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How to make cover letters instructive

Succinctly convey the study's context, emphases, implications and limitations.

An output of OpenAI's text-to-image generator DALL-E for the prompt "Many scientists typing cover letters for the journal Nature, pop art".

The title of this Editorial may be read as implying that cover letters to articles submitted to *Nature Biomedical Engineering* are neither useful nor informative. Indeed, most aren't. We find that many cover letters for research articles express excitement about the work, restate the abstract of the manuscript, declare that the findings constitute a major advance and emphasize the importance of the main research topic. They also typically list authors, suitable reviewers and excluded experts, and any competing interests and other confidential information; yet most of this information is requested by the manuscript submission system or can be provided through it.

Excitement, prominent advances and topical importance are, perhaps expectedly, more commonly relayed by authors than perceived or judged by editors (especially by those with a mindset for selectivity). Naturally, one's own work is a labour of effort and passion; yet it is difficult to transmit enthusiasm to an editor accustomed to reading, often cursorily, many similarly worded cover letters each week. Novel, promising and transformative work, and platform technology with untapped potential are examples of swiftly skipped words in the angular gyrus of an editor's brain as they skim through a cover letter to rapidly find the most useful bits of information.

There's more than love for one's work shaping the style of cover letters. Competition for publishing in a journal that peers perceive to be of high reputation drives many authors to overemphasize the findings of their work and the broader relevance of the subject area[1]. And misgivings about the work being misjudged by an editor insufficiently knowledgeable about the topic may drive some authors to avoid conveying seemingly complex context or background information, and to magnify the implications of their results.

It is therefore unsurprising that some editors disregard cover letters when assessing the suitability of a manuscript for their journal, or read the manuscript before opening the cover-letter file so as to appreciate and assess the work in the form meant to be communicated. Also, the widely held belief that editors of Nature-branded journals select manuscripts largely on the basis of the cover letter is a myth; manuscripts are examined[2]. Are cover letters for first submissions therefore a wasted effort? Are they an unhelpful relic of the pre-internet era? Do they bias manuscript selection? Many arguments can be made for and against these questions. Instead, discussing how cover letters accompanying first submissions of original research articles can be made more instructive would be more fruitful. That's our aim for the remainder of this piece.

First, and foremost, know your audience. Manuscripts are written for the many; cover letters should be written for an audience of one (or for a team of very few). When writing a manuscript, knowing your intended audience primordially means appropriately crafting the context of the scientific story[3]. Similarly, consideration of the current scientific experience of the manuscript's prospective handling editor and of their editorial colleagues — should this information be known or available — can inform how the cover letter is framed. Has the journal published related work? Does it have a reputation for quality in the subject area or for publishing similar types of scientific advances? Are the editors likely to be familiar

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with current challenges and opportunities in the field, and knowledgeable about its standards of rigour and reporting? Are the editors aware of any relevant controversies?

Second, help the editors understand and assess the main contributions of your work. At *Nature Biomedical Engineering*, for research manuscripts that fit the journal's scope we assess the degree of advance, broad implications and breadth and depth of the work. To perform this task well, we need to place the manuscript in its appropriate context[4]. We find that a cover letter is particularly informative when it helps us to identify the relevant type of advances in the study. Do the authors feel that the main contribution of the work involves the development of new technology to widen its biomedical applicability? Or does the value of the work mostly lie on the performance and translatability of a slightly improved workflow? Are any of the methods or their implementation new? Was the study's aim to minimize the usability and cost of a device, or to expand its functionality? Is the mechanism of action underlying the discovered phenomena a notable contribution? And are the mechanistic insights being leveraged to improve the understanding of the disease or the intervention? We also appreciate it when cover letters provide suitable context for the work: for instance, which recently published studies are most relevant, and why? Is the work merely using state-of-the-art technology or methodology, or building on it? Has the same problem been addressed by other approaches? Has the same hypothesis been investigated from different angles? What types of validation support the robustness of the findings?

Third, describe the realistic implications of the work. The temptation is to dream big; yet, the credibility of the inferences improve when they are suitably constrained. Hence, state the main challenges that lie in the way. Similarly, describe the study's limitations and whether they arise from the assumptions made, or from the methods, models or data acquired or used.

The style and format of research manuscripts are constrained for good reasons: they make it easier to find and interpret the information. The freedom of free-form writing can make cover letters more challenging to write well. We can offer a few more pieces of advice: constrain their length, structure and detail[5], and explain your work and its context accessibly[6]. And, as if writing for a semi-supervised learning agent (pictured), use natural language.

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