

# How to Write a Plain Language Summary

## WHY SUBMIT A PLAIN LANGUAGE SUMMARY?

A growing number of journal publishers are adopting the plain language summary as a way to broadly communicate scientific findings. A plain language summary clearly explains a study's purpose, importance, and key findings, and aims to connect with nonspecialist audiences. In contrast, an abstract includes additional technical detail to communicate with colleagues in your field of study. Because the plain language summary focuses on the meaning and relevance of research, it is a powerful tool for reaching audiences far beyond your circle of scientific peers.

## WHO USES PLAIN LANGUAGE SUMMARIES?

Content from a plain language summary—first published alongside a journal article—can be distributed and repurposed in many ways. University communications staff use a plain language summary while developing a news story and press release. Reporters, broadcast media, or science writers might be inspired to publish an article or information resource. A department chair or university program leader may share the summary with supporters. Students may better grasp the complexities of a research project. Scientists and their partner organizations can incorporate key phrases into social media messaging and grant proposals. Journal editors may take note of a study's importance and feature it as a research highlight. All of these possibilities (and more) may help to improve someone's knowledge, project, or well-being.

## THE CHALLENGE

Writing a plain language summary requires different cognitive skills than scientific writing. It takes time, energy, and thoughtfulness to craft a compelling and persuasive summary. With practice, it gets easier. Below are some tips and online resources to help you take up the challenge of sharing your research with nonspecialist audiences. A plain language summary not only raises the visibility of your paper—it can make the knowledge you create resonate with diverse groups of readers, with more lasting impact.



# PHYSICS



Image credit: Omar Bariffi

Let's compare how a plain language summary differs from a scientific abstract using an **article that was published in PNAS**. This study aims to explain how some plant diseases spread by investigating the physics of raindrops.

### PLAIN LANGUAGE SUMMARY

Understanding the spread of spores of plant pathogens, some of which may serve as potential human allergens, is of great importance to plant and animal health. Raindrop impact is known to be a mechanism for dispersing micron-sized pathogenic spores. However, previous studies have focused only on wet splash droplets formed by raindrop impact, which our results suggest are only a minor contributor to spore dispersal. Our experiments show the importance of air vortices resulting from the drop impacts to disperse spores beyond the laminar boundary layer, with the potential for transport over long distances.

This plain language summary immediately draws the reader in and conveys a great deal of science in only four sentences. It maintains a high level of engagement, throughout, especially in the places where it employs active voice. In the first sentence, words like "understanding" and "importance" orient the reader that this sentence addresses the implications of the study. The second and third sentences convey what scientific understanding already exists and what still needs to be investigated. The final sentence conveys the key finding of the study. Some terms in this summary are slightly too technical, but overall, it's easy to understand. Words suggesting the research's relevance to a broad readership, such as "allergen" and "health," are used to connect the experimental findings to broader biological and societal problems.

Now, compare the plain language summary to the article's accompanying abstract:

### ABSTRACT

Raindrop impact on infected plants can disperse micron-sized propagules of plant pathogens (e.g., spores of fungi). Little is known about the mechanism of how plant pathogens are liberated and transported due to raindrop impact. We used high-speed photography to observe thousands of dry-dispersed spores of the rust fungus *Puccinia triticina* being liberated from infected wheat plants following the impact of a single raindrop. We revealed that an air vortex ring was formed during the raindrop impact and carried the dry-dispersed spores away from the surface of the host plant. The maximum height and travel distance of the airborne spores increased with the aid of the air vortex. This unique mechanism of vortex-induced dispersal dynamics was characterized to predict trajectories of spores. Finally, we found that the spores transported by the air vortex can reach beyond the laminar boundary layer of leaves, which would enable the long-distance transport of plant pathogens through the atmosphere.

The abstract takes a more scientific approach than the plain language summary, frequently incorporating technical language and descriptions. The primary audience is scientific peers, who benefit from a more detailed account of methods, results, and descriptions of the physical or cause-effect phenomena involved. Technical terms (e.g., "propagules," "air vortex ring," "laminar boundary layer") are included, and some verbs (e.g., "liberated") are used in the strict sense of the authors' field of study. Although the plain language summary and abstract end similarly, the plain language summary places greater emphasis on broader impacts for plant, animal, and human health—a valuable way to attract audiences ranging from botanists to epidemiologists to people with allergies.

## WHAT SHOULD YOU INCLUDE IN A PLAIN LANGUAGE SUMMARY?

- Explain why you did the study
- State the research objective
- Describe what you did to study the research objective (use broad statements; e.g., “Our experiments show ...” or “We developed a mathematical model to estimate ...”)
- Explain your results concisely
- Interpret the significance and relevance of your results

### TIPS



- **Tell a story about your research.** Focus on *context*, *purpose*, *significance*, and *meaning*; don't just repackage your abstract. What do you most want readers to understand and reflect on?



- **Try sketching out a visual representation** (e.g., flow chart, diagram, mind map, storyboard) of your summary before writing.



- **Avoid technical terms/jargon, equations, symbols, etc.** If a technical term is unavoidable, include a simple definition.



- Think of a person you respect or enjoy talking with—a friend, family member, mentor, community leader, etc. **Write the summary as though you were explaining your study to that person.** Hear this person's voice; picture his/her facial expressions and gestures. What questions would this person ask? (This exercise will help you decide what clarifications are needed to make the research context clear.) Then imagine this person explaining your study to someone else they know. What key points or metaphors could they use?



- **Study examples from the AGU's Plain Language Summaries Collection.**



- **Use active voice.**



- **Ask a few people outside of your specialty**—nonscientists are particularly helpful—**to read over your summary** and see if it makes sense. Where can sentences be made stronger, clearer, and more concise? Are any interpretations of your findings overstated? Choose individuals who will provide a constructive critique, not merely praise and compliments.



- **Edit, edit, edit—for clarity and length.** Be sure to check the word count limit required by the journal publisher. (Generally, about 200 words is a good length.)



- “Finally, **don't rush the process** ... Write the summary, leave it for a day or two, and come back to it. It is very important to get it right, as these summaries have the potential to be read by many more people than would normally read a scientific paper within a journal.” — Chris Buddle, [anthropodecology.com](http://anthropodecology.com)

### REFERENCES

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