BB101
Prof. Sanjeeva Srivastava
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Summary of Lecture-4 (Genetics & Chromosomal basis of inheritance)

Dear Students,

Lecture 4 encompassed a comprehensive exploration of inheritance principles, challenging the conventional understanding derived from Mendelian genetics, which posits that each gene exclusively influences a singular phenotypic characteristic. An important concept introduced was pleiotropy, wherein a single gene manifests multiple phenotypic effects. The elucidation of this concept was exemplified through the instances of sickle-cell disease and cystic fibrosis, illustrating how pleiotropic alleles can underlie a spectrum of symptoms in hereditary disorders. Notably, the discussion underscored the evolutionary advantage conferred to heterozygotes in Africa carrying the sickle-cell allele. An experimental demonstration was also performed.

Furthermore, the lecture delved into the seminal experiment conducted by Thomas Hunt Morgan involving fruit flies. This investigation yielded pivotal insights into the intricate dynamics of inheritance, particularly concerning traits linked to the sex chromosomes. The discourse extended to the intricate mechanisms of sex-linked inheritance, elucidating the transmission patterns of genes situated on the sex chromosomes (X and Y). Additionally, the intricacies of genetic recombination and linkage were explored, shedding light on the inheritance dynamics of genes located on the same chromosome.

Looking ahead, the forthcoming class was highlighted to delve deeper into the molecular basis of inheritance. Specifically, the class is poised to scrutinize the ground-breaking experiments conducted by Griffith, Hershey & Chase, and Meselson & Stahl. These experiments, recognized for their seminal contributions, are instrumental in unraveling the molecular intricacies that govern genetic inheritance.

Resource Update:

The course handout and reference materials have been updated and are accessible through the provided Google Drive link:
https://drive.google.com/drive/folders/1FgzzCom1n6WKIgheQrFLA1U8rkJuISGT

In our journey through Genetics, our next lecture will delve into Molecular basis of inheritance & Flow of information.

Best wishes,
Sanjeeva