



EFMC
European Federation
for Medicinal Chemistry

THE HISTORY OF EFMC

BY HENK TIMMERMAN



Part I

Medicinal Chemistry in Europe; Annotations on the History of the European Federation for Medicinal Chemistry

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Introduction

Mankind has ever been in need for food and for medicines; food to keep the physiological systems functioning and medicines to restore the situation when something went wrong with that system. For both food and medicines nature offered much and beyond any doubt men have found by trial and error - and likely many fatal accidents as well –the materials they needed; only much, much later in history, only in the current era, food became also important for avoiding diseases, whereas preventive medicines were later introduced as well.

For food the products applied came from plants and animal sources both, whereas for medicines especially plants were important, but animals also served as a source. For medicinal use also mineral products found an application. As knowledge of physiology, pathology, and chemistry was absent, there was not any rationale for using certain products for a particular affection. Medicines could be found by accident only. When during history professions emerged, certain people specialized in providing medicines, medicine – men. As they just could not have any special knowledge, but an experience only, they were of course eager to protect their expertise for being used by others. As a patient had no other way to find a cure than asking a medicine- man, those people became respected and influential.

Alchemy has played a special role in the history of medicines. The alchemist had developed a special way to protect their position as healers of diseases. They used cryptograms as names for their medicines as well as anagrams (xidar was radix). As examples of their secret language, “young –lady at the river “meant mercury and a name like tigerlegs was used for arum-lily. Clearly when strange products – for medical use – as lion feces are found in books of alchemist one can be sure that something completely different is meant. The alchemist used material from plants, animals and mineral sources, obviously without any specific knowledge of disease and medicines both; they became a kind of witchdoctors making use of their strong position.

At a certain moment – in Europe during the middle ages – plants became selected for use in treating a given disease on basis specific features of the plant, such as shape or color. To mention a few examples: the walnut was due to its appearance useful for diseases of the brain and red cabbage for its color for blood related diseases. A very special example is the roots of the mandrake; it was said that this plant grew under the gallows from the semen of a hung criminal. The roots of the mandrake have – more or less - the shape of a human being and that was subsequently used as the reason to use them as a virtually omnipotent medicine. It is remarkable that a would-be omnipotent medicines of our days, ginseng derived products, are often promoted by presenting the roots (the source of the preparations) in the shape of a small humanlike figure, just as the mandrake. It should not surprise that many “medicines” were not effective at all. Some of the products from plants, however, had really useful properties. Well known examples are preparations from the foxglove (digitalis, decompensated heart), the Peruvian cinchona tree (quinine, malaria), the ephedra scrub (ephedrine, asthma), and the Salix tree (salicylderivatives, fever, pain).

Medicines from mineral origin *seemed* to be very effective; the effects they pro-

duced were easily observed and strong. These effects were, however, more of a toxic nature than being beneficial for the patient. Due to the negative outcome of especially mineral derived medicines (metal salts and -oxides) Hahnemann proposed his remarkable homeopathic principle; as a personal point of view I might say that the only positive property of his homeopathic preparations was - and is - the absence of any side effects, at the cost of the absence of a therapeutic result as well, however.

During the ages not much changed in the situation: witchdoctors, no effective medicines, many fatal diseases. The matter changed much for the better when around 1850 for the first time organic compounds could be synthesized, the first artificial dye synthesis by Perkin. When at roughly the same time pharmacology became an experimental approach with which effect of compounds in animals could be tested, ways to new medicines could be explored. Soon thereafter scientists as Crum Brown and Fraser realized that it was the chemical structure and nature of compounds which determine their effects on biological systems and therefore their potential usefulness as medicines. After the historical paper by Crum Brown and Fraser "On the Connection between Chemical Constitution and Physiological Action", some scientists became euphoric. Soon they predicted, we can design(!) medicines for any disease. And the pharmacopeia can be written from the laboratory table directly.

But again things developed in a rather different way. In the 1930ies the famous pharmacologist Clark stated that we had studied the relationships between chemical structure of compounds and their biological effects to such a level that we obtained a fair understanding of the level of our ignorance. Indeed, new medicines could be reached only via the empirical route, a matter of trial and error, of good luck and bad luck. Moreover, this trial and error method was applicable for both the wanted and the unwanted properties of the new compounds.

A new (sub)discipline

The cynics of Clark despite, many very useful new medicines resulted, effective and relatively safe as well. These new synthetic medicines have contributed much to health of men, to quality of life, have in several cases had even great influence on patterns in society.

Gradually making new medicines became a special art and a new chemical sub-discipline emerged, medicinal chemistry. The new field developed first in the United States, especially in research groups of the pharmaceutical industry; Europe followed and also academia, but both much later in time. The term medicinal chemistry became accepted when the American Chemical Society changed the name of its Division of Pharmaceutical Chemistry (founded in 1909) via Division of Chemistry and Medicinal Products (1920), in 1948 into Division of Medicinal Chemistry. In the beginning the search for new medicines was considered to belong to the field of pharmaceutical chemistry, together with pharmaceutical analysis, including the analysis of the formulation of medicines. For the new discipline- medicinal chemistry - organic chemistry, and more precisely organic synthesis remained the far most important contributor to this interdisciplinary new field of chemistry. However, the study of the relationships between

chemical structure (or better their properties) and biological activity, as well as the interpretation of mechanisms of action of bioactive compounds became more and more part of medicinal chemistry. A proper definition, however, was not provided and the field was included in schools of chemistry in some cases, but mostly it was part of departments of pharmacy.

The new division of the American Chemical Society became a major success. In 1966 the division started to publish its Annual Reports in Medicinal Chemistry, a series highlighting each year the most important developments in the field. The extremely useful books have never stopped to be published since. Another success of the division became the Journal of Medicinal Chemistry, which grew to become the leading journal for the discipline.

Europe was slow in picking up the developments. The strong position of organic chemistry at universities may have been the cause of the situation that scientists working on the synthesis of potentially new interesting compounds for use in medicines were considered to be poor organic chemists. But history goes its own way, also for developments in science.

In 1962 the Società Italiana di Scienze Farmaceutiche organized in Milan what might be considered as the first medicinal chemistry symposium in Europe. The meeting was sponsored by the International Union of Pure and Applied Chemistry, IUPAC. In 1970 the IUPAC established a Section on Medicinal Chemistry, as a committee of its Division for Organic Chemistry. In 1968 a 2nd International Symposium “Pharmaceutical Chemistry” had been organized jointly by IUPAC’s Divisions of Organic and the one of Applied Chemistry in Münster, Germany. It was quite remarkable and not without meaning that the opening lecture of this meeting was on the subject “The open field of pharmacology”; it was a sign that medicinal chemistry became more and more dependent on the pharmacology.

Part II

The Founding and the Early Years of the European Federation for Medicinal Chemistry (EFMC)

The symposia in Firenze and Münster – see *part 1* of this series of annotations – are considered as the numbers 1 and 2 of the series of symposia which were later named as the International Symposium on Medicinal Chemistry (ISMC) organized by national societies belonging to the European Federation for Medicinal Chemistry (EFMC). The third symposium in this series took place again in Milan, Italy in 1972. In the opening remarks to the symposium, Pietro Pratesi, who became one of the founders of the EFMC, gave a first definition of the field: “Medicinal chemistry has been defined as a basic science of health; and indeed it has many facets, since it uses the theoretical and experimental means of all branches of chemistry, especially organic chemistry, physical chemistry and biological chemistry.” Pratesi also precluded some expected developments: the interpretation of the mechanism of action of drugs and the prediction of the biological activity of substances. It would take a long time, however, before the discipline became broadly accepted as a *basic* science in the field of chemistry.

Part II of the History of EFMC was previously published on MedChem-Watch n.6 (April 2009).

The success of the ACS Division of Medicinal Chemistry drew the attention of European scientists, and in a number of countries new societies were started. In Italy the *Società Italiana di Scienze Farmaceutiche (SISF, 1954)* was founded, and later, in 1980, the Italian group became a division of the *Società Chimica Italiana*; in the United Kingdom *the Society for Drug Research* (1966) was formed, later renamed into *The Society for Medicines Research*; in France the *Société de Chimie Thérapeutique* was established (1966). In other countries new organizations were started as sections or divisions of existing learned societies: Belgium-Wallonia (Chemical Society, 1973), Germany (Chemical Society, 1971), Sweden (Pharmaceutical Society, 1972), the Netherlands (Chemical Society, 1970).

Around 1970 about 5-10 different societies or divisions and sections were active, all more or less independently from each other. The IUPAC had noticed the new developments, but attempts during the early sixties to start a Division of Medicinal Chemistry within the IUPAC framework had failed; the field was considered to be just a special branch of synthetic organic chemistry, organic chemistry being a strong field within this important international body. In 1968 the Division of Organic Chemistry of the IUPAC organized together with the Division of Applied Chemistry, the 2nd International Symposium “Pharmaceutical Chemistry”. This meeting, which took place in Münster (Germany) and is also known as the 2nd ISMC, was a significant success. It is quite remarkable that the term medicinal chemistry was not chosen, willingly neglecting the developments in both the USA and Europe, whereas instead the “old” wording of pharmaceutical chemistry was used. In general pharmaceutical chemistry is today not to be considered as an equivalent of medicinal chemistry, since the first deals with several, especially analytical, aspects of finished medicines, whereas medicinal chemistry focuses on the design, synthesis and (biological) characterization of the active ingredients of medicines.

A first international medicinal chemistry meeting, organized by the Soc. Chim. Therap. (France) together with their Belgian-Wallonian colleagues and in coopera-

tion with organizations from Belgium- Flandres, Germany, Italy, the Netherlands and the UK (some of them at that time still in *status nascendi*), took place in September 1969 in Brussels. The chairman of the symposium was F. Martin. It is not known why this meeting in Brussels was not designated as the third ISMC, but clearly a new European organization was close to birth.

After the success of the Brussels meeting an ad hoc committee called “The European Committee on Medicinal Chemistry” was formed. Included as members were Drs E.J.Ariëns from the Netherlands, F.Martin (Belgium), P. Pratesi (Italy), K.E Schulte (Germany), and J Thuillier (France). This committee arranged a first business meeting in Paris in March 1969 and a subsequent meeting on 18th December 1969, also in Paris. In the meantime the IUPAC had founded (1969) a section on medicinal (!) chemistry as part of its Division of Organic Chemistry.

Participants of the December 1969 meeting were Drs Eloy (Belgium), Gautier (France), Jones (UK), Pratesi (Italy), Schulte (Germany), Thuillier (France) and Timmerman (the Netherlands, representing Nauta). It was decided that there were no obstacles to start a European organization besides the IUPAC section, which was felt to be too much dominated by American influence and had, more importantly, typical IUPAC objectives, which were not specifically directed to the advancement of primary science. The participants discussed intensively the format of the new organization and its formal name. As all participants had the opinion that national societies would be continued it was decided that a federation was the best format. Also, because of differences between countries regarding the name of the discipline (drug research, chimie thérapeutique, farmacochemie, Arzneimittelforschung etc.) the internationally best accepted term *medicinal chemistry* was selected.

Subsequently the participants agreed on the foundation of “The European Federation for Medicinal Chemistry” (the official decision to found the federation being taken on 19th December 1969), thereby dissolving the European Committee on Medicinal Chemistry, and the IUPAC was informed accordingly. Thuillier was appointed as chairman with Mrs Simmonds as secretary (also secretary of the British Society for Drug Research). It was also decided to accept personal membership, but this decision has never been enacted. A very meaningful decision, which later on however caused certain conflicts with the rather traditional chemistry-oriented IUPAC, was that the federation should aim for intensive contacts with biochemistry, pharmacology and other neighboring disciplines.

From the beginning the EFMC had a rather loose structure. The founding fathers were a group of friends in science who worked hard for the benefit of their common interest. It seems they had forgotten that for a productive cooperation a solid structure and a guaranteed financial situation are much needed. There were no statutes or rules, no fees for membership, and everything was very loose indeed. More formal structures were established only much later. This oversight of the founders has led to problems in later years; these problems and the way in

which they have been solved will receive attention in subsequent parts of these annotations

In 1972 the third ISMC was organized, now under the sponsorship of the EFMC, Milan being the venue and Pratesi the main organizer. From the programme it became clear that medicinal chemistry was becoming recognized as a distinct discipline. In the concluding remarks as published in the official proceedings of the symposium, the famous medicinal chemist Adrien Albert stated: " *The present Symposium represents a tremendous change in content from most of the earlier medicinal chemistry meetings. It was custom for the latter to be almost entirely chemical in nature, with only dark hints that the substances described had biological action*" Albert even warned not to forget the chemistry as the major contributor to the field. He referred in his remarks to the *magical moment* at which the meeting took place: the isolation of the first agonist – receptor, the nicotinic acetylcholine receptor by Changeux.

From the meeting in Milan it became clear that the field was opening into new directions; the EFMC came at the right moment to guide the developments, to foster international cooperation, to advance science for the benefit of mankind. **The relationships between the EFMC and the IUPAC; the International Committee on Medicinal Chemistry (ICMC)** The interactions between the IUPAC section (the first chairman being E Campaign from the USA) and the EFMC were from the beginning very constructive and friendly; there was much understanding for the obvious differences in the objectives of both groups. Members of the Executive Committee (EC) were elected as member of the IUPAC section. The business meetings of both groups were organized at the occasion of scientific symposia, and the interactions became very productive. Early in the 1980s IUPAC decided, for reasons which never became entirely clear, to suspend the activities of the section for medicinal chemistry, stating that the activities should be embedded within the Division of Organic Chemistry. The decision came as a surprise and was considered as a denial of the position of medicinal chemistry as a discipline in its own right. All members of the section decided to vacate their seats and, at a meeting in Toronto (1982), they started " the International Committee on Medicinal Chemistry" (ICMC) as an independent structure to continue the activities which had been undertaken by the IUPAC section; Wijbe Nauta was appointed as chairman, with Henk Timmerman as secretary. Not long thereafter one of the members of the IUPAC section (Camille Wermuth) decided to restart working with the IUPAC. From this new initiative a committee for medicinal chemistry was started within the Division of Chemistry and Human Health. Gradually the friendly contacts between IUPAC and EFMC were restored and a discontinuation of the ICMC was the logical consequence. An unfortunate episode in the "history" of the young discipline came to an end.



Pietro Pratesi, one of the founders of the European medicinal chemistry community



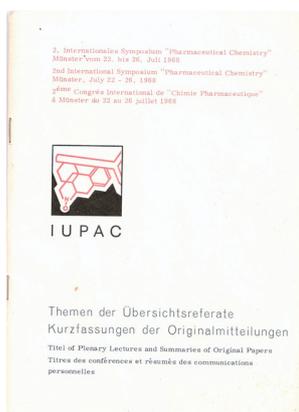
Part III

The Series International Symposia on Medicinal Chemistry, ISMC

Part II of the History of EFMC was previously published on MedChemWatch n.8 (December 2009).

The series “**International Symposium on Medicinal Chemistry**” (ISMC), organized under the sponsorship of the EFMC, is older than the EFMC itself. This seems to be somewhat odd, but has everything to do with the originally rather loose structure of the federation (see *part II* of this annotations in MedChemWatch, April 2009). The official birthdate of the EFMC is 13 September 1972, following a decision which was reached on 19 December 1969, but a meeting organized by the Società Italiana Farmaceutiche in Firenze in 1962 is considered as the first symposium in the series, followed by a meeting in Münster (1968) as the second ISMC. Remarkably this meeting in Münster had been set up and organized by the Division of Organic Chemistry and the Division of Applied Chemistry of the IUPAC; our young discipline had not yet received the IUPAC’s full attention. A special feature of the Münster symposium was the acceptance of English, French and German as official languages, offering a simultaneous translating of the lectures, also from Russian, into the three languages.

It is not easy to explain why an international medicinal chemistry meeting announced as a “European Meeting on Medicinal Chemistry” organized in Brussels in 1970 by a consortium of national organizations from Belgium (both Wallonia and Flanders), France, Germany, Italy, The Netherlands and the UK, has never been designated as the ISMC III. Indeed the name International Symposium on Medicinal Chemistry, with the addition “number III”, was organized by the Division of Organic Chemistry of the IUPAC, in Milan in 1972. It is somewhat difficult to understand why the symposium organized with one of the founding fathers of the EFMC, Pietro Pratesi, as chairman of the organizing committee, did not have the EFMC as co-organizing body. In the Opening Remarks of the symposium Pratesi expressed thanks only to the IUPAC and the Associazione Industrie Chimico Farmaceutiche, without mentioning the EFMC or the Società Italiana di Scienze Farmaceutiche. Clearly the EFMC was either still in a nascent form or was not generally accepted as an international body; the IUPAC remained the leading organization, and still considered medicinal chemistry as a special branch of organic chemistry. More information on the interactions between IUPAC and EFMC has been presented in number II of these annotations.



IUPAC, 1968



Eef Ariens (left) and Eric Lien meet at the ISMC in Noordwijkerhout NL in 1974

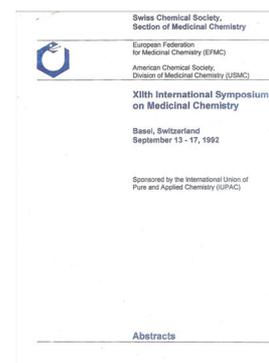
In 1972 the EFMC decided (after consulting the IUPAC!) to organize in all even years an International Symposium on Medicinal Chemistry, ISMC. The Dutch “Section Pharmacochimistry of the Royal Netherlands Chemical Society accepted to organize this IVth ISMC in 1974. The meeting was organized in conjunction with Belgian colleagues from Flanders and took place in Noordwijkerhout. The chair of the organizing committee was Wijbe Nauta, one of the founding fathers of the EFMC, who for many years has been the secretary of its Executive committee.

It seems that the symposium in Noordwijkerhout firmly established the ISMC series. The number of “active participants was still somewhat limited, (325 with an extra about 70 “accompanying participants”), but the fifth ISMC in 1976 in Paris – again with a founding father, Jean Thuillier, as chairman – attracted not less than 625 scientists, coming from twenty nine different nations. At that time posters became *en vogue* and over a hundred were on show in Paris. At this meeting John Topliss introduced his “manual method for applying the Hansch approach to drug design”, which later became widely known as “the Topliss tree”.

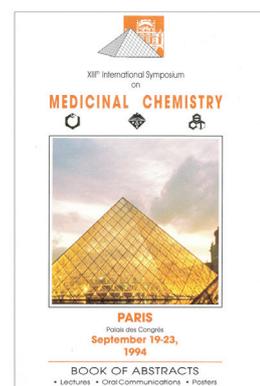
In 1978 the sixth ISMC was hosted by the British Society for Drug Research. The venue was Brighton, with John Cavalla (who has served on the EFMC for several years as chairman of the Executive Committee) as the chairman of its Organizing Committee. At this meeting double Nobel laureate Linus Pauling presented his remarkable ideas about the use of mega doses of vitamin-C to prevent cancer. Much attention was given to the new developments in the field of histaminergic H₂ ligands; the first H₂ antagonist was on its way to become a blockbuster as the anti-ulcer medicine, Cimetidine/Tagamet.

The seventh ISMC, originally scheduled to take place in 1980 in Madrid eventually took place in the Torremolinos, amidst a large number of sun-seeking tourists. The reason of the unexpected move from Madrid was that the Spanish government had used its power to force the organizers to vacate the booked facilities in Madrid which it needed for hosting a European meeting related to Spain’s recent entry of the European Union. Despite the somewhat unusual venue, the meeting in Torremolinos became a success, with about seven hundred participants from thirty four countries and a poster session with over two hundred posters. The chairman of the organizing committee was R. Madroñero. The famous medicinal chemist Alfred Burger presented a plenary lecture entitled “Current options in drug design”.

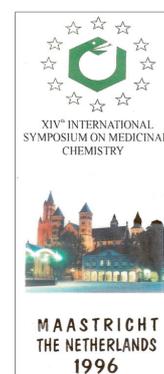
Due to a special request from colleagues in North America, the EFMC did not organize an ISMC in 1982. The medicinal chemists of Canada, Mexico and the USA had scheduled a North America Medicinal Chemistry Symposium in Toronto and apparently feared competition from a European meeting in the same year. At this symposium, chaired by Leslie Humber, a conflict emerged between the EFMC and the IUPAC (see previous annotations) and an International Committee on Medicinal Chemistry (ICMC) was founded. This committee was



XIIth ISMC, Basel, Switzerland, 1992



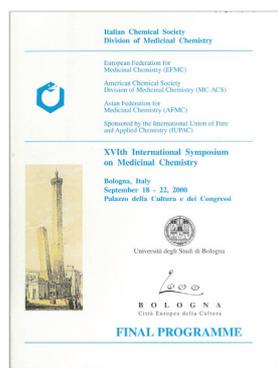
XIIIth ISMC, Paris, France, 1994



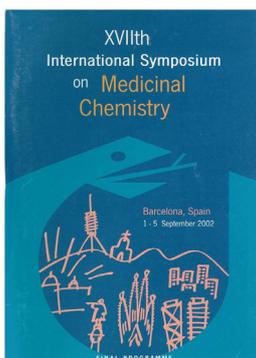
XIVth ISMC, Maastricht, The Netherlands, 1996



XVth ISMC, Edinburgh, Scotland, 1998



XVIth ISMC, Bologna, Italy, 2000



XVIIth ISMC, Barcelona, Spain, 2002

dissolved again in the late 1980s.

Uppsala Sweden was the hosting city of the eighth ISMC in 1984. Richard Dahlbom and Lars Nilsson chaired the symposium; the latter was at the time also chairman of the EFMC. The growth of the ISMC continued: about eight hundred participants from not less than thirtyfive countries. The programme consisted of eighteen symposia, and more than two hundred posters were presented. A special event was the inaugural lecture of Nobel laureate Bengt Samuelsson on “Chemistry and Medicine: Lessons from Prostaglandin and Leukotriene Research”, at that time a very hot topic. At this symposium the meaning of receptor classification became very apparent; many examples of selective ligands for subclasses of receptors were presented. It was also the time that the first relatively safe viricidal compounds showed up, as presented by Erik de Clercq from Leuven, Belgium.

The 1986 (ninth ISMC) meeting was special for its location, the western part of Berlin. The iron curtain was still down and “the wall” very much present. The chairman of the meeting was Ernst Mutschler, who had served the EFMC as chairman of the Executive Committee during the seventies. During the Berlin meeting omeprazole was presented as a promising new anti-ulcer agent; we all know now that the promises became fulfilled over the years to come. The important progress in anti-virus research was reviewed, as in Uppsala, by De Clercq.

For the tenth ISMC (1988), the EFMC had selected Budapest as a venue. The chairman, Laszlo Pallos, welcomed about seven hundred participants from twentyfive countries. This somewhat low number of participants was probably caused by the uncertain political situation of the time; however, no such tension was felt during the symposium. It was in the Budapest ISMC that the search for anti-HIV medicines was discussed (De Clercq), HIV becoming recognised as an emerging problem. The approach was rather empirical, starting from known viricidal ligands. Much attention was given to the use of computer modelling in drug design; this approach was seemingly taking over the role of QSAR technologies.

The 11th ISMC will always be remembered as a very special one. It took place in Jerusalem, and was organized by Shalom Sarel, Israel Agranat and Raphael Mechoulam. At the time of the final preparations for the symposium, the 1990 Gulf war began in August. Many already-registered participants decided to cancel their travel to Jerusalem. Finally not more than two hundred and fifty medicinal chemists from twenty countries convened; “industrialists” and Americans in particular decided not to attend. During the meeting there was much tension.

Basel was the host city of the 12th ISMC, Emil Kyburz, who has served the EFMC for a lengthy period as secretary and chairman of the Executive board, chaired the symposium. The number of attendants was back to normal, indeed even higher than before, with almost a thousand medicinal chemists present.

At this meeting the first EFMC award was installed. On an initiative of the Dutch, and financed by the Prof. Dr. W. Th. Nauta Foundation, the Nauta Award was presented for the first time. The award is given in recognition of excellence in medicinal chemistry and /or contributions to stimulate international contacts between medicinal chemists. The first winner was Arne Brandstrom (Astra Zeneca, Sweden) for his contributions to the design and development of the first successful proton pump inhibitor, omeprazole.

In 1994 Paris hosted the ISMC for the second time. The 13th symposium was chaired by Jaen-Claude Muller, who has served the EFMC as chairman of the Executive Committee. With over a thousand participants the ISMC was clearly still growing. The Nauta Award was granted to Maurice Petitou, for his important contributions to the role of sugar-chemistry in medicinal chemistry and especially the design and synthesis of low molecular-weight heparin derivatives (pentasaccharides).

The 14th ISMC also had a special character. It was organized in Maastricht, in the Southern part of the Netherlands, a provincial town. The special feature was that the meeting was organized by the adhering organizations from Belgium and the Netherlands.

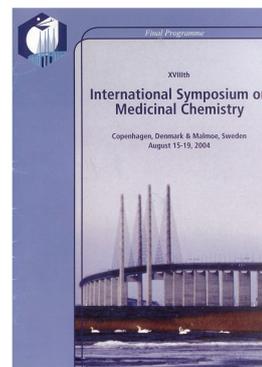
The chairmen were Achiel Haemers (B) and Henk Timmerman (NL). Over a thousand scientists participated; the size of the ISMC symposia seemed to have now found more or less a stable position and had become the largest “solo” medicinal chemistry symposium worldwide, not being part of a big international event (such as the ACS conferences during which medicinal chemistry meetings are organized). In Maastricht, Povl Krogsgaard Larssen was honoured with the third Nauta Award for his entire body of work and contributions to the field of medicinal chemistry.

Number fifteen (1998) of the ISMC series was hosted by British colleagues in Edinburgh, Scotland. The organizing bodies were the Biological & Medicinal Chemical Section of the Royal Society of Chemistry, the Royal Society of Chemistry and the Society for Chemical Industry. The organization started with Malcolm Campbell as chairman, but when he fell ill towards the time of the meeting, Derek Buckle took over his role.

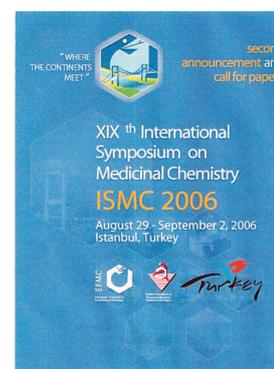
The normal number of participants for the time of just above 1000 was realized. Henk Timmerman, Amsterdam, received the Nauta Award, for both his scientific achievements and his contributions towards fostering cooperation between medicinal chemists, in Europe especially.

In the year 2000 the sixteenth ISMC was organized in Bologna. Carlo Melchiorre was chair of the organizing committee. Again more than 1000 medicinal chemists attended, confirming that the ISMC had definitively become the largest medicinal chemistry meeting worldwide. The Nauta award was granted to Erik de Clercq from Leuven, Belgium, for his major contributions to the identification of new, effective, and relatively safe, anti-viral compounds.

Due to the growing success of the ISMCs the adhering bodies of the EFMC became eager to organize an ISMC, whereas during the early years it had been sometimes difficult to interest a national organization to organize the next symposium. Now the adhering organizations started to compete, “bidbooks”



XVIIIth ISMC, Copenhagen, Denmark and Malmö, Sweden, 2004



XIXth ISMC, Istanbul, Turkey, 2006



XXth ISMC, Vienna, Austria, 2008

appeared, and local tourist organizations started to show interest.

The ISMCs had always been organized under the full responsibility of the local organizers. In several cases the EFMC was not the sole “sponsoring” body of the given ISMC, and the IUPAC and the ACS had been involved in the same manner. As the EFMC grew more and more into a professional organization, despite serious financial constraints, plans were developed to bring the ISMCs completely under the EFMC umbrella. It was thought that the ISMC could bring incomes to the EFMC. However to realize this, responsibility for the financial outcome would need to be accepted and risks would be unavoidable. Changes could only be introduced step by step, especially as the federation had insufficient financial means to accept risks. A system was introduced by which the local organizer still took the full responsibility for the financial outcome; new was that the programme needed an acceptance by the EFMC-EC and when a profit was made the organizer should pay a fee per participant to the EFMC. This system was refined during the first decade of the new century. The ISMCs started to improve the financial health of the federation, which in due time may allow it to accept also a certain financial responsibility for an ISMC.

Barcelona hosted the seventeenth ISMC, with Ferran Sanz (who served the EFMC as president) as chairman of the organizing committee. The meeting was a major success. Now well over a thousand participants led to an interesting financial success for the EFMC. Bernard Testa from Lausanne, Switzerland, was the awardee of the Nauta Prize for his major contributions to medicinal chemistry, including studies in pharmacokinetics in drug research. At this meeting the newly established UCB Award for excellence in medicinal chemistry (sponsored by UCB and later renamed into The UCB-Ehrlich Award for Excellence in Medicinal Chemistry) was granted to Jürg Zimmermann (Novartis, Basel) for his role in the design and development of the kinase inhibitor imatinib (Glyvec/Gleevec)



The winners of the Nauta Award (Testa) and the UCB Award (Zimmermann) at the ISMC in Barcelona, 2002. From left to right: Ferran Sanz (organizer Barcelona ISMC), Edmond Differding (UCB), Jürg Zimmermann (UCB prize Awardee), Bernard Testa (Nauta Award winner), Andele Nauta (Nauta foundation), Henk Timmerman (President EFMC).

Povl Krogsgaard Larssen chaired the organizing Committee of the next ISMC (2002), which was co-organized by the Danish and Swedish medicinal chemistry organizations. For the major part the symposium took place in Copenhagen, but for one day the participants were moved to Lund in Sweden, passing the newly opened bridge between Denmark and Sweden. The symposium again attracted well over a thousand colleagues and was very successful.

Robin Ganellin (London) was honoured with the Nauta prize, especially for his major contributions in designing and developing the first clinically applied histamine H₂ blocker, cimetidine (Tagamet). The UCB award was granted to Jesper Wengel of the University of Southern Denmark, for his discovery of “locked nucleic acids”, which provided important enhancements to the development of oligonucleotide based therapeutics.

Also at this meeting a new award was introduced, the Prous Award for New Technologies in Drug Discovery (sponsored by the Prous Institute for Biomedical Research and later renamed the The Prous Institute-Overton and Meyer Award for New Technologies in Drug Discovery). The first recipient of this prize was C. Oliver Kappe, from Graz, Austria, for his achievements in the field of microwave assisted combinatorial chemistry.

In 2006 the nineteenth ISMC was hosted by Turkish medicinal chemists in beautiful Istanbul at the Bosphorus. The organizing Committee was chaired by Fethi Sahin. The number of participants was a bit lower than at previous ISMCs, likely due to some fear of the political unrest in Turkey.

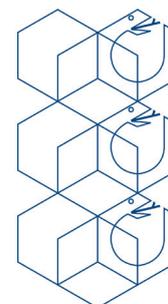
The Nauta Award was presented to Philip Portoghese of Minneapolis for his complete oeuvre and especially also his achievements as editor of the Journal of Medicinal Chemistry.

Bernd Riedl (Bayer, Leverkusen) received the UCB-Ehrlich Award for his outstanding contributions to the discovery of the kinase inhibitor sorafenib (Nexafar).

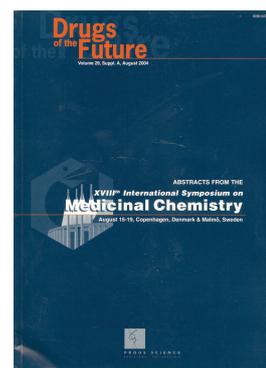
The Prous Institute-Overton Meyer Prize was awarded to Dario Neri (Zürich) for his pioneering and promising studies into the preparation of synthetic antibodies. The twentieth ISMC was held in Vienna in 2008. The organizing committee was chaired by Peter Etmayer. The number of participants was higher than ever before, around one thousand four hundred, from fifty nine nations. The organizers had succeeded to bring some of the atmosphere of the old glory of Vienna to the meeting by organizing social events in historically attractive locations, such as the famous Hofburg.

Prof Hugo Kubinyi (Heidelberg) was the winner of the 9th Nauta Award, being praised for the development, application and dissemination of rational drug discovery processes. Peter Seeberger (Zürich) received the UCB-Ehrlich Award for his excellent contributions to the automation of oligosaccharide synthesis, and Steven Ley was honoured with the Prous Institute-Overton Meyer Prize, to acknowledge his commitment to the discovery and introduction of new technologies for drug discovery.

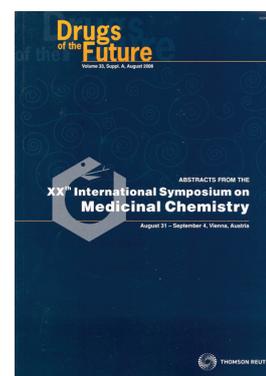
So far twenty ISMCs have been organized and the series is well established. Over the years cooperation with other scientific bodies (Div.Med. Chem ACS,



EFMC 2008 AWARDS



Drugs of the Future, August 2006, 31 (Suppl.A)



Drugs of the Future, August 2008, 33 (Suppl.A)

Published proceedings of ISMCs

P. Pratesi, *Medicinal Chemistry –III, Third International Symposium on Medicinal Chemistry*, Milano 1972, two volumes; Butterworths, London

J. Maas, *Medicinal Chemistry IV, Proceedings of the 4th International Symposium on Medicinal Chemistry*, Noordwijkerhout (NL) 1974, Elsevier, Amsterdam

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Federico G. de las Heras and Salvador Vega, *Medicinal Chemistry Advances, Proceedings of the Seventh International Symposium on Medicinal chemistry*, Pergamon, Oxford.

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• E.Mutschler and E. Winterfeldt, *Trends in Medicinal Chemistry, Proceedings of the Ninth International Symposium on Medicinal Chemistry*, Berlin 1986, VCH Weinheim.

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Shalom Sarel. Raphael Mechulam and Israel Agranat, *“Trends in Medicinal Chemistry’90; (proceedings of the XII ed ISMC Jerusalem 1990)*, Blackwell, London 1992.

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M.M. Campbell and I.S. Blagbrough, *Medicinal Chemistry into the Millennium, Proceedings XIVthe ISMC Edinburgh*, RSC, (2001).

Il Farmaco (2001), 51. 1-2, *Proceedings of the XVth International Symposium on Medicinal chemistry*, Bologna, Italy, Giuseppe Ronsisvalle, Editor;(selected lectures).

Asian Fed. Med. Chem. EUFEPS) has emerged and joint sessions at each other’s symposia have resulted.

The future for the ISMC is bright. The organizing of number XXI is well underway and is scheduled to take place in Brussels in 2010.

Venues of the ISMCs

- 1** 1962 Firenze, Italy
- 2** 1968 Münster, Germany
- 3** 1972 Milano, Italy
- 4** 1974 Noordwijkerhout, The Netherlands
- 5** 1976 Paris, France
- 6** 1978 Brighton, UK
- 7** 1980 Torremolinos, Spain
- 1982 (Toronto, Canada, *with the North Am. Med. Chem. Symposium*)
- 8** 1984 Uppsala, Sweden
- 9** 1986 Berlin, Germany
- 10** 1988 Budapest, Hungary
- 11** 1990 Jerusalem, Israel
- 12** 1992 Basel, Switzerland
- 13** 1994 Paris, France
- 14** 1996 Maastricht, The Netherlands
- 15** 1998 Edinburgh, UK
- 16** 2000 Bologna, Italy
- 17** 2002 Barcelona, Spain
- 18** 2004 Copenhagen/Lund, Denmark/Sweden
- 19** 2006 Istanbul, Turkey
- 20** 2008 Vienna, Austria
- 21** 2010 *Brussels, Belgium*
- 22** 2012 *Berlin, Germany*