

Department of Biochemical Engineering and Biotechnology
DRC Meeting No. 6 (2022-2023)

The sixth meeting of the Departmental Research Committee for the academic session 2022-2023 (No.6/2022-23) was held on 17th July 2023 in the Committee Room of the Department at 11 A.M.

The following members were present:

Prof. Prashant Mishra (Chairperson)
Prof. Ritu Kulshreshtha
Prof. Shilpi Sharma
Prof. Preeti Srivastava
Prof. Shaikh Z. Ahammad
Prof. Kumari Priti Sinha

1. Confirmation of the minutes of the Meeting No. 5/2022-23 held on 11th April 2023.
The minutes were confirmed as circulated.
2. Matters arising from the minutes of Meeting No. 5/2022-23.
None.
3. Synopsis of students:
 - a. The Committee discussed and based on the recommendation of SRC, approved the synopsis of the PhD thesis titled 'Azurin and its derivatives for cancer therapy and detection' submitted by Ritu Bharadwaj (2016 BEZ 8007) (Supervisor: Prashant Mishra). The Committee also approved the panel of Examiners and authorised the Chairperson to forward the same to Dean (Academics).
 - b. The Committee discussed and based on the recommendation of SRC, approved the synopsis of the PhD thesis titled 'Rational design and molecular engineering of synthetic receptors for biomarker-based pathogen detection' submitted by Soumya Rajpal (2017BEZ 8291) (Supervisor: Prashant Mishra). The Committee also approved the panel of Examiners and authorised the Chairperson to forward the same to Dean (Academics).
 - c. The Committee discussed and based on the recommendation of SRC, approved the synopsis of the PhD thesis titled 'Elucidation of the Role of Neuronal Differentiation Factors belonging to the NeuroD family in glioblastoma' submitted by Anirban Jana (2016 BEZ 8004) (Supervisor: Prof. Ritu Kulshreshtha). The Committee also approved the panel of Examiners and authorised the Chairperson to forward the same to Dean (Academics).
 - d. The Committee discussed and based on the recommendation of SRC, approved the synopsis of the PhD thesis titled 'miRNA therapy for Glioblastoma treatment' submitted by Indranil Mondal (2017BEZ8286) (Supervisor: Prof. Ritu Kulshreshtha). The

Committee also approved the panel of Examiners and authorised the Chairperson to forward the same to Dean (Academics).

- e. The Committee discussed and based on the recommendation of SRC, approved the synopsis of the PhD thesis titled ‘Metabolic engineering of *Bacillus subtilis* for xylose utilization and production of 2,3-butanediol and D-lactic acid’ submitted by Ngangom Pravina Devi (2016BEZ8008) (Supervisor: Prof. Ashish Misra). The Committee also approved the panel of Examiners and authorised the Chairperson to forward the same to Dean (Academics).
- f. The Committee discussed and based on the recommendation of SRC, approved the synopsis of the MS R thesis titled ‘Oxygen demand and PAOX1 induction of *Komagataella phaffii* using formate instead of methanol’ submitted by Nabamita Nandi (2020BEY7516) (Supervisor: Prof. Atul Narang). The Committee also approved the panel of Examiners and authorised the Chairperson to forward the same to Dean (Academics).
- g. The Committee discussed and based on the recommendation of SRC, approved the synopsis of the MS R thesis titled “Identification and characterization of a bacterial hemiterpene synthase” submitted by J S Sharad (2019 BEY7512) (Supervisor: Prof. Ashish Misra). The Committee also approved the panel of Examiners and authorised the Chairperson to forward the same to Dean (Academics).
- h. The Committee discussed and based on the recommendation of SRC, approved the synopsis of the MS R thesis titled ‘Development of genome engineering tools for *Gordonia* sp. IITR100’ submitted by Shreyoshi Karmakar (2021BEY7568) (Supervisor: Preeti Srivastava). The Committee also approved the panel of Examiners and authorised the Chairperson to forward the same to Dean (Academics).
- i. The Committee discussed and based on the recommendation of SRC, approved the synopsis of the MS R thesis titled ‘Development of an accelerostat—a bioreactor for rapid acquisition of steady state data’ submitted by Anshuman Singh Yadav (2021BEY7565) (Supervisor: Prof. Atul Narang). The Committee also approved the panel of Examiners and authorised the Chairperson to forward the same to Dean (Academics).

4. Student requests

- a. Request of Archana V (2022BEY7568) for conversion from MS (R) to PhD Degree programme was discussed and based on her eligibility, and recommendation of her supervisor, Committee recommended conversion her MS (R) to PhD Degree programme under the same supervisor (Prof. Preeti Srivastava).
- b. Request of Qazi Noorul Mateen for one month extension for submission of MSR thesis (Supervisor: Prof. Ishaan Gupta) was considered and approved. Student was advised to submit his MS R thesis within one month of the next semester 2023-2024.

- c. Request of Rashi Tyagi (2020BEZ 8525) to avail RSTA award to attend FEMS 2023 conference from 9-13 July and Ex-India leave from 8-15 July, 2023 for the same (Supervisor: Prof. Shilpi Sharma). The matter was discussed and the Committee approved the request.
- d. Request of Salila Pradhan (2020BEZ 8522) to avail RSTA award to attend FEMS 2023 conference from 9-13 July and Ex-India leave from 8-15 July, 2023 for the same (Supervisor: Prof. Shilpi Sharma). The matter was discussed and the Committee approved the request.
- e. Request of T Seyad Shefrin N (2018BEZ8440) to avail RSTA award to attend EuChems CompChem 2023 from 27-31 Aug 2023 and Ex-India leave to attend the same (Supervisor: Prof. D. Sundar). The matter was discussed and the Committee approved the request.
- f. Request of Deep Chandra Joshi (2018 BEZ 8240) to attend 'ISP 25' conference from 21 May to 27th May, 2023 and Ex-India leave to attend the same (Prof. T.R. Sreekrishnan). The matter was discussed and the Committee approved the request.
- g. Request of Soumya Sahai Saxena (2021BEZ 8009) for extension of research stay at NCCS for two months (Supervisor: Prof. Shilpi Sharma) from 21st June to 20th August 2023 with Institute fellowship was discussed and the Committee approved the request.
- h. Ex-India leave for Rashi Tyagi for availing a 6 months leave to visit Germany (1st October 2023 to 31st March 2024) with continuation of fellowship was discussed and the Committee approved the request.
- i. Request of Rahul Gupta to visit Sorbonne University for internship under SU student mobility 2023 scheme for three months (16 Oct, 2023-15th Jan 2024) and to avail Ex-India leave for the same was considered and the Committee approved the request (Supervisor Prof. Ritu Kulshreshtha).
- j. Request of Vipul Kumar (2018BEZ7509) for extension of Institute fellowship after PhD thesis submission till July 20, 2023 (up to completion of 5 Years) was discussed and the Committee approved the request as per the Institute rules.

5. Ph.D. and MS (R) Projects for approval

The following projects were discussed for PhD and MSR project allotment:

- a. "Epitope imprinting to design artificial antibodies for the detection of viruses" (Prof. Prashant Mishra) [PhD project]
- b. "Development of Lab-on-a-chip integrated DNA extraction and LAMP-based detection of high-risk HPV genotypes" (Prof. Ravikrishnan Elangovan) [PhD project]
- c. "Test and Treat: Lab-on-a-chip liquid biopsy approached for guiding precision therapy in NSCLC." (Prof. Ravikrishnan Elangovan) [PhD project]

- d. "Artificial Intelligence-based microscopy image annotation for disease diagnosis" (Prof. Ravikrishnan Elangovan) [PhD or MSR project]
- e. "Multiplexed PCR system for simultaneous detection of infectious disease pathogens" (Prof. Ravikrishnan Elangovan) [PhD or MSR project]

The committee discussed and approved all the above projects.

6. Nominations received for UG/PG awards:

The following nominations were received:

- a. Anshul Budhreja (2020BEY7515), MSR student, for thesis entitled "Dissecting Lung Pathophysiologies with RNA-Seq Analysis using Multifunctional Utility" (nominated by Prof. Ishaan Gupta)
- b. Nomination of Samuel Anandshadrach (2018BB50060) M.Tech. student for BOSS award (nominated by Prof. Atul Narang).

The Committee discussed and approved the nomination of Samuel Anandshadrach (2018BB50060) for the BOSS award.

No nomination was received for FITT award.

7. PhD student progress reports:

The chairman informed that as per guidelines, the progress report of a Ph.D. students needs to be approved by the respective supervisor(s) on ERP portal with appropriate recommendation. In case of unsatisfactory performance of a student, recommendation of SRC is to be submitted. The committee authorised the Chairperson to forward the grades to Dean (Academics).

8. Resignation letter received from Ms. Pallavi Chakraborty (2020 BEZ 8520) Ph.D. Student of Prof Atul Narang was discussed and approved.

9. Matters for ratification

- a. Decision on ICCR and AARDO applications: The Decision of selection committee on ICCR and AARDO applicants was ratified.
- b. Project proposals submitted by faculty members.

| S.No | Project Name | Investigator | Funding Agency |
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| 1 | Elucidating the impact of bodily fluids on microbiome on fabrics of relevance in health care sector | Prof. Shilpi Sharma (Mentor for Dr. Annapurna Bhattacharjee) | DST WISE |
| 2 | Development of sensitive magnetic nano-particle assisted rapid sandwich based lab-on-chip assay to monitor pharmacotherapy in | Prof. Ravikrishnan Elangovan Prof. Kumari Priti Sinha | ICMR |

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| | Parkinson's Disease and Schizophrenia | | |
| 3 | Utilising a systems approach to develop climate-smart agriculture | Prof. Brajesh Kumar Singh (Applicant) Prof. Shilpi Sharma (Indian Host) | VAIBHAV Scheme |
| 4. | Functional validation of the role of long non-coding RNAs (lncRNAs) in meningioma pathogenesis to reveal novel therapeutic targets and/or biomarkers with clinical significance | Prof. Ritu Kulshreshtha Prof. Vaishali Suri (AIIMS) | DBT |
| 5 | To study the role of dietary supplements in PM 2.5 associated breast cancer progression, resistance and metastasis | Prof. Ritu Kulshreshtha | ICMR |
| 6 | Deciphering molecular effectors involved in Androgen Receptor (AR)-driven modulation of glioblastoma (GBM) and its immune tumor microenvironment (iTME) | Prof. Ritu Kulshreshtha | CEFIPRA |
| 7 | Development of siRNA- loaded metal-organic frameworks (MOFs) nanocomposite for efficiently targeting lncRNA MIR210HG for glioblastoma treatment. | Prof. Ritu Kulshreshtha | CSIR (Aspire) |
| 8 | Machine learning-assisted holographic flow cytometry for label-free drug susceptibility testing of cancer cells | Prof. Supreet Bahga (PI) , Prof. Ritu Kulshreshtha, Dr. Shaurya Shriyam, Dr. Kedar Khare, Dr. Amit Gupta | DST RSF |
| 9 | Engineered Sustainable Nanomaterials for Wastewater Treatment; Disinfection, Antimicrobial Resistance (AMR) and Reuse | Prof. Shaikh Ziauddin Ahammad (Mentor of Dr. Afzal Ansari) | CSIR |
| 10 | Bio-Electro-Fenton based Advanced Oxidation process in Electro-Wetlands for Removal of Antibiotics and Antibiotic Resistance Genes from Urban Wastewater | Prof. Shaikh Ziauddin Ahammad (Mentor of Dr. Supriya Gupta) | CSIR |
| 11 | Development and validation of point-of-care cartridge-based isothermal nucleic acid amplification assay for viral load estimation of HCV. | Prof. Ravikrishnan Elangovan Prof. Vivekanandan Perumall | ICMR |
| 12 | Whole genome sequencing of Mycobacterium tuberculosis isolated from Extrapulmonary | Prof. Ravikrishnan Elangovan Prof. Vivekanandan Perumal | ICMR |

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| | tuberculosis patients and their association with drug resistance | | |
| 13 | AMR resistance gene detection using cartridge-based automated detection platform for culture-positive samples | Prof. Ravikrishnan Elangovan | BIRAC-NBM |
| 14 | Diagnostics for One Health and User Driven Solution for AMR (DOSA) UTI field Trial | Prof. Ravikrishnan Elangovan | Life-ARC |
| 15 | Harnessing the inherent potential of soil microbiome in inducing disease suppressiveness in arable land | Prof. Shilpi Sharma Prof. A Sharma (NCCS) | DBT |
| 16 | Automated cartridge-based molecular assay for the screening and confirmation of Tuberculosis infection from saliva samples in low-resource settings | Prof. Ravikrishnan Elangovan Prof. Vivekanandan Perumal | ICMR |
| 17 | Harnessing Methanotrophy in Paddy Fields: Employing microbes for Sustainable Crop Production and Climate Change Mitigation | Prof. Shilpi Sharma | DBT |

The above projects were circulated to members. As no comments were received, the projects were forwarded to the concerned authorities, and the item was ratified.

10. Any other matters, with permission of the Chair.

- a. Request of Prof. Shilpi Sharma to float Ph.D. project under UQIDAR with Institute fellowship was discussed and approved by the Committee subject to the maximum limit of individual faculty quota for Institute fellowship in the Department.
- b. Based on the Senate approval (215th Meeting of Senate dated 28.04.2021), Ph.D. students registered in 2017 and prior have been given one time extension for maximum six months beyond seven years. The committee advised that all such students should submit their synopsis within a month (if not submitted so far) and submit their thesis as soon as possible.

The meeting ended with a vote of thanks to the Chair.



Prashant Mishra
Chairperson, DRC

