

Hungarian Society for Immunology
Magyar Immunológiai Társaság

Immunology in Hungary: looking back and ahead

The history of Hungarian immunology can be divided into three main periods: (1) from the very beginning to the foundation of the Hungarian Society for Immunology (HSI) in 1971; (2) from 1971 to 8th International Congress of Immunology in Budapest (1992); (3) post-congress period.

1. From the beginning to the foundation of the HSI in 1971

We are very proud of the fact that a number of Hungarian physicians and scientists were present at the birth of immunology. In 1717, that is soon after variolation had been introduced in Europe, János Ádám Rayman carried out preventive variolations in Hungary. The first public vaccination according to Jenner was done by Ferenc Bene in the town of Pest in 1801. One of the parents of Hungarian experimental immunology was József Fodor, who showed in 1887 that fresh serum inhibited the growth of bacteria — a discovery made 1 year before G. Nuttall described the bactericidal action of blood. The term ‘antigen’, as the abbreviation of antisomatogen was created and introduced by a Hungarian immunologist, László Detre (Deutsch) working in Paris in Metschnikoffs laboratories and was published in the *Annales Pasteur* in 1899. He hypothesised first that immunity is induced by specific antigenic stimuli. Detre founded the first serum institute, the Jenner–Pasteur Institute in Budapest in 1901. Leo Liebermann was one of the founders of immunochemistry and built up the ‘selection theory’ of immunity several decades before Burnet. In 1915, Hugó Preisz provided evidence that antipneumococcus anti-serum reacted with pneumococci, thereby preparing them for phagocytosis as proposed by Pfeiffer. Béla Schick’s name appears in most immunology textbooks. He elaborated the so-called Schick test, a skin reaction for demonstrating acquired antitoxic immunity to diphtheria *in vivo*. He played a significant role in the

discovery of allergy. Working together with Pirquet in Vienna, he observed a peculiar illness, which they named serum sickness, in patients treated with antibacterial sera, and Schick was one of the discoverers of the Arthus reaction also. Jules (Gyula) Freund, who invented the Freund’s adjuvants, also started his carrier in Budapest. The name of Moritz Kaposi, known for long in the world of dermatologists, has become familiar to immunologists due to the frequent occurrence of Kaposi’s sarcoma — described by him — in the acquired immune deficiency syndrome (AIDS). Tamás Marschalkó reported first that plasma cells are of lymphoid origin. Passive cutaneous anaphylaxis was discovered by Zoltán Óváry who was working in the USA. Paul Kallós started his carrier in Budapest, but he became a leading personality of international allergy research in Sweden. He was the founder and, until his death, the chief editor of the *Journal of International Archives of Allergy and Applied Immunology*.

The rapid development of immunochemistry, leading to the thriving of modern immunology in general, reached Hungary relatively quickly, owing principally to the activity of Richárd Backhausz. He was an outstanding methodologist whose efforts in developing new immunodiffusion techniques were internationally acknowledged. Several other excellent Hungarian scientists, mainly allergologists and serologists, deserve mentioning: János Bókay, József Török, Ödön Rajka, Károly Hajós, Béla Fernet, Artúr Hámori, Kálmán Király and Lóránd Kesztyűs. Their importance has been acknowledged primarily within Hungary. The research of autoimmune diseases got a new impulse from the investigations of Gyula Petrányi who studied the pathogenesis of systemic autoimmune diseases. Last but not least, in any assessment of outstanding immunologists of Hungarian origin, acknowledgement must be made to Hungarian colleagues working abroad, including Eva and George Klein, George Janossy, Tibor Borsos, Tibor Diamanstein and Zoltán Nagy. Many young Hungarian immunologists have been trained in

their labs, and they are regular lecturers at our meetings and courses.

A mile-stone in the history of Hungarian immunology was the year of 1971 when the HSI was founded as an independent society. Owing to the productive efforts of the first president, the late Loránd Kesztyűs and the first secretary general, János Gergely, the Society joined the International Union of Immunological Societies (IUIS) in 1974. The subsequent rapid progress of modern immunology in Hungary was connected to our membership in IMS.

2. From 1971 to the 8th International Congress of Immunology

2.1. The 4th European Immunology Meeting in 1978

The annual national immunology meetings were characterised by an open disputant spirit and a high level of criticism. The Society made an increasing effort to interest the scientific community more and more deeply in immunology. It organised scientific meetings — at least one a year—with the active participation of visiting scientists from other countries. The establishment of the European Federation of Immunological Societies (EFIS) in 1975 had a great impact on the development of Hungarian immunology. Soon after its foundation János Gergely became actively involved in the work of EFIS and was elected as vice president in 1978, then as president in 1980. Joining the IUIS and EFIS attracted more and more visitors to our country and in turn, many Hungarian researchers became involved in international collaborations. In 1978 the HSI won the highest European reward: it was honoured with the task of organisation of the 4th European Immunology Congress.

Being open towards the West in this early period, the HSI undertook the role of a bridge between West and East. As one of the results of this activity, we began to organise the biannual meetings on 'Signal and Signal Processing in the Immune System'. From 1970 we organised successful immunological meetings and workshops, e.g. 'HLA and immunoreactivity'. As a result of these international meetings held in Hungary long lasting co-operations and friendships were initiated with outstanding researchers such as J. Dausset, J. van Rood, W. Bodmer, P. Ivanyi, R. Arnon, B. Cinader, M. Dierich, R. Jefferis, E. and G. Klein, F. Melchers, I. Pecht, D. Stanworth, H. Wigzell, A. Mitchison, H. Colten, R. Linch and many other excellent scientists. Our friends from abroad were always helpful in support of Hungarian immunologists both to train them in their labs and to come to Hungary to participate in meetings and workshops. Hungarian immunologists began to attend international meetings and congresses, too.

2.2. The 8th International Congress of Immunology in 1992

1992 was the year of greatest challenge for the community of immunologists in Hungary. The 8th International Congress of Immunology, held in our country, gave the Hungarian immunologists an opportunity to prove their organisation skill and to present their scientific capacity. This provided a good occasion to review the most important fields and results of Hungarian immunological research. In the special issue of *Immunology Today* the current research in Hungary was reviewed, summarising all the internationally accepted achievements in several fields of immunology: 'How immunology was won in Hungary' (János Gergely), 'Novel regulators of the humoral immune response' (Ferenc Uher, Éva Rajnavölgyi and Anna Erdei), 'Functional studies on Fc receptors' (Gabriella Sárma), 'Complement research: biosynthesis, genetics, immunoregulatory role and clinical studies' (András Falus, George Füst, Anna Erdei), 'Transmembrane signalling in T cells' (Sándor Damjanovich, János Szöllösi, Lajos Trón), 'Apoptosis' (László Fésűs), 'Synthetic peptides in the search for T- and B-cell epitopes' (Éva Rajnavölgyi), 'Susceptibility to autoimmune disease: a multigenic viewpoint' (G.Gy. Petrányi), 'The pathogenesis of autoimmune disease' (Peter Gergely), 'HIV in Hungary' (George Füst), 'Cellular and humoral suppression in transplantation' (G.Gy. Petrányi) and 'Clinical applications of phenotypic analysis' (Katalin Pálóczi).

One compliment, that Hungarian immunologists received in the post-congress period came from the R.G. Landes Company (Austin, TX, USA) giving us the opportunity to publish books in their series of *Medical Intelligence Unit*. Many of us participated in this work to publish up-to-date information in biomedical science for researchers and physicians.

The congress gave Hungarian immunology a boost. Many young scientist have chosen basic, applied or clinical immunology as their research field. The number of members of HSI has almost doubled (540 in 2000). Teaching immunology and immunological research have shown a significant progress.

3. Teaching immunology in Hungary

Supported by the catalysing effect of the HSI, immunology centres linked to universities or national institutes have taken significant pioneer role in gradual and postgraduate education. The first Department of Immunology was established at the University of Eötvös Loránd in Budapest in 1973. A number of graduate and postgraduate students were educated and international advanced courses were organised by this

department. Immunology was part of the curriculum for medical students at the medical universities, although, until 1991 not as an independent subject, but built into one of the main subjects such as microbiology, experimental pathology, physiology or biochemistry.

Basic immunology as an independent subject for medical students was introduced in 1991 at the Department of Biotechnology and Immunology of the Medical School at Pécs followed by the Department of Biology, Semmelweis Medical University, Budapest, and the Institute of Experimental Surgery, Albert Szent-Györgyi Medical University, Szeged. Recently, a Department of Immunology has been established at the Faculty of Medicine of the University of Debrecen. Immunology courses were offered by the University of Veterinary Science, Budapest, many years before the introduction of immunology into the curriculum of university medical schools.

It was about 15 years ago that on the initiative of the Hungarian Society of Allergy and Clinical Immunology, training of immunology for medical doctors was introduced, in the form of regular postgraduate immunological education. Nowadays, postgraduate courses are organised on basic and clinical immunology for medical doctors at the National Institute of Haematology and Immunology and at the 3rd Department of Medicine, University of Debrecen. A Chair of Immunology at the Postgraduate School for Medicine was founded at the National Institute of Haematology, Blood Transfusion and Immunology, Budapest. The school and the medical universities participated in the Tempus programme and, through this, international connections have been strengthened.

Along with the remarkable development in graduate and postgraduate education, the universities started to organise PhD programmes in 1993. Many programmes in the field of basic and applied immunology were accepted and announced. The Department of Immunology of Eötvös Loránd University in Budapest and the faculties of medicine of the recently re-organised Universities of Budapest Debrecen, Szeged and Pécs as well as the former University of Veterinary Science Budapest, all offer high level PhD training in immunology.

4. Research activity

Success in research depends very much on devotion and money. In Hungary, there has never been shortage of the former, but there is a permanent deficiency in the latter. The situation has gradually changed since 1986 and we have now a grant system that is more or less similar to that in countries of the European Community (apart from the amount of money available!). We

have recently been eligible for European Community grants which may be the beginning of a new era of competitive research in Hungary.

The first home of modern immunology was the National Institute of Haematology and Blood Transfusion, where, in 1963, a department for immunochemistry was founded by János Gergely. The scientific background of this relatively well-equipped institute favoured immunological research. A few years later, based on the kidney transplantation programme, the institute opened an up-to-date research facility for cellular and genetic research.

The former University Medical School of Debrecen also has a strong tradition in immunology research. Young medical doctors trained in 'classical immunology' at the Institute of Experimental Pathology had the opportunity to learn modern clinical immunology at the Medical Clinics. On the other hand, immunology became popular among biologists, and it is remarkable that a relatively high percentage of young Hungarian biologists are now working in immunology research groups.

Recently, further centres for immunological research have been opened including the national institutes, research centres of the Hungarian Academy of Sciences and the above mentioned medical schools.

The tasks envisaged by members of the first board included communication on various levels: (1) to organise national and international co-operation between immunologists; (2) to contribute to the organisational, academic, clinical and educational aspects of immunology; and (3) to interact with international organisations including the Central-Eastern European countries. The harmonious collaboration between scientists — even in the face of conflicting views on mechanisms — and the close working relationship with the national and international centres gave a wonderful experience for the members of the HSI. Interaction and personal connections link not only immunologists, but also the scientific and medical communities.

Like most other human endeavours, science works best when it is conducted in a secure environment where competition is encouraged. To provide such an environment—one in which scientists and clinicians can freely collaborate—is the goal of the Hungarian immunology. Now, 29 years after the announcement of our national immunology family, the 30th Annual Meeting of the HSI is being held in Budapest in 2000.

Executive Board of the Hungarian Society for Immunology:

Katalin Pálóczi, President; Tamás Jánossy, Secretary General;

Members: Anna Erdei; György Füst; János Gergely; Julia Szekeres-Bartho