

About the Authors



Dr. Tarun Kumar Bhattacharya completed his graduation (BVSc & AH) from Bidhan Chandra Krishi Viswa Vidyalaya, Mohanpur, Nadia (West Bengal) in the year 1994 and completed his masters (1996) and Ph.D (1999) in Animal Genetics & Breeding from National Dairy Research Institute, Karnal, Haryana and Indian Veterinary Research Institute, Izatnagar, Bareilly, Uttar Pradesh, respectively. He has been the Post-Doctoral Fellow of McGill University, Montreal, Canada during the year of 2007-08. In 1999, he joined Agricultural Research Service of

Indian Council of Agricultural Research by securing first position in the discipline of Animal Genetics and Breeding and worked as scientist at the Indian Veterinary Research Institute, Izatnagar, Bareilly, Uttar Pradesh. In January, 2007, Dr. Bhattacharya has joined as senior scientist at the Project Directorate on Poultry (Indian Council of Agricultural Research), Rajendranagar, Hyderabad. Presently, he is working as ICAR- National Fellow at Project Directorate on Poultry (Indian Council of Agricultural Research), Rajendranagar, Hyderabad. His research interests are diversified including Molecular Genetics, Population Genetics, Biotechnology, Cytogenetics and Immunogenetics. He is the recipients of the several National awards of repute. He has successfully completed several Institute and externally funded research projects with due appreciation. He has published more than 60 research papers in the foreign Journals and 50 research papers in the Indian Journals of repute. In addition, he has authored 3 books and 1 bulletin. He has also edited 2 research manuals.



Dr. R.N. Chatterjee has obtained M.V. Sc. and Doctoral degree in Animal Genetics and Breeding from IVRI, Izatnagar, U.P. and Veterinary College, Mathura, C.S. Azad University of Agriculture and Technology, Kanpur, India. He has received two national awards, Fakhruddin Ali Ahmed Award for Research for the biennium 2002-2003 and ICAR Award for Team Research for the Biennium 2001-2002, and three society awards viz. best poster award in SOCDAB 2004, 2008 and Indian Society of Animal Genetics & Breeding 2012.

He has worked as Assistant Professor in Mathura Veterinary College from 1992 to 1999 and thereafter, joined ICAR as Senior Scientist at CARI, Port Blair. He became Principal Scientist on 2005 and joined as Acting Director at Project Directorate on Poultry, Hyderabad on 1st January 2011. He has developed two varieties for rural poultry and was associated with improvement of pure lines of three rural poultry varieties. He has published 130 research articles in reputed Foreign and Indian journals. He has authored 3 books and 5 bulletins, and registered 131 gene sequences in NCBI. He has guided two Ph.D. and four M.Sc. students. He was deputed to GART, Zambia to advise the scientists and technical staff of GART regarding development of Rural Poultry variety and other aspects of poultry. He is also the Chairman of AP chapter of Indian Poultry Science Association and his research interests are poultry breeding and Molecular Genetics.



Mrs. Minakshi Dange completed her graduation (B.Sc) from Nagpur University (Maharashtra) in the year 1984. She has completed Master's Degree in Chemistry in the year 1987 from Nagpur University. She has joined Project Directorate on Poultry, Rajendranagar, Hyderabad in 1989 as a technician. Currently, she is working in Project Directorate on poultry, Rajendranagar, Hyderabad as a technical officer, T-7-8. She is involved in conducting Molecular Biology works in the laboratory besides maintaining the high end instruments and standardizing the techniques.

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ISBN.NO : 978-81-921-893-5-2

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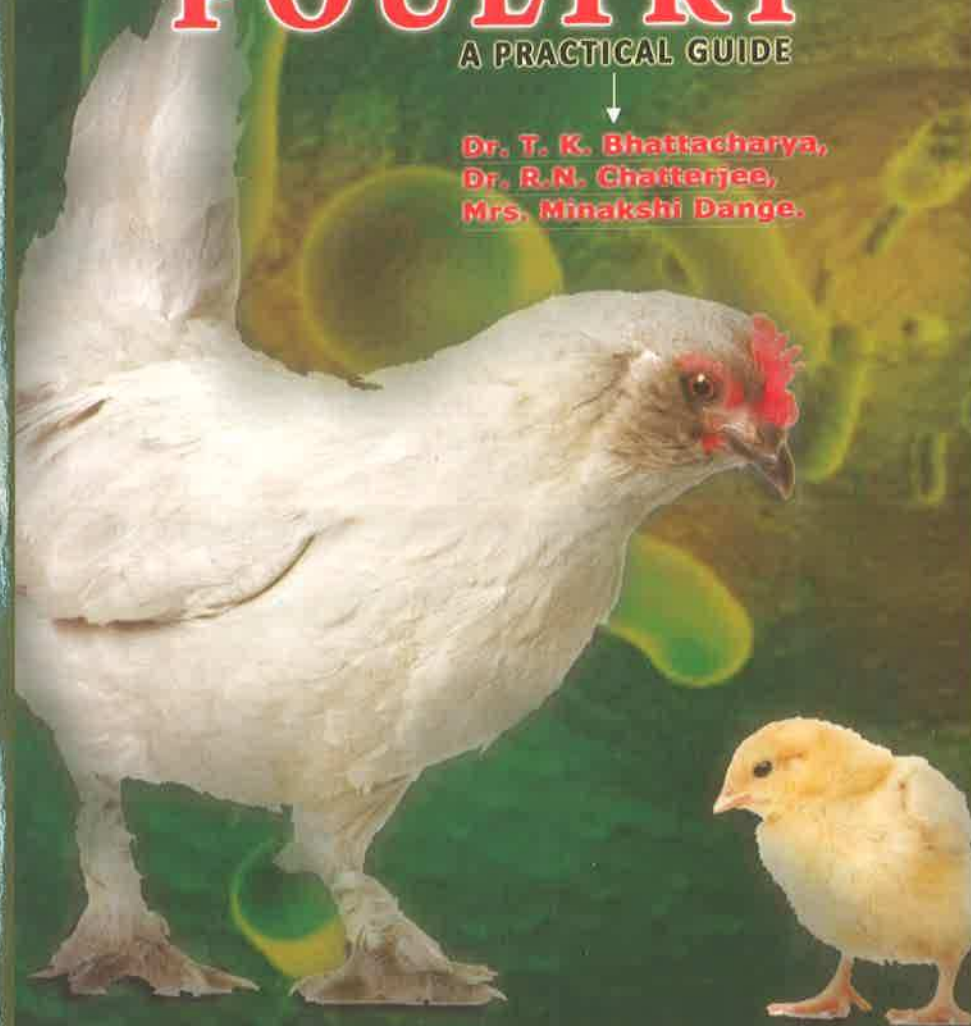
IN

POULTRY

A PRACTICAL GUIDE

↓
Dr. T. K. Bhattacharya,
Dr. R.N. Chatterjee,
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BIOTECHNOLOGY IN POULTRY



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BIOTECHNOLOGY IN POULTRY

A Practical Guide

Dr. T. K. Bhattacharya, ICAR - National Fellow

Dr. R.N. Chatterjee, Acting Director

Mrs. Minakshi Dange, T-7-8

**Project Directorate on Poultry (ICAR), Rajendranagar,
Hyderabad, Andhra Pradesh, India**

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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

Price: Rs. 395/-

ISBN : 978-81-921893- 7-6

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Designed by
Smart Multimedia
Dilsukhnagar, Hyderabad.

Printed at
Akruthi Offset Printers
Chikkadpally, Hyderabad.

PREFACE

Poultry has been one of the major commodities in Livestock sector contributing lion's share of total animal production. India possesses third rank in poultry egg production and fifth in poultry meat production in the world. Per capita availability of egg is presently 54 per annum while the ICMR recommended requirement per head is 180. On the other hand, per capita poultry meat availability is 2.16 kg per annum while the requirement is 10.8 kg per annum. Thus, to minimize the huge gap of production and requirement, it is utmost important to augment the productivity and production per se. In India, approximately 67% population is non-vegetarian who consume both meat and egg. Besides, poultry meat is white and lean meat, which makes it eligible to consume by the population having or prone to cardiac ailment and obesity. Some of the vegetarian people take eggs but not meat, those are called eggeterian. Hence, there is enormous demand of poultry products by the non-vegetarian as well as eggeterian people in the country. India and South Asian countries have been the home of Red jungle fowl, which is the ancestor of modern day chicken breeds of the world, who have been domesticated and improved by scientific ways to develop today's high yielding chicken breeds. Traditional breeding tools have been used to improve the performance of chicken world-wide. Intra-population long term selection as well as inbreeding and crossbreeding makes the genetic base narrow and small through out the globe. Today, a few pure lines are available to produce commercial chicken. In conventional selection, genetic gain is slow and thereby more number of generations and long duration is required to achieve the target. Further, it is very difficult to improve multi-traits at a time when the traits are negatively correlated and not expressed at a time or sex limited nature of traits. To minimize these constraints and limitations, molecular breeding through marker based or assisted selection have been powerful tools to improve production potential of birds. Furthermore, conventional breeding needs a very large population size to obtain accurate and high genetic gain. On the contrary, molecular breeding may be practiced in small population to obtain high genetic gain. The technique may

be practiced at a very early stage of life when the traits are not expressed, which make the breeders to screen their birds for their potentiality and poor birds may be discarded to reduce maintenance cost of unproductive or low productive birds. For adopting molecular breeding, some molecular biology techniques are to be acquainted with and practiced regularly in the farm creating small laboratory facilities with certain expertise. This book deals with methodological parts of different molecular biology techniques including creation of laboratory facilities, how to maintain clean environment in the laboratory, isolation of nucleic acids, detection of single nucleotide polymorphism, gene characterization, detection of genetic defects through cytogenetic investigation, immunogenetic profile of birds for better disease resilience etc. The book will be very much useful for the students, scientists, researchers, teachers, industry personnel and farmers who are directly or indirectly involved in the poultry operations aiming at improvement of performance of birds.

We express profound sense of gratitude to our colleagues at the Institute for providing moral support to prepare the manuscript. We are thankful to Dr. Chandan Paswan, Ph.D scholar; Mr. S. Dhanasekaran, Research Associate and Mr. K. Dyushanth, SRF for providing valuable inputs and criticism about the manuscript. Last but not the least, we would like to thank all those who have helped and encouraged us at various stages in writing this book.

T. K. Bhattacharya
R.N. Chatterjee
Minakshi Dange

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Conclusion :

The critics of animal patents have treated patents of more significant than for the commercial reality as discussed. Advances in biotechnology will threaten the livelihood of the family farmer because corporations that create and improve pigs, cows and beef through genetic engineering, will patent their inventions and own the animals and their offspring. Whether a company would close to exercise its rights to obtain royalties from farm animal progeny is an open question. It has been said that with livestock, once a desirable inheritable trait enters the gene pool, it is passed along from generation to next generation. Another cause for concern is that unique genetic resources the flora and fauna of our country may be appropriated for commercial exploitation by a company from developed countries. National and international concern with the system of intellectual property has become critically important in recent years. The role of intellectual property in global technical change and innovation, leading to industrial growth and economic development, is being world widely recognized. Information on patenting of indigenous livestock and its products is not only inadequate but also lacking in the country. Therefore mentioned facts clearly imply an emergent need to have appropriate patenting laws to protect the indigenous germplasm and its products and the process to manufacture the traditional dairy products. Further, steps are also required to create awareness among the scientists and professionals working in the livestock industry about the current enactments on the subject by way of organizing workshops, seminars and introducing subject in the course curricula of undergraduate and postgraduate level programme. Trends in developed Countries towards privatization and the granting of patent rights over genetically modified organisms mean limited access and increasing pressure to introduce complementary patent legislation in our country. This raises the prospect of country being required to obtain a license to access our own material. As we turn to the new millennium, these issues should discuss thoroughly and the country must immediately established ownership over its own genetic resources through appropriate laws.

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