



# NEWSLETTER

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



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<https://biotech.iitm.ac.in/>

# NEWSLETTER

## Department of Biotechnology

### MESSAGE FROM HEAD

“

*Dear Friends,*

*It gives me immense pleasure to launch the inaugural Newsletter of our Department, the Department of Biotechnology and Bhupat-Jyoti Mehta School of Biosciences at IIT Madras. Over the past two decades, our Dept. has expanded in all disciplines - be it faculty and student strength, infrastructural facilities, research achievements, student placements etc. In our continuous pursuit of excellence, we have been increasingly focusing on research initiatives that garner translational impact and societal benefits. As our alumni group, collaborators, and donors are expanding at a faster pace, we solicit your well wishes and support to take our department to a greater height. Together, let us continue to push the boundaries of biosciences and biotechnology in fostering more innovations and bringing positive changes to the nation and society.*

*Thank you for your continued support.*

”



### FACULTY ACHIEVEMENTS

**Prof. Nitish R Mahapatra elected as a Fellow of the Indian National Science Academy (INSA)**

For his significant contribution in studying key molecular pathways driving cardiovascular pathological conditions that will help in disease diagnosis and clinical management.



**Prof. Rayala Suresh Kumar received Mid-career Institute Research & Development Award**

He was recognized for his contributions to the field of cancer research, particularly in the identification of molecular mechanisms that lead to metastasis, and drug resistance.



**Prof. Sanjib Senapati received Dr. APJ Abdul Kalam R&D award in High Performance Computing Applications**

He was recognized for his significant contribution in understanding the drug resistance mechanism of HIV, using high performance computing.



**Prof. M. Michael Gromiha and Prof. Sathyanarayana Gummadi are listed as topmost 2% of researchers in the world.**



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### NEW FACULTY

**Dr. Meiyappan Lakshmanan**, Assistant Professor

**Key Research Interests:**

- Systematic Bioprocess & Cell line development for biopharmaceutical & cultivated meat manufacturing
- Computational systems biology for clinical marker identifications
- Multi-omics data integration and constraint-based modelling algorithm



**Dr. Richa Karmakar**, Assistant Professor

**Key Research Interests:**

- Prokaryotic and Eukaryotic chemotaxis
- Microfluidics based lab-on-chiptechnologies
- Biophysical aspect of cell-cell and cell-material interaction

**Dr. Krithika Ravi**, Assistant Professor

**Key Research Interests:**

- Biodegradation and conversion of plastics to platform chemicals
- Microbial valorization of biomass components to value added products
- Upgradation of Kraft lignin processes



### STUDENT AWARDS



**Ms. Pragathi Sneha**, PhD student (Prof. Michael Gromiha Lab), won InCOB Travel Award to attend the International Conference on Bioinformatics 2023 held in Brisbane, Australia.

**Ms. Harini**, PhD student (Prof. Michael Gromiha lab), won the Best Oral Presentation Award at the Indian Conference on Bioinformatics (InBix) 2023.



**Dr. Silpa Arkat**, Postdoc (Prof. Nitish Mahapatra lab) won the Best Experimental Paper Award at the Heart Failure Conflux- 2023

**Ms. Seemanti Aditya** (Prof. Amal Kanti Bera lab) won the Best Oral Presentation Award at the European Calcium Society (ECSW 2023) held in Padova, Italy.



**Mr. Srijith** (Prof. Himanshu Sinha Lab) received a Travel Fellowship Award to deliver a talk at Intelligent Systems for Molecular Biology/European Conference on Computational Biology 2023, Lyon, France.

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Ms. Purnima (Prof. Himanshu Sinha lab) got an EMBO Scientific Exchange Grant to support her visit to Queen's Univ Belfast. She is also a recipient of IITM WLI grant.



Ms. Fathima Ridha (Prof. Michael Gromiha lab) received Good Oral Presentation Award at TAC-MI International Forum 2023 at Tokyo, Japan.

### Team iGEM bags Gold Medal at the Paris iGEM Grand Jamboree

Led by undergraduate students Aarohi Vora and Sanjana Adluru, the iGEM team has won a Gold medal for their project titled "Synthopedia: An RBS Library and Webtool." The team developed an extensive library of synthetic ribosome binding sites (RBS) designed specifically for recombinant *Lactococcus lactis*, which is an FDA-approved GRAS organism.



### INSTITUTE RESEARCH AWARD

- Dr. Shankha Banerjee guided by Prof. Sanjib Senapati
- Dr. Medha Pandey guided by Prof. M. Michael Gromiha

### KESHAV RANGANATH AWARD

- Dr. Manoj Kumar S. guided by Prof. Sathyanarayana N Gummadi

## HIGHLIGHTS

114



Publications

104

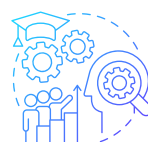


Patents

16

Consultancy  
projects

26

Sponsored  
Projects910  
lakhsGrant  
Amount

102



Graduates

## Workshop on Synthetic Biology

An intensive workshop on Synthetic Biology was conducted by Prof. Victor De Lorenzo of CSIC, SPAIN covering topics from molecular insights to technological applications, it explored the potential of Synthetic Biology in health, agriculture, and sustainable industries.

Feb 1st - 21st, 2024



## EVENTS

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## Department of Biotechnology

### International Conference on Cancer Biology 2023

The International Conference on Cancer Biology, with a focus on Molecular Mechanisms, Genomics, and Novel Therapeutics, was organized by Profs. S Mahalingam, Nathiya Muthalagu, and Shantanu Pradhan. It featured 9 scientific sessions with 40 invited speakers and ~250 participants from both national and international academic institutes.

September 14th-16th, 2023



### SEMINARS/WORKSHOP BY DISTINGUISHED SCIENTISTS

- Dr. Ram Vishwakarma, CSIR Distinguished Scientist, Central Drug Research Institute (CDRI), Lucknow
- Prof. Vijay Rangachari, Center for Molecular and Cellular Biosciences, The Univ. of Southern Mississippi, USA
- Prof. Victor de Lorenzo, National Biotechnology Center, CSIC, Spain
- Prof. Robert Zorec Institute of Pathophysiology, University of Ljubljana, Slovenia
- Dr. Chandra Verma, A\*STAR Singapore.
- Prof. Alexander Maier, ANU College of Science, Australia.
- Dr. Joseph Brock, Australian National University

### CONVOCATION



### Department Degree Distribution Programme held at the 60<sup>th</sup> institute convocation on 22<sup>nd</sup> July 2023

#### CHIEF GUEST

**Dr. Jyotsna Dhawan**, CSIR, Emeritus Scientist, Centre for Cellular and Molecular Biology, Hyderabad

**NO. OF STUDENTS GRADUATED:** 102



### DEPARTMENTAL GATHERING



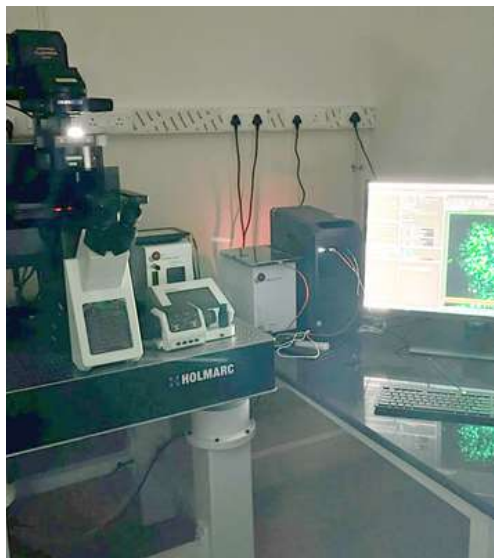
Once a month, our department hosts "Happy Hour" event for the undergraduate students, research scholars, staff, and faculty colleagues to come together for a fun-filled evening.

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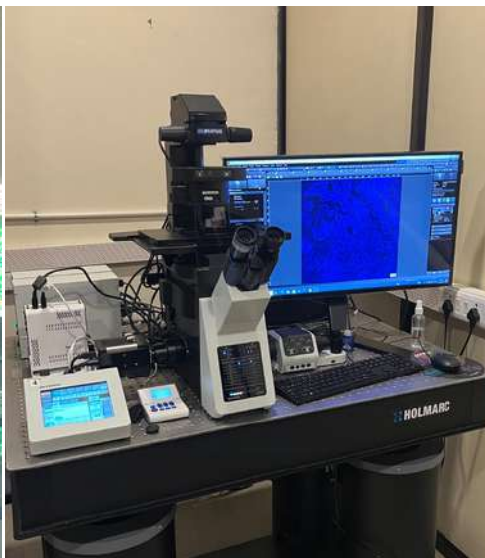
## Department of Biotechnology

### NEW INSTRUMENTS INSTALLED

Confocal Microscope



Fluorescence Microscope



IVIS *in vivo* imaging system



### SPORTS ACHIEVERS

This year the Inter-IIT contingent won the General championship (GC) after a trophy drought of 12 years. A lot of captains and contingent members were from the Biotechnology department. The list of major performers in the contingent from the department were:

- **Aditya Vikram**, 4th year UG student, currently the Institute Sports Secretary and Cricket captain, led the contingent to the GC win.
- **Prashant Singh Kathait**, a PhD scholar, was the hockey captain who finished in 3rd place and bagged the bronze. **Sanket Patil** and **Eslavath Pavan** were also part of the hockey team.
- **Amit Kumar**, PhD scholar, won 3 gold medals in pole vault.



- **Tanya Arulalan**, a 4th year UG student, was a key sprinter on the Athletics team and won multiple medals for the same.
- **Vasudha Kannan**, a 3rd-year UG student, played a key role in the women's volleyball team to bag a bronze medal.
- **Amit Kumar** (PhD Scholar), **Nikshep G** (3rd year UG) & **Dhruv Raghunath** (5th year DDP) led the football team to bronze medal

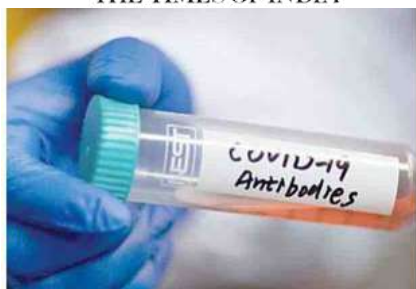
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### MEDIA OUTREACH



THE TIMES OF INDIA



#### Prof. M. Michael Gromiha & Vani Janakiraman developed a database on coronavirus antibodies

Prof. Gromiha and his collaborators have developed an online open-source database (Ab-CoV) for coronaviruses' neutralizing antibodies, encompassing crucial features such as binding affinity and neutralization profiles (IC50 and EC50) of antibodies. It contains all COVID-related antibodies identified so far, including source of each antibody, and the viral protein(s) and virus strains they recognize. Ab-CoV can aid in the development of drugs against new variants of SARS CoV-2.

[Click here to view full article](#)

#### Prof. Gromiha's team developed a tool to detect glioblastoma, a malignant tumour of the brain and spinal cord

Prof. M. Michael Gromiha and his team (Medha Pandey, Y. Dhanusha and P. Anoosha) developed a tool, "GBMDriver" to predict disease-causing mutations in targets, which are involved in glioblastoma. They have found important amino acid features for detecting cancer-causing mutations and achieved the highest accuracy for distinguishing between driver and neutral mutations.

[Click here to view full article](#)



The tool called aGBMDriver' (Glioblastoma Mutiforme Drivers), was developed specifically to identify driver mutations and passenger mutations in glioblastoma. The tool is publicly available online.

HANS NEWS SERVICE  
CHENNAI

RESEARCHERS at the Indian Institute of Technology (IIT) Madras have developed a Machine Learning (ML)-based computational tool for better detection of cancer-causing tumours in the brain and spinal cord.  
Glioblastoma is a fast and aggressively growing tumour in the brain and spinal cord.  
Although there has been research undertaken to un-



#### Prof. Himanshu Sinha along with THSTI Faridabad researchers developed the first India-specific AI model to determine the age of the foetus

Prof. Sinha, and his collaborators from THSTI, Faridabad, as part of the Interdisciplinary Group for Advanced Research on Birth Outcomes – DBT India Initiative (GARBH-Ini) program, have developed the first India-specific Artificial Intelligence (AI) model for determining the age of fetus in a pregnant woman in the second and third trimesters precisely. Accurate 'Gestational Age' (GA) is necessary for the appropriate care of pregnant women and for determining precise delivery dates. 'Garbhini-GA2' is the first late-trimester GA estimation model developed and validated using Indian population data.

[Click here to view full article](#)



#### Newsletter Committee:

Prof. Michael Gromiha, Prof. Himanshu Sinha, Prof. Greeshma Thrivikraman, Prof. Santhosh Sethuramanujam & Ms. Suganya Ragupathy



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