Guidelines

1. Introduction

The PhD program "Infectious Diseases and Immunology" includes research in biology of pathogens, pathogen-host interactions as well as function and development of immune cells. The program is designed for highly qualified international students with diverse scientific backgrounds and fosters the interdisciplinary approach.
The language of the program is English. The average study period is three years. All together students gain 180 credit points (CP), 150 CP for their **PhD research project** and 30 CP for classes and lectures which are part of the **curriculum**. Our graduate school consists out of the International Max Planck Research School for Infectious Diseases and Immunology (IMPRS-IDI) funded by the Max Planck Society (MPG) and the Graduierten-kolleg 1121 "Genetic and Immunologic Determinants of Pathogen-Host-Interactions" funded by the German Research Foundation (DFG).

2. PhD Research Project

The central part of the PhD program is the PhD research project. The students are in charge of a research project, in collaboration with their mentor and will be responsible for experimental design, execution of the experiments as well as interpretation and presentation of the results. Students receive 50 CP per year for research.

3. Curriculum

3.1. Overview

The curriculum offers research-oriented, interdisciplinary lectures and practical courses. The aim is to train students in methods, scientific thinking and reasoning as well as developing skills for effective scientific communication. The students of our graduate program are an active part of the research community, i.e. they organize meetings and colloquia and participate in international conferences.
The curriculum includes mandatory and elective modules. Students should accumulate at least 30 credit points (CP). There is no fixed annual curriculum and the program is also not organized according to the academic year (we do not have semesters). However, lectures offered by the universities take place according to the academic year (specifically marked below). Students should fulfill the majority of the requirements in the first two years.
The modules within the curriculum are

- **Lectures (10 CP):**
    - **"The art of reading a paper":** Students learn general scientific principles based on publications from various research fields. In this course, students analyze two publications and later discuss methodology, scientific

background, experiment results and conclusions of the publications with faculty members. This event is part of the "IDI-day".
    - **"Scientific thinking":** Students present their work year-round to each other. The presentations are 20 minutes long and include the background of the scientific field, the ongoing work (including what went wrong), and the ideas for the future (for the next days, the next weeks, the next year). The students in the audience follow the project in detail and hold a lively discussion. This event is part of the "IDI-day".
    - **Colloquia:** The Max Planck Institute for Infection Biology (MPIIB) and the Center of Infection Biology and Immunity (ZIBI) hold a weekly colloquium with international guest speakers on topics of infection biology, immunology and other general topics of life science.
    - **Lectures, others:** There are other lectures and seminars on infection biology and immunology offered by the Humboldt University, the Free University and the Charité. The ZIBI always offers a current update on its homepage (www.zibi-berlin.de).

- **Practical courses (4 CP):** There are many practical courses offered to our students to learn methods and techniques used in different research groups as well as the research topic itself and the scientific approach of these groups.

- **Soft skill courses (4 CP):** We offer a variety of lectures that support our students to pursue their career on subjects like scientific writing or giving presentations.

- **Scientific communication (4 CP):** Our students are an active part of the scientific community, e.g. by inviting guest speakers, organizing meetings and colloquia, communicating their research in grant applications and to the public. Advanced students are encouraged to conduct lectures and courses themselves. Special events for "scientific communication" which are organized by the students are lab tours and Hot topic seminars.

    - **Lab tour:** For one afternoon, students invite other students of the program to their "own" lab and give a "lab tour". During these visits the host students explain the research field of the lab / group.
    - **Hot topic seminar:** A Hot topic seminar is a one-day symposium in a section of the field of Infectious Diseases and Immunology, which is organized by 2 to 3 students. This is organized in close collaboration with the student's supervisor.

- **Meetings (8 CP):**

    - **International meeting / conference:** Each student is encouraged to attend an international meeting at least once to present a poster / talk.
    - **Retreat:** Each year a retreat for all students and faculty members of our program is organized. Students present their work and discuss it with other students and faculty members.

Please note: The participation in group meetings, internal research seminars, journal clubs which are held in the individual research departments and groups are not part of the curriculum.

To guarantee high quality of all classes and courses all events will be evaluated by the students and instructors. Feedback forms will be available after every class / course and will be analyzed carefully by the coordinators.

3.2. IDI-Day

Once a month, one Friday afternoon (generally the first Friday in a month, except July and August) will be designated as "IDI-day". The schedule is as follows:

When?	*What?*	*Who is talking?*
1.15 pm	The art of reading a paper	faculty
3 pm	News & Views	coordinators
3.15 pm	Scientific Thinking	generally 4 students
5 pm	Carrier development	Invited speakers
evening	"Get-together"	whoever is interested

3.3. Lectures

– mandatory

Lecture	*Extent of the lecture*	*CP*	*Lecturer*
The art of reading a paper	at least 8 times	1	faculty and advanced students
Scientific thinking			
participation	at least 8 /year	1	students
own presentation	at least once / year	1	
MPI and/or ZIBI Colloquium	15	1	invited speakers

– elective

Lecture	*Extent of the lecture*	*CP*	*Lecturer*
Topical questions in molecular parasitology	2 SWS	2	Lucius
Structural and molecular components involved in bacterial pathogens	2 SWS	2	Kolbe
Lecture series: Infection Biology	2 SWS	2	Lucius, Zychlinsky, Meyer, Kaufmann et al.
Lecture series: Immunology	2 SWS	2	Radbruch, Hamann et al.
Molecular Virology	2 SWS	2	Krüger

Please note: These is only a selection of what is offered in Berlin. The lectures are offered through the academic year: The summer semester usually starts mid-April and ends mid-July; winter semester usually starts mid-October and ends mid-February. For detailed information please refer to www.zibi-berlin.de.
Students can also attend the Summer School held by the ZIBI, the FEBS summer school, the Spring School on Immunology held by the DGfI, the Keystone Symposium or other

qualitatively similar symposia (please check with the your supervisor and the coordinator beforehand). 0,5 credits / day

3.4. Practical courses

Practical	*Extent of the course*	*CP*	*Lecturer*
Statistics for the life sciences - Introductory	2 day	1	Hofer / Streich
Statistics for the life sciences - Advanced	3 day	1,5	Hofer / Streich
Advanced flow cytometry	3 days	1,5	Chang / Hühn
Expression profiling using microarray and quantitative real-time PCR analysis	5 days	2,5	Mollenkopf / Schreiber /Kaufmann / Meyer
Purification and Characterization of Proteins Involved in Bacterial Pathogenesis	6 days	3,0	Zychlinsky / Kolbe
Pathology	3 days	1,5	Loddenkemper
The Mouse Course	3 days	1,5	Klemm
NMR supported structural biology	3 days	1,5	FMP
Dynamics of Biological Membranes - Measuring Transbilayer Lipid Movement and Membrane Fusion	4 days	2	Pomorski / Herrmann
RNA techniques	3 days	1,5	Vogel
Analysis of innate immune recognition in bacterial infections	3 days	1,5	Opitz / Suttorp
Functional flow cytometry	3 days	1,5	Volk / Scheibenbogen
Methods in Bacterial Genetics	7 days	3,5	Tedin / Ewers / Wieler / Hunke / Borriss
Blockage of parasite replication by antiparasitic drugs and host molecules *in vitro* and *in vivo*	3 days	1,5	Liesenfeld
En passant Mutagenesis – Playing with DNA-Virus Sequences	3 days	1,5	Tischer / Osterrieder
RNAi	3 days	1,5	Meyer et al.
Cellular Immunology	10 days	5	Hamann / Radbruch
Molecular Immunology	10 days	5	Chang / Hamann / Radbruch

Additionally there is the possibility to attend international courses such as those offered by EMBO, Cold Spring Harbor, etc. (check with the supervisor and the coordinator). The student can also visit a particular lab for at least one week (“lab visit”). The graduate school can help the students cover the travel expenses but we encourage all students to write an application for a travel grant. 0,5 credits / day

3.5. Soft Skills

Classes especially offered for the students of our program are organized upon demand. The Humboldt Graduate School (HGS) also offers Soft Skill classes (http://forschung.hu-berlin.de/wiss_nachw/hgs_html). Students should also look into the homepages "Berufliche Weiterbildung" of the Humboldt University (http://www2.hu-berlin.de/berweit/BWb/) and the Free University (http://www.fu-berlin.de/weiterbildung/) as well as in their local adult education centers ("Volkshochschule"; http://www.berlin.de/vhs/). Please contact coordinator beforehand.
Classes offered in the last years:

Class	*Extent of the class*	*CP*
Clear powerful and honest graphics	1 days	0,5
High performance presentation	2,5 days	1
Speed reading	2 h	0,25
English communication	2 days	1
Communication skills	1 day	0,5
Media training for scientists	2 days	1
Applying in English	1 day	0,5
Endnote workshop	4 h	0,25

3.6. Scientific communication

– select at least one

Project	*CP*	*comments*
Be host for a guest speaker for a colloquium	1	contact coordinator
Organize IDI retreat	1-3	up to 3 students together
Organize Hot Topic Seminar	1-3	up to 3 students together
Organize lab tour	0,5	

– please aim to do one

Project	*CP*	*comments*
Write an application for a fellowship	2-3	contact coordinator
Write an application for a travel grant	1-2	contact coordinator
Participate in writing a grant application with your supervisor	…	credits will be given in agreement with your supervisor
Organize and participate in "public relations activities" such as "Lange Nacht der Wissenschaften"	0,5-2	contact coordinator
Teach "The art of reading a paper" or a practical course	1-4	contact coordinator

3.7. Meetings

Project	*CP*	*comments*
Present in an international meeting, at least once	2	contact coordinator
Attend the IDI retreat (each year)	1 / year	
Organize "thesis committee meeting" (each year)	1 / year	

3.8. How a curriculum could look like

What do I take?	**When do I take it?**	**How many CP do I earn?**
Lectures		
The Art of Reading a Paper	1st year	1
Scientific Thinking	1st, 2nd, 3rd year	3
Own presentation		3
Colloquium	1st, 2nd year	3
SUM		**10**
Practicals		
Pathology	1st year	1,5
The mouse course	1st year	1,5
Blockage of parasite replication by antiparasitic drugs and host molecules *in vitro* and *in vivo*	2nd year	1,5
SUM		**4,5**
Soft skills		
High performance presentation	1st year	1
Clear powerful and honest graphics	2nd year	0,5
Stimm- und Sprechtraining für Frauen (HU)	2nd year	1
Applying in English	3rd year	0,5
Coaching for Advanced PhD students (HGS)	3rd year	1
SUM		**4**
Scientific communication		
Be host for a guest speaker for a colloquium	2nd year	1
Organize IDI retreat	2nd year	2
Teach "The Art of Reading a Paper"	3rd year	2
SUM		**5**
Meetings		
Attend an international meeting / conference, participate with an own poster / talk	3rd year	2
Thesis committee meeting	1st, 2nd, 3rd year	3
Attend the IDI retreat	1st, 2nd, 3rd year	3
SUM		**8**
TOTAL SUM		**31,5**

4. Thesis Committee

Each student has a thesis committee which advises the PhD research project and supervises the personal development of the student.

The thesis committee consists out of three faculty members. The first member is the direct supervisor of the student. The other two members should be from outside the research group of the student.

Consider the following points when selecting a thesis committee member:

- In which direction does my project develop? Who will give me valuable scientific advice? This is the most important question because your research project is the main part of your degree.
- From which university do I get my degree? How does the "Promotionsordnung" look like? (see 5.) It is wise to chose people who will read your dissertation and evaluate your defense. They should have a good overview over your work and know you personally.
- The thesis committee can also support you in case problems occur. Therefore you should be comfortable with the members of your committee. Consider whether if you can talk to them about awkward situations e.g. in case you want to break up your PhD.

The thesis committee should meet at least once a year. The first meeting should take place after 9 months. During the last meeting the thesis committee and the student should discuss the graduation process (last experiments, outline for the dissertation, selection of the reviewers and members of the "Promotionsausschuss").

The student submits a short report to the thesis committee and the coordinator two weeks before the meeting. The report should include:

1) a brief introduction to the project (0,5 page)
2) progress report of the research work including any problem that might have occurred (2 pages)
3) outlook (1 page)
4) list of lectures and courses the student participated
5) General comments (e.g. name courses which were very useful and why, suggestion for future courses)

The report should be at most 5 pages long, not more than 2000 words and include an adequate bibliography. You should use "TCMreport.doc" as template.
The meeting is organized by the student. The student should find an appropriate date for all committee members, book a room, and organize a laptop and beamer.
During the meeting the student gives a 20 min presentation covering all issues included in the report followed by a discussion on perspectives. After the meeting the student should summarize the discussion in one page. You may use "TCMminutes.doc" as template. The report should be send to the committee members and the coordinator no later than a week after the meeting.

5. Dr. rer. nat. or PhD?

In Germany, only universities can award academic titles. The faculty members of our program are affiliated to different Berlin Universities, and to different "Fakultäten" in case of the Humboldt University and "Fachbereichen" in case of the Free University. "Fakultäten" and "Fachbereiche" are comparable to "Schools" (e.g. Medical School) and "Departments" (e.g. Department of Biology) of American Universities. In Germany each "Fakultät" and "Fachbereich" has its own "Promotionsordnung". A "Promotionsordnung" is the law that indicates the requirements for a degree, e.g. "Dr. rer. nat.". For example: The Institute of Biology at the Humboldt-University belongs to the Mathematisch-Naturwissenschaftliche Fakultät I. Among other regulations, the "Promotionsordnung" says that your "Promotionsausschuss" (these are the people who finally evaluate your thesis and defense) should consists out of five professors and other lecturers which hold a "Habilitation". Three out of these five should be members of the Institute of Biology.
It is worth to decide in advance who should be a member of your "Promotionsausschuss" and maybe chose her/him as a member of your thesis committee (see 4.)
Only some "Fakultäten" and "Fachbereiche" offer the possibility to achieve a PhD, e.g. the Veterinary Medicine of the Free University. You can achieve a PhD at the Charité but only if you are part of the Medical Neuroscience Program.
Before you decide to go with the one "Fakultät" or the other "Fachbereich" and who should be involved in evaluating your work you should definitely talk about this issue with your supervisor and the coordinator!