HOW TO WRITE AND ILLUSTRATE A SCIENTIFIC PAPER SECOND EDITION

This Second Edition of *How to Write and Illustrate a Scientific Paper* will help both first-time writers and more experienced authors, in all biological and medical disciplines, to present their results effectively. Whilst retaining the easy-to-read and well-structured approach of the previous edition, it has been broadened to include comprehensive advice on writing compilation theses for doctoral degrees, and a detailed description of preparing case reports. Illustrations, particularly graphs, are discussed in detail, with poor examples redrawn for comparison. The reader is offered advice on how to present the paper, where and how to submit the manuscript, and finally, how to correct the proofs. Examples of both good and bad writing, selected from actual journal articles, illustrate the author's advice – which has been developed through his extensive teaching experience – in this accessible and informative guide.

**Björn Gustavii** has been teaching courses in scientific writing for doctoral (Ph.D.) students in medicine for 25 years. He brings his personal experience to this book, both from writing more than 100 of his own research papers and from his work as a journal editor.
How to
Write and
Illustrate
Scientific Papers

Björn Gustavii

Second Edition
## Contents

Preface vii  
Acknowledgments ix  
1 Basic rules of writing 1  
2 Comments on scientific language 3  
3 Drafting the manuscript 15  
4 Choosing a journal 18  
5 Preparing a graph 20  
6 Drawings 38  
7 Figure legends 40  
8 How to design tables 42  
9 Title 48  
10 Authors 54  
11 Abstract 58  
12 Introduction 61  
13 Methods 63  
14 Results 68  
15 Discussion 74  
16 Acknowledgments 79
Dear Novice Writer,

When I was in your shoes and preparing my first paper, I consulted a book on how to write. I found there a sentence encouraging the reader to stand in boiling water for an hour before doing the analysis:

After standing in boiling water for an hour, examine the contents of the flask.

I had a pretty good idea of what was wrong with the sentence but, at the time, I couldn’t figure out how to revise it, and the author didn’t tell me. Now I can. If, an hour later, you are still alive:

Place the flask in boiling water for an hour, then examine its contents.

So, in this book, every unfortunate example is followed by an improved version. Good examples are provided with appropriate bibliographic references. Bad ones, however, are presented with references expunged.

Some examples were taken from manuscripts in preparation, presented by participants in my courses on scientific writing. I have
been holding such courses for doctoral (Ph.D.) students in medicine since 1980. Other specimens are from manuscripts submitted for publication. They were collected when I served as an editor of *Acta Obstetricia et Gynecologica Scandinavica* from 1986 to 1994. Yet others are from published material.

From class discussions I have learned what candidates want to know. Based on this information, some chapters are more detailed than others, such as the one on how to prepare graphs.

The current edition contains a new and comprehensive chapter on doctoral (Ph.D.) theses. Numerous other changes also appear in this edition, for example, instructions for making drawings and a description of preparing case reports.

Finally, don’t accept all my suggestions, because there is no ultimate truth regarding how to write a paper – as I mistakenly believed when I was a bit younger.

Good luck, my friend.

Björn Gustavii
I thank the following persons, who have read all or parts of the manuscript of the second edition, for their advice and criticism.

Per Bergsjø, Norway
Carol Brimley-Norris, Finland
Joy Burrough-Boenisch, UK
Johan Ljungqvist, Sweden
Helen Sheppard, Sweden
Ray Williams, UK
Pål Wölner-Hanssen, Sweden

Special thanks to Tomas Söderblom, a layperson, who read the manuscript for intelligibility; Richard Fisher, who corrected the language; and Eva Dagnegård, who redrew the graphs and prepared the electronic manuscript.