Writing Papers for Biomaterials

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Introduction

Biomaterials is the leading journal that deals with biomaterials science and the related subjects of biocompatibility, medical devices, drug and gene delivery and tissue engineering. We are receiving manuscripts at 250 per month and publish over 7,000 pages per year. The high quality of the journal is beyond doubt. The maintenance, and hopefully even further improvement, of this quality is the concern and responsibility of authors, the editorial team, the referees and the publisher. The review process is central to the production of high quality published papers. The procedure, in general terms, is as follows. Manuscripts are received in the editorial office, via an online web submission and review system, and are read by the Editor-in-Chief. At this point the manuscript may be rejected because it does not match the scope of the journal. Only a few percent of manuscripts come into this category. The manuscript may also be rejected at this stage because, in the Editor's opinion, the quality of the paper is not sufficient to justify publication or because there would be very limited interest by the readership of the journal in the paper. This decision is never an easy one and the Editor takes into account the added value of the paper in comparison to other papers being published in ***Biomaterials*** in that specific area. Thus, a manuscript dealing with a slightly different way of sintering hydroxyapatite, or delivering a well-known drug in a slightly different manner, might be difficult to accept in view of the large number of papers on those subjects published recently. Approximately 35% of manuscripts are rejected on this basis, and the author is advised accordingly, usually within a couple of weeks and with a personalised letter of explanation.

If the Editor-in-Chief believes that the manuscript is of sufficient quality and interest to be peer reviewed, he will select appropriate referees from his database. The manuscript and abstract are sent by e-mail to referees who are invited to accept or decline the invitation within 10 days. If the referee agrees to conduct the review he is requested to complete his assessment and provide his report, in the EES web system, within three weeks. If a referee cannot review the paper, for any reason, the manuscript is sent to an alternate reviewer. This continues in cascade until the required number of reports is received. When the referee reports have been received, the Editor-in-Chief reads them and re-reads the manuscript. At this point he will either reject the paper, accept it without revision or request that the author revises the manuscript. A further 40% are rejected at this stage. Very few are accepted without revision. The authors normally receive copies of the referee's reports, although on occasion the Editor-in-Chief consolidates the referee's comments into his own report on the manuscript. If a revision is required, the authors are usually requested to complete this within a short, defined period of time, usually between 1 and 3 weeks.

This time limit is specified to avoid the publication of work that becomes out of date. If revised manuscripts are received after the deadline, the editorial office may decide to have the paper re-refereed. It should be noted that only rarely will the Editor-in-Chief require that significant additional experimental work is required. If referees suggest that more work needs to be done in order to make the work publishable, the Editor-in-Chief will usually reject the paper, with a recommendation to the author.

It will be seen from the above summary that some 75-80% of manuscripts are rejected and 95% of those eventually accepted have to be revised. These are not exceptional figures for a high quality scientific journal. It is unlikely that the rejection rate will be lowered since it is the intention to increase the quality of the journal, so that the acceptance criteria will be gradually raised. There are, however, many ways in which the overall quality of submitted manuscripts can be improved. This is important for several reasons. Too many manuscripts are received with obvious errors and poor quality presentation, which makes the editorial and review process more time consuming and difficult. It is not an easy task persuading referees to review papers and it is clear that they usually respond positively to well presented manuscripts but negatively (i.e. by refusing to do the review, or being late with the report) with poorly presented scripts. Obviously the shorter the editorial process the quicker will be the publication of the paper.

This present paper has been produced to give advice to authors on the presentation and submission of manuscripts to ***Biomaterials*** from the editorial perspective. It is not concerned with the logistics of submission, although a few aspects of this will be touched upon. It will cover manuscript content, style and length and will deal specifically about each part of a manuscript, from title to references.

Manuscript Content

Types of Manuscripts

Papers published in regular issues of ***Biomaterials*** are normally original research papers. Some Review papers are published but these are specially commissioned by the Editor-in-Chief. Leading Opinion Papers, which provide evidence-based scientific opinions on topical and important issues in biomaterials science, are also commissioned by the Editor-in-Chief. In both these cases, we do not accept unsolicited papers although the Editor would be happy to receive proposals for manuscripts in either category.

Scope

Because of the changing role of biomaterials in many areas of medical technology, the scope of the Journal is constantly evolving. The journal is relevant to all applications of biomaterials including implantable medical devices, tissue engineering and drug delivery systems. Indeed the journal is now divided into 9 sections, Biomaterials & Tissue Engineering, Biomaterials & Drug Delivery, Biomaterials & Medical Devices, Biomimetic & Natural Materials, Biocompatibility, The Materials Science of Biomaterials, Modelling of Biomaterial Performance, Biomaterials and Gene Transfer and Biomaterials for Biotechnology. Authors are requested on submission to specify the most appropriate section although the Editor-in-Chief may override the selection. It is very important that authors remain within the limits set out by these instructions. Thus, whilst we accept and indeed encourage manuscripts on drug delivery systems, the work must address materials science issues of these systems and not solely the pharmacology. Similarly, papers dealing with implantable devices must relate to the materials of those devices and not solely to clinical performance or biomechanics.

Papers dealing with the synthesis and characterisation of new materials that might have potential as biomaterials cannot be accepted unless they are able to demonstrate some relevant biological performance data. Any manuscript that does not mention the materials actually used cannot be accepted and detailed information about the materials is normally required. It should also be noted that we rarely publish papers that only describe techniques, without any substantive new biomaterials science content.

Intellectual Property

Quite often, questions about proprietary names, trademarks or materials of an undisclosed specification, arise and great care has to be taken. It is acceptable for a material or a device to be described by a trade name as long as there is also a description of that material or device. However, we normally prefer that trade name not to be used in the title or in the list of key words. It is not acceptable for a paper to discuss a material that cannot be specified for confidentiality reasons. It should also be said that all authors have the responsibility of ensuring that they consider the intellectual property implications of manuscript submission. Authors should be aware that the act of transmitting a manuscript to an editor, with the implicit assumption that the manuscript will be sent to referees, has already undertaken an act of disclosure which some legal jurisdictions may argue prevents a patent filing related to any aspect of the subject matter of the manuscript. Although in many jurisdictions of publication online is considered to be the date of disclosure we urge authors to take great care with the transmission of unprotected intellectual property. Also in the context of commercial aspects of biomaterials related products, we try to be very careful over the language used by authors to describe products, as they can be very misleading, often being written for 'marketing' purposes; papers that overtly promote a product, or denigrate competing products, are not acceptable.

Testing Results

A number of manuscripts have been received recently that report on tests carried out on biomaterials to determine biological safety, usually by compliance with the international standard ISO 10993. These manuscripts are normally rejected since this type of testing is done for regulatory purposes and is not scientifically based.

Splitting of Work

We have noticed recently that a number of authors are splitting pieces of work into very small packages and trying to publish these as series of papers. Whilst it is quite possible for a sequence of papers from one research group to be published, each paper has to be of sufficient significance to publish in its own right. It is unacceptable to submit a series of articles on the same subject matter, with duplication of much of the introduction, the methods, the discussion and references, and only small differences in the experimental work and results. Such submissions are usually returned with a request to consolidate them into one manuscript. It is also noticeable that a number of authors are submitting papers to ***Biomaterials*** that bear much similarity to papers submitted elsewhere, perhaps with sufficient differences to avoid any claim of publishing the same work twice, but only just. The editorial office is monitoring this situation and authors are asked to avoid this practice.

Incremental Work

There is one further feature about the manuscript content that should be emphasised. Quite often a manuscript is received that is technically and scientifically sound and fits the overall scope of the journal, but adds very little to our body of knowledge on

the subject. Typically this happens when the data obtained and the conclusions drawn show only a minor incremental advance. When considering the publication times of journals and the overall level of interest generated in each paper, it is often difficult to justify the inclusion of such papers. Equally we do not usually accept papers that only provide data that supports or confirms existing knowledge.

Manuscript Style, Length and Structure

The guide to authors gives some sound advice about the structure and style of a manuscript. Authors should note that the following sequence is normally required: title, authors, affiliations, abstract, keywords, introduction, materials and methods, results, discussion, conclusions, acknowledgements, appendix (where necessary), figure captions and tables. Review papers may have a different format within the main text. Failure to follow these instructions leads to delays.

Language

Somewhere in the region of 75% of papers submitted are from authors who do not have English as their first language. The editorial team are sympathetic to these authors and try to help when there are difficulties, but it is in the best interests of authors to produce manuscripts with high quality English in their first submission. The referees chosen for ***Biomaterials*** all understand the situation, and we in fact use many referees who do not have English as their first language, but it is inevitable that their view of a paper will be adversely affected if it is very difficult to read. In many cases we have to ask authors to have their manuscript checked and re-written by an English speaking person. Better use of spell-check and grammar-check software would also be helpful. It would be very beneficial if this could be done with the original submission rather than during the revision stage.

Length

There is no prescribed length of papers however the current average is 10 printed pages and we are seeking to reduce this to 8. The guide to authors urges them to write as concisely as possible. There are good reasons for this. Papers that are concise are more easily read by referees and by ultimate users of the journal. It also means that more papers can be published in each issue, thereby reducing publication times. It is important, of course, that the manuscript is sufficiently robust and substantive to convey accurately the significance of the work, but this can be achieved with careful attention to style of the text.

Title

The title is obviously the major factor that determines who will find and read the paper and great care should be taken with it. The title should be sufficiently informative so that the reader can immediately assess its likely relevance, but without being excessively long. The title does not have to convey the results or the conclusion, nor indeed does it have to specify the techniques. It is best to avoid sentences as titles; the best titles have between six and twelve words, with no verbs. As noted earlier, trade marks or proprietary names should be avoided.

Authorship

This is extremely important. In order to avoid later recriminations or even lawsuits, it is essential that all people who have played a significant role in the work and preparation of the manuscript are included in the list of authors and that, equally, there should be no authors who listed purely out of courtesy or local politics. Papers may be published by a single author or by a group of up to ten or twelve authors. Lead

authors should be aware that papers lose some credibility if there are far more named authors than could have possibly been involved with the work in any significant way. It is important that authors follow the declaration of consent to submission as given in the guidelines.

Each paper should have a corresponding author. It does not matter where in the list of authors the corresponding author is placed, and it is recognised that different laboratories and institutions have different policies on this. However, the corresponding authors should, as the name implies, be the person who corresponds with the editorial office and who will be the lead correspondent with any reader who wishes to communicate with the authors once the paper has been published. Far too often the editorial office receives requests for information about a manuscript from authors who are not the corresponding author. The editorial office communicates only with the corresponding author. . The corresponding author must provide a current, correct email address which is accessible by the Corresponding Author and which has been configured to accept email from biomaterials@online.be.

We would also like to standardise the way in which the author's names are quoted, but this is difficult because of cultural differences. We request the use of Christian name (given name), middle initial (if any) followed by surname (family name).

The affiliations of all authors should be unambiguously stated.

Mandatory Author Declaration

An Author Declaration is a mandatory and integral part of a submission. This Declaration covers a number of logistic and ethical issues. A template for the covering letter is found on the ***Biomaterials*** website. Authors may save the template, obtain the required signatures and then upload it as a part of their submission. All authors need to physically sign the form. It cannot be emailed, faxed or sent by post.

Keywords

Keywords have become very important with respect to literature searches and many search engines operate through the listing of these words. It is in the author's interest to think carefully about the words that will attract interested readers to their paper. A list of preferred key words has been compiled by the Editor-in-Chief and may be found in the Guide for Authors. There is little point in using very generic terms such as biomaterial, implant, drug, tissue engineering and prosthesis as key words. Equally there is no point in using obscure names, and it is best to avoid the author's own abbreviations. As noted earlier, trade names should be avoided.

Abstract

Next to the title, the abstract will be the second most important point of entry to the paper since most search facilities will print the abstract as part of the service, and far more people will read the abstract than the full papers. The abstract should be concise and informative. It is not the place to expand on techniques or discuss philosophy, and the conclusions that it expresses have to be an accurate reflection on what was found. Abstracts should be not used to exaggerate the significance of the work and they should not contain subjective opinions on this importance or speculate how a material might be used. Very commonly submitted abstracts will include a phrase such as 'material X is very biocompatible and shows promise for use in orthopaedic implants'. This is rarely a sensible approach to writing an abstract. We do not require the abstract to be split into sections (e.g. background, experiments, results, conclusions) as demanded by some other journals. The instructions specify a length of

100 – 200 words. Most good abstracts are around 150 words in length, as a single paragraph.

Introduction

The Introduction, as the name implies, should introduce the background to the work that has been carried out, effectively providing the scientific rationale. It should contain sufficient citations to the key literature to support this rationale and should lead to a clearly stated hypothesis or set of objectives. Authors should assume that the readership of the journal is well-informed and there is no need for any generic educational background. For example, in a paper on wound healing it is not necessary to take the first page to explain the ideal characteristics of wound dressing materials, or in a paper on drug eluting stents it is not necessary to describe all of the competing technologies that address in-stent restenosis. The introduction should rarely be more than two manuscript pages long. It should not pre-empt the Results, Discussion or Conclusions.

Materials and Methods

This section should specify exactly what was done experimentally, with sufficient detail for the reader to be able to repeat the experiments if he wishes. It is acceptable to refer to other publications if the methods have been used elsewhere, for example the MTT test is used very widely and it is unnecessary to repeat the details unless there has been a departure from standard practice. It is not, however, acceptable to refer to the author's own work if it has been published in relatively inaccessible places, including PhD theses and non-English language journals. All of the experimental work discussed in the paper should be described in this section. Materials used in the work should be described in appropriate detail, including sources of commercial supply or synthetic routes, and all major equipment should be specified with the manufacturers name, reference number and location. Animal experiments should be described in good detail but with sensitivity. Where institutional or regulatory rules apply to the conduct of the experiments they should be quoted. If any of the experimental work has been performed by a laboratory or organisation that is not represented in the list of authors, it should be explained here.

Results

Ideally the Results Section should be separate from the Discussion, but there is some flexibility here. The section should, obviously, be factual and it is best to avoid any philosophy or speculation. Authors should consider very carefully how to present their data. It should not be presented in multiple formats (i.e. the same data should not appear in figures and tables). If the data is displayed very effectively in either a table or figure, it should not be necessary to explain results in great detail in the text, but rather to use the text as a medium for emphasising the most significant data. It is occasionally acceptable not to provide actual evidence of the data, but this should not be done when the data is critical to interpretation, for example discussing crystallinity without showing XRD graphics.

Discussion

This section should summarise the nature of the observations and attempt to place this data into the context of the existing body of literature and, where appropriate, to express opinions about the significance of the work as far as biomaterials science is concerned. It should not be repetitive of the Introduction. It is entirely valid to suggest the potential implications of the work but without too much speculation. It is particularly important not to extend the discussion into areas that are not supported by

the facts that are in evidence. Experiments that address the mutagenicity potential of implantable metals should not lead to discussions about the generic biocompatibility of these materials, for example.

It is also important that new data is not brought into evidence in the discussion. Several recent manuscripts have set out the experimental methods and results in the correct sections, but then the authors described quite briefly some additional experiments in the discussion and used those results to support their conclusions. This is not acceptable. Equally authors cannot cite their as-yet unpublished work to support the discussion.

Conclusions

Many authors end the Discussion section with a paragraph on the conclusions. This is not the best way to draw the manuscript to an end, and we require that conclusions be separated into a distinct section. This should not be too long, nor should it be repetitive of the discussion, and especially should not bring new ideas into the paper. The conclusions have to be based on the facts in evidence and should be limited to reasonable speculation about the significance of the work. The editorial team are particularly vigilant over the use of unjustified, exaggerated language in the Conclusions section.

Acknowledgements

It is perfectly acceptable for authors to acknowledge any person, institution or organisation that have made a significant contribution to the work, including any funding agency or other sponsor of the work, or individuals who contributed to the work but who are not named as authors. It is always sensible to show a draft manuscript to such individuals to ensure they are comfortable about this citation. The Editor-in-Chief currently does not require statements to be made about the funding or sponsorship, nor is any declaration concerning conflict of interest required. Authors are encouraged, however, to consider using this Acknowledgements section to make any personal comments they wish about such issues.

References

Instructions for the preparation of the list of references are given in the guidelines to authors; the designated form is modified Vancouver. These instructions should be followed exactly; failure to do this is one of the most common faults with manuscripts and causes frustration all round. Note that this system requires the names of all authors. Only where there are more than six authors can the abbreviation et al be used, after the name of the sixth author. There is no formal guidance on the number of references quoted, but in practice the best papers have between 20 and 30. It is better to avoid too many citations to the author's own work, and it is good to have a balance between the older seminal papers that lay the groundwork for that particular area and recent quality papers that have contributed serious input into the subject. Documents that have limited circulation, obscure journals or books, especially those out of date, and electronic sources (e.g.web-sites) should also be avoided wherever possible. It is always helpful to the reputation of the journal to include citations to previous papers published in ***Biomaterials***.

Figures and Tables

As noted earlier, experimental data should be represented in figures or tables wherever possible. Advice is not given here about the preparation of figures, detail being given in the guide to authors. Authors should note, however, that since figures

and tables take up a considerable amount of space, they should be limited in number. Many authors used flow charts to represent experimental strategy or line drawings or photographs of equipment, most of which are unnecessary. Sometimes multiple figures are used with very little data on each, and which could be consolidated.

Colour is reproduced in high resolution online. However, consistent with Elsevier's global policy on colour that became effective in June 2008, colour will not be used in the print version, apart from exceptional circumstances, for example with papers commissioned by the Editor-in-Chief where colour is essential. The reason for this is that the vast majority of readers access the journal solely on-line and the high cost of colour reproduction in printed versions that are only rarely accessed cannot be justified. We suggest that authors may wish to alter their own methods of producing illustrations to take this into account. It is rare that colour actually enhances graphs and charts, and authors should resist the submission of such illustrations where the sole means of distinguishing lines or columns is by colour. We also suggest that PowerPoint illustrations are avoided as they are not usually consistent with the serious scientific information that is contained within the figure. It is recognised that some figures that appear within papers submitted to Biomaterials are rendered un-readable in black and white, for example those that display multiple colour stains or fluorescent images. In such cases, in order to avoid the frustration of readers, the Appendix to a paper which will indicate that some Supplementary Information associated with the article can be found on the on-line version, quoting the doi, will also explicitly state that the differential colours of such illustrations can be seen in the online version. This indicator will be included at the discretion of the Editor-in-Chief.

This will specify, for example:

Appendix: Figures with essential colour discrimination.

Certain figures in this article are difficult to interpret in black and white. The full colour images can be found in the on-line version, at doi:……..

Figure and table captions should be constructed with care. There should be sufficient information for the reader to understand the subject matter, but it is not necessary to write an extensive text to explain all the detail. All figures must be numbered by the author as the system does not automatically generate them.

Supplementary Data

If an author wishes to include supplementary information for the online version of the paper, including video-clip or raw data, he may do so. Supplementary material is made available via links in the online article but not published in print. Further technical details for uploading supplementary data may be found at http://authors.elsevier.com/ArtworkInstructions.html?dc=AI43 .

The Editorial Decision

After the completion of the review process, the Editor-in-Chief will normally be in a position to advise the authors of the first editorial decision. There are three possibilities, acceptance without revision, revision and rejection. Exceptionally, the Editor-in-Chief may advise the author that there is a delay in coming to this decision because of a serious conflict in the recommendations of the referees, in which case a further report may be requested for arbitration.

If the author is advised that the paper is rejected and cannot be published, the decision is final and not available for negotiation. This does not mean that the author is prevented from submitting further papers to the journal on a similar subject, but the authors are strongly advised to take into account any critical comments of the referees and any further papers will be considered as new submissions and submitted to the review process from the beginning.

If the author is requested to revise the paper, it is important for all of the points raised by the referees and / or editor to be addressed. This does not mean that the referee has to make all of the changes suggested, but it is expected that the author will make most of these changes (the Editor-in-Chief will often remove referees recommendations that he does not consider to be sensible) and will provide reasons why he is unable to make the remainder. The preferred format for the re-submission of a revised paper is a covering letter explaining the responses to the referees together with a clear copy of the revised version and a copy which tracks the changes that have been made. It is essential that the author follows the detailed instructions when submitting a revised paper.

In this respect, it is essential that the authors are vigilant with the version of the paper that they are working with. It is not unusual to have authors submit a 'revised' paper, but only send the original version in error. This provides serious problems for the office.