

## Practical information on writing a thesis in microbiology

The diploma work is based on individual professional work, which proves the student's material knowledge and ability to synthesize. It is important to keep grammar rules and spelling in mind. The structure and correlations of the individual chapters should be logical. In terms of wording the thesis is a continuous free-text description.

### Structure of the diploma work:

- **Outside cover** must indicate the student's name and the year of submitting the diploma work under the „DIPLOMA WORK” title.
- **Title page** – should include:
  - Title – should be short and express the topic of the work  
“diploma work”
  - the student's name, faculty, year and study group,
  - the consultant's name and workplace.
- **Table of content** – chapters in decimal structure and with page numbers
- **List of abbreviations** – if used in large numbers in the text
- **Introduction**

The introduction should convince the reader about the theoretical or/and practical importance of the thesis and account for the topic selection.
- **Main part** of the thesis with chapters depending on the theme
- **Summary / Conclusion**
- **References**

The degree thesis must be submitted in 2 copies, bound as a book and should also be submitted electronically. (You'll get back one copy later.)

### **Formal requirements of the dissertation:**

The minimum length of the degree thesis is 50,000 characters and it cannot be longer than 100,000 characters (without spaces). (This is about 30-60 pages.)

Font: Times New Roman, 12.

- margins: at the top, bottom, left, and right edges of the page: 2,5 cm
- gutter margin: on the left side, 1,5 cm
- page numbering: the numerals must be centered under the text beginning with the front page
- paragraph alignment: justified
- font colour: black
- line spacing: 1,5
- figures, tables tables and figures should be numbered for identification; all have a title and are understood independently of the context
- printing: single-sided printing

### **Bibliography / References:**

The bibliography must be listed and represented at the end of the thesis. The format of the references should be uniform.

They can be listed in alphabetical order by the name of the first author, or can be listed in the order of their appearance in the text.

In the text of the thesis, references are indicated by a number, always placed within a sentence.

Eg. in the text: [Infections due to methicillin-resistant strains of \*S. aureus\* are associated with higher mortality rates than infections caused by methicillin-susceptible strains \(12\).](#)

OR: [strains<sup>12</sup>](#). OR: [strains \[12\]](#).

In References, include authors, title of the paper, journal, year of publication, issue, page number:

[12. Lakhundi, S., Zhang, K.: Methicillin-Resistant Staphylococcus aureus: Molecular Characterization, Evolution, and Epidemiology. Clin Microbiol Rev 2018, 31:e00020-18.](#)

The use of lots of references, especially from the scientific literature of the recent years, is preferred. Textbooks can also be cited, but the thesis should include more, newer information compared to a microbiology textbook, so use those references preferably only in the general

description parts of the thesis. The use of PubMed or Google scholar is recommended to find scientific papers.

Websites can also be cited, reference should be numbered in the text and the website should be added to the references list.

For example:

In the text:

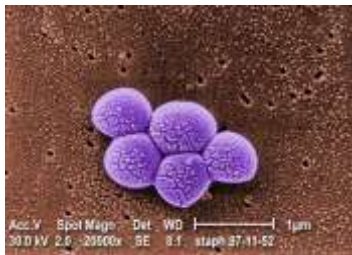


Figure 1. Scanning electron microscopy of *Staphylococcus aureus* (5).

In references:

5. <https://www.cdc.gov/mrsa/community/photos/photo-mrsa-13.html>

Scientific websites, eg. [www.who.int](http://www.who.int), [www.cdc.gov](http://www.cdc.gov), [www.ecdc.europa.eu](http://www.ecdc.europa.eu) etc. are preferred.

For management of the references, the EndNote reference manager can be downloaded from the library website for the use of Semmelweis University students. If installed to the computer, this will appear as an extension in Word and can be used to manage the references added to the text.

### **Figures:**

Pictures, graphs, charts are all considered figures. All figures should be numbered and referred to in the text.

For example:

*S.aureus* is a Gram positive coccus (Figure 1).

All figures should have titles, and if necessary, descriptions so the meaning of the picture/graph etc. is clear even without reading the surrounding text.

Eg.: Figure 1. Scanning electron microscopy of *Staphylococcus aureus* (5).

(see above)

Source of the figures should always be given, either among the references, or, if large number of figures are included, in a separate List of figures section at the end of the thesis.

### Tables:

Tables should also be numbered, and referred to in the text. If not based on own work of the student, the source of the table should also be given in the references.

For example:

Table 1. Classification of *S.aureus* (15).

#### CLASSIFICATION OF STAPHYLOCOCCUS AUREUS

Type of <i>S. aureus</i>	<i>mecA</i> Gene	Comment
Methicillin-susceptible (MSSA)	-	Susceptible to methicillin, oxacillin, nafcillin, cephalosporins, and other $\beta$ -lactams
Borderline-resistant (BRSA)	-	Borderline oxacillin MICs (1 to 2 $\mu\text{g}/\text{mL}$ ) due to hyperproduction of $\beta$ -lactamase or abnormal PBPs
Methicillin-resistant (MRSA)	+	Methicillin MICs usually $\geq 16 \mu\text{g}/\text{mL}$ due to low-affinity PBP (PBP-2')
Glycopeptide-intermediate (GISA)	+ <sup>a</sup>	Vancomycin MIC 8 $\mu\text{g}/\text{mL}$ (most <i>S. aureus</i> have MIC $\leq 2 \mu\text{g}/\text{mL}$ ); also resistant to teicoplanin

<sup>a</sup> All GISA described to date have been MRSA

Table 1

Title of figures should be placed below the figure, title of tables should be placed above the table.

Name of microbes should be given in full version at their first appearance in the text: *Staphylococcus aureus*. At further mentions, short form is sufficient: *S.aureus*.

Name of bacteria should always appear in italics, even when abbreviated.

**Plagiarism:**

From the regulation of diploma work at Semmelweis University:

“All statements, facts, data which are not intellectual products of the thesis writer should contain the data source. If one source is referred by the thesis writer at more places, the source has to be marked at all places. It is an important requirement that a verbatim citation can only be cited between quotation marks with exact source mark and exact designation of the place of the source (in case of a book or a journal: page number). The failure of this counts as plagiarism, which may apply the immediate suspension of student status at worst! “

A statement that the thesis is his/her own work and not a product of plagiarism should be signed by the student and included in the diploma work.

**Defence of the thesis:**

The finished dissertation must be submitted to the department in duplicate, by January 15 of the year of graduation at the latest.

The thesis will be assessed by a reviewer. Reviewer will suggest a grade based on the formal and the scientific value of the work. The reviewer will also give questions. The assessment and the questions will be sent to the candidate before the defence.

At the thesis defence, at least three members of the institute will be present. The student should present his/her diploma work in about 10 minutes (with or without a powerpoint presentation). The reviewer will read the opinion and the questions. The student should answer the questions provided previously and any other questions given by the members of the committee. The members of the committee will decide the final grade of the thesis and the defence.

