Guidelines for Manuscript Preparation for Advanced Biomedical Engineering

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Editorial Board of
Advanced Biomedical Engineering
Japanese Society for Medical and Biological Engineering

1. Introduction

One of the goals of the *Advanced Biomedical Engineering* (ABE) is to let graduate students submitting manuscripts for the first time or young researchers with little experience in submitting manuscripts to scientific journals to gain valuable experience for future submission. In keeping with this spirit, the Editorial Board has compiled these guidelines from the perspective of peer review. Please read these guidelines carefully while preparing the manuscript and accomplish a high quality paper.

2. Basic Principle of Peer Review

The ABE is a peer-reviewed journal published by the Japanese Society for Medical and Biological Engineering. Manuscripts submitted to ABE are subject to review by experts, to decide whether the manuscript is acceptable for publication. Two principles are adopted in the peer review.

First, biomedical engineering is a science positioned in the interdisciplinary zone across the two disciplines of medicine and engineering. The readership spans extensively from the medical field to engineering field. Therefore a paper has to be of interest to a wide range of readers.

Second, a paper is not an end in itself, but forms a part of the long history of biomedical engineering. Researchers who read the submitted paper may refer to its contents and further develop new research. Hence, the authors have the full responsibility for the contents of the paper. Once the paper is published, it will be read by a large number of researchers over a long period of time. Therefore authors must make sure that the contents are accurate and rational.

3. Categories of Articles

There are three categories of papers in ABE: Original Papers, Research Letters, and Technical Notes. The aim and the conditions to be fulfilled differ among the three categories. Before preparing a manuscript for submission, authors must first decide which category to submit.

Original Papers have a length of around six printed pages. Since these papers report new research findings, it is necessary to follow strictly the format of a research paper.

Research Letters have a length of around four printed pages. Similar to Original Papers, Research Letters also report research outcomes, although they are not as complete as Original Papers. This category is for the presentation of newly proposed concepts or new experimental facts that merit expedited publication.

For example, in order to proof the validity of a newly proposed technique or theory, experiments of a considerable size are needed. However, increasing the number of subjects is not necessarily easy in research on human subjects. If results that merit expedited publication are obtained before a sufficiently large number of subjects are enrolled, please consider submitting as Research Letters.

However, submitting as Research Letters does not mean that the criteria of review for novelty of the technique being addressed in the submitted paper are slackened. Only the proof of facts or presentation of evidence for claiming the validity of the technique is relatively relaxed compared to Original Papers. Therefore, the category of Research Letters does not mean that a paper is more easily accepted for publication.

Even a manuscript has been submitted as Research Article, the result of peer review may decide that the paper is more appropriately handled as Research Letters. In that case, the page limit may be increased to more than four printed pages.

Technical Notes have a length of around two printed pages. This category publishes materials that are considered to be useful for researchers in the field of biomedical engineering, such as testing reports or design data of machines or parts, and survey results.

4. Peer Review

Review of a submitted manuscript is conducted by two members of the Review Committee selected according to the field of the submitted paper, comprising one reviewer from the medical discipline and one reviewer from the engineering discipline, as well as one of the Editor-in-Chief and Deputy Editor as co-editor who is in charge of the manuscript. The final decision of whether to accept the manuscript for publication is made by the Editor-in-Chief.

First the manuscript is circulated to the reviewers, and the comments from the reviewers are sent to the co-editor in charge of the manuscript. Based on the reviewers' comments, the co-editor composes a decision statement, and the Editor-in-Chief makes the final decision. In the case that the opinions of the reviewers diverge greatly, a third reviewer may be asked to review the paper.

In case of inquiries during the review process or regarding the reviewers' comments, please contact the co-editor in charge of the manuscript through the Editorial Office.

The decision is one of the following: Accept; Accept on condition; Decide after revision; Reject.

"Accept on condition" means that the manuscript will be accepted upon revision according to reviewers' comments. Thus, the revision is minor and there is no request to make changes that affect the content of the manuscript.

The decision of "Decide after revision" is made when the content of the manuscript is ambiguous or when there is discrepancy in the argument. Since reviewers' comments are sent back to the authors, responses to reviewers' comments and revisions based on the comments are obligatory. Although there is no guarantee that the revised manuscript will be accepted, the possibility is high if the authors address the comments seriously.

In the case of "Decide after revision", the manuscript has to be re-submitted within 3 months from the day the comments are sent to the authors by email, or within the deadline specified by the Editorial Office.

In the case of "Reject", the reasons for not accepting the manuscript for publication are given to the authors in reviewers' comments. We hope that the authors will improve the writing, revise the research contents or perform additional experiments based on the comments, and try again to submit to this *Journal*.

5. Writing the Manuscript

Here, some points that need attention while preparing the manuscript will be explained based on the format of a typical article.

5.1 Title

The title should express the content of the paper, and should be short and informative. Therefore titles that are too general should be rewritten using more specific expressions.

For example, let us assume that the research is on measuring blood lactic acid concentration in deep tissue using near infrared light, and the author contemplates the title of "Measurement of data in deep tissue using near infrared light". A good point about this title is that "near infrared light", which is used in the measuring technique, is incorporated. However, a weak point is that despite the fact that lactic acid is measured, but a general expression of "data in deep tissue" is used. Hence, the title of "Measurement of blood lactic acid concentration in deep tissue using near infrared light" will be more appropriate.

Furthermore, if the content of the paper concerns denoising, changing the title to "Denoising in the measurement of blood lactic acid concentration in deep tissue using near infrared light" will make it easier for the read-

ers to understand the content of the paper from the title.

Title is the part of a paper first read by the readers. Please give careful thoughts to produce an appropriate title that reflects the content of the paper.

5.2 Abstracts

The abstract should contain the results and conclusion. Nonetheless, abstracts containing only the introduction and methods without results or conclusion are occasionally encountered. Please always include results and conclusion.

The abstract should be written in a way that the content is understandable by reading it alone. Hence, if abbreviations are used, they should be defined at first mention. Moreover, tables and figures in the text cannot be cited in the abstract.

The abstract should be written in proper English used in writing scientific publications. If the authors do not use English in their daily life, writing in “proper English” is no easy task. Authors is requested to have their manuscript checked for English usage by a professional English editing agency or an English expert in their institution.

5.3 Introduction

The first section of the paper, which has the heading “Introduction”, explains the background leading to the research described in the submitted paper, the review of previous studies and clear definition of the problem identified from those studies, and the strategies to solve this problem. During peer review, the novelty of the submitted manuscript and its validity as a scientific paper are assessed based on Introduction.

In Introduction, provide an outline of the overall research subject addressed by the paper, followed by what problem remain to be solved and how the research described in the paper attempted to solve this problem, in an easy to understand manner avoiding lengthy descriptions.

Especially, it is important to emphasize the originality and the importance of the research content addressed by the submitted paper through reviewing past studies.

If reports on the same research as that described in the submitted paper have already been published, a problem with novelty arises. Since it is rare that the expertise of the reviewers coincides exactly with the content of the submitted paper, the reviewers do not necessarily have full knowledge concerning the field of research of the submitted paper. A possibility may arise, where a manuscript is rejected because novelty of the study cannot be assessed due to insufficient description of previous studies. Please summarize past studies and identify the problem, then explain the methods used in the attempt to solve the problem.

In the field of biomedical engineering, assertion of why the content claimed or the method proposed in the submitted paper is important is a requisite to rationalize the research described in the paper. It is crucial to include such assertion in the paper. Assertion of importance is possible from various perspectives such as clinical, physiological, pathological, technical, and that of idea. It is not necessary to assert a level of “importance” that will convince all readers. However, please assert the importance to a degree that will convince experts in the same field.

5.4 Methods/Theories

This section describes the theory or methods associated with the approach to the research proposed in the submitted paper. Please use equations and figures appropriately and describe concisely in an easy to understand manner.

Moreover, an original article is not a commentary. Therefore it suffices to explain only the theory necessary for the paper. There is no need to explain textbook contents; cite appropriate references instead. Please restrict explanations to contents indispensable for understanding the problem addressed in the submitted paper.

To support the validity of the technique proposed in the submitted paper, experiments using human or animal subjects and simulations are used. Please explain the contents of the experiments and simulations in this section.

5.5 Results

"Results" is the section that describes the results of the experiments explained in Methods. It is necessary to describe all the results that are going to be used later in the discussion.

Although figures and tables are increasingly being used in Results, please be reminded to use a minimally required number of figures and tables. The experiments likely generate a large volume of results. However, just listing all these results in a large number of figures and tables only makes the paper difficult to understand. Please summarize the results and use the minimally required number of figures and tables. Are unnecessary results included in the figures and tables?

When it is necessary to compare multiple sets of results, please present them in the same figure or table to facilitate comparison.

5.6 Discussion

Discussion is the place to assert the validity of the technique, etc. being proposed in the submitted paper, based on the data presented in Results. Among the results obtained, some might contradict the content proposed by the paper. This can be discussed as a limitation of the proposed technique, and should not pose a problem.

5.7 Statement Concerning Bioethics

A statement concerning bioethics for human or animal subjects must be included in medical papers. Since the experiments are conceivably conducted in accordance with the ethical regulations provided by the authors' institutions, please make sure that this is stated.

State that the study conformed to bioethical principles in Methods/Theories. Some examples are as follows: "This investigational method was approved by the ethics committee for clinical and epidemiological research at …. University, and measurements were conducted only after obtaining written informed consent following explanation of the study content to the subject." "This investigational method was approved by the animal experiment ethics committee at …. University prior to conduct of the experiments."

For ethical statements concerning clinical trials, please see Instructions for Manuscript Preparation.

5.8 Figures and Tables

Peer reviews of submitted manuscripts are conducted based on the images of the printed pages. Therefore, please try to design figures and tables by anticipating their appearance on printed pages.

Papers that directly paste output of spreadsheet software resulting in abnormally large number of digits are occasionally encountered. Please pay attention to the number of significant digits. Are the axis titles, numbers on the axes and legends on the graphs easily readable? Please use as large font size as possible or use bold typeface to make them clearly legible. Many authors display color figures even though black and white figures are adequate. Please do not just paste the color graphs generated by a spreadsheet software, but construct figures by careful selecting the color and width of lines, types of lines and other attributes.

In addition, please give due consideration to the resolution when the figure is displayed on a screen or a printed page, to ensure that the information which the authors wish to convey to readers is communicated adequately.

Like the abstract, figures and tables should also be understandable on their own. Hence, please define the abbreviations used in the contents or titles of figures and tables.

6. Originality, Prior Publication, Copyright of Figures & Tables

Concerning the research of the present submission, the study group to which the authors are affiliated may have either presented some interim data in Japanese or international scientific conferences or published those data in proceedings. In addition, the research outcomes obtained so far may have been submitted for publication or already published in any journals. Research consists of series of operations or steps in the long-term, and it is only natural to publish interim results along the way. There is no hindrance to submission of these papers.

On the other hand, novelty is an obligatory condition for a scientific paper. Therefore,

please mention in Introduction all previous publications by the study group related to the submitted manuscript. Citation of the published papers or proceedings is also mandatory. With that as basis, please describe clearly the novelty of the contents addressed in the submitted paper. In case such descriptions are lacking, multiple publications will be suspected during review. Among the results published so far, there is bound to be something that can be developed; please describe them concisely.

Please also pay attention to copyrights of figures. In general, the copyrights for figures are owned by the academic organizations that publish the journals or proceedings. Even for the author him/herself, the figures cannot be reproduced or adapted without obtaining prior permission.

Especially, block diagrams of systems and concept diagrams of research remain unchanged in the same research. However, if the author wishes to reuse a diagram that has been published in another journal or proceedings, permission has to be obtained from the relevant academic organization, or a new diagram has to be prepared without changing the elements characterizing the diagram. In the case that permission for use is obtained, please state in the Submission Form.

The issue of copyright can be avoided if you used articles or figures already presented at the conference or publications organized by Japanese Society for Medical and Biological Engineering. However there still exist problems of multiple publications or multiple submissions. Please contact the Editorial Office in case of any queries.

7. Before Submission

Please check the manuscript carefully before submission. Peer review is conducted based on the submitted manuscript. A research paper is a grand integration of all the study results. In order to communicate accurately the authors' intent to the reviewers, please take time to check the manuscript carefully, and try to submit a manuscript as complete as possible.

Proofreading is important. Please check the use of particles, punctuations, and paragraph separation. Is proper English being used? A manuscript that is carelessly proofread conveys a poor impression to the reviewers.

Apart from "%", leave one space between the number and the unit.

Please check that the figures and tables are clearly readable.

The format of references is also specified in Instructions for Manuscript Preparation. Do they conform to the requirements?

Are the figures and tables cited accurately in the main text? Do the numbers of figures and tables correspond to the numbers cited? Please also check that the references are cited accurately.

8. Revision of Manuscript

When the submitted manuscript received a decision of "accept on condition" or "decide after revision", reviewers' comments including queries from reviewers and recommendations of changes will be sent back to the authors. Authors have to respond to the comments and revise the manuscript where necessary.

For resubmission of the revised manuscript, please prepare the revised manuscript and also responses to reviewers' comments.

Please respond to the comments in a point-by-point manner. When the manuscript is revised, please describe in the response how the comment has been addressed and what changes have been made. Also highlight the changes in the text so that they are easily identifiable.

The reviewers have limited time to decide whether or not the revised manuscript is acceptable for publication. Therefore, authors should respond clearly why the revision was made, what changes were made, and where the changes were made. The manuscript may be rejected if the results of revision are difficult to understand.

It is possible that the reviewers may misunderstand a part of the manuscript. In this case, find out the reason for such misunderstanding. If ambiguity exists in a part of the original manuscript, please correct to make it easily comprehensible. Another option is to explain

the misunderstanding in the response to the reviewer's comment.

Also, please make sure that the revision does not generate discrepancies.

9. Final Remarks

As a grand integration of your research, we hope that you will consider submitting your report to *Advanced Biomedical Engineering*. On that occasion, we hope that these guidelines will provide useful information.