Department of Biochemical Engineering and Biotechnology

Minutes of the meeting of
Departmental Research Committee (DRC)
(DRC-06/2016-2017)

March 29, 2017

The sixth meeting of the *Departmental Research Committee* (DRC) for the academic session 2016-2017 was held on **Wednesday, March 29, 2017** at **12 noon** in the Committee Room (I-230) of the Department.

The following members were present:

Prof. T.R. Sreekrishnan (*Chairman*)
Prof. Saroj Mishra
Prof. A.K. Srivastava
Prof. Prashant Mishra
Dr. Shilpi Sharma
Dr. Ritu Kulshreshtha
Dr. Preeti Srivastava
Dr. Ravikrishnan Elangovan
Dr. Ziauddin Shaikh Ahammad
Dr. Ashish Misra
Dr. D. Sundar (*Convener*)

Item No. 1 - To confirm the minutes of the 5th meeting of the DRC for the session 2016-2017 (*DRC-05/2016-2017*) held on February 15, 2017.

The Minutes of the DRC meeting No. 05/2016-2017 were confirmed as circulated.

Item No. 2 - Matters arising out of the minutes of DRC-05/2016-2017.

None

Item No. 3 - Admissions to PhD and MSR Programs (2017-2018, 1st Semester).

The Chairman informed the Committee about the Institute Schedule for PG admissions for 1st Semester 2017-2018. The Committee decided that the written test/interview for admission to PhD/MSR programs in the Department would be conducted during May 15-16, 2017. The Committee further decided that the Coordinators for ensuing round of PhD and MSR admissions would be Dr. D. Sundar and Dr. Ritu Kulshreshtha, respectively. Prof. Saroj Mishra will coordinate the setting of question paper. The shortlisting criteria approved by the Committee for admission to PhD and MSR programs are given in **Annexures 1 and 2**.

Item No. 4 - To consider the projects floated by the departmental faculty for BTP and MTP.

The projects submitted by the faculty for BTP and MTP were discussed and approved for floating to the students **(Annexures 3 and 4)**. The Committee recommended that request for a particular project should not be entertained if the student has not discussed with the concerned faculty. It was further decided that the students should be advised to give their choice of three projects only after discussing them with respective faculty members, latest by April 21, 2017. Depending on the choices given by the students and the feedback received from faculty members, the students will be offered any one project of their choice. The allotment of projects will be taken up in the next DRC.

Item No. 5 - Scheduling the written PhD Comprehensive Exam in April 2017.

It was decided to conduct the Ph.D Written Comprehensive Examination on April 17 and 18, 2017 for Paper 1 and Paper 2 respectively. Prof. A.K. Srivastava and Dr. Preeti Srivastava will coordinate the setting of question papers and conduct the examination.

Item No. 6 - A request received from PhD student Ms. Anveshika Aditya (2011BEZ8423) for award of Assistantship beyond the 5-year period.

The Committee discussed and recommended the application received from Ms. Anveshika Aditya to be forwarded to Dean (Academics) for favorable consideration.

(Action: Chairman DRC to forward the letters to Dean - Academics)

Item No. 7 - Initiation of *DBEB Research Seminars*

The Committee welcomed the proposal of Dr. Ravikrishan Elangovan to intiate the *DBEB Research Seminars* that will have seminar presentations every week by the departmental faculty and senior research scholars. Since these are important component of our student's education and training, the Committee recommended that all the PhD and MSR students are required to attend the compulsorily attend the Seminars and actively participate in the discussion.

(Action: Dr. Ravi Elangovan)

Item No. 8 – To report the matters for ratification by the DRC.

The Committee ratified the approval accorded by the Chairman DRC or Head of the Department on the following projects proposals submitted by the Departmental Faculty:

Sl.	Project Title	Project Investigators	Funding Agency
1	Continuous pilot scale production of value added biodegradable polymers (PHB & derivatives) from low cost gaseous substrates (methane-Carbon dioxide-air)	AK Srivastava (PI) TR Sreekrishnan (Co-PI)	GAIL
2	Finding of a new RNA aptamer and mediated drug delivery method specific to prostrate cancer, a pioneer prostate cancer research approach in India	Prashant Mishra (PI) (on behalf of Dr. Garima Shrivastava)	DST (Scheme WOS-A)
3	Improvement of oil recovery through viscosity reduction of crude oil using recombinant microbe *Gordonia*	Preeti Srivastava (PI) Tapan Chaudhuri (Co-PI)	ONGC
4	Development of an affordable, automated and field deployable, point of care and contained system for rapid diagnosis of TB caused by *Mycobacterium tuberculosis*	Ravi Elangovan (PI) (was earlier submitted by Prof. S.E. Hasnain)	MHRD – IMPRINT
5	Development of cost effective and efficient polymer based nanocarriers for *in vitro* transfection of nucleic acids in mammalian cells	Ritu Kulshreshtha (PI) Veena Koul (Co-PI)	BIRAC – BIG
6	Ecotoxicological assessment of manure application in agriculture	Shilpi Sharma (PI)	MoEF
7	Mitigation of salinity stress by 'acclimatised microbiome'	Shilpi Sharma (PI) Anshuman Khardenavis & Atya Kapley (NEERI) (Co-PIs)	CSIR

Item No. 10 - Any other item with the permission of the Chair.

a) **Report on Comprehensive Examination and Approval of Research Plan of the PhD student Ms. Rabab Anjum (2015BEZ8352).**

The Plan of Work for PhD on the topic '*Scale up of production of shikimic acid (raw material for TAMIFLU) by plant cell cultures*' submitted by Ms. Rabab Anjum was discussed, and based on the recommendation of the SRC, it was approved.

(Action: Chairman DRC to forward the Form w/ enclosures to Dean - Academics)

b) Dual Degree Project Evaluation

The Committee decided the following time period for evaluation of the final MTP-2 projects:

Sl.	Qualifications	Deadline for submission of project report	Date of final project evaluation
1	Dual degree students who have registered for the course BED852	June 19, 2017	Between June 20-30, 2017
2	Dual degree students who have registered for the course BED854	July 18, 2017	Between July 19-28, 2017

It was further recommended that those students who are registered for the course BED852 and willing to appear in the final project evaluation during July 19-28, 2017, need to submit a written application to the MTP Coordinator duly forwarded by their research supervisors by April 05, 2017.

(Action: Dr. Shilpi Sharma to inform all the MTP students)

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

D. SUNDAR
DRC Convener

Distribution

All DRC members and other DBEB Faculty (by email)

Cc: DRC File

Annexure 1

Admission to PhD Program in Department of Biochemical Engineering and Biotechnology

Short-listing criteria (2017-2018 Semester 1)

The candidates must have first class (60% or 6.75/10 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.

Qualifying exam	Acceptable majors	General Category	OBC (Non-creamy layer)	SC/ST & PD
B. Tech.	Biochemical Engineering, Chemical Engineering, Biotechnology, Industrial Biotechnology, Bioinformatics, Environmental Engineering, Pharmaceutical Biotechnology, Food Science and Engineering, Food Technology	(i) B.Tech 70% or 7.75/10 CGPA (ii) Valid JRF or GATE score of min. 600 in Life Sciences or Biotechnology or Chemical Engg.	(i) B.Tech 70% or 7.75/10 CGPA (ii) Valid JRF or GATE score of min. 550 in Life Sciences or Biotechnology or Chemical Engg	(i) B.Tech 65% or 7.25/10 CGPA (ii) Valid JRF or GATE score of min. 500 in Life Sciences or Biotechnology or Chemical Engg.
M. Tech./ M.S. (R)	Biochemical Engineering, Chemical Engineering, Biotechnology, Industrial Biotechnology, Bioinformatics, Environmental Engineering, Pharmaceutical Biotechnology, Food Science and Engineering, Food Technology	(i) M.Tech 65% or 7.25/10 CGPA (ii) GATE score not required	(i) M.Tech 65% or 7.25/10 CGPA (ii) GATE score not required	(i) M.Tech 60% or 6.75/10 CGPA (ii) GATE score not required
M. Sc.	Biochemistry, Biotechnology, Bioinformatics, Biophysics, Biosciences, Chemistry, Environmental Science, Genetics, Life Sciences, Microbiology	(i) M.Sc. 60% or 6.75/10 CGPA (ii) GATE score 600 or valid JRF	(i) M.Sc. 60% or 6.75/10 CGPA (ii) GATE score 550 or valid JRF	(i) M.Sc. 55% or CGPA 6.25/10 (ii) GATE score 500 or valid JRF

For B.Tech graduates from IITs

In respect of 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)

Students from CFTIs (Centrally Funded Technical Institutions - IIT's, NIT's, IIIT's, etc) having CPI/CGPA 7.00 (at 10.00 scale) at the end of 3rd year are also eligible for admission to PhD. The requirement of qualification through a national examination is waived off.

Experience required for admission to part-time PhD. Program in DBEB

Sl.	Qualifications	Work Experience (post qualification)
1	M.E./M.Tech./M.S.(R) or Equivalent	Nil
2	B.E./B.Tech./M.Sc. or equivalent, from CFTIs/Central Universities	1 year
3	B.E./B.Tech./M.Sc. or equivalent, and working in IIT Delhi* (Project or Regular) * *Through proper channel*	1 year
4	B.E./B.Tech./M.Sc. or equivalent, from institutions other than CFTIs/Central Universities	2 years

- The minimum qualification for these candidates is the same as for full-time candidates, except that the requirement for qualifying in a national examination is waived off.

Annexure 2

Admission to MSR Program in Department of Biochemical Engineering and Biotechnology

Short-listing criteria (2017-2018 Semester 1)

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	OBC (Non-creamy layer)	SC/ST & PD
B. Tech.	Biochemical Engineering, Chemical Engineering, Biotechnology, Industrial Biotechnology, Bioinformatics, Environmental Engineering, Pharmaceutical Biotechnology, Food Science and Engineering, Food Technology	(i) B.Tech 70% or 7.75/10 CGPA (ii) Valid JRF or GATE score of min. 600 in Life Sciences or Biotechnology or Chemical Engg.	(i) B.Tech 70% or 7.75/10 CGPA (ii) Valid JRF or GATE score of min. 550 in Life Sciences or Biotechnology or Chemical Engg	(i) B.Tech 65% or 7.1/10 CGPA (ii) Valid JRF or GATE score of min. 550 in Life Sciences or Biotechnology or Chemical Engg.
M.Sc.	Biochemistry, Biotechnology, Bioinformatics, Biophysics, Biosciences, Chemistry, Environmental Science, Genetics, Life Sciences, Microbiology	(i) M.Sc. 60% or 6.75/10 CGPA (ii) GATE score 600	(i) M.Sc. 60% or 6.75/10 CGPA (ii) GATE score 550	(i) M.Sc. 55% or CGPA 6.25/10 (ii) GATE score 500

Annexure 3

Projects for BTech students (BTP-1)

Sl.	Project Title	Faculty
1	To develop newer recovery and purification protocols for PHB	AKS
2	To develop newer production protocols for PHB derivatives.	AKS
3	Characterization of pyruvate decarboxylase from ethanologenic organisms	AM
4	Replication and expression of broad host range plasmids in gram negative bacteria	AM
5	Affinity capture and detection using a PDMS device	AM
6	Analysis of a mathematical model of the mel and lac operons of *E.coli*.	AN
7	Kinetics of ethanol production by *Pichia stipitis*.	AN
8	Extractive fermentation of 6-pentyl pyrone by *Trichoderma atroviride.*	AN
9	Investigation of potential action mechanism of herbal drugs	DS
10	Computational analysis of genomic big data	DS
11	Preparation of magnetic nanoparticles for purification of amidase	PM
12	Effect of microwave radiations on enzymatic activity of *Ensifer meliloti* amidase	PM
13	Preparation of drug loaded liposomes for liposomal delivery	PM
14	Cloning and expression of the gene encoding for a transcriptional regulator	PS
15	Localization of FtsZ-GFP in *Rhodococcus erythropolis*	PS
16	Characterization of a Fructosyl amino acid oxidase mutant	PS
17	Torque measurement in rotary molecular motors	RE
18	Rapid and specific digestion of genomic DNA with rare endonucleases	RE
19	High through put screening assays for enzymes	RE
20	Design and construction of miRNA sponges	RK
21	Design of HIF biosensors	RK
22	Purification and characterization of fructosyl transferase from *Microbacterium paraoxydans* (2 students)	SM
23	Evaluation of adsorbants for enrichment of fructo-oligosaccharides from sugar reaction mixtures	SM
24	Computer simulation of biological transport models	SN
25	Computer simulation of ATP synthesis	SN
26	Computer simulation of photosynthesis	SN
27	Studies on crystallization of proteins	SN
28	Approaches to crystallization of membrane proteins	SN
29	Development of nucleic acid markers for antibiotic resistance (two students)	SS
30	Development of nucleic acid markers for bacterial load on fabrics	SS
31	A mathematical model for the transport and biodegradation of pollutants in natural water bodies.	TRS
32	Transport limitations in biofilms	TRS
33	Effect of toxic compounds on biofilm formation and on well-developed biofilms.	TRS
34	Surface specificity for attachment by methanogenic bacteria	TRS
35	Effect of additives on enzymatic hydrolysis of lignolellulosic substrates.	VSB
36	Effect of cross-linking reagents on activity of cellulolytic CLEA.	VSB
37	Evaluation of antimicrobial effect of the common spices	ZAS
38	Impact of Bisphenol A on antibiotic resistance proliferation	ZAS

Annexure 4

Projects for Dual Degree students (MTP)

Sl.	Project Title	Faculty
1	To study mass cultivation of callus of *Azadirachta indica* in a newly developed bioreactor design.	AKS
2	To study mass propagation of hairy roots of *A. annua* for secondary metabolite production in nutrient sprinkle bioreactor.	AKS
3	To study mass propagation of hairy roots of *C. roseus* for secondary metabolite production in nutrient sprinkle bioreactor.	AKS
4	Mass production of medical grade biopolymers in two stage bioreactor.	AKS
5	Expression of reporter gene to check stability of shuttle vectors in *Bacillus* species	AM
6	Use of auxotrophies for culturing bacteria	AM
7	Kinetics of recombinant protein synthesis by *Pichia pastoris.*	AN
8	Analysis of a mathematical model of the mel and lac operons of *E.coli*.	AN
9	Kinetics of ethanol production by *Pichia stipitis*.	AN
10	Extractive fermentation of 6-pentyl pyrone by *Trichoderma atroviride.*	AN
11	Investigation of potential action mechanism of herbal drugs	DS
12	Computational analysis of genomic big data	DS
13	Bioconversion of D-amino acid amidase to respective acids using *Ensifer meliloti* amidase	PM
14	Preparation of molecularly imprinted polymers for separation of pharmaceutical drugs	PM
15	Localization of partitioning proteins in *Rhodococcus erythropolis*	PS
16	Cloning and characterization of a promoter	PS
17	Cloning, expression and characterization of a transcriptional regulator	PS
18	Linearization of DNA molecules in nano channels	RE
19	Isolation of circulating miRNA	RE
20	Study the role of mediator subunit in cancer	RK
21	Study the hypoxia regulated miRNA in cancer	RK
22	Evaluating parameters affecting whole cell catalyzed synthesis of fructo-oligosaccharides.	SM
23	Developing a membrane/adsorption based process for separation of sugars from fructo-oligosaccharides	SM & GPA
24	Efficient decomposting of rice straw using microbial consortia	SM & SS (CRDT)
25	Biologically-inspired design of a quantum computer	SN
26	Studies on crystallization of proteins	SN
27	Approaches to crystallization of membrane proteins	SN
28	Effect of textile on its microbial load	SS
29	Identification of core microbiome in *Vigna*	SS
30	Anaerobic treatment using thermophilic methanogenesis	TRS
31	Effect of nitrogen on granulation of methanogenic bacteria	TRS
32	Performance of common effluent treatment plants (CETPs) of Delhi	TRS
33	Colour removal from waste waters using high cell density bioreactors.	TRS
34	Magnetic Combi-CLEAs of cellulase and xylanase - Synthesis and application.	VSB
35	Effect of microparticles on production of cellulolytic enzymes in *Trichoderma/Aspergillus.*	VSB
36	Treatment of sewage using high rate sponge reactor	ZAS
37	Evaluating the role of sewage treatment systems on antibiotic resistance proliferation	ZAS