



1988	Ph.D. - ETH Zürich, Switzerland
1989 - 1991	PostDoc - Yale University School of Medicine, New Haven, USA
1992 - 1999	PostDoc - Institute of Biochemistry I, University of Heidelberg / BZH
1999	Habilitation in Biochemistry, University of Heidelberg, 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

We provide training in biochemistry for students from three different faculties (Medicine, Biosciences, Chemistry & Geosciences) at the undergraduate and graduate level. Furthermore, we engage in the development of new curricula and learning formats in order to continuously adjust our programs to the demands on state-of-the-art biochemical education.

The teaching unit

The teaching unit provides services and infrastructure for high-end education in modern biochemistry. Responsibilities include the development and organization of courses and examinations in collaboration with the lecturers and the dean's offices, services for students and teaching staff, maintenance of the electronic learning platform and the teaching laboratories as well as set up the practicals. Lab space can house up to 120 students with about half of the benches equipped with basic instruments for biochemical analysis. For advanced courses, a cell culture lab, a cold room, a dark room and equipment for large scale preparations, like centrifuges and incubators, are available. In a computer room with 14 workstations students can use special software or online tools, like databases for gene and protein analysis or virtual patients. Outside the BZH-course hours, the entire infrastructure of the teaching unit can be used by other groups on the campus.

Undergraduate Program

Approximately 800 medical students, 190 biology students and 120 chemistry students participate in biochemistry courses each year. In addition, 25 students are trained in a selective biochemistry study program which is described in a separate section of this report. All students attend obligatory basic 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.

Medical students' education

The medical students' courses extend from the second throughout the fourth semester. They are systematically structured from the basics of biomolecules to complex metabolic pathways and cellular functions. The preclinical core curriculum at Heidelberg University is unique in Germany since all topics are taught interdisciplinary with cell biology, anatomy and physiology. Our curriculum is very well accepted and led to better results in internal as well as national examinations: In the last 3 years Heidelberg ranked among the top three German medical faculties (out of 32) in the national state examinations. In addition to the obligatory courses, we offer the possibility to perform a practical in one of the research groups or to attend a seminar on a selected topic. With the aim to foster self-directed learning and to

integrate clinical aspects into the preclinical curriculum, we - in collaboration with clinicians and computer scientists - developed virtual cases in an electronic format.



Medical students dealing with a virtual patient in our CIP pool.

Education of students of biosciences

For students of biosciences, we offer a program which starts in the first semester with an introductory seminar “On current topics of the life sciences” and continues longitudinally to the master program with selected topics related to ongoing research at the BZH. Basic modules for bachelor students as well as advanced modules of the major “Molecular and Cellular Biology (MCB)” for students of the international master program “Molecular Biosciences” are arranged in collaboration with the coordinators and teaching staff from other subjects, like molecular biology and cell biology. The course concept aims to provide a solid and modern education in biochemistry from basic knowledge to high-end methods, like tandem affinity purification or lipid analyses. 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 students’ education

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 students gain basic knowledge and are trained to handle basic lab equipment. In the elective module students get insight into more sophis-

ticated techniques, like protein crystallography and structural analyses. Master students perform a lab rotation in a research group and participate in the groups’ research seminars. Our electives are in great demand which gives us the privilege to choose the most talented students for a bachelor thesis and afterwards for the master program.



Students of the master program “Molecular Biosciences” in a MCB practical.

Graduate program

Our 65-70 graduate students receive an intense and professional training in our internal BZH graduate program or in one of the other graduate programs on campus, like the international graduate program Hartmut Hofmann-Berling international graduate school of molecular and cellular biology (HBIGS) or the DFG-funded research training group GRK 1188. Graduate students’ education includes supervision by a thesis advisory committee, reports about the progress in the BZH department seminar and participation in a course program which offers a vast diversity 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 BZH lab day, which are organized by our board of PhD students. In addition, opportunity is given to discuss science issues in guest speakers’ seminars.

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

Rainer Beck

Biochemistry Bachelor

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. Starting winter 2015, the consecutive study program Biochemistry Master will be offered.

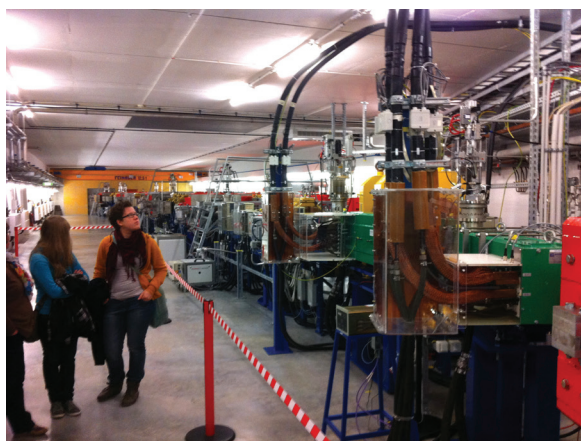


Dr. R. Beck (BZH) and Dr. M. Schmidt (NCT).

Capacities and Selection of Applicants

Biochemistry Bachelor in Heidelberg is a very selective study program. In 2013 over 1100 applicants competed 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



Students of Biochemistry visiting the Heidelberg Ion-Beam Center.

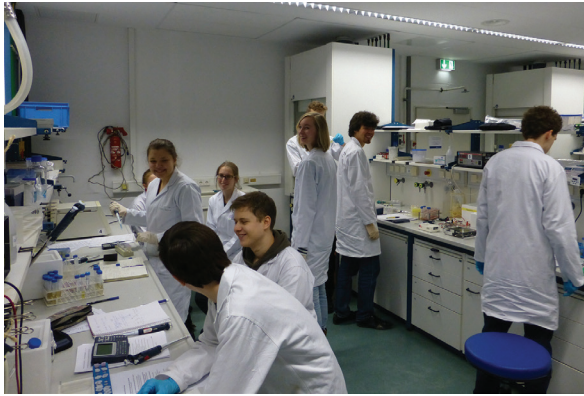
qualifications, such as extended laboratory practicals and participation in national and international scientific competitions.

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.

The Bachelor Program

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:



Biochemistry Practical A.

We designed a new lecture series Biochemistry I-III specific for this study program. Our goal is to offer our students unique lectures (and tutorials), where we can take the time to thoroughly explain and, together with the 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.

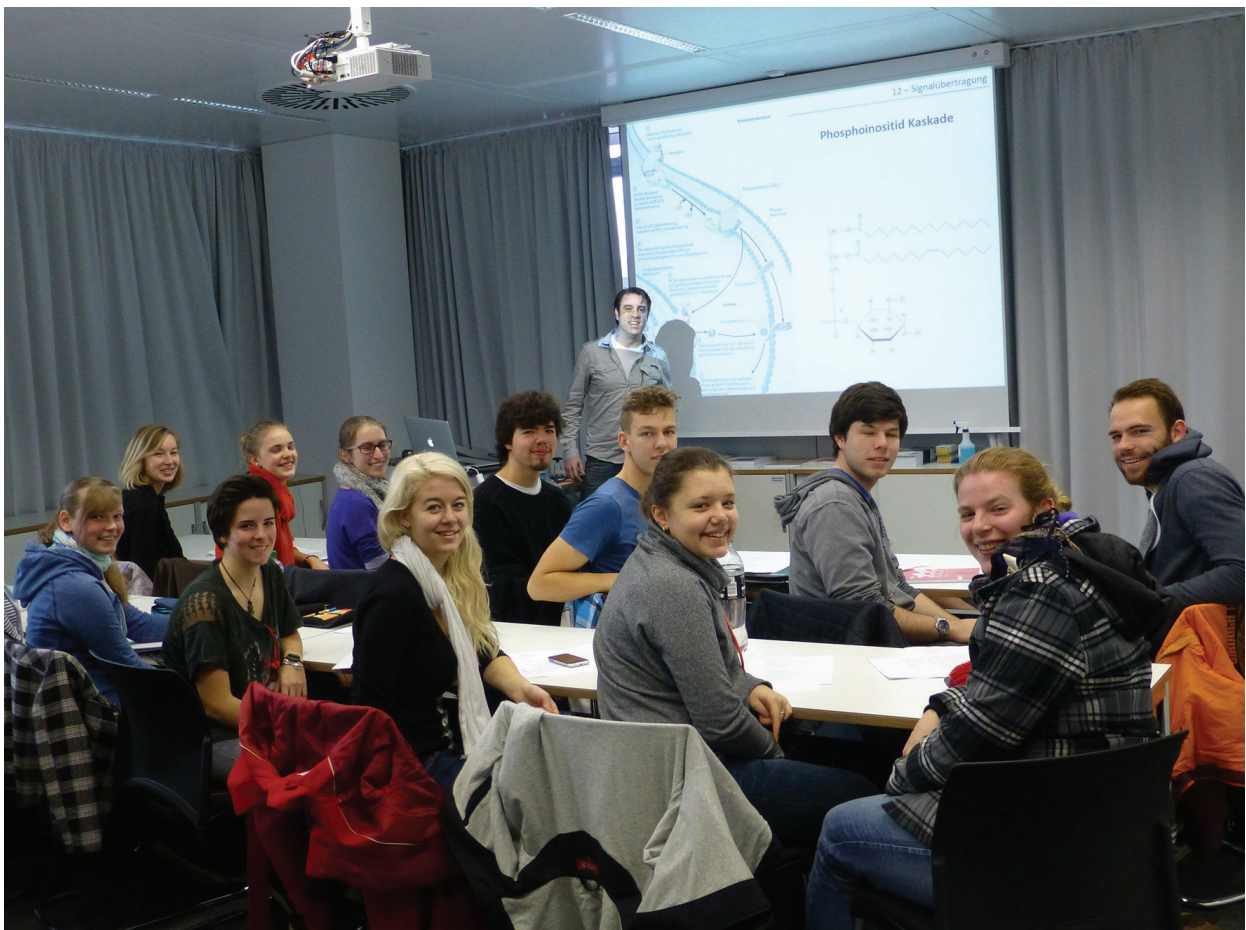
In the 3rd year, students of Biochemistry will start conducting research practicals in research groups of the BZH and affiliated mural and extra-mural institutions.

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.

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Lecture Biochemistry I.