AACR American Association for Cancer Research
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# Tips for Writing an Excellent Abstract

With the November 18th abstract deadline for the AACR Annual Meeting 2022 rapidly approaching, early career investigators all around the world are excited to communicate their findings to the cancer research community, some of them for the first time. This month, members of the Associate Member Council (AMC) interviewed experts with experience in both writing and reviewing countless abstracts, to share some tips for effective scientific communication. Each expert's credentials, the questions we asked, and their responses are summarized below.

**THE EXPERTS:**

Dr. Deborah Banker, PhD, is the Senior Science Writer for the Clinical Research Division Program in Immunology, Immunotherapy Integrated Research Center and Research Administration at the Fred Hutchinson Cancer Center. Dr. Banker completed her postdoctoral research at UCLA and worked as a staff scientist at the Fred Hutch before becoming the Vice President of Research Communications at the Leukemia & Lymphoma Society (LLS). In her communication roles at LLS and the Fred Hutch, Dr. Banker has written extensive research-focused communications for scientific, lay, and policy audiences, and developed a scientific writing course for research trainees. She became a member of AACR in 2005.

Dr. Lisa Butterfield, PhD, is the Vice President of Research and Development at the Parker Institute for Cancer Immunotherapy and an Adjunct Professor of Microbiology and Immunology at the University of California, San Francisco. She has served as the President and a member of the Executive Committee of the Society of Immunotherapy of Cancer, was a member of the AACR Education Committee for the AACR Annual Meeting 2018 and is currently a member of the AACR Cancer Immunology Steering Committee. She became a member of AACR in 1994.

Dr. Tyler J. Curiel, MD, MPH, FACP, is Professor of Medicine and Microbiology, Immunology & Molecular Genetics and holds the Daisy M. Skinner President's Chair in Cancer Immunology Research at UT Health San Antonio. Dr. Curiel is a physician-scientist with clinical expertise in phase I experimental therapeutics and gynecologic cancers and research expertise in cancer immunotherapy. Dr. Curiel has significant administrative expertise as past Chief of two different academic divisions: Hematology and Medical Oncology, Director of a general clinical research center and Executive Director of an NCI-designated Cancer Center. He has served as primary mentor to both pre- and post-doctoral fellows and junior faculty and became a member of AACR in 2008.

Dr. Charles Swanton, MD, PhD, FAACR is a Professor at The Francis Crick Institute and the University of College London Cancer Institute and is a physician-scientist with expertise in cancer evolution and its role in drug resistance in lung cancer. Dr. Swanton was inducted as a

Fellow of the AACR Academy in 2020, served as the Program Chair for the AACR Annual Meeting 2021, and currently serves on the AACR Board of Directors and the AACR Cancer Evolution Working Group Executive Committee. He has been a member of AACR since 2013.

Dr. Ratna K. Vadlamudi, PhD, is a Professor and the Tom C. and Patricia H. Frost Endowed Chair at UT Health San Antonio (UTHSA). He has held the position of PI and MPI on multiple NIH, DOD and foundation grants; served as panelist /chair of NIH and DOD study sections. As a professor of Obstetrics and Gynecology and Integrated Biomedical Sciences Graduate School at UTHSA, he has contributed 22 years of didactic and laboratory training as a primary mentor to undergraduates, pre-doctoral and post-doctoral fellows. He became a member of AACR in 1997.

**THEIR ADVICE:**

***What attracts you to an abstract that makes it stand apart from others?***

- Dr. Banker: It addresses an important scientific/clinical question, with a sound experimental plan and state-of-the-art methods, and impactful results are clearly presented.

- Dr. Butterfield: First, some positive data being reported is always irresistible. When you have positive clinical data, the abstract almost writes itself. For other abstracts, context is important-- why should I be excited about this? How is it an important step forward? Highlighting innovation is important, and if you can make it easy on the reviewers to see why your data are important, it can help.

- Dr. Curiel: Seeing a novel finding, pathway or drug. Or solving an important question.

- Dr. Swanton:
    - Concise, clear, no hyperbole;
    - Few abbreviations;
    - Clear conclusions; and
    - Ideally in vitro cell model plus animal work or human in vivo data: aim to provide orthogonal data from other systems/approaches/methods to support your findings.

- Dr. Vadlamudi: Opening sentence(s) that mention the knowledge gap being addressed by the study

***Do you have a template or method you prefer to utilize while writing your abstract?***

- Dr. Banker: A Scientific Abstract should include, briefly:
    - the **background** of the project;
    - the **hypothesis**(es) and **specific aims;**

    - the **significance** of the project, including its potential **relevance to improving cancer diagnosis/treatment**;
    - the **methodology** used, including the **unique features / innovation** of the project;
    - **concise results**; and
    - a brief description of **how your results will affect future studies, including in other research areas**.

- Dr. Swanton and Vadlamundi shared a preference for a structured abstract the outline above.

- Dr. Butterfield: I try not to restate earlier data at all-- that can make something seem like an incremental advance. I start with context in the field, state the results with minimal methods, and then finish with highlighting innovation.

- Dr. Curiel:
    - Why is this issue important?
    - What are gaps to fill?
    - Here's how we addressed them.
    - Here is what we found.
    - Future directions.

***In your opinion, what are the most important components of an abstract that make it memorable?***

- Dr. Banker: A good abstract should briefly answer these questions:
    - *What is not yet known?* ***What problem are you trying to solve****?*
    - ***Why should we care*** *about the problem and the results?*
    - ***How did you address the problem*** *in your project?*
    - ***What is novel/valuable*** *about your particular approach?*
    - ***What's the answer(s)****?*
    - ***What are the implications of your answer****; i.e., what might be the clinical application, near-term and long-term, and/or how might your new findings advance your scientific field?*

- Dr. Butterfield: Why it is important in the field and for therapy (and if preclinical, not only relevant for the model, but for the bigger picture of human disease).

- Dr. Curiel: Clarity. Solving a big issue. Reporting a major new finding.

- Dr. Swanton: The conclusion.

- Dr. Vadlamudi: Knowledge gap statement and conclusion/implication statements.

***Do you have any suggestions on things to avoid while composing an abstract?***

- Dr. Banker: Do not say everything you know about the problem and your study, just what you need to say to make your case. Use only essential jargon, acronyms, etc. Remember that readers will likely have diverse backgrounds. Also, don't ignore the instructions! If you don't follow instructions regarding the word/character count, and font and margin size, your abstract may not even be reviewed.

- Dr. Butterfield: No typos or language errors. They can easily distract the reviewer from your scientific message. No redundancies (you don't have space for that) and not too many numbers (which makes it hard to read) - use of only the most critical few numbers.

- Dr. Curiel: Curse of knowledge: assuming readers know as much as you. Describing results without explaining what they mean. Undefined abbreviations. Incomplete background or set up of the issue.

- Dr. Swanton: Avoid words like interestingly, avoid hyperbole, superlatives. Present results in an unbiased dispassionate manner. Bear in mind a p value is just a p value- it does not confirm your conclusions are correct, always consider other explanations for your findings where possible and mitigate them (briefly in the abstract- it shows you have really considered other reasons for your observations).

- Dr. Vadlamudi: Avoid being descriptive, avoid passive sentences, focus on key findings, and be able to tell the story is also important.

***What tips or pieces of advice could you give to early career researchers when they get ready to write an abstract?***

- Dr. Butterfield: Don't leave it for the last minute, so that you can go back and reread it. Let someone else read it too, like all of your co-authors. Make sure they all read it and approve it.

- Dr. Banker echoed the advice above.

- Dr. Curiel: Don't assume readers are subject matter experts. Set up the problem clearly. Describe results clearly and explain what they mean at the same time. Show some concrete applicability of the results. Avoid vague statements like "this is a big advance" or "these data have huge implications." Spell it out.

- Dr. Swanton: Don't submit too early before the weight of evidence is in your favor, try to validate your data in multiple models, collaborate with others to build and solidify your data (e.g. those who can ask similar questions in different model systems or who might have clinical trial/in vivo data to substantiate your findings).

- Dr. Vadlamudi: Always be thinking the knowledge gap and how the research being presented will advance the field.

***In your experience writing, reading, and reviewing abstracts, what is one key piece of advice that you would like to pass on to the AACR Associate Membership as they progress through their academic journey?***

- Dr. Banker: Know your audience. What are the AACR's priorities? How do you/your project meet their priorities? Be sure to clearly address why the reader should care. Be complete, but concise and remember that less can be more!

- Dr. Butterfield: Know the statistics of oral presentations and poster acceptances at the target meeting, so that you know your chances of acceptance and potential oral presentation or travel award.

- Dr. Curiel: Avoid the curse of knowledge.

- Dr. Swanton:
    - Abstract with lots of acronyms, abbreviations etc can be very difficult to read. Avoid where possible.
    - Avoid words like interestingly, surprisingly, major findings etc. Present the work in a dispassionate, unbiased manner.
    - Abstracts with limited pre-clinical data (e.g. one cell line, one animal model etc) may be open to criticism. Try to have orthogonal approaches to validate your findings.
    - Brevity is key. Do not pack an abstract with all your data, focus on what the reader needs to know. Bear in mind that many referees will have over 50 abstracts to review in their spare time- time is limited and yours needs to stand out. Make their job easy.

- Dr. Vadlamudi: Read and re-read the abstract multiple times, keep polishing it, ask your peers and friends to read/critique the abstract.

**MAIN TAKEAWAYS:**

- Highlight the knowledge gap being addressed and the innovation of your approach and results.
- Minimize the use of acronyms, jargon, and hyperboles.
- Pay attention to formatting and requirements (Available starting on page 21 of the Call for Abstracts).
- Do not wait until November 17th to start writing.

**FINAL REMINDERS:**

**The deadline to submit AACR Abstracts and Scholar in Training Award applications for**

**the AACR Annual Meeting 2022 is Thursday, November 18th, 2021**. The call for abstracts can be found here, the abstract submission portal can be accessed through myAACR.org, and the link to submit Training Award applications can be accessed on the home page of myAACR.org. More information about the Training Awards for the AACR Annual Meeting 2022 is available here. Please contact Abstract Submission Customer Service with questions (217-398-1792 or aacr@support.ctimeetingtech.com). We look forward to seeing you in New Orleans, LA!

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