Summary of Lec 14

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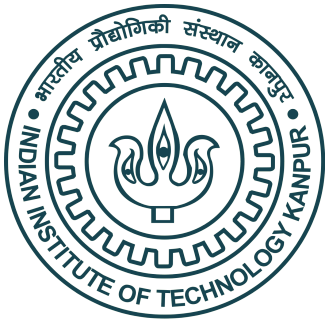

Contents

1 Fetal Hb

The Hb expressed in embryonic stage is quite different from what is expressed in adult. Considering the fact that partial pressure of O_2 in mother's blood is quite low as compared to its atmospheric partial pressure. The fetal Hb picks up most O_2 molecules from the blood. Fetal Hb is constituted by γ-globin gene. Two units of α-globin is coupled to two units of α to yield Fetal Hb. With the passage of time expression of γ-globin gene is repressed by its repressor protein. In fact, there is a reciprocal relation between the expression of β-globin unit and γ-globin unit.

2 Anaemia

Researches for curing Anaemia again gained attention after it was found that a heterozygous mutation producing Fetal Hb and mutated adult Hb (marker of Anaemia) alleviates the symptoms of Anaemia i.e., sickling pain. It can be inferred that if expression of Fetal Hb can be triggered in Anaemia patients then the disease can be treated. Scientists have started trying doing the same by mutating the gene responsible for repressor proteins expression.

Heretofore, we used to insert an extra gene for correct adult Hb production in Anaemia patients. But triggering the suppression of repressor proteins for Fetal Hb, we can maintain the condition of **reciprocal** relationship between fetal and adult Hb production. This maintains the cell *Homeostasis* better. That is quite a leap.

3 Conclusion

The sickling during Anaemia is mainly due to coagulation of Sickle-Cell Hb. The coagulation is quite sensitive to the conc. of Sickle-cell Hb. If we can somehow reduce the conc. by introducing some Fetal Hb units then the sickling symptom can be alleviated. Hydroxyurea does the same.