

Department of Biochemical Engineering and Biotechnology
Minutes of DRC meeting
(DRC-08/2019-2020)

Dated: 9th June 2020

The eighth meeting of *Departmental Research Committee* (DRC) for the academic session 2019-2020 was held on 1st June 2020 at 11.00 am by video conferencing

The following members were present:

Prof. Shilpi Sharma (*Chairperson*)

Prof. T. R. Sreekrishnan

Prof. Atul Narang

Prof. D. Sundar

Prof. Ritu Kulshrestha

Prof. Preeti Srivastava

Prof. Rohan Jain

Prof R. Elangovan (*Convenor*)

1. To confirm the minutes of the 7th meeting of the DRC for the session 2019-2020 held on 27th April 2020

The minutes of the 7th meeting of DRC for the session 2019-2020 held on 27th April 2020 were confirmed as circulated.

2. To report the matters arising from minutes of Meeting No. 07/2019-2020

- a. DRC recommended an extension of three months for thesis submission for Ph.D. students who have submitted synopsis, considering the COVID situation (**Annexure 1; 07/2019-2020**).

- b. Prof. A. K. Srivastava to be the sole supervisor for Mr Sanjay Kumar supervisor as long as the thesis submission is done before September 2020 (**Annexure 1; 07/2019-2020**).

3. Modality for selection of students for departmental Ph.D. and MSR programmes for summer entry 2020

The committee decided the modality for Ph.D. selection process for Semester I, 2020–2021 (**Annexure 2**). Selection of M.S.(Res) was decided to be based solely on GATE score. The shortlisting criteria for the selection of Ph.D. and M.S.(Res) was finalised (**Annexure 3**). The list of projects available for the students to be admitted in Sem I, 2020-2021 have been compiled as **Annexure 4**. The instructions for Online Interview process has been compiled as **Annexure 5**.

Tentative dates were set for Ph.D. selection process:

Announcement of shortlisted candidates : **First week of July 2020**

First and second rounds of Interview : **Second/Third week of July 2020**

Declaration of results : **Third week of July 2020**

The announcement of shortlisted candidates for M.S.(Res) programme will be made tentatively in the **first week of July 2020**.

4. BTP/MTP evaluation mode for Semester II, 2019-20

Based on Senate approved evaluation modality for project courses in Audit or Credit mode the committee finalised the following for BTP/MTP evaluation:

The Audit/credit option for completing BTP/MTP may be decided by the students in consultation with their respective Supervisor. The submission of the thesis is compulsory (for both audit/credit options) and should be done online by July 04, 2020. The students opting for the Credit option have to make a final presentation before a Committee on July 13-14, 2020 for

evaluation. The exact schedule of the presentation will be informed to students in due course of time.

To pass in the BTP course (both for audit/credit options), the minimum pass grade is D grade or equivalent performance. To pass in the MTP course (both for audit/credit options), the minimum pass grade is C grade or equivalent performance.

5. Approval of new MSR projects

Committee approved the following projects by faculty members:

S.No.	Supervisor	Title of project
1	D. Sundar	Computational Genome Analysis
2	D. Sundar	Understanding the molecular mechanism of action of natural drugs
3	Z. Ahammad	Study on antibiotic resistance transmission and proliferation contributed by pharmaceutical industry and development of possible mitigation strategy
4	Z. Ahammad	Assessment of anaerobic digester performance in mitigating AMR proliferation during treatment of sewage

6. Applications for Ph.D. from ASEAN programme

Committee decided to deliberate on the single applicant in a special DRC meeting scheduled for 5th June 2020. (Action: PhD Coordinator)

7. To report the matters for ratification by the DRC

(a) Project proposals submitted by departmental faculty

S. No	Project Title	Project Investigator	Funding Agency
1	Development of rapid deployable diagnostics platform for COVID19	RE	Corporate
2	Overcoming the problem of high oxygen demand by using formate instead of methanol to induce the AOX1 promoter of <i>Scheffersomyces pfaffi</i> (<i>Pichia pastoris</i>).	AN	DBT
3	Elucidating the role of small-molecule effectors of gene regulation using metabolomics.	AN	DBT
4	Utilization of lignin for the production of value-added products by a metabolically engineered bacterium	PS	DBT
5	Development of low-cost single-cell RNA-sequencing device to study cellular heterogeneity and temporal dynamics upon hypoxic shock to a mammalian system	Pankaj Prasad, Mentors: IG & RK	DBT-RA

6	Characterization of lipid transporter network in <i>Candida auris</i> using CRISPR based genome engineering	Pranjali Agarwal, Mentor: IG	DBT-RA
7	Fabrication of chitosan oligosaccharide, nanoclay, and calcium phosphate based bionanocomposite scaffolds for bone regeneration	Ashwini Kumar, Mentor: PM	SERB NPDF
8	Design of array of DNA origami assembled plasmonic nanosensors for SERS based sensing of breast cancer biomarkers	Swati Tanwar, Mentor: PM	SERB NPDF
9	Role of microRNAs in the regulation of autophagy in breast cancer and its therapeutic implications	Monoj K. Das, Mentor: RK	DBT-RA
10	Identification of novel therapeutic targets to diagnose and treat gall bladder cancer using cell-sequencing	Pankaj Prasad, Mentor: IG	SERB NPDF
11	Characterization of the lipid transporter network using highthroughput CRISPR based screening in fungal pathogen causing Candidiasis	Pranjali Agarwal, Mentor: IG	SERB NPDF

The above projects were circulated to members, since no specific comments were received the projects were forwarded to Dean IRD and the item was ratified.

(b) Ex India leave application

Committee approved the request for Ex-India leave as detailed below:

Name	Visiting University	Duration
Shubham Dubey (2017BEZ7534)	University of Freiburg	11th Jan 2021-11th June 2021

8. Any other item with the permission of Chair
None

The meeting ended with thanks to all members.

Ravikrishnan E
Convenor, DRC

Distribution

DBEB faculty (by email)

Annexure 1

List of students who have submitted their synopsis and need extension for thesis submission

S. No.	Entry No.	Name	Supervisor	Synopsis date
1	2013BEZ8510	Vidhu S.	SN & RE	18/10/2019
2	2014BEZ7503	Ashish Lohar	TRS	03/12/2019
3	2014BEZ8002	Lovely	AKS	09/05/2019
4	2014BEZ8005	Sanjay Kumar	AKS	09/05/2019
5	2014BEZ8267	Vidhi Malik	DS	27/11/2019

Short-listing criteria for Admission to Ph.D. Program (Sem I, 2020-2021)

The candidates must have first class (60% or 6.0/10 CGPA) in all examinations starting from 10+2 up to the qualifying exam and they must meet the following criteria based on their qualifying exam degree:

Table 1. Minimum Qualification for Admission to full-time Ph.D. Programme

Qualifying exam	Acceptable majors	General Category	General Category (EWS)	OBC (Non-creamy layer)	SC/ST & PD
B. Tech/B.E.	Biochemical Engineering, Chemical Engineering, Biotechnology, Industrial Biotechnology, Bioinformatics, Environmental Engineering, Pharmaceutical Biotechnology	(i) B.Tech 70% or 7.0/10 CGPA (ii) Valid JRF or GATE score of min. 650 in Life Sciences or Biotechnology or Chemical Engg.	(i) B.Tech 70% or 7.0/10 CGPA (ii) Valid JRF or GATE score of min. 650 in Life Sciences or Biotechnology or Chemical Engg.	(i) B.Tech 70% or 7.0/10 CGPA (ii) Valid JRF or GATE score of min. 600 in Life Sciences or Biotechnology or Chemical Engg.	(i) B.Tech 65% or 6.5/10 CGPA (ii) Valid JRF or GATE score of min. 550 in Life Sciences or Biotechnology or Chemical Engg.
M. Tech / M.E / MS(R) or equivalent	Biochemical Engineering, Biological Engineering, Bioprocess Engineering, Bioscience and Bioengineering, Chemical Engineering, Chemical Technology, Biotechnology, Industrial Biotechnology, Bioinformatics, Environmental Engineering, Pharmaceutical Biotechnology, Chemical	(i) M.Tech 70% or 7.0/10 CGPA (ii) Gate score > 650 Or MTech 80% or 8.0/10 CGPA	(i) M.Tech 70% or 7.0/10 CGPA (ii) Gate score > 650 Or MTech 80% or 8.0/10 CGPA	(i) M.Tech 70% or 7.0/10 CGPA (ii) Gate score > 600 Or MTech 80% or 8.0/10 CGPA	(i) M.Tech 70% or 7.0/10 CGPA (ii) Gate score > 550 Or MTech 75% or 7.5/10 CGPA

	plant design, Computational biology				
M.Sc	Biochemistry, Biotechnology, Bioinformatics, Biophysics, Biosciences, Chemistry, Environmental Science, Environmental Studies Genetics, Life Sciences, Microbiology, Chemical and molecular biology, Industrial Biotechnology, Microbial biotechnology, Molecular biology & biotechnology, System biotechnology, Computational biology & bioinformatics	(i) M.Sc. 60% or 6.0/10 CGPA (ii) Valid JRF or GATE score of min. 650 in Life Sciences or Biotechnology or Chemical Engg	(i) M.Sc. 60% or 6.0/10 CGPA (ii) Valid JRF or GATE score of min. 650 in Life Sciences or Biotechnology or Chemical Engg	(i) M.Sc. 60% or 6.0/10 CGPA (ii) Valid JRF or GATE score of min. 600 in Life Sciences or Biotechnology or Chemical Engg	(i) M.Sc. 55% or CGPA 5.5/10 (ii) Valid JRF or GATE score of min. 550 in Life Sciences or Biotechnology or Chemical Engg.

For B.Tech graduates from IITs

For B.Techs from IITs graduating with a CGPA of 8.0 or above, the requirement of qualification through a national examination is waived off.

For students from Centrally Funded Technical Institutions (CFTI)

Requirement of qualification in GATE / National Exam is waived for the following categories of applicants from CFTIs:

- 1) Currently registered students in Centrally Funded Technical Institutes (CFTIs) pursuing B.Tech./B.E./ Integrated M. Tech/ Integrated M. Sc. programmes, who have completed 6 semesters or more, and have CGPA of 8.000 or above (on a 10 point scale). Such students must obtain a CGPA of 8.000 or above at the time of graduation, and before they formally register for the Ph.D. programme (80% aggregate marks, if marks is the primary mode of evaluation);
- 2) B.Tech./B.E./ Integrated M. Tech/ Integrated M. Sc. programmes of CFTIs (in the programmes marked under (1) with a final graduation CGPA of more than 8.000 (80% aggregate marks, if marks is the primary mode of evaluation);
- 3) M.Sc. graduates from IITs with CGPA 8.000 or above.

Minimum Qualifications for admission to Part-time and Sponsored (full-time) Ph.D. Programmes:

The following eligibility conditions apply for the Part-time and sponsored full-time programmes:

1. Only employees of Public Sector Undertakings or Government Departments or Research and Development Organizations or Private Industries (approved by Faculty Boards) are eligible for admission to these programmes.
2. The minimum full-time experience required *after* obtaining the qualifying degree and as on date of registration, is given below in Table 2:

Table 2: Experience required for admission to part-time Ph.D./ M.Tech./ M.S.(R) Programmes For admission to part-time programme	Qualifications	Work Experience (Post Qualification)
Ph.D.	M.E./M.Tech./M.S.(R)/M.D.or Equivalent	Nil
Ph.D.	B.E./B.Tech./M.Sc./M.A./M.B.A./MBBS or equivalent, from CFTIs/Central Universities	1 Year
Ph.D.	B.E./B.Tech./M.Sc./M.A./M.B.A./MBBS or equivalent, and working in IIT Delhi* (Project or Regular) *Through proper channel	1 Year
Ph.D.	B.E./B.Tech./M.Sc./M.A./MBA/MBBS or equivalent, from institutions other than CFTIs/Central Universities	2 Years

3. Minimum qualification for these candidates is the same as for full-time candidates (Table 1), except that the requirement of qualifying in a national examination is waived.
4. For part-time candidates from outside NCR (or at a radial distance of more than 50 km from IIT Delhi), there is a minimum residency requirement of 6 months. The Department may specify a higher residency requirement based on the courses recommended as well as the background.

Short-listing criteria for Admission to M.S.(Res) Program (Sem 1, 2020-2021)

The candidates must have first class in all examinations starting from 10+2 up to the qualifying exam and they must meet the following criteria based on their qualifying exam degree.

Qualifying exam	Acceptable majors	General Category	General Category (EWS)	OBC (Non-creamy layer)	SC/ST & PD
B. Tech.	Biochemical Engineering, Chemical Engineering, Biotechnology, Industrial Biotechnology, Bioinformatics, Environmental Engineering, Pharmaceutical Biotechnology	(i) B.Tech 70% or 7.0/10 CGPA (ii) GATE score of min. 650 in Life Sciences or Biotechnology or Chemical Engg.	(i) B.Tech 70% or 7.0/10 CGPA (ii) GATE score of min. 650 in Life Sciences or Biotechnology or Chemical Engg.	(i) B.Tech 70% or 7.0/10 CGPA (ii) GATE score of min. 600 in Life Sciences or Biotechnology or Chemical Engg	(i) B.Tech 65% or 6.5/10 CGPA (ii) GATE score of min. 550 in Life Sciences or Biotechnology or Chemical Engg
M.Sc.	Biochemistry, Biotechnology, Bioinformatics, Biophysics, Biosciences, Chemistry, Environmental Science, Environmental Studies Genetics, Life Sciences, Microbiology	i) M.Sc. 60% or 6.0/10 CGPA ii) GATE score of min. 650 in Life Sciences or Biotechnology or Chemical Engg.	i) M.Sc. 60% or 6.0/10 CGPA ii) GATE score of min. 650 in Life Sciences or Biotechnology or Chemical Engg.	i) M.Sc. 60% or 6.0/10 CGPA ii) GATE score of min. 600 in Life Sciences or Biotechnology or Chemical Engg.	i) M.Sc. 55% or 5.5/10 CGPA ii) GATE score of min. 550 in Life Sciences or Biotechnology or Chemical Engg.

For B.Tech graduates from IITs

For B.Techs from IITs graduating with a CGPA of 8.0 or above, the requirement of qualification through a national examination is waived off.

For students from Centrally Funded Technical Institutions (CFTI)

Requirement of qualification in GATE / National Exam is waived for the following categories of applicants from CFTIs:

- 1) Currently registered students in Centrally Funded Technical Institutes (CFTIs) pursuing B.Tech./B.E./ Integrated M. Sc. programmes, who have completed 6 semesters or more, and have CGPA of 8.000 or above (on a 10 point scale). Such students must obtain a CGPA of 8.000 or above

at the time of graduation, and before they formally register for the MSR. programme (80% aggregate marks, if marks is the primary mode of evaluation);

2) B.Tech./B.E./Integrated M. Sc. programmes of CFTIs (in the programmes marked under (1) with a final graduation CGPA of more than 8.000 (80% aggregate marks, if marks is the primary mode of evaluation);

3) M.Sc. graduates from IITs with CGPA 8.

Annexure 4a

Ph.D. topics open for the current round of selections (Sem I, 2020-2021)

Faculty	No. of project floated	No. of open positions with faculty	Project number and title
Atul Narang	2	2	Project 1: Kinetics of recombinant protein synthesis on mixtures of carbon sources in <i>Komagataella phaffi</i>
			Project 2: Kinetics of ethanol production in <i>Pichia stipitis</i> .
Ashish Misra	1	1	Project 3: Experimental and computational techniques for metabolic analysis and engineering of microbes
Ishaan Gupta	3	2	Project 4: DADI: Deciphering Allelic Dosage Imbalance associated with genomic variation
			Project 5: FailureOme: Dissecting molecular mechanism of human organ degeneration during Aging through high precision genomics
			Project 6: LoCoGen: Development of Low Cost single cell and single molecule Genomics
Lucinda E. Doyle	2	1	Project 7: Electroactive India: profiling electrochemically-active microorganisms from across the subcontinent
			Project 8: Investigating the relationship between electroactivity and viruses in <i>Shewanella oneidensis</i>
Prashant Mishra	4	2	Project 9: Carbon nanodots for anticancer drug delivery and bioimaging
			Project 10: Fabrication of bioactive peptide loaded multifunctional mesoporous silica nanoparticles for cancer treatment
			Project 22: Engineered antibacterial nanomaterial based hydrogel scaffold for chronic wound healing
			Project 23: Biomarker based noninvasive method for detection of oral cancer using nanosensor.
Preeti Srivastava	2	2	Project 11: Enhanced biodesulfurization through enzyme co-localisation in bacterial microcompartments
			Project 12: Deciphering the mechanism of regulation of the <i>dsz</i> operon for biodesulfurization of organosulfurs
Rohan Jain	2	1	Project 13: Development of algae based slow release fertilizer
			Project 14: Development of siderophores immobilized magnetic material for the recovery of germanium from industrial wastewater and solid waste
Ritu Kulshreshtha	1	1	Project 15: Investigating the role of non-coding RNAs in meningioma pathogenesis
Shilpi Sharma	1	1	Project 16: Designing a synthetic microbial community for biocontrol of pathogen
T R Sreekrishnan	1	1	Project 17: AD doctor: Development of tools to assess health of anaerobic digester (AD)

Sk. Ziauddin Ahammad	4	2	Project 18: Development of IoT enabled system for water quality surveillance in water bodies
			Project 19: Understanding the auto-healing capability of Ganga river (in view of the reduction efficacy of AMR burden)
			Project 20: Study on antibiotic resistance transmission and proliferation contributed by pharmaceutical industry and development of possible mitigation strategy
			Project 21: Assessment of anaerobic digester performance in mitigating AMR proliferation during treatment of sewage
Total	23	16	

Annexure 4b

M.S. (Res) topics open for the current round of selections (Sem I, 2020-2021)

Faculty	No. of project floated	No. of open positions with faculty	Project number and title
Atul Narang	1	1	Project 1: Catabolite repression in continuous cultures of <i>Escherichia coli</i> growing on a mixture of glucose + lactose
Ashish Misra	1	1	Project 2: Experimental and computational techniques for metabolic analysis and engineering of microbes
Ishaan Gupta	3	2	Project 3: Optimize the isolation of non-membrane bound organelles: Assemblysomes
			Project 4: Optimize the carboxylated magnetic bead based protocols for inexpensive purification of nucleic acids and proteins
			Project 5: Development of in-house kit for inexpensive DNA sequencing
Lucinda E. Doyle	1	1	Project 6: Electroactive India: profiling electrochemically-active microorganisms from across the subcontinent
Prashant Mishra	2	2	Project 7: Engineered antibacterial nanomaterial based hydrogel scaffold for chronic wound healing
			Project 8: Biomarker based noninvasive method for detection of oral cancer using nanosensor.
Preeti Srivastava	2	2	Project 9: Spatial localization of biodesulfurization enzymes in <i>Gordonia</i> sp. ITTR100
			Project 10: Development of genome editing tools for <i>Gordonia</i>
Ravikrishnan Elangovan	3	2	Project 11: Liquid Biopsy: Exosome based diagnostics for lung cancer
			Project 12: Optimization of light sheet microscopy for large clinical specimen analysis
			Project 13: Molecular source tracking of AMR pathogens based on Whole Genome Sequencing
Rohan Jain	2	1	Project 14: Development of algae based slow release fertilizer
			Project 15: Identification of siderophores that can bind to rare earth elements using DFT calculations
Shilpi Sharma	3	2	Project 16: Transfer of microbial load from fabric to other surfaces
			Project 17: Bioremediation of heavy metals from indigenous strains
			Project 18: Soil metabolome as indicator of soil health
D Sundar	2	1	Project 19: Computational Genome Analysis
			Project 20: Understanding the molecular mechanism

			of action of natural drugs
Sk. Ziauddin Ahammad	3	2	Project 21: Study on antibiotic resistance transmission and proliferation contributed by pharmaceutical industry and development of possible mitigation strategy
			Project 22: Assessment of anaerobic digester performance in mitigating AMR proliferation during treatment of sewage
			Project 23: Understanding the auto-healing capability of Ganga river (in view of the reduction efficacy of AMR burden)
Total	23	17	