Directive for a Dissertation (PhD-thesis) at the Medical University of Innsbruck

For the PhD Doctor of Philosophy (Q 794 440 202)

and the PhD programs:

Genetics, Epigenetics & Genomics (GEG)

Image Guided Diagnosis and Therapy (IGDT)

Infection, Immunity & Transplantation (IIT)

Molecular and Cellular Biology of Diseases (MCBD)

Musculoskeletal Sciences (MSS)

Neurosciences (NS)

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1 Preamble

Due to the legal situation in Austria a PhD thesis is defined as an independent scientific publication of one author (the PhD student) only. We therefore advise you to see a thesis strictly as an independent scientific paper and to write it as such.

Thus, the PhD student risks the thesis to be considered (self-) plagiarism, if the content of published work (including the own published work) is used, but not properly cited. While many journals allow the use of your published content in your PhD thesis (e.g., if they are published under the creative commons license), certain journals demand a transfer of copyright. The contents published in such a journal can only be used for the PhD thesis if the permission is requested and granted by the journal. Using such content in a PhD thesis without the permission of the journal can result in a violation of economic rights. Hence, the PhD student who submits the PhD thesis is responsible
(1) to ensure that copyright issues are not violated,
(2) to properly cite her/his own work and work of others to avoid allegations of (self-) plagiarism &
(3) to clearly declare the personal contribution to the described work.

Most journals will consider submissions containing material that has previously formed part of a PhD thesis, which has been published according to the requirements of the institution awarding the qualification. The same holds true for electronic preprints. However, some journals might have different policies on prior publication, and the PhD students are advised to carefully check with the journals prior to submitting their work.

The author of the PhD thesis is also responsible to ensure that the content of PhD thesis adheres to the rules of good scientific practice at the MUI (https://www.i-med.ac.at/recht/docs_rs/2020_08_26-Satzungsteil-GSP_konsolidierte-Fassung.pdf).

Please be aware that the papers your thesis are based upon must not be bound with the rest of the thesis. You can always enclose the papers in a folder for your thesis committee, reviewer, and defence committee, but certainly not in the official version, submitted to the Nationalbibliothek. According to the Austrian Universities Law (Universitätsgesetz, UG), a thesis is an official publication in its own right and may therefore not consist entirely of published material, it must contain unpublished work.

The "ideal" thesis comprises the following sections in the way described below:

Introduction: Give an extensive overview of the background of your topic. This should be an original text, not a copy of your papers. You should approach this like a new, original publication.

Materials and Methods: Detailed, if not previously published: then you may only very briefly describe the method and reference the paper(s), but do not copy-paste them.

Results: Do not copy-paste the text from your papers, but you may cite them. Figures may be used from publications, if allowed by the journal – usually – and properly referenced.

Discussion: Discuss and illustrate what the findings of your thesis mean in light of the background and the hypotheses. This should be an original work.

2 Before submitting the PhD thesis

- ➢ A final PhD thesis committee meeting must have taken place. The form can be found here: https://phd-school.i-med.ac.at/fileadmin/Abteilung_Lehre/2020/2020_Final-Thesis-Committee.pdf

- ➢ At the time of submission for evaluation, at least one paper should have been published or accepted for publication in an international, peer-reviewed scientific journal with the PhD candidate as a first-named author or co-first-named author. If this is not the case, the PhD candidate and the thesis committee must explain in writing why the submission of the thesis is justified at that time.

- ➢ Submit the final credit calculator and application for submission to the PhD office. The office together with the program coordinator will check it before it is forwarded to the Vice Rector for Study Matters for final approval.

- ➢ Check with your supervisor whether to block parts of your thesis for patent issues. The application to exclude use of the doctoral thesis (embargo) can be found here: https://phd-school.i-med.ac.at/fileadmin/Abteilung_Lehre/2020/2020_Application-to-exclude-doctoral-thesis.pdf

- ➢ For the submission of the PhD thesis please use this form: https://phd-school.i-med.ac.at/fileadmin/Abteilung_Lehre/2020/2020_Submission_doctoral_thesis_Q794-440.pdf

- ➢ The MUI offers a **formal check of PhD thesis** prior to the final submission. If you want to use this service, please contact **Mag. Huber** well before to arrange the timing of the formal PhD thesis check (see also chapter 10).

3 The Goal of a PhD thesis

According to §83 of the Austrian University Law 2002 [UG 2002] (UG2002), the student must write a PhD thesis that adheres to this directive. During working on the topic and writing the text, the provisions of the Austrian Copyright Law BGBl No. 111/ 1936 must be followed (§80 (2) UG 2002) (please also see preamble).

The thesis is a detailed, written presentation of the PhD candidate's work on his/her research project.

The PhD candidate must provide verifiable evidence of his/her ability to work on a scientific problem independently and with scientific rigor. The thesis must be written in English. If a subject is covered by a team of PhD candidates, the intellectual and experimental contribution of each candidate must be clearly evident and it must be possible to evaluate each candidate's contribution separately.

3 The Goal of a PhD thesis

4 The structure of the PhD thesis

In the PhD thesis the student provides the proof that he/she is able to independently develop a scientific project. The PhD thesis describes the scientific problem, the working hypothesis and the new results of the thesis research. It puts these results into perspective and provides sufficient background and methodological details to allow an in-depth review of the thesis.

In general, the number of pages of a scientific publication is not the most important quality criterion. It is more important to describe the topic precisely, correctly, and understandably in a compact form, whereby the process of independently handling the research problem is documented. Every topic should be covered as compactly and clearly as possible but also as detailed as necessary. Journal articles are kept rather short due to limited space, economic reasons of the publishers, the requirements of the readers, and other similar reasons. A PhD thesis should be more extensive.

The length of a typical PhD thesis (written in Arial or Times New Roman 11, line spacing max. 1.5) at MUI is 70 – 100 pages, in order to serve its purpose in accordance with the Austrian University Law [UG] and it must contain the following sections:

➢ **Cover page**
  - with logo of MUI
  - title of PhD thesis
  - author
  - supervisor
  - department / institute
  - month / year of submission

➢ **Statement of originality (not signed) / Eidesstattliche Erklärung (nicht unterschrieben)**

  The statement of originality must be present both in German and in English.
  The template is available on the website of the Medical University (https://www.i-med.ac.at/studium/studierende/docs/eidesstattliche-Erklaerung_06_04_2016.pdf). It must be placed before the table of contents in the PhD thesis. State your first & last name in the designated field. Do not sign the statement of originality in the PhD thesis. The student must personally sign the statement of originality in the Department for Teaching and Study Organisation [Abteilung Lehr-und Studienorganisation] on the day of submitting their thesis (please also see below)

➢ **Table of contents**

➢ **Key words**

➢ **List of Abbreviations**

➢ **Acknowledgments**

You can acknowledge your PI, PhD committee, friends and family. You can also acknowledge the founding sources of personal fellowships or grants from your PI.

➢ **Abstract in English (max. 1 page)**

➢ **Abstract in German (max. 1 page)**

➢ **Introduction**

The introduction provides sufficient background information and explains the general and the particular scientific problem.

➢ **Objective of the study / Working hypothesis / Aims**
- Defines the research question that is addressed in the PhD thesis.
- Written in passive voice and past – "the aim was to…."

➢ **Materials & Methods**

Contains a detailed description of the experimental procedure and reagents that allow to follow the experimental design and to reproduce the experiments, unless it is already fully published – then referencing it is sufficient.

➢ **Results – can be organized and presented in chapters**
- Clear definition of your own contribution
- Particularly important if you use results from publications with multiple authors, and / or if one or several of these authors were equal contributing to the published manuscript.
- If the results of your thesis are already published (either on a preprint server such as biorxiv/medrxiv, or in a peer-reviewed journal), and you want to use them in your thesis, please make sure that this is possible (e.g. if they are published creative commons (CC) license or if the publisher allows the use). In case you are not sure, please contact the publisher, since in some cases, you might need to ask for permission to reuse your results.

Either way, if you include published data in your thesis, you must cite these results and make clear that they have been published, otherwise it might raise suspicion of self-plagiarism.

- We also strongly encourage you to include most (if not all) of your meaningful unpublished data in your thesis.
- The results are organized such that they are logically connected.

➢ **Discussion & Outlook**

- Do not repeat the results. Rather, explain how your results move the field forward and how they provide novel insights and different perspectives on the problem that you set out to solve.
- Describe how your results break new ground for the research field, and which questions should be asked next.
- Describe the limitations of your study.

➢ **List of References**

- Must allow the reader to unambiguously identify the source of information that you are quoting.
- Use Vancouver (please see additional guidelines for citations below).

➢ **Appendices (if required)**

➢ **Academic CV & list of publication**

Including a CV is optional. If you include a CV, do NOT add personal information (please also see below).

➢ **The following information must NOT be present in the PhD thesis:**

- Matriculation number
- Address
- Signature
- Phone number
- A CV with sensitive personal data

5 Format of PhD thesis

- ➢ The PhD thesis must be submitted as a bound hard cover document in DIN A4 format.
- ➢ The cover should be labelled with Dissertation (PhD thesis) and the Name of the author
- ➢ The title of the PhD thesis should be on the front page or first page together with the MUI logo
- ➢ The spine of the thesis must bear the author's name, the label Dissertation (PhD-Thesis) and the year of publication.
- ➢ It is recommended that the PhD thesis be printed single-sided. If you print double-sided please make sure to use the appropriate paper-strength to avoid ghosting; the pages must be numbered consecutively.
- ➢ For legibility reasons, the continuous text should have a line spacing of 1.5 lines, a font size of 11 pt, and an easily readable font such as Arial or Times New Roman.
- ➢ There should be a margin for corrections of 2 -2.5 cm on the right side of each page.
- ➢ The PhD thesis must be formally coherent.
- ➢ The PhD thesis must be written in English without exception.

6 Gender-Sensitive Language and Respecting Gender Aspects

Gender-sensitive language must be used. Paying attention to differences regarding sex and gender during the work on the entire research problem and PhD thesis is required. The Guideline for Gender Medicine and Research, Guideline for Scientific Work [Leitfaden Gender Medizin und Forschung, Leitfaden für wissenschaftliche Arbeiten] serves as a guide for the integration of the cross-cutting issue of gender medicine and can be found here on the website of the Coordination Office for Equality, Advancement of Women, and Gender Research [Koordinationsstelle für Gleichstellung, Frauenförderung und Geschlechterforschung].

6 Gender-Sensitive Language and Respecting Gender Aspects

7 Useful Information about References and Citation Style

It is highly recommended to use literature management application from the start. You can save a lot of work, frustration, and time for revisions if you consistently use a literature management application. However, do not rely too much on these applications, as they are helpful, but not without fault. Nearly every bibliography must be adjusted manually at the end.

Nowadays, there are various applications available which all basically do the same: they make sure that labelling citations and creating a bibliography is as simple and as consistent as possible. In addition, these applications allow you to change the reference style with the push of a button. You will really appreciate this feature.

Frequently used Reference Management Software (citation programs) are:

- EndNote   www.endnote.com
- Citavi   www.citavi.com
- Zotero   www.zotero.com
- Mendeley   www.mendeley.com
- Papers   www.papersapp.com

The Department for Teaching and Study Organization recommends EndNote. However, each of these applications is absolutely sufficient for writing a PhD thesis and the IT Services Department [Abteilung für Informations-Kommunikations-Technologie] offers students free usage of Endnote Web and Citavi, the online version of the software. This version allows students to manage up to 10,000 references and use them in Microsoft Word, amongst others.

To use the software, you must log in on a computer in the PC room of the IT Services Department located in the MZA user room and create a personal EndNote Web account. The corresponding link is available on the website www.myendnoteweb.com

After your registration is complete, you can use Endnote Web and manage your references from any computer. To make sure your account stays active, you must log in on a computer in the PC room of the IT Services Department using your account at least once a year (every 365 days). This is necessary in order to limit the users to the active students of the University.

Additional information about configuring and using the platform is available directly on the Endnote Web portal.

ATTENTION: Never rely blindly on your software! Double-check each entry thoroughly for missing information and incorrect formatting!

8 Why are citations necessary at all?

A citation in any of its forms can and must never be only an end in itself, even if students see it as a chore. One reason for referencing is for reasons of scientific integrity. You indicate very clearly that you are referring to somebody else's research results or your own; this is also a way of valuing the intellectual work of other researchers. At the same time, you reinforce your arguments and results with the results of other researchers. Another important purpose of referencing is to enable the reader to find and study the original sources. Hence, you should strive to cite the original research papers, rather than the reviews.

Each citation/reference (and hence source of information) must be traceable. You have to make this as easy as possible for the reader. Therefore, bibliographic entries must be

> ➢ complete,
> ➢ correct, and
> ➢ as reliable over time as possible

A bibliography entry which is incomplete (e.g., a book missing its year/edition/publisher) forces the reader to search for the actual publication themselves using the information provided by you. This must be avoided.

9 The reference style

Use the **<u>Vancouver</u>** system.

A bibliography created with EndNote can be adjusted "by hand". Technically experienced users can adjust these applications using style sheets according to their needs.

At the beginning, there is always the question what is being cited and how. You must use different forms depending on whether you cite a book, a journal entry, or a part of an edited volume; whether it is an exact quote, that you are paraphrasing, or delivering prove for a statement.

For more details on citations, please consult the appendix (chapter 11).

9 The reference style

10 Important contact information and points of contact

If you have any **questions related to formatting the PhD thesis**, including correct citation, please contact **Mag. Dennis Huber**, Department for Teaching and Study Organisation [Abteilung Lehr-und Studienorganisation]. Mag. Huber can also conduct a formal check of PhD thesis prior to the final submission. If you want to use this service, please contact Mag. Huber well before to arrange the timing of the formal PhD thesis check:

Mag. rer. nat. Dennis Huber

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Emai: Dennis.Huber@i-med.ac.at

For all **administrative matters** concerning the PhD thesis ranging from registration to submission of the thesis, please contact Mag.a Brigitte Amtmann, International Relations Department:

Mag.a phil. Brigitte Amtmann

Tel.:   +43 512 9003 70050;
Email: Brigitte.Amtmann@i-med.ac.at

11 Appendix on Citations and References.

11.1 Some "sources" are not or only partly citable:

- ➢ <u>Wikipedia</u>: You should not cite Wikipedia. The origin of its articles is unclear (Who wrote the entry? Who edited it?), and they are also volatile. The article can contain different (and contradicting) information on the next day or disappear altogether.

- ➢ <u>Websites in general</u>: Citing websites is critical: most websites reference other sources themselves. Search for those sources and cite the original publication. If it is necessary to cite websites (e.g., information from a company website, data from Statistik Austria, data from the WHO), follow the template for citing websites below. Be prepared, however, that those sources might no longer be available after two years at the latest.

- ➢ <u>Flyers/brochures</u>: Avoid citing such sources. Instead, verify where the information originally came from and then cite that source. In most cases, it is almost impossible for the reader to obtain those flyers or brochures. Hence, this source fails when it comes to a key quality characteristic – its traceability.

- ➢ <u>Lecture notes</u>: Those are not citable either. Find the publications the lecturer extracted the information from, and cite those sources. This also applies to PowerPoint slides.

- ➢ <u>Oral correspondence</u>: Avoid citing such sources. Better ask the other person where you can obtain this information, and then cite those sources. Provided you did not speak to a distinguished expert in that field, you can probably find more current and more reliable data during your own research.

11.2 What do I need for a citation to be correct?

Strictly speaking, a citation comprises three parts:

A. The cited part in the text
B. The mark directly next to the cited part
C. The information in the bibliography (list of references)

<u>Here is an example for all 3 parts of a journal article</u>:

The importance of effective intrapersonal relationships between patients and healthcare providers cannot be underestimated [1].

(1) Williams B, Brown T, Boyle M, Dousek S. Psychometric testing of the Jefferson Scale of Empathy Health Profession Students' version with Australian paramedic students. Nurs Health Sci. 2013; 15(1):45-50.

PART A: The importance of effective intrapersonal relationships between patients and healthcare providers cannot be underestimated. = the cited text

PART B: [1] = the Vancouver-conform mark which links the text to the bibliography

PART C: (1) Williams B, Brown T, Boyle M, Dousek S. Psychometric testing of the Jefferson Scale of Empathy Health Profession Students' version with Australian paramedic students. Nurs Health Sci. 2013; 15(1):45-50.

11.3 The format of the Vancouver bibliography / list of references

Author(s). Title. Journal (abbreviated). Year; volume(issue):pages.

The correct abbreviation of a journal's name (NLM title abbreviation) can be found in the PubMed database: http://www.ncbi.nlm.nih.gov/nlmcatalog/journals

• Funke J. Computer-based testing and training with scenarios from complex problem-solving research: Advantages and disadvantages. Int J Select Assess. 1998; 6(2):90-6.

• Eseryel D, Law V, Ifenthaler D, Ge X, Miller R. An Investigation of the Interrelationships between Motivation, Engagement, and Complex Problem Solving in Game-based Learning. Educ Technol Soc. 2014; 17(1):42-53.

• Angelsky OV, Gorsky MP, Hanson SG, Lukin VP, Mokhun II, Polyanskii PV, et al. Optical correlation algorithm for reconstructing phase skeleton of complex optical fields for solving the phase problem. Optics Express. 2014; 22(5):6186-93.

11.4 Special Cases

You will frequently find special cases, for example journals without volume/issue information, pure online journals, or articles without an author. In most of those cases, the problem can be solved by conducting an online search about the Vancouver referencing system. If you cannot find a solution, please contact Mr. Huber (see section 10).

You will regularly encounter publications which either have no page numbers at all or "strange" page numbers like e0254, e3756646363, 4556333455, etc. This means it is most probably one of the three following sources:

➢ epub ahead of print (= this article only exists in digital form, but will be published in a printed version in the near future),

➢ Epub (= this article only exists in digital form and will likely not be published in a printed medium), and

➢ eCollection (= this article will be published either in a digital form only or in combination with a print medium).

In all these cases you must state the DOI (Digital Object Identifier).

Here are three (fictional) examples:

• Doe J. A very nice paper. J Theor Sci. 2000; 1(23):e123456. doi: 92345wg/07 [Epub ahead of print 2000 Jun 23].

• Doe J. An even nicer paper. J Theor Sci. 2009; 1(23):123456. doi: 12475wg/99 [Epub 2009 May 15].

• Doe J. The nicest paper. J Theor Sci. 2015; 1(23). doi: 347654ma/99 [eCollection 2009].

Combinations of the above are also possible, for example eCollection with complete date.

11.4.1 How to cite journal articles without issue?

Dedovic K, Ngiam J. The cortisol awakening response and major depression: examining the evidence. Neuropsychiatr Dis Treat. 2015; 11:1181-9.

11.4.2 How to cite journal article published ahead of print?

Kwon OJ, Kim M, Lee HS, Sung KK, Lee S. Title. Biomed Res Int. 2015; 2015:709230. Doi: 10.1155/2015/709230 [epub ahead of print 2015 Aug 31].

11.4.3 How to cite journal articles without authors?

Write [No authors listed] where the authors would be stated.

11.4.4 How to cite a Table in a Journal?

Where this is necessary, add the description of the table to the source. Here is a (fictional) example:

Doe J. A paper on something. J Spec Sci Fi. 2009; 1(99):12-9. Table 1.2 Results of the first trial. p. 18.

11.5 How to cite books, diploma and master's Theses, as well as PhD Theses?

Author(s). Title. Edition. Place of publication: publisher. Year.

11.5.1 Monography

•   Timischl W. Angewandte Statistik. Eine Einführung für Biologen und Mediziner. 3rd edition. Vienna: Springer. 2013.

•   Bortz J, Lienert GA. Kurzgefasste Statistik für die Klinik. Leitfaden für die verteilungsfreie Analyse kleiner Stichproben. 3rd edition. Heidelberg: Springer Medizin Verlag. 2008.

11.5.2 A book with editors

Brähler E, Holling H, Leutner D, Petermann F [ed.]. Brickenkamp Handbuch psychologischer und pädagogischer Tests. Volume 1. 3rd, fully revised and expanded edition. Göttingen: Hogrefe. 2002.

11.5.3 A chapter from an edited book

Kalz M, Schön S, Lindner M, Roth D, Baumgartner P. Systeme im Einsatz. Lernmanagement, Kompetenzmanagement und PLE. In: Ebner M, Schön S [ed.]. Lehrbuch für Lernen und Lehren mit Technologien. 1st edition. Norderstedt: Books on Demand. 2011. p. 111-117.

11.5.4 Diploma thesis

Doe J. Lung Diseases [diploma thesis]. Anytown: Free University Any Country. 2016.

11.5.5 Master's thesis

Doe J. Functions of the human lung [Master's thesis]. Anytown: Free University Any Country. 2016.

11.5.6 PhD thesis

Doe J. Special Areas of Very Special Research [PhD thesis]. Anytown: Free University Any Country. 2016.

11.5.7 How to cite a figure from a book?

We recommend to ask the publisher for permission beforehand, as those pictures are subject to copyright laws and a diploma thesis/PhD thesis is also regarded as a publication. If you have the permission to print the picture in your thesis, this should be done as follows:

Author(s). Title of the book. Edition. Place of publication: publisher. Year. Page on which the picture can be found. Caption of the picture.

Doe J. Textbook of Medicine. 90th edition. Innsbruck: Universitätsverlag. 2015. p. 20. Picture 5.1 The Human Muscular System.

NOTE: Tables in books should be cited in the same way. However, like pictures, use them with caution for copyright reasons. Never use someone else's table formatted as a picture.

11.6 How to cite sources from the internet?

Author(s)/Editor/Company. Title [Internet/Image on the Internet/Online document]. Date of creation of the source [last access date]. Available at: Link.

11.6.1 Websites

Statistik Austria. Unfälle mit Personenschaden [Internet]. 2015 [last accessed on 2015 Jul 10]. Available from:

http://www.statistik.at/web_de/statistiken/energie_umwelt_innovation_mobilitaet/verkehr/strasse/u nfaelle_mit_personenschaden/index.html.

Word Health Organization (WHO). Tobacco Fact Sheet No 339 [Internet]. 2015 [last accessed on 2015 Jul 10]. Available from: http://www.who.int/mediacentre/factsheets/fs339/en/.

Johns Hopkins University, Online Mendelian Inheritance in Man (OMIM). #192500 ICD+ Long QT Syndrome 1; LQT1 [Internet]. 2015 Sep 23 [last accessed on 2016 Feb 6]. Available from:

http://omim.org/entry/192500?search=long%20qt%20syndrome-1&highlight=syndromic%20syndrome%20qt%20long%20syndrome1.

11.6.2 Online document

World Health Organization. Global status reports on alcohol and health 2014 [online document]. Luxembourg: World Health Organization; 2014 [cited on 2016 Feb 18]. Available at:

http://apps.who.int/iris/bitstream/10665/112736/1/9789240692763_eng.pdf?ua=1.

11.6.3 Picture from the internet

Not all pictures on the internet are "free" from a legal point of view. Many of them are subject to copyright. Conduct the appropriate research before using a picture from an unsafe online source.

Vitanet. Vereinfachte Darstellung der Herzens und der herznahen Gefäße [image on the internet]. Without date [last accessed on 2016 Apr 18]. Available at: http://www.vitanet.de/f/16727s460x397/alte_struktur/herz-kreislauf/anatomie/herz/Herz_Lunge%5B1%5D.jpg.

IMPORTANT: Online sources must ALWAYS include the date on which it was last accessed. The placeholder "Date unknown" can be used, as the date on which the website has been created is not always available.

11.7 How to cite a conference presentation?

Author(s). Title/topic [lecture]. Name of the event. Event location, date. Place of publication of the edited volume (= optional): Publisher. Year.

Burghaus D, Kappes K, Bauland A, Heue M, Kindler-Röhrborn A, Becker JC, et al. Gendersensibilität und geschlechterspezifische Rollenvorstellungen in der Medizin: Eine Bestandsaufnahme [lecture]. Annual Conference of the German Association for Medical Education (GMA). Aachen, 2012 Sep 27-29. Düsseldorf: German Medical Science GMS Publishing House; 2012.