DEPARTMENT OF BIOTECHNOLOGY

ରମାଦେବୀ ମହିଳା ବିଶ୍ୱବିଦ୍ୟାଳୟ, ଭୁବନେଶ୍ୱର

Rama Devi Women's University, Vidya Vihar, Bhubaneswar

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SEMINARS/CONFERENCES/WORKSHOPS/WEBINARS CONDUCTED BY DEPARTMENT OF BIOTECHNOLOGY

1. **Event:** Seminar
2. **Title of the Event : Rosalind Franklin Seminar Series**
3. **Date & Duration:** 9th December, 2025 (3 pm – 5 pm)
4. **Objective/Motivation of the Event:**

Genes, growth, and geometry in plants are intricately linked processes that determine organ size, shape, and form. Genetic regulators control spatial and temporal patterns of cell division and expansion, while growth dynamics generate gradients that shape developing tissues. The resulting geometry of plant organs, such as leaves, emerges from the coordinated interplay between molecular signals and physical principles, including allometry and surface curvature. Together, these mechanisms explain how complex plant forms arise from simple genetic instructions.

The event sought to provide insights into fundamental biological processes governing growth and form, while also sensitizing participants to practical aspects of research careers, including funding opportunities and national-level examinations essential for pursuing doctoral research. The seminar was envisioned as a platform to bridge conceptual biology with research planning and career development.

5. **Theme of the Event:** Genetic control of plant growth and shape
6. **Funding Agency:**
7. **Funds Received (In Rs.):**
8. **Technical Session (Details)**
   i. **No. of Technical sessions conducted:** 01

Title of the Technical sessions: "Genes, Growth and Geometry"

9. **Chairperson of the technical session: Prof. Raj Kumar Joshi** (Head, Department of Biotechnology)

Resource persons (Details):

1) **Dr. Utpal Nath**, Professor, Department of Microbiology and Cell Biology, Indian Institute of Science (IISc), Bengaluru

2) **Dr. Sathees C. Raghavan**
Professor, Department of Biochemistry, Indian Institute of Science (IISc), Bengaluru

10. Participants Details (Indicate Numbers only)

i. **Scientists/Faculty/Members of industry: 3**

ii. **Ph. D. Scholars: 6**

iii. **Students: 29**

11. Outcomes of the Event:

Dr. Utpal Nath delivered a lecture on **"Genes, Growth and Geometry"**, highlighting how spatial regulation of cell division and expansion governs leaf growth and shape in plants. He explained how leaf growth is spatially regulated, highlighting fate-mapping studies that reveal gradients in cell division and cell size along the leaf axis, supported by differential expression of cell cycle regulators such as B-cyclins. The lecture introduced the concept of allometry, as proposed by Julian Huxley, to explain differential growth rates among plant organs. Using the mathematical model $y = bx^a$, Dr. Nath illustrated positive allometry, negative allometry, and isometry through comparative examples from species including *Nicotiana, Hibiscus, Croton,* and *Syzygium*, demonstrating how growth dynamics shape leaf morphology. He further discussed the genetic basis of complex allometry**,** emphasizing the roles of Growth Regulating Factors (GRFs) and miR396 in controlling growth patterns along the tip–base and medio-lateral axes. The lecture also introduced geometric principles of surface curvature, explaining how positive, negative, and zero curvature can be quantified using perimeter-to-area relationships and linked to mutant phenotypes such as *tarani* and *jaw-D*. The seminar concluded with brief remarks by Dr. Sathees C. Raghavan on research funding opportunities and the importance of qualifying national-level examinations such as CSIR-UGC NET, DBT-JRF, and GATE for Ph.D. fellowships. The session effectively integrated genetics, mathematics, and geometry, enriching participants' understanding of plant morphogenesis.

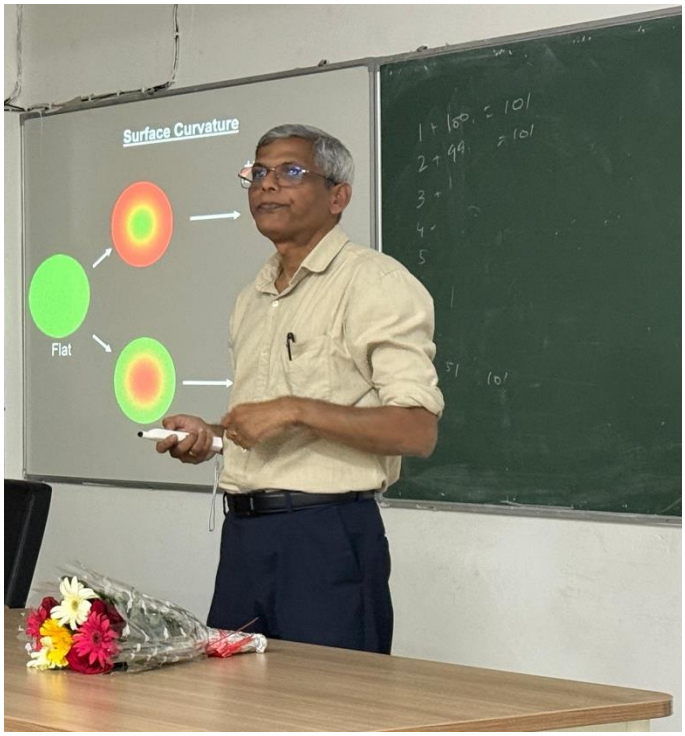
The session was highly interactive, with students and research scholars actively engaging in discussions on quantitative approaches to developmental biology. The lecture successfully bridged concepts from **genetics, mathematics, and geometry**, offering participants a comprehensive understanding of plant morphogenesis.

12. Recommendations (if any):

The organizing committee was very pleased with the overall execution of the event in a smooth and successful manner.

13. Selected Photographs : Enclosed

Dr. Utpal Nath and Dr. Sathees C. Raghavan during the seminar session.



Dr. Utpal Nath delivering the lecture on "**Genes, Growth and Geometry**"

Dr. Utpal Nath and Dr. Sathees C. Raghavan with faculty members in the Rosalind Franklin Hallway of the Department, honouring the legacy reflected in the seminar series title.

Dr. Sathees C. Raghavan engaging with the audience during the Rosalind Franklin Seminar.

Group photograph of Dr. Utpal Nath and Dr. Sathees C. Raghavan with faculties, PhD scholars and students after the seminar session.

ATTENDANCE SHEET

Event name : Rosalind Franklin Seminar Series

Speakers : Dr. Utpal Nath and Dr. Sathees C. Raghavan, IISc Bengaluru

Date : 09. 12. 2025

Sl. No.	Name	Signature
1	Biswasmita Priyadarsini Tripathy (PG 1st yr)	Biswasmita
2.	Prakruti Dhal (PG 1st yr)	Prakruti
3.	Preyasree Pradhan (PG 1st yr)	Preyasree
4.	Purnima Jena (PG 1st yr)	Purnima
5.	Shubhashweta Ojha	
6	Swayam Prabha Sarangi	
7.	Sumedha Priyadarshini Sahu	Sumedha.
8.	Ronali Nayak	Ronali
9.	Monalisa Mehboreen	Monalisa
10.	Bishnupriya Champati	Bishnupriya Champati
11	Jessica John	Jessica John
12	Ananya Barik	Ananya Barik
13	Abhanisha Dash	Abhanisha Dash
14	Sruthi Smitha Jena	Sruthi Smitha Jena
15	Priyanka Mirdha	Priyanka Mirdha
16	Ishreeta Priyadarshini	Ishreeta Priyadarshini
17	Prayan Pramita Naik	Prayan Pramita Naik
18	Dibyasmita Nayak	Dibya
19	Lorence Roshi	Lorence
20	Omkita Nayak	Omkata
21	Shreyasi Panda	Shreyasi
22	Divyanshi	Divyanshi
23	Omasmita Mishra	
24	Suryansh Dalabehera	
25	Bhabapriya Pradhan	Bhabapriya
26	Dibyashree Priyadarshinee	
27	Shailaja Lenka	
28	Chetna Patra	Chetna Patra
29	Susmita Das	Susmita Das
30	Shibani Jena	Shibani Jena
31	Sulagna Dash Mohapatra	Sulagna
32	Alaka Mohanty	Alaka
33	Praeheta Das	PDas
34	Richa Sharma	RSh
35	Tamarapalli Sravya Sruti	

Sl. No.	Name	Signature
36.	Dr. Tirthankara Bhotra	
37	Dr. S. K. Nandi	
38	Prof. S Mohanty	