Jyoti & Bhupat Mehta

# School of Health Sciences and Technology

## Quarterly Report

### Q2 (April 25 – June 25)

# Research Grant Applications:

**Funding Agency:** AAHII
**PI**: **Dr. Erwin Fuhrer**
**Co-PI: Dr. Debabrata Sikdar**
**Project Title**: Low-Field MRI R&D unit for POC diagnostics
**Proposed Funding amount**: ~1.8 Cr

**Funding Agency**: Indian Council of Medical Research (ICMR)
**PI: Dr. Ashok Puranik (Director, AIIMS Guwahati)**
**Co-PI: Dr. S. Kanagaraj**
**Project Title**: Design and Development of minimally Invasive Internal Cardiac massager device using vine robotics.
**Proposed Funding amount**: ~69 Lakh

# Research Grant Applications:

**Funding Agency**: Indian Council of Medical Research (ICMR)
**PI: Dr. Rajiv Kar**
**Co-PI: Prof. Dipankar Bandyopadhyay**
**Project Title**: Evaluation of Cervical Cancer Disease Progression and Testing Strategy by Point of Care Device & HPV Testing in HIV positive Women in Manipur
**Proposed Funding amount**: ~55 Lakh

**Funding Agency**: Indian Institute of Technology (IIT) Guwahati, Start-Up Grant
**PI: Dr. Raju Bej**
**Project Title**: Development of Biopolymer-Based Dynamic Hydrogels Mimicking Cervical Mucus.
**Proposed Funding amount**: ~20 Lakh

# Journal Publications:

1. Mohapatra SS, Bisht KS, Suryawanshi S, Gupta S, Biswas VK, Chakraborty A, Raghav SK, Maiti TK, Kar R K, Ashis Biswas (2025) Decoding Anti-Amyloidogenic and Fibril Neutralizing Action of Gut Microbiota-Derived Indole 3-Acetic Acid on Insulin Fibrillation through Multispectroscopic, Machine Learning, and Hybrid Quantum Mechanics/Molecular Mechanics Approaches. *Journal of Physical Chemistry B*, 129 (13), 3281–3296.
2. De A K, Srivastava R, Das N, Pattader P S G , Kar R K (2025) Mechanistic Insights on Sulfur Functionalization of Ag Nanoflowers, *Physical Chemistry Chemical Physics (PCCP)*, Just Accepted.
3. Kotal, A., Das, S., Sarangi, S., Das, N., Kar, R K (2025) Image Analysis for Analytics and Microbial Studies. *Journal of Chemical Education,* 102(4), 1684-1693.
4. Barik, S., Aldar, K.S., Chakraborty, A., Panda, A.K., Kar, R K, Biswas A. (2025) Understanding the structural and functional implications of lysine succinylation in Mycobacterium tuberculosis heat shock protein 16.3. *International Journal of Biological Macromolecules,* 307, 142046.

# Series Awareness Program:

## Dr. Harish Tiwari

Our DBT-Welcome Trust fellow, Dr. Harish Kumar Tiwari, organized a series of rabies awareness programs across various schools in Guwahati and Udalguri, Assam.

# Conferences (Attended):

## Prof. S. Kanagaraj

Participated in the JODI Conclave, i.e. Collaboration with Wadhwani Foundation Conclave Meeting at Bharat Mandapam, New Delhi, where Hon’ble PM Shri Narendra Modi highlighted transformative initiatives in Science and Innovation on 30th April 2025, New Delhi.

Notably, he mentioned the MoU between ANRF and Wadhwani Foundation to expand research through the establishment of Super Hubs in AI, Biosciences and HealthTech at IIT Kanpur and IIT Bombay.

This marks a significant milestone for India's innovation ecosystem, and we're proud to be part of this evolving research landscape.


# Conferences (Attended):

## Dr. Raju Bej

Attended Workshop on “Semiconductor Fabrication and Characterization for Nanoelectronics” Organized by IIT Guwahati and Ministry of Electronics and Information Technology, Government of India on 10$^{th}$ - 12$^{th}$ June 2025.


# Conferences (Attended):

## Dr. Jyoti Jain

Attended SEMI ESSCI IESA Semiconductor Manufacturing Workshop 2025 on 10th – 11th April 2025, Organized by IIT Guwahati and Ministry of Electronics and Information Technology, Government of India on 10th - 12th June 2025.

# Honours:

## Dr. Raju Bej

Judge for the poster session of INUP-i2i offline workshop on Semiconductor Fabrication and Characterization for Nanoelectronics, June 12, 2025.

Organized by IIT Guwahati and Ministry of Electronics and Information Technology, Government of India.

**Subject:** Request to evaluate poster on 12-06-2025 as a judge for INUP-i2i Offline Workshop.

Dear Sir,

We kindly request your esteemed presence as a judge for the poster session of the INUP-i2i Offline Workshop on Semiconductor Fabricatior for Nanoelectronics. The session is scheduled to be held on **June 12, 2025**, from **3:00 PM to 6:00 PM** in the **Conference Hall.**

Your expertise in the field would be invaluable in evaluating the participants' work, and we would be honoured to have your presence. Thar

FWF Österreichischer Wissenschaftsfonds

Österreichischer Wissenschaftsfonds FWF
Georg-Coch-Platz 2
1010 Wien

+43 1 505 67 40
office@fwf.ac.at | fwf.ac.at

792245
Prof. Dr. Raju BEJ
School of Health Sciences and Technology
Indian Institute of Technology Guwahati

India

Vienna, 16. Juni 2025

Contact:Karl PAFLIK, phone: 8407
e-mail: Karl.Paflik@fwf.ac.at

**Project Nr. PAT3384024**

Dear Professor Dr. Bej,

On behalf of the Austrian Science Fund (FWF) I would like to confirm that your review of the proposal **Evaluation of long-term hydrogel stability and permeability** by **WURM Florian** has arrived at the FWF.

Thank you very much for your commitment. Your cooperation is an indispensable contribution to the effective funding of scientific research in Austria.

Such reviews are of enormous importance for ensuring that the research supported by the FWF meets the highest quality criteria according to international standards and is thus internationally competitive. Like many other research funding organisations worldwide, the FWF makes every effort to ensure that its decision-making procedures are in line with international best practices and that the taxpayers' money is spent wisely.

Dr Bej's review was an invaluable contribution for basic research in Austria, and we would be grateful if we could rely on his expertise with similar requests in the future.

Yours sincerely,

Dr. Ruth CICHA

Natural and Technical Sciences

# Honours:

## Dr. Raju Bej

Dr. Raju Bej served as a reviewer for a research grant from the Austrian Science Foundation (FWF), titled 'Evaluation of Long-term Hydrogel Stability and Permeability,' in June 2025.

# Invited Talks by our Faculties:

- **Prof. S. Kanagaraj;** Invited to participate, 29th April 2025, Bharat Mandapam, New Delhi.
- **Dr. Erwin Fuhrer;** Invited talk on "Sensor Technology", 22nd April 2025, Don Bosco University, Guwahati.

# Invited Talks by our Faculties:

- **Dr. Erwin Fuhrer;** Member Technical Revision and Advisory Committee, 3rd May 2025, SAMEER Mumbai.
- **Dr. Erwin Fuhrer;** Collaboration work (Dr. Srikanth Sugavanam), 27th to 30th May 2025, IIT Mandi.

# Invited Talks by our Faculties:

**Dr. Rajiv Kar**
Invited Talk for Faculty Development Program on Nano-Bio-Electronics, "Investigate the current response at a voltage window using voltammetry", NIT Patna, on 21st to 24th May 2025.


**Dr. Rajiv Kar** delivered three sessions for new ICMR recruits of the North East Region on "AI and Mathematical Modelling in Healthcare". The event "Margdarshan" was organised at IIT Guwahati in collaboration with the Quality Council of India. Dated 3rd-11th Apr 2025.

# Invited Talks by our Faculties:

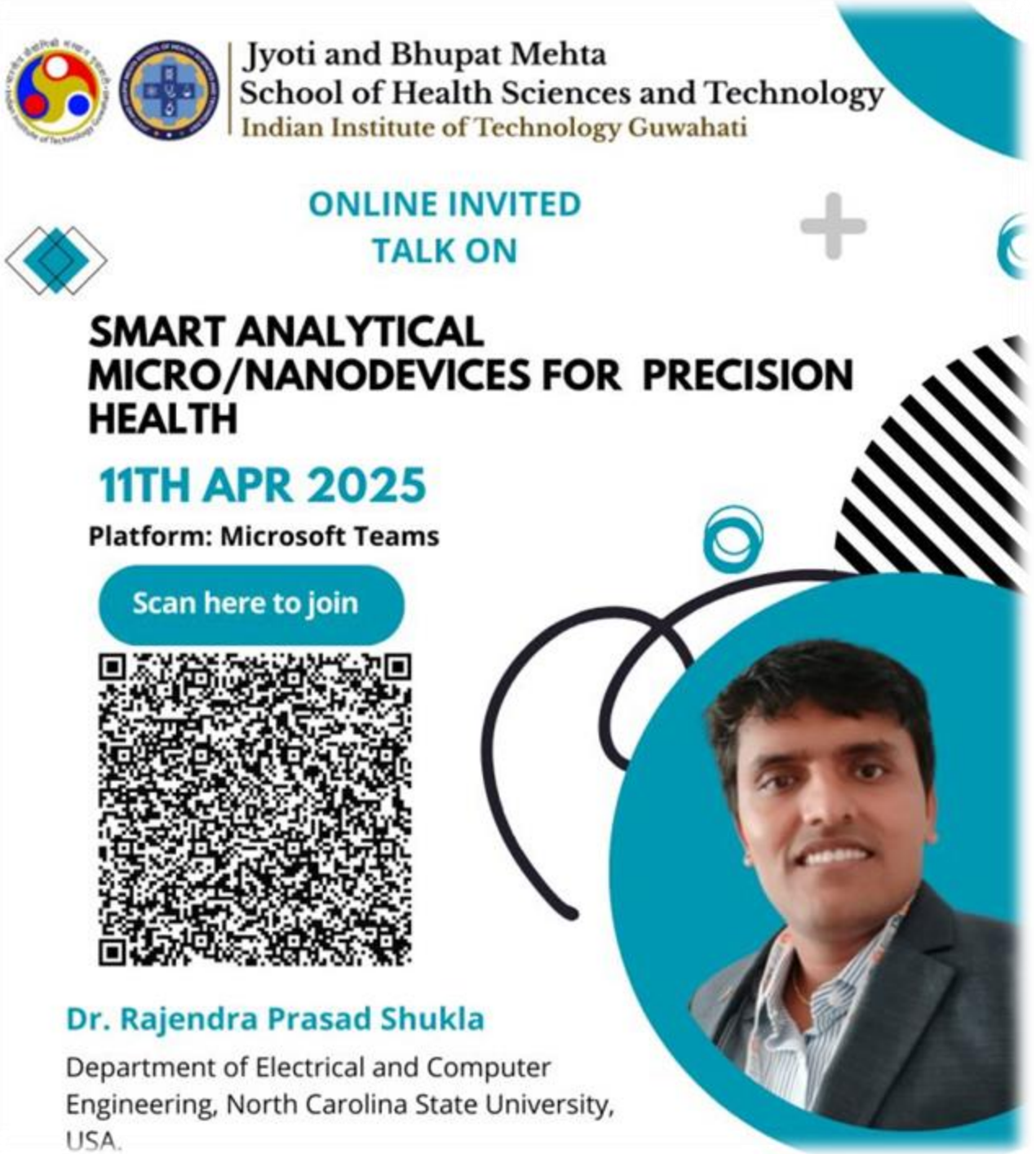
- Dr. Rajiv Kar; Presentation on Health Informatics, May 2025, AIIMS Guwahati.

# Departmental Visitors:

Dr. Amrita Rath, University of Stuttgart, Germany, delivered an invited talk on **"From Nature to Healthcare: Harnessing the Multifunctional Potential of Chitosan Biopolymer"**, on 7th April 2025.

# Departmental Visitors:

Dr. Rajendra Shukla, North Carolina State University, delivered an invited talk on **"Smart Analytical Micro/Nanodevices for Precision Health"**, on 11th April 2025.



# Departmental Visitors:

Dr. Sudir K Jain, Diabetic Foot Surgeon, Sunvalley Hospital Guwahati, delivered an invited talk on **"Diabetic foot disease & Management-Medico-Mechanical Facts"**, on 24th April 2025.

# New Member:

## Dr. Rahul Agarwal
## Assistant Professor

**Research Group:**

**Biophysics and Diagnostics Systems lab**

# BME surge spurs call for medical-engineering collaboration in India

A common platform will prepare the next generation of clinical engineers, physicians, scientists, and innovators in the healthcare sector



Sonal Srivastava | Posted June 05, 2025 08:57 AM

As life expectancy increases and emerging technologies are integrated into the healthcare sector, the field of Biomedical Engineering (BME) is expanding in India. Medical colleges and engineering institutes must collaborate on a common platform to facilitate research and development, drive progress further, and address the demand-supply gap for BME professionals.

The primary goal of BME is the multidisciplinary integration of engineers, doctors, and scientists to jointly solve medical problems and develop solutions for diagnosis, treatment, and overall well-being. “To address diverse health challenges, BM engineers must collaborate not only with doctors and engineers but also with a wide range of healthcare professionals, including nurses, surgeons, and technicians, forming a multidisciplinary platform for innovative medical solutions such as Magnetic Resonance Imaging (MRI) machines, dialysis machines, diagnostic instruments, ultrasound systems, and many others. A multidisciplinary collaborative platform is not just beneficial but essential for advancing BM research, enhancing public health outcomes, and preparing the next generation of clinical engineers, physicians, scientists, and innovators in the healthcare sector,” says **Dr. Subrata Pramanik, Assistant Professor, Jyoti and Bhupat Mehta School of Health Sciences and Technology, IIT Guwahati.**

# IITG rolls out new BS programme

## The degree awarded will be a Bachelor of Science in Biomedical Science and Engineering

**Debasmita.Dasgupta**
@timesofindia.com

Similar to IIT Madras, IIT Guwahati has also introduced a four -year Bachelor of Science (BS) degree in Biomedical Science and Engineering allowing students to explore medicine and technology jointly. The course has been initiated by IIT Guwahati in association with AIIMS Guwahati, and the National Institute of Pharmaceutical Education and Research, (NIPER) Guwahati to offer a multidisciplinary approach that blends engineering principles with medical science.

The course focuses on practical learning and real-world exposure. Speaking to *Education Times*, Rajiv Kumar Kar, assistant professor, Jyoti and Bhupat Mehta School of Health Sciences and Technology at IIT Guwahati, explains that the interdisciplinary programme will bridge the gap between biomedical sciences and engineering.

Traditionally, students either pursue medical fields like medicine, dentistry, and pharmacy. The focus on engineering is largely for those with a strong foundation in mathematics. "These disciplines often operate in silos, limiting the development of integrated solutions for real-world challenges. To address this, the programme integrates biological sciences—such as immunology, molecular biology, and biochemistry—with engineering fields such as electronics, signal processing, and artificial intelligence (AI)," he says.

COURSE CURSOR

ISTOCK

"A key highlight of the programme is the emphasis on point-of-care technologies, such as the pregnancy test strip and blood glucose glucometer, where students learn to apply both engineering and biological knowledge to create practical, real-world solutions. Students gain hands-on experience working with biological systems involving antibodies, blood components, microorganisms, genes, and proteins. On the engineering side, they explore ways to integrate these biological elements with electronics , instrumentation, medical image processing, and mechanical systems—bridging the gap between life sciences and technology to develop innovative diagnostic tools," he adds.

### Curriculum breakdown

The course integrates both biology and various branches of engineering to gain hands-on exposure through clinical experiences. "Interacting directly with doctors and scientists is crucial to bridge the gap between theoretical knowledge and practical application in the biomedical field. This approach will equip students with skills that are highly relevant in the rapidly evolving healthcare and medical technology sectors," Prof Kar says.

### Specialised electives

The first three years will blend biological sciences and engineering. Students will study subjects like biomechanics, biomedical devices, signal processing, and AI/ mechanical learning (ML) in medicine.

"The final year is dedicated to specialised electives and project work, allowing students to focus on pharmaceuticals, clinical applications, or biomedical device prototyping. Additionally, they will have opportunities to work with startups or engage in research projects to refine their expertise," he says.

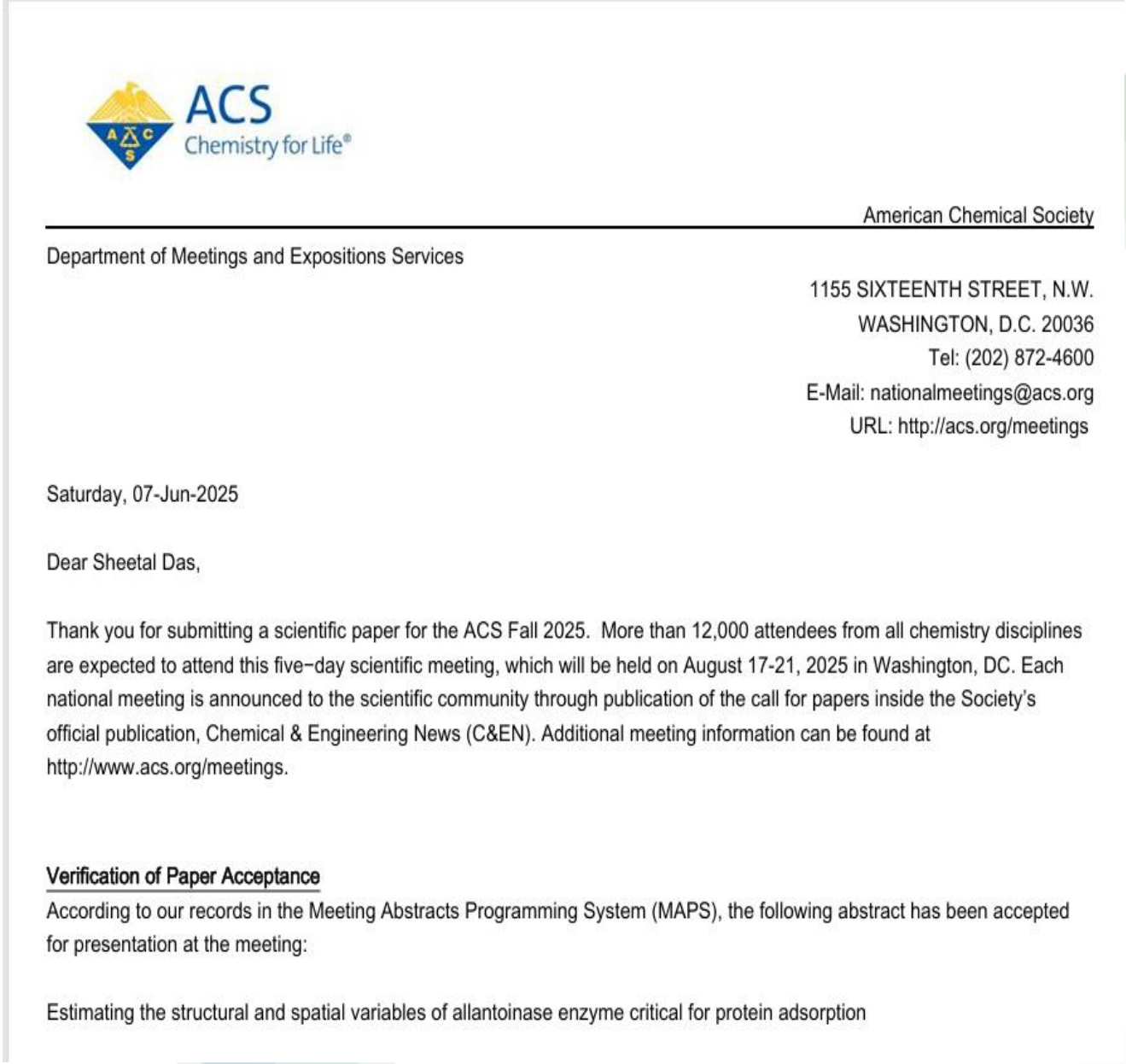
# News Headlines:

- Interview in **Times of India** regarding opening of new BS program in Biomedical Science and Engineering at IITG by **Dr. Rajiv Kumar Kar**

# Students' Achievements

## PhD Research Scholar: Sheetal Das

Abstract titled “Estimating the structural and spatial variables of Allantoinase enzyme critical for protein adsorption” has been accepted for Oral Presentation in person under the BIOL division at the ACS Fall 2025 conference, organized by the American Chemical Society (ACS), from August 17 to August 21, 2025, at Washington D.C., USA.



ACS Chemistry for Life®

American Chemical Society

Department of Meetings and Expositions Services

1155 SIXTEENTH STREET, N.W.
WASHINGTON, D.C. 20036
Tel: (202) 872-4600
E-Mail: nationalmeetings@acs.org
URL: http://acs.org/meetings

Saturday, 07-Jun-2025

Dear Sheetal Das,

Thank you for submitting a scientific paper for the ACS Fall 2025. More than 12,000 attendees from all chemistry disciplines are expected to attend this five-day scientific meeting, which will be held on August 17-21, 2025 in Washington, DC. Each national meeting is announced to the scientific community through publication of the call for papers inside the Society's official publication, Chemical & Engineering News (C&EN). Additional meeting information can be found at http://www.acs.org/meetings.

**Verification of Paper Acceptance**

According to our records in the Meeting Abstracts Programming System (MAPS), the following abstract has been accepted for presentation at the meeting:

Estimating the structural and spatial variables of allantoinase enzyme critical for protein adsorption


# Students' Achievements:

Students from JBMSHST, IIT Guwahati participated in the Continuing Medical Education (CME) program titled **"DNA to Immunity: Two Pillars of Health and Disease"** organized by the Department of Biochemistry, AIIMS Guwahati on May 24, 2025.
This event was held to commemorate DNA Day (25th April), International Immunology Day (29th April) and the completion of four years of the Biochemistry department at AIIMS Guwahati.
The CME featured insightful lectures from esteemed experts:
Dr. Rahul Purwar (IIT Bombay) on India's first indigenous CAR-T Cell Therapy, Dr. Vinod Scaria (Karkinos Healthcare) on Personal Genomes for Precision Medicine and Dr. Ashis K. Mukherjee (IASST Guwahati) on Efficacy and Quality of Commercial Antivenoms.

# Building Constructio Underway