidine are more resistant to acid hydrolysis
Alkali hydrolysis of RNA produces a mixture of 2 and 3 prime nucleotides of cyclic mono phosphate intermediate

8. The double helix structure was proposed by James Watson and Franck's crick in 1953 and it can be compensated to a twisted ladder; the two strands are anti parallel; the width is 20degreeA; each strand of DNA has a hydrophilic deoxyribose phosphate backbone; each turn if the helix is 34 degrees A; the two poly nucleotide chains are of identical but complementary to each other due to base pairing

9.

| | RNA | DNA |
|---|---|---|
| Sugar moiety | Ribose | Deoxyribose |
| Nitrogenous bases | Adenine guanine cytosine and uracil | Adenine guanine thymine and cytosine |
| Pairing | Adenine pairs with uracil | Adenine pairs with thymine |
| Number of strand | One | Two |
| Reaction with alkali | Hydrolyeses | No effect |

10. Functions
    a. Nucleotides are activated precursors of DNA and RNA
    b. Nucleotides of adenine acts as carrier of methy group in the form of S–adenoyl methionine
    c. ATP is a universal currency if energy in biological system
    d. Gtp is involved in protein synthesis as source of energy
    e. Adenine nucleotides are components of 3 major enzymes NAD+, FAD+, CoA
    f. Nucleotides are metabolic regulators e.g C–AMP and c GMP