

Minutes of the meeting of Board of Studies in Plant Science

Date: 15-4-2019 Time 10 .00 AM to 5.00 PM

Venue: Department of Plant Science,  
Central University of Kerala, Periyar-671316

Ref. CUK/ACA/BoS/187/2013/2019/1714/E5566 dated 05<sup>th</sup> February 2019

As per the CUK letter cited, Board of studies meeting was conducted on 15-4-2019 from 10.00 AM to 5.00 PM with the following members.

**Members present**

Dr. K. Arunkumar

Chairman, PLS-BOS

Prof. (Dr.) T. Parimelazhagan

Expert-Member, Department of Botany

Bharathira University, Coimbatore

Prof. (Dr.) G. R. Janardhana

Expert-Member, Department of Botany

University of Mysore

Mysore

Prof. (Dr.) V. Sivaram

Expert-Member, Department of Botany

Bangalore University

Bangalore

Prof. Dr. T. Dennis Thomas

Member

Dr. K. Ramachandran

Member

Dr. Ginny Antony

Member

Draft syllabus submitted by the Department of Plant Science was thoroughly gone through and discussed based on the CUK CBCS regulations. Accordingly the board unanimously passed the following resolutions.

- Resolved to approve the proposed syllabus for M.Sc Plant Science programme to be adopted from the Academic year 2019-2020.
- Specific Textbooks of 10 to 15 are limited to each course.
- The credits for core courses were decided as 60 credits and 12 credits for elective courses.
- Accordingly 13 core courses each carry 4 credits were finalized
- Suggestions in the course content by the expert members were included and courses were accordingly revised.
- Recent topics in all courses were included as per the expert suggestions.

Dr. K. Arunkumar

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Dr. Ginny Antony

Member

<b>BTY 5005</b>	<b>GENOME STABILITY AND DNA REPAIR</b> (Credits 2 ; Theory 2 hrs)
<b>Aim</b>	To understand the basis of genomic stability, mutations, their cause, repair and methods of screening
<b>Objectives</b>	<ul style="list-style-type: none"> <li>➤ To study the types of mutations and their causes</li> <li>➤ To study how DNA mutations are repaired</li> <li>➤ To study different methods used to screen mutations</li> <li>➤ To know how to select appropriate method to screen mutations</li> </ul>
<b>Learning outcome</b>	<p>Mutations are the cause of evolution, biodiversity increase and, many genetic disorders. students after completion of this course will know</p> <ul style="list-style-type: none"> <li>➤ different types of mutations and their repair</li> <li>➤ methods to screen mutations and importantly, select the appropriate method.</li> </ul>
	<b>Theory</b>
<b>1.</b>	<p><b>Mutagens and mutations:</b> Biochemical basis of mutations and mutagens Types of mutations - ploidy changes, chromosomal aberrations such as additions, deletions, translocations, duplications, inversions, molecular mutations such as point mutations and frame-shift mutations, recombinations (at chromosome and DNA level), trinucleotide-repeat expansion, mutational hot spots</p>
<b>2.</b>	<p><b>Transposons and retrotransposons as mutagens:</b> Historical background of transposons Structure of typical transposons and types of transposons and retrotransposons Genetic and evolutionary significance, implications in genome plasticity</p>
<b>3.</b>	<p><b>DNA repair:</b> Types of DNA repair in prokaryotes and eukaryotes DNA recombination models</p>
<b>4.</b>	<p><b>Screening of mutations:</b> Techniques to screen chromosomal mutations, based on microscopy, flow cytometry and hybridisation Techniques to screen molecular mutations, in prokaryotes and eukaryotes, based on PCR, real time PCR, electrophoresis, arrays, sequencing, Ames test, eukaryotic detector mutants Absolute and relative quantification of mutations Advantages and disadvantageous of the techniques</p>

**Text Books:**

1. Watson JD, Tania AB, Stephen PB, Alexander G, Michael L, Losick Richard L. 2017. Molecular Biology of the Gene, 7<sup>th</sup> edition. Pearson Education.
2. Krebs JE, Goldstein ES, Kilpatrick ST. 2017. Lewin's GENES XII. Jones and Bartlett Publishers, Inc.
3. Lodish H, Berk A, Kaiser CA, Krieger M, Bretscher A. 2016. Molecular Cell Biology, 8<sup>th</sup> edition. W H Freeman & Co.
4. Alberts B. 2014. Molecular Biology of the Cell, 6<sup>th</sup> edition. Garland Science.
5. Daniel L. Hartl DL, Cochrane B. 2017. Genetics: Analysis of Genes and Genomes 9<sup>th</sup> edition. Jones & Bartlett Learning.
6. Griffiths AJF, Wessler SR, Carroll SB, Doebley J. 2015. Introduction to Genetic Analysis, 11<sup>th</sup> edition. W.H. Freeman & Worth Publishers.
7. Stryer L, Berg JM, Tymoczko JL, Gatto Jr GJ. 2019. Biochemistry, 9<sup>th</sup> edition. W. H. Freeman.
8. Sharma AK, Sharma A. 1980. Chromosome Techniques - Theory and Practice, 3<sup>rd</sup> edition. Elsevier.
  
9. Meksem K, Kahl G. 2010. The Handbook of Plant Mutation Screening: Mining of Natural and Induced Alleles. Wiley.
10. Cotton RGH, Edkins E, Forrest S (Eds.). 1998. Mutation Detection: A Practical Approach (Practical Approach Series), 1<sup>st</sup> edition. IRL Press.