The international PhD programme “Biomolecular Technology of Proteins” (BioToP, https://biotop.boku.ac.at) was established eight years ago and offers a research-based doctoral education at the interface of basic and applied science in the field of protein biotechnology, focusing on enzymes and antibodies. Our aim is to offer a broad education in protein biotechnology that will guarantee employability of our graduates in both academia and industry.

Production of native or designed proteins for therapeutic, diagnostic and industrial use needs a thorough understanding of protein (bio)chemistry and molecular biology, and the differences in physiology of various expression systems. In addition, it requires an understanding of different production steps, starting from genome analysis, gene identification and cloning, mutagenesis strategies, design, display and screening of protein libraries, establishment of highly productive strains with desirable growth and production properties, and the setup of analytical procedures for the assessment of structural and functional features. These different aspects are presented to BioToP students in a specialised curriculum based four basic courses, basic laboratory courses, and courses on various soft skills.

BioToP is structured into four different areas, (i) Structure-function analysis, engineering and design of proteins, (ii) Biosynthesis, post-translational modifications and trafficking of recombinant proteins, (iii) Expression systems and cell factories, (iv) Bioinformatics and molecular modelling. These four areas are for example reflected in the four basic courses or the lab courses offered, as well as in the individual research topics of PhD theses.