

Biomedical Research - From Ideation to Publication

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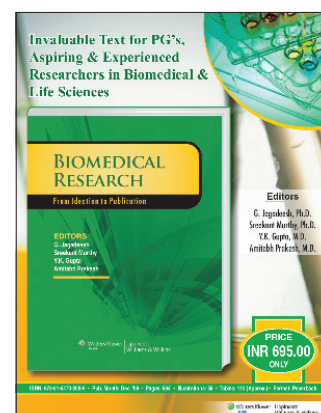
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I strongly recommend this book to all aspiring and established biomedical researchers seeking to advance their knowledge in understanding the 'Basic Concepts of Scientific Research and Communication'

P. Balakumar

Research is an intellectual process taken to become a scientist, to discover, interpret, and revise the current knowledge of the different facets of the profession. Postgraduate (PG) education and pre-/postdoctoral experience are essential steps to becoming a scientist. Most PG and doctoral students are not sufficiently trained in the fundamental process of study design and research protocol writing; the very first steps in scientific research. Moreover, they are inadequately trained in writing a research paper in an appropriate manner on the basis of their research findings. Broad-based information in the scientific methods of research and communication are necessary before an individual can pursue a distinct scientific career. The research should open a vista for success, advance the current knowledge and strengthen career prospects. This book accomplishes these criteria with a clear and lucid exposition of the indispensable principles of "BIOMEDICAL RESEARCH-from ideation to publication", which includes well-defined relevant topics that primarily illustrate "how to understand basic research concepts", "how to initiate and develop a research proposal

and protocol with diverse steps", "how to communicate research findings", "how to seek research grants", and the "importance of bench and publication ethics." The book has key contributions from 47 experts affiliated to academia, industries, and regulatory agencies, from around the globe including the USA, Canada, the United Kingdom, New Zealand, Ireland, France, and India. The Editors are: (1) Dr. G. Jagadeesh, currently serving as a Senior Expert Pharmacologist, Division of Cardiovascular and Renal Products, Center for Drug Evaluation and Research, US Food and Drug Administration, USA; (2). Dr. Sreekant Murthy, serving as a Professor of Biomedical Engineering, Vice Provost for Research Compliance, Drexel University College of Medicine, Philadelphia, USA; (3). Dr. Y.K. Gupta, serving as a Professor and Head, Department of Pharmacology, All India Institute of Medical Sciences, New Delhi, India, and (4). Dr. Amitabh Prakash, serving as an Editor, Clinical Pharmacokinetics, and the American Journal of Cardiovascular Drugs, Wolters Kluwer, Auckland, New Zealand. The book is divided into 10 main sections (Section A to J) with 36 chapters in total. Each chapter begins with a well-defined introduction and precise objectives for the better understanding of its contents. Importantly, the "key points" are summarized skillfully in a box format at the end of each chapter, leading to a reader-friendly book.

AN APPRAISAL OF THE BOOK

- The book is presented in a professional manner
- Each chapter is comprehensively detailed with updated information
- The "key points" are summarized expressively in a box format at the end of each chapter
- The book provides a good critique of information in the field of the basic concepts of scientific research

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- The book is an important read for budding biomedical researchers
- The book goes beyond criticisms

Section A begins with “*Getting Started in Research*” in which a creative and critical thinking in biomedical research and FOHR (Focus, Objectives, Hypothesis, and Research Question), the FOUR cornerstones of a research project, are vitally discussed. Section B focuses on “*Planning for Non-Clinical Science Research*”, a major division of the book. This section reviews writing research protocols, drug delivery research, nanomedicine technologies, pharmacogenomics, and importantly, an alternative approach to animal experimentation in research. I found both sections A and B to be incredibly useful for beginners in understanding the basic concepts of research processes.

Section C advances to the next stage, “*Planning for Clinical Research*”, regarding the principles of clinical research and writing a clinical trial protocol with a useful discussion on bioavailability and bioequivalence studies.

The many ways of expressing scientific data and analyzing statistical significance in between data groups are considered major aspects of scientific research documentation, which Section D introduces the readers to in “*Study Design and Statistical Analysis*” by critically discussing the application of statistics in biomedical sciences and also its exploitation in bioavailability and bioequivalence studies. An objective of a research project cannot be clearly spelled out until and unless a systematic review of literature in the relevant area of research is done. Most researchers, however, do not have guidelines on precisely how to review the existing literature. Section E on “*Exploring the Literature for Reaching Idea*” addresses this imperative issue. This is followed by Section F, which is on “*Scientific Communication*”, a backbone of the book having dealt with eight key chapters addressing the optimal ways of structuring IMRaD (Introduction, Materials and Methods, Results and Discussion) and appropriate writing style of abstract, title, and referencing system (Vancouver system and Harvard system). The section also addresses the need of language and style in medical writing for successful scientific communication. Additionally, this key section provides information for writing a good thesis/dissertation in keeping the fact that completion of any research project requires compilation

and interpretation of data in the form of a thesis for an award of a degree.

Publication in high impact factor journal is a success in the scientific career of a researcher. Successful bench work should be translated into a scientific publication; however, one should understand that writing a research paper is no easier than the research itself. This aspect is elegantly addressed in Section G on the “*Tools for Scholarly Publications*”, which advances our knowledge into unbeaten work on publishing in a journal. It is a well-known fact that many researchers struggle to secure funds for their research projects because of a lack of awareness of the funding opportunities and non-professional grant writing. Section H on “*Seeking Research Support*” educates the reader how to write a successful grant proposal with funding opportunities in biomedical sciences. This section importantly highlights that successful grant awards can be achieved by a combination of “good science” and a “well-written” proposal. This is followed by Section I on “*Innovation in Career*” dealing with an overview of how a researcher can have an innovative biomedical career, an interesting section for the reader. The value of research outcomes depends on its publication in an impacted journal. But, most of researchers are not fully aware of publication ethics. The final Section J eloquently discusses “*Research and Publication Integrity*”, an essential topic of bench and publication ethics.

All chapters in the book are well organized and presented in a way that allows the easy synthesis of the concepts of scientific research and communication. Overall, the comprehensively and richly presented information makes this book a unique source for a reader to learn the biomedical research process and the successful publication of research findings. This book is an important tool for budding biomedical researchers aiming to understand the determinants of scientific research. Based on my long standing experience in teaching and research, I strongly recommend this book to all aspiring and established biomedical researchers and teachers seeking to advance their knowledge in understanding the “Basic Concepts of Scientific Research and Communication”.

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