

## **Continuing Training Offer of the Fribourg Graduate School of Life Sciences and Medicine (FGLM) University of Fribourg**

### **1. The FGLM – An Overview**

The Fribourg Graduate School of Life Sciences and Medicine (FGLM) is an interdisciplinary graduate school in life science, which offers – on a voluntary and participatory basis – a coordinated doctoral program in life sciences at the University of Fribourg. It addresses all doctoral students in the life sciences (including biology, medicine, biochemistry, bioinformatics, but also doctoral students in chemistry, physics, statistics and mathematics with a life science focus). The aim of the FGLM is to complement the regular training of PhD / MD students in the life sciences by fostering and offering continuing education opportunities on a voluntary basis; it aims to prepare the next generation of life scientists for future challenges in academia and society. It is open to all PhD/MD students performing research in the life sciences at UniFR.

The Faculty of Sciences at UniFR offers the following degrees related to life sciences / biology:

- PhD in Biology
- PhD in Biochemistry
- PhD in Bioinformatics
- PhD in Medicine
- MD in Medicine

The FGLM offers to its member doctoral students a voluntary program of continuing training and course activities. By signing, together with their supervisor, the agreement mentioned in Article 2 of the FGLM bylaws they voluntarily agree to follow the FGLM training program.

The program consists of the following:

- (1) Each year, FGLM doctoral students commit themselves voluntarily to attending courses covering at least 2 ECTS per year (see below). Courses should be divided between scientific / methodological courses and “soft skills” courses (see below for an

overview of courses). The FGLM doctoral students are encouraged to take the course exams but they are not obliged to do so; if they do take the exam, they need to be enrolled for the exams and pay the exam fees. The FGLM does not formally accredit ECTS points.

(2) In addition, FGLM doctoral students must have followed during the duration of their thesis work at least three courses, conferences, or symposia designed specifically for postgraduate studies. Such courses are offered, among others, by the following societies and doctoral schools:

- FEBS: <http://www.febs.org/index.php?id=86>;
- EMBO: <http://www.embo.org/events/calendar.html>
- LS2 (Life Sciences Switzerland): <http://www.usgeb.ch>
- SGM/SSM: <http://www.swissmicrobiology.ch>
- StarOmics (CUSO, doctoral school): <http://biologie.cuso.ch/accueil/>
- Microbiology (CUSO, doctoral school): <http://biologie.cuso.ch/accueil/>
- Swiss Chronobiology Meeting: <http://www.unifr.ch/biology/events/chrono4/>
- Doctoral School Ecology & Evolution (CUSO): <http://biologie.cuso.ch/ecologie-evolution/welcome/>
- Interuniversity Doctoral Program in Organismal Biology:  
<http://www2.unine.ch/dp-biol>

(3) FGLM doctoral students are also expected to have participated in and presented a poster or talk at least one international congress. Participation in any of the above mentioned events should be discussed beforehand with, and approved by the PhD supervisor, who has to judge if a given scientific conference or course will be appropriate for the training of the doctoral student. FGLM doctoral students should try to participate in congresses also beyond the required minimum, especially if they take place in Switzerland, if the supervisor agrees with this.

(4) If a doctoral student wishes to participate in another specialized education program or doctoral school of CUSO, she/he can ask for accreditation of these courses. Participation in any specialized education program or doctoral school requires the consent of the PhD supervisor.

- (5) The regular and active participation in progress reports, journal clubs, conferences and seminars organized by the Departments of Biology or Medicine form an integral part of the education of FGLM doctoral students (see recommended course schedule).
- (6) To support cross-disciplinary approaches, the FGLM encourages doctoral students to undertake short-term laboratory rotations, in which interested PhD students have the opportunity to carry out up to two rotations in another laboratory associated with the FGLM.
- (7) FGLM doctoral students commit themselves to actively participating in student-organized FGLM activities (e.g., the FGLM retreat, etc.).

For FGLM doctoral students who perform their thesis work at another university or research institution in cooperation with FGLM, it is the duty of the PhD supervisor to define an equivalent training program and to make sure that the requirements are equivalent to the ones of the FGLM and the University of Fribourg.

At the end of the thesis work the student submits documentation of the completed coursework to the FGLM administrative office; the head of the FGLM then issues a signed postgraduate study report which confirms that the required FGLM coursework has been completed. This document represents simply a confirmation; it does not formally accredit coursework or ECTS points and it does not represent a formal certificate or diploma.

**Contacts:**

- FGLM administrative office: Sabrina Lutz (DepBL): [sabrina.lutz@unifr.ch](mailto:sabrina.lutz@unifr.ch); Office: DepBL, building PER 04, room number 0.108, Rue A.-Gockel 3. Tel.: +41 26 300 8810
- Co-heads of the FGLM: Prof. Jörn Dengjel ([joern.dengjel@unifr.ch](mailto:joern.dengjel@unifr.ch); DepBL) and Prof. Jens Stein ([jens.stein@unifr.ch](mailto:jens.stein@unifr.ch); Section Medicine, OMI)

## 2. Requirements for completion of the FGLM curriculum

Also see the detailed regulations in the FGLM bylaws; also see the list of courses below. All successfully completed courses have to be recorded on the FGLM record sheet.

At the end of their doctoral studies, students must have taken at least:

- 6 ECTS of courses (e.g. modules A.1 and A.2, see below), to be taken over three years
- 2 ECTS of soft skills (e.g. organizing meetings, mentoring of Master and Bachelor students, Soft Skills CUSO courses). Typically,
  - 1 ECTS for mentoring one Master student (1 year)
  - 1 ECTS for mentoring two BSc students (3 months each), or rotation students (6 weeks each)
  - 0.5 ECTS / 4 hours per week / one semester for assisting BSc and MSc students and preparing workshops (“travaux pratiques”)
- 3 conferences and/or workshops (e.g. module B.2, see below)
- Seminars and meetings held in Fribourg (module B.1, see below)

The completed FGLM record sheets and thesis committee meeting reports are kept centrally by the FGLM administrative office (currently at the DepBL: Sabrina Lutz, [sabrina.lutz@unifr.ch](mailto:sabrina.lutz@unifr.ch)).

PhD students are responsible for updating and managing these documents and for submitting them to the administrative office in a timely fashion.

The completed record sheet has to be verified and signed by the PhD student, the PhD supervisor and handed over to the FGLM secretary.

The completed FGLM record sheet is signed by the head of the FGLM and will be given to the student after the successful PhD defence as a confirmation of the successfully completed FGLM curriculum. This attestation by the FGLM does not represent a formal accreditation of ECTS.

## 3. Recommended course schedule

### Throughout the PhD:

- Literature study: e.g., SBL.00404, SBL.00326; SBL.00402, SBC.07111 (typically involving at least 1 presentation every 2 years)
- Progress reports: e.g., SBL.00403, SBL.00326, SBL.00212, SBC.07111 (typically involving 1 presentation per year)
- Laboratory group meetings: e.g., SBL.00401, SBC.04402, SBL.00401, SBC.07111 (presentations according to the research group)
- Seminars: e.g., SBL.00400

**1<sup>st</sup> year of PhD:**

- 2 ECTS from UniFR or other programs in Switzerland

**2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> year of PhD:**

- 3 courses / symposia from national and/or international programs
- 4 ECTS from UniFR or external courses
- 2 ECTS of soft skills

**4. Continued training offer proposed to PhD students in the FGLM program**

Below are examples of courses that can be taken by FGLM students; other courses may be eligible, especially from the Masters programs in biology and/or medicine.

See here: <https://www.unifr.ch/bio/en/studies/master/> and

<https://www3.unifr.ch/med/de/section/platforms/>.

		Semester	hours	ECTS
<b>Module A.1 Topical courses</b>				
(Themes remain, but contents can change year after year)				
SBL.00411	Signalling and transport	AS	8	1
SBL.00412	Introduction to protein structure and function	AS	8	1
SBL.10006	Developmental biology of marine animal models <i>Biennial: Alternates with SBL.10008</i>	AS	8	1
SBL.10008	Omics approaches in marine sciences <i>Biennial: Alternates with SBL.10006</i>	AS	8	1
SBL.00414	Cell fate and tissue regeneration	AS	8	1
SBL.00415	Cell proliferation	SS	8	1
SBL.00416	Biological Rhythms	SS	8	1
SBL.00417	Evolution on the bench	SS	8	1
SBL.00418	Microbial metabolism and genetics	SS	8	1
SBL.00419	Advanced imaging	SS	8	1
SBL.00421	Oceanography and marine ecosystems <i>Biennial: Alternates with SBL.10007</i>	SS	8	1
SBL.10007	Polar biology <i>Biennial: Alternates with SBL.00421</i>	SS	8	1
SBL.10010	Altered carbohydrate metabolism in disease	SS	8	1
-	Other courses from Fribourg, Bern or Freiburg PhD programs, or other Universities and programmes.			

**Module A.2** Elective courses from UniFR Master programmes  
(cannot be taken if credited during the MSc)

		Semester	Hours	ECTS
SBC.07104	Introduction to protein structure and protein homology modelling #	SS	14	1.5
SBC.07105	Introduction to docking of small molecules to large macromolecules and molecular graphics #	SS	14	1.5
SBL.30001	Introduction to R	AS	3 days	2
SBC.07109	Programming with R	AS	2 days	1
SBC.07110	Introduction to UNIX and BASH	AS	5 days	2.5
SBL.20003	Methods in plant pathogen interactions	AS	50	4
SBL.00420	Career profiling in life sciences	SS	8	1
SBL.20035	Structure and functions of host-associated microbiota	SS	28	3
SBL.00425	Metagenomic data analysis	SS	14	1
SBL.00427	Visual communication of data	AS	8	1
SBL.00428	Optogenetics and photopharmacology	SS	8	1
SBL.00429	Animal models of regeneration	SS	20	2
SBL.00451	Introduction to mass spectrometry and proteomics §	AS	8	1
SBL.00452	Advanced quantitative proteomics (including practical course)	SS	12	1
SBL.00453	Protein homeostasis: translation, quality control and degradation	AS	12	1
SBL.00125	Light and fluorescence microscopy for Life Sciences	AS	28	3
SBL.20001	Biostatistics I - generalized linear models and mixed effects models	AS	28	3
SBL.20002	Biostatistics II - multivariate analysis	AS	28	3
SBL.10001	Modelling human disease in experimental genetic systems	SS	20	2
SBL.10002	From bench to bedside	SS	5	0.5
SBL.10003	Health-related topics in developmental biology	SS	20	2
SBL.10004	Ethics in stem cell research	SS	8	1
SBL.10011	Structure, function and diseases of lipid metabolism	SS	8	1
UNIL	Introductory course in laboratory animal science	SS	5 days	3

- Other courses from Fribourg, Bern or Freiburg PhD programmes, or other Universities and programmes.

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AS Fall semester; SS Spring semester; #Must be taken together; §Prerequisite for SBL.00452

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**Module B.1: Seminars and meetings in Fribourg (examples)**

	Semester	hours	ECTS
SBL.10103 Research group meetings	3 sem.	3 x 14	3
SBL.10105 Research seminars in molecular life and health sciences	3 sem.	3 x 14	3
SBL.20083 Research group meetings in environmental biology	3 sem.	3 x 14	3
SBL.20081 Research seminars in environmental biology	4 sem.	4x14	5
SBL.00431 Seminars in biology	4 sem.	4x10	2
SBL.20005 Critical reading	All	28	3
SBL.10100 Journal club in molecular life sciences	3 sem.	3x14	3
UNIBE Seminar and journal club in Population genetics and Bioinformatics	SS	28	2
SBL.00127 BeFri research colloquium in cell and developmental biology I	SS	12	1.5
SBL.00128 BeFri research colloquium in cell and developmental biology II	SS	12	1.5
SBL.00129 BeFri research retreat in cell and developmental biology	SS	2 days	1
- Chronobiology Meeting	AS	8	0.5
- Fribourg Ecology & Evolution Days	AS	14	1
- Peer Reviewing in Natural- and Life Sciences: From Submission to Retraction (CUSO)	SS	12	1

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**Module B.2: Seminars & meetings outside Fribourg**

Basel Worm Meeting	SS	8	0.5
LS2 Meeting	SS	12	0.5
FEBS meetings	#		
EMBO courses, workshops and meetings	#		
SGM/SSM (microbiology)	#		
StarOmics (CUSO)	#		
Microbiology (CUSO)	#		
Doctoral Program in Molecular Plant Sciences (CUSO)	#		
Doctoral Program in Ecology and Evolution (CUSO)	#		
(Soft) Skills for your PhD (CUSO)	#		
Interuniversity Doctoral Program in Organismal Biology	#		
Biology XX: the annual Swiss conference on organismic biology	SS		

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## 5. Description of courses

***Up-to-date courses descriptions can be found in the Biology Masters study plans and on Timetable, at the links below :***

- [https://cdn.unifr.ch/scimed/plans/current/Plan\\_MSc\\_BL\\_EnvBiol\\_en.pdf](https://cdn.unifr.ch/scimed/plans/current/Plan_MSc_BL_EnvBiol_en.pdf)
- [https://cdn.unifr.ch/scimed/plans/current/Plan\\_MSc\\_BL\\_MLHS\\_en.pdf](https://cdn.unifr.ch/scimed/plans/current/Plan_MSc_BL_MLHS_en.pdf)
- [https://cdn.unifr.ch/scimed/plans/current/Plan\\_MSc\\_BI\\_en.pdf](https://cdn.unifr.ch/scimed/plans/current/Plan_MSc_BI_en.pdf)
- <https://www.unifr.ch/timetable/>