WORKSHOP ON MATHEMATICAL AND COMPUTATIONAL BIOLOGY

A Report

The Centre for Excellence in Mathematical Biology (CEMB) at Sri Sathya Sai Institute of Higher Learning (SSSIHL), in collaboration with the Department of Biosciences, successfully organized a one-day Workshop on Mathematical and Computational Biology on April 5th, 2026. The event was conducted in hybrid mode at the Seminar Hall of the Prasanthi Nilayam Campus of SSSIHL, bringing together students, faculty, and researchers from across disciplines. The workshop was primarily designed for the undergraduate students of the BS Artificial Intelligence and Computational Biology programme at the Prasanthi Nilayam Campus, offering them a valuable opportunity to engage with leading experts at the frontier of mathematical and computational life sciences. The proceedings were structured into two sessions — one in the morning and one in the afternoon — each featuring a distinguished speaker of international repute.

Morning Session:

The morning session commenced on a devotional note with the traditional Vedic chanting (Vedam), setting a serene and focused atmosphere for the day's intellectual proceedings. The session featured Prof. Philip K. Maini, a world-renowned mathematical biologist from the Wolfson Centre for Mathematical Biology, University of Oxford. Prof. Maini opened his talk by offering a compelling perspective on the fundamental need for mathematical models in understanding biological systems — emphasizing that models serve not merely as abstract tools, but as essential frameworks for uncovering the principles underlying complex living processes. He introduced participants to a range of mathematical models and illustrated their wide-ranging applications across biology, medicine, and allied sciences, making the subject highly accessible and engaging for the student audience.

In the latter part of his session, Prof. Maini presented insights from his own cutting-edge research on the multidisciplinary investigation of collective cell motion. He elaborated on how mathematical modelling, when integrated with experimental biology and computational approaches, can shed light on the coordinated movement of cell populations — a phenomenon central to embryonic development, wound healing, and cancer invasion. His talk was both intellectually stimulating and highly inspiring for the young researchers in attendance.

Afternoon Session:

The afternoon session featured Dr. Mohit Kumar Jolly, an accomplished researcher from the Centre for BioSystems Science and Engineering (BSSE) at the Indian Institute of Science (IISc), Bangalore. Dr. Jolly's talk addressed some of the most pressing and unresolved challenges in contemporary cancer biology and therapeutics.

He began by painting a vivid picture of the unsolved clinical challenges that continue to confound cancer treatment, particularly the phenomenon of treatment resistance and disease recurrence. Dr. Jolly then delved into a detailed and rigorous exploration of the dynamics of cancer metastasis — the process by which cancer cells spread from primary tumors to distant organs — and discussed the underlying biological and molecular drivers that fuel this process. He further elaborated on the correlations between these drivers and patient outcomes, and presented an overview of emerging therapeutic strategies aimed at targeting metastatic pathways. His systems biology perspective, grounded in quantitative modelling, offered the students a vivid demonstration of how computational tools can be harnessed to tackle real-world biomedical problems.

Both sessions were well-received and generated enthusiastic discussion among the participants. The workshop served as an enriching platform for students to broaden their understanding of the interdisciplinary nature of modern biology and to appreciate the profound role that mathematics and computation play in advancing life sciences research.

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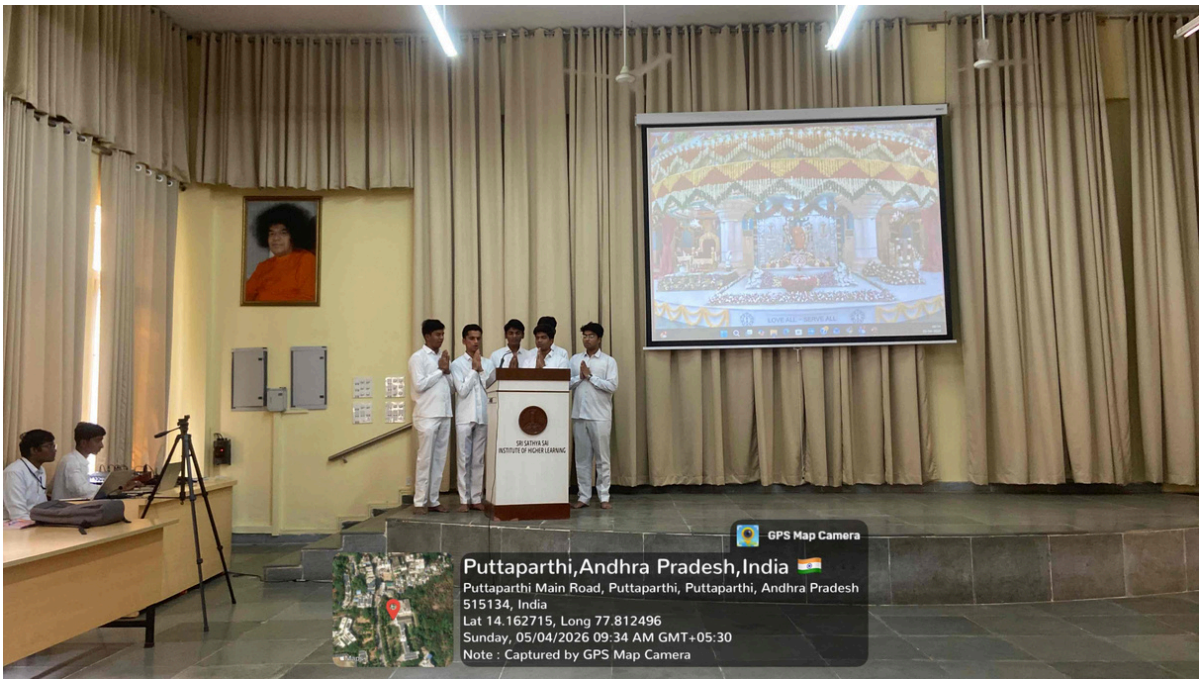

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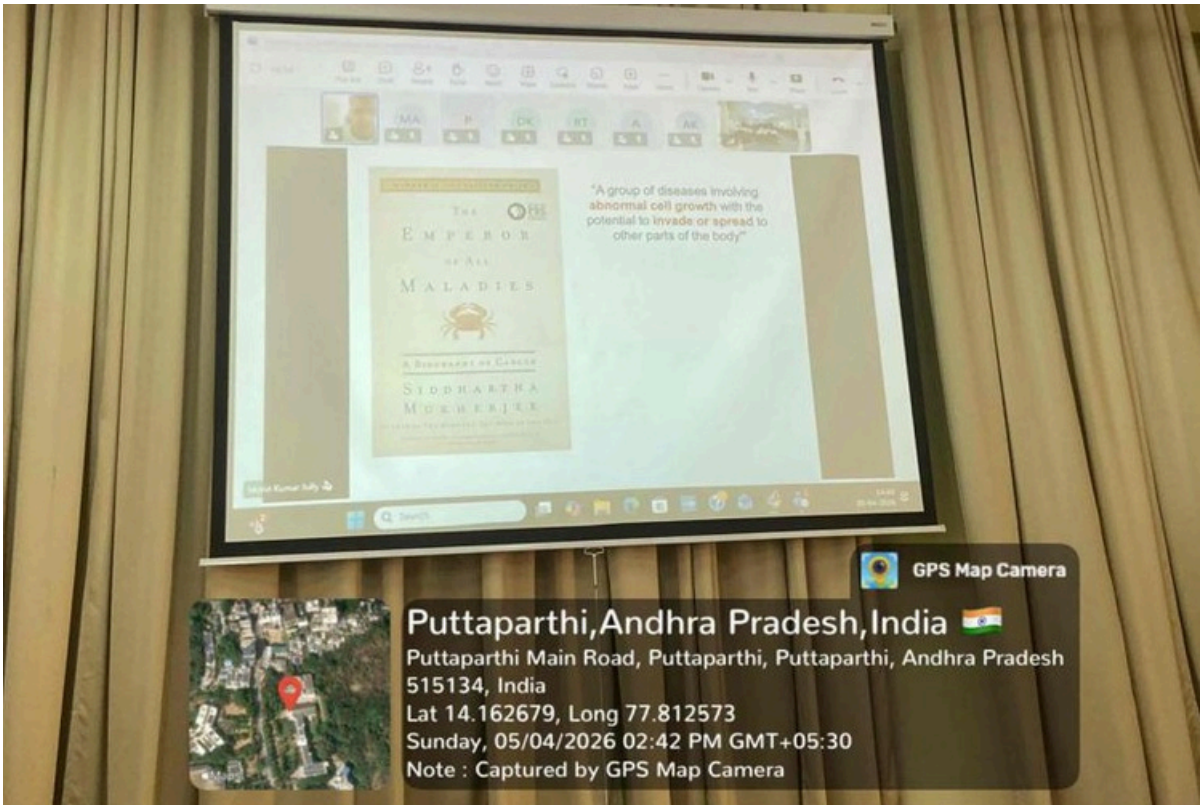

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