



BIO-TRANS

An Annual Newsletter That Transmits the Biotechnology Department Activities

MANIPAL INSTITUTE OF TECHNOLOGY, MANIPAL ACADEMY OF HIGHER EDUCATION, MANIPAL

Message from the Chair

LIST OF HODs			
Sl.No.	Name	From	To
1	Dr. Padmini Padmanabhan	01-04-2006	20-07-2007
2	Dr. V. Ramachandra Murty	21-07-2007	20-09-2007
3	Dr. Jayadeva Bhat	21-09-2007	01-02-2009
4	Dr. V. Ramachandra Murty	02-02-2009	31-12-2012
5	Dr. Bharath Raja Guru	01-01-2013	31-12-2018
6	Dr. M. Ramananda Bhat	01-01-2019	31-12-2021
7	Dr. S Balaji	01-01-2022	



The scientist, Sir Isaac Newton once said, "If I have seen further, it is by standing on the shoulders of giants." Hence, as a new Head, Department of Biotechnology, first and foremost, I express my sincere gratitude to all my predecessors who led the department by laying stepping stones to achieve the mission and vision.

It is my pleasure to disseminate the achievements of our department through 'BIO-TRANSMIT'. As per the **EducationWorld India Higher Education Rankings** for B.Tech programme in Biomedical & Biotechnology category, we secured **#1 and #2** for the last two years **2021 and 2022**, respectively. This is among the top 10 courses & institutes of India.

I sincerely thank the support rendered by our Institute as well as the team efforts of our faculty members, research scholars, staff, and students. I join the team to move forward with great zeal and enthusiasm to attract many more laurels in the near future.

I also thank the editorial team for bringing out the achievements of our department into the limelight.

EDITORIAL BOARD

Chairperson

- Dr. Balaji S

Editors

- Dr. Fayaz SM
- Dr. Subbalaxmi S
- Dr. Kannan N

Sub - Editors

- Mr. Soumodeep Sarkar
- Mr. Yuvraj Rallapalli

INTERNATIONAL CONFERENCE

An International Virtual Conference on Biomaterial-Based Therapeutics, Engineering and Medicine (**BIOTEM 2021**) was jointly organized by the Departments of Biotechnology, Biomedical Engineering and Chemical Engineering, under the aegis of Society for Biomaterials & Artificial Organs India (SBAOI) and Society for Tissue Engineering and Regenerative Medicine India (STERMI). This was Co-organized by The American Ceramic Society (ACerS). The event was conducted from 17th to 20th December, 2021

There were 160 National and International participants at the conference. The best presentations were given awards under various categories namely SBAOI-MAHE “Young Scientist Award”, SBAOI-Bajpai-Saha “Student Award”, Dr. T.M.A. Pai “Researcher Award”, and “The Best Poster Award”.



NATIONAL SYMPOSIUM

The flagship annual national symposium in biotechnology “SymBiot-2021” was organized by the Department of Biotechnology, MIT, Manipal and the Institution of Engineers Biotechnology (IEBt) student chapter on 16th October 2021.

The agenda of this virtual symposium was to bring together experts in the field and to share data, foster collaboration, exchange information across a variety of approaches and specialities with an engaging lineup of virtual scientific content. There were two guest lectures followed by paper and poster presentations by nearly 80 participants from various institutes and universities all over India.

SymBiot'21
A National Level Symposium
16th October 2021
Online Registrations open
For more information see SymBiot'21 Brochure Link in Bio
Deadline: Till 10th October

CONTACT US:
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Yuvraj Rallapelli, Vice President, IE-Bt (+91 99898 37136)
Shrovan Balasubramaniam, General Secretary, IE-Bt (+91 96000 11627)

Moisture Content Analysis

Samples	Moisture Content (%)
<i>Cordia dichotoma</i>	2.44%
<i>Flueggea leucopyrus</i>	4.30%
<i>Lantana camara</i>	0.65%

Figure 10: Moisture Content

Figure 11: Plot of Moisture Content

Carbohydrate estimation

Samples	Percentage of Carbohydrate
<i>Cordia dichotoma</i>	4.81%
<i>Flueggea leucopyrus</i>	4.38%
<i>Lantana camara</i>	14.04%

Figure 12: Anthrone Method

Figure 13: Plot of Carbohydrate concentration

APARNA SRINATH and A. Manickam. Biochemical Methods. New Age International, 2010

USES OF IRON OXIDE NANOPARTICLE CONJUGATED WITH PHYCOCYANIN.

- The binding of phycocyanin with iron oxide nanoparticles is non toxic to the body so in future the biological applications used for drug delivery and many of the biomedical application.
- The recorded feature the capability of iron oxide nanoparticles binding as advanced nanodrug forms region of cuticular epidermic injury mending recollecting of the product.
- In **haemolysis**, the binding of phycocyanin and iron oxide nanoparticles the blood cells, were not damaged during the haemolysis.
- Hence phycocyanin bound with iron oxide nanoparticles can be used for blood and haemolysis assay and prove to be a useful application for medical field.

WORKSHOPS

As much as students aim to improve their technical skills, the development of soft skills is equally integral in building a career. With this aim, IE-Biotechnology Manipal and the Department of Biotechnology, MIT conducted a "Soft Skill Workshop" hosted by Ms. Rashmi Shenoy Prabhu, Managing Director of Rashmi Shenoy Prabhu Training and Consulting, Mumbai, and Mr. Vivek Naidu, Managing Director of Youdian Business Solutions Pvt., Mumbai.

IE-Biotechnology, Manipal Chapter hosted a workshop on "Fundamentals of Research Methodology" for the B.Tech students by Dr. Fayaz on 11th April 2021. The talk comprehensively included:

1. Resources of Scientific work,
2. Retrieving Technical papers,
3. Types of Scientific Communications,
4. Thesis writing/Report preparation,
5. Journal paper writing

GUEST LECTURE

GUEST LECTURE

Dr. Regina Sharmila Dass

M. Sc. Microbiology, PhD Microbiology

Nanobiotechnology-The Revolution in the Current Era

Assistant professor at Pondicherry Central University with over 20 years of experience.

Highly recognized mycologist specializing in Fumonisin

Author of 35+ research articles, book chapters and a book on Fumonisin

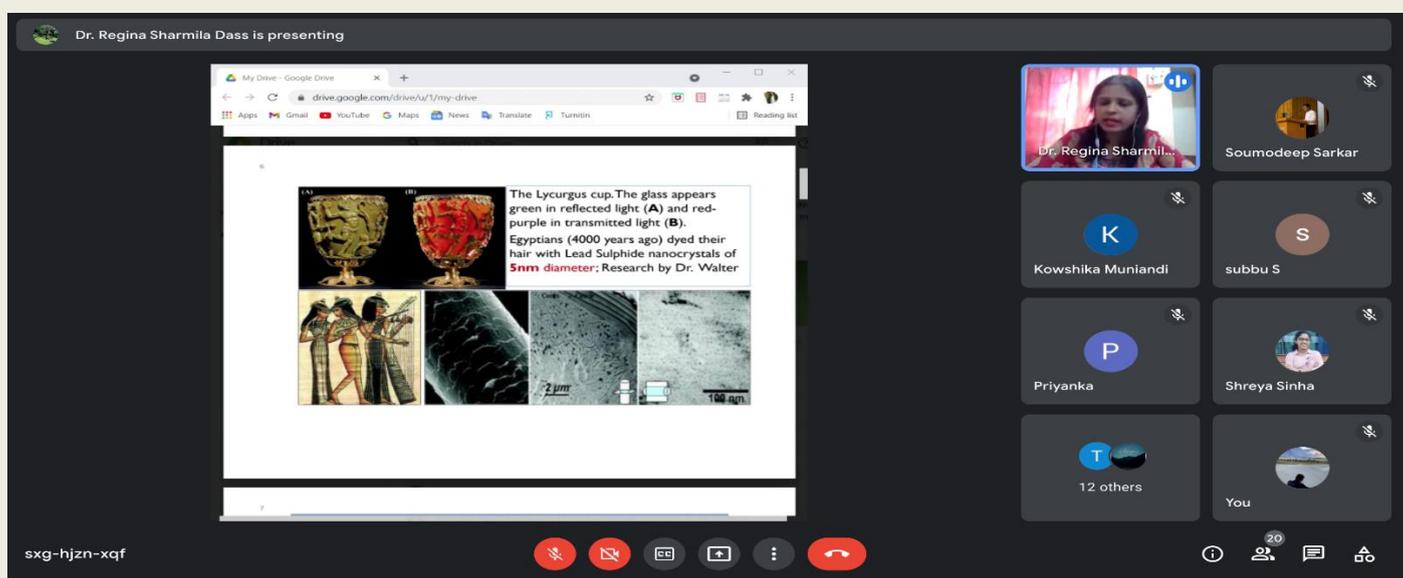
Guided 40+ post graduate students for their thesis

14 years of experience as a consultant in Eco-Regenerative Agriculture

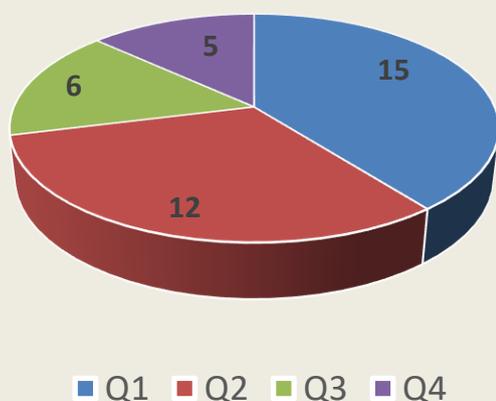
31/7/21 16:00 pm onwards
Google Meet



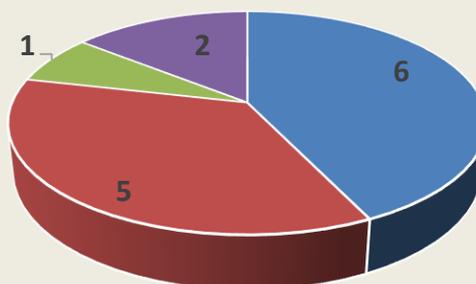
A guest lecture on “**Nanobiotechnology-The Revolution in the Current Era**” by Dr. Regina Sharmila Dass from Pondicherry Central University was conducted on 31st July 2021. Dr. Das area of specialization is on Fumonisin, which are a group of Fusarium toxins known to be carcinogenic to animals and possibly to humans. She is a well-known mycologist in India. She has authored close to 40 research articles and book chapters, a book on Fumonisin and is a member of multiple administrative and governing bodies at Pondicherry University



PUBLICATIONS



We have published **38 articles** in peer-reviewed indexed International Journals during 2021, and **14 articles** during Jan-April 2022.



RESEARCH GRANTS

1. **Dr. Naresh Kumar Mani** received a research grant of **₹25 Lakhs** from DST – SERB for the project “Drop & Detect: Distance-based assay for *Candida albicans* using Paper-based Microfluidic devices and Isothermal Amplification”
2. **Dr. Vijendra Prabhu** received a research grant of **₹29 Lakhs** from ICMR for the project “Modulating Inflammation by Photochemical Approach - Implications in Delayed Wound Repair”
3. **Mrs. Archana M Rao** received a research grant of **₹2 Lakhs** from MAC-ID for the project “Inhibition of DNA Encapsidation of Herpes Simplex Virus”
4. **Dr. Fayaz SM** received a research grant of **₹2 Lakhs** from MAC-ID for the project “Development of Novel and Potential Neuraminidase (NA) Inhibitors against H1N1 Influenza Virus through *In Silico* and *In Vitro* Studies”
5. **Dr. Kannan N** received the MAHE seed grant of **₹50,000** for the project “Optimization of thermostable GH5 enzyme production from microorganism for food applications”

FACULTY ACHIEVEMENTS

- **Dr. Fayaz** received the **Best Oral Presentation award** in the 9th International Congress of the Society for Ethnopharmacology, India (SFEC-2022) at JSS College of Pharmacy Mysuru during 22nd to 24th April 2022.
- **Dr. Naresh Kumar Mani** has received the Indian National Science Academy (INSA) Visiting Scientist award for 2021-2022 to work at IIT Kharagpur for a month starting from December 2021.
- The research work of **Dr. Naresh Kumar Mani** “Knitting thread devices: Detecting *Candida albicans* using napkins and tampons” has been highlighted by the American Chemical Society and Nature Asia. This work has received an Altmetric score of 140 and covered by Dailylegraph (UK), Newscientist Magazine (U.S), Verywellhealth.com (U.S).

STUDENT ACHIEVEMENTS

- **Mr. Rohit Raj** of 8th Semester B.Tech secured an **All India FIFTH Rank** in the **GATE-2022** Exam.

GATE 2022		GATE 2022 Scorecard			
Graduate Aptitude Test in Engineering		Graduate Aptitude Test in Engineering (GATE)			
अभियांत्रिकी स्नातक अभिषेक परीक्षा					
Name of Candidate	ROHITRAJ RAY				
Parent's/Guardian's Name	IRANI RAY				
Registration Number	BT22S51230178				
Date of Birth	26-Sep-2000				
Examination Paper	Biotechnology (BT)				
GATE Score:	911	Marks out of 100:	68.67		
All India Rank in this paper:	5	Qualifying Marks*	General	EWS/OBC (NCL)	SC/ST/PwD
Number of Candidates Appeared in this paper:	13994		35.5	31.9	23.6

- **Ms. Avani Hegde** of 4th Semester B.Tech achieved the **Runner-up position** in the event “The Cinema Roundtable” under Matsuri 2021 organized by Behind the Scenes, Manipal.



STUDENT ACHIEVEMENTS

- The **Manipal Bio-machines Club** won the **Bronze medal** at iGEM (International Genetically Engineered Machines) competition held in 2021.
- **Ms. Girisa Prabhu** and **Divya Bhat** of 8th Semester B.Tech secured **First prize** in Poster presentation category of the National Level Biotechnology Symposium “Symbiot 21” at MIT, Manipal.
- **Mr. Eeshan Koundinya** of 4th Semester B.Tech achieved the **Second position** in the Spotlight Monoacting event of Ananya – cultural wing of Sympulse 21, Symbiosis Centre for Management Studies, Pune.
- **Ms. Girisa Prabhu** and **Divya Bhat** of 8th Semester B.Tech authored a **review article** "A Critical Look at Bioproducts Co-cultured Under Solid State Fermentation and Their Challenges and Industrial Applications" in the journal “Waste and Biomass Valorization”.
- **Ms. Akshita Singh** and **Mr. Nachiket Kelkar** of 8th Semester B.Tech authored a **review article** "Review on the extraction of calcium supplements from eggshells to combat waste generation and chronic calcium deficiency" in the journal “Environmental Science and Pollution Research”.
- **Mr. Nachiket Kelkar** of 8th Semester B.Tech authored a **review article** "Sensing of body fluid hormones using paper-based analytical devices" in the “Microchemical Journal”.
- **Mr. Soumadeep Sarkar** of 8th Semester B.Tech completed an internship at Canada – MITACS Globalink Research, for a duration of 12 weeks on the Project “Regulation of oncogenic tyrosine kinase receptors signaling specificity” from Universite Laval-Quebec.
- **Mr. Punith J Suvarna** of 8th Semester B.Tech secured **Third Place** in the Smash Championship 2021-22 organized by NIT Surathkal during 11-13 March 2022.
- **Ms. Sona Mariam Thomas** of 8th Semester B.Tech received a **Seed Money Grant** of ₹10,000 from MAHE Manipal to work on “Hybrid Artificial Nanomolecule Based Electrochemical Sensors For Detection of Water Pollutants”.
- **Mr. Raghavendra** (Research Scholar) received the **Young Scientist Best Oral Presentation Award** in the 3rd International Conference on Environmental, Agricultural, Chemical and Biological Sciences during January 2022.
- **Mrs. Natasha Joyline** (Research Scholar) secured **Third Prize** in the Essay Writing Competition conducted by the Technical Association of Biotechnology during the technical fest Technozion 2022 at NIT Warangal.

STUDENT ACHIEVEMENTS

- **Mr. Sujesh** (Research Scholar) received the ICMR fellowship for his doctoral studies on Paper microfluidics and disease diagnosis.
- **Ms. Anusha Prabhu** (Research Scholar) received an ICMR-SRF fellowship extension for Six months from June-December, 2021.

ALUMNI INTERACTIONS

ALUMNI TALK

Arun Somasundaram
Manipal: Biotechnology to Dartmouth: Engineering Management

My Academic and Professional Journey

Incoming Master in Engineering Management student at Dartmouth.

Graduate Program acceptances in Dartmouth, Duke, Columbia, Berkeley and Cornell.

IAS Summer Research Fellow at the Institute of Genomics and Integrative Biology (2018).

Khorana Scholar at the University of Wisconsin Madison (2019).

Clinical Programmer at GlaxoSmithKline (2020-21).

26/6/21
16:00-17:00
MS Teams

Mr. Arun Somasundaram (2016-20 Batch), a clinical programmer at GlaxoSmithKline gave a talk on "Manipal Biotechnology to Dartmouth Engineering Management – My Academic and Professional Journey" on 26th June, 2021.

Mr. Karan Gera (2012-16 Batch), delivered a talk on "Pre-clinical Biomedical Research and Business Development in Biologics - My First-hand Experience" on 10th July, 2021.

ALUMNI TALK

Karan Gera
Pre-clinical Biomedical Research and Business Development in Biologics

My Firsthand Experience

Served in a project management, business development, and marketing role at Epione Labs & Therapiva (divisions of Laxal Life Sciences, Hyderabad) (2018-21)

Currently a business development & project management professional for novel biologics and biosimilars, at Enzene Biosciences, a biologics subsidiary of Alkem Laboratories, in Pune, India.

Masters in Molecular, Cellular & Developmental biology from Iowa State University in Ames, Iowa. (2016-18) with research in:

- Development of a broadly neutralizing antibody-based HIV-1 vaccine.
- In vitro research with pesticide-based models of Parkinson's disease.
- Pre-clinical studies on murine and canine models of Lysosomal Storage Diseases at Ellinwood lab at ISU.

10/7/21
(Saturday)
16:00-17:00
MS Teams

IEBt Manipal Chapter presents

ALUMNI TALK

Sanjula Mansingh
B.Tech. Biotechnology

Goals for the Future: Creating opportunities for internships and achieving goals

Experienced life coach for personal and professional development

- Co-founder of a career orientation startup
- Organizer of the largest personal development and career symposium in North Bengal.
- Co-creating paid internship with Humbolt University.

18/08/2021 **6:30-8:30 pm** **MS Teams**

Ms. Sanjula Mansingh (2012-16 Batch), gave a talk on "Goals for the Future: Creating opportunities for internships and achieving goals" on 18th August, 2021.

Mr. Aditya Jupudi (2013-17 Batch), Secretary at the International student organization, OUHSC, delivered a talk on "Landing a PhD and the prospects beyond: One string attached" on 21st August, 2021.

ALUMNI INTERACTIONS

Alumni Talk

The Journey from Manipal to Stanford

25/08/2021
6:30 PM
MS Teams

Aishwaria Manek

- Worked at GSK Pharmaceuticals as a clinical programmer after graduating from MIT Manipal with a Biotechnology Engineering degree.
- Later pursued courses in Technology and Engineering Management while working as a Teaching Assistant in the MS&E Department and Self funded entire education at Stanford.
- Interned at Roche Diagnostics as a Product Management Intern.
- Will soon be pursuing healthcare consulting at ZS Associates at NYC.

Ms. Aishwaria Manek (2014-18 Batch), gave a talk on "Manipal to Stanford: Navigating through higher education abroad" on 25th August, 2021.

Mr. Mukund Kabbe (2013-17 Batch), delivered a talk on "Unravelling the mysteries of the brain using single-cell sequencing technologies" on 28th August, 2021.

Alumni Talk

Unravelling the mysteries of the brain: One cell at a time

28/08/2021
6:30 PM
MS Teams

Mukund

- Currently a 2nd year PhD student
- Internships in Poland and Germany
- Master's degree in molecular biology from Lund University, Sweden with a specialization in molecular genetics and neuroscience
- Carried out his thesis project in Castelo-Branco lab at the Karolinska Institute, Stockholm
- Research assistant at Castelo-Branco lab for 6 months prior to starting his PhD

Alumni Talk

Computational Biology

29/08/2021
7:30 PM
MS Teams

Purna Jain

- Computational Biologist at Tempus Labs, inc. an AI enabled diagnostics company
- Took courses in bioinformatics, deep learning and computer science and worked as a research assistant at the Brown Lab.
- Master's degree in Bioinformatics from Georgia Institute of Technology
- Applied machine learning methods to discover genes that drive antibiotic microbial resistance to *Pseudomonas aeruginosa* and was awarded Leland Jackson fellowship for their contributions
- Worked at Intella therapeutics where they developed bioinformatics pipelines to analyse CRISPR and scRNAseq data for developing T cell mediated cancer therapies.

Ms. Purna Jain (2014-18 Batch), computational biologist at the renowned Tempus Labs, gave a talk on "Computational Biology" on 29th August, 2021.

ALUMNI TALK

FROM MANIPAL TO MUNICH

Graduated from MIT in 2021 with a Bachelor's degree in Biotechnology. Did his Bachelor's project on "Metal responsive gene regulation by bacterial riboswitches"

Carried out project at the Nation Center for Biological Sciences (NCBS), Bangalore in the lab of Dr. Arati Ramesh

Was involved in confirming and evaluating the activity of a putative metal binding riboswitch occurring naturally in *Haemophilus ducreii*

Currently pursuing MS in Molecular and Cellular Biology in Germany at Ludwig-Maximilians University (LMU) Munich.

Upcoming projects: In the lab of Dr. Josef Mautner at the Helmholtz Center München on the cell-cell cross talk of T cells and virus infected cells (EBV or SARS-CoV-2)

1/4/22 (Friday)
6:00 PM IST
MS Teams
<https://meet.google.com/znhdsk>

Akshat Joshipura

Mr. Akshat Joshipura (2017-21 Batch), delivered a talk on "From Manipal to LMU, My Academic Journey" on 1st April, 2022.

ALUMNI TALK

FROM MANIPAL TO JOHNS HOPKINS

Currently a biochemistry graduate student at Johns Hopkins University.

Analyzing the binding affinity of SARS-CoV-2 spike protein RBDs of the delta and omicron variants with bat, pangolin and human ACE-2 receptor.

Research Intern at Serum Institute of India where she worked on the characterization of a therapeutic monoclonal antibody

Summer Research Intern at Indian Institute of Science (IISc) in the fields of Cell Biology and Microbiology.

6/3/22 (Sunday)
7:30 - 8:30 PM
MS Teams
<https://meet.google.com/ajvbtzuz>

Trupti Tripathi

Ms. Trupti Tripathi (2017-21 Batch), delivered a talk on "From Manipal to John Hopkins: My Academic Journey" on 6th March, 2022.

ALUMNI ACHIEVEMENTS



Ms. Palak Sehgal and Mr. Keenan Pinto (2012-16 Batch), are the Co-founders of Nordetect. They participated in Grow-NY, and was awarded a prize worth \$250,000 in December, 2021.

Ms. Rhea Sharma (2014-18 Batch), received the **Dean's Award for Graduate Student Excellence in Leadership** at Northeastern University Boston, MA. She was the only Indian to be Awarded in April, 2022.



- **Ms. Tanushikha Khichi** (2010-14 Batch) received the **Excellent academic performance award** in the MS Marketing Analytics Program and her name was published on a Dean's list indicating a high degree of respect.
- **Ms. Trupti Tripathi** (2017-21 Batch) was offered the **Research Technologist position** at The Johns Hopkins University, Baltimore, Maryland, US in November 2021.
- **Mr Pranav Menon** (2016-20 Batch) was Awarded the **2021 Geoff Hewitt Prize** for outstanding performance, in M.Sc Advanced Chemical Engineering with Biotechnology at Imperial College London

Thank You!