What Is a Scientific Paper? 18

Debuttion of a Scientific Paper 1 Organization of a Scientific Pape Shape of a Scientific Paper 22 Other Definitions 22

# Contents

Preface xv

A Word to International Readers xix

Acknowledgments xxi

## PART I: SOME PRELIMINARIES

## 1 What Is Scientific Writing? 3

The Scope of Scientific Writing 3 The Need for Clarity 3 Receiving the Signals 4 Understanding the Signals 4 Understanding the Context 4 Organization and Language in Scientific Writing 5

2 Historical Perspectives 6

The Early History 6 The Electronic Era 7 The IMRAD Story 8

## 3 Approaching a Writing Project 11

Establishing the Mindset 11 Preparing to Write 12 vi Contents

Doing the Writing 14 Revising Your Work 16

## 4 What Is a Scientific Paper? 18

Definition of a Scientific Paper 18 Organization of a Scientific Paper 20 Shape of a Scientific Paper 22 Other Definitions 22

## 5 Ethics in Scientific Publishing 24

Ethics as a Foundation 24 Authenticity and Accuracy 24 Originality 25 Credit 26 Ethical Treatment of Humans and Animals 27 Disclosure of Conflicts of Interest 28

6 Where to Submit Your Manuscript 29

Why Decide Early, Why Decide Well 29 Prestige and Impact 31 Access 34 Avoiding Predatory Journals 34 Other Factors to Consider 35 Using Instructions to Authors 36

## PART II: PREPARING THE TEXT

7 How to Prepare the Title 41

Importance of the Title 41 Length of the Title 42 Need for Specific Titles 42 Importance of Syntax 43 The Title as a Label 44 Abbreviations and Jargon 45 More About Title Format 45

## 8 How to List the Authors and Addresses 47

The Order of the Names 47 Definition of Authorship 49 Defining the Order: An Example 50 Specifying Contributions 51 Proper and Consistent Form 51 Listing the Addresses 52 A Solution: ORCID 53 Purposes of the Addresses 54

9 How to Prepare the Abstract 55

Definition 55 Types of Abstracts 57 Economy of Words 59 Akin to Abstracts 60

## 10 How to Write the Introduction 61

Guidelines 61 Reasons for the Guidelines 62 Exceptions 63 Citations and Abbreviations 65

11 How to Write the Materials and Methods Section 66

Purpose of the Section 66 Materials 67 Methods 68 Headings 68 Measurements and Analysis 68 Need for References 69 Tables and Figures 69 Correct Form and Grammar 70

## 12 How to Write the Results 72

Content of the Results 72 How to Handle Numbers 73 Strive for Clarity 73 Avoid Redundancy 74 A Supplement on Supplementary Material Online 74

## 13 How to Write the Discussion 75

Discussion and Verbiage 75 Components of the Discussion 76 Factual Relationships 76

#### viii Contents

Noting Strengths and Limitations 77 Significance of the Paper 78 Defining Scientific Truth 78

## 14 How to State the Acknowledgments 80

Ingredients of the Acknowledgments 80 Being Courteous 80

## 15 How to Cite the References 82

Rules to Follow 82 Electronic Aids to Citation 83 Citations in the Text 83 Reference Styles 84 *Name and Year System 85 Alphabet-Number System 85 Citation Order System 86* Titles and Inclusive Pages 87 Journal Abbreviations 87 Some Trends in Reference Format 88 Examples of Different Reference Styles 88 Citing Electronic Material 89 One More Reason to Cite Carefully 89

## PART III: PREPARING THE TABLES AND FIGURES

## 16 How to Design Effective Tables 93

When to Use Tables 93 How to Arrange Tabular Material 96 Exponents in Table Headings 99 Following the Journal's Instructions 99 Titles, Footnotes, and Abbreviations 100 Additional Tips on Tables 100

## 17 How to Prepare Effective Graphs 101

When Not to Use Graphs 101 When to Use Graphs 103 How to Prepare Graphs 104 Symbols and Legends 106 A Few More Tips on Graphs 107 18 How to Prepare Effective Photographs 108

Photographs and Micrographs 108 Submission Formats 108 Cropping 109 Necessary Keys and Guides 109 Color 111 Line Drawings 113

## PART IV: PUBLISHING THE PAPER

#### 19 Rights and Permissions 117

What Is Copyright? 117 Copyright Considerations 118 Copyright and Electronic Publishing 119

#### 20 How to Submit the Manuscript 121

Checking Your Manuscript 121 Submitting Your Manuscript 122 The Cover Letter 122 Sample Cover Letter 124 Electronic Cover Letters 125 Confirmation of Receipt 125

## 21 The Review Process (How to Deal with Editors) 126

Functions of Editors, Managing Editors, and Manuscript Editors 126
The Review Process 128
The Editor's Decision 132
The Accept Letter 133
The Modify Letter 133
The Reject Letter 136
Editors as Gatekeepers 138

## 22 The Publishing Process (How to Deal with Proofs) and After Publication 140

The Copyediting and Proofing Processes 140 Why Proofs Are Sent to Authors 141 Misspelled Words 141 Marking the Corrections 143

#### x Contents

Additions to the Proofs 143 Addition of References 145 Proofing the Illustrations 145 When to Complain 146 Reprints 146 Publicizing and Archiving Your Paper 147 Celebrating Publication 149

## PART V: DOING OTHER WRITING FOR PUBLICATION

23	How to Write a Review Paper 153
	Characteristics of a Review Paper 153 Preparing an Outline 154 Types of Reviews 155 Writing for the Audience 156 Importance of Introductory Paragraphs 157 Importance of Conclusions 157
24	How to Write Opinion (Letters to the Editor, Editorials, and Book Reviews) 158
	Writing Informed Opinion 158 Letters to the Editor 158 Editorials 159 Book (and Other Media) Reviews 160
25	How to Write a Book Chapter or a Book 162
	How to Write a Book Chapter 162 Why (or Why Not) to Write a Book 163 How to Find a Publisher 163 How to Prepare a Book Manuscript 165 How to Participate in the Publication Process 166 How to Help Market Your Book 168
26	How to Write for the Public 170
	Why Write for General Readerships? 170 Finding Publication Venues 170 Engaging the Audience 172 Conveying Content Clearly 173

Emulating the Best 174

## PART VI: CONFERENCE COMMUNICATIONS

#### 27 How to Present a Paper Orally 177

How to Get to Present a Paper 177 A Word of Caution 178 Organization of the Paper 178 Presentation of the Paper 179 Slides 180 The Audience 181 A Few Answers on Questions 182

#### 28 How to Prepare a Poster 183

Popularity of Posters 183 Organization 184 Preparing the Poster 185 Presenting the Poster 187

#### 29 How to Write a Conference Report 188

Definition 188 Format 189 Presenting the New Ideas 190 Editing and Publishing 190

#### PART VII: SCIENTIFIC STYLE

#### 30 Use and Misuse of English 195

Keep It Simple 195 Dangling Modifiers 196 The Ten Commandments of Good Writing 197 Metaphorically Speaking 198 Misuse of Words 198 Tense in Scientific Writing 200 Active versus Passive Voice 202 Euphemisms 202 Singulars and Plurals 203 Noun Problems 204 Numbers 205 Odds and Ends 205 xii Contents

33

## 31 Avoiding Jargon 208

Definition of Jargon 208 Mumblespeak and Other Sins 208 Mottoes to Live By 210 Bureaucratese 210 Special Cases 212

## 32 How and When to Use Abbreviations 214

General Principles 214 Good Practice 215 Units of Measurement 216 Special Problems 216 SI (Système International) Units 217 Other Abbreviations 217

Writing Clearly across Cultures and Media 218 Readable Writing 218 Consistency in Wording 220 Serving International Readers 220 A Few Words on Email Style 221 Writing for Online Reading 222

# 34 How to Write Science in English as a Foreign Language 223

English as the International Language of Science 223 The Essentials: Content, Organization, and Clarity 224 Cultural Differences to Consider 225 Some Common Language Challenges 226 More Strategies for English-Language Writing 227 More Resources 228

# PART VIII: OTHER TOPICS IN SCIENTIFIC COMMUNICATION

## 35 How to Write a Thesis 231

Purpose of the Thesis 231 Tips on Writing 233 When to Write the Thesis 234 Relationship to the Outside World 235 From Thesis to Publication 236 36 How to Prepare a Curriculum Vitae, Cover Letter, and Personal Statement 237

What's a CV? What's It Good For? 237 What to Put In (and What to Leave Out) 239 Other Suggestions 239 Preparing a Cover Letter 240 Writing a Personal Statement 241

## 37 How to Prepare Grant Proposals and Progress Reports 243

Preparing a Grant Proposal 243
Identifying Potential Sources of Funding 244
Preliminary Letters and Proposals 244
Common Parts of a Proposal 245
Preparing to Write the Proposal 246
Writing the Proposal 246
Common Reasons for Rejection 249
Other Problems to Watch For 249
Resubmitting a Proposal 250
Two Closing Comments 251
Writing a Progress Report 251
Basic Structure 251
Some Suggestions 252

38 How to Write a Recommendation Letter—and How to Ask for One 254

Deciding Whether to Write the Letter 254 Gathering the Information 255 Writing the Letter(s) 255 A Light Aside 256 If You're Seeking Recommendation Letters 257

#### 39 How to Work with the Media 258

Before the Interview 258 During the Interview 260 After the Interview 261

#### 40 How to Provide Peer Review 263

Responding to a Request for Peer Review 263 Peer Reviewing a Scientific Paper 264 Providing Informal Peer Review 266

#### xiv Contents

## 41 How to Edit Your Own Work 269

Preparing to Edit Your Work 269 Items to Notice: 8 Cs 270 A Good Choice: Checklists 271 Finding and Working with an Author's Editor 272

## 42 How to Seek a Scientific-Communication Career 276

Career Options in Scientific Communication 276 An Admittedly Unvalidated Quiz 277 Career Preparation 278 Entering the Field and Keeping Up 279

Appendix 1: Selected Journal Title Word Abbreviations 281 Appendix 2: Words and Expressions to Avoid 285 Appendix 3: SI (Système International) Prefixes and Their Abbreviations 293 Appendix 4: Some Helpful Websites 295 Glossary 297

References 303

Index 311

Here to Write's River and Repairing the second rest of the Arrive State of the Part of the

PART VIIL OTHER TOPICS IN SCIENTI

After the Interview 261

How to Provide Peer Review 263

Responding to a Request for Peer Review 263 IT all all wirw of name Peer Reviewing a Scientific Paper 136/10 ablanto and of qirkarditalas Peoviding Informal Peer Review 266 companied of a sead to more