JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY
विद्या तत्व ज्योतिर्मय:

DEPARTMENTAL NEWSLETTER

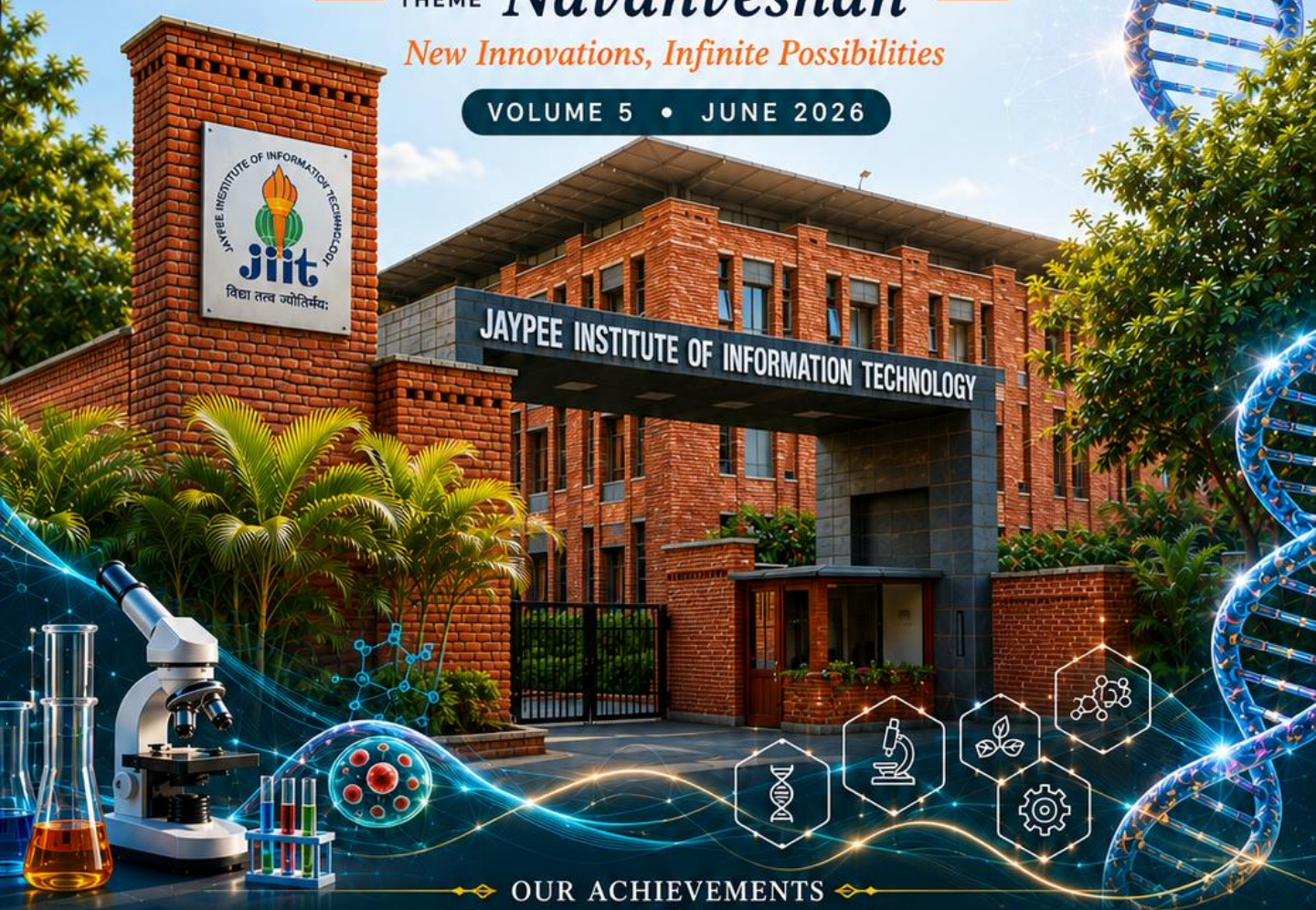
KOSHIKA

Unit of Life, Technology & Communication

THEME **Navanveshan**

New Innovations, Infinite Possibilities

VOLUME 5 • JUNE 2026



OUR ACHIEVEMENTS

RESEARCH PUBLICATIONS	PATENTS FILED/GRANTED	PROJECTS COMPLETED	STUDENT ACHIEVEMENTS	INDUSTRY COLLABORATIONS
150+	12+	25+	50+	20+

"Innovation distinguishes between a leader and a follower — and in the cell, evolution has been innovating for billions of years."

– EDITORIAL BOARD, KOSHIKA

Department of Biotechnology,
Jaypee Institute of Information Technology
(Deemed to be University under Section 3 of UGC Act 1956)

KOSHIKA MAP

Your Guide to Navanveshan

Message from Director (R&D)

The field of biotechnology continues to evolve at an extraordinary pace, creating new opportunities for scientific discovery and societal impact. Guided by this spirit of exploration, the Department of Biotechnology at Jaypee Institute of Information Technology has continued to strengthen its commitment to quality education, impactful research, and interdisciplinary collaboration. The theme of this year's edition of Koshika, "Navanveshan", aptly reflects this journey of continuous learning and innovation.

The academic session 2025–26 has witnessed significant progress across research, academic initiatives, and student engagement. Our faculty members, researchers, and students have made valuable contributions through quality publications, funded research projects, patents, books, and collaborative studies addressing challenges in healthcare, agriculture, environmental sustainability, and industrial biotechnology. The successful organization of ICABB-2025 and ICABB-2026 further strengthened our research ecosystem by bringing together scientists, academicians, industry experts, and students to exchange ideas and explore emerging advances in biotechnology.

Koshika captures these achievements while celebrating the creativity, dedication, and aspirations of our academic community. I congratulate the editorial team and all contributors for their sincere efforts and extend my best wishes for continued excellence as we strive to translate scientific knowledge into meaningful solutions for society.

Prof. Pammi Gauba
Director R&D
HOD - Biotechnology

Message from Associate Head

It gives me immense pleasure to address the readers of Koshika, the Department Newsletter of Biotechnology at Jaypee Institute of Information Technology (JIIT), Noida, for the academic session 2025–26. The Department of Biotechnology continues to promote academic excellence, innovation, interdisciplinary learning, and experiential education through a vibrant ecosystem of industrial visits, expert talks, workshops, hands-on training programs, research seminars, and interactions with scientists, industry professionals, and entrepreneurs. These initiatives provide students with valuable practical exposure, encourage scientific thinking, and help bridge the gap between academics and industry.

The theme of this year's edition, Navanveshan, reflects the spirit of curiosity, innovation, and continuous scientific discovery. The department actively encourages skill-based learning, interdisciplinary research, participation in conferences and competitions, and exposure to emerging areas of biotechnology and life sciences. We also take immense pride in our distinguished alumni, whose achievements in academia, research, healthcare, industry, and entrepreneurship continue to inspire our students and strengthen the department's professional network through alumni interactions, mentorship sessions, and invited talks.

Every edition of *Koshika* represents the shared commitment of our faculty, students, alumni, and editorial team to celebrate learning and innovation. I congratulate everyone who contributed to this publication and hope it serves as a source of inspiration for future achievements. Together, let us continue to nurture curiosity, embrace new challenges, and advance biotechnology for the benefit of society.

Prof. Reema Gabrani
Associate Head – Biotechnology

VISION

To be a centre of excellence in Biotechnology for providing quality education and carrying out cutting edge research to produce professionals, innovators, researchers, and entrepreneurs.

MISSION

MISSION 1: To offer contemporary, futuristic and flexible curricula of Biotechnology for teaching and training.

MISSION 2: To carry out globally acceptable cutting-edge research through sponsored projects and to provide state of art laboratories for experimental work.

MISSION 3: To develop bio safe, socially ethically and environmentally acceptable solutions to address health, environmental, industrial, entrepreneurial and societal concerns.

PROGRAMME EDUCATIONAL OBJECTIVES

B.TECH. BIOTECHNOLOGY

PEO1: To provide fundamental and practical knowledge in the field of Biotechnology for pursuing research career in industry and academia.

PEO2: To impart analytical and research skills and nurture entrepreneurial endeavours.

PEO3: To develop biotechnologists with professional ethics to address global and societal issues for sustainable development.

M.TECH. BIOTECHNOLOGY

PEO1: To impart advanced theoretical and practical knowledge in Biotechnology and allied fields.

PEO2: To provide domain knowledge and expertise for successful career in academics, research, and industry.

PEO3: To develop ethically and socially responsible professionals with leadership and entrepreneurship skills.

PROGRAMME EDUCATIONAL OBJECTIVES

M.SC. ENVIRONMENTAL BIOTECHNOLOGY

PEO1: To impart advanced theoretical and practical knowledge in Environmental Biotechnology and allied fields.

PEO2: To enhance knowledge and expertise for a successful career in academics, research and industry.

PEO3: To develop professionals with social, environmental and ethical awareness.

M.SC. MICROBIOLOGY

PEO1: To impart advanced theoretical and practical knowledge in Microbiology and allied fields of Biotechnology.

PEO2: To enhance knowledge and expertise for a successful career in academics, research and industry.

PEO3: To develop professionals with social, environmental and ethical awareness.

M.Sc. BIOINFORMATICS

PEO 1: To impart advanced theoretical and practical knowledge in Bioinformatics and allied fields

PEO2: To enhance knowledge and expertise for a successful career in academics, research and industry.

PEO3: To develop professionals with social, environmental and ethical awareness.

New Faces of the Department

Dr. Diwakar Sharma
ASSISTANT PROFESSOR (GRADE-I)
diwakar.sharma@mail.jiit.ac.in

Dr. Deeksha Pandey
ASSISTANT PROFESSOR (GRADE-I)
deeksha.pandey@mail.jiit.ac.in

Dr. Kareena Moar
ASSISTANT PROFESSOR (GRADE-I)
kareena.moar@mail.jiit.ac.in

Dr. Surabhi Tomar
ASSISTANT PROFESSOR (GRADE- I)
Surabhi.Tomar@mail.jiit.ac.in

Dr. Sahil Jain
ASSISTANT PROFESSOR (GRADE-II)
sahil.jain@mail.jiit.ac.in

Dr. Apurva Chatrath
ASSISTANT PROFESSOR (GRADE- I)
apurva.chatrath@mail.jiit.ac.in

Dr. Ankit Mathur
ASSISTANT PROFESSOR (SENIOR GRADE)
ankit.mathur@mail.jiit.ac.in

Dr. Anuradha Singh
ASSISTANT PROFESSOR (SENIOR GRADE)
anuradha.singh@mail.jiit.ac.in

Technical Staff – The Backbone of Biotechnology Laboratory

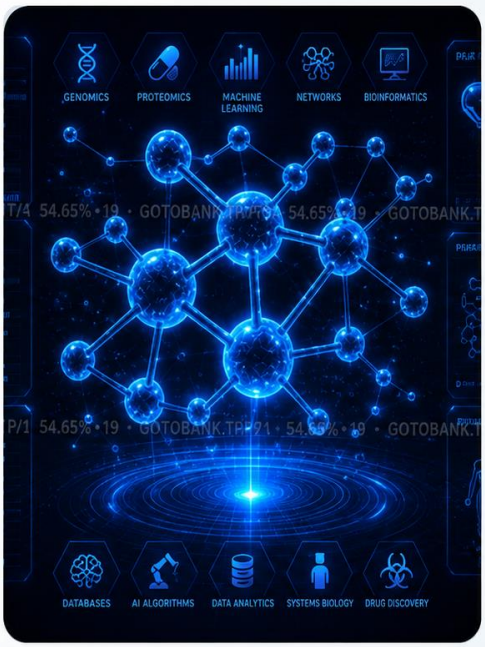
Bio technology Laboratory at JIIT Noida is powered by a Tight-knit Team of Technical staff that play a vital role in the smooth functioning of the laboratory. The laboratory staff provide technical support and facilitate proper access to systems and instruments to all departmental researchers and Students. They also take responsibility in proper maintainance and upkeep of laboratory equipment, ensuring compliance with laboratory safety regulations, Bio-safety protocols, troubleshooting technical problem and improving laboratory systems for better efficiency and accuracy. They organize and maintain accurate instrument SOP (Safe Operating Procedures) and laboratory documentation.

The role of laboratory technical staff in supporting experimental work, maintaining equipment and ensuring safety and accuracy contribute to scientific innovation and advancement in biotechnology research at JIIT, NOIDA.

New Programs of the Department

M.Sc. in Bioinformatics @ JIIT Noida

An elite two-year interdisciplinary programme designed to bridge the gap between **biological sciences** and **computational intelligence.** This curriculum integrates cutting-edge AI applications with deep omics analytics to solve complex biological challenges.



Core Specializations

- Systems Biology & Omics
- Machine Learning & AI
- Python/R Programming
- Drug Design & Structural Bio
- Database Management
- Extensive Lab Research

CAREER PATHWAYS

Biotechnology • Healthcare • Pharma Research • AI-driven Startups • Agriinformatics

NEW CURRICULUM ANNOUNCEMENT

B.Tech Biotechnology with Bioinformatics Specialization

The Paradigm Shift

Modern biotechnology has evolved into a full-scale data science. Bridging wet-lab biology with massive computational power is no longer optional—it is a critical necessity to decode complex genomic patterns.

Genomics data analysis, data-driven discovery

The Digital Toolkit

Students graduate with highly competitive hybrid capabilities, mastering critical programming architectures alongside biological experimentation to maximize field adaptability.

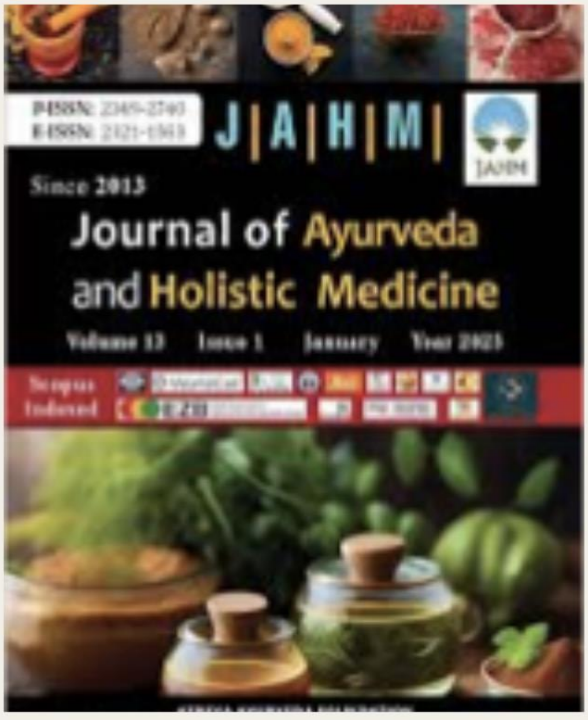
Python & R, Molecular modelling, Machine learning

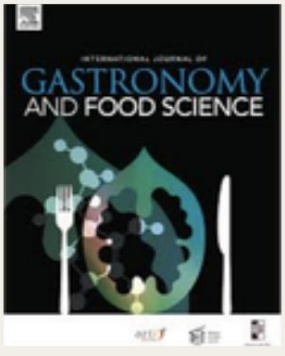
Career Acceleration

Direct paths into high-paying global sectors. Students possess a distinct competitive advantage over traditional biotech candidates in modern corporate ecosystems.

Target Sectors: AI Drug Design, Precision Medicine, Health-Tech Startups

Advancing in research and knowledge





A collection of leading academic journals where we published

2025 EDITION

BENCH TO BIBLIOGRAPHY

NOSE TO BRAIN DELIVERY

Discover Nano › Article

se to brain delivery of nanostructured
d carriers loaded with rivastigmine
nilotinib for treating Alzheimer's
ease: preparation, cell line study, and
ivo evaluation

Open access | Published: 13 June 2025
20, article number 93 (2025) Cite this article

ve full access to this open access article

nload PDF Save article

SUSTAINABLE ENVIRONMENT

Home › Environmental Science and Pollution Research › Article

Real-time detection and removal of hexavalent chromium: current innovations and future perspectives in scalable and sustainable environmental remediation

Review Article | Published: 13 October 2025
Volume 32, pages 22840–22876 (2025) Cite this article

Access provided by Jaypee Institute of Information Technology Noida

Download PDF Save article

Aditi Raj, Pammi Gauba & Ekta Bhatt

PLANT IN THERAPY

ELSEVIER Plant Physiology and Biochemistry PPB
Volume 225, August 2025, 109965

Unravelling the interplay between plant miRNAs and plant secondary metabolites: A new frontier in cross-kingdom regulatory mechanisms

Yamini Agarwal [a], Pammi Gauba [b], Vibha Rani [a]

Show more

+ Add to Mendeley Share Cite

https://doi.org/10.1016/j.plaphy.2025.109965 Get rights and content

VIRUS IN GLOBAL NEWS

ELSEVIER Acta Tropica
Volume 272, December 2025, 107917

pidemiology of the Crimean-Co
emorrhagic fever virus

ha Kaushal [a 1], Sahil Jain [b c 1], Dimple Davray [b], Albert Rizvanov [d],
ng-Hsien Chiang [e], Olesia Ohlopkova [f], Svetlana Khaiboullina [d], Ze Ch
noj Baranwal [a]

MANAGING RESISTANCE

Review › Wounds. 2025 Sep;37(9):363-372. doi: 10.25270/wn

**Phytotherapy for chronic wound mar
era of antibiotic resistance**

Kajal Rawat [1], Reema Gabrani [1]

Affiliations + expand

PMID: 41176770 DOI: 10.25270/wnds/24210

Free article

ESKAPE PATHOGENS

ELSEVIER The Cell Surface
Volume 14, December 2025, 100154

AmpC β-lactamases: A key to antibiotic resistance in ESKAPE pathogens

Deeksha Pandey [a b 1], Isha Gupta [a 1], Dinesh Gupta [a]

Show more

+ Add to Mendeley Share Cite

https://doi.org/10.1016/j.tcsw.2025.100154 Get rights and content

Under a Creative Commons license Open access

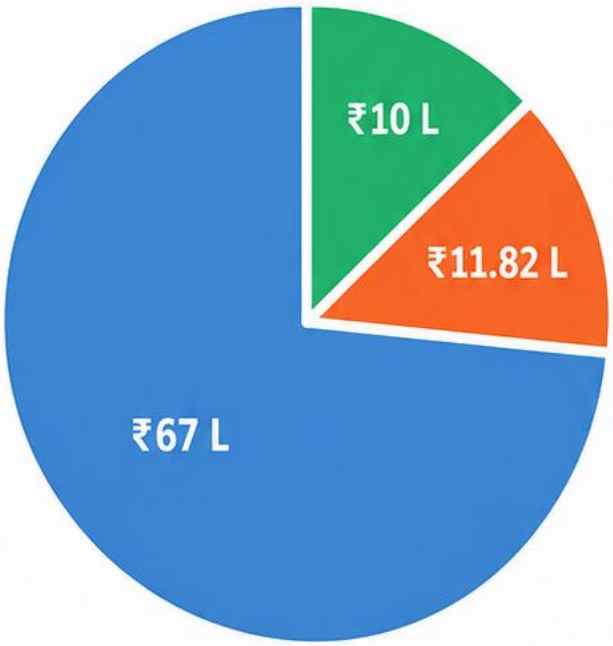
RESEARCH FUNDING LANDSCAPE

Department – Grants Portfolio Overview

₹88.82 L	₹827.79 L	₹916.61 L	7 Agencies
New Projects Total	Ongoing Projects Total	Combined Portfolio	Funding Agencies

RESEARCH PROJECTS GRANTED THIS YEAR

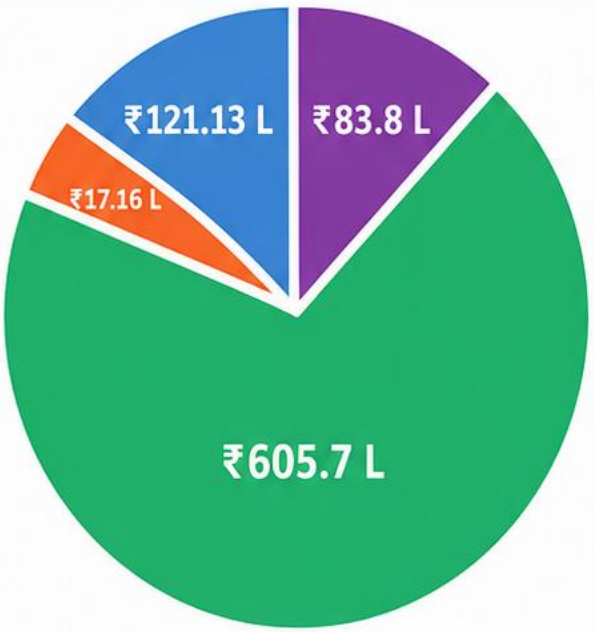
Total Funding: ₹88.82 Lakhs | 3 Government Agencies



- **ANRF** ₹ 67 L
- **ICMR** ₹ 11.82 L
- **Anveshan Centre of Excellence, IIM Indore (ACE)** ₹ 10 L

RESEARCH PROJECTS CONTINUING THIS YEAR

Total Funding: ₹827.79 Lakhs | 4 Government Agencies



- **DBT** ₹ 121.13 L
- **UPCST** ₹ 17.16 L
- **BIRAC** ₹ 605.7 L
- **ICMR** ₹ 83.8 L

We Research. We Published. The World Noticed.

A fullyear snapshot of the department's research output – **indexed**, **quartiled**, and **counted**.

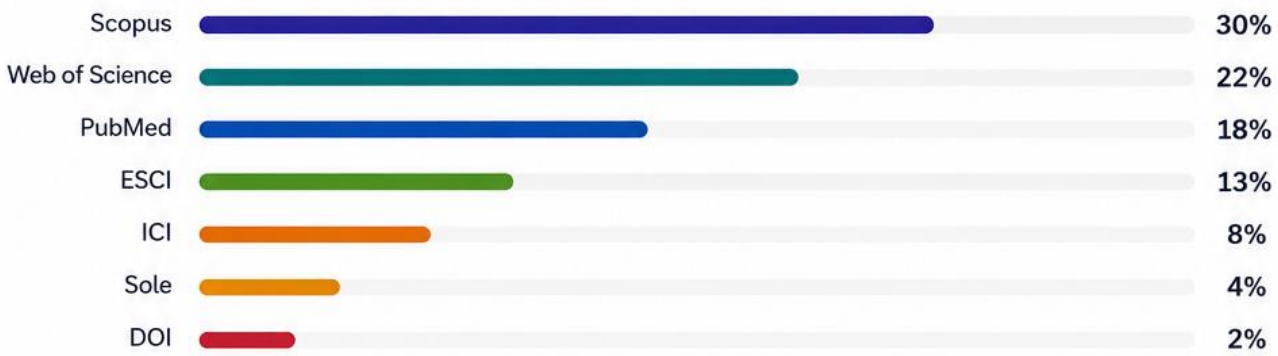
210
Total publications

56
Q1 + Q2 papers

33%
Scopus share

7
Databases indexed

WHERE OUR RESEARCH IS INDEXED



JOURNAL QUALITY TIER

Q1 - Top tier	Q2 - Strong	Q3 - Solid	Q4 - Indexed
27	29	21	12

PUBLICATION TYPE BREAKDOWN

What we published
by publication type

Research Paper 74% · Review 14% · Book 7% · Other 5%

155
Research papers published

30
Review articles published

15
Books & proceedings

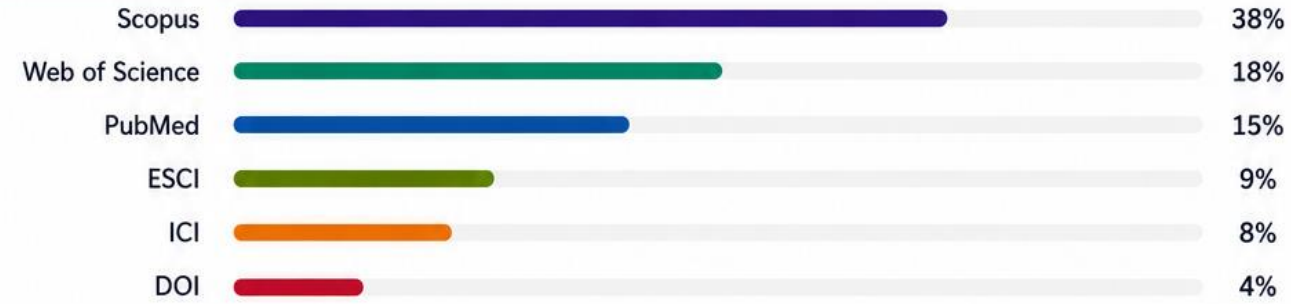
The Journey continues to **June 2026**
wasn't a milestone, it was **momentum.**

The Journey Continues.

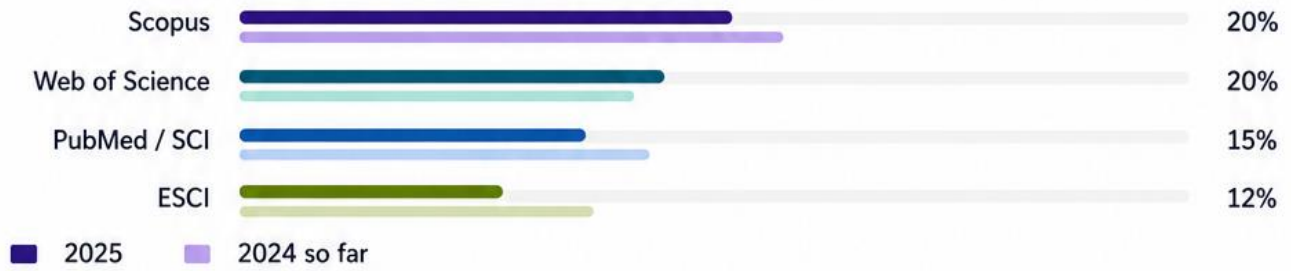
A new year, a fresh start —
and already a remarkable record taking shape.

76	7	38%	7
Publications so far	Q1 + Q2 papers	Scopus share	Databases indexed

WHERE OUR RESEARCH IS INDEXED



YEAR-ON-YEAR: HOW THE TOP DATABASES COMPARE



2025 JOURNAL QUARTILES & PUBLICATION TYPE

Journal quartile

Out of 11 quartile-assigned papers

1	6
Q1	Q2
3	1
Q3	Q4

Publication type

A shift in the mix for 2025

↑ 5%
Scopus share up from 33% → 38% in 2025

↑ Reviews ↑
Reviews now match Research Papers at 43% each

Still counting — 2025 is midway and already at 76 publications.
If the pace holds, this year is on track to match — or surpass — 2024.

DBT-BIRAC SUPPORTED INCUBATOR

BioNEST — JIIT

Driving the Transition: "From Research to Bio-Enterprises"

TOTAL CAPITAL OUTLAY
INR 6.05 Crores

FOCUS RESEARCH DOMAINS

- Biotechnology
- Pharmaceutical Sciences
- Health-Tech Applications
- Environmental Sustainability
- Food Sciences & Allied Domains

ADVANCED INSTRUMENTATION FACILITY

THERMAL ANALYSIS
DSC
High-precision thermal properties & stability mapping.

SEPARATION SCIENCE
HPLC
Analytical separation and biomolecule quantification.

SPECTROSCOPY
AAS
Providing parts-per-billion elemental trace diagnostics.

GENOMICS HUB
RT-PCR
Real-Time Quantitative Polymerase Chain Reaction for genetic target amplification.

Core Lab Refurbishment & Expansion
Upgrading incubation micro-environments and corporate validation spaces.

Active Execution

BioNEST Lab Refurbishment: Scaling Innovation

Converting **10,000+ sq. ft.** of raw space into a state-of-the-art incubation hub for scaling biotechnologies — creating a robust, industry-ready ecosystem to accelerate life science entrepreneurship and innovation.

Refurbished Infrastructure | **Advanced Equipment Deployment** | **Operational Readiness**

Startup Nurturing

Key Lab Upgrades

Modernized Workspace
High-efficiency, flexible lab zones tailored for research.

Strategic Infrastructure
Optimized layout for BIRAC-funded projects.

Scientific Excellence
World-class research capabilities for breakthrough biotech innovation.

Advanced Facilities
Cutting-edge infrastructure designed for high-throughput experimentation.

Technology Scaling
From lab bench to market-ready solutions at unprecedented speed.

शिक्षा मंत्रालय
MINISTRY OF EDUCATION
सत्यमेव जयते

SPRINGER NATURE

Celebrating Women in Excellence

Her Research, Our Future

Prof. Vibha Rani
Biotechnology Department

INDIA RESEARCH TOUR 2025 JIIT, NOIDA

Prof. Shweta Dang
Biotechnology Department

INDIA RESEARCH TOUR 2025 JIIT, NOIDA

Azadi Ka Amrit Mahotsav
MoE's INNOVATION CELL (GOVERNMENT OF INDIA)
INSTITUTION'S INNOVATION COUNCIL

IIC Regional Meet
MoE's Innovation Cell
Institutions' Innovation Council

Certificate of Appreciation

This certificate is presented to JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY exhibiting one of the best creative poster on their institute's Innovation & Entrepreneurship Journey/Achievements at the Regional meet 2022 held at Dr. A.P.J. Abdul Kalam Technical University, Lucknow.

Dr. Anuj Kumar Sharma
AKTU IIC President,
AKTU, Lucknow

Mr. Dipan Sahu
Assistant Innovation Director
MoE's Innovation Cell

JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY, NOIDA

IIC REGIONAL MEET-2025

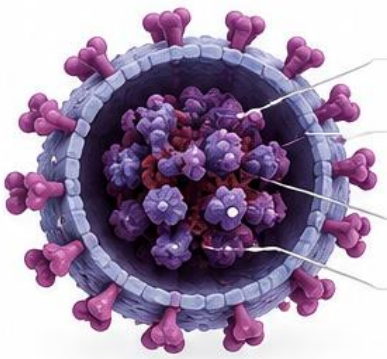
IIC team lead by Prof. Vibha Rani (President, IIC), Prof. Ashwani Mathur (Innovation Ambassador), Dr. Garima Mathur (Convener, IIC) & Mr. Adhaar Kohli (Representative, IIC student cell) participated in IIC Regional Meet-2025,

Scientific Breakthroughs in Biotechnology

HANTAVIRUS:

The Silent Rodent-Borne Threat Challenging Global Public Health

Hantaviruses are zoonotic pathogens maintained in rodent reservoirs worldwide. Though human-to-human transmission is rare, infection can cause severe disease with high mortality. Recent scientific advances are improving our understanding—yet important challenges remain.



WHAT IS HANTAVIRUS?

- **Family:** Hantaviridae
- **Enveloped, negative-sense, single-stranded RNA virus**
- **Genome: 3 segments (S, M, L)**
- **Natural reservoirs:** Rodents
- **Humans are accidental hosts**

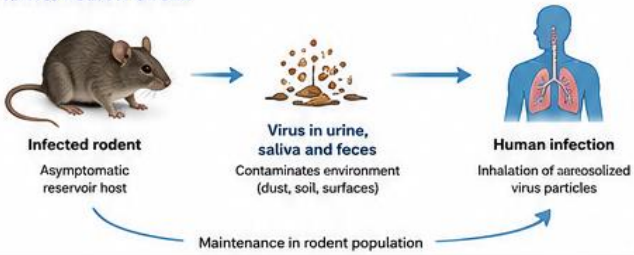
GENOME ORGANIZATION

- **S Segment (~1.7 kb)** — Nucleocapsid (N) protein
- **M Segment (~3.6 kb)** — Glycoprotein precursor (Gn, Gc)
- **L Segment (~6.5 kb)** — RNA-dependent RNA polymerase (RdRp)

GLOBAL DISTRIBUTION OF MAJOR HANTAVIRUSES

- **Hantaan virus** (East Asia)
- **Seoul virus** (Worldwide)
- **Puumala virus** (Europe)
- **Sin Nombre virus** (North America)
- **Andes virus** (South America)

TRANSMISSION CYCLE



CLINICAL MANIFESTATIONS

HFRS
(Hemorrhagic Fever with Renal Syndrome)

- High fever
- Hemorrhages
- Thrombocytopenia
- Acute kidney injury
- Case fatality rate: 1–15%

Common in Europe and Asia (e.g., Hantaan, Puumala virus)

HCPS
(Hantavirus Cardiopulmonary Syndrome)

- Rapid onset
- Pulmonary edema
- Respiratory failure
- Cardiogenic shock
- Case fatality rate: >35–40%

Common in the Americas (e.g., Sin Nombre, Andes virus)

WHY SCIENTISTS ARE CONCERNED

Climate Change
Alters rodent ecology and expands geographical range, increasing human exposure.

Urbanization
Encroachment into rodent habitats increases human–rodent contact.

Globalization
Movement of goods and rodents facilitates transcontinental spread (e.g., Seoul virus).

Underdiagnosis
Non-specific symptoms and limited surveillance lead to underreporting and underestimated burden.

KEY TAKEAWAYS

- ✓ Hantaviruses remain a significant but often overlooked zoonotic threat.
- ✓ High mortality in some forms underscores the need for better tools.
- ✓ Research advances are opening new avenues for diagnostics, therapeutics and vaccines.
- ✓ A One Health approach is essential for surveillance, prevention and control.

RECENT RESEARCH BREAKTHROUGHS

Structural biology of viral entry
Cryo-EM structures of glycoproteins reveal how hantaviruses attach and fuse with host cells, guiding rational vaccine and antiviral design.

Host receptor identification
Endothelial cell receptors for hantavirus have been identified, providing targets to block viral entry and vascular leakage.

Single-cell transcriptomics
Reveals dysregulated pathways in infected endothelial cells that trigger cytokine storm and vascular leakage responsible for severe disease.

AI-assisted antiviral discovery
Machine learning models are being used to identify small molecules that inhibit viral replication and host–virus interactions.

VACCINE DEVELOPMENT: PROGRESS & LIMITATIONS

Antigen Discovery → Preclinical Evaluation → Vaccine Platforms → Clinical Trials → Licensure & Deployment

Promising Platforms

- ✓ mRNA vaccines
- ✓ Viral vector vaccines
- ✓ Recombinant protein vaccines
- ✓ Broad-spectrum (pan-hantavirus) immunogens

Major Limitations

- ✗ Diverse viral species and strains
- ✗ Limited commercial incentives
- ✗ Incomplete understanding of protective immunity
- ✗ Geographic variation in strains

CRITICAL CHALLENGES

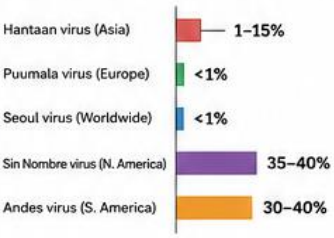
No specific antiviral therapy
Treatment is primarily supportive and requires intensive care.

Diagnostic delay
Early symptoms mimic other febrile illnesses, leading to late diagnosis.

Underreporting
Many cases go undetected due to limited surveillance and laboratory capacity.

Ecological complexity
Rodent dynamics and environmental factors complicate prediction and prevention.

ESTIMATED CASE FATALITY RATE



*Rates vary by region, healthcare access and outbreak settings.

FUTURE DIRECTIONS

- Universal vaccines
- Rapid point-of-care diagnostics
- Predictive ecological surveillance
- AI-driven outbreak forecasting
- Host-targeted therapeutics
- One Health integrated approach

CONCLUSION

Hantaviruses may be "silent," but their impact is anything but small. With expanding ecological niches, high mortality in severe cases, and the absence of approved therapeutics or vaccines, they pose a persistent global threat. Interdisciplinary research, strengthened surveillance, and innovative biotechnological solutions are essential to stay ahead of this hidden enemy.

BIOTECHNOLOGY BREAKTHROUGH

From Proteins Back to DNA:

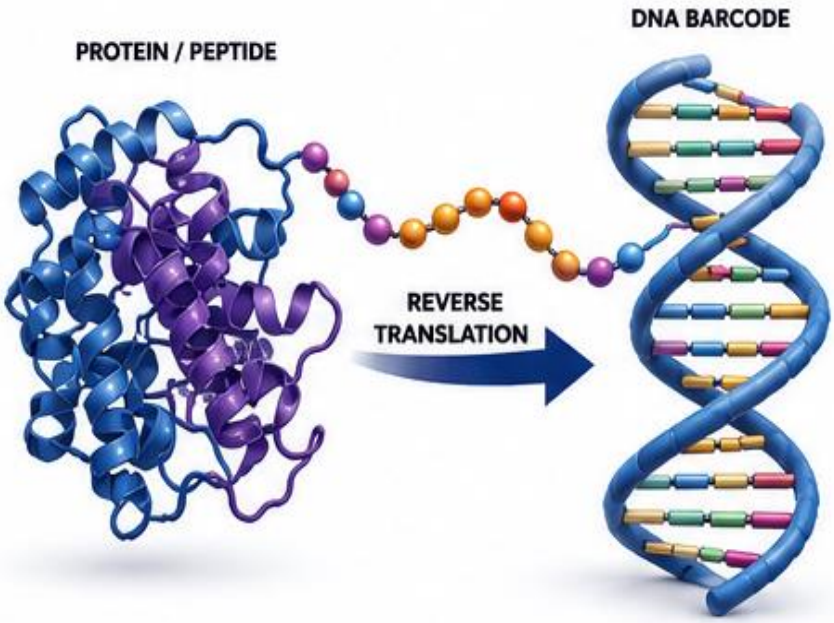
Reverse Translation Revolutionizes Single-Molecule Protein Sequencing

A groundbreaking study in Nature Biotechnology (2026) introduces a transformative approach that converts peptide information into DNA barcodes, enabling ultra-sensitive, high-throughput protein sequencing using existing DNA sequencing technologies.

INTRODUCTION

For decades, molecular biology has followed the central dogma: DNA → RNA → Protein. While DNA and RNA sequencing have advanced exponentially, protein sequencing has remained challenging due to the lack of efficient amplification methods. Mass spectrometry, though powerful, struggles with low-abundance proteins and is difficult to scale for single-molecule applications.

In a landmark study, Zheng et al. (2026) developed a method to "reverse translate" peptides into DNA, allowing proteins to be read using standard next-generation sequencing (NGS) platforms. This innovation bridges proteomics and genomics, opening new frontiers for biology and medicine.



THE CHALLENGE OF PROTEIN SEQUENCING

Proteins cannot be amplified like DNA. Their complexity—post-translational modifications, structural diversity, and dynamic interactions—makes comprehenive analysis difficult. This has created a major bottleneck in understanding cellular functions, biomarkers, and disease mechanisms.

WHAT IS REVERSE TRANSLATION?

Reverse translation is a strategy to convert the sequence information of peptides into DNA barcodes. These barcodes are then amplified and decoded using next-generation sequencing. In essence, proteins are transformed into a nucleic acid-readable format.

HOW THE TECHNOLOGY WORKS

1 Peptide Capture

Individual peptides are captured and immobilized on microscopic beads.

2 Amino Acid Probing

Cyclic rounds of probes identify each amino acid in sequence.

3 DNA Encoding

Each amino acid detection generates a specific DNA tag.

4 Barcode Assembly

DNA tags are assembled into a unique barcode representing the peptide.

5 Amplification

Barcoded DNA molecules are PCR-amplified to generate millions of copies.

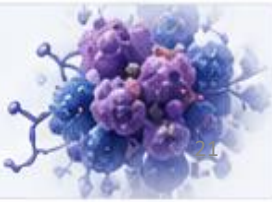
6 NGS & Decoding

The barcodes are sequenced using standard NGS platforms and computationally decoded to reveal the peptide sequence.

KEY HIGHLIGHTS

- Single-molecule sensitivity
- Single-amino-acid resolution
- Compatible with existing NGS platforms
- High scalability and throughput
- Potential for cost-effective proteomics

> *By converting peptide information into DNA that can be sequenced, we bring proteomics into the age of genomics.*
>
> *— Zheng et al., Nature Biotechnology, 2026*



KEY FINDINGS

Single-Molecule Sensitivity

Successfully sequenced individual peptide molecules, enabling detection of extremely low-abundance proteins.

High Accuracy

Achieved single-amino-acid resolution with high sequence fidelity.

NGS Compatibility

Works seamlessly with commercial next-generation sequencing instruments.

Scalability

Benefits from decades of advances in sequencing chemistry, automation, and data analysis.

Broad Applicability

Applicable to various sample types, including complex biological mixtures.

POTENTIAL APPLICATIONS

Precision Oncology
Enables deep profiling of tumor proteomes, identification of novel biomarkers, and monitoring of therapy response.

Liquid Biopsy
Allows ultra-sensitive detection of protein biomarkers in blood and other body fluids for early disease diagnosis.

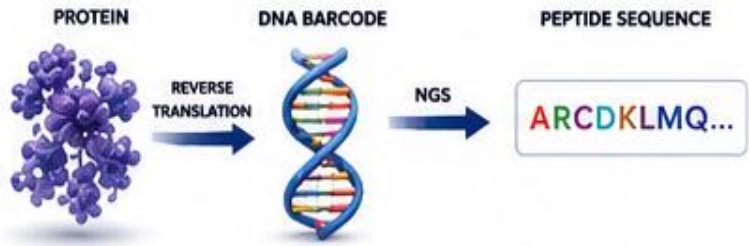
Immunotherapy
Facilitates accurate identification of neoantigens for personalized cancer vaccines and T-cell therapies.

Single-Cell Biology
Reveals protein heterogeneity at the single-molecule level, providing insights into cell function and development.

Drug Discovery
Enhances understanding of protein targets, pathways, and drug mechanisms, accelerating therapeutic development.

COMPARISON: PROTEIN SEQUENCING METHODS

Feature	Traditional Mass Spectrometry	Reverse Translation (This Study)
Sensitivity	Medium to Low	Single-Molecule
Throughput	Moderate	Very High
Sequence Resolution	Variable	Single-Amino-Acid
Amplification	Not Possible	PCR-Based
Compatibility	Specialized Instruments	Standard NGS Platforms
Scalability	Limited	High
Cost	High	Potentially Lower



IMPACT ON THE FUTURE

This technology has the potential to transform how we study proteins in health and disease. As sequencing technologies continue to evolve, reverse translation-based proteomics could become as routine and powerful as DNA sequencing is today.

> "This is a paradigm shift that could redefine proteomics and accelerate discoveries across biology and medicine."
>
> — *Nature Biotechnology Editorial, 2026*

CHALLENGES AND NEXT STEPS

- Expanding the method to full-length proteins
- Improving detection of post-translational modifications
- Increasing read length and accuracy
- Reducing costs for large-scale clinical applications
- Integrating with AI for enhanced data interpretation

CONCLUSION

Reverse translation of peptides into DNA represents one of the most innovative advances in biotechnology. By enabling single-molecule protein sequencing with existing DNA sequencing platforms, it opens the door to a new era of precision proteomics, with profound implications for diagnostics, therapeutics, and our understanding of life at the molecular level.

THE DARK GENOME:

Illuminating the Hidden Majority of Our DNA

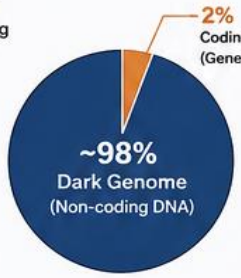
For decades, only ~2% of the human genome was thought to "matter". The remaining ~98%—once dismissed as "junk"—is now recognized as a vast regulatory universe shaping development, disease, and evolution. Welcome to the era of the Dark Genome.

WHAT IS THE DARK GENOME?

The Dark Genome refers to all non-coding sequences of DNA that do not encode proteins but have functional roles.

It includes:

- Enhancers and silencers
- Promoters and insulators
- Long non-coding RNAs (lncRNAs)
- MicroRNA genes
- Structural variants
- Transposable elements (TEs)
- Intronic and intergenic regions



THE DARK GENOME: NOT SO "JUNK" AFTER ALL

Regulates when, where, and how genes are expressed	Essential for development and cell identity	Influences immunity and response to pathogens	Mutations in non-coding regions contribute to complex diseases	Drives evolution and species-specific traits

HOW WE EXPLORE THE DARK GENOME

ATAC-seq	ChIP-seq	RNA-seq (single cell)	Hi-C / 3C / Capture-C	Long-read sequencing
Maps open chromatin regions	Identifies DNA regions bound by proteins	Reveals non-coding RNA expression at single-cell resolution	Deciphers 3D interactions across the genome	Resolves repetitive regions and structural complexity

EXAMPLES OF DARK GENOME DISCOVERIES

Human Accelerated Regions (HARs)
Highly conserved non-coding sequences that shaped human evolution, especially brain development.

Enhancer Variants in Disease
GWAS studies show most disease-linked variants lie in enhancers, not in genes.

LncRNA in Cancer
HOTAIR, MALAT1, and other lncRNAs drive tumor progression and metastasis.

Transposon-Derived Regulatory Elements
Many enhancers originated from ancient transposons and continue to regulate key genes.

The dark genome is rich in information—we are just beginning to decode it.

THE FUTURE OF DARK GENOME RESEARCH

Complete regulatory maps of human development and diseases	Personalized medicine based on individual regulatory landscapes	CRISPR-based editing of regulatory elements for therapy	AI-driven models that predict gene regulation and disease risk	Global consortia building open resources for the community

RECENT SCIENTIFIC ADVANCES

1. Functional Mapping at Unprecedented Resolution
Technologies like ATAC-seq, ChIP-seq, Hi-C, and single-cell multi-omics have mapped millions of regulatory elements across cell types and developmental stages.

2. Rise of Non-coding RNAs
Thousands of lncRNAs and enhancer RNAs (eRNAs) are now known to regulate gene expression, chromatin architecture, and cell identity. Many are implicated in cancer, neurological disorders, and immunity.

3. Transposable Elements: From "Junk" to Drivers
TEs, once considered selfish DNA, are now recognized as major evolutionary forces and regulators of gene expression, embryonic development, and genome architecture.

4. 3D Genome Architecture
Hi-C and related technologies revealed how non-coding regions orchestrate long-range interactions inside the nucleus, forming "regulatory neighborhoods" that control gene activity.

5. AI and Deep Learning
Machine learning models are decoding hidden patterns in non-coding DNA, predicting enhancer activity, variant impact, and gene regulation with increasing accuracy.

IMPACT ON HEALTH AND MEDICINE

Cancer	Neurological Disorders	Rare Diseases	Drug Discovery
Non-coding mutations can activate oncogenes or silence tumor suppressors.	Dark genome variants linked to autism, schizophrenia, epilepsy, and Alzheimer's.	Many disease-causing variants lie in non-coding regions affecting gene regulation.	Regulatory elements and non-coding RNAs are emerging as novel therapeutic targets.

CHALLENGES AHEAD

Complexity	Non-coding regions are vast, repetitive, and context-dependent, making them difficult to interpret.
Functional Validation	Proving function of regulatory elements requires sophisticated models and high-throughput assays.
Inter-individual Variation	Regulatory landscapes vary between individuals, cell types, age, and environment.
Data Integration	Integrating multi-omics, 3D genomics, and epigenomics demands advanced computational frameworks.
Clinical Translation	Moving discoveries from the bench to bedside remains time-consuming and resource-intensive.

KEY TAKEAWAYS

- [x] The dark genome makes up ~98% of our DNA but holds immense regulatory power.
- [x] Advances in genomics and computational biology are unlocking its secrets.
- [x] Non-coding variants contribute to many complex diseases.
- [x] Understanding the dark genome will revolutionize diagnostics, therapeutics, and precision medicine.
- [x] We are moving from a gene-centric view to a regulation-centric era.

The dark genome is no longer dark—
science is turning on the light.

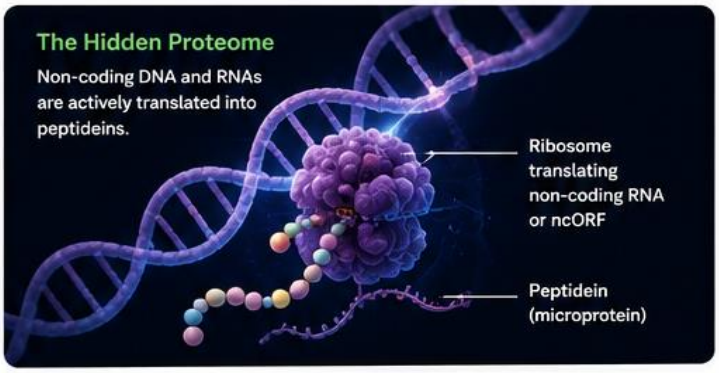
A T G G C T A G C T T A G C C T A G C T A G C

Coding (Known) | Non-coding (The Dark Genome)

PEPTIDEINS:

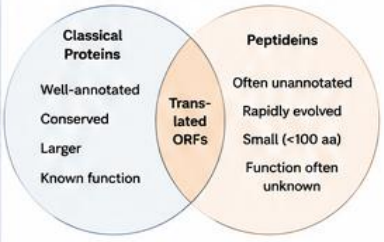
Hidden Proteins from the Dark Genome Rewrite Our Understanding of Biology

A landmark study by the TransCODE Consortium (*Nature*, 2026) has revealed that thousands of regions once labeled "non-coding" actually produce small protein-like molecules. These newly discovered entities, named *peptideins*, expand the human proteome by ~10% and open an entirely new frontier in genomics, disease biology and therapeutics.



WHAT ARE PEPTIDEINS?

Peptideins are small protein-like molecules translated from non-coding genomic regions or non-coding RNAs. They are typically <100 amino acids and were previously overlooked by conventional gene annotation.



Key Features

- ✓ Encoded by non-canonical open reading frames (ncORFs)
- ✓ Translated from regions previously considered "non-coding"
- ✓ Often species- or tissue-specific
- ✓ Detected at RNA and protein levels
- ✓ Potential regulatory and functional roles

KEY DISCOVERY AT A GLANCE

7,264	~25%	1,785	~10%	Hundreds
non-canonical ORFs (ncORFs) systematically examined	showed evidence of translation	unique peptideins identified	expansion of the known human proteome	of peptideins linked to diseases, including cancer

Why it Matters

The "dark genome" is not silent. It produces a vast repertoire of small proteins with potential to regulate biology, influence disease, and offer new therapeutic targets.

WHERE DO PEPTIDEINS COME FROM?

Peptideins arise from hidden open reading frames in:

- Long non-coding RNAs (lncRNAs)
- 5' and 3' Untranslated Regions (UTRs)
- Antisense transcripts
- Intergenic regions
- Small ORFs (sORFs/smORFs) within genes

These regions were historically dismissed as "junk DNA" or "non-coding RNA". Peptideins prove that many of them are actively translated.

HOW PEPTIDEINS WERE DISCOVERED

Ribosome Profiling (Ribo-seq)
Captures ribosome footprints on ncORFs, providing direct evidence of translation.

Mass Spectrometry (Proteomics)
Detects peptideins at the protein level across cells and tissues.

Immunopeptidomics
Identifies peptideins presented on MHC molecules—key for immunity and cancer.

Integrative Computational Analysis
AI-assisted annotation filters noise and predicts functional potential.

POTENTIAL ROLES OF PEPTIDEINS

Gene Regulation
Modulate transcription, splicing, and chromatin states.

Cell Signaling
Interact with proteins and pathways to fine-tune signaling.

Development
Drive cell fate decisions and tissue-specific processes.

Stress Response
Participate in cellular stress and adaptive responses.

Immunity
Some peptideins regulate innate and adaptive immune functions.

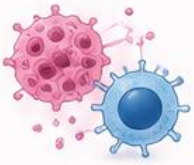
Disease Association
Aberrant expression linked to cancer, neurological and metabolic diseases.

Evolution
Many are rapidly evolving and may contribute to species-specific traits.

RELEVANCE TO CANCER AND IMMUNOTHERAPY

Peptideins are frequently detected in:

- Tumor cells
- Tumor-associated immune cells
- Circulating tumor samples
- Patient-derived organoids



Why this is exciting:

- ✓ Peptideins can generate novel neoantigens.
- ✓ Unique tissue / tumor specificity reduces off-target risk.
- ✓ Attractive targets for CAR-T cells, TCR therapies, and vaccines.
- ✓ Potential biomarkers for early detection and prognosis.

Several peptideins are already being evaluated as therapeutic targets and diagnostic biomarkers.

EXAMPLES OF EARLY DISCOVERIES

PEP-1027
A microprotein encoded by a lncRNA, shown to suppress tumor cell proliferation in multiple cancer models.

SMIM30 Family Peptideins
Surface-exposed microproteins implicated in immune evasion in certain cancers.

Brain-Specific Peptideins
Highly enriched in neuronal tissues; potential roles in synaptic regulation and neurodevelopment.

Immune-Regulatory Peptideins
Modulate cytokine production and T-cell activation.

CHALLENGES AHEAD

Functional Annotation
Most peptideins have unknown functions.

Low Abundance
Many are expressed at extremely low levels.

Evolutionary Diversity
High variability complicates conservation-based prediction.

Detection Limitations
Current technologies may still miss some peptideins.

Clinical Translation
From discovery to therapy is a long and complex path.

Standardization Needs
Uniform databases and nomenclature are still evolving.

IMPACT ON BIOLOGY AND MEDICINE

- Redefines the human genome and proteome.
- Provides insights into complex regulation.
- Enables discovery of new biomarkers and drug targets.
- Drives next-generation vaccines and targeted therapies.
- Opens a new era of precision medicine and personalized care.

KEY TAKEAWAYS

- ✓ Peptideins are a new class of small proteins translated from non-coding regions.
- ✓ They expand the known human proteome by ~10%.
- ✓ Advanced multi-omics technologies have uncovered 1,785 peptideins.
- ✓ They play diverse roles in biology, disease, and evolution.
- ✓ High relevance to cancer, immunity, and therapeutic innovation.
- ✓ We are only beginning to decode the hidden proteome within us.

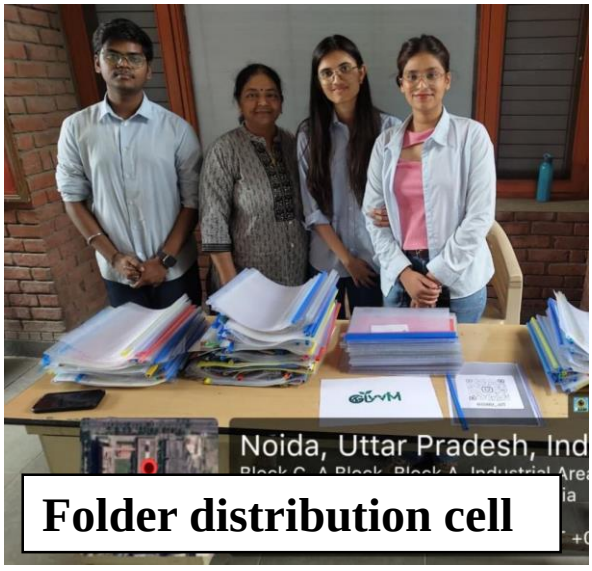
The discovery of peptideins proves that the dark genome is a treasure trove of biology waiting to be explored—**redefining what it means to be "human" at the molecular level.**

Events Organized
Year 2025-26

Events by Green Initiative and Waste Management Cell – Prof. S Krishna Sundari

Horticulture awareness drive

Orientation program



Folder distribution cell

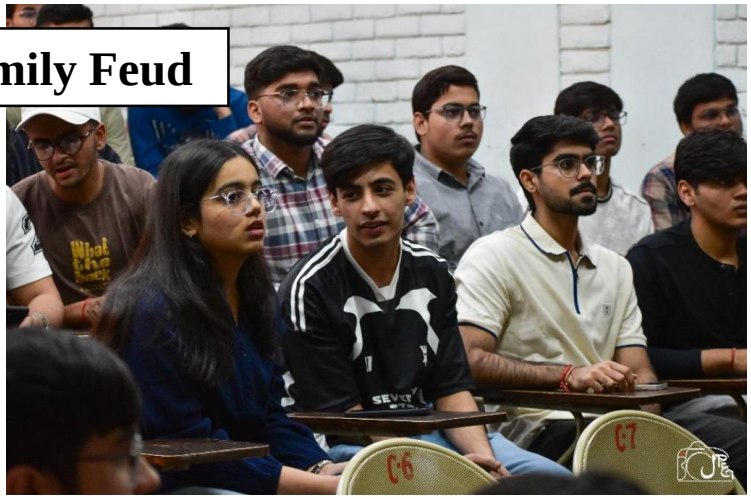
Awareness Posters

Page Turners Society (2025-26) – Prof. Indira Sarethy

Forged in Fiction

Jimmy Jab Duo Games

Family Feud



Crescendo, The Music Society – Prof. S Krishna Sundari

Unplugged

Crescendo @ BITS Pilani

Crescendo Family

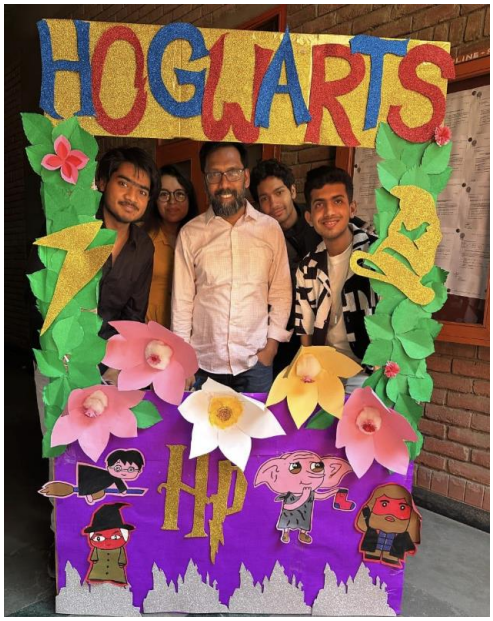
GREEN GIGGLES Conducted by the Expressions- The Painting Hub



Guest Lecture on Mental Health Awareness


TOTE – ALLY ZEN

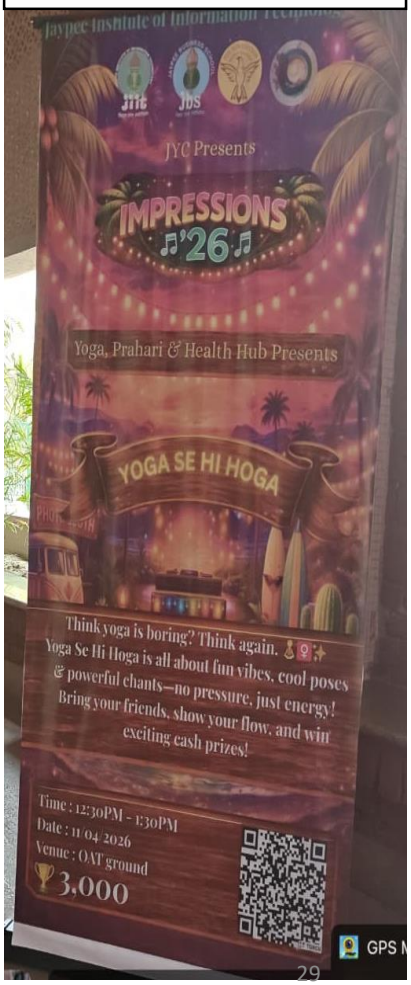




GIWM'S TEAM GREEN- The Environment Consciousness hub - Prof. S Krishna Sundari

Yoga Se Hi Hoga – Organised by Yoga, Prahari and Health Hub -Prof. Reema Gabrani, Prof. Shweta Dang & Dr. Ekta Bhatt

The event was organized with the objective of promoting physical fitness, mental wellness, and the importance of yoga among students.



THE JOURNEY BEYOND THE LABORATORY

From Curiosity to Innovation

ALUMNI VOICE:
Dr. Pallavi Kumari

Researcher, Innovator, and Proud Alumna

There are moments in life when we look back and realize that what seemed like a small decision eventually shaped an entire journey. For me, choosing the path of research was one such decision.

As a student, I was always fascinated by the ability of science to answer complex questions and improve human lives. I often wondered how discoveries made in laboratories eventually become treatments, technologies, and solutions that impact society. At that time, research appeared to be a world filled with possibilities, but I had little idea of the challenges, patience, and perseverance it would demand.

"Science is not about memorizing facts; it is about exploring the unknown."

My journey truly began during my time at the **Jaypee Institute of Information Technology, NOIDA**. The classrooms introduced me to scientific concepts, but it was the research environment that taught me how science is actually practiced. The institute nurtured a culture where asking questions was encouraged, curiosity was valued, and learning extended far beyond textbooks.

What I cherish most from those years is not merely the knowledge I gained, but the mindset I developed. I learned that science is about looking at a problem and believing that there may be a better solution. As I progressed into research, I became increasingly interested in understanding how innovative approaches could contribute to addressing major healthcare challenges. This interest gradually evolved into a research project that would later become one of the most significant milestones of my career.

Failure Is Not the Opposite of Success

However, the journey from an idea to a recognised innovation was far from easy.

Like many young researchers, I began with enthusiasm and confidence. I believed that if I designed experiments carefully, the results would naturally follow. Reality, however, had different lessons to teach.

> *Experiments failed.*
> *Protocols had to be repeated.*
> *Results were often inconsistent.*
> *Months of work occasionally led to outcomes that raised more questions than answers.*

There were times when I questioned whether I was moving in the right direction. There were days when progress seemed invisible, Yet, those very moments became the turning points of my journey. Research taught me that failure is not the opposite of success, it is an essential part of success.Every unsuccessful experiment revealed something new. Every challenge encouraged me to think more critically. Every setback forced me to become more patient and resilient. Slowly, I began to understand that scientific discovery is not about obtaining perfect results; it is about continuously learning, adapting, and moving forward.

The Power of Mentorship

During this journey, I was fortunate to receive the guidance and mentorship of **Prof. Shweta Dang**, whose support played a transformative role in my development as a researcher. She encouraged me to think independently while maintaining scientific rigour. More importantly, she helped me understand that meaningful research requires persistence, discipline, and belief in one's ideas.

Whenever challenges appeared overwhelming, her mentorship served as a source of encouragement. She taught me that innovation often lies beyond the boundaries of conventional thinking and that every researcher must develop the courage to explore uncharted paths.

From Hypothesis to Innovation

As the research progressed, the initial concept gradually evolved into a novel innovation. What had once existed only as a hypothesis began to take shape through experimental evidence, careful analysis, and continuous refinement. Witnessing this transformation was one of the most exciting experiences of my career.

Yet, the most valuable lesson I learned was that innovation is never a single moment of inspiration.

"Innovation is built on persistence long before it is recognised by others."

It is a process. It is the accumulation of countless hours spent reading scientific literature, planning experiments, troubleshooting failures, analysing data, and learning from mentors and colleagues.

When the research ultimately culminated in a **granted patent**, it represented much more than a professional achievement. It symbolised years of dedication, determination, and faith in the scientific process. It was a reminder that even the most ambitious goals can be achieved when one remains committed despite obstacles.

For me, the patent was not the destination; it was a milestone in a much larger journey. It reinforced my belief that research has the power to create meaningful change and that innovative ideas can emerge from anyone willing to pursue them with passion and perseverance.

A Message to Today's Students

Today, whenever I interact with students and young researchers, I often see reflections of my younger self — curious, ambitious, and eager to contribute. To them, I would like to say that research is not reserved for a select few extraordinary individuals.

> ***"Researchers are ordinary people who choose not to give up."***
>
> The path will challenge you. There will be failures, rejections, and moments of uncertainty. There will be times when your experiments refuse to cooperate and your hypotheses seem impossible to prove. But there will also be moments of discovery that make every struggle worthwhile.

Most importantly, remember that success in research is rarely measured by a single publication, degree, or patent. True success lies in developing the courage to think differently, the determination to continue learning, and the ability to contribute positively to society through knowledge and innovation.

As I reflect on my own journey, I remain deeply grateful to the institute that laid the foundation of my scientific career, to the mentors who guided me, and to every challenge that helped me grow.

The laboratories may have been where the experiments were conducted, but the real transformation happened within me.

A curious student entered the world of science seeking answers.
A researcher emerged, inspired to create new possibilities.
And that journey continues every day.

FROM DISSERTATION TO PATENT

Turning an M.Tech Thesis into a Food Biosensor Innovation

KAMYA GARG

Inventor | Research Scholar | PhD Scholar
(Formerly M.Tech)

What began as an M.Tech dissertation has evolved into a **patented biosensor for rapid starch estimation** in food samples—demonstrating how academic research can translate into real-world innovation.

WHY THIS RESEARCH MATTERS

Accurate starch estimation is essential for food quality assurance, nutritional analysis, and industrial processing.

Conventional methods are often laborious, reagent-intensive, and time-consuming.

This biosensor offers a faster, simpler, and reliable alternative for quality control and food industry applications.

> *Under the mentorship of Prof. Ashwani Mathur, an academic research question gradually evolved into a patented biosensor—transforming a dissertation into an innovation with practical applications.*

HOW DOES THE BIOSENSOR WORK?

The device utilizes immobilized α-amylase to catalyze starch hydrolysis. The resulting enzymatic activity is converted into a measurable signal by a transducer, enabling rapid and quantitative estimation within minutes.

FROM SAMPLE TO RESULT

1. **Food Sample** (with starch)
2. **Immobilized α-Amylase** (enzyme)
3. **Signal Transducer** (output)
4. **Quantitative Starch Reading** (result)

FROM LAB TO PATENT OFFICE

The journey from hypothesis to patent required continuous experimentation, refinement, and validation.

Guided by **Prof. Ashwani Mathur** and co-invented with **Prof. Pammi Gauba**, this work demonstrates how academic research can evolve into technologies with real-world applications.

The patented biosensor now forms the foundation of ongoing doctoral research toward portable and field-deployable food quality testing platforms.

RESEARCH JOURNEY

Research Question → **M.Tech Dissertation** → **Prototype Development** → **Patent Publication** → **PhD Research** → **Towards Commercial Translation**

PATENT TEAM

- **Kamya Garg** — Inventor
- **Prof. Ashwani Mathur** — Inventor & Supervisor
- **Prof. Pammi Gauba** — Co-Inventor

KEY HIGHLIGHTS

- Rapid starch estimation
- Portable food-quality testing
- Reusable enzyme platform
- Suitable for cereals and processed foods
- Commercialization potential
- Published patent with translational value

> *A dissertation is not the end of a degree—*
> *it can be the beginning of an innovation.*
>
> This journey reminds us that curiosity, perseverance, and the right mentorship can transform ideas into technologies that benefit society.
>
> *— Kamya Garg*

Alumni: Akshay Malhotra

My name is Akshay Malhotra, and I am a proud alumnus of the Department of Biotechnology at Jaypee Institute of Information Technology (JIIT), Noida, from the B.Tech Biotechnology batch of 2010-2014.

Coming from a middle-class family, pursuing higher education and advanced research at an international level once felt like a distant dream. However, the strong academic foundation, practical exposure, and continuous support I received at JIIT gave me the confidence to believe in myself and aim higher. During my undergraduate years, I actively participated in research projects, laboratory work, conferences, technical activities, and academic events, which gradually developed my passion for scientific research and innovation.

My interest in biotechnology had already begun in school during classes 11th and 12th, but JIIT was the place where I truly understood how biotechnology is implemented and applied in real-world research and industry. One of the greatest strengths of the Department of Biotechnology was its strong emphasis on practical learning and research-oriented education. We received valuable exposure to diverse domains including microbiology, molecular biology, developmental biology, analytical sciences, genetics, bioinformatics and interdisciplinary research technologies. The department encouraged students to move beyond theoretical learning and gain confidence through practical exposure and scientific discussions.

This strong academic environment played a major role in shaping my career. During my bachelor's degree, I also had the opportunity to pursue my industrial internship at the Institute of Nuclear Medicine and Allied Sciences (INMAS) under DRDO, where the mentors and scientists appreciated the technical knowledge, research understanding, and laboratory exposure I had developed during my time at JIIT. Experiences like these helped me realize the importance of strong fundamentals, discipline, and scientific curiosity.

After completing my bachelor's degree, I continued expanding my academic and research journey through higher studies, industrial exposure, and interdisciplinary research experiences at different institutions. Over the years, I have been fortunate to receive competitive research funding and fellowship support from Indian and international organizations collectively amounting to ~ €50,000.

Today, I am pursuing my Ph.D. at Freie Universität, Berlin, one of Germany's leading research universities, under a prestigious long-term fellowship supported through a collaborative academic initiative between HTW Berlin and Freie Universität, Berlin. Over the six-year duration of my doctoral research, the fellowship support amounts to ~ €300,000 enabling me to work in a highly international and research-intensive academic environment.

When I reflect on my journey, I strongly believe that the foundation of all these achievements was built during my time at JIIT. The university not only trained me academically but also taught me professionalism, discipline, confidence, adaptability, and perseverance. Even after graduating in 2014, I have remained in close contact with the faculty members of the Department of Biotechnology. One of the most special aspects of JIIT is the lifelong bond between professors and students. The faculty members genuinely care for their students and continue supporting, guiding, motivating, and encouraging us even years after graduation.

My advice to current students would be to stay curious, disciplined, and open to opportunities beyond the classroom. Participate actively in projects, workshops, seminars, conferences, and research activities because these experiences play a major role in shaping confidence and future career opportunities. Most importantly, build strong connections with your faculty members. The professors at JIIT are highly knowledgeable, experienced, and deeply supportive, and their mentorship can become one of the greatest strengths in your academic and professional journey.

Today, after gaining experience across academia, industry, and international research environments, I still strongly believe that the foundation of my journey was built at JIIT. The values, discipline, scientific curiosity, and confidence that I developed during my undergraduate years continue to guide me even today in my academic and professional life. Whether it was working in research laboratories, interacting with scientists and professors from different institutions, or adapting to international research environments in Germany, I have always realized how strongly my roots at JIIT prepared me for these opportunities and challenges.

I remain deeply grateful to the Department of Biotechnology, my respected professors, and the university for shaping me into the person I am today. Beyond academics, the mentorship and encouragement I received from the faculty members not only supported my growth during my student years but have continued long after graduation. Their guidance, faith, and blessings have played a major role throughout my journey, and I will always carry immense respect and gratitude for the institution that gave me the foundation to dream bigger and achieve those dreams.

Alumni: Priyam Kotwal

Priyam Kotwal
B.Tech Biotechnology
Batch of 2010-2014

Dear JIITians,
I am Priyam Kotwal, and I'm currently working as a Senior Consultant with Gartner.

My journey with JIIT takes me back to 2010 when I stepped into the beautiful red building with curiosity and wonder. I still remember the first time I looked at the heavily acronym-laden timetable, and it took about a week to correlate and memorise what each acronym stood for as we familiarised ourselves with the many LTs, tutorial rooms, labs and professors through orientations and subject introductions. While the first year allowed us to develop a basic foundation, one really had to wait until the second year to properly immerse oneself in the full range of Biotechnology subjects.

Since graduating in 2014, one of the many things I continue to admire about JIIT is the brilliant balance it struck between freedom and structure, allowing room for experimentation while insisting on respect for time and discipline – something we strive for internally, even as individuals, as we navigate our careers.

As I have continued to visit our college over the years for our alumni meets, it feels like a blessing each time to be in the aura of our nurturing professors who remain the true architects of my journey.

For current students seeking to carve a niche for themselves in the BANI world of today, I hope you'll always remember in your heart that each of us brings unique value to the table and are careers are only one of the ways that we contribute value to society, so never lose sight of the larger picture or diminish your value by comparing it with somebody else's, despite the many pressures. In the darkest of times, a shred of faith, a pinch of conviction, and the tiniest step forward guided with your gut's compass might be all that you need to propel you toward your destiny.

All the best, and I hope you'll make the most of your time at JIIT.

ICABB on NEWS 2025 & 2026

जेआईआईटी में बॉयोटेक्नोलॉजी पर अंतरराष्ट्रीय सम्मेलन

नोएडा (वि)। जेपी इंस्टीट्यूट ऑफ इंफॉर्मेशन टेक्नोलॉजी (जेआईआईटी) में बॉयोटेक्नोलॉजी विभाग ने 'बायोसाइंसेज और बायोटेक्नोलॉजी में प्रगति' विषय पर 08वां अंतरराष्ट्रीय सम्मेलन (आईसीएबीबी-2025) आयोजित किया। कार्यक्रम का उद्घाटन हृदय रोग विशेषज्ञ पद्मश्री प्रो. बलराम भार्गव ने किया। सम्मेलन का नेतृत्व विभागाध्यक्ष प्रो. पम्मी गौबा और संयोजन डॉ. शालिनी मणि और डॉ. निधि बत्रा ने किया। इस दौरान आणविक जीव विज्ञान, जीनोमिक्स, प्रोटिओमिक्स, बायोइन्फॉर्मेटिक्स, औषधि आविष्कार, पुनर्योजी चिकित्सा सिंथेटिक बायोलॉजी आदि विषय पर चर्चा की गई।

नवाचारों की खोज पर हुआ अंतरराष्ट्रीय सम्मेलन

नवाचारों की खोज पर अंतरराष्ट्रीय सम्मेलन का हुआ आयोजन • सौ. स्वयं

जासं, नोएडा: जेपी इंस्टीट्यूट आफ इन्फार्मेशन टेक्नोलाजी में बुधवार को इंटरनेशनल कान्फ्रेंस आन एडवांस्ड बायोमेट्रिक एंड बायोटेक्नोलाजी (आइसीएबीबी)-2025 नवाचारों की खोज पर अंतरराष्ट्रीय सम्मेलन का आयोजन हुआ। विभागाध्यक्ष प्रो. पम्मी गौबा ने संयोजक डा. शालिनी मणि और डा. निधि बत्रा के साथ बायोमेडिसिन, बायोटेक्नोलाजी और कम्प्यूटेशनल बायोलाजी में नवाचार और अनुसंधान पर मार्ग प्रशस्त किया। पद्म श्री सम्मानित प्रो. डा. बलराम भार्गव ने कार्यक्रम का उद्घाटन किया।

ICABB 2025 explores innovations in Biomedicine, Biotechnology, Computational Biology at JIIT Noida

AGENCIES

NOIDA, Jan 29: The 8th International Conference on Advances in Biosciences & Biotechnology (ICABB-2025) kicked off at Jaypee Institute of Information Technology (JIIT), Noida, hosted by the Department of Biotechnology. Sponsored by the Department of Biotechnology, Govt. of India (DBT), and the Anusandhan National Research Foundation (ANRF), the event aims to serve as

of Medical Research, shared his insights on the evolving landscape of medical science.

ICABB-2025, under the theme "Innovations in Biomed-

The conference also hosted interactive workshops, panel discussions, and poster sessions, encouraging knowledge exchange and fostering collaboration. With participation

जेपी इंस्टीट्यूट के मंच पर विज्ञानी साझा करेंगे ज्ञान

जेपी इंस्टीट्यूट आफ इंफार्मेशन टेक्नोलाजी में आयोजित 9वें अंतरराष्ट्रीय जैव विज्ञान और जैव प्रौद्योगिकी सम्मेलन में मौजूद विशेषज्ञ और शिक्षक • सौ. ग्रबंधन

जासं, नोएडा: सेक्टर 62 स्थित जेपी इंस्टीट्यूट आफ इंफार्मेशन टेक्नोलाजी में तीन दिवसीय नौवें अंतरराष्ट्रीय जैव विज्ञान और जैव प्रौद्योगिकी सम्मेलन का शुभारंभ बुधवार को किया। उद्घाटन मुख्य अतिथि पद्म श्री और पद्मभूषण से सम्मानित डा. विजय कुमार सारस्वत ने किया। विशिष्ट अतिथि गौतमबुद्ध नगर विश्वविद्यालय ग्रेटर नोएडा के कुलपति प्रोफेसर राणा प्रताप सिंह रहे। यह सम्मेलन भारत सरकार द्वारा सीएसआइआर और एएनआरएफ के सहयोग से किया जा रहा है। यह आयोजन दुनिया भर के वैज्ञानिकों और शोधकर्ताओं को एक साझा मंच पर लाएगा। सम्मेलन का विषय "जैव चिकित्सा और जैव अभियांत्रिकी के क्षेत्र में नवीन नवाचार" है। सम्मेलन का आयोजन डा. मनीषा सिंह और डा. निवेदिता मिश्रा द्वारा किया है, जिन्होंने सम्मेलन के उद्देश्यों और संरचना को रेखांकित किया। उन्होंने बताया कि यह सम्मेलन शोधकर्ताओं को वर्तमान प्रगति साझा करने के नए अवसर तलाशने के लिए एक सशक्त मंच प्रदान करता है।

जेआईआईटी नोएडा में ICABB-2026 का शुभारंभ जैव-विज्ञान में वैश्विक नवाचारों पर मंथन

जेआईआईटी नोएडा में ICABB-2026 का शुभारंभ, जैव-विज्ञान में वैश्विक नवाचारों पर मंथन

जेपी इंस्टीट्यूट ऑफ इंफॉर्मेशन टेक्नोलॉजी (JIT),28 से 30 जनवरी 2026 तक 9वें अंतर्राष्ट्रीय जैव विज्ञान और जैव प्रौद्योगिकी सम्मेलन (ICABB-2026) का आतिथ्य किया। इस प्रतिष्ठित सम्मेलन को भारत सरकार द्वारा CSIR और ANRF का सहयोग प्राप्त है। यह आयोजन दुनिया भर के वैज्ञानिकों, और शोधकर्ताओं को एक साझा मंच पर लाता है। इस वर्ष सम्मेलन का विषय "जैव चिकित्सा और जैव अभियांत्रिकी के क्षेत्र में नवीन नवाचार पर आधारित है। उद्घाटन सत्र में

पद्म श्री और पद्म भूषण पुरस्कार से सम्मानित डॉ. विजय कुमार सारस्वत मुख्य अतिथि के रूप में उपस्थित थे। इस कार्यक्रम में विशिष्ट अतिथि के रूप में गौतम बुद्ध विश्वविद्यालय, ग्रेटर नोएडा के कुलपति प्रोफेसर राणा प्रताप सिंह उपस्थित थे।

7th INTERNATIONAL CONFERENCE ON

ADVANCES IN BIOSCIENCES AND BIOTECHNOLOGY

ICABB-2024

31st January – 2nd February 2024 | JIIT, Noida

INNOVATION • COLLABORATION • IMPACT

CONFERENCE HIGHLIGHTS

- Keynote Addresses by Eminent Speakers
- Paper Presentations & Poster Sessions
- Young Researcher Forum
- Networking & Collaborations
- Knowledge Exchange & Future Perspectives

"Bringing together minds Advancing science Building a better tomorrow"

Together, we explore. Together, we innovate. Together, we impact.

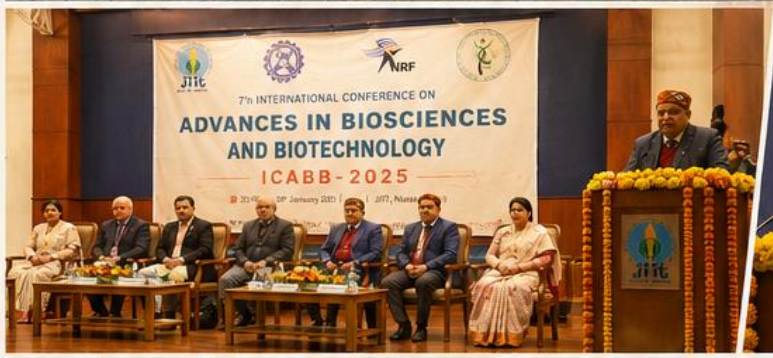
7th INTERNATIONAL CONFERENCE ON

ADVANCES IN BIOSCIENCES AND BIOTECHNOLOGY

ICABB-2025

28th – 30th January 2025 | JIIT, Noida

INNOVATION • COLLABORATION • IMPACT



CONFERENCE HIGHLIGHTS

- Keynote Addresses by Eminent Speakers
- Paper Presentations & Poster Sessions
- Young Researcher Forum
- Cultural Evening
- Networking & Collaborations
- Knowledge Exchange & Future Perspectives

> "Bringing together minds
> Advancing science
> Building a better tomorrow"

Together, we explore. Together, we innovate. Together, we impact.

Poetic Verses

कभी-कभी ज़िंदगी की लड़ाइयाँ हमें इतना थका देती हैं कि हम रुक जाते हैं।
हमें लगता है कि शायद अब आगे बढ़ने की ताकत नहीं बची।
लेकिन सच यह है कि थक जाना हारना नहीं होता।
कुछ देर का ठहराव सिर्फ़ अगली उड़ान की तैयारी होता है।

और जब पूरी दुनिया तुम पर शक कर रही हो,
तब भी एक आवाज़ ऐसी होती है जो तुम्हें आगे बढ़ने के लिए पुकारती है—
वो आवाज़ तुम्हारे अपने भीतर की होती है।

यह कविता उसी आवाज़ का स्मरण है...

कहानी अभी बाकी है

देखो, ये कहानी तुम्हारी है,
जैसे चाहो वैसे लिख लो।
बस मंज़िल तक पहुँचना है,
सफ़र तुम्हारा है, चाहे रास्ता बदल लो।

तुम कब से नसीब पर भरोसा करने लगी?
थक कर बैठी थीं बस कुछ पल,
अब हो गया आराम तुम्हारा, चलो।

उठो, खड़ी हो जाओ,
ये जंग दोबारा शुरू कर लो।
किसी को तुम पर भरोसा हो या न हो,
तुम खुद पर भरोसा कर अपना सहारा बन लो।

कौन भला यहाँ तुम्हें तुमसे ज़्यादा जानता होगा?
किसने तुम्हारा साथ तुमसे ज़्यादा निभाया होगा?
फिर क्यों अपनी हिम्मत को
दूसरों के अंदाज़ों से आँकती हो?

अपने किरदार की सच्चाई के लिए
तुम क्यों दुनिया से सफ़ाई माँगती हो?
ये युद्ध जो तुम लड़ रही हो, तुम्हारा अपना है,
इसे तुमने ही शुरू किया है।

फिर कैसे अपने शस्त्र रखकर
हार मान सकती हो?
अपनी कहानी को तुम
यूँ अधूरा कैसे छोड़ सकती हो?

ताकत रखती हो तुम
अपना वक्त बदलने की,
फिर क्यों खुद को कमज़ोर समझती हो?

चलो, हो गया अब आराम तुम्हारा,
उठो...
और इस जंग को फिर से शुरू कर लो।

आँचल (पीएचडी छात्रा)

तपते हुए चेहरे

ये तपते हुए चेहरे, तुम कहाँ लेके जाओगे,
कहीं कोई ठंडक नहीं, कैसे इन्हें बुझाओगे,
ये तपते हुए चेहरे, तुम कहाँ लेके जाओगे ?

ये तपन है उनके, सपनों के टूट जाने की,
ये तपन है भूखें पेट के, दो वक्त के खाने की,
ये तपन है रोज़ी को, वतन छोड़ जाने की,
ये तपन है सासों के, ऐसे ही सूख जाने की,
जो भाप बनके उड़ गया, पानी कहाँ से लाओगे?
ये तपते हुए ....

मरहम कोई भी इनपे, अब काम नहीं करता,
छाता कोई भी इनके, सरों को नहीं ढकता,
झोला कोई भी इनके, समान को ना लादे,
ये झेल नहीं सकते, अब झूठे-मूटे से वादे,
ढाँढस की डोर टूटी, धागे कहाँ से लाओगे?
ये तपते हुए .....

फूलों की नहीं इनको, अब आस है सावन की,
सोना चाँदी नहीं, इन्हें भूख है जेवन की,
शेरवानी नहीं इन्हें, तन-ढाकन चाहिये,
महँगे कमरे नहीं, बस थोड़ी छाँव चाहिए,
प्यार-मुहब्बत और, दुलार कहाँ से लाओगे ?
ये तपते हुए .....

- प्रो. रचना



Departmental celebration







Departmental Lunch at Bikaner, 14 Aug 2024

Departmental celebration

ADVANCED RESEARCH CROSSWORD

Explore the frontier of modern biotechnology, systems biology, omics sciences, and synthetic biology.

ACROSS

1. Complete set of heritable chromatin modifications (9)
8. Adaptive prokaryotic immune system exploited for editing (9)
11. Engineering discipline focused on programmable biological systems (10)
12. Global analysis of cellular metabolites (12)
13. Chemical linkage strategy joining biomolecules (14)
18. Direct conversion of one mature cell type into another (20)

DOWN

2. Sequencing-based study of uncultured microbial communities (12)
3. RNA regulatory element sensing small metabolites (10)
4. Discipline linking chemical compounds with genomic targets (13)
5. Entire RNA complement expressed by a genome (13)
6. Evolutionary analysis using whole-genome information (13)
7. Cellular maintenance of protein-folding homeostasis (12)
9. Large-scale study of glycosylated proteins (15)
10. Collective microbial ecosystem associated with a host (10)
12. Community-wide RNA sequencing approach (19)
14. Study of genomic influence on drug response (16)
15. Complete network of molecular interactions (11)
16. Complex composed of RNA and protein molecules (17)
17. Computational handling of chemical-biological data (15)
19. Transplantation between different species (19)

BIO-INNOVATION CHALLENGE

Advanced Biotechnology Sudoku

PhD-Level Amino Acid Sudoku

Use the symbols **A, R, N, D, C, Q, E, G, H**

Innovation begins with patterns. Decode the language of amino acids through this biotechnology-inspired Sudoku challenge.

A		N			Q	E		H
	C		E	G		A	R	
E		H		R	N			Q
	N		C		E	G	H	
C		E		H		R		D
	H	A	R		D		Q	
N			Q	E		H		R
	E	G			R	N	D	
H			N	D			E	G

RULES

- Each row must contain all 9 amino acid symbols exactly once.
- Each column must contain all 9 amino acid symbols exactly once.
- Each 3 × 3 box must contain all symbols without repetition.

SYMBOLS USED

A	Alanine
R	Arginine
N	Asparagine
D	Aspartic Acid
C	Cysteine
Q	Glutamine
E	Glutamic Acid
G	Glycine
H	Histidine

DID YOU KNOW?

Amino acids are the building blocks of proteins, and proteins perform most of the critical functions inside living cells.

Message from the Editorial Team

It is with great enthusiasm that we present the 2025–26 edition of *Koshika*, the annual newsletter of the Department of Biotechnology, Jaypee Institute of Information Technology, Noida.

The theme of this year's edition, *Navanveshan*, celebrates the spirit of curiosity, innovation, and scientific discovery that lies at the heart of biotechnology. As the boundaries between biology, engineering, data science, and medicine continue to converge, biotechnology is entering an era of unprecedented transformation. From decoding the dark genome and uncovering hidden proteins to harnessing artificial intelligence for scientific discovery, the pace of advancement has never been more exciting.

Koshika serves as a platform to document and celebrate the achievements, aspirations, and collective efforts of our students, faculty members, researchers, alumni, and staff. This edition highlights the department's academic accomplishments, research contributions, scientific breakthroughs, outreach activities, alumni journeys, creative expressions, and memorable moments from the academic year.

Beyond a record of achievements, we hope this newsletter reflects the vibrant culture of learning, collaboration, and innovation that defines our department. Every publication, project, event, and creative contribution featured in these pages represents the dedication and passion of individuals who continue to strengthen the biotechnology community at JIIT.

We extend our sincere gratitude to all contributors, faculty coordinators, alumni, and students whose support made this edition possible. We also thank our readers for being part of this journey of exploration and discovery.

As biotechnology continues to reshape the future of healthcare, agriculture, sustainability, and industry, we hope that the stories and achievements featured in *Koshika* inspire new ideas, meaningful collaborations, and a continued pursuit of scientific excellence.

Happy Reading!

Editorial Team
Koshika 2025–26
Department of Biotechnology
Jaypee Institute of Information Technology, Noida

EDITORIAL BOARD

KOSHIKA AY 2026

NAVANVESHAN

Koshika, the annual newsletter of the Department of Biotechnology, serves as a platform to celebrate scientific achievements, research excellence, innovation, outreach activities, alumni accomplishments, and creative expression. The Editorial Board is committed to fostering scholarly communication and showcasing the vibrant academic spirit of the department.

Prof. S. Krishna Sundari

Editor-in-Chief

Professor

EDITORS

Prof. Rachana

Editor

Professor

Prof. Vibha Gupta

Editor

Professor

Dr. Pooja Choudhary

Editor

Assistant Professor

Dr. Nivedita Mishra

Editor

Assistant Professor

Dr. Diwakar Sharma

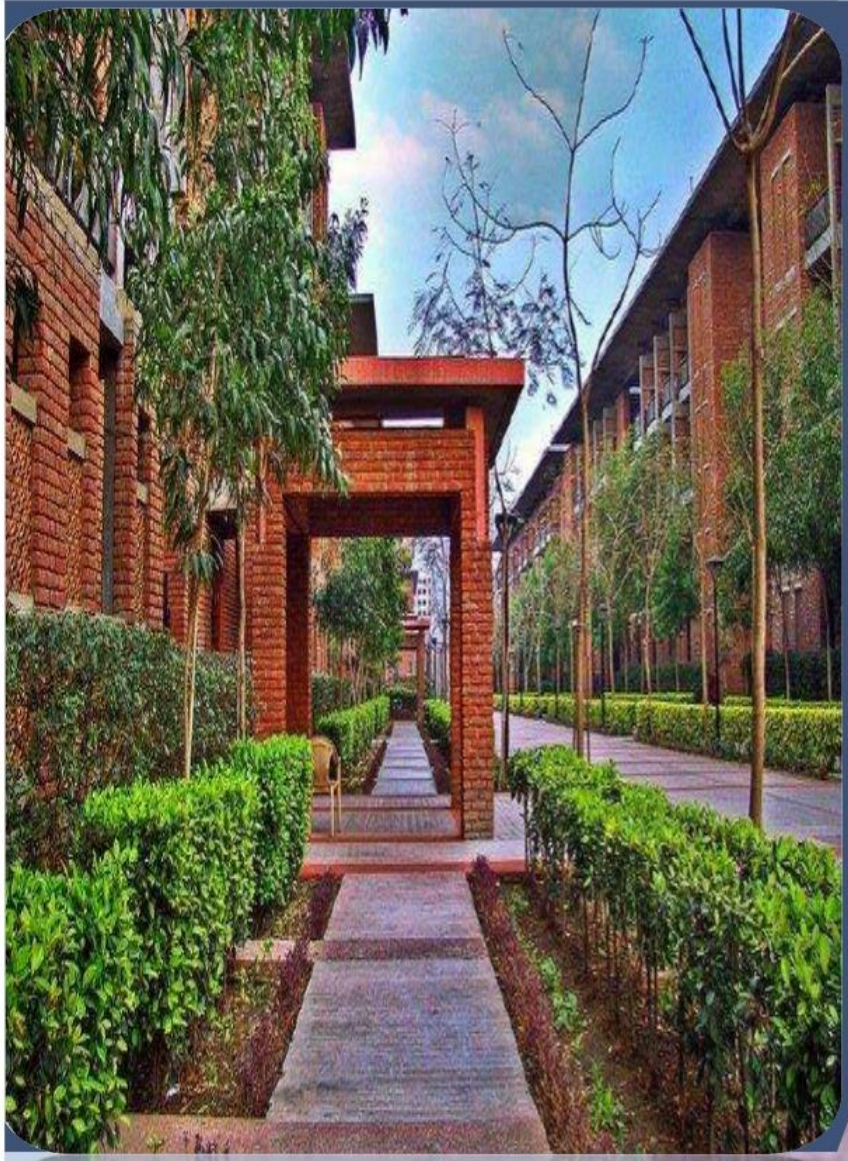
Editor

Assistant Professor (Grade I)

EDITORIAL VISION

To promote scientific **excellence**, encourage **creativity**, document achievements and inspire the next generation of biotechnologists through knowledge and **innovation**.

We hope you enjoyed our newsletter!
Please share your feedback with us at
koshika.newsletter@gmail.com
We'd love to hear from you



JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY

jiit

विद्या तत्व ज्योतिसमः