

**Department of Biochemical Engineering and Biotechnology**  
**Minutes of DRC meeting**  
(DRC-3/2020-2021)

Dated: 19 Nov 2020

The third meeting of the *Departmental Research Committee* (DRC) for the academic session 2020-2021 was held on 18 Nov 2020 at 3 PM by video conferencing.

The following members were present:

Prof. Shilpi Sharma (*Chairperson & Acting Convenor*)

Prof. T. R. Sreekrishnan

Prof. D. Sundar

Prof. Ritu Kulshrestha

Prof. Preeti Srivastava

Prof. Rohan Jain

1. To confirm the minutes of the 2nd meeting of the DRC for the session 2020-2021 held on 21<sup>st</sup> Oct 2020.

The minutes of the 2nd meeting of the DRC for the session 2020-2021 held on 21<sup>st</sup> Oct 2020 were confirmed as circulated.

2. To report the matters arising from minutes of Meeting No. 02/2020-2021

None

3. Planning of upcoming Ph.D. selection, Sem 2, 2020-2021

The committee decided the modality for Ph.D. selection process for Semester 2, 2020–2021 (**Annexure 1**). The shortlisting criteria for the selection was finalised (**Annexure 2**). The PhD Coordinator presented the details of applications received from P.G. section, and details of candidates shortlisted for 1<sup>st</sup> round of interview as per the eligibility criteria finalised by DRC (**Annexure 3**). The list of projects available for the students to be admitted in Sem 2, 2020-2021 have been compiled as **Annexure 4**. The instructions for Online Interview process has been compiled as **Annexure 5**.

*Schedule for Ph.D. selection process:*

Announcement of shortlisted candidates: Last week of Nov 2020

First and second rounds of Interview: 1<sup>st</sup> and 3<sup>rd</sup> Dec 2020

Declaration of results: Second week of Dec 2020

4. Approval of SRC for new Ph.D. students, Entry Sem I, 2020-2021

SRC was constituted for Ph.D. students, Entry Sem I, 2020-21 as per **Annexure 6**.

5. Allotment of MSR projects to new students, Entry Sem I, 2020-2021

MSR students of Entry Sem I, 2020-2021 were allotted topics as per **Annexure 7**. To accommodate the preferences of the students, two slots were additionally opened up for Prof A. Narang and Prof R. Kulshreshtha.

6. Modality for conducting Paper 1 of comprehensive exam in the current phase

The committee decided to conduct Paper 1 of comprehensive examination for doctoral students of the department in the afternoon of 21<sup>st</sup> Dec 2020 using online platform. The students will be required to take the examination with their camera on during the entire duration of the exam. Prof. I. Gupta and Prof. Z. Ahammad were assigned the duty of coordinating the question paper. Prof. P. Mishra, Prof. R. Elangovan and Prof. A. Misra were assigned the responsibility of conducting the exam.

7. Assignment of SRC members in place of Prof. AK Srivastava from doctoral students' SRC SRC members were assigned in place of superannuated faculty member for selected doctoral students as per **Annexure 8**.

8. Approval of Ph.D. projects by faculty members

S.No.	Project Title	PI
1	Asphaltene biodesulfurization and its application for bioremediation of crude oil	PS
2	Investigating the regulatory network of the key genes and non-coding RNAs in glioblastoma	RK
3	Investigating the role of long non-coding RNAs in meningioma pathogenesis	RK

The three projects proposed by faculty members were circulated to DRC members. As no comments were received, the projects were approved.

9. Applications for RETA

No applications were received from departmental Ph.D. students for RETA for Sem I, 2020-21

10. To report the matters for ratification by the DRC.

a. Project proposals submitted by departmental faculty

S.No	Project Name	PI	Funding Agency/Scheme
1	Development of automated liquid procuring cassette for in vitro diagnostics	Allanki Sai Swaroop under the supervision of Prof. R. Elangovan	ICMR Innovation fellowship
2	Investigating the dynamic interplay between chemical shuttles, metal oxides and electroactive microorganisms from the North East Region of India for application in bioelectrochemical devices	Prof. L. E. Doyle	DBT Initiative on Chemical Ecology of the North East Region (NER) of India
3	Therapeutic potential and mechanistic studies on anticancer activity of Citrus sp. essential oils against glioblastoma cells	Dr. Prakriti Nidhi (Mentor: Prof. Ritu Kulshrestha)	DBT-RA
4	Gelatin-aloë vera gel based bioactive nanocomposite construct as engineered bone graft	Dr. Ashwini Kumar (Mentor: Prof. Prashant Mishra)	DBT-RA
5	Economic production and validation of RT-LAMP enzymes in the diagnosis of commercially important Plant viruses	Allanki Sai Swaroop (Mentor: Prof. R. Elangovan)	DBT-RA

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.

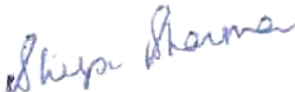
11. Matters for information

None

12. Any other item with the permission of Chair

- Application of foreign candidate for departmental PhD programme was discussed (**Annexure 9**)

The meeting ended with thanks to all members.

  
Shilpi Sharma  
Acting Convenor, DRC

**Distribution:** DBEB faculty (by email)

**Modality for selection of Ph.D. students (Sem II, 2020-2021)**

- a. List of Ph.D. projects along with the name of the supervisors will be made available on our departmental website (*Action – Ph.D. Coordinator*)
- b. The shortlisted students will be asked to give the preference of three projects among the floated ones.
- c. The selection process will be carried out in two phases of interview for applicants shortlisted as per eligibility criteria.
- d. For the first phase of the interview, a question bank will be prepared covering a broad range of topics. The questions will be categorized as “Common questions” including questions from both Biochemical Engineering and Biological Sciences, and “Specialised questions” for the two areas (*Action: Prof R. Kulshrestha & Prof A. Misra*).
- e. DRC members and other faculty members interested in taking Ph.D. students will be assigned a list of shortlisted students for first round of MS Teams interview. The applicants will be asked 8 questions from the question bank (4 from each category, viz. Common and Specialised). There will be equal weightage for the questions.
- f. Based on the responses, students will be shortlisted for the second round of interview to be conducted by MS Teams.
- g. The questions for second round of interview will be divided into four broad categories: one of the subjects as per their specialisation, bachelors / masters thesis (understanding and interpretation), research aptitude and their understanding of the proposed project. Equal weightage will be assigned to the four categories, and students will be ranked based on their performance.

**Short-listing criteria for Admission to Ph.D. Program (Sem II, 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 PhD 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 plant design, Computational biology	(i) MTech 80% or 8.0/10 CGPA	(i) MTech 80% or 8.0/10 CGPA	(i) MTech 80% or 8.0/10 CGPA	(i) MTech 75% or 7.5/10 CGPA
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.

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 (or any other programme of minimum 4 years, admission to which is on the basis of JEE), 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) Graduates of CFTIs (in the programmes marked under (i)) with a final graduation CGPA of more than 8.000 (80% aggregate marks, if marks is the primary mode of evaluation);
- 3) M.As and 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 (Table 2):

<b>Table 2. Experience required for admission to part-time Ph.D./ M.Tech./ M.S.(R) Programmes for admission to part-time programme</b>	<b>Qualifications</b>	<b>Work Experience (Post Qualification)</b>
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.

**Shortlisting of candidates for 1<sup>st</sup> round of interview towards selection for Ph.D. programme  
of DBEB**

Category	No. of applications received			No. of direct admission			No. of candidates shortlisted for stage 1 interview		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
General	44	98	142	-	-	-	19	48	67
OBC	30	25	55	-	-	-	22	15	37
EWS	10	12	22	-	-	-	3	7	10
SC	12	14	26	-	-	-	7	8	15
ST	4	3	7	-	-	-	1	0	1
PH	0	0	0	-	-	-	0	0	0
Total	100	152	252				52	78	130

## List of projects available for students of Entry Sem II, 2020-2021

Faculty	No. of projects floated	No. of free slots	Project number and title
A. Narang	1	1	<b>Project 1:</b> Area - Biochemical Engg. (topic to be announced)
A. Misra	1	1	<b>Project 2:</b> Area - Metabolic Engg (topic to be announced)
Prashant Mishra	2	1	<b>Project 3:</b> Fabrication of bioactive peptide loaded multifunctional mesoporous silica nanoparticles for cancer treatment
			<b>Project 4:</b> Biomarker based noninvasive method for detection of oral cancer using nanosensor.
P. Srivastava	2	1	<b>Project 5:</b> Asphaltene biodesulfurization and its application for bioremediation of crude oil
			<b>Project 6:</b> Deciphering the mechanism of regulation of the <i>dsz</i> operon for biodesulfurization of organosulfurs
R. Kulshreshtha	2	2	<b>Project 7:</b> Investigating the regulatory network of the key genes and non-coding RNAs in glioblastoma
			<b>Project 8:</b> Investigating the role of long non-coding RNAs in meningioma pathogenesis
R. Elangovan	2	2	<b>Project 9:</b> Molecular source tracking of AMR pathogens based on Whole Genome Sequencing
			<b>Project 10:</b> Optimization of light sheet microscopy for large clinical specimen analysis
<b>Total</b>	<b>10</b>	<b>8</b>	

**Annexure 6**

**SRC composition of Ph.D. students , Entry Sem I, 2020-2021**

<b>Name of student</b>	<b>Supervisor</b>	<b>Chairperson</b>	<b>Internal expert</b>	<b>External expert</b>
Abhilash Dasari 2020BEZ8510	I. Gupta	P. Srivastava	D. Sundar	S. Minocha, KSBS
Aratrika Ghosh 2020BEZ8512	R. Jain	L. E. Doyle	T. R. Sreekrishnan	B. J. Alappat, Civil
Asheemita Bagachi 2020BEZ8513	P. Srivastava	S. Sharma	R. Kulshreshtha	T. Dutta, Chem
Juwayria 2020BEZ8514	I. Gupta	D. Sundar	P. Srivastava	V. Perumal, KSBS
Khadeeja Parveen 2020BEZ8515	T. R. Sreekrishnan	A. Misra	Z. Ahammad	A. K. Saroha, Chemical
K. V. Supraja 2020BEZ8516	R. Jain	P. Srivastava	Z. Ahammad	A. Kumar, Civil
Mahenaz Haneef 2020BEZ8517	Z. Ahammad	A. Misra	T. R. Sreekrishnan	A. K. Nema, Civil
Monika Luthra 2020BEZ8518	L. E. Doyle	P. Srivastava	S. Sharma	P. Ingole, Chem
Nikita Deshwal 2020BEZ8519	Z. Ahammad	T. R. Sreekrishnan	R. Jain	A. Kumar, Civil
Palistha Tuladhar 2020BEZ8568	A. Misra	A. Narang	D. Sundar	J. Gomes, KSBS
Pallavi Chakraborty 2020BEZ8520	A. Narang	A. Misra	P. Srivastava	J. Gomes, KSBS
Preetha Ganguly 2020BEZ8521	P. Mishra	P. Srivastava	R. Kulshreshtha	S. Das, CARE
Rashi Tyagi 2020BEZ8525	S. Sharma	R. Jain	L. E. Doyle	P. Hariprasad, CRDT
Salila Pradhan 2020BEZ8522	S. Sharma	R. Kulshreshtha	P. Srivastava	P. Hariprasad, CRDT



**Allotment of topics and supervisors to MSR students (Entry Sem I, 2020-2021)**

<b>S.No</b>	<b>Name</b>	<b>Topic</b>	<b>Supervisor</b>
1	Anshul Budhraj 2020BEY7515	Optimize the isolation of non-membrane bound organelles: Assemblysomes	IG
2	Nabamita Nandi 2020BEY7516	Explore the use of formate to induce AOX1 promoter of <i>Komagataella phaff</i> ( <i>Pichia pastoris</i> )	AN
3	Nandita Fuloria 2020BEY7517	Identification and production of siderophores that can selectively and sensitively bind to rare earth elements	RJ
4	Nirmal S. Mahar 2020BEY7518	Assembly of Human Mitochondrial Genome	DS & IG
5	Rhythm Sardana 2020BEY7519	Catabolite repression in continuous cultures of <i>Escherichia coli</i> growing on a mixture of glucose + lactose	AN
6	Shubham Sharma 2020BEY7520	Engineered antibacterial nanomaterial based hydrogel scaffold for chronic wound healing	PM
7	Anuja Sharma 2020BEY7604	Investigating the role of non-coding RNAs in meningioma pathogenesis	RK
8	Qazi Noorul Mateen 2020BEY7605	Development of in-house kit for inexpensive DNA sequencing	IG

**Change in SRC for doctoral students due to superannuation of faculty member**

<b>Name of student</b>	<b>Supervisor</b>	<b>Chairperson</b>	<b>Internal expert</b>	<b>External expert</b>
Deepchandra Joshi 2018BEZ8240	T.R. Sreekrishnan	S. Sharma	Z. Ahammad	B. Alappat, Civil
Priyanka Dubey 2017BEZ8285	T.R. Sreekrishnan & R. Jain	P. Srivastava	Z. Ahammad	Arun Kumar, Civil
Deepak Sharma 2016BEZ8559	Z. Ahammad & T.R. Sreekrishnan	A. Misra	A. Narang	B. Alappat, Civil
Rishabh Shukla 2015BEZ8351	Z. Ahammad	R. Jain	T. R. Sreekrishnan	B. Alappat, Civil
Shashi Kumar 2015BEZ8358	T.R. Sreekrishnan & G P Agarwal	A. Narang	A. Misra	V. Buwa, Chem Engg