

About the book...

Ever since the ancient caveman began differentially identifying animal species for food, the art of species identification underwent gradual transformation from 'conscience' into 'science'. Consequently, animal species identification has emerged as a systematic scientific approach aiming at determination of origin of species based on the evident cue in structures and compositions of biomolecules. Evolutionary clues existing in an individual or group of species have been explored as landmarks (indicators, signatures or markers) in ascertaining a species. However, upon time these approaches followed developments in the science and technology and undergone dramatic changes leading to evolution of modern tools. The advanced tools offered diversified indications in areas such as food adulteration, quality assurance, forensics, species protection, legal, etc so as to address issues of day-to-day life.

Since the discovery of Polymerase Chain Reaction by Kary Mullis, the science and art of species identification has reached its zenith of perfection with hitherto unseen sensitivity, specificity, and precision. The PCR and its advanced versions have almost overcome the limitations faced so far by the conventional tools. Hence, chapters have been divided according to application of techniques looking into specific requirements. This book is an effort to elucidate such DNA based molecular techniques for animal species identification.

Price : Rs. 330/- \$ 30

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DNA BASED IDENTIFICATION OF ANIMAL SPECIES

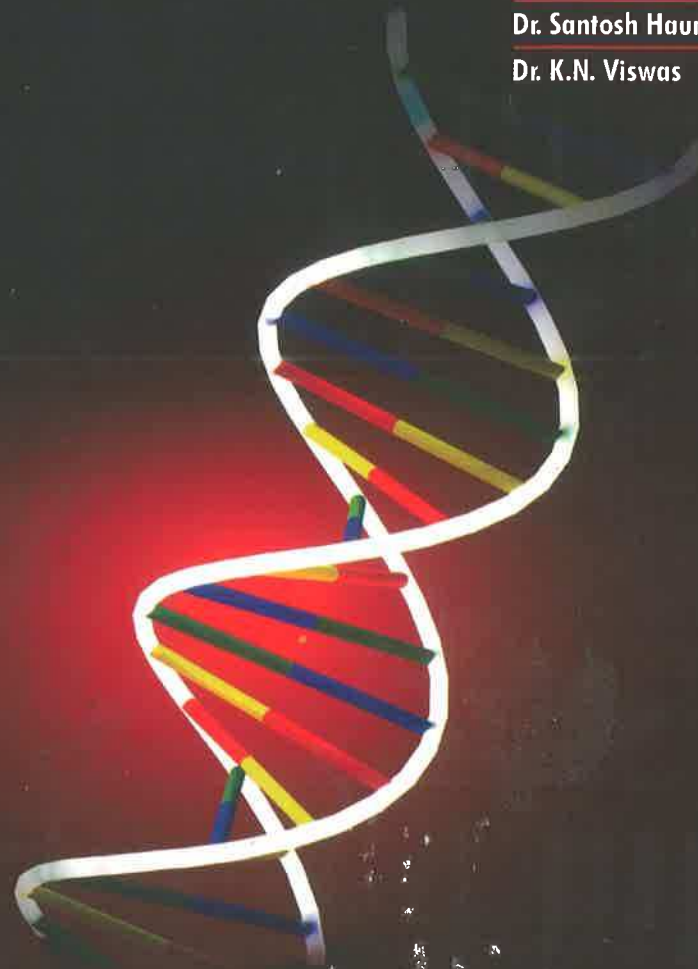
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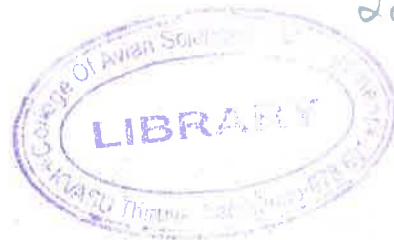
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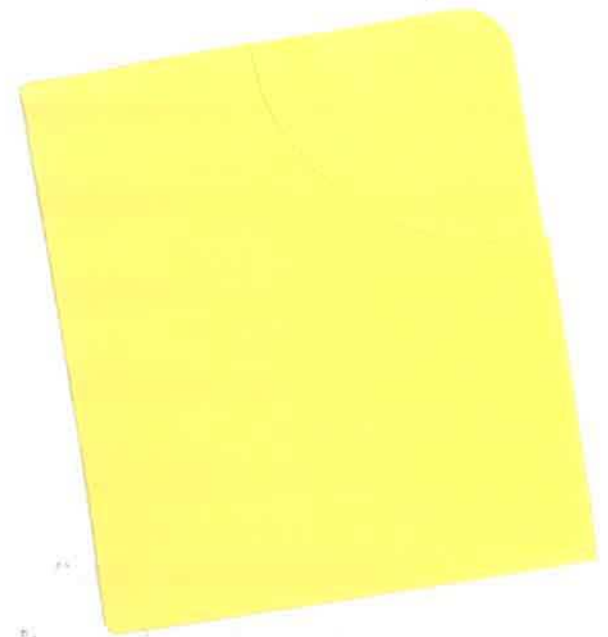
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Saroor Nagar, Hyderabad - 500 035. India.
Phone : 040-24042046, Mobile : 09391378805.
E-mail : hindpoultry@hotmail.com ,
Website : www.hindpoultry.com

First Edition : 2012

ISBN : 978-81-921893-7-6

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Designed by
Smart Multimedia
Dilsukhnagar, Hyderabad.

Printed at
Akruthi Offset Printers
Chikkadpally, Hyderabad.



Preface

Ever since the ancient caveman began differentially identifying animal species for food, the art of species identification underwent gradual transformation from 'conscience' into 'science'. Consequently, animal species identification has emerged as a systematic scientific approach aiming at determination of origin of species based on the evident cue in structures and compositions of biomolecules. Evolutionary clues existing in an individual or group of species have been explored as landmarks (indicators, signatures or markers) in ascertaining a species. However, upon time these approaches followed developments in the science and technology and undergone dramatic changes leading to evolution of modern tools. The advanced tools offered diversified indications in areas such as food adulteration, quality assurance, forensics, species protection, legal, etc so as to address issues of day-to-day life.

Since the discovery of Polymerase Chain Reaction by Karry Mullis, the science and art of species identification has reached its zenith of perfection with hitherto unseen sensitivity, specificity, and precision. The PCR and its advanced versions have almost overcome the limitations faced so far by the conventional tools. Hence, chapters have been divided according to application of techniques looking into specific requirements. This book is an effort to elucidate such DNA based molecular techniques for animal species identification.

Keeping in view of non-availability of such comprehensive compilation, this book to best of our knowledge is a unique blend of techniques and applications and authors hope it will serve as a handy reference to students, academicians, administrators and other end users. Nevertheless, improvement is a continuous process; hence scientific and technical inputs,

rational thoughts, comments and suggestions from experts working in this area are highly solicited.

Authors thank their teachers, professional colleagues and family members for their unconditional support rendered while accomplishing this work.

Authors

About the Authors...

Dr. Nagappa Shivaning Karabasanavar (M.V.Sc., Ph.D) pursued his primary and high-school education at his native place (Krishna-Kittur, Taluka Athani; District Belgaum, Karnataka). After Pre-university course from JSS College (Dharwad), he obtained his professional qualification of B.V.Sc. & A.H. from Veterinary College, Bidar (UAS, Dharwad) with high merit. He got his higher academic qualification of masters (M.V.Sc. as ICAR-JRF) and doctoral (Ph.D with DBT-SRF) from G.B. Pant University of Agriculture and Technology, Pantnagar with Veterinary Public Health as major and Veterinary Microbiology, Animal Biotechnology & Biochemistry as minor disciplines. Under the able guidance of Dr. S.P. Singh, the author developed insights into the emerging area of meat speciation. His research has been published in the scientific journals of high repute. He has maintained a sound academic excellence throughout his carrier as evidenced by his attainments. His doctoral research has been recognized by ISVIB and conferred him Young Scientist'award. He has also presented research paper on speciation at 57th ICoMST held at Belgium (August 2011). He has handled several extramural research projects of national importance including agency sponsored projects as PI and Co-PI; presently he has been granted a DST Fast-Track scheme on application of Ig-Y technology in poultry. He has worked as Assistant Professor of Veterinary Public Health & Epidemiology at KNP College of Veterinary Science, Shirval and Bombay Veterinary College, Mumbai of Maharashtra Animal & Fishery Science University, Nagpur. Presently, he is working as Assistant Professor of Veterinary Public Health & Epidemiology at Veterinary College, Shimoga of Karnataka Veterinary, Animal & Fisheries Sciences University, Bidar.



Dr. Girish Patil, S. M. V. Sc., Ph. D., Scientist, National Research Centre on Meat, Hyderabad was born in Kumbalur, Davanagere district Karnataka. He has completed his B.V.Sc. & A.H. from College of Veterinary Science, Bidar, Karnataka and completed his M.V.Sc. and Ph.D. from Indian Veterinary Research Institute, Izatnagar, Bareilly in the discipline of Livestock Products Technology. He has developed array of techniques for identification of species and sex of meat and has established forensic laboratory in National Research Centre on Meat,

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