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# Biotechnology and Bioforensics

New Trends

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# Foreword

DNA technology has engraved its name in improving the nutritional quality of food by producing GM foods, personalized medicine based on DNA screening techniques, forensic DNA testing, genetic testing, and many other domains. New inventions and outbreaks in the era of science can be best exemplified with the progress in the implementation of DNA-based technologies and methodologies. This series presents the information on genetic predisposition, conventional communized medicine, and the individual specific problems with a focus on the therapy, often a random one rather than being specific as in the case of personalized medicine based on DNA screening techniques. The literature in this series describes the problems posed by the loss of victim identity in mass disaster cases that can be better solved by the DNA profiling technology today. It is also a well-accepted fact that Bioinformatics now plays a key role in modern drug discovery and it cuts enormous time frame and funding required in the processes of drugs reaching the market. Modern tools in bioinformatics and structure-based drug discovery have now enabled Insilco studies of crucial steps like weeding out the bad leads early in the process, positive lead screening, stability, toxicity prediction, bioavailability studies, etc. The chapters in this series comprise research insights from bioinformaticians, pharma professionals, and computational biology and discusses the emerging challenges, problems, and achievements in this field of developing algorithms and softwares, databases, target identification, Protein modeling, Protein function prediction, Binding site analysis, Protein drug complexes, Biomarkers Research Docking, etc.

# Preface

The current era of incredible innovations toward the zeal to chase the heights of development has made science and technology one of the most powerful tools to accomplish the tasks of incremental prosperity for human welfare and sustainable development. It has been rightly said that science, technology, and innovation work together for growth and development. With the multifarious aspects of science there is a need for thought-provoking ideas and cumulative efforts which can strengthen the scientific capacity to produce successful innovation systems. This series has come up with its horizons widened. It aims to bring out all the advancements and innovations in the field of Biology, not restricting itself only to DNA technologies. The chapters in the book have brought together interdisciplinary domains of Life Science to implement the developments in one discipline so as to foster the standards of the other. I hope this series would be both knowledgeable and memorable to you all. We can expect more automation; it is already happening. There will be more integration of computerized analysis with laboratory tests. Capillary electrophoresis will require less material and produce faster results, DNA chips are in the pipeline too. We can also expect miniaturization with attendant portability. I recently read of a hand-held chip that can analyze 8 STRs in a few minutes. We can foresee the time when analysis can take place at the crime scene. If immediate results are produced, this can provide prompt clearance of erroneously identified suspects, avoiding much needless apprehension. I would emphasize, however, that what can be done in pilot experiments will usually not be good enough for forensic use, for which a system must be thoroughly tested and validated. While the appropriate use of DNA can be helpful in reducing and reversing wrongful convictions, inappropriate use of it and the sway of it, over other evidence on juries and judges can create a system of wrongful convictions. I offer my sincere gratitude toward the authors of the book chapters, acknowledging the support and cooperation received from the scientists from BioAxis DNA Research Centre Private Limited, CRRao AIMSCS, Andhra Pradesh Forensic Science Laboratories, Hyderabad from where most of the reviewers contributed toward review of papers.

# Contents

<b>1</b>	<b>Amplification and Sequence Analysis of TPI Gene, a Structural Gene of Operon from <i>Lactobacillus delbrueckii</i></b> . . . . .	1
	T. Pravin Reddy and Dhatrika Sahithi	
1.1	Introduction. . . . .	1
1.2	Materials and Method. . . . .	3
1.2.1	Collection of Pure Cow Milk . . . . .	3
1.2.2	Isolation of <i>Lactobacillus delbrueckii</i> by Direct Inoculation and Serial Dilution . . . . .	3
1.2.3	Gram Staining . . . . .	3
1.2.4	Biochemical Confirmation. . . . .	3
1.2.5	Isolation of Genomic DNA. . . . .	4
1.2.6	Estimation of DNA: Spectrophotometric Determination . . . . .	4
1.2.7	Polymerase Chain Reaction Application . . . . .	5
1.2.8	Bioinformatics Analysis . . . . .	5
1.3	Results and Discussion . . . . .	5
	References . . . . .	8
<b>2</b>	<b><i>Lactobacillus Model Moiety</i> a New Era Dosage Form as Nutraceuticals and Therapeutic Mediator</b> . . . . .	11
	Abhinandan R. Patil, Sunita S. Shinde, Pratik S. Kakade and John I. D'souza	
2.1	Introduction. . . . .	11
2.2	Materials and Methods . . . . .	13
2.2.1	Preparation of Bacterial Suspension . . . . .	13
2.3	Methodology . . . . .	13
2.3.1	Part A. . . . .	13
2.3.2	Part B: Homogenization and Spray Dry . . . . .	13
2.3.3	Part C: In Vitro Cytotoxicity Studies: SRB Assay . . . . .	14
2.3.4	Part D: Anti-microbial Screening (Well Assay) . . . . .	15
2.4	Results and Discussion . . . . .	15
2.4.1	Other Thermo Protective Agent Used and There Effects Observed by Spray Dry . . . . .	17
2.4.2	Survival Rate During Spray Drying . . . . .	17

2.4.3	Part D: In Vitro Cell Cytotoxicity Studies. . . . .	17
2.4.4	Part E. . . . .	18
2.4.5	Organisms Zone of Clearance . . . . .	19
2.5	Conclusion . . . . .	19
	Bibliography . . . . .	20
<b>3</b>	<b>Decolorization and Biosorption of Dyes Using <i>Aspergillus</i> Sp. . . . .</b>	<b>23</b>
	Sahithi Dhatrika and T. Pravin Reddy	
3.1	Introduction. . . . .	24
3.2	Materials and Methods . . . . .	25
3.3	Biosorption Experiment . . . . .	25
3.4	Results and Discussion . . . . .	26
3.5	Biosorption Experiment . . . . .	31
3.6	Conclusion . . . . .	32
	References . . . . .	33
<b>4</b>	<b>Anti-cancer Activity of Selected Seaweeds Against HeLa, K-562 and MDA-MB Cell Lines . . . . .</b>	<b>35</b>
	Ilahi Shaik, A. Shameem and P. Sasi Bhushana Rao	
4.1	Introduction. . . . .	35
4.2	Materials and Methods . . . . .	36
4.2.1	Sample Collection and Preparation. . . . .	36
4.2.2	Preparation of Extracts . . . . .	36
4.2.3	Cell Lines and Culture Condition. . . . .	36
4.2.4	MTT (3-(4, 5-Dimethylthiazol-2-yl)-2, 5-Diphenyltetrazolium Bromide) Assay . . . . .	37
4.2.5	Calculation . . . . .	37
4.3	Results . . . . .	37
4.4	Discussion. . . . .	39
4.5	Conclusion . . . . .	40
	References . . . . .	41
<b>5</b>	<b>Predisposition Factors of Type II Diabetes Mellitus and Related Complications. . . . .</b>	<b>43</b>
	Alice Jayapradha Cheekurthy, C. Ram Babu, Amit Kumar and K. Surendrababu	
5.1	Introduction. . . . .	44
5.1.1	Predisposition Factors. . . . .	46
5.1.2	Biochemical Predisposition Factors . . . . .	46
5.1.3	Complications . . . . .	47
5.2	Conclusion . . . . .	48
	References . . . . .	49

<b>6 Biohardening of Micropropagated Plants with PGPR and Endophytic Bacteria Enhances the Protein Content . . . . .</b>	<b>51</b>
Sunitha Panigrahi, K. Aruna Lakshmi, Y. Venkateshwarulu and Nikkita Umesh	
6.1 Introduction . . . . .	52
6.2 Materials and Methods . . . . .	53
6.2.1 Hardening Process . . . . .	53
6.3 Isolation of Bacteria from Soil . . . . .	53
6.4 Inoculation of the Bacteria . . . . .	54
6.5 Plant Collection . . . . .	54
6.6 Nutrient Analysis . . . . .	54
6.7 Quantitative Estimation of Enzyme by Lowry's Method . . . . .	54
6.8 Fidelity Test . . . . .	55
6.9 Results and Discussion . . . . .	55
6.9.1 Enumeration of the Microorganisms . . . . .	55
6.9.2 Plant Isolation . . . . .	56
6.10 Protein Concentration . . . . .	57
6.10.1 Comparative Analysis of the Quantitative Protein . . . . .	57
6.11 Conclusion . . . . .	58
References . . . . .	58
<b>7 Effect of Plant Growth Regulators on Morphological, Physiological and Biochemical Parameters of Soybean (<i>Glycine max</i> L. Merrill) . . . . .</b>	<b>61</b>
R. Ramesh and E. Ramprasad	
7.1 Introduction . . . . .	62
7.2 Materials and Methods . . . . .	62
7.3 Results and Discussion . . . . .	63
7.3.1 Morphological Traits . . . . .	63
7.3.2 Physiological Traits . . . . .	67
7.3.3 Biochemical Parameters . . . . .	69
7.4 Conclusion . . . . .	71
References . . . . .	71
<b>8 Rapid Diagnostic Tests Show False Positive Leading to Dilemma in Malarial Treatment: A Case Study . . . . .</b>	<b>73</b>
Susanta Kumar Panda and Amit Kumar	
8.1 Introduction . . . . .	74
8.2 Materials and Methods . . . . .	75
8.2.1 Materials . . . . .	75
8.3 Results . . . . .	77
8.4 Discussion . . . . .	77
8.5 Conclusion . . . . .	78
References . . . . .	78



**9 Association of BDNF Levels and Muscoskeletal Problems in Type 2 Diabetes . . . . . 81**  
Allam Appa Rao, Amit Kumar, Surendra Babu, Anuradha Parihar  
and Subha Senkhula

9.1 Introduction. . . . . 81  
9.2 Sampling. . . . . 82  
9.3 Methodology . . . . . 83  
9.4 Result and Discussions . . . . . 84  
9.5 Conclusion . . . . . 85  
References . . . . . 86