

History of the Department of Pathophysiology

The Department of Pathophysiology of the University of Vienna Medical School was organized in 2000, when the Institute of General and Experimental Pathology, which already dates from 1873, merged with the Institute of Specific Prophylaxis and Tropical Medicine, established in 1974.

1873-1999: Institut fuer Allgemeine und Experimentelle Pathologie

The Institute of General and Experimental Pathology was established largely through the efforts of the famous pathologist, Carl von Rokitansky, one of the founders of classical clinical pathology. It was his opinion that morphological and histopathological findings, because of their descriptive nature, were insufficient to understand the etiology and pathogenesis of diseases. Rokitansky was convinced that pathological observations needed to be supplemented by appropriate experimental studies.

He therefore used his influence with the government to have Salomon Stricker, appointed to the chair of “General Pathology”. Stricker was a young, but already internationally known scientist. On Rokitansky’s suggestion, the Institute’s name was expanded to include the discipline of experimental pathology. It therefore became the Institute of General and Experimental Pathology.

Salomon Stricker, after graduation from the University of Vienna Medical School, trained in internal medicine, surgery, dermatology, ophthalmology, and psychiatry. He became a research assistant at the Institute of Physiology under the famous Ernst Wilhelm von Brücke. There he worked on embryological and histological problems. Interestingly, it was Stricker who was the first to observe living cells divide under the microscope!

Subsequently Stricker worked in the laboratories of the renowned French physiologist Claude Bernard and those of Karl Ludwig in Leipzig. Stricker was an excellent researcher who aimed at combining experimental research with clinical practice. In retrospect it is clear that under Salomon Stricker’s direction the activities conducted at the Institute under the name of “Experimental Pathology” correspond to what today is called “Pathophysiology”. It is interesting that throughout his leadership Salomon Stricker attempted to make a clinical ward part of the Institute. Neither he nor his successor, Philipp Knoll, succeeded in this endeavor, largely because of opposition by the clinical faculty.

Stricker, as an outstanding scientist, attracted many gifted researchers, some of whom ultimately became Institute faculty. One was Rudolf Kraus who, on the basis of his experimental work, published the first report of an immune precipitation reaction (*Wiener Klinische Wochenschrift*, [1897], 10: 736.).

Another member of the Institute faculty was Carl Koller, who, at the suggestion of Sigmund Freud, experimented successfully with cocaine as a local anesthetic.

Arthur Biedl, a leading endocrinologist around the turn of the century was another important member of the Institute. He was known not only for describing the syndrome that bears his name (Lawrence-Moon-Biedl Syndrome), but also was the author of an outstanding two-volume text on endocrinology, that comprised more than 1000 pages and contained over 8000 references. It is a text that describes in great detail the basic and clinical endocrinological knowledge of that time.

The eminent clinical pathologist Richard Paltauf served as director of the Department of Pathology at the Hospital Rudolfstiftung and, simultaneously, served as head of the Institute of General and Experimental Pathology from 1900 to 1924. Paltauf steered the Institute exclusively towards basic experimental research and organized the Institute into departments of experimental physiology, microbiology, pathological morphology, and chemistry. This has remained the Institute's organizational structure till today.

Paltauf's death was followed by a difficult period, because the Medical Faculty was unable to agree on a successor. The Institute remained under the interim direction of Julius Rothberger, also an excellent scientist and the founder of what may be called the "Vienna School of Experimental Cardiology." Rothberger was the first to describe cardiac dysfunctions such as "arrhythmia perpetua", atrial fibrillation, or the left bundle branch block. When Germany occupied Austria in 1938 (in the Anschluss), the Institute was forced to close. It did not reopen till several years after the end of the Second World War.

Adolf Lindner, who had started his scientific career at the Institute of Pharmacology, became its head in 1956. His appointment played a crucial role in the kind of research carried on at the Institute. Throughout his headship (1956-1983), Lindner made every effort to increase the number of researchers and to expand research funds, as by initiating collaborative projects with the pharmaceutical industry. He thus made it possible for the Institute to become a significant center for experimental medicine at the Medical Faculty of the University of Vienna.

In 1959, plans for a new Vienna General Hospital were being developed. Adolf Lindner was able to convince the faculty to make the Institute of General and Experimental Pathology part of the proposal, justifying this inclusion by indicating how this clinically and theoretically based structure would fit into the framework of the university clinics. It is also to his credit that "Functional Pathology" became a required course in the new medical curriculum that went into effect in 1980. The term "Functional Pathology" was chosen to indicate that insight into the causes, development and symptoms of disease requires

knowledge of the intricate relationship between molecular and cellular processes that underlie our bodily functions and that must be understood if one wishes to analyze the functional disturbances and deviations that constitute pathology.

It was not until the late summer of 1990 that the Institute of General and Experimental Pathology was moved to the new complex of the Vienna General Hospital. This provided more laboratory space and led to the acquisition of modern, high-quality equipment. As a result the Institute retained its importance for the Medical Faculty as a research and education center, with focus on experimental medicine.

From 2000 on: Department of Pathophysiology

Already in 1993 the Austrian Parliament had passed legislation to reorganize Austrian universities (Universtätsorganisationsgesetz 1993). This law took effect for the University of Vienna on January 1, 2000. The new legislation encouraged the formation of larger from smaller units, with the intent of increasing research and teaching efficiency. Thus, it was proposed that the Institute for Specific Prophylaxis and Tropical Medicine, in order to maintain its full research and teaching activities, become part of the Department of General and Experimental Pathology. The three-decade old and very fruitful cooperation between the two institutes was offered as a major reason. The merger was approved by the Medical Faculty and the Senate of the University of Vienna in December, 1999.

The newly established organization was named Department of Pathophysiology. This designation was chosen to meet the requirements stipulated by the 1993 law, i.e. for the name to be understood throughout the world and to reflect the fact that departmental research and teaching activities represent a specific discipline in the field of biomedical science. The term Department replaces the term Institute. The designation "Experimental Pathology", though it aptly describes the scientific activities of the Institute, never achieved recognition in countries other than Austria. It was therefore replaced by the widely understood term "Pathophysiology".

As a result of a total reorganisation of the Austrian University system, the Medical Faculty of the University of Vienna was transformed into the independent University of Medicine Vienna in 2004. At the same time, the Department of Pathophysiology was incorporated into a Center of Physiology and Pathophysiology together with the Departments of Medical Chemistry, of Physiology, and of Specific Prophylaxis and Tropical Medicine.

The Department of Pathophysiology, since 1983 under the headship of Meinrad Peterlik, PhD, MD, is made up of four Divisions:

1. Division of Molecular and Biochemical Pathology
(Head: *Meinrad Peterlik*, PhD, MD)
2. Division of Cellular Pathophysiology
(Head: *Jürg Graf*, MD)
3. Division of Immunopathology
(Head: *Rudolf Valenta*, MD)
4. Division of Applied Experimental Pathology
(Head: *Otto Scheiner*, PhD)

MISSION STATEMENT

In line with historic tradition and the trends and developments in modern medicine, the Department of Pathophysiology is dedicated to basic and translational "disease-oriented" research. It employs the broad methodology of biomedical science to focus on the molecular and cellular basis of the etiology and the pathogenesis of malignant, inflammatory, infectious, degenerative and hereditary diseases. The Department has also strong interest to further develop for the good of the patient novel findings and insights from basic research activities into efficient diagnostic, preventive or therapeutic measures (for details see: M. Peterlik: "Indagandis sedibus et causis morborum - die Entwicklung der Pathophysiologie als Desiderat Rokitanskys", Wien. Med. Wochenschr. 154: 467-471, 2004).

Research activities, carried out at present by fifteen research groups, are funded primarily by grants from international and national agencies and by industry contracts. The Department is proud of its many collaborations with prestigious research institutions in the USA, Australia, Japan, Great Britain, Germany, Italy, Finland, and Hungary, to name only the most prominent.

The wide range of research activities in the field of Pathophysiology enables the Department to provide high quality teaching in Functional Pathology. The Department of Pathophysiology is also certified to provide specialist training (for Fachaerzte) in the fields of pathophysiology and immunology.