Special Topics on Bioinformatics:
Intro to Biomolecular Structures and Genetics

Paper to discuss

Paper 2

"Short communication on Next-generation sequencing"

Jorge S Reis-Filho

Paper 3

"CNV-seq, a new method to detect copy number variation using high-throughput sequencing"

Chao Xie and Martti T Tammi

Writing a scientific report

Exactly what are you going to write about

Audience is writing for a beginner, an intermediate, or an advanced audience

Do your research. How well do you know the topic? Is it something you can write easily about with little or no preparation, or do you need more information from experts in the field?

Decide on the length of the reported document. Consider the limitations

Compile a list of possible sources for you to consult. This can include documents, internet research and people to talk to

Write either an outline or a summary : report to the sharper focus

Writing a scientific report

Write the rough draft of the report as follows

Tell your readers what you are going to tell them

For example:

This report explains how to […..]

It covers the following information

The information in this report is written for a beginner/an intermediate/ or an advanced

Tell your readers what you promised to tell them

Tell your readers what you just told them

For example:

This report taught you how to [...]

You learned how to [...]

Writing a scientific report

Report should

- describe the materials that were used
- include results that were obtained
- relate the results to existing knowledge
- suggest future study
- presentation of data in tables and figures

Reader should be able to

- duplicate the study from the information
- see a full presentation of results (Without any attached interpretations)
- reach his or her own conclusions

Writing a scientific report

Check over your piece for presentation

Check for faulty information

Double-checked your facts

Delete any unnecessary or contradictory information

Eliminate anything that is just taking up space

Don't fill your work with fluff

Check for grammar and spelling errors

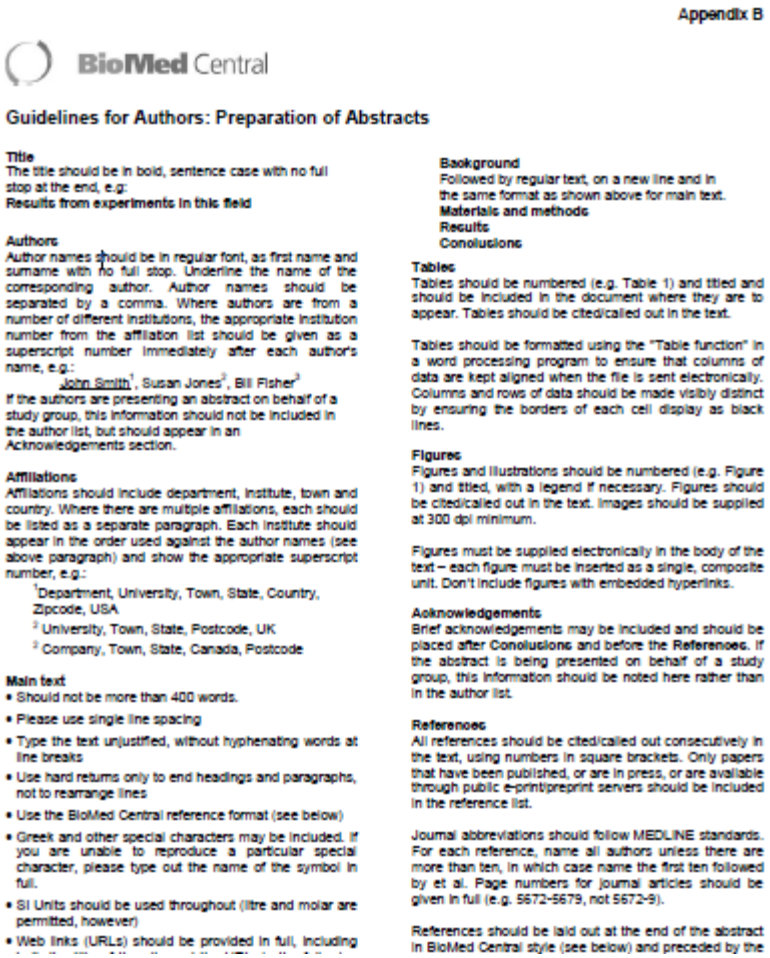
Read it aloud to yourself to make sure the text flows smoothly

If you need to do more research, go ahead and do it!!!!

Writing a scientific report

Specific parts of a scientific paper

- The Abstract
- The Introduction
- The Methods and Materials
- The Results
- The Discussion
- Acknowledgements
- References



Appendix B

BioMed Central

Guidelines for Authors: Preparation of Abstracts

Title
The title should be in bold, sentence case with no full stop at the end, e.g:
Results from experiments in this field

Authors
Author names should be in regular font, as first name and surname with no full stop. Underline the name of the corresponding author. Author names should be separated by a comma. Where authors are from a number of different institutions, the appropriate institution number from the affiliation list should be given as a superscript number immediately after each author's name, e.g.:
John Smith[1], Susan Jones[2], Bill Fisher[3]
If the authors are presenting an abstract on behalf of a study group, this information should not be included in the author list, but should appear in an Acknowledgements section.

Affiliations
Affiliations should include department, institute, town and country. Where there are multiple affiliations, each should be listed as a separate paragraph. Each institute should appear in the order used against the author names (see above paragraph) and show the appropriate superscript number, e.g.:
[1]Department, University, Town, State, Country, Zipcode, USA
[2] University, Town, State, Postcode, UK
[3] Company, Town, State, Canada, Postcode

Main text
- Should not be more than 400 words.
- Please use single line spacing
- Type the text unjustified, without hyphenating words at line breaks
- Use hard returns only to end headings and paragraphs, not to rearrange lines
- Use the BioMed Central reference format (see below)
- Greek and other special characters may be included. If you are unable to reproduce a particular special character, please type out the name of the symbol in full.
- SI Units should be used throughout (litre and molar are permitted, however)
- Web links (URLs) should be provided in full, including

Background
Followed by regular text, on a new line and in the same format as shown above for main text.
Materials and methods
Results
Conclusions

Tables
Tables should be numbered (e.g. Table 1) and titled and should be included in the document where they are to appear. Tables should be cited/called out in the text.

Tables should be formatted using the "Table function" in a word processing program to ensure that columns of data are kept aligned when the file is sent electronically. Columns and rows of data should be made visibly distinct by ensuring the borders of each cell display as black lines.

Figures
Figures and illustrations should be numbered (e.g. Figure 1) and titled, with a legend if necessary. Figures should be cited/called out in the text. Images should be supplied at 300 dpi minimum.

Figures must be supplied electronically in the body of the text – each figure must be inserted as a single, composite unit. Don't include figures with embedded hyperlinks.

Acknowledgements
Brief acknowledgements may be included and should be placed after **Conclusions** and before the **References**. If the abstract is being presented on behalf of a study group, this information should be noted here rather than in the author list.

References
All references should be cited/called out consecutively in the text, using numbers in square brackets. Only papers that have been published, or are in press, or are available through public e-print/preprint servers should be included in the reference list.

Journal abbreviations should follow MEDLINE standards. For each reference, name all authors unless there are more than ten, in which case name the first ten followed by et al. Page numbers for journal articles should be given in full (e.g. 5672-5679, not 5672-9).

References should be laid out at the end of the abstract in BioMed Central style (see below) and preceded by the

Writing a scientific report

The Abstract

Written last and is a complete summary of all section of the paper

Short section and is intended to give the potential reader an overall view of the following paper

Brief, concise summary of your results

- Purpose of the paper
- How the work was carried out
- results
- conclusions

These topics are then described in more detail in the body of the paper

Writing a scientific report

The Introduction

Historical and current state of knowledge about the topic
Bulk comes from the synthesis of previously published results
Written in third person using active voice

Should indicate the specific objectives or testable hypotheses that will be studied
Hypothesis should be either supported or refuted by the results of the reported study

Writing a scientific report

The Materials and Methods

The way the project was conducted: where, when, and how

Written in past tense as it describes what was done to generate data

Where: why was the site for the research chosen?

When: Time periods of the study (year, month, day, time of day).

Describe any special conditions that prevailed during the study period

How: data collection, conducted experiments, and specify the equipment used

Reference to previously published standard procedures and equipment

Detail so the reader can duplicate the study

State the procedures used to record, summarize, and analyze the data, including literature citations

Writing a scientific report

The results

Summarize the data and observations obtained in your study

- Raw data utilizing written text, tables, and figures: text should relate the data to those of the literature
- Presentation of data as a table or figure is sufficient. Same data should not be presented in both ways
- Reader can observe any general patterns and gain a sense of the amount of variability within the data
- Concentrate on general patterns, trends, and differences in the results

Begin with the most general features of the data and proceed toward the most specific

Any data sheets or other raw data should be included in an appendix

Data is not interpreted in the "Results" section!!!!!!

Writing a scientific report

The conclusions

Interpret the data in relation to the original objectives or hypotheses

Relate the interpretations to the present state of knowledge and future needs for research

If you can answer "Yes" then → good discussion section

1. Did you reach conclusions about the initial hypotheses?
2. Did you compare conclusions to those of others?
3. Did you identify sources of error and basic inadequacies of technique?
4. Did you speculate upon broader meanings of the conclusions reached?
5. Did you identify further steps needed in research on the problem?
6. Did you suggest improvements of methods?

Writing a scientific report

Aknowledgments

Give credit to those who helped in the project: contributing work, advice, permission, technical assistance, funds for conducting the actual work, and help with preparation of the paper ….

Should **not** include those who contributed significantly to the paper and are listed as authors

References

List authors alphabetically that are referred to in the text

Different types of references has their own particular format

Many journals have specific formats that must be followed

Writing a scientific report

References

***Journal Article*:**

Includes the name of the author or authors, the year of publication, the article title, the fully spelled journal name, and the volume and page numbers of the article itself

Steward, K. K. and W. H. Ornes. 1975. The autecology of sawgrass in the Florida Everglades. Ecology **56**:162-171.

***Article from Proceedings of a Meeting*:**

Sajwan, K. S., W.H. Ornes, and T. V. Youngblood. 1996. Feasibility of using fly ash with sewage sludge and animal wastes as a soil amendment. Pages 459-462 in Proceedings of the 10th International Conference on Heavy Metals in the Environment Vol. II, September 18-22, 1995, Hamburg, Germany.

Writing a scientific report

References

***Article in Edited Volume*:**

Includes the article author, date of publication, article title, pages in volume, names of volume editors. volume title, and the publisher's name and location

Ornes, W. H. and R B. Wildman. 1979. Effects of cadmium on aquatic vascular plants. Pages 304-312 in D. D. Hemphill, editor. Trace substances in environmental health-XIII. University of Missouri, Columbia, Missouri, USA.

***Book*:**

Gives the author, date of publication, title, and the publisher's name and location

Sokal, R R, and F. J. Rohlf. 1981. Biometry. W. H. Freeman, New York, New York, USA.