



VOLUME 2
2020

A Sneak Peek into
2019

BIO-TRANSMIT

An Annual E-newsletter that Transmits the Biotechnology Department Activities of MIT

SYMBIOT 2019

“SymBiot-2019”, a national symposium in biotechnology was organized by the department of biotechnology, MIT, Manipal and the Institution of Engineers Biotechnology (IEBt) student chapter on 26th September 2019. There were three guest lectures followed by paper and poster presentations by nearly 80 participants from various institutes and universities including MAHE. Among them, more than 30 were outstation participants from institutes such as IIT Roorkee, Savitribai Phule Pune University, JSS college (Ooty), NMAM Institute of Technology (Nitte, Karnataka), VIT (Vellore), Bangalore University, D.G.P.G. College (C.S.J.M. University, Kanpur), P. A. College of Engineering (Karnataka), Basaveshwar engineering college, etc. This symposium was sponsored by the Eppendorf, Trishul Laboratories, and Durga Laboratories.



Message From HOD



DR. RAMANANDA BHAT M.

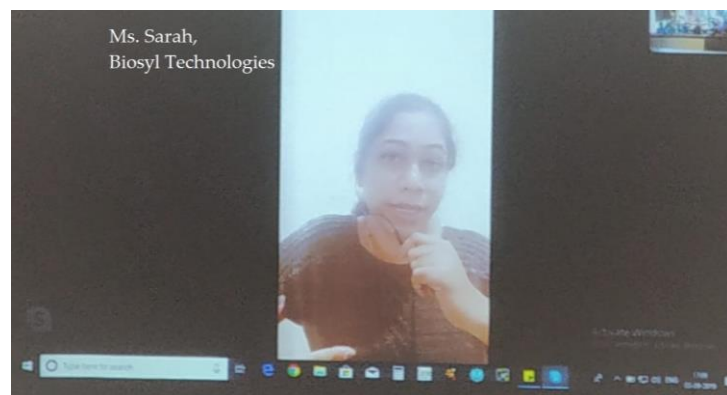
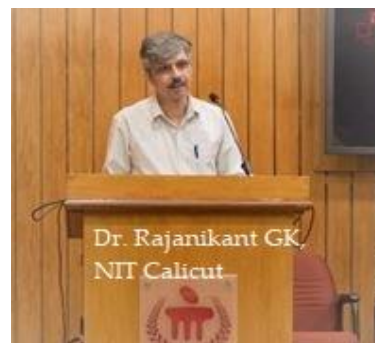
The year 2019 was impressive for our department with a range of activities and achievements. It was an overwhelming experience for me in my first year tenure as HOD.

We started with a series of guest lectures, followed by our signature annual symposium SymBiot. We launched our department e-newsletter “Bio-TransMIT” and also initiated the Alumnus-Student Virtual Interaction (ASVIN) Series.

I thank my team for their constant cooperation and support. We look forward for a fruitful year ahead.

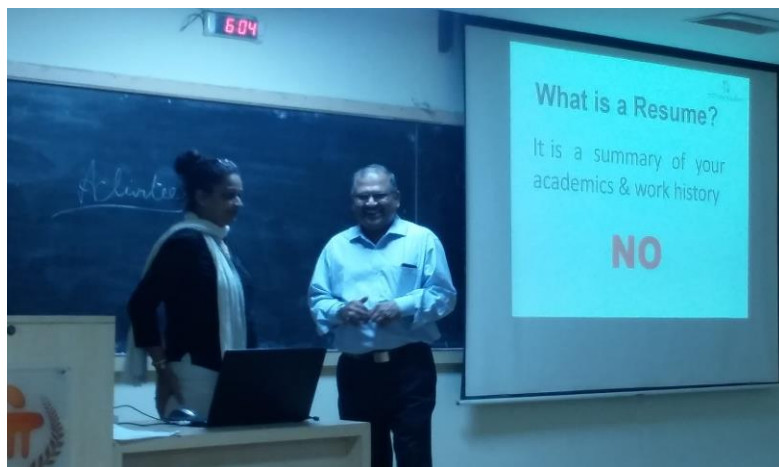
Guest Lectures

1. Dr. M. Ranjith (NITK, Surathkal), lecture on "Bacterial Motility".
2. Dr. G. Madhu (Cochin University of Science and Technology), lecture on "Cost effective methods for Biological treatment of wastewater".
3. Dr. Shashidhar (University of Agricultural Sciences, Shimoga), lecture on "Opportunities for Engineers in Agriculture".
4. Dr. Deepak (KLE Technological University), lecture on "Higher Studies in Australia and New Zealand".
5. Dr. Dipankar Nandi, IISc Bangalore, lecture on "T cell co-stimulation and anti-tumor therapy" during SYMBIOT'19.
6. Dr. Rajanikant GK, NIT, Calicut, lecture on "Drug Repurposing Strategies for Ischemic Stroke" during SYMBIOT'19.
7. Dr. Sudhakaran Prabakaran, University of Cambridge, UK, lecture on "Translational products encoded by novel ORFs may form protein-like structures and have biological functions" during SYMBIOT'19.
8. Entrepreneur talk (Virtual) by Ms. Sarah, Co-Founder of Biosyl Technologies.



Workshop

A workshop related to "Campus to Corporate" was conducted for Vth & VIth semester students on September 14, 2019 by Sojourn Planners, Mumbai.



Journal Publications

1. **Deblina Das, Ramananda Bhat M, Raja Selvaraj.** Review of inulinase production using solid-state fermentation. *Annals of Microbiology*, 2019, 69: 201-209
2. **Pinto J, Ahmad M, Guru BR.** Enhancing the efficacy of fluocinolone acetonide by encapsulating with PLGA nanoparticles and conjugating with linear PEG polymer. *J Biomater Sci Polym Ed*, 2019, 30: 1-24
3. **Priyodip P., Balaji S.** An in vitro chicken gut model for the assessment of phytase producing bacteria. *3 Biotech* (2019) 9:294
4. **Priyodip P., Balaji S.** A Preliminary Study on Probiotic Characteristics of *Sporosarcina* spp. for Poultry Applications. *Current Microbiology* (2019) 76:448–461
5. **Sneha P, Urmi S, Balaji S.** *In Silico* Insights into HIV-1 Vpu-Tetherin Interactions and Its Mutational Counterparts. *Med. Sci.* 2019, 7, 74; doi:10.3390/medsci7060074
6. **Mudgal J, Mudgal PP, Kinra M, Raval R.** Immunomodulatory role of chitosan-based nanoparticles and oligosaccharides in cyclophosphamide-treated mice. *Scandinavian journal of immunology*. 2019 Apr;89(4):e12749.
7. **Bhat P, Pawaskar GM, Raval R, Cord-Landwehr S, Moerschbacher B, Raval K.**(2019) Expression of *Bacillus licheniformis* chitin deacetylase in *E. coli* pLysS: Sustainable production, purification and characterization. *International journal of biological macromolecules*. 2019 15 June 131:1008-1013.
8. **Pawaskar GM, Pangannaya S, Raval K, Trivedi DR, Raval R.** Screening of chitin deacetylase producing microbes from marine source using a novel receptor on agar plate. *International journal of biological macromolecules*. 2019 15 June: 716-720.
9. **Tiwari DP, Chatterjee PM, Raval R, Kumar DA.** Whole genome sequencing of *Bacillus subtilis* Natto3 and cloning and expression of *ywtA*, a pivotal gene of poly- γ -glutamic acid biosynthesis operon. *Research Journal of Biotechnology* Jul;14:7.

10. Chatterjee PM, Tiwari DP, **Raval R**, Dubey AK. Coherent aspects of multifaceted eco-friendly biopolymer-polyglutamic acid from the microbes. *J Pure Appl Microbiol.* 2019;13(2):741-56.
11. Tiwari DP., Chatterjee PM, Uppadhyaya N, Bhaduri A, **Raval R** and Dubey AK. Comparative genome assessment of the two novel poly- γ -glutamic acid producing *Bacillus* strains, *J Pure Appl Microbiol.* 13 (2): 667-676.
12. **Narasimhan S.** Ultrastructural and histochemical analysis of the trichomes of *Cyclea peltata* (Menispermaceae). *Medicinal Plants - International Journal of Phytomedicines and Related Industries* 2019; 11: 363-367
13. **Naresh Kumar Mani, A. Prabhu,** S. K. Biswas, and S. Chakraborty. Fabricating Paper Based Devices Using Correction Pens. *Scientific Reports*, 2019, 9.
14. Balendu Sheker Giri, Asmita Sarowgi, Yeshaswi Kaushik, Anugunj Pal, Abhishek Jaiswal, Sangeeta Kumari, Harinder Singh, Ravi Sonwani, **Thivaharan Varadavenkatesan,** RS Singh, "Indoor potted plant based biofilter: performance evaluation and kinetics study", *Indian Journal of Experimental Biology*, 2019, 57 (11): 879-886
15. **Thivaharan Varadavenkatesan,** Elizaveta Lyubchik, Shraddha Pai, Arivalagan Pugazhendhi, Ramesh Vinayagam, Raja Selvaraj, "Photocatalytic degradation of Rhodamine B by zinc oxide nanoparticles synthesized using the leaf extract of *Cyanometra ramiflora*", *Journal of Photochemistry and Photobiology B: Biology*, 2019, 199: 111621
16. Niyam Dave, Raja Selvaraj, **Thivaharan Varadavenkatesan,** Ramesh Vinayagam, "A critical review on production of bioethanol from macroalgal biomass", *Algal Research*, 2019, 42: 101606
17. **Thivaharan Varadavenkatesan,** Ramesh Vinayagam, Raja Selvaraj, "Green synthesis and structural characterization of silver nanoparticles synthesized using the pod extract of *Clitoria ternatea* and its application towards dye degradation" *Materials Today: Proceedings*, 2019 (Accepted; <https://doi.org/10.1016/j.matpr.2019.04.216>)
18. **Thivaharan Varadavenkatesan,** Raja Selvaraj, Ramesh Vinayagam, "Green synthesis of silver nanoparticles using *Thunbergia grandiflora* flower extract and its catalytic action in reduction of Congo red dye" *Materials Today: Proceedings*, 2019 (Accepted; <https://doi.org/10.1016/j.matpr.2019.05.441>)
19. Sanjana Anchan, Shraddha Pai, H Sridevi, **Thivaharan Varadavenkatesan,** Ramesh Vinayagam, Raja Selvaraj, "Biogenic synthesis of ferric oxide nanoparticles using the leaf extract of *Peltophorum pterocarpum* and their catalytic dye degradation potential" *Biocatalysis and Agricultural Biotechnology*, 2019, 20: 101251
20. **Thivaharan Varadavenkatesan,** R Selvaraj, R Vinayagam, "Dye degradation and antibacterial activity of green synthesized silver nanoparticles using *Ipomoea digitata* Linn. flower extract", *International journal of environmental science and technology*, 2019, 16 (5): 2395-2404
21. Manohara Dhulappa Jalageri, Yashoda Malgar Puttaiahgowda, Ajithkumar Manayan Parambil, **Thivaharan Varadavenkatesan,** "Synthesis and fabrication of highly functionalized Jeffamine antimicrobial polymeric coating", *Polymers for Advanced Technologies*, 2019, 1-12
22. Shraddha Pai, H Sridevi, **Thivaharan Varadavenkatesan,** Ramesh Vinayagam, Raja Selvaraj, "Photocatalytic zinc oxide nanoparticles synthesis using *Peltophorum pterocarpum* leaf extract and their characterization", *Optik*, 2019, 185: 248-255
23. Akshatha Nagaraja, Yashoda Malgar Puttaiahgowda, Ananda Kulal, Ajithkumar Manayan Parambil, **Thivaharan Varadavenkatesan,** "Synthesis, Characterization, and Fabrication of Hydrophilic Antimicrobial Polymer Thin Film Coatings", *Macromolecular Research*, 2019, 27 (3): 301-309
24. Rangappa Santosh, **Priyodip Paul, Mukunthan K. Selvam,** Chenthattil Raril, Panchangam M. Krishna, Jamballi G. Manjunatha, Gundibasappa K. Nagaraj. One-Pot Synthesis of Pymido[4,5-d]pyrimidine Derivatives and Investigation of Their Antibacterial, Antioxidant, DNA-Binding and Voltammetric Characteristics. *Chemistry Select*, 2019, 990-996

25. Rangappa Santosh, Ashwini Prabhu, **Mukunthan K. Selvam**, Panchangam M. Krishna, Gundibasappa K. Nagaraja, Panchappady D. Rekha. Design, synthesis, and pharmacology of some oxadiazole and hydroxypyrazoline hybrids bearing thiazoyl scaffold: antiproliferative activity, molecular docking and DNA binding studies. *Heliyon*, 2019, 448-461
26. **Geethu M, Vrundha R**, Raja S, Raghu Chandrashekar H, **Divyashree M. S.** Improvement of the Production and Characterisation of Polyhydroxyalkanoate by *Bacillus endophyticus* Using Inexpensive Carbon Feedstock. *Journal of Polymers and the Environment*, 2019, 27: 917-928
27. Shanmugasundar S, **Kannan N**, Sundaravadivel E, Zsolt S, **Mukunthan KS**, Manokaran J, Narendranath J, Kamalakannan VP, Kavitha P, Prabhu V, Balasubramanian N. Study on the inflammatory response of PMMA/polystyrene/silica nanocomposite membranes for drug delivery and dental applications. *PLOS ONE*, 2019, 1-14
28. **Subbalaxmi Selvaraj, Ramachandra Murty Vytla**, G. S. Vijay, **Kannan Natarajan**. Modeling and optimization of tannase production with *Triphala* in packed bed reactor by response surface methodology, genetic algorithm, and artificial neural network. *3- Biotech*, 2019. 9:259.
29. **Subbalaxmi Selvaraj, Ramachandra Murty Vytla**. Solid-state fermentation of *Bacillus gottheilii* M2S2 in laboratory-scale packed bed reactor for tannase production. *Preparative Biochemistry and Biotechnology*, 2019. 48(9):799-807.

Book Chapters

1. Sandhya PD, **Balaji S.** "Computational Coarse Protein Modeling of HIV-1 Sequences Using Evolutionary Search Algorithm" In Shapshak et al. (eds.), *Global Virology III: Virology in the 21st Century*, pp 97-115
2. Sofia D, Prema KV, **Balaji S.** "A Combinatorial Computational Approach for Drug Discovery Against AIDS: Machine Learning and Proteochemometrics" In Shapshak et al. (eds.), *Global Virology III: Virology in the 21st Century*, pp 345-359
3. Balakrishnan R M, Uddandarao P, Raval K, **Raval R.** (2019). A perspective of advanced biosensors for environmental monitoring. In *Tools, Techniques and Protocols for Monitoring Environmental Contaminants*, Elsevier. pp. 19-51
4. **Naresh Kumar Mani, Anusha Prabhu**, Annamalai Senthil Kumar. Recent Updates on Inkjet-Printed Sensors. *Bioelectrochemical Interface Engineering*, Wiley USA 2019.

Conference Publication

1. Vijendra Prabhu et.al., "Action of He-Ne laser on wounded human skin fibroblast cells" *Proceedings of SPIE*, 11079, 110790T-1-6 (2019).

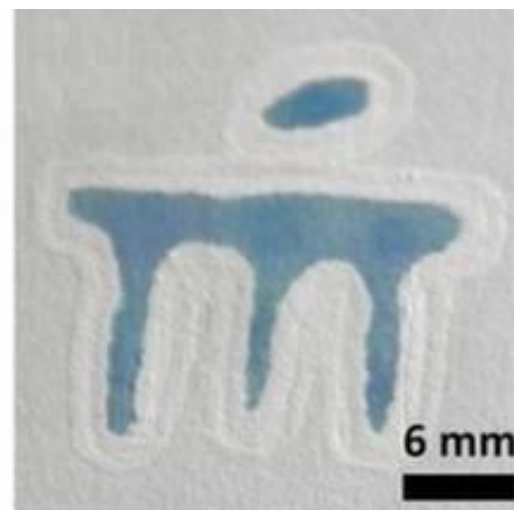
Student Achievements

1. Mr. Goutam Mohan Pawaskar (Research Scholar) received the direct-SRF award from CSIR-MHRD (Govt. of India).
2. Mr. Pradyumna Kulkarni completed an internship at University of Washington, USA.
3. Ms. Amanda Fernades has done an internship at Sultan Qaboos University, Oman.
4. Mr. Arun Somasundaram completed an internship at University of Wisconsin-Madison, USA.
5. Mr. Omkar Khandpekar has done an internship at Universiti Malaysia Sabah, Malaysia.
6. Ms. Linda Bobby Tholath completed an internship at Keck Graduate Institute, USA.
7. Mr. Pranav Menon has done Mitacs Globalink Research Internship at York University, Canada.

8. Ms. Aishwarya Udaya kumar has done an internship at National pharmaceutical industry, Muscat.
9. Ms. Shirlee Nongrum and Ms. Shreya Lodha have completed their 6th Semester in SUP Biotech, France.
(Outbound Semester Exchange)

Faculty Achievements

1. Dr. Ramananda Bhat received the KFIST-L1 research grant of ₹20 Lakhs from VGST, Karnataka.
2. Dr. Bharath Raja Guru received the Intra Mural Fund research grant of ₹6 Lakhs from MAHE, Manipal.
3. Dr. Ritu Raval received the Intra Mural Fund research grant of ₹3.45 Lakhs from MAHE, Manipal.
4. Dr. Vijendra Prabhu received the Dr. T.M.A Pai Gold Medal Award for Outstanding Research Publication.
5. Dr. Naresh K Mani filed a patent on “A Hydrophobic based Composition and Paper based System for Detection of Microbes” to Indian Patent Office (Filing no: 201941036676), date 12/09/2019
6. Dr. Ritu Raval received the best published paper award from Manipal Mc.Gill center for Infectious Diseases for the publication “Immunomodulatory role of chitosan-based nanoparticles and oligosaccharides in cyclophosphamide-treated mice”.
7. Dr. Naresh K Mani received Indian National Academy of Engineering (INAE) fellowship to carry out research in Microfluidics Laboratory at Indian Institute of Technology, Kharagpur.
8. Dr. Vijendra Prabhu received the International Travel Grant from Science and Research Board (SERB), Government of India to attend and present a paper in European Conferences on Biomedical Optics- 2019 held in Munich, Germany during 23-27 June 2019.
9. Dr. S. Balaji, edited a Book entitled “Global virology III: Virology in the 21st Century”, published by Springer 2019
10. A newspaper article on “Correction Pen as a diagnostic tool” was published in Hindu - Business Line. The research group involves our faculty Dr. Naresh K Mani.
(<https://www.thehindubusinessline.com/news/science/correction-pen-is-new-tool-to-make-cheap-diagnostic-kits/article26281924.ece>)



Activities Outside the Department

1. Dr. Balaji delivered a guest lecture in the National Conference on “Recent trends in life science” at Kailash women’s college, Salem, Tamilnadu on 22nd July, 2019
2. Dr. Thivaharan V. presented orally on “Synthesis, characterization and antibacterial properties of silver nanoparticles fabricated using the fruit extract of Lagerstroemia speciosa” at 3rd International Conference on Functional Materials and Chemical Engineering, Chulalongkorn University, Bangkok, Thailand, during December 15-17, 2019
3. Dr. Narasimhan presented orally on “Sustainable Practices of Plant Tissue Culture Model for Rural India- Strategic Lessons from Plant Tissue Culture Techniques” at 1st International Conference on Crafting Foundations for Sustainable and Inclusive Development (CRFSID-2019), Manipal University Dubai during February 22-23, 2019
4. Dr. Ravindranath presented orally on "Subtractive Resistomics approach to identify drug targets in MDR Neisseria gonorrhoeae" at Interdisciplinary Conference on Healthcare and Technical Research – (ICHTR 2019), Mangalore, organized by Manipal Academy of Higher Education Student Research Forum (MAHE-SRF) during October 29-31, 2019

IAESTE/AIESEC Interns

1. Ms. Mafalda Moreira (University of Lisbon, Portugal) was supervised by Dr. Balaji on “Optimization of print parameters in 3D-printed PLA samples”.
2. Mr. Dissanayake Mudiyansele Panduka Kapisa Bandara Dissanayake (University of Edinburgh Napier, Scotland) was supervised by Dr. Subbalaxmi on “Process optimization of Exopolysaccharide production under submerged fermentation”.
3. Ms. Natalia Markowiak (Poland) and Ms. Katje Fritschle (Germany) were supervised by Dr. Mukunthan.
4. Ms. Jolanta (Poland) was supervised by Dr. Ritu Raval.
5. Mr. Onat Buğra (Yeditepe University, Istanbul, Turkey) and Ms. Reice Kerr (University of Glasgow) were supervised by Dr. Narasimhan.
6. Ms. Vanja Radenkovic (Serbia) was supervised by Mrs. Vrunda.

Alumni Corner

This year, we have started the Alumnus-Student Virtual Interaction (ASVIN) Series in order to connect our distinguished alumni with the current students.

1. Alumni interaction over Skype by Ms. Kanupriya Daga (Batch of 2012-2016), Process Engineer, Hyde Engg., Hyderabad.



2. Alumni interaction over Skype by Ms. Sujata Ravi (Batch of 2005-2009), Senior Scientist, PsiOxus Therapeutics Limited, UK.

