

## Faculty of Biology and Medicine School of Biology

# Guide to research work for the Master of Science in Biology



The General Study Rules for the Bachelor and Master in Biology, and the Programme Regulations for the Master of Science in “Medical Biology”, “Behaviour, Evolution and Conservation” and “Molecular Life Sciences” shall take precedence.



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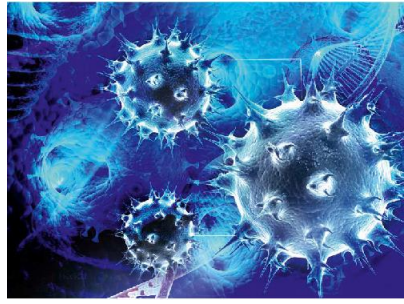
## Introduction

The School of Biology offers three Masters of Science programmes in Biology, whose topics fall within the areas of biological research expertise of the Faculty of Biology and Medicine (FBM) at the University of Lausanne (UNIL). Each Master's programme is offered in English over a period of three semesters and is equivalent to 90 ECTS.

The qualifications awarded for the three Masters' programmes are as follows:



**Master of Science in  
Behaviour, Evolution and  
Conservation (MSc BEC)**



**Master of Science in  
Medical Biology  
(MSc MB)**



**Master of Science in  
Molecular Life Sciences  
(MSc MLS)**

Particular focus is placed on practical work throughout the Master's programme, consisting of:

- a **First-step** project in the first semester
- a **Master thesis** project in the second and third semesters, resulting in the Master's thesis

As part of this work, students have the opportunity to collaborate with leading laboratories and research groups, thus allowing them to push their learning to the frontiers of knowledge in their chosen field.

The teaching and supervision of research work are provided by the various departments of basic and clinical sciences of the FBM, both within the UNIL and CHUV and also in collaboration with other neighbouring institutions, e.g. EPFL, museums, foundations, and outside of Switzerland.

This guide to research work is aimed at Master of Science students and their supervisors. Its purpose is to provide practical information to help initiate the First-step and the Master thesis projects and prepare the Master's thesis under the best conditions. It also details the objectives and procedures of the Master thesis project. Notwithstanding the information contained herein, [the Programme Regulations of each Master's Programme](#) (p.10) shall take precedence.

## Objectives

Supported by the First-step project, the learning objectives of the Master thesis project are as follows:

- Develop the ability to understand a biological system
- Learn to develop a research question, formulate a hypothesis and define an appropriate experimental approach to answer the question
- Develop analytical and critical thinking
- Be part of a research group
- Communicate results orally and in writing
- Develop autonomy in conducting a research project

## First-step and Master thesis projects

To achieve their objectives, the three Masters of Science Programmes of the School of Biology offer two research projects: First-step and Master thesis, which the student takes consecutively.

The First-Step project takes place in the first semester and accounts for 14 (MSc MLS) to 15 (MSc BEC and MSc MB) ECTS. The project lasts for 10 weeks and provides an introduction to individual research.

The Master thesis project accounts for 45 ECTS for all MSc and 30 ECTS for the BEE & GEE specialisation of MSc BEC. It takes place in the second and third semesters and consists of a major research project that provides students with the opportunity to work at the frontiers of knowledge in their field.

To achieve this objective, each student is supervised by a project director who proposes the research theme and is responsible for monitoring the project. The project director may also appoint a “direct supervisor”, who is usually a member of the laboratory and is responsible for closely supervising the project and the student. For both practical projects, at least three aspects are assessed:

- the practical work performed throughout the project
- the preparation of a report for the First-step project or a thesis for the Master project
- the oral defence

The specific requirements for the Master’s thesis are explained in this document.

## Project submission

Every year, as of 1st August and until first week of September, Project's Directors (UNIL teachers registered in our mailing list) can submit First Step and Master projects through the SylviaAcad database, following the procedure described in the [Appendix I](#).

To be registered in our mailing list, a member of the teaching staff of the UNIL (Full Professor, Associate Professor, Assistant Professor, Tenured Senior Lecturer and Researcher, Lecturer, Privat-docent, or, with the permission of the School of Biology, any person with a doctorate involved in teaching) can request the School of biology by sending his/her CV and specifying for which Master he/she applies.

Project directors guarantees the feasibility of the project within the time limits set for this purpose and ensures that the necessary skills and resources are available to the student to complete the research project. To ensure a good balance between proposed First-step and Master thesis projects, teachers must propose at least one First-step project to propose a Master thesis project.

Master Directors ensure that every project submitted by a project director corresponds to the learning objectives (p.4). Once the project has been validated, it will be published into the database and be available for the students to consult it as of the first day of teaching of the new academic year.

## Project selection

The School of Biology has a database of First-step projects and Master thesis projects, proposed by the project directors. The procedure for checking these lists and selecting one or more projects is described in [Appendix II](#). Students can access the database and see descriptions of all projects from the first week of classes in the autumn semester to the end of the semester.

- **Registration for the *First-step* project**

Registration for the *First-step* projects is possible during the first two weeks of classes in the autumn semester. Students are encouraged to meet the supervisors of the ***First-step*** projects that interest them before making their selection in the database. Only one choice of project is possible given the limited duration of the registration period and the start date of the research work in the selected laboratory. The student must bear in mind that they cannot undertake their Master Thesis in the same research group as the one selected for their *First-step* project (except for BEE & GEE specialisation of the MSc BEC).

- **Registration for the Master Thesis project**

Registration for the Master Thesis projects is possible from 1<sup>st</sup> November to mid-November. Students are required to meet the supervisors of the Master projects that interest them from the first week of classes and before making their selection in the database. Project directors had to allow a meeting with a minimum of 2 students until the beginning of the registration. In the database, students can specify up to 3 projects, in order of priority, and can check the number of times a project is selected by other students. For information purposes, registration and allocation timeline is available in [Appendix III](#).

Please note that if your Master Thesis project constraint 'Animal experimentation', the students have to follow the practical and theoretical course agreed by the cantonal veterinary office. For

Masters MB and MLS, the course is called 'LTK1 Module: Training in Animal Experimentation'. For Master BEC and its CEE & GEE specialisation, the course is called 'Animal experimentation and wild animals'. Keep in mind that any manipulations learned during the practical course, as well as killings, are, of course, not allowed without taking the course.

However, there is a list of manipulations allowed during the First-Step or the Master Thesis project that are not considered as 'Animal experimentation':

- observations
- weaning
- sexing
- use of metabolic cages
- behavioural analyses

## Allocation of projects

The *First-step* or Master Thesis projects are allocated by the School of Biology. Therefore, the project directors are not permitted to allocate *First-step* or Master projects before registrations have closed.

The projects are allocated according to the following general rules:

- **For *First-step* projects:**

The School of Biology allocates the project to one student according to their unique choice. Should two students choose the same project, it will be randomly assigned by the School of Biology.

- **For Master Thesis projects:**

Wherever possible, the School of Biology allocates the student their first choice of project. If several students have selected the same Master Thesis topic as their first choice, the School of Biology contacts the project director, who decides which candidate to select. If necessary, the subjects chosen by the unsuccessful students as second and third choices are then considered.

## Master thesis projects outside the UNIL

The *First-step* must be carried out at a laboratory affiliated with UNIL, with the exception of the *First-step* for the Biocomputing specialisation of the MLS Master, in which case the laboratory may be affiliated with SIB.

Students who wish may carry out their Master thesis project at another institution of Higher Education must submit an application file to the secretariat of the School of Biology containing:

- the CV of the external Director, if he/she has never coached a student of the School of Biology
- a motivation letter (i.e., application letter) of the student
- the registration form
- the project description form
- the document “Responsibilities of the UNIL Master’s curriculum Co-Director” signed

*The registration form and the project description form are available on the School of Biology website page: “Research project”.*

The request must be approved by the Council of the School of Biology, therefore **the project description** must be such as to allow the Council members to assess the scientific content of the proposed project and to decide whether it corresponds to the level expected of a Master’s thesis research project.

**The CV of the external director** must allow the Council members to assess whether his/her skills, experience and work environment are suitable to support the student during the execution of the practical work, the analysis of the results, the drafting the thesis, as well as any other attributes required to ensure the successful conclusion of the Master thesis project.

**The choice of the UNIL Co-Director** is also an important consideration as they will guarantee that the work done meets the requirements of a UNIL Master. We invite any students interested in a Master Thesis outside of UNIL to discuss this with the head of their Master.

For Master projects proposed in a public or nonprofit organisation, the student may receive limited financial support (e.g. for field trips fees). To apply, the student must complete his-her application with a detailed budget, emitted and signed by the external Director stating that the fees mentioned cannot be supported by the host organisation. This document must also be approved by the co-Director UNIL.

The submission of an application form and file is not sufficient to ensure acceptance of a Master thesis project external to UNIL by the Council of the School of Biology; therefore students must also select a UNIL Master thesis project.

## Tasks and Responsibilities

The First-step and Master thesis projects, and the **tasks and responsibilities of the student, project director and direct supervisor** are described in [Appendices IV](#) and [V](#).

## Leave

Leave entitlement during the execution of the Master thesis project work is not governed by the School of Biology. Students are entitled to take leave during this period. However it is a matter for agreement between the students and their supervisors (project director and direct supervisor).

## Master's thesis

The Master thesis project culminates with the writing of a Master's thesis. The aim of the thesis is to record the results of the research work and communicate them to others.

The presentation of the thesis must comply in all respects with the requirements for writing and presenting a scientific academic work: an introduction that shows a good level of knowledge of the research area in its current context, a description of the method used, presentation of the results, a final discussion demonstrating critical thinking and an appreciation of the quality and limitations of the results obtained, and a conclusion suggesting possible perspectives in the field of research.

The Master's thesis must be written in English and contain the following element:

- Title page format provided by the School of Biology
- Abstracts in English and French
- List of abbreviations
- Table of contents
- List of figures and tables
- Introduction
- Materials and methods
- Results
- Discussion - Conclusions
- References

## Plagiarism

The student must write his thesis personally in full compliance with UNIL Directives 0.3 and 4.2 concerning plagiarism and scientific integrity. UNIL reserves the right to use similarity detection software as a support for the analysis of documents submitted by its students (Directive 3.5).

Failure to comply with these directives is considered a serious offence punishable by UNIL or even by criminal prosecution.

Instances of plagiarism will be reported to the Deanship, which will apply sanctions ranging from a reprimand to cancellation of the project, to the failure of one or more modules or even exclusion from the Faculty, depending on the severity of the specific case.



## The Master's thesis assessment

The Master research project and the thesis are assessed by a panel of experts.

The panel includes a mandatory minimum of the project director (and the UNIL co-director for projects outside the UNIL) and an external expert with a doctorate qualification. The external expert must be independent of the director/co-director's research group, but does not have to be recruited externally to the host institution.

## Defence of the Master Thesis

(art. 39 and 40 of the Programme Regulations for each Master)

To be eligible to defend his/her Master's thesis during the current semester, the student must have passed all modules 1, 2 and 3, and have submitted the thesis to the project director and the external expert by the established deadline, i.e. five weeks before the resumption of teaching of the following semester. The defence must take place no later than two weeks before the resumption of teaching of the following semester. No extensions may be granted other than a prior request for an extension of one semester. If a deadline is not respected without a valid reason, a failure will be notified to module 4.

The length and terms of the oral defence are specific to each Master.

The defence of the thesis is public.

The full panel must be present at the defence of the Master's thesis. The external director may either attend the defence or communicate his/her assessment by means a written report. Upon a reasoned request to the Direction of the School of Biology, and exceptionally, the presence of a member of the jury by videoconference is permitted.

## Assessment of the Master Thesis

(Art. 40 of the Programme Regulations for each Master)

The Master thesis project accounts for 45 ECTS for all MSc and 30 ECTS for the BEE & GEE specialisation of MSc BEC.

The secretariat of the School of Biology forwards the assessment procedures I and II to the director/co-director of the Master's thesis. On the basis of the assessment procedure I, the panel will award three marks – one for the written thesis, one for the oral defence, and one for the practical research work. The assessment procedure II will be submitted along with the final version of the thesis.

Following the oral defense, the UNIL director or co-director promptly returns the completed assessment procedure I including comments to the secretariat of the School of Biology.

The student has 2 weeks after the oral defence to make any corrections and submit the final version of the thesis to the UNIL director/co-director.

The final version of the thesis has to be verified by the director. For thesis outside the UNIL, both external director and co-director have to check. Then director/co-director forwards a bound copy of the full and final version in digital format to the secretariat of the School of Biology along with the completed assessment procedure II.

## Copyright - Privacy

The Master's thesis is the intellectual property of the student, who is its author. However, UNIL remains the owner of any intellectual property rights related to technical creations or research results obtained by faculty members when carrying out their activities on behalf of the UNIL.

The School of Biology archived the Master's theses in digital format. In the event that the results are required to be kept confidential, the project director must inform the School of Biology.

## Useful Links

Below are some useful links for more information:

[General Programme Regulations for the Bachelor and Master \(RGE\) of UNIL](#)  
in French only

[Programme Regulations - Master of Science in Medical Biology](#)

[Programme Regulations - Master of Science in Behaviour, Evolution and Conservation](#)

[Programme Regulations - Master of Science in Molecular Life Sciences](#)

Directive 0.3 bis of UNIL Management

[Code of Ethics concerning borrowing, quoting and use of various sources](#)  
in French only

Directive 4.2 of UNIL Management

[Scientific Integrity in research and procedures to be followed in case of breach of integrity](#) in French only

Directive 3.15 of UNIL Management

[Treatment of cases of plagiarism in the context of teaching](#)  
in French only

All these documents are available on:

[www.unil.ch/ecoledobiologie](http://www.unil.ch/ecoledobiologie) > Welcome > Regulations and Directives

## Appendix I

Step-by-step procedure to select First-step or Master thesis project - *for Directors*

### Project preparation

The First-step and Master project descriptions should:

- give the students a clear and concise understanding of the proposed project.
- be prepared in English.
- be divided into subsections: Title, Introduction, Aim of the project, Experimental approach, Significance, and (if desired) References.

*The total length of the description should not exceed 3000 characters (including spaces); for subsection character limitations see the submission site.*

### Access to the website for projects submission

1. Go to the School of Biology website (English version)/« For teachers»/« Master Research Projects»: [www.unil.ch/ecoledebiologie/en/home/menuintst/masters/research-project.html](http://www.unil.ch/ecoledebiologie/en/home/menuintst/masters/research-project.html)
2. Select "Project submission (for teachers)".
3. Click on the button «Research projects submission».
4. Enter your login details (as for UNIL email).

*For a best visibility of the page please open the web page on your screen as wide as possible.*

### Step-by-step procedure for projects submission

*If you are also a director of Master projects for the School of Medicine, select "School of Biology".*

1. Please check your personal details, if a mistake appears, please let us know.  
*Do not pay attention to the direct supervisor for the moment (step 9 below).*
2. To submit your project, click on « Add a new project» (the bottom of the page).
3. Select the type of the project (First-step or Master thesis). Each project Director must propose a First-step project to able to propose a Master thesis project.
4. Fill in the boxes with the appropriate subsection of the project description.
5. Select your department or service (use the predefined list by clicking on the box with the three dots "...").
6. Select the Master category for which the project will be offered (more than one can be selected).
7. Select the subject area(s) related to the project (not mandatory).
8. Click on « Save» to save the project.

*A summary of the project appears.*

9. You can now modify:
  - the name of the direct supervisor\* by clicking on the "Edit button" on the top of the page.
  - the project description by clicking on the « Edit» button at the bottom of the page.
10. To submit another project or review your projects click on « return » written in red on the top – left side.
11. When you are finished, log out on the top-right side of the window.
12. To later modify the direct supervisor or the project description, go to the "project submission" page as above, save again the bottom and click on "Edit"

*\* The direct supervisor would normally be, for example, a lab postdoc or senior PhD student. If the name you entered elicits a « Direct supervisor inconnu » response, fill in the form "[Direct supervisor unknown](#)" and send it back to us.*

### Contact

[ecoledebiologie@unil.ch](mailto:ecoledebiologie@unil.ch) / 021/692 40 10

## Appendix II

Step-by-step procedure to select First-step or Master thesis project - *for Students*

### Access to the website for projects selection

*The access is similar for the First-step and Master thesis projects*

5. Go to the School of Biology website (English version)/« For students»/« Master Research projects». <http://www.unil.ch/ecoledbiologie/en/home/menuintst/masters/research-project.html>
6. Select «project selection & registration (for students) ».
7. Click on the button « Registration to research projects ».
8. Enter your login details (as for UNIL email).

*For best visibility of the pages please open the web page on your screen as wide as possible.*

9. A list of the available projects will appear. This list can be sorted by the following categories:
  - Master category
  - Department
  - Name of the project Director
  - Subject area (keywords)
10. Click on the red numbers to display all of the projects listed in the corresponding category.  
*For example, if you click on the red number next to the project theme “behaviour”, all of the subjects related to behaviour concepts will appear.*

### Step-by-step procedure for project selection

*The registration procedure is similar for the First-step and Master thesis projects*

1. Go on the description of the project in the category which interests you.  
*You will see the title in red and the description in black.  
In the “First choice” column, you can see if the project has already been selected by other students\**
2. To select a project, simply click on the red title and the project will be added to your choices.  
*It appears in the box above the table named “My Inscriptions”.*

**At the end of the process, each project will be allocated to only one student.**

If you want to remove a choice, click on the square with a “minus” on the right-hand side.

\* 0= nobody has selected this project yet; 1 or more = number of students who have also selected this project).

### WARNING

To register for the First-step project: You must select only one choice.

To register for the Master thesis project: You may select up to 3 possible choices (classified in order of priority).

**The First-step and the Master thesis project must be carried out in different labs. Don't forget to consider this when selecting your First-step project!**

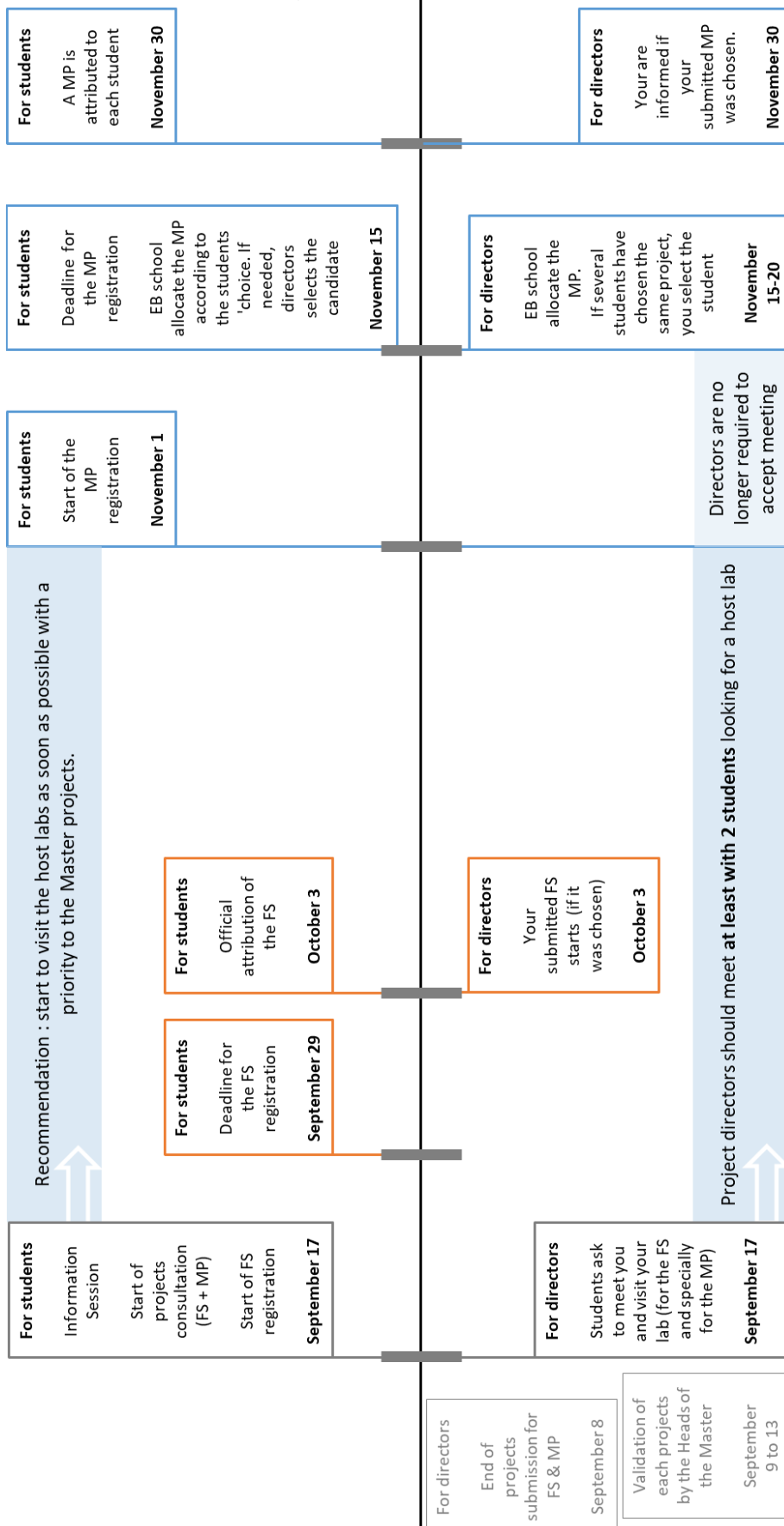
**We encourage students to visit Directors whose project(s) interest(s) them.**

### Contact

[ecoledbiologie@unil.ch](mailto:ecoledbiologie@unil.ch) / 021/692.40.10

## Appendix III

### First-step (FS) and Master project (MP) registration and allocation timeline (for 2019)



## Appendix IV

### Timetable for First-Step (FS) and Master Thesis project (MT)

		What	When	Who
FS	Step 1	Submission of First-step and Master thesis projects	August	Project Directors
	FS	Step 2	Selection of First-step project (only 1 choice allowed)	middle of Semester to end-September
Step 3		Allocation of First-step projects	when step 2 is completed	School of Biology
Step 4		Start of First-step project work	according to the Master schedule	Students
MT	Step 5	Establishment of contact between students and Project Directors for choices of Master thesis projects	mid-October to mid-November	Students
	Step 6	Application deadline for external Master thesis projects	30 October	Students
	Step 7	Selection of Master thesis project (up to 3 choices allowed)	November 1 to 15	Students
	Step 8	Allocation of Master thesis projects	mid-November to end-November	School of Biology
	Step 9	Signature of Master thesis project "IT protocol"	first week of December	Project Directors Students
FS	Step 10	Submission of First-Step reports and oral assessment	as directed by the guidelines of each Master's programme	Students
	Step 11	Publication of the results of the Autumn semester	following the winter examination session of semester 1	School of Biology
MT	Step 12	Start of Master thesis project work	from semester 2, according to the Master schedule	Students
	Step 13	Progress review of the Master thesis project	end of August	School of Biology
	Step 14	Identification of an external expert to sit on the assessment panel	during Semester 3	Project Directors
	Step 15	Submission of the Master thesis to each member of the panel	at least 5 weeks before the resumption of teaching the following semester, in early January (Semester 3)	Students
	Step 16	Information regarding the date, location and composition of the panel at the School of Biology	upon receipt of the Master thesis	Project Directors
	Step 17	Communication of assessment procedures I and II	when step 16 is completed by the Director	School of Biology
	Step 18	Oral defence of the Master thesis	at least 2 weeks before the resumption of teaching the following semester, end-January (Semester 3)	Students
	Step 19	Submission of the assessment procedure I to the School of Biology	up to 1 week after the defence of the Master thesis	Project Directors
	Step 20	Submission of the final Master thesis to the Project Director	two weeks after the defence of the Master thesis	Students
	Step 21	Submission of the Master thesis and assessment procedure II to the School of Biology	when step 20 is completed	Project Directors
	Step 22	Publication of the results of the Master Thesis	when step 21 is completed	School of Biology

## Appendix V

### Master Thesis: responsibilities of the project director, direct supervisor and the student

The items listed below refer to the programme regulations of each Master's programme.

- The project **director** – a member of the teaching staff of the UNIL or, with the permission of the School of Biology, any person with a doctorate involved in teaching (art. 37) – may propose a research topic. This person guarantees the feasibility of the project within the time limits set for this purpose and ensures that the necessary skills and resources are available to the student to complete the research project.
- The project **director** must propose at least one First-step project to propose a Master thesis project. Exceptions may be granted upon request by the Director of the Master's programme concerned and the School of Biology.
- The **student** is responsible for finding a teacher who agrees to supervise his/her Master thesis project at the beginning of the Master programme and, at the latest, by November 30. The Master thesis project and the project director should be different from those selected for the First-step project.
- The **School of Biology** provides project directors with a limited fund to support the student's research.
- The project **director** may appoint a **direct supervisor** to supervise the student, however, the project director remains the reference person vis-à-vis the Director of the Master's Programme and the School of Biology.
- The project **director** is responsible for monitoring the student's progress. The School of Biology recommends that regular one-to-one meetings are held between the project director, direct supervisor and the student, particularly at the start of the Master thesis project.
- In August, about halfway through the project, the **School of Biology** ensure that the Master progress review of the Master thesis project is progressing well in consultation with the project directors and students.
- The project **director** is responsible for identifying an **external expert**, possibly in consultation with the student. The external expert must be independent of the project director's research group, but does not need to be recruited externally to UNIL or the host institution (art. 40, 2b).
- The **student** must send a copy of his/her thesis to each member of the panel at the end of the third semester of the Master's programme, but not later than five weeks before the resumption of teaching of the following semester (art. 40).
- Upon receipt of the thesis, the project **director** informs the School of Biology of the date and place of the defence and the name of the external expert.
- The project **director** sends the assessment procedures I and II and the final thesis in digital format to the School of Biology by the deadlines set out in the timetable in Appendix II.