



NEWSLETTER

**Department of Biotechnology
Bhupat & Jyoti Mehta
School of Biosciences**

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**Department of Biotechnology
Bhupat and Jyoti Mehta School of Biosciences
Indian Institute of Technology Madras,
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MESSAGE FROM THE EDITORIAL DESK >>>>>

We are pleased to present the eighth issue of our Departmental Newsletter. We would like to begin by highlighting the opportunity for all our alumni to participate in the department's development by making contributions through the Joy of Giving website (See pg. 6 for more details). In this edition, we are happy to report that the annual Department Degree Distribution program was a resounding success. This issue also highlights the third edition of BIOMERS, our department graduate student symposium. As in previous years, the symposium featured enthusiastic participation from both students and faculty. Furthermore, we highlight our students' research through their publications in leading journals. We also highlight our department's contribution to national research capacity building through a workshop on Expansion microscopy. Finally, this edition features an interview with one of our senior colleagues, Prof. G.K. Suraishkumar, offering insights into his academic journey. We invite you to explore this issue and welcome your feedback and suggestions as we continue to improve the newsletter.

FACULTY AWARDS/RECOGNITION >>>>>



Dr. Meiyappan Lakshmanan was appointed as an Associate Editor in npj Systems Biology and Applications.

Prof. S. Mahalingam received the 2026 CSR Award for "Healthcare Innovation and Social Impact in Cancer," instituted by FKCCI.



STUDENT AWARDS >>>>>

Ms. Tanjot Kaur (Dr. Greeshma Thrivikraman Lab) was awarded the Saxon Student Mobility Fellowship to undertake a two-month research stay at TU Dresden, Germany.



Mr. Rahul S (Prof. G. K. Suraishkumar Lab) received a RWTH Aachen-IIT Madras Junior Research Fellowship for a five-month research stay at RWTH Aachen University, Germany.



Ms. Neha Rani Das (Dr. Richa Karmakar Lab) received the Carl Storm Opportunity Fellowship to attend the "Gordon Research Conference" on Bioanalytical Sensors, USA.



Ms. Ushasi Chakrabarti and Ms. Shreya Mukherjee (Prof. Nitish R. Mahapatra Lab) received Best Poster Presentation Awards at the International Society for Heart Research (Indian Section) Annual Conference at AIIMS, New Delhi.

Mr. Shivam K. Singh (Prof. Nitish R. Mahapatra Lab) received the Best EV Image, EVOLVE Synergy, and EVOLVE 2026 Travel Awards at the "InSEV Annual Conference", Bhubaneswar.



STUDENT RESEARCH HIGHLIGHTS >>>>>

Title: *PIGBOS-CLCC1 interaction shapes cellular calcium dynamics and energy metabolism.*

Authors: Seemanti Aditya, Amal Kanti Bera

Journal: *Cell Communication and Signaling*, June 26 2026.

DOI: [10.1186/s12964-026-03027-3](https://doi.org/10.1186/s12964-026-03027-3)



Seemanti Aditya

Summary

- This study identifies a previously unrecognized role of the mitochondrial microprotein PIGBOS in coordinating ER-mitochondrial calcium signaling through its interaction with CLCC1.
- The PIGBOS-CLCC1 signaling axis regulates calcium homeostasis, mitochondrial respiration, ATP production, and cellular redox balance, linking organelle communication with cellular energy metabolism.



Title: *Matrix permissiveness regulates 3D confinement of fibroblasts in biosynthetic hydrogel microenvironments*

Authors: Patra IP, Kannan M, Sabarinath S, Sarkar S, Deshpande A, Pradhan S.

Journal: *Acta Biomater.* 2026;219:148-166

DOI: [doi:10.1016/j.actbio.2026.06.046](https://doi.org/10.1016/j.actbio.2026.06.046)

Indira Priyadarshani Patra

Summary

- Identified matrix permissiveness as a key regulator of fibroblast behavior in 3D microenvironments.
- Established matrix adhesivity and degradability as critical determinants of cellular and nuclear confinement.
- Provides design principles for engineering biomimetic 3D microenvironments for tissue engineering and disease modeling.

Title: *PDA-MutPred: Reliable prediction of binding affinity change upon mutation in protein-DNA complexes.*

Authors: Harini K, Yasuo N, Sekijima M, Gromiha MM

Journal: *Int J Biol Macromol.* 2026 Aug;373:153205.

DOI: [10.1016/j.ijbiomac.2026.153205](https://doi.org/10.1016/j.ijbiomac.2026.153205)



Dr. Harini K

Summary

- Identified key structural, sequence, and interaction features influencing mutation-induced changes in protein-DNA binding affinity.
- Developed machine learning models for reliable prediction of binding affinity changes across diverse protein-DNA complexes.
- Developed a web server to facilitate prediction and large-scale analysis of mutation-induced changes in protein-DNA binding affinity.

Department of Biotechnology

DEPARTMENT DEGREE DISTRIBUTION >>>>>

The Department of Biotechnology, IIT Madras, held its Convocation Ceremony on 17th July 2026, celebrating the graduation of 132 students, including 78 Dual Degree, 18 M.Tech, 5 MS, 7 B.Tech, 3 BS and 21 Ph.D. scholars. The event was graced by Padma Shri Awardee (2026), Dr. K. Thangaraj, Senior Scientist at CSIR–Centre for Cellular and Molecular Biology (CCMB), Hyderabad, as the Chief Guest. Addressing the gathering, Dr. Thangaraj congratulated the graduates and highlighted the role of biotechnology in addressing challenges in healthcare and agriculture. He particularly emphasised the progress made in dissecting India's genetic diversity and identifying the effect of widely used drugs on such a mixed population. He further encouraged students to pursue research in multiple domains of biotechnology and identify unique approaches having a wider reach and broader impact, especially on Indian society. Faculty, students, and families joined to celebrate this milestone, highlighting the department's strong academic and research culture. The ceremony marked the beginning of a new journey for the graduates as they stepped into leadership roles in biotechnology, healthcare, and allied fields.



CONVOCATION 2025 PRIZE WINNERS >>>>>

PRIZE	STUDENT	PRIZE	STUDENT
BATCH OF 1979 AWARD (PH.D.)	SRIJITH S	INSTITUTE MERIT PRIZE	ISHAN KHURMA
BEST PHD THESIS IN DATA SCIENCES	PAVAN KUMAR S	INSTITUTE MERIT PRIZE	ANIRUDH RAO
BEST M.S. THESIS IN THE DEPT. OF BIOTECHNOLOGY	R NAKUL	KALPATHI AGS PRIZE	ANANYA K AJAY
AMERICAN EXPRESS AWARD	ROSHINI M	THE DIVASHRI AWARD	ANANYA K AJAY
PROF. K B RAMACHANDRAN AWARD	ROSHINI M	BATCH OF 1979 AWARD - BIOLOGICAL ENGINEERING	R P HARSHINI
INSTITUTE MERIT PRIZE	ROSHINI M	BATCH OF 1979 AWARD - BIOLOGICAL SCIENCES	AADIT PRADEEP MAHAJAN

RESEARCH HIGHLIGHTS >>>>>

Prof. G. K. Suraishkumar is a former head of the department and an expert in bioprocess engineering. His research focuses on investigating the effects of reactive species on productivity in biological systems. Over the last decade, his lab has been using reactive species to understand cellular stress and improve productivity under microgravity conditions, with potential applications for space travel. Here are excerpts from his interview.



Prof. G K Suraishkumar

1. Where does your passion for teaching come from, and how do you see it relating to your research identity?

When I was a child, helping others learn – my classmates and friends – always gave me a high. I knew in my 8th standard I wanted to be a teacher, professionally. My research identity and administrative identity are different from my teaching identity. Those identities are based on a personal need to contribute at fundamental and significant levels, rather than at additive, delta levels. May be, the communication of our research and communication with people for admin were helped by teaching, because it is essentially story-telling. Outreach is essentially communication too. My philosophy is to do my very best in whatever I choose to do; otherwise, not to get into it at all. Thus, I am proud of and satisfied with my contributions, in all professional aspects (learning strategies, research/learning publications, research monograph, textbooks, contributing significantly to the start-up of departments/programs in two IITs, MOOCs, outreach, etc.) I have done. Further info on my teaching: https://www.youtube.com/watch?v=gt1mUk9jb_A

2. Your work has spanned collaborations across disciplines and institutions. How has this cross-disciplinary collaboration shaped your thinking?

I believe that to contribute at the cutting-edge through experimental research, one needs to collaborate, because one cannot be an expert at the cutting-edge in all the needed aspects. So, I have collaborated mostly to complement the needed aspects to make significant contributions, when I was growing up as a researcher. Subsequently, collaborations were also based on invitations from others who needed our inputs, support for students who wanted international experiences, etc. In all cases, I have significantly learnt from my collaborators.

3. As a mentor, how do you approach guiding young researchers?

To begin with, I consider each young researcher as a unique person, with a unique set of strengths. I always respect them. In the first few months, I try to find their inherent strengths through observations alone – no tests! Then I try to fine tune their work to build on their strengths. This approach also keeps them invested, happy and enthused. Of course, when things don't work out, which happens often when one does significant, novel work, I hold their hands and we together figure out ways out of the hole to make meaningful contributions.



4. What advice would you give young researchers trying to balance research, teaching engagement, and outreach?

Among the relevant activities, say research, teaching, administration, mentoring, outreach, and start-ups, quickly realize what you are good at – i.e. what comes easily to you. Focus on doing that very well. Pick up the needed skills through FDP, etc. to do the other needed activities (teaching, research, mentoring, and admin) somewhat well, over time. Further, never lose sight of the fact that personal aspects (e.g. family, personal interests) are highly important, and provide enough time for those. Never spend all your time on work, which unfortunately, can happen in a residential campus.

5. Looking back over 30+ years, what has been the most challenging period, and how did you push through it?

Initially, it was lack of recognition (awards) for good work in research and teaching, especially because I was a “well awarded” student in primary/high schools. After about the first twelve years, I realized the essence of recognitions is popularity at some level, even esoteric and I just stopped pursuing recognitions – have never applied for an award or position after say, 2005. Despite that, some recognitions happened on their own, which I gratefully accepted.

Department of Biotechnology

SYMPOSIUM/CONFERENCE >>>>>

The Annual Research Scholars' Symposium of the Department of Biotechnology, BIOMERS 2026, was held at ICSR on 22 August 2026. The one-day symposium featured a series of scientific talks and a poster session, providing a platform for research scholars to showcase their work and share their research within the department. A total of 24 student talks were organised under five unifying themes: 'Biomedical and Tissue Bioengineering', 'Industrial Biotechnology and Microbial Bioengineering', 'Small Molecules, Proteins and Pathways', 'Physiology and Neuroscience', and 'Computational Intelligence in Healthcare'. The presentations highlighted the expertise of the students across diverse areas of biotechnology and reflected the breadth and depth of research being pursued within the department. The one-hour poster session, featuring 45 posters presented by representative student groups, provided an opportunity for scholars to present their research in a focused and engaging format. The scale and diversity of BIOMERS 2026, planned and executed by the students and technical staff under the mentorship of Drs. Krithika Ravi and Ninitha AJ served as a testament to the department's growing research strength, vibrancy, and prominence.



JOY OF GIVING >>>>>

The Department of Biotechnology—housed in the Bhupat and Jyoti Mehta School of Biosciences at IIT Madras—was established in 2004 and has rapidly grown into a premier centre of excellence for research in biology and its allied areas. The department is home to 35 faculty members, approximately 250 MS/PhD scholars, and 330 undergraduate students. Its cutting-edge research is powered by state-of-the-art infrastructure, including the National Cancer Tissue Biobank, a DST-FIST facility for protein characterization, an advanced imaging facility, a newly established animal house, and a Sophisticated Analytical Instrumentation Facility. As the department strives to enhance its standing as a world-class hub for biological research and development, it seeks partners and well-wishers to generously donate to the Departmental Development Fund and to support the key initiatives of the department.

Dept of Biotechnology
Developmental Fund



JOY OF GIVING



Website

Department of Biotechnology

WORKSHOP >>>>>

National workshop on Expansion Microscopy: The Department of Biotechnology conducted the 3-day hands-on training workshop on methods of cell expansion up to 5-fold. Nearly 30 MS/M.Tech/PhD students have participated from across the country from various national institutes. The training was provided by Prof. Vasant Muralidharan, VAIBHAV fellow, Professor of Cell Biology, University of Georgia, Atlanta, USA, hosted by Prof. Arumugam Rajavelu, Dept of Biotechnology.



VISITS BY DISTINGUISHED SCIENTISTS >>>>>

- Dr. Debasish Roy, IISc, Bangalore
- Dr. Ramray Bhat, IISc, Bangalore
- Prof. Swasti Tiwari, Institute of Medical Sciences, Lucknow
- Natarajan Kannan, University of Georgia, USA
- **1979 Alumni Lecture Series**
 - Prof. Vatsala Thirumalai, NCBS, Bengaluru
 - Prof. Raghavan Varadarajan, IISc, Bangalore

HIGHLIGHTS >>>>>

MoU with Mehta Family Foundation

A \$105,000 MoU was signed between IIT Madras and the Mehta Family Foundation to support the BT Seminar Hall renovation and BT Student Lounge, strengthening academic and student-focused spaces.

28



Publications

5/2



**Patents
Applied/Granted**

1



**Consultancy
projects**

9



**Sponsored
Projects**

655.72
lakhs



**Grant
Amount**

Newsletter Committee:

Prof. M. Michael Gromiha, Prof. Himanshu Sinha, Dr. Greeshma Thrivikraman, Dr. Santhosh Sethuramanujam & Mr. Amit Phogat