

The history of immunology in Switzerland, 1950 - 2018

Preliminary Note:

The following outlines key aspects of Swiss immunology and its main contributors. It should be understood, however, that this does not claim to be a complete history and does not contain a list of scientific prizes awarded, successful research projects or methods used by individuals. For such details, we refer the reader to the relevant literature.

In **1950**, the „**Swiss Society for Allergology**“ was founded by representatives from various medical disciplines, including internal medicine with *Wilhelm Löffler* and *Werner Hadorn*, microbiology with *Arthur Grumbach* and dermatology with *Hans Stork*, *Guido Miescher* and *Werner Jadas-Sohn*.

In **1951**, the first International Congress for Allergology takes place in Zurich. The Society for Allergology already has more than 150 members, although for most, allergology is still more of a hobby than a true calling.

1956 - 1972 The progression towards a Swiss Society for Allergology and Immunology.

Already during the early days of allergology, new discoveries into the functions of the immune system are being made. In the case of immunodeficiency, conditions such as immunodeficiency disorders, autoimmune diseases, serious infection and tumors arise. Organ transplants are only possible if rejection by the immune system can be prevented.

Institutions are set up in many parts of the USA and Europe that adopt these new disciplines, Switzerland included. **Switzerland makes its mark on the field.**

1956 *Walter Hitzig*, *Silvio Barandun* and *Alfred Hässig* are the first to describe the hereditary antibody deficiency syndrome, which is soon dubbed **Swiss-type Agammaglobulinemia** in their honor.

Walter Hitzig works in the Zurich Children's Hospital and is a joint founder of pediatric immunology. *Silvio Barandun* runs an institute specializing in immunoglobulin within the Tiefenau Hospital in Bern, and, like *Walter Hitzig*, he is considered to be an international authority on immunodeficiency. *Alfred Hässig* is the founder and Director of the Swiss Blood Donor Service and a pioneer in the fields of transfusion medicine and immunohematology.

1956 - 57 *Jean Lindenmann* and *Alick Isaacs* discover **Interferon** in England, the first potentially important mediator of immune responses.

Jean Lindenmann continues to research interferon at the Zurich Institute of Microbiology. Many regard him as the father of **cytokine research** and **immune-infectiology**. He is shortlisted as a potential Nobel Prize candidate. At his institute, immunologist *Hansruedi Ramseyer* also conducts research on the relationship between interferon and the immune system.

1960 *Albert Böni* founds **Switzerland's first rheumatism clinic** in Zurich. He focuses specifically on patients with complex musculoskeletal disorders that also involve other organs. He is among the first to propose the hypothesis that these could be **autoimmune diseases**.

1964 *Henri Isliker* creates the „**Institut de Biochimie**“ in Lausanne from the Swiss Institute for Experimental Cancer Research. It is the first large, university-based **institute for basic immunology** in Switzerland, which attracts many emerging immunologists (numbering between 10 and 15) from Switzerland and abroad, gains a far-reaching reputation, is associated with the WHO and is a WHO reference center for immunoglobulin.

1968 - 69 Immunology-focused institutes, departments, outpatient clinics, and laboratories are established in all university cantons of Switzerland. Their work extends beyond allergology to include clinical immunology, immunodeficiency disorders, autoimmune diseases, infection immunology, transplant medicine, and transfusion medicine — although with varying areas of emphasis.

- **Bern** sees the opening of the Institute for Immunology and Allergology. The Institute's first Director is *Alain de Weck* (1971-1993), succeeded by *Max Hess*, *Beda Stadler* and *Werner Pichler*.
- In **Lausanne** the „Service d'Immunologie et d'Allergologie“ in the Centre Hospitalier Universitaire Vaudois (CHUV)“ is founded by *Philipp Frei*, and he is succeeded in 1999 by *Giuseppe Pantaleo*.
- In **Geneva** the „Service d'Immunologie et d'Allergologie“ is set up under the direction of *Jean-Pierre Girard*, *Michel Jeannet*, *André Cruchaud* and later *Jean-Michel Dayer*.
- In **Basel** hat sich in der Dermatologie bereits eine Immunologie-Gruppe gebildet, dies unter **Rudolf Schuppli** und **Ferdi Wortmann**.
- In **Zurich** an immunology laboratory is set up and directed by *Peter Grob*. At the dermatological clinic with its director *Hans Stork*, the allergology unit („Allergiestation“) is expanded, and headed up by *Brunello Wüthrich*. *Robert Keller* carries out animal tumor research in a dilapidated building at the Schönleinstrasse.

1968 - 69 *Ernst Sorkin* opens the „Institute for Neuroendocrine-Immune Interactions“ in Davos.

As early as 1967–68, *Felix Largiader* in Zurich began performing kidney transplants, and *Åke Senning* was preparing for the first heart transplant. To enable organ exchange throughout Switzerland, a standardized assessment of tissue compatibility was essential. A nationwide **HLA typing network** was established, with a central coordination laboratory in Geneva, led by *Michel Jeannet*.

In 1969, *Åke Senning* performs the first heart transplant in Europe. Switzerland is among the best-organized countries in the world when it comes to transplant immunology.

In 1969–70, the **Basel Institute of Immunology** is founded by **Hoffmann-La Roche**. Among the initiators are *Alfred Pletscher*, *Eduard Kellenberger*, *Georges Köhler*, and *Niels K. Jerne*, who serves as the institute's first director until 1980, followed by *Fritz Melchers*. Alongside 4 to 6 senior staff members — including **three Nobel laureates**: *Georges Köhler*, *Niels K. Jerne*, and *Susumu Tonegawa* — the institute hosts 40 to 60 of the world's top young immunologists at any given time, each staying for a period of 3 to at most 6 years. By the

year 2000, over 500 scientists have conducted research at the institute, 27 of whom have received major scientific awards.

From **1970 to 1972**, *Franz Wagenhäuser* succeeds *Albert Böni* and continues to develop the Clinic for Rheumatology and Physical Therapy into a center for **autoimmune and connective tissue diseases**. At the clinic, the first patients in Switzerland are treated not only with corticosteroids but also with the immunosuppressant Imuran, originally a cytostatic drug.

Anticipating later developments: In 1980, under the leadership of *Steffen Gay*, a research center called the **Center of Experimental Rheumatology** is established at the Rheumatology Clinic. It soon becomes associated with several specialized European networks.

From **1968 to 1972**, representatives of basic immunology, allergology, and clinical immunology begin working more closely together and start to organize themselves. It soon becomes clear that separating these three disciplines in a small country like Switzerland — where everyone knows each other — would make little sense.

In **1972**, the **Swiss Society for Allergology and Immunology (SSAI)** is founded. Unlike in many other countries, it brings together members from all related disciplines — allergology, clinical immunology, basic research, and laboratory medicine. This integration of fields is exemplified by the consistent alternation of SSAI presidents from one specialty to another. After *Peter Grob* (1972–1974), a clinical immunologist, *Jean-Charles Cerottini* (1974–1976), a basic researcher, takes over. This concept has proven successful to this day — see separate list of all SSAI presidents from 1974 to the present.

Alain de Weck, who **directed the Institute of Immunology and Allergology in Bern** from 1971 to 1993 and was a founding member of the SSAI, was already closely collaborating with the WHO at that time. He was active, and in part held leadership roles, in the **International Union of Immunological Societies (IUIS)** and the **International Association of Allergology and Clinical Immunology (IAACI)**. Through his efforts, he opened Switzerland's broad field of immunology to the international community. Since then, the SSAI has maintained connections with national and international organizations and appoints official delegates.

Starting in **1972**, the SSAI and the newly established immunological departments in Switzerland organize many international conferences focused on specific aspects of basic research, allergology, autoimmune diseases, immunodeficiencies, organ transplantation, and viral hepatitis. Representatives of the SSAI from all these immunological fields also participate in international conferences.

As a result, the **Wolfsberg Meeting** is established to promote the next generation of basic immunology researchers, initiated by *Hans Hengartner*. Additionally, the more clinically oriented annual meeting "**Allergy and Immunology Update**" (AIU) is created, initiated by *Werner Pichler*. Another initiative is the "**Continuing Education Meeting for Medical Laboratory in Immunology**", with the current president *Luca Bernasconi* from Aarau. These meetings are still held today, attracting great interest and many participants.

In 1974, the **Swiss National Science Foundation**, a key institution for promoting basic research, had been organizing **Postgraduate Courses** in many established scientific fields and Swiss university cities for several years to support the next generation of researchers. Immunology was also seen as a field with great

potential, and as a result, a **Postgraduate Course in Immunology** was established in 1974, held in Zurich with highly qualified speakers from across Switzerland.

1983 Under the patronage of the SSAI, the Swiss Aerobiology Working Group is founded in Zurich on the initiative of *Ferdi Wortmann*. Already in 1962 first analyses of pollen have been performed, but only years later *Ruth M. Leuschner* conducted systematic pollen analyses. In 1972, the financing and logistics for the pollen analyses were transferred to SMA - MeteoSchweiz (National Pollen Monitoring Network, NAPOL). In 1993, to foster optimal relationships between biometeorology and medicine, the **Swiss Society for Aerobiology (SGA)** was founded. Through national epidemiological studies (SAPALDIA, SCARPOL), the impacts of biological and anthropogenic airborne pollutants on human health and the environment are investigated interdisciplinarily, particularly with regard to allergic diseases. The collected data enables both individual and general measures, prophylaxes, and therapies. Among the co-founders, promoters, and former president of the Swiss Society of Aerobiology, *Markus Gassner* is noteworthy for being the first to describe the early contact of young children with cows as a protective factor against allergies.

1983 *Marco Baggiolini*, as director of the Theodor Kocher Institute (1983–2001), introduced experimental immunology at the institute, further strengthening the field.

1984 - 85 **The HIV/AIDS epidemic reaches Switzerland**, and efforts to combat it are coordinated nationwide. A national network of diagnostic laboratories (3-tier principle) and hospital departments for infectious diseases is established. The **Federal Commission for AIDS Issues (EKAF)** is formed (clinical and laboratory), along with the **Swiss HIV Cohort**, one of the first in the world, followed shortly by the **Federal Commission for the Coordination of AIDS Research (KKAF)**, initially under the aegis of the Federal Office of Public Health (BAG), and later the Swiss National Science Foundation. Many members of the SSAI played a significant role in these efforts.

In **1988** the **Swiss Institute for Allergy and Asthma Research (SIAF)** is founded in Davos. The main initiators are *Walter Siegenthaler*, one of the directors of the Department of Internal Medicine at the University Hospital of Zurich (USZ), and, importantly, the city and region of Davos, which aims to maintain and even enhance its reputation as a "health resort." The SIAF effectively takes over the legacy of the simultaneously dissolved Institute for Neuroendocrine-Immune Interactions led by *Ernst Sorkin*. The first director of SIAF is *Kurt Blaser*, followed by *Cezmi Akdis*. The institute organizes large international congresses in Davos every year. Later, the SIAF becomes affiliated with the University of Zurich, linked with a chair in immunology.

1992 *Rolf Zinkernagel* and *Hans Hengartner* found the **Institute for Experimental Immunology** in Zurich, which evolved from the Institute for Experimental Pathology, established in 1980, and had already been focused on immunology. The Institute for Experimental Immunology gains international recognition; each year, 12-15 postdoctoral researchers work there. From 2008, it was led by *Burkhard Becher* and *Christian Münz*.

In **1996**, *Rolf Zinkernagel* and Australian *Peter C. Doherty* were awarded the **Nobel Prize**, marking a major recognition of the field of immunology and bringing international attention to Switzerland.

From 1995 onwards, basic immunology increasingly becomes an integral part of all biology-oriented faculties worldwide — including at the University of Zurich and the ETH Zurich. *Hans Hengartner* actively promotes and institutionalizes immunology at both institutions. At ETH, experimental immunology is steadily developed and, in 2002, is formally established as the **Institute of Microbiology**, led by *Annette Oxenius*.

In **2000**, the **Basel Institute of Immunology** of Hoffmann-La Roche is dissolved. It is replaced by a Center for Medical Genomics, and the immunology research is transferred to a Roche institute in California.

Under the leadership of *Antonio Lanzavecchia*, a former senior staff member of the Basel Institute of Immunology, the **Institute for Research in Biomedicine (IRB)** is founded in Bellinzona. The institute focuses primarily on immunopathogenic processes. *Federica Sallusto* heads the Cellular Immunology division and later becomes president of the SSAI.

From **2000** onwards — in some cases slightly earlier, in others later — the original clinical and experimental institutions are reorganized, but above all, they are expanded.

- **In Genf** Within the university hospital, the "Service d'Allergologie et Immunologie" still exists, currently headed by *Jörg Seebach*. There is also an Institute of Pathology and Immunology, directed by *Walter Reith*.
- **In Lausanne** The Biochemistry Institute of Henri Isliker has steadily grown. A branch of the **Ludwig Institute for Cancer Research (LICR)** was also integrated. In the 1990s, the **Swiss Institute for Experimental Cancer Research (ISREC)** was established, directed by *Michel Aguet*. During this time, the Lausanne Branch of the LICR was also founded, initially led by *Jean-Charles Cerottini*, followed by *Hugh Robson MacDonald*. From 1997, *Daniel Speiser* began developing clinical T-cell-based cancer therapies. In 2011, the LICR Lausanne Branch was dissolved, with part of it integrated into the University of Lausanne. Today, the Ludwig Institute is reestablishing its Lausanne Branch. The clinical allergology service, originally founded and directed by *Philippe Frei*, was taken over in 1999 by *Giuseppe Pantaleo*, with *François Spertini* as a leading member.
- **In Berne** The central clinical institution is the Inselspital (University Hospital of Bern). The fields of allergology, led by *Arthur Helbling*, and immunology, led by *Martin Bachmann*, are integrated into the **Polyclinic for Rheumatology, Immunology, and Allergology (RIA)**. Additionally, the **Theodor Kocher Institute**, under the direction of *Britta Engelhardt*, is structured into closely collaborating research groups. Since 2014, the **Institute of Virology and Immunology (IVI)** has merged with the former Institute of Veterinary Virology (IVV) at Vetsuisse. The new institute offers high-quality research, teaching, and services in virology and immunology in cooperation with the Vetsuisse Faculty in Bern. The IVI site in Mittelhäusern also serves as the Swiss reference laboratory for the diagnosis, surveillance, and control of highly contagious animal diseases such as avian influenza, foot-and-mouth disease, and classical swine fever.
- **In Basel** Within the University Hospital, there is a Department of Medical Immunology led by *Ingmar Heijnen*, and an Allergology Outpatient Clinic headed by *Andreas Bircher*.

- **In Zurich** The former Institute of Microbiology, previously under *Prof. Lindemann*, has expanded under the new director *Eric Böttger*. The Institute of Medical Virology founded by *Alexander von Gräfenitz* and *Fritz Kaiser* was directed from 1993 to 2008 by *Karin Mölling*, and subsequently by *Alexandra Trkola*. The allergy unit of the dermatology clinic, previously developed by *Brunello Wüthrich*, continues to operate, later under *Peter Schmid-Grendelmeier*. The Department of Clinical Immunology, formerly led by *Peter Grob* (1968–2002), became a Clinic of Immunology, led from 2002 to 2012 by *Adriano Fontana*, and since 2014 by *Onur Boyman*. The Institute of Experimental Immunology, formerly under *Rolf Zinkernagel* and *Hans Hengartner*, continues under the leadership of *Burkhard Becher* and *Christian Münz*. Pediatric immunology at the Children's Hospital was led by *Walter Hitzig*, then *Reinhard Seger*, and later by *Jana Pachlopnik Schmid* and *Janine Reichenbach*.

In **2002**, the non-profit foundation "aha! Swiss Allergy Centre for Allergy, Skin and Asthma" was established. It works closely with the SSAI and is intended as a promotional and advisory institution in the field of allergology, addressing allergies that affect a significant portion of the Swiss population. Supported also by industry, *aha!* has proven to be a successful initiative.

2018 – Current State of the Art of the SSAI

The Swiss Society for Allergology and Immunology (SSAI) continues to unite basic researchers, laboratory diagnostics specialists, and clinically active physicians, thereby playing a pioneering role in multidisciplinary biomedical advancement. It still actively supports the involvement of its members in national and international organizations. In doing so, it has remained true to its founding principles while significantly expanding.

The SGA now has between 600 and 700 members, 13 board members, 9 permanent commissions and subcommissions, and appoints 14 delegates to various Swiss medical societies as well as delegates to 5 international organizations in the fields of immunology and allergology. It also maintains a permanent secretariat, headed by a Managing Director.

The SSAI awards several prizes and strongly promotes advanced immunological training—an impressive track record that is worth preserving.