University of Applied Sciences and Arts Northwestern Switzerland
School of Life Sciences

Institute for Pharma Technology and Biotechnology

www.fhnw.ch/ipb-en

Institute for Pharma Technology and Biotechnology

Innovative teaching and research for safe, effective, high-quality medicines.

The Institute for Pharma Technology and Biotechnology is a leader in research and teaching in pharmaceutical sciences and biotechnology.
Our expertise covers every aspect of the field: formulation, biotechnological active ingredient production, process development, drug delivery, gene transfer systems and packaging, as well as drug pharma-cokinetics and pharma-codynamics. We work hand in hand with industry, from pharmacologically active synthetic, biotechnological and gene-based pharmaceutical ingredients, to ready-to-use drug dosage forms. The work of the Institute is research-based, scientifically robust, industry-focused and application-oriented.

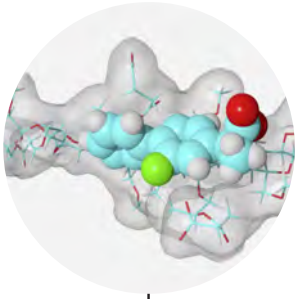
This feeds into the training we give our students, offering them an outstanding preparation for their professional careers. Our staff's wide-ranging experience in scientific research and practice underpins our work; our cooperation with industry partners both in teaching and research focuses on the exacting demands of drug quality, the needs of society and economic efficiency.

Interdisciplinary fields

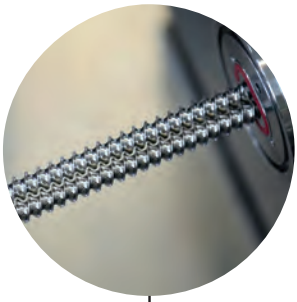
We research innovative technologies and methods for the pharmaceutical products of the future. Our work generates expertise and technology to improve pharmaceutical and industrial processes as well as a better understanding of dosage forms.

Formulation of chemical active ingredients

Formulation and process development for biological active ingredients; packaging and device development

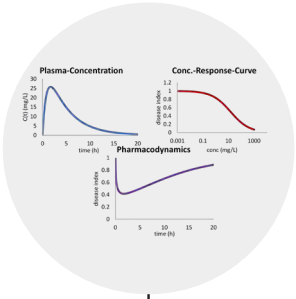


Poorly water-soluble active ingredients, amorphisation, solubility, lipid-based systems, solid dispersions, Quality by Design, molecular modelling

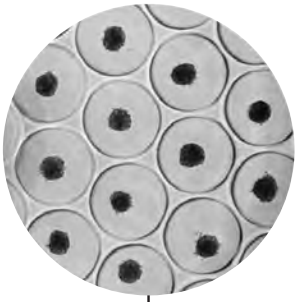


Production processes

Therapeutic proteins, monoclonal antibodies, protein analysis, implants, biomaterials

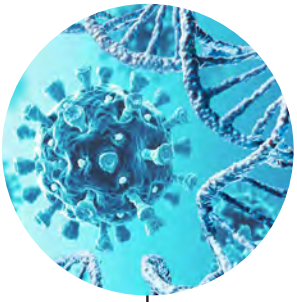


Pharmacokinetics – Pharmacodynamics



Precision pharmaceuticals

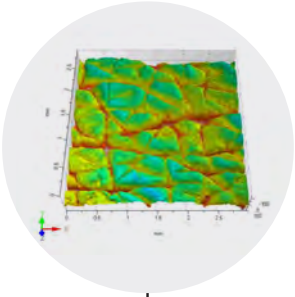
Nano-milling, spray drying, melt extrusion, automation, Process Analytical Technology



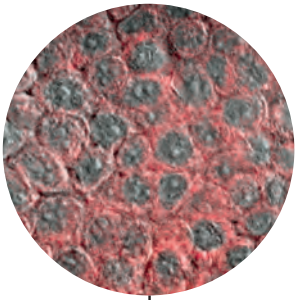
Gene therapy and vector design

Biopharmaceutical processes, from genetic manipulation and process development to pharmaceutical formulation

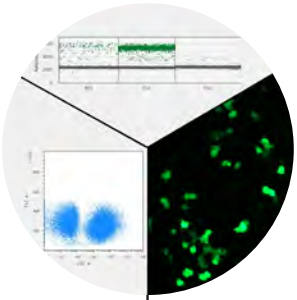
Control and modelling of (bio)pharmaceutical processes



Intestinal and (trans-)dermal in vitro models, mathematical modelling



Drug absorption and drug delivery

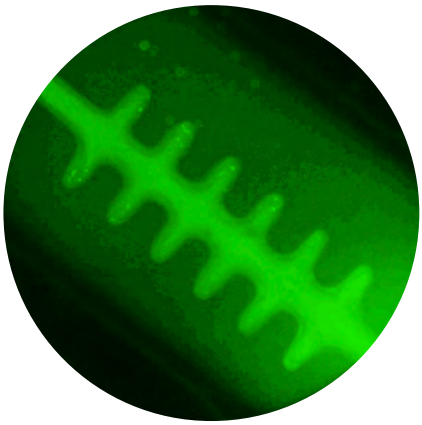


Viral and non-viral gene transfer, targeted expression and cell line development

Expertise and infrastructure

Drug manufacturing and characterisation

- Antibody and protein production, fermentation, downstream processing
- *In vitro* pharmacology tests in 96- and 384-well plate format
- Formulation production for synthetic and biological active ingredients
- In vitro LADME tests (active ingredient dissolution and release, permeability, metabolism)
- Freeze-drying
- Sterilisation
- Aseptic production
- Crushing, grinding, mixing, granulation, compaction
- Tableting, encapsulation, coating
- Melt extrusion
- Homogenisation
- Spray drying
- Gene therapeutics design and administration (viral, liposomal, peptide, electroporation)



Infrastructure

- BL2 laboratory for viral gene transfer
- Cell culture incl. organoid platform
- ddPCR, fluorescence and cell microscopy
- Pipetting and multimodal plate reading devices
- Bio-process technology systems
- Protein analytics
- HPLC, LC-MS/MS, UV/Vis spectroscopy
- Cleanroom
- Process Technology Centre for solid and semi-solid dosage forms
- Particle analysis, DLS, laser diffraction thermal analysis, iGC, rheology, diffusing wave spectroscopy
- Surface characterisation
- Packaging analysis

Higher Education

- BSc Pharma technology
- BSc Biotechnology
- MSc Pharma Technology
- MSc Biotechnology

Continuing Education

- CAS Pharma Quality Manager

FHNW School of Life Sciences

At At the new FHNW Campus in the heart of Europe's largest life sciences region, the School of Life Sciences does cutting-edge research for a better future. State-of-the art infrastructure and equipment, including a new Process Technology Centre, enable our researchers and industry partners to work together to develop new technologies and products from concept to market.

The campus has an ideal location close to public transport links and with a view over Basel. In addition to the School of Life Sciences, the new FHNW Campus Muttenz houses the Schools of Architecture, Civil Engineering and Geomatics, Education, Social Work and Engineering, where around 4 500 people study and work.

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For further information about
our research fields:
www.fhnw.ch/ipb-en

The FHNW incorporates nine facilities:

- FHNW School of Applied Psychology
- FHNW School of Architecture, Civil Engineering and Geomatics
- FHNW Academy of Art and Design
- FHNW School of Computer Science
- **FHNW School of Life Sciences**
- FHNW Academy of Music
- FHNW School of Education
- FHNW School of Social Work
- FHNW School of Engineering
- FHNW School of Business

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