



DEPARTMENT OF BIOCHEMISTRY & MOLECULAR BIOLOGY
SCHOOL OF BIOLOGICAL SCIENCES
CENTRAL UNIVERSITY OF KERALA
(Established under the Central Universities Act, 2009)
Website: www.cukerala.ac.in

CUK/SBS/BCMB/BOS/Minutes/Dec-2018

18-12-2018

Minutes of the meeting of Board of Studies in Biochemistry & Molecular Biology held on 18-12-2018 at 10.30 AM in Department of Biochemistry and Molecular Biology, Central University of Kerala, Periyar, Kasaragod.

Agenda:

1. Reporting the renaming of the M.Sc. program
2. Revision of syllabus
3. Updating the panel of question paper setters and evaluators
4. Framing model question paper
5. Any other item

Members attended the meeting:

- | | | |
|--------------------------------------|----|-----------------|
| 1. Prof. (Dr). Govinda Rao Duddukuri | -- | Chairperson |
| 2. Prof. (Dr). Annie Abraham | -- | External member |
| 3. Prof. (Dr). T. Rajamohn | -- | External member |
| 4. Prof. (Dr). Sathisha G J | -- | External Member |
| 5. Dr. K. Arunkumar | -- | Member |
| 6. Dr. Rajendra Pilankatta | -- | Member |
| 7. Dr. R. Aswati Nair | -- | Member |



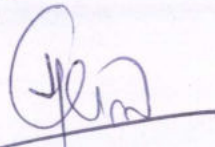


Resolutions:

1. The chairperson has welcomed the BOS committee members and thanked the members for their consent and endorsement for renaming the M.Sc. Biochemistry and Molecular Biology program as M.Sc. Biochemistry program and informed the members that the same was approved by Academic council held on 12-12-2018. And this would come into effect for students admitted in 2018-19 batch.
2. The chairperson has explained the scheme of present syllabus of M.Sc. Biochemistry. The committee has discussed and suggested some constructive changes in the syllabus of two year M.Sc. Biochemistry program as per the Choice Based Credit System (CBCS) for further strengthening the curriculum and recommended its implementation from next academic year (Annexure- I).

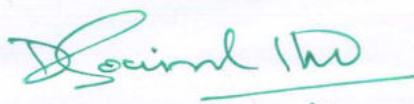


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3. The committee has discussed elective papers and their syllabi and approved (Annexure-II)
4. The committee has resolved and approved the question paper model for the End semester examinations as per CUK guidelines. (Annexure-III)
5. The committee has resolved and approved the panel of examiners for question paper setting and evaluation for End-semester examinations as per guidelines of Central University of Kerala (Annexure-IV)

Member	Signature
1. Prof.(Dr). Annie Abraham Department of Biochemistry, University of Kerala, Kariyavattom, Thiruvananthapuram - 695 581	
2. Prof. (Dr). T. Rajamohan Department of Biochemistry, University of Kerala, Kariyavattom, Thiruvananthapuram - 695 581	
3. Prof. (Dr). Sathisha G J Department of Biochemistry, Kuvempu University Shankaraghatta Shimoga, Karnataka - 577 451	
4. Dr. K. Arun Kumar Associate professor, Dept. of Plant Science, Central University of Kerala, Kasaragod	
5. Dr. Rajendra Pilankatta Associate professor, Dept. of Biochemistry & Molecular Biology, Central University of Kerala, Kasaragod	

Tejaswini Hills, PO Periy, Kasaragod -671316


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6. Dr. R. Aswathi Nair
Associate professor,
Dept. of Biochemistry & Molecular Biology,
Central University of Kerala, Kasaragod



Dr. Govinda Rao Duddukuri,
Professor, Chairperson,
PG Board of Studies of Department
of Biochemistry and Molecular
Biology

BBM-5303- GENETIC ENGINEERING (3-1-0-3)

UNIT-I

Recombinant DNA Technology: Basic principles of recombinant DNA technology, restriction endonuclease; Cloning vectors: plasmid vectors, phage vectors, cosmids, high capacity cloning vectors- BACs, PACs, YACs and human artificial chromosomes; Gene transfer methods: Physical, Chemical and Biological. Screening of recombinants: Marker inactivation, nucleic acid hybridization and immunological screening for expressed genes.

UNIT-II

Cloning strategies: Directional Cloning, Blunt ended cloning; Cloning of fusion proteins; Introducing of tags to cloned proteins.

Library Construction: cDNA and genomic DNA libraries, cDNA cloning and cloning from genomic DNA.

UNIT-III

Expression systems: Expression vectors for optimum protein synthesis, solubilization of expressed proteins.

Prokaryotic expression systems; Eukaryotic expression systems; Insect cell expression systems- baculovirus transfer vector.

UNIT-IV

Techniques in gene manipulation: Site directed mutagenesis; Random mutagenesis using PCR; protein engineering to improve enzymes, DNA shuffling.

UNIT-V

Transgenic Animals/ Cells: Transgenic animal, Retroviral DNA microinjection and engineered stem cells methods for producing transgenic mice. Whole body Knock outs and conditional knock outs. Use of CRISPR-CAS in generation of gene knock out cell lines.

Applications of recombinant DNA technology: production of therapeutic proteins, GMO.

Recommended Books

- 1) Rapley, Ralph, and David Whitehouse, eds. Molecular biology and biotechnology. Royal Society of Chemistry, 2014.

- 2) U Satyanarayana, Biotechnology, BooksAnd Allied (p) Limited, 2013.
- 3) James D. Watson, Recombinant DNA, W. H. Freeman,1992
- 4) John E. Smith, Biotechnology, Cambridge University Press, 2009.
- 5) B. D. Singh, "Biotechnology expanding horizons." Kalyani, India (2009).
- 6) S. B. Primrose, Molecular Biotechnology, Blackwell Scientific Publications,1991
- 7) Sandhya Mitra, Genetic Engineering: Principles and Practice, McGraw-Hill Education, 2015
- 8) Pamela Peters, Biotechnology: a guide to genetic engineering, Wm. C. Brown Publishers, 1993