Writing Effective Scientific Abstracts

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- WHAT MAKES AN ABSTRACT?
- WHAT MAKES A GOOD ABSTRACT?
- USES OF THE ABSTRACT
- SUBMITTING TO SACNAS (OR ELSEWHERE)
- WHAT DO I DO IF I DON'T HAVE RESULTS BY THE SUBMISSION DEADLINE?
- WRITING IS HARD

The 5 Parts of an Abstract

1. **Title** (*overview*)
2. **Objective/Purpose of the study** (*why?*)
3. **Materials and Methods** (*how?*)
4. **Results** (*what?*)
5. **Conclusion/Significance** (*so what?*)

The 5 Parts of an Abstract

Title: Should be written with your audience in mind—use terms likely to be familiar to the average reader in a given audience; give enough information to help specialists who might be scanning abstract book for posters relevant to their research; unless for a disciplinary conference, avoid overly technical language or abbreviations except for widely recognized ones (RNA, DNA, ATP and so forth)

Objective/Purpose of the study (*why?*): a concise statement of your research question or hypothesis.

Materials and Methods (*how?*): describe only important information about procedure, equipment, and quantities.

Results (*what?*): include specific, data; if results are quantifiable, then report as such; results of statistical analysis should be included.

Conclusion/Significance (*so what?*): briefly state important conclusions or questions that follow from the findings.

Note that the form of an abstract mirrors the form of a scientific research paper

Uses of the Abstract

- Submit as part of a conference or fellowship proposal

- Summarize a research project for funding requests, publication, or research resources
  - Databases (PubMed, libraries, etc.)
  - Journal submissions
  - Pre-proposal for grant funding

- Conferences use them to produce abstract books for participants to review

Sample PubMed entry

Enantioselective Total Syn

www.ncbi.nlm.nih.gov/pubmed/24873648

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J Org Chem. 2014 Jun 20;79(12):5697-709. doi: 10.1021/jo500800k. Epub 2014 May 30.

Enantioselective Total Syntheses of FR901464 and Spliceostatin A and Evaluation of Splicing Activity of Key Derivatives.

Ghosh AK[1], Chen ZH, Effenberger KA, Jurica MS.

Author information

Abstract

FR901464 (1) and spliceostatin A (2) are potent inhibitors of spliceosomes. These compounds have shown remarkable anticancer activity against multiple human cancer cell lines. Herein, we describe efficient, enantioselective syntheses of FR901464, spliceostatin A, six corresponding diastereomers and an evaluation of their splicing activity. Syntheses of spliceostatin A and FR901464 were carried out in the longest linear sequence of 9 and 10 steps, respectively. To construct the highly functionalized tetrahydropyran A-ring, we utilized CBS reduction, Achmatowicz rearrangement, Michael addition, and reductive amination as key steps. The remarkable diastereoselectivity of the Michael addition was specifically demonstrated with different substrates under various reaction conditions. The side chain B was prepared from an optically active alcohol, followed by acetylation and hydrogenation over Lindlar's catalyst. The other densely functionalized tetrahydropyran C-ring was derived from readily available (R)-isopropylidene glyceraldehyde through a route featuring 1,2-addition, cyclic ketalization, and regioselective epoxidation. These fragments were coupled together at a late stage through amidation and cross-metathesis in a convergent manner. Six key diastereomers were then synthesized to probe the importance of specific stereochemical features of FR901464 and spliceostatin A, with respect to their in vitro splicing activity.

PMID: 24873648 [PubMed - in process] PMCID: PMC4066912 [Available on 2015/5/30]

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Enantioselective syntheses of FR901464 and spliceostatin A: potent inhibitors [Org Lett. 2013]

Total syntheses, fragmentation studies, and antitumor/antiproliferative [J Am Chem Soc. 2007]

Total synthesis of FR901464, an antitumor agent that regulates the transc [J Am Chem Soc. 2006]

Review Enantioselective total syntheses of several bioactiv [Chem Pharm Bull (Tokyo). 2004]

Review Cephalostatin analogues--synthesis and biological acti [Fortschr Chem Org Naturst. 2004]

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SACNAS Undergraduate Summer Research Abstract Submission Guidelines

All submissions must be received within the 2014 Application Period: **June 16 - July 14 at 5 PM PDT**

Abstract Guidelines
Submissions must follow these guidelines in order to be considered for a presentation:

Abstracts must contain:

- At least two authors including presenting author (student), research mentor, or co-authors
- All undergraduate, postbaccalaureate, and graduate student abstract submissions (poster and oral) are reviewed on a scale of 1 to 5 (5 being the highest) based on the criteria outlined below
- A hypothesis or statement about the problem under investigation
- A statement of the experimental methods/materials used
- Results provided in summary form (even if preliminary)
- Conclusion

1. All abstract review decisions are final.
2. Submissions with average scores of 3 and above will be published in the Annual Abstracts Volume and will be considered for presentation
3. Abstract word limit is 250 (maximum). No graphics or schema are allowed in SACNAS abstract submissions
4. Abstracts will need to be approved by the Principal Investigator (PI) before submission. Students must obtain permission from their PI, co-authors and/or research mentors before submitting an abstract. Research mentors will receive an e-mail notification of abstract submission.
5. Students working in the same lab must independently submit original abstracts, identical abstracts submitted by different students will be automatically rejected.
6. Only abstract submitters can be presenting authors for student poster and/or oral presentations
7. Important Note: No changes are allowed after submission

http://sacnas.org/events/national-conf/student-postdoc-research-presentations/guidelines

Fundamental Qualities of a Good Abstract

- Single paragraph, no extra line breaks, no indentations.
- Written in the 1st person plural ("we")
- Written in the past tense
- Focus is on summarizing results; limits background info to essentials
- No references or citations—an abstract must stand alone
- Length is usually around 250 words; always check submission requirements for specific limits

Title in regular font—same type & size as rest of abstract.

Do not italicize or put in quotation marks. Do not punctuate.

Investigation of Nitric Oxide Mediated Oligonucleotide Damage by Photoactive Metal Nitrosyls

Student Name and PI Name
Department of Chemistry and Biochemistry
University of California, Santa Cruz

Your name, names of others involved in the project, and PI. University affiliation and department. Center above body unless otherwise instructed.

It has been demonstrated that the use of photoactive metal nitrosyls not only permits efficient transport of nitric oxide to the target site, but also provides light-triggered release of NO to cells which in turn lead to apoptosis. Since DNA damage is a hallmark of apoptosis, we are therefore interested in the interaction of DNA with NO and other reactive nitrogen species (RNS). We propose that Manganese nitrosyls can mediate in t[illegible] such as peroxynitrite and dinitrogen trioxide ar[illegible]s are responsible for DNA damage. We predic[illegible]more than one type of RNS can be generated w[illegible]ces. This implies a mixture deaminated and [illegible]mployed spectroscopic techniques and HPLC in characterizing the products obtained when DNA bases are exposed to photoactive NO donors and the subsequent RNS it generates. Preliminary findings indicate that exposure of guanine to NO gas alone does not alter its chemical structure. With designed metal nitrosyls as NO donors, we could have a convenient tool that allows analysis of individual components in the series of events that take place in the onset of apoptosis.

The abstract body is usually a solid block of text that is single-spaced. Do not indent the first line. No line breaks between sections.

Average length is 250 words. This abstract is 199 words.

Draft Abstract

What's missing? How to improve?

Exploring Population Connectivity Using Two Methods.

We investigated connectivity in south Texas by examining genetic variation in microsatellite loci and concentrations of stable isotopes in otoliths. Analysis of microsatellite data revealed no population structure (FST = 0.014, P = 0.35); however, pairwise comparisons indicated significant differences between some non-adjacent areas.

Discriminant function analysis of otolith stable isotope concentrations revealed that on average 64% of samples were assigned to the correct area. Our results suggest that mixing is occurring and is most likely between adjacent areas; however, longdistance migrations may also occur. therefore, demographic connectivity, including mixing rates among regions, should be considered as part of management decisions.

Critique of Abstract #1

•Title: Title too short and not descriptive, doesn't give any context or tell what the study was about.

• Why (Introduction): Missing an "introduction" sentence or two that puts work into a context and identifies main questions/objectives.

• Hypothesis (Question/Problem): Also missing - there is no indication of the motivation/aim of the study or even of the main question addressed.

• How (Materials and Methods): Implied but not really described.

• What (Results): This part is actually good, but would be more meaningful and powerful if other information (e.g., introduction and methods) were there.

• Summary: Good summary statement, but also would be more powerful and understandable if other information were not missing.

• Conclusion/Significance: OK - could do a little better job of tying results back into the main aim or motivation of the study, if that information were included.

Revised Abstract

Combining Genetic Markers and Otolith Chemistry to Examine Connectivity Issues: Connectivity of Spotted Seatrout in South Texas as an Example

Presenter Name, Other Researchers in Group, PI
Departmental Affiliation
University Affiliation

Worldwide fisheries declines have prompted concerns about population connectivity among management regions. Understanding connectivity will improve effectiveness of management strategies, especially for determining the scale at which these strategies should be implemented. Spotted seatrout, a species highly dependent on estuaries throughout its life, was our model species for this study. We investigated connectivity in south Texas by examining genetic variation in 10 microsatellite loci and concentrations of two stable isotopes (δ13C and δ18O) in otoliths (earbones). Given the estuarine dependence in this species, we hypothesized that we would find some genetic differentiation among areas as well as area-specific isotope “signatures” in the otoliths. We collected adults from multiple locations within each of five areas and used standard techniques to collect microsatellite genotypes and assess genetic differentiation among regions as one measure of population connectivity. We also quantified otolith δ 13C and δ18O using inductively coupled mass spectrometry. Analysis of microsatellite data revealed no population structure (FST = 0.014, P = 0.35); however, pairwise comparisons indicated significant differences between some non-adjacent areas. Discriminant function analysis of otolith stable isotope concentrations revealed that on average 64% of samples were assigned to the correct area. Our results suggest that mixing is occurring and is most likely between adjacent areas; however, long-distance migrations may also occur. Therefore, demographic connectivity, including mixing rates among regions, should be considered as part of management decisions.

RESOURCES AND REFERENCES

- SACNAS guide to writing abstracts http://sacnas.org/events/national-conf/student-postdoc-research-presentations

- SACNAS sample abstracts

  http://dl.dropboxusercontent.com/u/21485523/2012_Abstract_Samples.pdf

- NATURE- on scientific writing http://www.nature.com/nsmb/journal/v17/n2/full/nsmb0210-139.html

QUESTIONS?