UPPSALA
UNIVERSITET

Report template with instructions

Teachers 1MB830, 1MB745

Abstract

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OBS!

The layout of this document is the same as for the written report. Therefore, some sections (abstract, popular science summary, abbreviations) are found both here, before the main report, but are also described in the main text under "Front matter".

Last revision: 17th of November 2020

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The abstract is meant as a summary of the report, that is it should include an introduction statement, and the most important aspects of material and method, results and discussion. The abstract should be contained within one page.

This is the third page of the report, after the title page followed by a blank page. However, the page numbering is not written out until the main part of the report starts.

Title – find one that attracts the reader

Popular Science Summary

Your name

This section should be a popular science text, that is, directed to readers with no college education in bioinformatics. This means you cannot use your abstract, but you must write with simpler words, avoid overly complicated sentences and even avoid - or explain - scientific terms that are not widely known by the general public. In general, a popularized science text cannot be too simple. In many cases you can also write a title more adapted to this popular science section, instead of the more scientific one of your report. You often need to reduce/select the content, avoiding too many details, and instead pick out the most important results or "highlights" from your studies.

The summary should be no more than 1 page. The main text should be adjusted to the left and Times New Roman 12 points is an appropriate font. The title and your name should be centered and made larger than the main text. It is not allowed to include pictures. Please note that the Swedish-speaking students are required to write this summary in Swedish. If you are not fluent in Swedish, you should write in English.

Some formal, general, information should be added to the bottom of the page in the same way as on the front of your report, and will vary with the type and length of your thesis. Use the automatically generated text from the front of the report as a template (see example below).

The table of contents should be placed on a right-hand side (odd page) in the document.

Table of Contents

Abbreviations

Here you write, in alphabetical order, a list of all abbreviations used in the text. The abbreviations should be placed on a right-hand side.

Also, the introduction should be placed on a right-hand side (odd page) in the document. So, depending on how many abbreviations are introduced, more blank pages may need to be inserted before the report starts.

Example:

ATP   adenosine triphosphate

DNA   deoxyribonucleic acid

1 About the template

In the written report you summarize your work. The report will be archived and, if you wish, published. To create uniformity for the technical masters, we have from the spring semester of 2017 the requirement that the report should follow the instructions in this document. It facilitates feedback between students and teachers when everyone involved knows what is expected of the report. Moreover, you will get a good exercise in following the instructions for the drafting of a document, which you will have advantage of no matter where you choose to work in the future.

This document is thus a template, and contains instructions for the report for Master programs in Bioinformatics at Uppsala University. This document supplements the course plans (UU 2020), the faculty guidelines for degree projects (TEKNAT 2016/25), specific instructions for the master's programs (IBG 2020a), and Presenting Science, IBG:s instructions on scientific writing (Rydin *et al.* 2014).

You can start writing your report by replacing the text in the template with your own. A Microsoft Word version is available for downloading from the course page if it is the PDF version you are reading. The template uses the styles that are pre-defined with names that begin with X. **The names of the styles are shown in bold** in this document. The styles for example control spaces between paragraphs. So, never use additional blank lines. If you use other software, follow the appearance that the formatted template provides (see Appendix A).

The work is presented in the form of a report written in English (or Swedish) with abstract in English. If the report is written in English, use British English spelling and language conventions. The report has three parts, the introductory part with information and summaries of the report, the main body in which you present your project, and a final section with information about references, and possibly appendices.

At IBG we follow the instructions in Presenting Science. The booklet has instructions for scientific writing within the biological field. Different disciplines, however, have different traditions when it comes to the outline, and many degree projects are performed in areas not covered by Presenting Science. Therefore, consult your supervisor or subject reader about the appropriate disposition for the type of work you have done. However, you must always follow the instructions for referencing, tables and figures according to Presenting Science and formats in this document that control the layout.

2 Front matter

The order of the information contained in the front matter is title page, abstract page, popular science summary, table of contents and, if necessary, abbreviations. These pages should always start on the right-hand side, i.e., an odd page in the document. Therefore, insert blank pages after the title page and abstract, and if necessary, also after the other pages.

2.1 Title page

The title page is generated here: http://pdf.teknik.uu.se/pdf/exjobbsframsida-ibg2.php?lang=en

2.2 Abstract page

The abstract is a summary of the entire paper, see Presenting Science (Rydin *et al.* 2014). The abstract page should be followed by a blank page in the document.

2.3 Popular Science Summary

You should summarize your work on 1 page in Swedish (or in English if you are not fluent in Swedish). Remember that you are writing the popular science summary for a different audience than the rest of the report. Presenting Science (Rydin *et al.* 2014) has instructions on what you need to consider when writing a popular science text. The summary is on the fifth page of the report, after the title page and abstract page, which both are followed by blank pages.

2.4 Table of Contents

The table of contents should provide a quick overview of the report. As you use the styles, it is easy to create and update. The styles **X-heading 1**, **X-heading 2** and **X-heading 3** are used to create the index. Headings in the introductory part shall not be included in the index. Therefore, use style **X-heading 1 introductory part** for them. The table of contents should be on the right-hand side.

2.5 Abbreviations

Last in the introductory part, you could have a list of abbreviations if necessary. Sort the list alphabetically. Begin the list with abbreviations on a new page, on the right-hand side, after the table of contents.

3 Body: The report's text with figures and tables

In the main part you describe your project. It should be written as a continuous text supplemented with e.g., tables and figures. The disposition of a scientific paper is determined by a number of defined main headings. Your task is to, in relation to this, report your work in a legible and accurate manner.

Keep the body of the text to between 8000-13000 words.

Try to limit the number of figures and tables in the body to 10 of each.

3.1 Main headings

For main headings, use the style **X-heading 1**. The following main headings can be used in the report:

- Introduction
- Materials and Methods
- Results
- Discussion
- Ethical concerns and conflict of interest
- Ethical approval
- Acknowledgement

The list is formatted with the style **X-bulleted list**. For numbered lists, use the style **X-numbered list**.

All main headings do not need to be included. You can use others you think are appropriate based on the scientific works written within your field. However, we want you to have separate sections for the results and discussion. Instructions on what to write in the various sections are found in Presenting Science (Rydin *et al.* 2014). Consult your supervisor or subject reader if you are unsure of which main headings that are appropriate in your case.

3.2 Main outline

Besides the main headings, you can use subheadings to structure your text. Use the style **X-heading 2** for subheadings which are on the level below the main headings and the style **X-heading 3** for the next level of subheadings. You should not need additional levels. The main report always begins on a right-hand side, i.e., on an odd page in the document.

3.2.1 Introduction
You start the report by providing an introduction to the project you have done. Key points to cover are: prior work in the field necessary to understand and contextualize the work, also

broader context and societal impact of the project. A well written introduction communicates both why the project is important (why should we care), what came before, and it should also make the reader confident in your background knowledge. **The introduction should clearly describe the aim of the project.**

3.2.2 Materials and Methods

After introducing the project, you describe how it was carried out. You must account for all experiments and analyses you made and the basic rule is that it should be possible to repeat the work by reading the description. According to the standards of your field, if protocols, scripts/code, or data are deposited in a public repository for reproducibility and reusability, the reference should be provided here. If pre-existing data play a major role in this project, you should sufficiently explain how those data came about, in its own sub section.

There are different traditions on how to describe experiments in different disciplines. Read Presenting Science (Rydin *et al.* 2014) and consult your supervisor or subject reader if you are unsure on how to describe the methods in your report.

3.2.3 Results

In the results section you write what you did and which results you got, but in such a way that the reader can judge that you have produced, analysed, and interpreted the results. For example, results should not be just a succession of figures and bullet point, but a well-structured text. Structure the results section in a way that makes the text easy to follow and understand – think about subheadings! A good advice is to try to keep a clear link between the questions, and the methods used in order to answer them.

Make sure that this section has main text, not only figures/tables with legends. All figures/tables should be introduced in the main text, see 3.2.9. Think carefully about which figures and tables to put in the main text. Which ones need to be there, and which ones can be left out or put in an appendix?

3.2.4 Discussion

In the discussion section, put the whole work, not only the results in a context and return to the questions you presented in the introduction. How does your work relate to previous research and development? Is there any bias? If there are bias – how can it be avoided? What are the limitations of the experiments? Because a discussion must refer to the existing body of work for the question at hand, it must include references! The discussion is an important part of a scientific document and needs to be substantial.

3.2.5 Ethical concerns and conflict of interest

Depending on the nature of each individual project, there might be other aspects of the work that may be of interest, but that may not always be obvious to people in the relevant field of research. Are there for example ethical aspects on what you have done, or what your work is

aimed at? What role does your work have for individuals, the environment, sustainability, the society at large? Mention relevant aspects and make it more interesting for a wider readership.

3.2.6 Ethical approval
If the data or experiments you use need ethical approval, you should here state that you have that.

3.2.7 Acknowledgement
Often there are reasons to thank someone who contributed to the work, for example the supervisor. This is done at the end of the main body, before the references.

3.2.8 References in the text
You need to provide references for all data in the report that is not your own, or commonly known. You can read about how to reference on the IBG's website (IBG 2020b) and in Presenting Science (Rydin *et al.* 2014). If you want, you can use a reference management program to organize your references. For Zotero there is a ready template for IBG's reference system to download from the IBG website (https://www.ibg.uu.se/student-en/support-service/reference-management/).

3.2.9 Tables and Figures
Often it is convenient to illustrate aspects of the introduction, or describe methods, results and conclusions in the form of a figure or a table. A well-designed figure goes a long way in supporting information otherwise provided in the text. A figure should as much as possible be stand-alone, that is to say that the reader should be able to derive the main message by just looking at a figure (although all figures must be referenced in the text, see below). Use, as far as possible, self-produced images and tables. Create your illustrations with a software that is designed for it (for example Photoshop, Illustrator, Inkscape, PowerPoint, etc). Typically, screen shots of program outputs are not considered valuable figures.

If you use previously published material, you must obtain permission from the copyright holder. State this, and the source, last in the figure caption: "Illustration used with permission from ...". How to design tables and figures and how you refer to them in the text are described in detail in Presenting Science (Rydin *et al.* 2014). Make sure to refer to all figures and tables in the text, number them in the order they appear in the text, and insert them into the document in order. That is, Figure 1 is referenced to in the text before Figure 2 and also placed before Figure 2 in the document. An easy way to get this right is to use cross-references.

When referencing the figure in the text you use insert-cross-reference and select figure, and "only label and number" as within this parenthesis (Figure 1). If a figure is inserted before another in the text, just mark the entire text after inserting the figure and figure text, and update the field. Then all figure numbers and cross-references in the text will be updated.

Figure 1. Under the figure you choose insert-description. You can then choose between inserting a figure, table or equation label. If you do not want the text to be blue, which is the default, you can just change this afterwards. In this picture we see students during the exam ceremony in the University auditorium, 2015.

3.3 Other parts outside the main text

In addition to tables and figures it might be appropriate to use other elements in the report that do not belong to the text, for example equations, chemical reactions or programming code. Make sure to then follow the practice of the subject area in which you have done your work. Consult your supervisor or subject reader if you want advise.

3.4 Layout

A report with good layout gives a good impression. The basis is that you use this template. Other things to consider are:

- make page breaks at appropriate places to minimize empty spaces in the report,
- gather the body text - avoid single lines of running text above or below tables and figures,
- keep figures and tables within the margins used for the text,
- make figures and tables as uniform as possible with respect to font, font size and colours,
- avoid naked headings, that is, when there is no text between two headings at different levels.

4 Concluding part: References and appendix

At the end, create a list of references, and include an appendix if necessary. Use the style **X-1 heading concluding part** for headings.

4.1 References

Every scientific journal has its own standard for references. At IBG the requirement is that you follow the instructions in Presenting Science (Rydin *et al.* 2014). This you can do, for example, by using Zotero and the available template for the reference system.

4.2 Appendix

In the appendix, you can account for results that are too extensive to be included in the main report, but motivated to show. The appendix always starts on a new page and is provided as Appendix A, Appendix B, etc. Each appendix begins on a new page.

5 Concerning writing

If you have problems with the language, the subject reader may refer you to the Language Workshop (www.sprakverkstaden.uu.se/), which then gives you support in the writing process. You can also contact the Language Workshop yourself if you want.

6 What is required for an approved final report?

The supervisor and subject reader will provide feedback on your report. When the subject reader has approved the report, send it to the coordinator. The examiner will read it and make the final assessment. What they are mainly looking at is if:

- the work is scientifically accurate and understandable for a person with general knowledge in bioinformatics,
- outline and layout follow the instructions in this document and Presenting Science (Rydin *et al.* 2014),
- the work is set in its social context, that is, that a person outside the research field understand why the work has been done and what the purpose was,
- the work has been carried out in a responsible manner, for example, that there are permits for any animal testing, and that you have considered the potential ethical aspects.

If you meet all the criteria your report will be approved.

References

IBG 2020a. Guidelines.
https://www.ibg.uu.se/student/programsidor/master/masterprogrammet-bioinformatik/examensarbete/anvisningar/. Accessed 17 November 2020.

IBG 2020b. Reference management. https://www.ibg.uu.se/student-en/support-service/reference-management/. Accessed 17 November 2020.

Rydin H, Carlson K, Berglund A, Svensson BG. 2014. Presenting Science – Biology Education Centre. https://www.ibg.uu.se/digitalAssets/331/c_331418-l_3-k_att-presentera-vetenskap-en.pdf. Accessed 17 November 2020.

TEKNAT 2016/25. Guidelines and instructions for the degree project course within the technical programs at Uppsala University. https://teknat.uu.se/digitalAssets/404/c_404796-l_1-k_guidelines-and-instructions-degree-project.pdf. Accessed 17 November 2020.

UU 2020. Syllabus for Degree Project E in Bioinformatics.
https://www.uu.se/en/admissions/freestanding-courses/course-syllabus/?kKod=1MB830.
Accessed 17 November 2020.

Appendix A – Formatting instructions

If you do not use the template, use the following formatting for the different parts of the report:

X-heading 1 introductory part: Arial normal style 18 points, line spacing 1.15, 36 points before and 12 after the paragraph; not numbered in body

X-heading 1: Arial normal style 18 points, line spacing 1.15, 36 points before and 12 after the paragraph; numbered in body

X-heading 2: Arial normal style 14 points; line spacing 1.15; 18 points before and 12 after the paragraph; numbered

X-heading 3: Arial bold style 12 points; line spacing 1.15; 10 points before and 0 after the paragraph; numbered

X-main text: Times New Roman normal style 12 points; line spacing 1.15; 0 points before and 12 after the paragraph

- X-bulleted list: Times New Roman normal style 12 points; line spacing 1.15; 0 points before and 12 after the paragraph

1. X-numbered list: Times New Roman normal style 12 points; line spacing 1.15; 0 points before and 12 after the paragraph

X-heading 1 concluding part: Arial normal style 18 points, line spacing 1.15, 36 points before and 12 after the paragraph; not numbered in body