

## EXPERT TALK - IMMUNOLOGY OF T-CELL DEVELOPMENT

The speaker, Dr. Kushagra Bansal, delivered an exceptional talk on immunology, shedding light on the intricate processes involved in T-cell development. 70 participants, comprising undergraduate (UG) and postgraduate (PG) students from Biotechnology and Microbiology, undergraduate students of Biochemistry, and a few faculty members from the departments of Life Sciences and Chemical Sciences attended this talk. Here's a summary of Dr. Bansal's presentation:

T-cells, also known as Thymus cells, play a crucial role in cell-mediated immunity. Their maturation occurs in the thymus, the primary lymphoid organ located above the heart. The thymic tissue serves as the site for T-cell maturation and positive selection. During positive selection, cells with higher affinity for our body's self-antigens are eliminated, allowing those with lower affinity towards self-antigens to survive and mature.

Dr. Bansal highlighted the role of medullary thymic epithelial cells (mTEC), which possess the Aire (autoimmune regulated) gene responsible for the expression of a myriad of self-antigens. Using advanced methods like RNAseq, Dr. Bansal identified 7621 genes associated with this process, surpassing the 766 genes identified through the outdated DNA microarray method.

Furthermore, Dr. Bansal discussed the interaction between the Aire gene and topoisomerase-I, an enzyme crucial in DNA topology. Deletion of topoisomerase-I in his laboratory led to the development of mice lacking a thymus gland. This groundbreaking work is currently being explored in animals, and its therapeutic implications hold significance in advancing research in thymus gland development and autoimmunity.

The talk received an enthusiastic response from faculty members and students across diverse departments, including Biotechnology, Microbiology, and Biochemistry.

For the Images of the expert talk – Immunology of T-Cell Development, kindly refer to the Photo Gallery: <https://sju.edu.in/gallery/39>