



VIBT
Vienna Institute
of BioTechnology

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From “Know why” to “Know how”





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Our Research Philosophy: Curiosity and creativity are the driving forces for scientific discoveries and the basis of technological innovation.

The Vienna Institute of BioTechnology VIBT is a research initiative of several departments of the University of Natural Resources and Life Sciences (BOKU), Vienna, location Muthgasse. The departments contribute with complementary and internationally renowned areas of expertise. It was conceived as a think tank and now serves as a research, training and technology development site where curiosity and creativity meet. The research capacity, diversity and size of the VIBT offer the capacity and mix to facilitate scientific discovery and technological innovations in the life sciences.

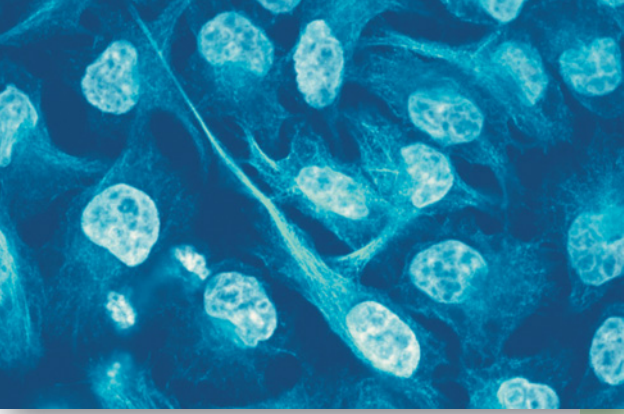
Its research and teaching cover a wide range of topics from basic research in the molecular biosciences and biotechnology to applications in nutrition, bio-economics, sustainability and medicine.

Areas of Expertise

- Development and optimization of biological cell factories
- Development and optimization of biogenic diagnostics, therapeutics, process molecules and the respective biotechnological production processes
- Glycobiology, glycoengineering and glycobotechnology
- Ultra-trace analysis of natural compounds and pollutants, food, biotechnology, medicine and cultural history
- Optimization, development and safety of food along the supply chain
- Biodiversity, molecular bases and utilization of plant and microbial systems
- Bio-economic approaches to the comprehensive utilization of renewable resources
- Nanobiotechnological solutions modeled on biological structures
- Integrated water management and protection of the livelihoods of water in a sustainable way
- Bioinformatics: modeling of bioprocesses

<http://www.boku.ac.at/vibt.html>





Department of Applied Genetics and Cell Biology

The research portfolio of the DAGZ comprises basic, translational and applied research in molecular genetics and cell biology with special emphasis on interdisciplinary collaborations with medical and agricultural biotechnology, as well as co-operation with industry. The activities can be structured into the following areas of interest.

- Auxin
- Molecular Biology and Cell Biology of Plants
- Molecular Plant Biotechnology
- Molecular Plant Physiology
- Molecular Cell Biology
- Plant Biochemistry
- Plant Genetics
- Plant Glycobiology
- Plant Cell Walls
- Plant-Pathogen Interactions
- Plants and Environmental Influences
- Fungal Genetics and Genomics

<http://www.dagz.boku.ac.at>



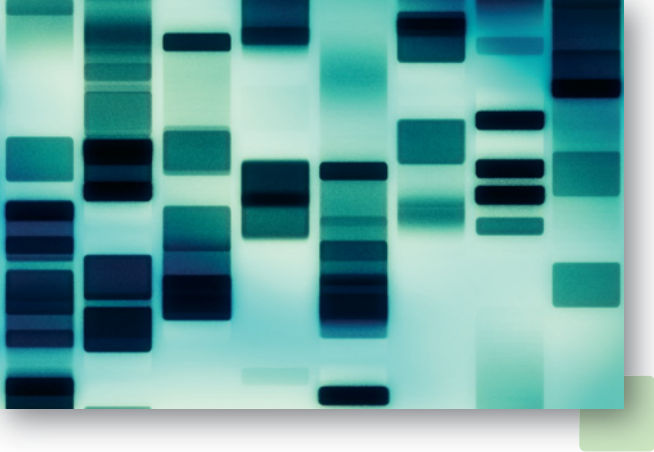
Department of Biotechnology

The department's expertise is aimed at identifying and developing novel compounds and processes for biopharmaceuticals and biofuels and comprises the following areas of research activity.

- Biopharmaceutical Technology
 - Mammalian Cells as Cell Factories
 - Therapeutic Relevant Drug Liposomology Shaping up to Transdermal Systems
 - Expansion and Differentiation of Cells
- Bioprocess Engineering
 - Fermentation
 - Preparation and Process Science
 - Technical Biology
- Functional Biodiversity and Utilization of Genetic Resources
 - Plant Biotechnology
 - Austrian Center of Biological Resources and Applied Mycology
- Molecular and Cellular Biotechnology
 - Insect Cell Technology
 - Cell Biology and Cell Line Development
 - Microbial Strain Improvement and Metabolic Engineering
 - Protein Engineering
 - Plant Functional Genomics
- Quantitative Biology and Bioinformatics

<http://www.biotec.boku.ac.at>





Department of Chemistry

The Department of Chemistry serves as a pivotal institution providing core expertise in teaching and research on a variety of BOKU-relevant scientific themes related to chemistry and chemistry-related topics. Its research is focused on the biotechnology of proteins and glycans, the exploitation of renewable resources and methodological excellence in the field of chemical analysis and synthesis. We follow the principles of "green chemistry" by using environmentally-benign chemicals, energy-saving techniques and efficient chemical reactions following the principles of atom economy.

- Analytical Chemistry
- Protein Biochemistry
- Glycobiology
- Glycochemistry
- Wood-, Cellulose- & Fibre Chemistry

<http://www.chemie.boku.ac.at>



Department of Food Science and Technology

The Department of Food Science and Technology plays an important role within the BOKU's fields of expertise in "food, nutrition and health". It provides a significant contribution in ensuring safe and high grade foods through its research and teaching efforts. Research focuses on the specific needs of the Austrian and Central European consumers. The research groups represent the core disciplines of the food supply chain.

- Food Quality Assurance
- Food Sensory Science
- Food Chemistry and authenticity
- Food Physics
- Food Microbiology and Hygiene
- Food Technology
- Food Biotechnology
- Process Technology

<http://www.dlwt.boku.ac.at>





Department of Nanobiotechnology

Research activities at the Department of Nanobiotechnology are focussed on molecular nanotechnology, nanobiotechnology, biomimetics, synthetic biology and biophysics. Biological principles, chemical processes and physical principles are combined in a transdisciplinary approach to obtain molecular building blocks and structures with novel properties. The human and infrastructure resources of the DNBT make it a centre of competence for biologically inspired functional surfaces and materials. Our research balances fundamental knowledge generation with focussed development and optimization of nanotechnologies for biological applications.

- Synthetic Bioarchitectures
- Biologically Inspired Materials
- Biophysics

<http://www.nano.boku.ac.at>



Department of Water, Atmosphere and Environment

The focus of the Department of Water, Atmosphere and Environment is the sustainable protection of livelihood and water for future generations. In a holistic approach all different parts of the water cycle are explored and its use and supply are optimized whilst assuring sustainability. Methods, models and technologies are refined and complemented with innovative inputs.

- Resource Protection, Drinking Water Abstraction, Water Reuse, Waste Water Discharge and Treatment
- Interaction of Water and Soil Dependent on Various Climatic Conditions
- Investigation of Processes and Interactions of Hydraulic Engineering and the Environment on Different Scales

<http://www.wau.boku.ac.at>



Institute of Animal Nutrition, Products, and Nutrition Physiology

The Institute of Animal Nutrition, Products, and Nutrition Physiology is dedicated to the very origins of the animal-based food supply chain. Work is centered on appropriate feeding of agricultural livestock, with the ultimate aim of producing animal-based food (milk, meat, eggs) which is safe, of highest quality and produced in a resource-efficient and environmentally friendly manner.

- Metabolism of Nutrients and the Impact of Functional Food Components in Model Animals
- Analyses of Nutrients in Biological Material
- Quantification of Fractional Nutrient Fluxes in the Intact Organism

<http://www.tte.boku.ac.at>





Core Facilities

The VIBT possesses key infrastructure and skills that are provided for research and teaching activities, as well as for collaborations with companies and other research institutions and comprises the following laboratories.

- Laboratory of Food Technology
- Analytics of Glycans and Polysaccharides
- Pilot Plant for Upstream and Downstream of Biomolecules
- Proteomics/Genomics/Transcriptomics
- Cell Culture
- Plant Biotechnology
- Technical Biology
- Protein Technology
- Microbial Systems
- Bioanalysis
- Nanostructure and Nanomaterials Characterization
- Hydraulic Lab/Technical Lab of Sanitary Engineering

In cooperation with:

EQ-VIBT www.eq-vibt.boku.ac.at

- Imaging Center
- Cellular Analysis
- Extremophile Center

University of Applied Sciences (FH CW)

- Fermentation Research Facilities

Key Data and Figures

- 350 to 400 scientists, depending on project status; about two-thirds through external funding
- 53,000 m² net floor area, of which approximately 20,000 m² laboratory and pilot plants
- About 250 scientific publications per year in journals listed in the Science Citation Index (SCI)
- 50 new competitive research projects granted per year from Austrian (FWF, FFG, CDG) and international (EU) research funding institutions
- Current funding at the cutting edge of science and industry:
 - CD Labs of the Christian Doppler Research Association
 - Laura Bassi Centre of the Austrian Research Promotion Agency FFG
 - Special research program (SFB) of the Austrian Science Fund FWF
 - Endowed Chairs of the Vienna Science, Research and Technology Fund WWTF
 - BioToP Doctoral program
 - Competence Centre: Austrian Centre of Industrial Biotechnology ACIB
 - Competence Centre for Wood Composites and Wood Chemistry Wood COMET
 - MINT Initiative "Pilot Plant"

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