1988	Ph.D. - ETH Zürich, Switzerland
1989 - 1991	PostDoc - Yale University School of Medicine, New Haven, USA
1992 - 1999	PostDoc - Institute of Biochemistry I, Heidelberg University / BZH
1999	Habilitation in Biochemistry, Heidelberg University, Medical Faculty
2000 - 2002	Scientific Director - German Cystic Fibrosis Association
since 2002	Head of the teaching unit and lecturer - BZH

Cordula Harter

Teaching and Education

BZH's activities in biochemical education are unique: We train more than 1000 undergraduate students of three faculties and offer an elaborate graduate program for around 60 PhD students. In addition, we engage in the development of modern curricula and novel teaching formats.

The teaching unit

BZH's teaching activities are centrally coordinated. Our office provides services for students and teaching staff, manages courses and examinations, maintains the electronic learning platform, and cooperates with the deans' offices in curricular and interdisciplinary affairs. Our teaching laboratories are managed by technicians who set up the students' experiments and take care of the infrastructure. Our lab space can accommodate up to 120 students and is equipped with instruments for biochemical analyses as well as for large scale preparations. For advanced courses a cell culture lab, a cold room and a dark room are available. In a computer room with 14 workstations students can use special software and online tools, like databases for gene and protein analysis.

Undergraduate Program

Approximately 800 medical students, 190 biology students and 120 chemistry students participate in courses each year. In addition, 25 students are trained each year in a selective biochemistry study program which is described in a separate section of this report. All students attend obligatory courses which consist of lectures, seminars and practicals and are individually organized for the students of the respective subject. In addition, students can choose among various electives.

Medicine

The medical students' courses extend from the second throughout the fourth semester. They are systematically structured from fundamental biomolecules, metabolic pathways, cell and organ functions, to the molecular basis of diseases.

As a novel teaching format, we recently introduced the "inverted classroom", a concept which moves the lecture outside the classroom – as an online lecture - and allows the students to prepare a topic at home and deepen the knowledge later in the classroom. Another innovative teaching format are virtual patients: We integrated electronic cases in our curriculum in order to emphasise the clinical relevance of biochemistry and to foster self-directed learning.

The preclinical curriculum at Heidelberg University is likewise unique in that topics are taught interdisciplinary with other preclinical subjects like anatomy and physiology but also with clinical subjects, e.g. pharmacology. The high quality of our curriculum is confirmed by very good results in internal as well as national examinations:

Heidelberg continues to rank among the top three German medical faculties (out of 31) in the national state examinations.

Medical students prepare selected topics in a interactive seminar.

Biosciences

For students of biosciences, we offer courses at the Bsc and Master level. Our Bsc program starts in the first semester with a seminar "Current topics of the life sciences". In the second semester, the foundations of biochemistry, e.g. enzymatic catalysis and metabolism, are taught in a core course which consists of lectures and a practical. For students of the third to fifth semester courses at an advanced level are offered, e.g. a practical where students apply technologies to regulate gene expression. At the master level, the BZH participates in the major "Molecular and Cellular Biology (MCB)" of the international master program "Molecular Biosciences". BZH group leaders offer lectures on topics of their current research and lab rotations. Upon completion of the course program, students have the opportunity to perform a thesis in one of the research groups and later on to apply for a graduate program.

Chemistry

For chemistry students, we offer two modules at the bachelor level: one obligatory for students of the third semester and one elective for students of the fourth and fifth semester. In the obligatory module fundamental biochemistry is taught in lectures and seminars, and students learn to handle basic lab equipment and to analyse various types of biomolecules. In the elective module students get insight into more sophisticated techniques, like protein crystallography and structural analyses. Master students perform a lab rotation and participate in research seminars. Our electives are in great demand which gives us the privilege to choose the best students for a bachelor thesis and afterwards for the master or doctoral program.

Practical work in small groups is an essential element of our educational program.

Graduate program

To offer excellent research opportunities in a stimulating and supportive atmosphere and to prepare our graduates for a career in academia or industry are our demands on graduate education. To this end, we provide not only state-of-the-art laboratories for our approximately 60 graduate students, but also comprehensive training in our BZH graduate program or in one of the other graduate programs on campus, like the Hartmut Hofmann-Berling international graduate school of molecular and cellular biology (HBIGS). Graduate students' program includes supervision by an advisory committee, progress reports in our department seminar and participation in a program which offers a variety of courses ranging from laboratory techniques to soft skills. Interaction among the BZH graduate students is further intensified by regular social and scientific meetings, like the yearly doctoral retreat, which is organized by our board of PhD students. In addition, opportunity is given to discuss science issues in guest speakers' seminars and at international conferences.

Cordula Harter
Phone: +49 (0)6221 / 54 6758
E-mail: cordula.harter@bzh.uni-heidelberg.de

2008	Ph.D. - BZH
2008 - 2012	PostDoc - Yale University, New Haven, USA
since 2012	Study Coordinator, Lecturer Biochemistry - BZH

Rainer Beck

Bachelor and Master Study Programs in Biochemistry

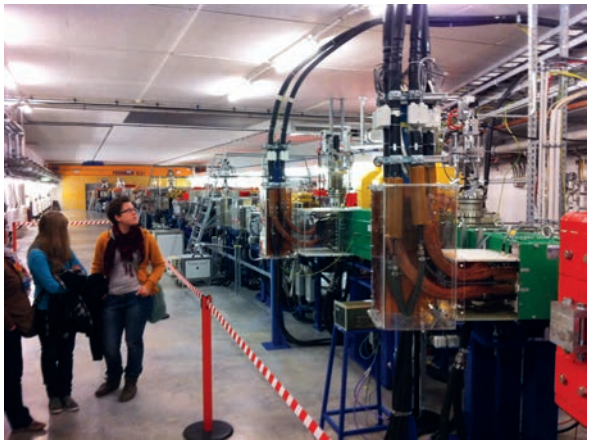
Since winter 2012, the Faculty of Biosciences and the Faculty of Chemistry and Geosciences, offer a joint study program Biochemistry Bachelor. The goal is to prepare excellent students for a career in applied research in Life Sciences. Since winter 2015, the consecutive study program Biochemistry Master started.

Lecture Biochemistry II.

Capacities and Selection of Applicants

Biochemistry Bachelor in Heidelberg is a very selective study program. Between 700 and 1100 candidates per year applied for the 25 slots available. This gives us the privilege to draw the most ambitious and talented applicants.

Initial selection is based not only on grades (focus on math and science), but also on additional qualifications, such as extended laboratory practicals and participation scientific competitions.



Students of Biochemistry visiting the Heidelberg Ion-Beam Center.

Based on this initial ranking, the top 75 candidates are invited to the BZH for the second round of the selection process: Interviews are conducted by a member of the Faculty of Biosciences together with a member of the Faculty of Chemistry.

Biochemistry Bachelor

In the first years, students of Biochemistry in Heidelberg undergo a very thorough training in Chemistry; they complete all courses mandatory for students of Chemistry.

Starting in the 2nd year, the students commence their education in Biochemistry:
We made a new lecture series Biochemistry I-III for this study program. Our goal is to offer our students unique lectures, where we can take the time to thoroughly explain and, together with the

Biochemistry Practical A.

students, explore molecular mechanisms underlying biochemical processes. We put special emphasis on the relationships of structure and function of biomolecules, and describe biochemical processes quantitatively.

We often sidestep and reference to techniques and laboratory experiments, in an effort to demonstrate how textbook knowledge was initially discovered, and how such data is experimentally generated.

In the 3rd year, students of Biochemistry will start conducting research practicals in research groups of the BZH and affiliated mural and extramural institutions.

By this time, the students will have acquired a thorough understanding of Chemistry and Biochemistry. The Bachelor program concludes with a Bachelor thesis and an oral exam on topics of Chemistry and Biochemistry.

Biochemistry Master

The consecutive Master program extends over two years and aims at preparing the students for a subsequent training as PhD students.
In contrast to the tightly structured Bachelor program with little freedom of choice, Master students are to choose freely combinations of in total four modules from a list of nine chemical and biological subjects. Out of the nine modules, two were created specifically for Master Biochemistry, one being Pathobiochemistry (coordinated by Britta Brügger and Walter Nickel), the other being Bioinformatics/Molecular Dynamics (coordinated by Rob Russel).

Each module consists of a lecture/seminar, as well as a research practical of 8 weeks. The main focus is on the practical trainings, to this end our students can choose freely the institutions and laboratories where the research practicals will be carried out, including research at the pharmaceutical industry.

After completion of the four modules and their associated research practicals, the students will be prepared to choose the group in which they want to work during the next 6 months for their master thesis. Before commencing the laboratory work, the students will, with the help of respective group leader, formulate a detailed research proposal about their project.

The Master program concludes with a disputation of the Master thesis.

Biochemistry Bachelor students visiting CERN.

Rainer Beck
Phone: +49 (0)6221 / 54 5452
E-mail: rainer.beck@bzh.uni-heidelberg.de

PhD Board and BZH Meeting

PhDs for PhDs

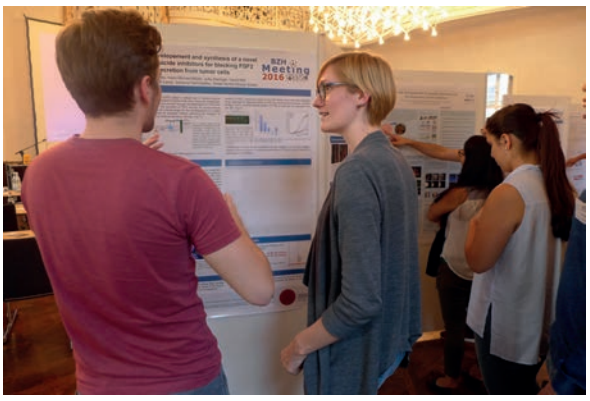
The PhD board of the BZH is a committee of PhD students - at least one person from each group at the BZH - that takes over some tasks for the benefit of all PhD students. The PhD board organizes social and scientific events for the BZH community, and arbitrates between PhDs and group leaders within the Biochemistry Centre of Heidelberg. Here, the core events in which the PhD board is involved are presented:

The group leader meeting

As part of the BZH family, we have a reserved slot in the group leader meeting to introduce topics or new ideas and to raise awareness of challenges that PhD students might face.

The BZH lecture speaker, invited by PhD students and PostDocs

On behalf of all BZH PhD students, we invite and host one speaker per year for the BZH lecture series. The PhD students choose speakers in a ranked poll. One of those speakers is then hosted



Poster session.

by the PhD board and is asked to share his or her scientific experience with junior scientists such as PhD students and young PostDocs.

Students' lunch with the BZH lecture guest speakers

As part of every guest speakers' visit at the BZH lecture series, the PhD board organizes a common lunch with each speaker for up to ten interested PhD students and young PostDocs to meet the speaker in an informal setting. While

Lecture hall during poster session.

usually some scientific questions are addressed, the discussion focuses on the career of the speaker and his/her opinion on the research field, its future perspectives or the involved scientific community. Of course, in this context advice about scientific career planning and professional orientation in academia are extremely valuable.

Science forum

Every one or two months on a Friday evening the PhD board organizes a relaxed get-together for PhDs and PostDocs. This gives PhD students from the different groups of the BZH the opportunity to get to know each other, talk to each other, exchange ideas, get new contacts and get a feeling of how to tackle the challenges of a PhD student's life. Furthermore, it provides the PhD students with the possibility to meet people outside their group and to get to know alternative scientific approaches to overcome their experimental obstacles.

The BZH Meeting

The BZH meeting is an annual retreat for PhD students and young PostDocs of the BZH that takes place for an extended weekend. The PhD board organizes its scientific programme. During

the meeting, one PhD student from each group introduces the main topics of their group and presents their work in front of an audience of about hundred scientists in a formal presentation. Additionally, three national and international guest speakers are invited to give a keynote lecture and to participate in the rest of the scientific activities during the meeting.

Round table discussions.

Not only the speakers have the opportunity to present their work, but also all other PhD students do in the form of a poster presentation.

The BZH Meeting also includes the highly appreciated round table discussions. Here, five to six people from different groups sit together at a table and present their projects in a simple and yet comprehensive way, without technical support (slides, etc) in order to maximize feedback from other participants.

The BZH meeting serves the purpose of interconnecting the different groups of the BZH not only scientifically but also personally, which is also encouraged through the social events of the meeting such as canoeing, hiking or board gaming.

The first BZH meeting was held in 2016 from 12th to 14th June in Kloster Schöntal (Baden-Württemberg). There were more than 50 participants with over 40 posters and ten presentations from BZH students and postdocs, in addition to three keynote lectures from guest speakers from Germany, France, and the USA.

PhD Board
E-mail: PhDBoard@bzh.uni-heidelberg.de
Web: www.bzh.uni-heidelberg.de/PhDBoard

Group photo of the participants of the BZH Meeting 2016 at Kloster Schöntal..