

Frontiers in Biotechnology

The student seminar series took place on October 21st, 2023, from 8 A.M. to 11 A.M. The venue for this enlightening event was Loyola Hall, SJU. As part of the 'Research and Career Development' course for second-year MSc Biotechnology students, the seminar series provided a platform for students to deliver presentations on emerging topics in the field of Biotechnology. Seven student groups, each focusing on a selected topic, presented their seminars within a time limit of 15 minutes.

The examiner panel, comprising internal examiners Dr. Susan Mary Philip and Dr. Nishanth MJ, along with external examiners Dr. Neelam Mishra from the Department of Botany and Dr. Bharat Parthasarathy from the Department of Zoology, evaluated the presentations. The seminars allowed second-year MSc Biotechnology students to explore in-depth topics of interest, develop essential soft skills through group work, and provided a preview for first-year MSc Biotechnology students on seminar delivery and topic exploration.

Each of the seven groups covered diverse topics and subject matters:

Group 1 - '**Innovations in Wellness: The Power of Cell and Gene Therapies**': Explored gene therapy, including methods, procedures, and case studies on Sickle Cell anemia and Leber Amaurosis. Discussed various cell therapy methods such as CAR-T cell therapy and Pluripotent Stem Cell-based therapy.

Group 2 - '**Bridging Minds and Microbes: Understanding the Gut-Brain Link**': Explored the bidirectional relations of the gut and the nervous system, emphasizing the Gut-Brain Axis and microbial composition's effects on neuro-psychiatric systems. Presented a case study on Autism Spectrum Disorders.

Group 3 - '**Understanding the Human Brain through Organoids**': Delved into brain subregions, organoids, and their functions. Discussed study techniques like organotypic slice cultures and vascularized human cortical organoids. Addressed advantages, limitations, and a case study on Alzheimer's disease.

Group 4 - '**Precision Agriculture and Resilient Crops**': Explored technology-based farming methods, smart farming systems, and topics like sensors and GPS. Presented a case study on rice crop management in Indonesia and discussed biotechnological companies improving crop farming technologies.

Group 5 - '**Biotech in Zero-G: Nurturing Life in Space**': Covered space environments, microgravity, space station conditions, and history of space research. Discussed researches and projects in space, including microbiome research, Just-In-Time drugs, SynBio Project, Alzheimer's research, tissue chips, and cancer research.

Group 6 - '**After CRISPR- The Next Generation of Gene Editing**': Explored CRISPR-CAS technology and advanced techniques for genome and prime editing. Discussed improved techniques like CAS12, CAS13, and dCAS9, with a case study on gene editing around Angelman's Syndrome. Emphasized ethical concerns and the need for regulations.

Group 7 - '**Connecting Brain and Technology: The Power of Brain-Machine Interfaces**': Focused on neurotechnology, Brain-Machine Interface Prosthetics, Deep Brain Stimulations, sensors devices, and neuronal machines. Discussed real-world instances, promising insights, challenges, and ethical issues.

For the Images of the Frontiers in Biotechnology, kindly refer to the Photo Gallery:

<https://sju.edu.in/gallery/46>