

# Lay Abstracts and Summaries: Writing Advice for Scientists

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**Abstract** Scientific journals, institutional review boards, and funding sources often require abstracts or research summaries written specifically for the lay public. Making research findings understandable to the public helps raise awareness and speed adoption of practices that may lead to improved health. We provide advice on writing lay abstracts and summaries which includes the following: (1) make reasonable assumptions about grade-level, vocabulary, prior experience, and interests of the audience; (2) practice a verbal explanation with someone from your audience; (3) start writing by using a simple headline followed by a brief and relevant synopsis in common language then expand; (4) read your draft aloud and revise; (5) check readability statistics and simplify as needed; and (6) have both lay audience and peer scientists read your summary to assure that it is accessible to the public while remaining true to the science.

**Keywords** Scientific writing · Proposal development · Research dissemination

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## Introduction

Writing scientific reports geared toward the lay public is becoming increasingly important. In addition to technical abstracts, funders like the American Cancer Society [1], the National Multiple Sclerosis Society [2], and the federally funded Patient Centered Outcomes Research Initiative [3] require general audience summaries as part of their grant applications. Increasingly, stakeholders and members of the public without scientific training also serve on scientific review groups and on institutional review boards where they have full voting privileges in decisions about funding and conduct of scientific research. Lay summaries are also frequently used for widespread dissemination on the web, in the press and in other public venues. Some publishers also use lay abstracts from their articles in a similar way, posting them on their websites [4]. Some scientific journals and institutional review boards require abstracts or research summaries written specifically for the lay public. The Journal of the National Cancer Institute requires that all articles include an abstract that is “readable by nonspecialists as well as by experts in the particular field” [5]. As scientists advance in their education and experience, the language of science becomes second nature, and common language solutions become more elusive. Making research findings understandable to the public helps disseminate new science well beyond the walls of the academy, thereby raising awareness and speeding adoption of practices that may lead to improved health.

The length of a lay abstract or summary may vary widely depending on the purpose. Some are limited to one to two sentences, while others may require a 1,000-word essay. Regardless of length, translating research into lay language takes patience, time, and effort.

A successful lay summary is relevant to the intended audience while striking the right balance between a detailed scientific explanation and oversimplification. Scientists spend

years mastering and employing the specialized language of a scientific field. Such language is important to scientific communication as it is highly specific with little room for alternate interpretations. Common language, on the other hand, can be less specific, context dependent, or highly interpretable. Thus, making a transition from the scientific to writing to or for the general public may fall outside a scientist's comfort zone as explaining in common terms the complexities of science and research can be challenging.

### What a Lay Abstract Is Not

Do not make the mistake of copying your scientific abstract and using it as your lay abstract or summary. This may be seen as nonresponsive to instructions and could have adverse effects on decisions regarding your grant, IRB submission, or your manuscript. A lay abstract or summary is intended to be stated in language different from the scientific jargon used in scientific writing. Do not leave this task for the last minute and do not treat it as an afterthought. A little effort goes a long way.

### Where to Begin

As with any abstract or manuscript, refer to parameters provided in instructions from the requestor to determine purpose and desirable length and depth (Table 1). Knowing how the lay summary will be used will help you frame your message. Depending on the purpose you may want to sell your ideas (persuasive), inform your readers (teaching) or create excitement about your findings (motivational).

Define your audience. Estimate their probable level of education, vocabulary, prior experience, and interest. Write these assumptions down. Then, find a few people who are representative of this group and explain your research aloud to each of them. Ask them for their honest feedback, especially regarding issues they do not understand. Explain complex content to them and ask them to summarize, explaining it back to you. This will provide some analogies and other common language solutions that might not have otherwise occurred to you. This process of explaining will also bring to light jargon you need to avoid or define and illustrations you may want to include.

Find your headline. With a simple phrase, state the main impact of your work for this audience in this context. What is your main take-home message? Then, summarize the most important and relevant information. You can expand on this information later (space permitting), but providing a brief synopsis at the beginning allows you to get key points across, capture attention, and draw in the audience.

**Table 1** Writing checklist for lay abstracts or summaries

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- Check instructions for required elements, character limits, and other guidelines
  - Define the purpose of the summary to properly frame your message
  - Define your audience
    - Write down your assumptions (grade level, vocabulary, experience, interests)
    - Practice explaining your research to representatives of your audience
    - Ask audience representatives to explain it back to you
  - Write a headline and brief synopsis; expand on your brief synopsis if you have space
  - Avoid long and complicated words
  - Use shorter sentences (avoid choppy writing)
  - Use active voice
  - Organize to make your story clear
  - Read aloud and make adjustments
  - Check readability and reading level statistics
    - Adjust
    - Recheck
  - Review and feedback
    - From intended audience; revise
    - From peer scientists; revise
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As you write, beware of long, multisyllabic vocabulary, especially when writing for the general public. Do not use acronyms except for those that are commonly known (e.g., in the US, YMCA). Shorten sentences but avoid writing that sounds choppy. Use the active voice (“Each person got multivitamins”) instead of the passive voice (“Multivitamins were given to each person”). Organize and reorganize to make your arguments and story clear. Then, read your draft aloud and make adjustments. Remember that newspapers are written at an eighth grade level. Writing as if your summary was an article in your local newspaper will give you a sense of style and tone and will probably be pitched at the right grade level for the general public.

Once you have a solid draft of your summary, check readability and reading level. Microsoft Word has built-in instruments (see Microsoft Office Help for details) or you can use an online tool (e.g., <http://www.readability-score.com/>). These tools will give you a general estimate of complexity. If your writing exceeds the eighth grade level, substitute simpler words and shorter sentences to get closer to your goal.

Feedback from your audience is priceless. Identify several lay people who can review what you have written. If you sit with them as they read, they can point out where there is misunderstanding or confusion, and you can fix it on the spot. Other scientists from your field can also be helpful as their review can help ensure that the science is clear and accurate. Your goal is a summary that is accessible to the public while true to the science.

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