

## **Immunology in Austria – Past and Present**

### **History.**

At the time of the first surge of immunology during the second half of the 19<sup>th</sup> and the beginning of the 20<sup>th</sup> century Austrian physicians have made important contributions to this emerging new science. Rudolf Kraus was first to describe the precipitation reaction occurring after mixing soluble antigen with a specific antiserum. Max von Gruber contributed to the application of bacterial agglutination as a diagnostic tool (Gruber-Widal test). Karl Landsteiner, studying hemagglutination by sera from individual persons, discovered the ABO blood group system, made important observations in the serodiagnosis of syphilis and in 1904 described the first autoantibody and thus the first autoimmune disease, the paroxysmal cold hemoglobinuria. Ernst Peter Pick modified proteins by attaching simple chemicals and showed that after their injection in animals they produced antibodies specific for the chemical (later termed haptens by Landsteiner). Löwenstein and Eisler-Terramare made the important observation, that bacterial toxins could be inactivated by formaldehyde without losing their antigenicity. These were called toxoids and used for the immunization of animals as well as humans. Another outstanding immunologist of this period was Clemens von Pirquet, a pediatrician, well known for coining the term "allergy" in 1906. He also made important studies on serum sickness, developed a skin test for tuberculosis – the tuberculin reaction – and together with Schick, a skin test for diphtheria.

Two world wars significantly impaired Austria's capacity in immunological research. Landsteiner left Austria in 1919, Ernst Peter Pick was exiled in 1938 after the "Anschluss", and Eisler-Terramare was detained in a concentration camp. In 1945 research in Austria was practically non-existent. It took almost 20 years until immunology took roots again in Austria. It was Carl Steffen, who chaired a diagnostic laboratory at a Viennese hospital, who started a self-taught career in immunohematology. On this basis, he developed a serological test for autoantibodies, the antiglobulin-consumption test (later called the "Steffen test"). In 1967 he was appointed chairman of the newly established Institute of Immunology at the University of Vienna Medical School (the first of its kind in German-speaking countries).

Throughout the preceding and subsequent years young Austrians were given the opportunity to obtain solid immunological training in various first rank institutions in the USA, the UK, Holland, France, Israel and other international countries. In due course, a new school of immunology arose in Austria, which led to the foundation of the Austrian Society for Allergology and Immunology in 1971.

### **The Austrian Society for Allergology and Immunology (Österreichische Gesellschaft für Allergologie und Immunologie - ÖGAI)**

From its onset, the Austrian Society for Allergy and Immunology was conceived as a platform on which basic and clinical scientists could communicate for their mutual benefit. Allergy, which up to the sixties was restricted to skin prick testing, opened new aspects for a basic understanding of its pathophysiology by the discovery of IgE. Therefore, Steffen invited a proponent allergist, Alois Ferstel, to join in the foundation of this new society. The founding General Assembly took place on the 8<sup>th</sup> of May, 1971. After a slow beginning more and more scientists, trained abroad and full of enthusiasm, joined the Society. Over the years, internationally recognized research groups were established, and the annual general meetings grew in the size and quality of the papers presented. The membership is presently just above

600, one of the highest memberships of all immunological societies in proportion to the total population of Austria (currently 8 million).

The focus of research centered on the immunology of collagen (Steffen), autoimmunity (Georg Wick), typing of leukocytes and their characterization in the CD-system (Walter Knapp), cells of the immune system in the skin (Georg Stingl), Langerhans cells and dermal dendritic cells (Gerold Schuler and Nikolaus Romani), molecular characterization of allergens and pathophysiological mechanisms of allergy (Dietrich Kraft and his group), immunodeficiencies (Martha Eibl), rheumatoid arthritis (Josef Smolen), T cell signaling (Hannes Stockinger), complement (Manfred Dierich), immunosenescence (Georg Wick and Beatrix Grubeck-Loewenstein), just to name a few of the active contributors.

The Austrian Science Research Fund – the major Austrian granting institution – recognized and supported these activities by establishing several special research programs (Spezialforschungsbereiche, SFBs) and funding numerous single projects for these activities. Two of these SFBs are still ongoing:

SFB F18 - Molecular and Immunological Strategies for Prevention, Diagnosis and Treatment of Type I Allergies (Coordinator Rudolf Valenta, Vienna)

SFB F23 - Mechanisms of Establishment and Maintenance of Immunological Tolerance (Coordinator: Wilfried Elmeier, Vienna)

The Christian Doppler Society, another funding institution, supports three laboratories devoted to allergy research: the CD-Laboratory for Allergy Research, headed by Rudolf Valenta, Vienna, the CD-Laboratory for Allergy Diagnosis and Therapy, headed by Fatima Ferreira, Salzburg, and the CD-Laboratory for Immunomodulation, headed by Barbara Bohle, Vienna.

### **ÖGAI and the International Scientific Community**

From the beginning, ÖGAI intended to establish links to other immunological societies, particularly in the neighboring countries. Joint meetings were held with the immunological societies of Germany, Hungary and Italy, and scientists from Eastern European Countries were regularly invited to the Annual Meetings of the ÖGAI. In particular during the presidency of Othmar Förster, efforts were made to open the Society to the international immunological stage. Because of these activities and his accomplishments in macrophage research, Othmar Förster was elected unanimously in 1990 as the Honorary President.

Ever since the Tatra Conferences were started in Slovakia in 1994 as a joint project between the British Society for Immunology, the Czechoslovak Society for Immunology, and the ÖGAI, members of our society were involved in the organization and support of this meeting (Georg Wick as founding member, and presently Hannes Stockinger).

This year, 2008, ÖGAI will again host the Joint Annual Meeting of the German Society for Immunology and ÖGAI in Vienna from September 3-6, 2008.

The ÖGAI became a member of International Immunological Federations such as IUIS, EFIS, IAACI and EAACI since her early days. Austrians held various offices in these societies. In the IUIS Carl Steffen served as a Council Member from 1980 to 1983. Walter Knapp, Josef Smolen and Rudolf Valenta were/are chairmen of the Standardization

Committee from 1992 – 1995, 1995 – 1998, and 1998 – to date, respectively. From 1998 until 2004, Josef Smolen served as treasurer of the IUIS.

Members of the ÖGAI served also in various positions in the EFIS. Between 1978 and 1980, C. Steffen was President of EFIS. Another Austrian in this office from 1998 to 2000 was Walter Knapp, after he had served as Vice President from 1995 to 1998. In 2006 Hannes Stockinger was elected to serve as treasurer of EFIS until 2009.

ÖGAI members were/are also in prominent positions in various International Allergy Groups. Dietrich Kraft was a member of the IUIS/WHO Subcommittee on Standardization of Allergens from 1992 until 1996. During this time he was also a Member of the Board of the Collegium Internationale Allergologicum (CIA), and from 1992 until 2001 he served as a member of the Executive Board of the European Association of Allergy and Clinical Immunology (EAACI). In 2005 the World Allergy Organization (WAO) elected Rudolf Valenta as a Member of the Research Council, and since 2006 he is also a Member of the Council of the CIA. From 2003-2005 he was a Member at Large and from 2005-2007 Second Vice-president of the EAACI. Furthermore, Barbara Bohle serves as Secretary of the Immunology Section of the EAACI since 2005, and is a Scientific Advisory Board member of the Paul Ehrlich Institute since 2006.

In order to develop an Immunology curriculum that might serve as an useful model for harmonizing training programs in Immunology throughout Europe, members of the ÖGAI have been delegated to the UEMS (Union of European Medical Societies) sections of Allergy (Heinz Kofler, Fritz Horak) and Medical Biopathology (Commission of Immunology, Gerhard Zlabinger). Particular efforts within the latter section have lead to the definition of a European curriculum, which is now followed by the development of criteria for training centres, and the establishment of a detailed logbook for training.

The 4<sup>th</sup> International Workshop and Conference on Human Leukocyte Differentiation Antigens, organized by Walter Knapp in Vienna in 1989, was a major event in which Austrian Immunology was connected to the international scientific community.

ÖGAI had the honor of hosting the EAACI Conference on two occasions: in 1977 with Carl Steffen as president, and in 2006 under the chairmanship of Rudolf Valenta. In the near future, we hope to have the privilege to organize one of the EFIS Congresses.

To strengthen the ties to the international scientific community, the ÖGAI has invited renowned immunologists to accept an honorary membership. Up to date, there are 6 honorary members in our society:

Ira M. Green, Bethesda, MD, USA (1981)

Gustav J.V. Nossal, Melbourne, Australia (1987), a native Austrian who was exiled in 1938.

Noel R. Rose, Baltimore, MD, USA (1994)

Fred Rosen, Boston, MA, USA (1996)

Ethan Shevach, Bethesda, MD, USA (2000)

Fritz Melchers, Basel, (2002).

In addition, the ÖGAI has implemented a "Clemens von Pirquet Medal" which is awarded to outstanding allergists, mostly of international origin.



Up to now, this honour has been bestowed on the following scientists:

Robin R.R. Coombs, Cambridge, UK (1988)  
Alain de Weck, Berne, Switzerland (1990)  
Alec Schon, Winnipeg, Canada (1994)  
Allen P. Kaplan, Charleston, SC, USA (2001)  
Gunnar Johansson, Stockholm, Sweden (2002)  
Sergio Romagnani, Florence, Italy (2002)  
Dietrich Kraft, Vienna, Austria (2003)  
Radvan Urbanek, Freiburg, Germany (2006)

Another honorary medal for outstanding achievements in immunology, the Karl Landsteiner Medal, has up to now been awarded only once, to Georg Wick, Innsbruck, Austria (2004). He is an internationally recognized investigator of autoimmunity and a pioneer in studies of immune mechanisms in the pathogenesis of arteriosclerosis.



A special event was organized in 1988, the year of the 50<sup>th</sup> anniversary of the occupation of Austria by Hitler-Germany, which was followed by the expulsion of Jews and political opponents. Many of them found new homes in other countries, mostly in the USA, UK, Israel or Australia. Some of them became prominent scientists, particularly in immunology. The ÖGAI tried to invite all of them to a meeting in Vienna, entitled "Österreicher in der Immunologie: Der Verlust durch 1938 – 50 Jahre danach", where they presented their research to young Austrian immunologists. Most of them accepted. The purpose of this meeting was to remind us of the loss inflicted upon our country by a prejudiced and inhumane ideology.

**Picture on the right:**  
**Expelled Austrians in Immunology.**  
**From left to right: front row: Bernhard Cinader, Ruth Nussenzweig, Fritz H. Bach, Arnold Reif**  
**Rear: Israel Pecht, Emile Zuckerkandl, Ira M. Green, Felix Milgrom, Peter H. Schur**

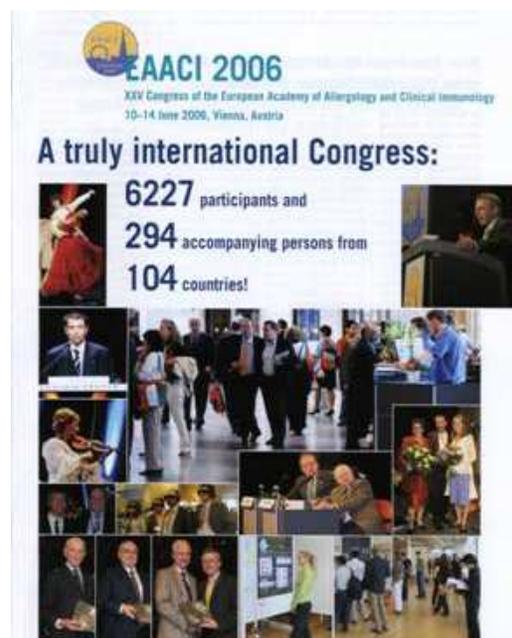


## Meetings

During the first years meetings organized by the ÖGAI were more or less incidental and focused on allergy and clinical immunology. After 1986 we intended to forge a stronger link to basic immunology by holding the annual meeting jointly with the Austrian Biochemical Society. Additional meetings were held each year on clinical immunology – sometimes together with one of the societies for clinical (sub)specialties (rheumatology, haematology and oncology), – and allergy.

In the nineties, specially focused international meetings became more numerous. Therefore, the number of national meetings was reduced, and after 1998 only the Annual Meeting was organized in different locations. These Annual Meetings grew steadily both in size and quality of the contributions from society members and guests, and first class international speakers were solicited for presentations at the symposia. In 2004, one of the 4 symposia was devoted to the 100<sup>th</sup> anniversary of the first description of an autoimmune disease caused by an autoantibody, the so-called Donath-Landsteiner antibody, which causes paroxysmal cold hemoglobinuria. At this meeting, 8 distinguished speakers reported about their research in 4 symposia, and 146 papers were published as short oral presentation or as posters.

A most recent highlight among the conferences organized in Vienna was the XXV. EAACI Congress mentioned above, organized by Rudolf Valenta. There were over 6000 participants, 150 Sessions with 300 Speakers, and 1713 free communications including posters.



In addition, many meetings organized by members of the society on their own were endorsed by the ÖGAI. They included the "Wörthersee Symposia" on new developments in clinical allergy, organized by Reinhart Jarisch, and the meetings on the new discipline of "Allergo-Oncology" organized for the first time in 2007 and repeated in 2008 by Erika Jensen-Jarolim.

## Promotion of young scientists, public education, professional politics

To acknowledge outstanding work of young scientist, the ÖGAI in association with generous sponsors annually awards prizes for excellent publications in immunology – the "Karl Landsteiner Prize" – and allergy – the "Clemens von Pirquet Prize". The first prize is sponsored by the "Karl Landsteiner & Eisler-Terramare Foundation", the second by ALK-

Abellò Company. The awardees are chosen after a peer review process involving international scientists.

Furthermore, up to three prizes are given every year to the best theses in immunology or allergy. The first thesis prize is sponsored by Ursula and Fritz Melchers since 2003 and associated with their names. At the annual meetings of the Society, the three best poster presentations are also honoured by a Poster-Prize. Moreover, numerous travel scholarships are awarded each year to allow young Austrian immunologists to attend international meetings.

Many efforts are made to bring knowledge about Immunology and Allergy to the public. The "Day of Immunology" and the "Day of Allergy", proclaimed annually for a few years now, are taken as opportunities to present the society, its activities and achievements in the press and other public media. Four years ago an educational exhibition about vaccination was compiled by ÖGAI. This was presented at schools and to the general public, to overcome wide spread irrational prejudice against vaccination programs, and to promote understanding of these important prophylactic measures.

To ascertain competence in providing diagnostic immunology to the community, efforts were made for many years to establish the medical specialty "Immunology" for specially trained physicians. In 1993 the "Facharzt für Immunologie" (Specialist for Immunology) was officially recognized by the authorities. Since then, 32 doctors have attained this licence. The educational and training program for this new specialty was worked out by ÖGAI, and examinations required for the licence are given by members of the Society annually. In this respect, ÖGAI members are participating in the endeavours of the UEMS to accord training programs in Immunology and Allergy between EU countries as mentioned above. Unfortunately, up to now we were not (yet) successful in our efforts for the recognition of a "Specialist for Allergy". Hopefully, the imminent recognition of this specialty by the UEMS will assist us to attain this goal.

To promote the public recognition of various specialized disciplines in Immunology and Allergy, to harmonize their procedures and to provide self control mechanisms, the society has established several committees: Clinical Immunology (Chair: Hermann Wolf), Clinical Allergy (Chair: Reinhart Jarisch), Vaccines (Chair: Ursula Wiedermann) and Pre- and Postdoctoral Training in Immunology, (Chair: Hannes Stockinger)

Details about the Austrian Society for Allergy and Immunology can be seen on the website of the Society: <http://www.oegai.org>

Othmar Förster MD, Professor for Experimental Pathology  
Honorary President of ÖGAI

Josef Smolen MD, Professor for Internal Medicine/Rheumatology  
President of ÖGAI

Hannes Stockinger PhD, Professor for Molecular Immunology  
Treasurer of EFIS, Past President of ÖGAI

Gerhard Zlabinger MD, Professor for Clinical Experimental Immunology  
Historian of ÖGAI