

Pharmacy at the ETH Zürich – Past and Present[#]

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Abstract: Pharmacy has a long-standing tradition at the Swiss Federal Institute of Technology. The last 149 years have seen a vigorous expansion from a single professor to a faculty of about ten and from a few students per year to about one hundred in 2003. Starting out as part of the Chemistry section in the early days of the ETH, Pharmacy became an independent unit in 1916 when it was moved to a new location at Clausiusstrasse 25. With various changes in organizational structure it remained there until 1993, when it was transferred to the Irchel Campus of the University of Zürich due to lack of space. Upon the installation of autonomous departments at the ETH in 2003, the critical size for organizational units was becoming an issue. As a consequence the Institute of Pharmaceutical Sciences together with the three Chemistry Laboratories and the Institute of Chemical and Bioengineering decided to establish the new Department of Chemistry and Applied Biosciences (D-CHAB). With the move to the HCI Höggerberg, the five Institutes of the D-CHAB have also become re-united at the same location.

Keywords: Drug research · History · Institute of Pharmaceutical Sciences · Pharmacy

1. Organization

The first School of Pharmacy in Switzerland opened its doors at the Swiss Federal Institute of Technology (ETH) on October 15, 1855, when the 'Polytechnische Schule' was established. Until 1908 the Pharmacy courses were integrated in the Chemistry section, and only then a study section 'Pharmacy' (Abteilung V) was implemented at ETH. In 1916, the Institute of Pharmacy was founded, which remained in place until the reorganization in 1990, when the ETH introduced a formal matrix structure with a teaching organization, the 'Abteilung', and a research-oriented unit, the Department of Pharmacy. In 1999, when the matrix structure at the ETH was abandoned, a new type of Department responsible for both teaching and research was created; the Department of Applied Biosciences. This name reflects the strategic opening from 'pharmacy' to 'pharma-

ceutical sciences' that had taken place with the nomination of several professors in the field of life sciences during the 1990s. At the same time, the Institute was reintroduced as the 'Institute of Pharmaceutical Sciences' (IPW). In the course of the latest reorganization (January 2003), when autonomous departments were created, the Pharmacy section decided to join forces with the institutes of the Chemistry Department founding the new 'Department of Chemistry and Applied Biosciences' (D-CHAB). This new organizational unit comprises the IPW, the Institute for Chemical and Bioengineering, and the Laboratories of Inorganic Chemistry, Organic Chemistry and Physical Chemistry. In parallel to the structural reorganizations, a new curriculum 'Pharmaceutical Sciences' has been designed, thus taking into account the strategic opening of the field.

2. Locations

From 1855 until 1861 Pharmacy was integrated in the 'Chemisch-Technische Schule' which was located at the 'Stiftsverwaltung' downtown close to the main church ('Grossmünster') and in the grammar school of the city of Zürich. In 1861, the University of Zürich and the ETH jointly established the 'New Chemical Laboratory' which was functional until 1886, when the ETH built the Chemistry building

at Universitätsstrasse, where Pharmacy and Chemistry remained together until 1916. Between 1916 and 1993 the Institute of Pharmacy was located at Clausiusstrasse 25 in the west wing of the building complex for Natural Sciences together with the Institute of Bacteriology ('Hygienisch-bakteriologisches Institut') and the Institute of Photography. Already in the 1930s, the lack of space required the Pharmacognostic Collection to be moved to the attic, where it remained until 1993. Due to the rapid development in science a sharp increase in student numbers in the beginner's courses occurred (15 in 1960, 31 in 1970, 84 in 1979 and 132 in 1985). Therefore, lack of room remained an issue and the years up to the 1980s were characterized by different efforts to gain more space such as the move into one of the provisional containers in front of the Chemistry building, the expansion to the old EMPA building at Leonhardstrasse, the assignment of some laboratories in the east wing of the Natural Sciences building to Pharmacy, and the move of the former Institute of Bacteriology (today 'Institut für Hygiene und Arbeitsphysiologie') to a different location. Finally, the professors of Pharmacy were able to convince the President of the ETH that a new building should be planned. At the same time the University of Zürich was realizing a new complex on the Irchel campus for the Institute of Pharmacology of the Medical Faculty. The federal government and the

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[#]Described in detail in refs [1–6]

Chairs in Pharmaceutical Sciences^{a,b}

Prof. *Pompejus Alexander Bolley*, Pharmaceutical Chemistry (1855 to 1860)

Prof. *Joseph Gastell*, Pharmacognosy (1857 to 1871), Pharmacognosy and Pharmaceutical Chemistry (1860 to 1866) [Honorary Professor from 1861]

Prof. *Eduard Schür*, Pharmacognosy (1873 to 1874), Pharmacognosy, Pharmaceutical Chemistry and Toxicology (1874 to 1892) [Professor from 1881]

Prof. *Carl Hartwich*, Pharmacognosy, Pharmaceutical Chemistry and Toxicology (1892 to 1917)

Prof. *Robert Eder*, Pharmacognosy and Pharmaceutical Chemistry (1917 to 1930).

It was the special merit of Prof. Eder to create independent chairs for the disciplines Pharmaceutical Chemistry, Pharmacognosy and Galenical Pharmacy.

Pharmaceutical Chemistry

Different topics such as Organic, Inorganic and Analytical Pharmaceutical Chemistry as well as Physical Pharmacy have been taught under this header.

Prof. *Robert Eder* (1930 to 1944)

Prof. *Jakob Büchi* (1944 to 1972)

Prof. *Xavier Perlia* (1963 to 1991) [Assistant Professor 1963, Professor from 1969]

Prof. *Hans Georg Weder* (1974 to 1993) [Assistant Professor 1976, Professor from 1978]

Prof. *Gerd Folkers* (1991 to 2004)

Pharmacognosy (since 1972 Pharmacognosy and Phytochemistry; from 2003 Pharmaceutical Biology)

Prof. *Hans Flück* (1930 to 1971) [Professor from 1935]

Prof. *Otto Sticher* (1971 to 2002) [Professor from 1972]

Prof. *Karl-Heinz Altmann* (from 2003)

Galenical Pharmacy (Drug Formulation and Delivery)

Prof. *Jakob Büchi* (1931 to 1943; 1944 to 1946) [Professor from 1936]

Prof. *Kurt Eugen Münzel* (1947 to 1954) [Professor from 1948]

Prof. *Kurt Steiger* (1954 to 1960)

Prof. *Peter Paul Speiser* (1961 to 1988)

Prof. *Hans Peter Merkle* (from 1989)

Pharmacology

From 1932 on, the professors of the Medical Faculty of the University of Zürich taught the lectures in 'Pharmacology and Toxicology' for students in Pharmacy. In 1965 a joint professorship UNIZH/ETHZ for Pharmacology and Toxicology was established.

Prof. *Peter Gaudenz Waser* (1965 to 1985)

Prof. *Hanns Möhler* (from 1989)

Biopharmacy

Prof. *Heidi Wunderli-Allenspach* (from 1986) [Assistant Professor 1986, Professor from 1992]

Anatomy

Until 1993 lecturers of the Medical Faculty of the University of Zürich taught the 'Anatomy and Physiology' lectures of Pharmacy students. In 1993 a joint professorship UNIZH/ETHZ for 'Anatomy' was established.

Prof. *Markus Müntener* (from 1993)

Radiopharmacy

Prof. *P. August Schubiger* (from 1997)

Biomacromolecules

Prof. *Dario Neri* (from 1999)

Pharmacogenomics

Prof. *Michael Detmar* (from October 2004)

Pharmaceutical Biochemistry

Prof. *Annette Beck-Sickinger* (Assistant Professor from 1997 to 1999)

Prof. *Leonardo Scapozza* (Assistant Professor from 2001 to 2004)

Therapeutics Technologies

Prof. *André W. Brändli* (Assistant Professor from 2001)

Prof. *Roger Schibli* (Assistant Professor from October 2004)

Pharmaceutical Analytics

Prof. *Hansruedi Altorfer* (Honorary Professor from 1994)

Chemical Sensors/Biosensors and Bioanalytical Chemistry

Prof. *Ursula Spichiger* (Honorary Professor from 1999)

^a Teaching activities are only listed for persons who were elected professors at a later stage.

^b Honorary Professors are only listed if they are employees of, or associated with the ETH Technopark).

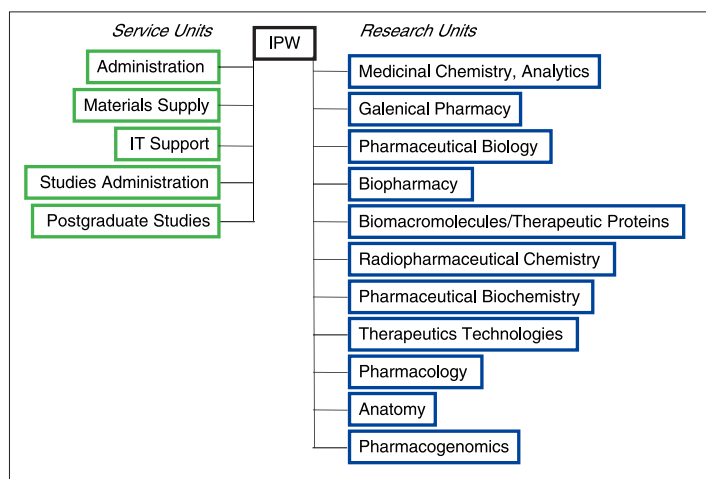


Fig. 1. Organization of the Institute of Pharmaceutical Sciences (IPW). For more information see <http://www.pharma.ethz.ch>.

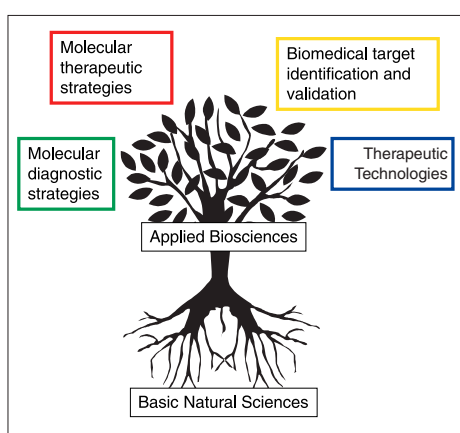


Fig. 2. Pharmaceutical Sciences – the underlying strategy

canton Zürich joined efforts and agreed that Pharmacy should be located in the same building on three floors that were financed by the ETH ('Stockwerkeigentum'). In September 1993, the IPW (then Department of Pharmacy) moved into the new rooms on the Irchel campus.

In the meantime the IPW has further expanded with a new chair in Biomacromolecules (Prof. Neri, 1999), and assistant professorships in Pharmaceutical Biochemistry (Prof. Scapozza, 2001) and Therapeutics Technologies (Prof. Brändli, 2001). Space was again becoming scarce. A transient solution was found by renting laboratory and office space from the University of Zürich. As no permanent expansion was possible on the Irchel campus, it was decided to transfer the IPW to the new buildings on Hönggerberg. A new allocation scheme was designed for the HCI annex ('3. Ausbautetappe Hönggerberg') to accommodate the Department of Materials, the Institute of Microbiology (D-BIOL) and the IPW. For the D-CHAB this has the major advantage of bringing its five institutes into one building. Most importantly, however, this transfer, which took place in August/September 2004 has led to a sub-

stantial strengthening of the Life Sciences at ETH Hönggerberg.

3. Pharmaceutical Sciences Today

Today the IPW comprises 10 research units with a total of 140 employees (about 100 full time equivalents) and different service units (Fig. 1). More than ninety Ph.D. students from 10 nations and a total of about 300 undergraduates are enrolled. About 50 federal diplomas in Pharmacy are awarded per year. Research has steadily expanded over the last 10 years with the motto 'from concepts to prototypes'. The strategy of IPW is illustrated in Fig. 2. Efforts are concentrated on the development of new diagnostics and therapeutics as well as the identification of new therapeutic targets. The IPW has close links within the ETH, with the Functional Genomics Center Zürich, with the University of Zürich and,

within the framework of the Center for Pharmaceutical Sciences, the University of Basel (Fig. 3). In 2005, a preclinical PET (Positron Emission Tomography) unit as part of the new Imaging Center HCI Hönggerberg will complement the clinical PET center, located at the University Hospital Zürich.

With the new HCI building, enough space is finally available to put the most beautiful and interesting pieces of the Pharmacognostic Collection ('Hartwich Sammlung') in a permanent exhibition, together with items of the history of the former Chemistry Department. This is part of the museum project of the D-CHAB that also comprises the installation of a garden for medicinal plants, which will be open to visitors.

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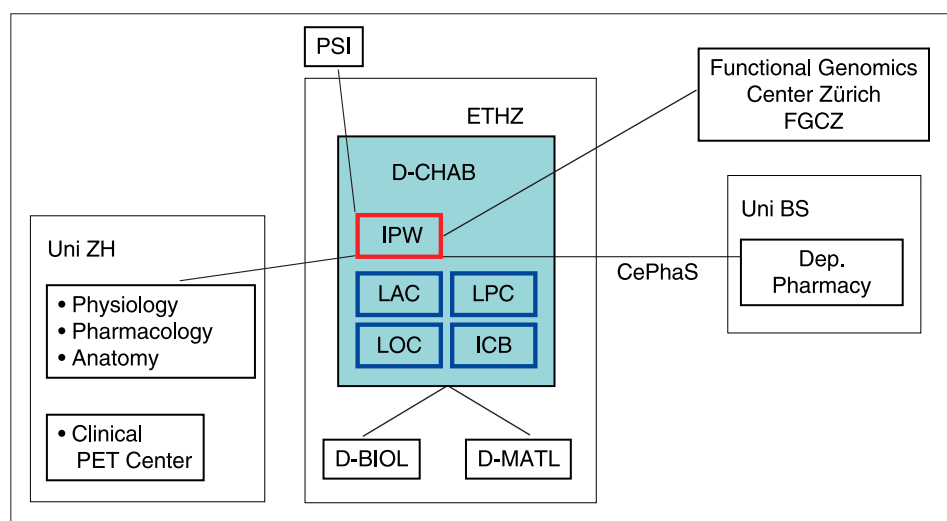


Fig. 3. The network of IPW. CePhaS Center of Pharmaceutical Sciences Basel-Zürich; D-BIOL Department of Biology; D-CHAB Department of Chemistry and Applied Biosciences; D-MATL Department of Materials; ICB Institute for Chemical and Bioengineering; LAC Laboratory of Inorganic Chemistry; LOC Laboratory of Organic Chemistry; LPC Laboratory of Physical Chemistry; PSI Paul Scherrer Institute.