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Editorial



Dear Colleagues,

This issue of *MedChemWatch* opens with an interesting perspective, by Siegfried Schneider (Boehringer Ingelheim, Vienna), covering several aspects related to the outsourcing of medicinal chemistry projects to the so-called new economy's countries, China and India in particular. This process is driven by the need of big pharmaceutical companies to face the challenge of R&D productivity and it is a tendency that many of us, especially those working in industry, have experienced bringing significant changes in their professional lives. Outsourcing, however, is also offering new challenges to people working in academia. In a sense, it asks for a continuous increase in productivity and specialization. In an other one, it offers opportunity to exploit established know-how to spin off new initiatives that can also productively translate into occasion for high-level, qualified formation. A very nice example is given by the presentation of the activity of Latvian Organic Synthesis Institute (Riga), which was one of the most important institute members of the former USSR Academy of Science, and which has now kept its ability to integrate focused organic synthesis with later steps of the drug discovery process, thus offering an integrated platform for international collaboration as well as high level education.

In this issue of *MedChemWatch*, we continue presenting new SME or biotech, with the idea of disseminating information which can eventually result in new opportunity for collaboration or formation. Now is the turn of Hybrigenics, (Paris), and we will be very glad to receive and publish further contributions from all the Europe. We are entering 2010, and as in all the even years, there will be the International Symposium on Medicinal Chemistry (ISMC), the core event of EFMC which will be held in Brussels, September 5-9. Registrations are just open, and don't miss the opportunity to attend to the world's largest event in Medicinal Chemistry.

I am sure that many of us will appreciate the report by Henk Timmerman on the history of the ISMC meetings. We are now facing the XXI edition, and it is nice to re-think and remember the road (and the growth) that our community made over the last forty years.

continued on p.2 »



EFMC
European Federation
for Medicinal Chemistry

« continued from p.1

The XXI-ISMIC is the occasion in which EFMC awards will be assigned, and the call for candidatures is now open. This year, two prizes will be also assigned to young researcher (below 35) working in academia and industry, respectively. Again, the call is open, and on behalf of EFMC, I encourage all the young colleagues to send their CVs.

Another event which will mark this forthcoming year is the launch of MedChemComm, published by the RSC as the official journal of EFMC. You will find further information and the call for papers in the journal's home page (<http://www.rsc.org/Publishing/Journals/md/Index.asp>).

As usual, this issue will also contain information on the activity of the EC of EFMC and news from the member societies. I invite you to read these information and, especially, to use this space to disseminate your events. Finally, when you read these notes, the IMI second call 2009 will be open. This a great opportunity for funding excellent cooperative projects. You will find further information in the Grant Alert section

Last, I keep inviting you to circulate this Newsletter to your next colleague, inviting him/her to register (it's free, at the EFMC home page, www.efmc.info) and stay up to date with all the EFMC events and initiatives. ■

GABRIELE COSTANTINO

GRANT ALERT

Innovative Medicines Joint Undertaking (IMI JU) 2009 Call for proposals

BY GABRIELE COSTANTINO

The official launch of the second call 2009 is to be held in Brussels, November 17th and the deadline for the expression of interest has been set to February 8, 2010. There will be as much as €76.8 million provided by the European Commission, plus at least the same amount mobilized by member companies of the European Federation of Pharmaceutical Industries and Associations (EFPIA)

The IMI 2009 Call for proposals will have 9 topics addressing two of the four strategic pillars identified by the IMI, namely **Predictivity of Efficacy Evaluation** and **Knowledge Management**.

The 9 topics are: (1) Oncology – Target Validation; (2) Oncology – Molecular Biomarkers; (3) Oncology – Imaging Biomarkers; (4) Infectious Diseases – Diagnostic Tools; (5) Inflammation – Aberrant Adaptive Immunity; (6) Inflammation – Translation Research; (7) Knowledge Management – Drug / Disease Modelling; (8) Knowledge Management – Open Pharmacological Space; (9) Knowledge Management - Electronic Health Records (HER) ■



The Innovative Medicines Initiative

Information and materials available at
www.imi.europa.eu/index_en.html

A new journal from RSC Publishing Launching mid 2010

Rapid communication of research
in medicinal chemistry

MedChemComm



Official journal of:



A new, peer-reviewed journal publishing medicinal chemistry research, including new studies related to biologically-active chemical or biochemical entities that can act as pharmacological agents with therapeutic potential or relevance.

The journal will publish monthly issues from mid 2010 and will contain a mix of vibrant and concise research and review articles. *MedChemComm* will complement the existing RSC Publishing portfolio of bioscience journals, providing authors in the field with a dedicated subject-specific publication.

From launch, the current issue of *MedChemComm* will be freely available to all readers via the website. Free institutional online access to all 2010/2011 content will be available following a simple registration process at www.rsc.org/medchemcomm_registration

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Perspective

Outsourcing Medicinal Chemistry to China and India – the Past, the Present and the Future

BY SIEGFRIED SCHNEIDER



Besides the loss of blockbuster drugs due to patent expiry and the increased generic competition, the pharmaceutical industry has been faced with a thinning of its drug discovery pipeline. The increase of R&D spending, longer drug development times and the declining of drug approvals per year are the main reasons for this challenge.

Cost and time are critical success factors for the pharmaceutical industry. To master this challenge, pharmaceutical companies are applying different strategies, including merger and acquisition, in-licensing and outsourcing.

Whereas merger and acquisition is a short-term solution, in-licensing is more and more difficult and cost intensive. Outsourcing is a key strategy which is followed by nearly all pharmaceutical companies. Outsourcing offers financial and operational flexibility, allows the company to focus on its core competencies and will drive innovation. In the earlier days, pharmaceutical companies mainly outsourced clinical research, the manufacturing of intermediates or active pharmaceutical ingredients (APIs), routine synthesis of building blocks, or IT related businesses.

Things are changing. Outsourcing activities are moving up the value-chain. More and more core competencies such as medicinal chemistry, lead optimization and pre-clinical research are being outsourced to contract research organizations (CROs). This applies not only to

CROs in the Western hemisphere but also to those in Asian countries. The most prominent pharmaceutical outsourcing locations in Asia are China, India, Malaysia, Singapore, South Korea, Taiwan, Thailand and Vietnam. For the outsourcing of chemistry, Chinese and Indian companies head this list due to their experience in generic manufacturing, their highly-skilled workforces and strong technology basis.

Whereas virtual companies and also some biotech companies are outsourcing their entire medicinal chemistry programs, big pharmaceutical companies are very careful in outsourcing such projects as a whole. However, due to the increasing pressure on cost and time, even major pharmaceutical companies are looking for external resources to support their in house research and development programs.

Before 2000, (medicinal) chemistry services were mainly outsourced to US or Europe based companies. CROs like Albany Molecular Research (US), BioFocus (UK), ArQuel (US), ChemDiv (Russia, US) or Evotec (UK) were one of the most important chemistry service providers for the pharmaceutical industry. This changed from 2000 onwards, due to the incorporation of IP protection into Chinese and Indian law. The fact that the intellectual property protection system in both countries is now close to western standards has boosted pharmaceutical outsourcing to China and India. This applies especially to the outsourcing of pre-clinical research and medicinal chemistry services.

Within a few years, Asian based com-

panies such as BioDuro (China, US), Chembiotek (India), GVK (India), Jubilant Organosys Ltd. (India), ShangPharma (China) or WuXi Apptec (China), just to name a few, emerged and were able to displace many of the leading Western CROs. For example the Chinese company WuXi Apptec started in 2000 with mainly synthetic chemistry services for the pharmaceutical industry. But soon it became the largest CRO in China offering the full range of drug discovery and development services including toxicology and API manufacturing. WuXi Apptec is now – after 9 years – the largest pre-clinical CRO in the world, employing more chemists than Pfizer. In the meantime, it has nearly all top pharmaceutical and biotech companies as customers.

Similarly to WuXi Apptec, most of these service providers in Asia have started up by offering basic or routine chemistry services, but transformed later into so-called “one-stop-shop” companies. These “one-stop-shop” providers offer “integrated drug development services” from target identification, design of molecules, biological testing and toxicology to IND submission including pilot plant API production for clinical studies.

The chemistry services provided by these “Super CROs” include for example:

- Synthesis of reference compounds
- Synthesis of building blocks, advanced intermediates and scaffolds
- Synthesis of focused or general libraries
- Lead generation and lead optimisation including the generation of structure-

activity relationships

- Molecular modelling
- Route scouting and scale-up from milligram to kilogram quantities
- Process research and development including kilo-lab and pilot-plant production
- Development of analytical methods
- Impurity profiling, stability testing or salt screening

Besides outsourcing to different CROs, many of the leading pharmaceutical companies are trying to establish a foothold in Asia. Roche, for example, has set up a wholly-owned research site in Zhangjiang Hi-Tech Park in Shanghai, in 2004. The R&D Centre China LTD (RRDCC) is focusing on medicinal chemistry, including drug design, synthesis evaluation, SAR development, lead generation and optimisation. According to Roche, the center cooperates with the best academic institutes, biotech companies and CROs in China. AstraZeneca has been investing in Asia for decades and Novartis has built a R&D center in Suzhou near Shanghai. However, these investments are tiny compared with the amount the pharmaceutical companies are spending on R&D in the West.

But what makes China and India so attractive?

- Due to the large and growing population and increasing prosperity, both countries will be attractive consumer markets in the future. By 2015 China is expected to be, beside the United States and Japan, one of the top three prescription drug markets in the world.
- Multinational pharmaceutical companies have recognized that a research site in China and India helps to build up connections with authorities and regulatory agencies in these countries.
- The ability to communicate in the English language across the whole organization is one of the advantages of India.
- Numerous returnees with long work experience in the western pharmaceutical industry are going back to China

and India. Many of these returnees are setting up their own service companies or are working in key management positions of service providers. These returnees are very familiar with western culture and business behavior, and speak fluent English.

- Last but not least, labor costs are (still) much lower as compared to western CROs.

To be price-competitive, some western CROs are offering a so-called hybrid model. These companies are subcontracting (part of) the outsourced projects to emerging countries. Evotec for example, one of the leading western CROs for integrated drug discovery and development service, has in addition to its research sites in Abingdon (UK) and Hamburg (Germany) a research center in India offering a synthetic chemistry service to its clients. NiKem, another European CRO based in Baranzate (Italy), does not own facilities in emerging countries but has preferred outsourcing partners. Depending on the client's wish, NiKem outsources specific synthetic chemistry tasks to its preferred partners and passes the savings on to the client.

In the future, labor costs in China and India will increase. In China for example, due to governmental policy which is supporting areas such as Shanghai or Beijing, labor costs are increasing rapidly in these coastal areas. In the long run, the cost advantage which CROs in China and India offer will diminish. One consequence might be that outsourcing of routine synthetic chemistry will move ahead to even lower cost countries in Asia or even Africa.

Currently, it does not appear that outsourcing to China and India will lead to a massive reduction of R&D spending in the pharmaceutical industry. Outsourcing of routine synthetic chemistry and medicinal chemistry is more regarded as an add-on. Pharmaceutical companies have the opportunity to run more drug discovery projects at the same time while internal resources can be main-

tained at the same level. The advantage of having more active projects at the same time will – this is the hope – increase the probability of success.

Pharmaceutical companies often stick to a few “preferred” outsourcing partners with which they have built relationships and trust. This will strengthen the position of the already existing CROs.

In my opinion, within the next 10 years, Big-Pharma is going to increase outsourcing of medicinal chemistry programs. In the same time the currently fast growing market for medicinal chemistry outsourcing will consolidate. What remains are a few leading CROs located mainly in Asia and some in Europe and the United States. Some of these service providers will probably move ahead and set up their own drug discovery programs.

Irrespective of one's attitude towards the political system in China, it makes it easier to enforce decisions than it is in India. An example of this enforcement power was the organization and performance of the Olympic Games. Nothing was left to chance. This will help China to further increase its economic power and will probably push China towards a position as a leading economy, with India on its coat-tails. Strategic relationships with CROs in Asia facilitate desirable lower-cost base operations while assuring quality products and access to the growing Asian markets.

(The opinion expressed in this article are entirely personal and do not reflect those of Boehringer-Ingelheim.) ■

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The Latvian Institute of Organic Synthesis, Riga, Latvia

BY IVARS KALVINSH



About LIOS

Latvian Institute of Organic Synthesis (LIOS) is a research center located in Riga, Latvia operating under Ministry of Science and Education. Although the institute is an independent research organization it works in very close collaboration with two major local universities to support the student education both at undergraduate and graduate level. The origin of the present status and research directions dates back to some 50 years ago. LIOS was established in 1957 as a member of group of institutes under Academy of Sciences in former USSR. It was created as a soviet counterpart to western pharmaceutical companies with the aim to undertake all the stages of drug development from idea to manufacturing. Such concept required close cooperation of academic and applied research which was not typical for that time. The efficiency of the idea was proven by 17 original drugs and more than 70 original preparation methods of known drugs which were discovered and introduced to the market during soviet times. The turning point in the institute's life coincided with the collapse of USSR and regaining Latvia's independence in 1991. While the institute remained as public research organization, it managed to survive through difficult 90-ties with very low national funding. It was possible mainly due to previously accumulated experience in drug discovery that formed a firm base for contract research programs with foreign and domestic pharmaceutical companies. During the past decade national as well as EU funding increased notably, which allowed to modernize the equipment that is crucial for performing advanced research (400 MHz, 600 MHz NMR spectrometers, a host of chromatographic instruments both for preparative and analytical applications). Besides academic research programs LIOS has remained active in contract research. More than 270 patents have been filed in the last 5 years together with business partners from different countries. In cooperation with UK and Danish companies a new anti cancer drug (currently in 2nd phase clinical trials) has been developed. Scientists from LIOS were involved both in design of the active entity and synthetic development of the molecule which now undergoes 2nd phase clinical trials for CNS associated diseases. On January 2009 Latvian Institute of Organic Synthesis was awarded with WIPO Award for Innovative Enterprises.

Currently, LIOS is a working place for 300 employees, 110 of them hold PhD degree. It is structured in 17 groups that closely collaborate in different projects. LIOS possesses 2424 m² of fully equipped laboratory space for organic synthesis and analytical chemistry.

Apart from research activities, LIOS publishes Journal of Heterocyclic Compounds which is issued in English version by Springer. Institute also organizes biannual Paul Walden Symposium in Organic Chemistry that was held for the 6th time this year. The success of the symposium is ensured by high level scientific presentations and discussions contributed by outstanding speakers from academic and industrial institutions from around the world.

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The following are the main areas of LIOS activities:

Medicinal chemistry

Medicinal chemistry projects at the IOS are not only revolved around preparation of large number of compounds, they cover all stages of pre-clinical development, starting with the concept and often ending with the clinical candidate. The major strength of the medicinal chemistry carried at LIOS certainly is organic synthesis. The areas of expertise include sophisticated synthesis of complex target compounds to discover patent free scaffolds as well as parallel synthesis for rapid generation of analogue series. New trends in organic chemistry are rapidly acquired and advanced methodology is used for drug discovery projects. *In vitro* and *in vivo* test systems established by LIOS pharmacologists support rapid lead development avoiding logistics and bureaucracy problems often associated with sample transfer from one research center to another. The typical medicinal chemistry projects at LIOS include: 1) protein structure determination and investigation of protein-ligand interaction by NMR spectroscopy, 2) design and synthesis of novel patentable compounds with diverse therapeutic potential, 3) design and synthesis of compound series for lead discovery, 4) design and synthesis of compounds necessary for other purposes in drug discovery projects e.g.

metabolites, standard reagents etc., 5) *in silico* screening of virtual libraries and generation of new core structures. Besides these «classical» medicinal chemistry activities, significant efforts are invested in interdisciplinary research towards new medicines. There are ongoing projects at the IOS devoted to discovery of new gene transfection agents, artificial liposomes etc.

Pharmacology and biological studies

The biological activity testing subunits in LIOS have highly skilled research staff and up-to-date equipment to perform both independent pharmacological studies and to assist medicinal chemists with activity screening tests. Pharmacological experiments are followed by in-depth analysis of the obtained tissue samples in collaboration with analytical units of LIOS. The typical biological activity testing at LIOS include: 1) screening of compounds in the test systems and development of screening systems for new indications, 2) investigations of the mechanisms of action of active ingredients, 3) biochemical measurements, radioligand binding studies, molecular biology assays, immunohistochemistry, 4) *in vitro* experiments in cell culture and isolated organs, 5) cardiovascular pharmacology in small experimental laboratory animals, 6) *in vivo* CNS activity testing, 7) anticancer activity screening *in vitro* and *in vivo*, 8) drug metabolism and pharmacokinetics, 9) toxicology tests.

Organic synthesis method development.

Development of original preparation methods of already known active molecules has been one of the main research directions of the institute since the very beginning. The process chemists of the IOS develop general synthetic methods applicable to a number of compounds which are of interest for pharmaceutical research and development. 1) Development of convenient synthetic procedures for preparation of potential lead compounds or candidate drugs, 2) development of original (patent free) preparation methods of known active pharmaceutical ingredients, 3) consulting of pharmaceutical manufacturers during scale-up of the developed procedures, 4) development of preparation methods and synthesis of building blocks required by medicinal chemists, 5) optimization of synthetic procedures for large-scale synthesis, 6) identification of critical steps for large-scale synthesis, setting of preliminary quality specifications for starting materials involved. Process chemistry activities are usually accompanied by fundamental research projects aimed to develop new methods in organic chemistry. The projects are typically realized by involving graduate students who work on their degree dissertations associated with the project. Thus, new method development activities at the LIOS represent the best example of fundamental research



contribution to the needs of applied research.

Analytical chemistry

Analytical chemistry is an important tool for process and medicinal chemistry as well as for pharmacological studies. LIOS has a team of highly skilled analytical chemistry experts capable to perform challenging tasks and to assist organic chemists and pharmacologists in their research. The tasks of analytical chemistry section at LIOS imply structure elucidation of newly synthesized molecules, development of in-process monitoring tools, characterization of compounds, continuous support of pharmacologists. Moreover, during the last years, the GMP certified analytical test facility was established to perform stability studies of active pharmaceutical ingredients and final dosage forms. Both classical wet chemistry procedures and modern analytical techniques are applied to solve tasks of various complexity. The typical analytical chemistry at IOS include: 1) structure determination of organic molecules both by NMR

and X-ray methods, 2) impurity profiling of synthesized compounds, 3) development and validation of analytical procedures both for in process and quality control purposes, 4) ICH compliant stability testing of active pharmaceutical ingredients and final dosage forms characterization of organic compounds including active pharmaceutical ingredients (includes exact mass determination, microanalysis, polymorphism studies etc), 5) development and application of bioanalytical procedures for pharmacological research.

In summary, Latvian Institute of Organic Synthesis has succeeded in building up the so called "knowledge triangle" – research, education and innovation – thus becoming the leading centre of drug discovery in the Baltic States. The combination of the academic expertise with strictly target oriented applied research will help the Institute to find its unique niche within the European Research Area consequently contributing to the growth of high-tech R&D in Baltic region and adding value to European innovative medicines research. ■



SME PRESENTATION

Hybrigenics, Paris

BY RÉMI DELANSORNE

Hybrigenics is a biotechnology and pharmaceutical company focusing its internal R&D programs on innovative target and therapeutics against cancer and commercializing its high throughput technology and bioinformatics platforms to identify, validate and inhibit protein interactions. Hybrigenics is organized in two operational units: **Hybrigenics Pharma** for the internal R&D programs and **Hybrigenics Services** for the commercial business, coordinated with economies of scale by a common corporate, financial and administrative management. The core link among all Hybrigenics activities is trust in science for life.

Hybrigenics Pharma most advanced development program is based on inecalcitol, a vitamin D analogue, for prostate cancer in combination with current reference treatments, for improved efficacy and better tolerance. Hybrigenics Services offers to researchers from all life sciences an access to its ISO 9001-certified Yeast-Two

HYBRIGENICS

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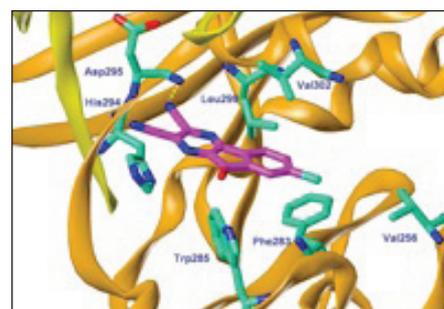
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website: www.hybrigenics.com

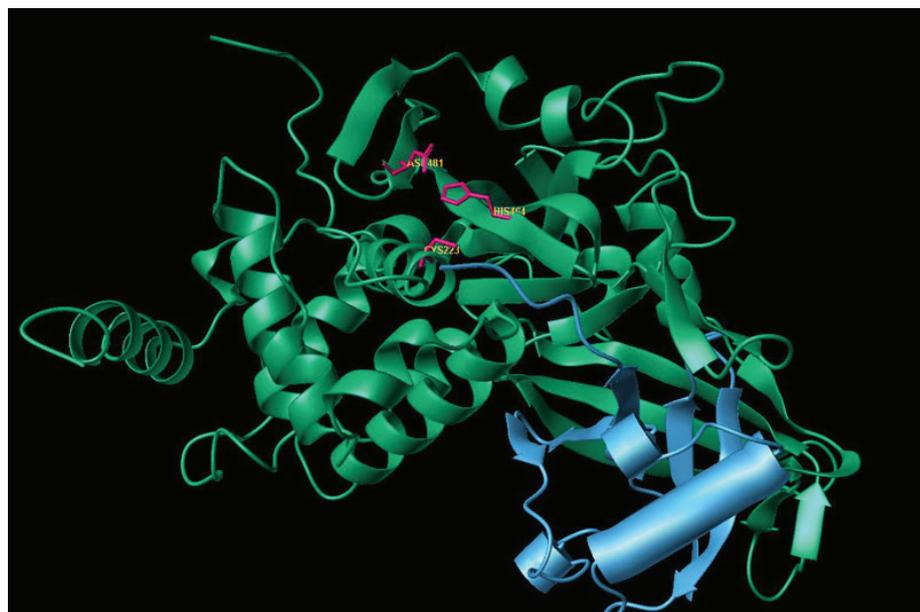
Hybrid (Y2H) high throughput screening platform [1], to its sophisticated bioinformatics set of tools and extensive database, and to its chemical library and high throughput small molecule screening platform, as fee-for-service activities. Knowledge of protein-protein interaction networks is essential for the understanding of cell biology regulation and signaling [2,3]. Novel protein interactions can thus be identified in all life science areas and validated both in vitro and in cells using HTRF® systems. The Small Molecule Screening (SMS) service is an integrated solution from assay development to compound evaluation. Protein-protein interactions assays can be customized and screened with our highly diverse and natural compound libraries. We can also transfer customer-developed assays in our process, not only to screen protein interactions but also proteases and many more enzymes and receptors. Hybrigenics Pharma research program explores the role of Ubiquitin-Specific Proteases (USPs) in the degradation of onco-proteins, and the use of proprietary USP inhibitors against various cancer types.

It is one of the first companies to have discovered potent and selective small molecule inhibitors of USP. USPs are involved in the deubiquitination of specific target substrates regulating their stability, subcellular localization and/or activation status. These proteins represent a druggable target class due to their thiol-protease catalytic core which is amenable to pharmacological inhibition by small molecules. Using USP protein networks and functional RNAi screening of genome wide USP, USP7/HAUSP and USP8 have been identified as key targets. More specifically, USP7 was reported to be involved in oncogene stabilization and inactivation of several tumour-suppressor genes resulting in cancer-cell proliferation and tumour aggressiveness which makes USP7 a very promising therapeutic target. Advanced High-Throughput-Screening-compatible assays using optimized USP substrates were de-

veloped at Hybrigenics to screen our chemically diverse library from which several series of active molecules were found. We have previously shown the anti-cancer potential of HBX 41,108 [4] and of HBX 90,397 as an USP7 and USP8 inhibitor, respectively. Our drug discovery group also recently identified new promising chemical series exhibiting USP7-specific inhibition. Current attempts to develop specific and effective drugs targeting deubiquitinating enzymes will facilitate subsequent investigation of the role of this class of molecular targets in normal and disease states, and will provide a structural basis for drug development. We have therefore demonstrated the capacity of Hybrigenics to build a unique expertise in the molecular and cell biology, enzymology and pharmacology of USPs as well as a solid patent portfolio covering advanced screening assays and original small-molecule inhibitors.



Screenshot of HBX 41,108 docked in USP7 structure as a possible Protein-Ligand model.



Representation of the active site of USP

Selectec Publications :

- [1] "The protein-protein interaction map of *Helicobacter pylori*", Rain JC, et al., Nature. (2001) 409(6817):211-5.
- [2] "Functional proteomics mapping of a human signaling pathway" Colland F, et al., Genome Res. (2004) 14(7) :1324-32.
- [3] «Protein interaction mapping: a *Drosophila* case study.», Formstecher E, et al., Genome Res. (2005) 15(3):376-84.
- [4] «Small-molecule inhibitor of USP7/HAUSP ubiquitin protease stabilizes and activates p53 in cells», Colland F, et al., Mol Cancer Ther. (2009) 8(8):2286-95. ■

Medicinal Chemistry in Europe; annotations on the history of the European Federation for Medicinal Chemistry

Part III: the series International Symposia on Medicinal Chemistry, ISMC

BY HENK TIMMERMAN

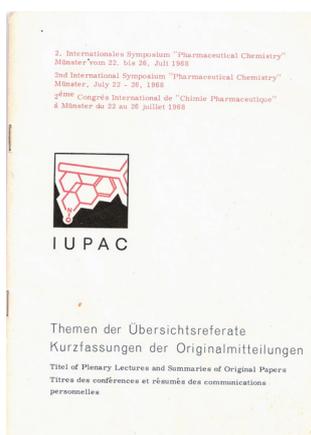
The series “**International Symposium on Medicinal Chemistry**” (ISMC), organized under the sponsorship of the EFMC, is older than the EFMC itself. This seems to be somewhat odd, but has everything to do with the originally rather loose structure of the federation (see *part II* of this annotations in *Med-ChemWatch*, 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.

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 Pharmacochemistry 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.



IUPAC, 1968



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

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”.

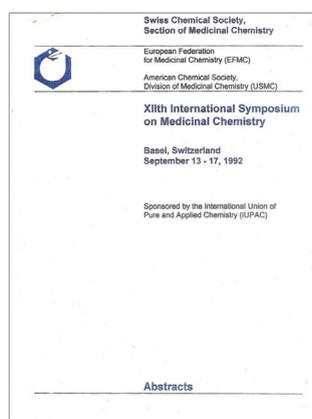
Due to a special request from colleagues in North America, the EFMC did not organize an ISMC in 1982. The medicinal chemists of Canada, Mexico and the USA had scheduled a North America Medicinal Chemistry Symposium in Toronto and apparently feared competition from a European meeting in the same year. 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 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

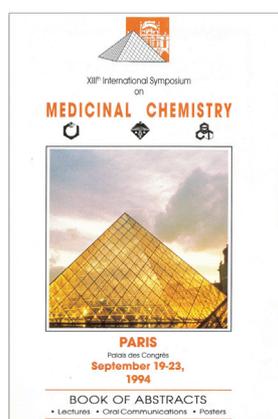
time also chairman of the EFMC. The growth of the ISMC continued: about eight hundred participants from not less than thirtyfive countries. The programme consisted of eighteen symposia, and more than two hundred posters were presented. A special event was the inaugural lecture of Nobel laureate Bengt 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.

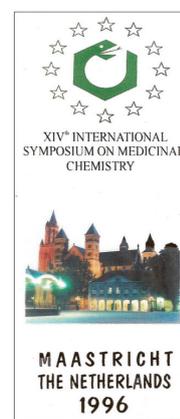
For the tenth ISMC (1988), the EFMC had selected Budapest as a venue. The chairman, Laszlo Pallos, welcomed



XIIth ISMC, Basel, Switzerland, 1992



XIIIth ISMC, Paris, France, 1994



XIVth ISMC, Maastricht, The Netherlands, 1996

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.

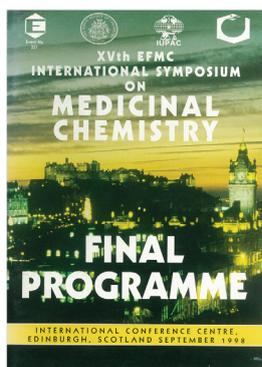
The chairmen were Achiel Haemers (B) and Henk Timmerman (NL). Over a thousand scientists participated; the size of the ISMC symposia seemed to

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 Larsen was honoured with the third Nauta Award for his entire body of work and contributions to the field of medicinal chemistry.

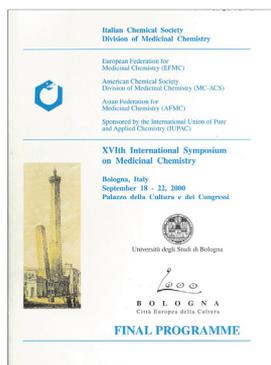
Number fifteen (1998) of the ISMC series was hosted by British colleagues in Edinburgh, Scotland. The organizing bodies were the Biological & Medicinal Chemical Section of the Royal Society of Chemistry, the Royal Society of Chemistry and the Society for Chemical Industry. The organization started with 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.

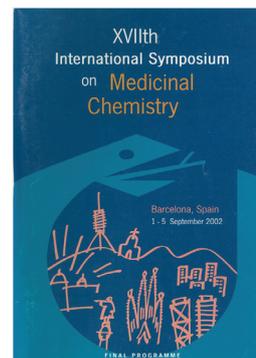
In the year 2000 the sixteenth ISMC was organized in Bologna. Carlo Melchiorre was chair of the organizing committee. Again more than 1000 medicinal chemists attended, confirming that the ISMC had definitively become the largest medicinal chemistry meet-



XVth ISMC, Edinburgh, Scotland, 1998



XVIth ISMC, Bologna, Italy, 2000

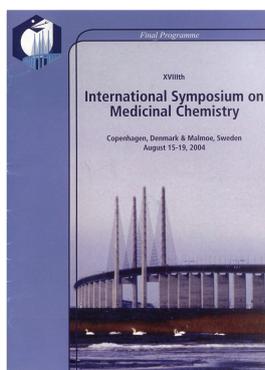


XVIIth ISMC, Barcelona, Spain, 2002

ing 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, "bid-books" 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



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



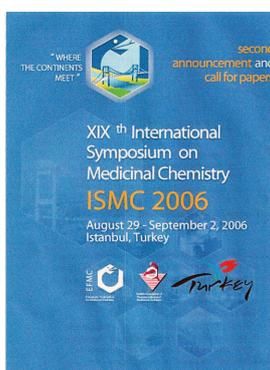
The winners of the Nauta Award (Testa) and the UCB Award (Zimmermann) at the ISMC in Barcelona, 2002. From left to right: Ferran Sanz (organizer Barcelona ISMC), Edmond Differding (UCB), Jürg Zimmermann (UCB prize Awardee), Bernard Testa (Nauta Award winner), Andele Nauta (Nauta foundation), Henk Timmerman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

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)

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



XIXth ISMC, Istanbul, Turkey, 2006



XXth ISMC, Vienna, Austria, 2008

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 com-



Pellicciari Istanbul 2006

mittee 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, 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.



EFMC 2008 AWARDS

Note: I have written this review partly from documents, partly from my memory (I attended all but one ISMC). It is quite possible I introduced some incorrect data or have forgotten interesting aspects. I invite the readers to contact me in case they like to propose adjustments, additions, improvements.

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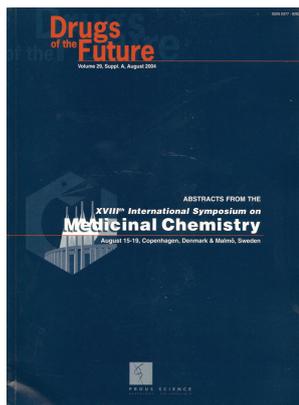
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Drugs of the Future, August 2006, 31 (Suppl.A)



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

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

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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.
- Richard Dahlbom and J Lars G Nilsson, *VIIIth International Symposium on Medicinal Chemistry*, Uppsala (Sweden) 1984, Proceedings, two volumes, Swedish Pharmaceutical Press Stockholm.
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Medicinal Chemistry – An integral division within the German Pharmaceutical Society

BY PETER GMEINER



The German Pharmaceutical Society (DPhG) founded a *Division of Pharmaceutical/Medicinal Chemistry* in 1985. The original name *Pharmaceutical Chemistry* was transformed into *Pharmaceutical/Medicinal Chemistry* in 2000 to demonstrate that this community covers both, drug discovery topics of medicinal chemistry and the typical scope of the pharmaceutical chemistry which includes also analytical aspects.

Having more than 700 members, the aim of the *Division of Pharmaceutical/Medicinal Chemistry* is to support the development at universities and industrial research laboratories. The activities of the division include the organization of scientific conferences, the support of junior scientists and the development of guidelines for educational concepts and curricula in pharmacy studies and related disciplines.

Since 1987, the *Division of Pharmaceutical/Medicinal Chemistry* promotes an annual scientific conference. Together with local organizers modern topics in medicinal chemistry are selected and discussed together with international experts in the field.

These meetings take place in spring, every year in a different place, which is usually a university city with a pharmaceutical department.

Since 2004, the conference has been termed *Frontiers in Medicinal Chemistry* being organized together with the *Divi-*

sion of Medicinal Chemistry of the German Chemical Society (GDCh).

The international symposium attracts approximately 250 to 300 participants from all over the world. Focusing on recent developments and trends including novel promising pharmaceutical targets, current technologies and particular highlights in medicinal chemistry, the scientific program includes plenary lectures, short lectures and poster presentations. Furthermore, oral communications of postdoctoral junior scientists are considered. It is the goal of the organizers to make this meeting an event of scientific excellence, attractive to both, industrial and academic scientists in medicinal chemistry and related fields of research.

DPhG

Aiming to promote excellent junior scientists the division of *Pharmaceutical/Medicinal Chemistry* annually awards an excellent medicinal chemist with the *Innovationspreis*, in cooperation with the division of *Medicinal Chemistry* of the GDCh.

The division has also a great number of fruitful cooperations. As an example, there is the cooperation with the Division of *Medicinal Chemistry* of the Swiss Chemical Society resulting in the organization of the joint meeting *Frontiers in Medicinal Chemistry* every second year.

Finally, the *Division of Pharmaceutical/Medicinal Chemistry* detects current topics and distributes scientific statements and press releases with regard to current developments in drug discovery and pharmaceutical education.

Together with the Medicinal Chemistry Division of the GDCh, the *Division of Pharmaceutical/Medicinal Chemistry* will have the pleasure to host the XXI-Ind International Symposium on Medicinal Chemistry EFMC-ISMC 2012 on behalf of the European Federation for Medicinal Chemistry. The members of the division are proud of this honourable assignment hoping that a large international attendance will once again experience this conference as one of the worldwide leading Medicinal Chemistry meetings. ■

**EFMC****ISMC 2010**XXIst
International Symposium
on Medicinal Chemistry

September 5-9, 2010 Brussels, Belgium

Call For Abstracts

Abstracts for oral communications and poster presentations can be submitted via the symposium website. Deadline April 2, 2010.

**INTERNATIONAL ORGANISING COMMITTEE****Chairmen****Koen Augustyns**
(University of Antwerp, Belgium)
Edmond Differding
(UCB, Belgium)**Members****Gerhard Ecker**
(University of Vienna & EFMC, Austria)
Peter Ettmayer
(Boehringer Ingelheim, Austria)
Eckhart Ottow
(Bayer, Germany)
Henk Timmerman
(VU Amsterdam, The Netherlands)**PLENARY LECTURES**

- 3 INVITED PLENARY LECTURES
2010 IUPAC-RICHTER PRIZE LECTURE
EFMC AWARD LECTURES
- The Nauta Award for Pharmacochimistry
 - The UCB-Ehrlich Award for Excellence in Medicinal Chemistry
 - The Prous Institute-Overton and Meyer Award for New Technologies in Drug Discovery
- EFMC PRIZE LECTURES
- Prize for Young Medicinal Chemist in Industry
 - Prize for Young Medicinal Chemist in Academia

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EFMC-Industry Liaison Committee**CHEMICAL APPROACHES TO STEM CELL BIOLOGY**
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Stephan A. Sieber
(Ludwig-Maximilians-Universität München, Germany)**COVALENT INHIBITORS IN DRUG DISCOVERY**
Stan Van Boeckel (Schering-Plough, The Netherlands)**EMERGING DRUGS - CASE STUDIES OF RECENTLY DISCLOSED NEW MEDICINES**
Nicholas Carruthers (Johnson & Johnson R&D, United States)**EMERGING TECHNOLOGIES**
David Parry (Cyclofluidic, United Kingdom)**FINDING THE RIGHT BINDING POCKETS: ALLOSTERIC MODULATORS OF G-PROTEIN COUPLED RECEPTORS FOR NON-CNS DISEASES (ACS Session)**
Robert A. Fecik (University Of Minnesota, United States)**FIRST TIME DISCLOSURES**
Eckhart Ottow (Bayer Schering Pharma, Germany)**G-PROTEIN COUPLED 7TM RECEPTORS - NEW INSIGHTS INTO THEIR STRUCTURE AND LIGAND RECOGNITION**
Hans Bräuner-Osborne
(The Danish University of Pharmaceutical Sciences, Denmark)**HOT TOPICS IN ANTI-INFECTIVES**
Lieven Meerpoel (Johnson & Johnson PRD, Belgium)**HOT TOPICS IN CARDIOVASCULAR DISEASES**
Joachim Mittendorf (Bayer Schering Pharma, Germany)**HOT TOPICS IN CNS DISEASES**
Benoit Kenda (UCB, Belgium)**IMAGING BIOMARKERS**
Gilles Tamagnan (Yale School of Medicine, United States)**INNOVATIVE DRUG DELIVERY SYSTEMS AND NANOTECHNOLOGIES (EUFEPS Session)**
Daan Crommelin (TI Pharma, The Netherlands)**KNOWLEDGE ENABLED DRUG DESIGN**
Mark Bunnage (Pfizer, United Kingdom)**LATE BREAKING NEWS**
Henk Timmerman (VU Amsterdam, The Netherlands)**MOLECULAR THERAPIES FOR INFLAMMATORY AND AUTOIMMUNE DISEASES: ONGOING CLINICAL TRIALS AND FUTURE PROSPECTS**
Sylviane Muller (CNRS Strasbourg, France)**NATURAL PRODUCTS IN DRUG DISCOVERY BEYOND CYTOTOXICS AND ANTI-INFECTIVES**
Gloria Serra (Udelar, Uruguay)**NEW MEDICINES BEYOND SMALL MOLECULES**
Hans-Ulrich Stitz (Sanofi-Aventis, Germany)**NOVEL TREATMENTS FOR OBESITY AND METABOLIC DISORDERS**
Roberto Pellicciari (University Of Perugia, Italy)**ONCOLOGY CASE STUDIES**
Peter Ettmayer (Boehringer Ingelheim, Austria)**PROCESS R&D AND SCALE-UP: CHEMISTRY, CRYSTALS & MORE CHALLENGES AND SUCCESS STORIES**
Herbert Stark (Sanofi-Aventis, Germany)**SUCCESSFUL STRATEGIES IN LEAD DISCOVERY**
Hans Peter Maerki (F. Hoffmann - La Roche, Switzerland)**TARGETING PATHWAYS**
Nicholas Cosford
(Burnham Institute for Medical Research, United States)**TARGETING PROTEIN-PROTEIN INTERACTIONS (AFMC Session)**
David Winkler (Csiro Molecular Science, Australia)**TEACHING MEDICINAL CHEMISTRY**
EFMC-Teaching & Training Committee**THE CHALLENGES IN DESIGNING MULTIPLE LIGANDS DRUGS. THE GOOD, THE BAD AND THE UGLY (ACS Session)**
John Butera (Wyeth Research, United States)**TOXICITY CHALLENGES IN DRUG DESIGN AND STRUCTURE-TOXICITY RELATIONSHIPS**
Ferran Sanz (Universitat Pompeu Fabra, Spain)**VIRTUAL SCREENING AND PROFILING**
Didier Rognan (University of Strasbourg, France)**EFMC**
European Federation
for Medicinal Chemistry

BY ERDEN BANOGLU

RSC | Advancing the Chemical Sciences

ROYAL SOCIETY OF CHEMISTRY – BIOLOGICAL AND MEDICINAL CHEMISTRY SECTION (BMCS)

Recent Events and Awards

The RSC BMCS held its flagship conference – the 15th RSC-SCI Medicinal Chemistry Symposium – in Cambridge during 6-9 September 2009. This biennial event witnessed an exceptional field of speakers, mostly from the pharmaceutical and biotechnology industries, and was attended by almost 300 participants. Consistent with the established reputation of the event, lively and highly informed discussions followed each talk and these reflections continued informally over lunch, dinner and in the Bar well into evening! One of the highlights of the meeting was the presentation of the BMCS 2009 Malcolm Campbell award to Dr. LWL Woo and Prof. BVL Potter from the University of Bath and Dr. A. Purohit and the late Prof. MJ Reed from Imperial College for their discovery of STX64, a novel agent against steroid sulfatase which has demonstrated evidence of efficacy in the clinic for the treatment of hormone dependent cancers. The prize is awarded by the BMCS biennially in recognition of recently published outstanding biological or medicinal chemistry research.

Future Activities

The BMCS is very active in organising an extensive range of conferences on a variety of relevant topics, and meetings that are currently scheduled by the committee include the following events:

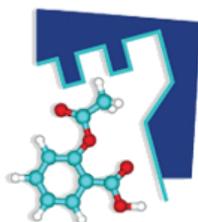
- **Chemical biology for drug discovery**
Oxford University, Medical Sciences Training Centre, United Kingdom
8-9 December 2009

- **3rd Biological and Medicinal Chemistry Symposium for Postgraduates**
University of Cambridge, Wolfson Lecture Theatre, Chemistry Department, Cambridge, United Kingdom
11 December 2009 10:00-18:00

- **21st Symposium on Medicinal Chemistry**
University of Hertfordshire, Fielder Centre, Hatfield, United Kingdom
29 April 2010 09:30-17:00

- **3rd RSD-SCI GPCRs in Medicinal Chemistry**
Schering-Plough, Oss, Netherlands
20-22 September 2010

Further details of these and other events are available at: <http://www.rcs.org/Membership/Networking/InterestGroups/BMCS/ForthcomingEvents.asp>



THE HELLENIC SOCIETY ON MEDICINAL CHEMISTRY

The 14th Hellenic Symposium on Medicinal Chemistry

The Hellenic Society of Medicinal Chemistry in co-operation with the Division of Organic and Medicinal Chemistry of the Association of Greek Chemists organize the 14th Hellenic Symposium on Medicinal Chemistry in Thessaloniki, Greece in April 23-25, 2010.

HSMC-14 continues the tradition of bi-annual meetings established since more than 25 years in Greece as a forum for the discussion of recent advances in the field of Medicinal Chemistry.

The topics of the Symposium include drug design and lead identification and optimization, covering all therapeutic areas, as well as the impact of ADME/Tox properties in drug discovery. Organic Synthesis, Biochemistry and Chemical Biology, Pharmacology, Computational Chemistry and Cheminformatics are integrated to create the environment for fruitful interchange of ideas between scientists involved in Medicinal Chemistry related areas. The official language of the Symposium is English. Thessaloniki, the capital of North Greece, is a fascinating city and cultural center, steeped in the Byzantine Era, where you can at the same time enjoy modern life style activities. The Symposium venue is located in the heart of Thessaloniki and easily accessible, offering to the participants the possibility to visit the most important historical sites. More details about HSMC-14 can be found in the Symposium website at www.helmedchem2010.gr



18th Symposium on Quantitative Structure-Activity Relationships

The Hellenic Society on Medicinal Chemistry in co-operation with the International Cheminformatics and

QSAR Society organize the 18th European Symposium on Quantitative Structure-Activity Relationships in Rhodes, Greece, in September 19-24, 2010. The European Symposia in QSAR have been taking place since 1973 and constitute major scientific events in the field of rational drug design and discovery, with further applications in agricultural or environmental chemistry. The Euro-QSAR2010 symposium, entitled "Discovery Informatics and Drug Design" is an EFMC sponsored event and will focus on the latest scientific and technological developments in QSAR and cheminformatics, continuing the tradition of holding biannual symposia at different European countries.

The island of Rhodes (Rhodos in Greek) is renowned for its rich history, breathtaking beauty, vibrant social life and distinct culture, and offers excellent facilities for international events. It is the third largest Greek island, situated in the Southeast Aegean in the Mediterranean Sea at the crossroads of two continents.

The Symposium will offer a high quality scientific program and it is expected to attract more than 400 participants from Europe and overseas from both academic and industry environment.

The Symposium topics include:

- Pharmacophore Searching and Virtual Screening
- Structure-Based Drug Design – Drugability
- Bioinformatics / Chemoinformatics
- Systems Biology and Biological Complexity
- Multi-target QSAR
- QSPR for Novel Biomaterials and Regenerative Medicine
- In Silico PhysChem Profiling and ADMET
- Predicting Drug Safety
- Predictive Toxicology and Risk Assessment -Environmental QSAR
- Computational Strategies in Agricultural Research
- Novel QSAR Approach



SCS

Division of
Medicinal Chemistry

DIVISION OF MEDICINAL CHEMISTRY OF THE SWISS CHEMICAL SOCIETY

The Division of Medicinal Chemistry organized its own scientific session at the Fall Meeting of the Swiss Chemical Society in Lausanne (September 04). Scientists from universities and from industry presented 15 short communications and 34 posters. The Mettler-Toledo Prize for the „Best Oral Presentation“ was awarded to Silvia Anthoine Dietrich from the ETH Zürich for her talk entitled "Total Synthesis of New Functionalized Epothilone Analogs for Prodrug Design and Tumor Targeting". The SCS-DSM Nutritional Products Poster Prize was given to Liliana Sintra Grilo from the School of Pharmaceutical Sciences, University of Geneva, for her contribution "Stereoselective block of hERG1 channel by bupivacaine scrutinized at molecular level".

Activities planned in 2010:

• May 27, 2010

Mini-Symposium on 'Channels and Transporters' at the Department of Chemistry, University of Basel, comprising overview lectures by Beat Ernst ("Introduction and Basics of Channels and Transporters"), Raimund Dutzler ("The Structural Basis for Ion Conduction and Gating in Pentameric Ligand-Gated Ion Channels") and Dietrich Keppler ("Uptake and Efflux Transporters for Endogenous Substances and for Drugs"), and two specific case studies, namely "Avosentan" (Werner Neidhart, Roche Basel) and another one from ICAGEN (title and speaker still open). No registration is necessary, free entrance is offered to all participants.

• September 16, 2010

Division of Medicinal Chemistry, oral and poster session at the Fall Meeting of the Swiss Chemical Society, ETH Zürich.

• September 21-24, 2010

The Swiss Chemical Society will organize the ILMAC Scientific Forum at the MCH Basel entitled "From Nylon to Nanomaterials. Future Trends in Polymers", with a specific section on September 23 dedicated to Biopolymers and Polymer Based Drug Delivery. The program will include a lecture by Prof. Alberto A. Gabizon (Hebrew University, Jerusalem, Israel): "Delivery of Anticancer Agents by Liposomes: Nanomedicine in Action".

• October 10-15, 2010

9th Swiss Course on Medicinal Chemistry, organized by Professor Beat Ernst in Leysin, a picturesque Swiss mountain village. This course is held every second year. It offers young scientists with a few years of experience in the pharmaceutical industry and interested Ph.D. students a broad overview of key disciplines important for modern pre-clinical drug research. Active participation in tutorials and a broad variety of lectures and case histories are important elements of the course. See also <http://www.swiss-chem-soc.ch/events/index.cfm>.



MEDICINAL CHEMISTRY DIVISION AUSTRIA

Seminar Program

Winter Semester 2009/2010

• November 11, 2009, 9:30 a.m.

Prof. Dr. Gerhard Ecker
University of Vienna
Pharmacoinformatics – current trends,

future challenges

University of Vienna, IX. Althanstrasse
14, HS 4

• **November 18, 2009, 9:30 a.m.**

Prof. Dr. Peter Wolschann

University of Vienna

*Molecular Calculations – from Force fields to
Density Functional and ab initio Methods*

University of Vienna, IX. Althanstrasse
14, HS 4

• **November 23, 2009, 5 p.m.**

Dr. Norbert Bischofberger

Gilead Sciences, USA

*Science Conquers Infectious Disease: the
Advancement of Drugs against HIV and
Influenza*

Innsbruck University, Innrain 52a,
Großer HS / Chem. Institute

• **November 26, 2009, 4 p.m.**

Dr. Marko Susnik

Austrian Chamber of Commerce

REACH Chemical Legislation on Change

Vienna University of Technology,
VI. Getreidemarkt 9, Chemie-HS

• **December 3, 2009, 4 p.m.**

Dr. Peter Pöchlauer

DSM Linz

*New Strategies Towards the Total Syntheses
of Architecturally Complex Alkaloids*

Vienna University of Technology,
VI. Getreidemarkt 9, Chemie-HS

• **January 11, 2010, 5 p.m.**

Prof. Dr. Andreas Marx

University of Konstanz

*Caught in the act: DNA polymerases
encountering aberrant substrates*

Innsbruck University, Innrain 52a,
Großer HS / Chem. Institute

• **January 14, 2010, 4 p.m.**

Prof. Vladimir Kren

Academy of Sciences, Czech Republic

*Biocatalytic modifications and
discrimination of flavonoids: Chiral
problems of silybin*

Vienna University of Technology, VI.
Getreidemarkt 9, Chemie-HS



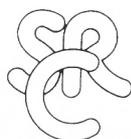
TURKISH ASSOCIATION OF PHARMACEUTICAL AND MEDICINAL CHEMISTRY

**1st Turkish-Russian Joint meeting on
Organic and Medicinal Chemistry** was
held in Antalya, Turkey on 14-17 Octo-
ber 2009 which was organized by the
Turkish Association of Pharmaceutical
and Medicinal Chemistry in collabora-
tion with the D.I.Mendeleev Russian
Chemical Society (Section of Medicinal
Chemistry).

International Postgraduate Student Meeting on Pharmaceutical Sciences (IPSMPS2010)

June 24-27, 2010, Çesme, Izmir, Turkey
IPSMPS will be organized to achieve
an international scientific platform for
postgraduate students and junior sci-
entists to meet and experience the ad-
vancements and the future expectations
on the most relevant issues of pharma-
ceutical sciences via the plenary lectures
given by the distinguished scientists.
Meantime, the participants will find op-
portunity to share their researches by
oral or poster presentations.

www.ipsmps2010.org



SOCIÉTÉ ROYALE
DE CHIMIE

SOCIÉTÉ ROYALE DE CHIMIE (SRC), MEDICINAL CHEMISTRY DIVISION

**21st International Symposium on Me-
dicinal Chemistry, EFMC-ISM 2010**
Brussels, Belgium

September 5-9, 2010

The Organizing Committee cordially
invites you to attend the XXIst Inter-
national Symposium on Medicinal

Chemistry (ISM 2010) that will be
held in Brussels on September 5-9,
2010. It will be organized jointly by the
Medicinal Chemistry Divisions of the
'Société Royale de Chimie (SRC)' and
the 'Koninklijke Vlaamse Chemische
Vereniging (KVCV)', on behalf of the
European Federation for Medicinal
Chemistry (EFMC).

ISM 2010 will continue the tradition
established by these biennial Interna-
tional Symposia and will cover drug
discovery advances in all major thera-
peutic areas, as well as the most recent
advances in lead identification and opti-
mization strategies, in drug design and
development, and in prediction of activ-
ity as well as of adverse effects. An em-
phasis will be on first time disclosures,
emerging drugs and emerging technol-
ogies, including nanotechnologies and
the chemical modulation of stem cells.
ISM 2010 will also illustrate the im-
pact of the omics and biomarker areas
on the interfaces between chemistry,
informatics, biology and experimental
medicine.

The Congress venue, 'SQUARE', Brus-
sels' fully renovated conference center
which reopened in September 2009,
offers state of the art facilities for speak-
ers, exhibitors and attendants, as well
as convenient access to all major hotels
of the city center. 'SQUARE' is situated
in the historic heart of Brussels, in be-
tween the world famous Grand Place
and Le Sablon, well known for its an-
tique shops and cozy terraces.

Registration is now open and can be done
via the online registration tool on the sym-
posium website www.ismc2010.org.

We look forward to your active partici-
pation!

Edmond Differding, Koen Augustyns

Symposium Co-Chairmen ■

BY GABRIELE COSTANTINO AND AGOSTINO BRUNO

The 1st RSC/SGC Symposium on Chemical Biology for Drug Discovery will be held in Oxford (UK), December 8-9, 2009

This two-day symposium brings together chemists and biologists to explore how the interdisciplinary field of chemical Biology is enhancing our understanding of the molecular mechanisms of disease.

The program includes talks from leading scientists in pathway deconvolution, chemical genetics, association of molecular targets with disease, discovery of chemical probes and protein-protein interactions. These will be accompanied by perspectives on the growing trend of academic-industrial collaborations impacting chemical biology for drug discovery.

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For further information and for the detailed program go at:

<http://www.confsec.co.uk/conferences/CBDD%202009/Index.htm>

or contact the Conference Secretariat, Eliane Wellingham, at:

esw@confsec.co.uk
.....

The 28th Camerino-Cyprus-Noordwijkerhout Symposium Trekking through receptor chemistry will take place in Camerino (Italy), May 16-20, 2010

The interplay of biological activity and chemical structure is a highly intriguing problem for all scientists involved in the study of bioactive compounds. In the recent past, a number of international symposia on this subject have been held. As the number of symposia seemed to be increasing and a risk of overlap between the different programs was becoming a real threat, the organizers of the Noordwijkerhout (The Netherlands) and of the Camerino (Italy) series of symposia decided to start cooperating closely.

This cooperation ensured that since then every two years a Camerino or a Noordwijkerhout Symposium has taken place (1987, 1991, 1995, 1999, 2003 and 2007) in Camerino and (1989, 1993, 1997, 2001, 2005 and 2009) in Noordwijkerhout. Likewise under the auspices of the European Federation of Medicinal Chemistry (EFMC), the first Cyprus Symposium was convened in Limassol, Cyprus in 1983.

In 2007 it was decided to join the efforts of the Camerino-Noordwijkerhout team and those of the Cyprus group in such a way that each year a symposium in one of the three venues will be organised.

In 2008 the 26th Cyprus-Noordwijkerhout-Camerino Symposium in this long lasting series was held in Limassol (Cyprus), the 27th symposium will be held in 2009 in Noordwijkerhout (The Netherlands) and the 28th symposium will be held in 2010 in Camerino (Italy).

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The detailed scientific program and further information are available on line at <http://www.unicam.it/farmacia/symposium/index.html>
.....

The XX National Meeting on Medicinal Chemistry of the Division of Italian Chemical Society, will be held in Padova (Italy), September 12-16, 2010

Organizing Committee:

L. Brasili, S. Caffieri, A. Chilin, F. Dall'Acqua (chairman),
L. Dalla Via, A. Dolmella, C. Franchini, B. Gatto, G. Innocenti, M. Palumbo

Organised by:

Division of Medicinal Chemistry of the Italian Chemical Society (Società Chimica Italiana), Italy
Department of Pharmaceutical Sciences
University of Padova
Via Marzolo 5
35131 Padova (Italy)

.....
Contact person:

Francesco Dall'Acqua

tel: +39 049 827 5708

fax: +39 049 827 5366

email: francesco.dallacqua@unipd.it
.....

The 18th European Symposium on Quantitative Structure – Activity Relationship will take place in Rhodes (Greece), September 19-24, 2010

The European Symposia in QSAR have been taking place since 1973 and constitute major scientific events in the field of rational drug design, with further applications in agricultural or environmental chemistry. The EuroQSAR2010 symposium, entitled "Discovery Informatics and Drug Design" will focus on the latest scientific and technological developments in QSAR and chemoinformatics, continuing the tradition of holding biannual symposia at different European countries.

For updated information please visit the Symposium website at:

www.euroqsar2010.gr

**XXIst International Symposium on Medicinal Chemistry
September 5-9, 2010, Brussels, Belgium**

EFMC-ISMC 2010 will be organised by the Medicinal and Bioorganic Chemistry Division of Royal Flemish Chemical Society (KVCV) and the Division for Medicinal Chemistry of the Société Royale de Chimie (SRC), on behalf of the European Federation for Medicinal Chemistry (EFMC).

This symposium traditionally attracts experts in drug research and development, in particular medicinal and synthetic chemists, combinatorial chemists, molecular modelers, pharmacologists, as well as development chemists. It is recognized worldwide as one of the leading Medicinal Chemistry meetings, as proven by its large international attendance.

Contact: Dr Edmond Differding (UCB S.A.)

Organised by: European Federation for Medicinal Chemistry (EFMC), Medicinal and Bioorganic Chemistry Division of Royal Flemish Chemical Society (KVCV) (Belgium), Société Royale de Chimie (SRC), Medicinal Chemistry Division (Belgium). ■

For further informations please visit:

<http://www.ismc2010.org>

CONFERENCE REPORT

ASMC09 Kiev International Symposium on Advances in Synthetic and Medicinal Chemistry

Kiev, Ukraine, August 23-27, 2009

BY ERDEN BANOGLU

ASMC09 Kiev was organized by European Federation for Medicinal Chemistry (EFMC) and ChemBridge Corporation as the 3rd in the series of events which started five years ago with ASCMCo4 Moscow. The second symposium in the series was held in St. Petersburg in 2007. The idea of such a series of international scientific event in the field of organic and medicinal chemistry was created about five years ago aiming bringing together the leading scientists and expert practitioners from academic, government and industrial institutions of eastern and western countries to power up the scientific potential which stayed apart for a long time. For these reasons, the locations of the meetings were decided to be chosen from the



eastern countries. Following the tradition, the third symposium was held in Kiev, the capital city of Ukraine, which also offered a pleasurable social and cultural experiences to the participants with its historical heritage and great museums.

The ASMC09 Kiev with its distinguished panel of 50 internationally renowned speakers from academia and the pharmaceutical industry as well as 130 peer reviewed poster presentations continued the tradition which resulted a great success in advancing science of medicinal and organic chemistry and also successfully created a network of international audience of about 300 delegates from all over the world hence promoting cooperation and exchange of ideas. This 3rd meeting of the symposium series was chaired by Prof. Eric Carreria (ETH, Zuirch, Switzerland) and Dr. Scott Biller (Novartis, Cambridge, USA) to create an environment for discussing emerging trends in synthetic organic and medicinal chemistry as well as novel approaches in drug design and recent advances in drug discovery and development.

The highlights of the symposium included:

- Case histories from chemistry to the recently developed clinical candidates
- Fragment inspired and structure guided medicinal chemistry
- Strategies for building focused small molecule screening libraries in drug discovery
- Novel synthetic and catalytic methodologies in natural products and heteroaromatic chemistry

The core structure of the symposium successfully brought together the synthetic organic and medicinal chemistry and carried a message that changing face of organic synthesis for making biologically important molecules has a pivotal role using medicinal chemistry approaches more efficiently in drug discovery process. Each session was organized in a heterogeneous way including talks for advanced methods in synthetic organic chemistry, use of structural bi-

ology, property- and structure-based approaches in drug discovery and real-life case studies for developing novel drug candidates. It was obvious that the symposium chairmen and the members of organizing committee have done a great job to invite speakers from both academia and pharmaceutical industry with particular care on didactic aspects of the symposium. Additionally, equal distribution of the speakers from both academia and industry ideally allowed audience to understand the current picture of drug discovery and development process with the newest technologies as well as the place of medicinal chemistry within the process.

The first day of the symposium emphasized the changing face of organic synthesis with presented novel methodologies in heterocyclic synthesis, C-C bond forming and C-H bond reactivity for streamlining the synthesis of more complex molecules with biological relevance. Harmonized with these talks also the structure-based approaches had its place with case histories of BACE inhibitors for Alzheimer's disease, inhibitors of Gliir-mediated transcription as anticancer agents, bisubstrate COMT inhibitors for Parkinson disease, discovery of Ixabepilone, a natural product epothilone analogue, for metastatic breast cancer. The second day continued with more medicinal chemistry stories using fragment based approaches for turning fragments-to-leads. Especially, emphasize given to use the techniques associated with fragment- and structure-based drug discovery such as X-ray crystallography or NMR for structural understanding of the binding interactions between the fragments or structures and their target protein. Session topics included different protein families comprising kinases, ATPases, proteases, adenosine deaminase, Bcl-2, HIV-1 RT dimerization process inhibitors for treating various pathologies associated with these proteins. These talks followed by a Business Mini Symposium on how to create and use a medicinal chemistry screen-

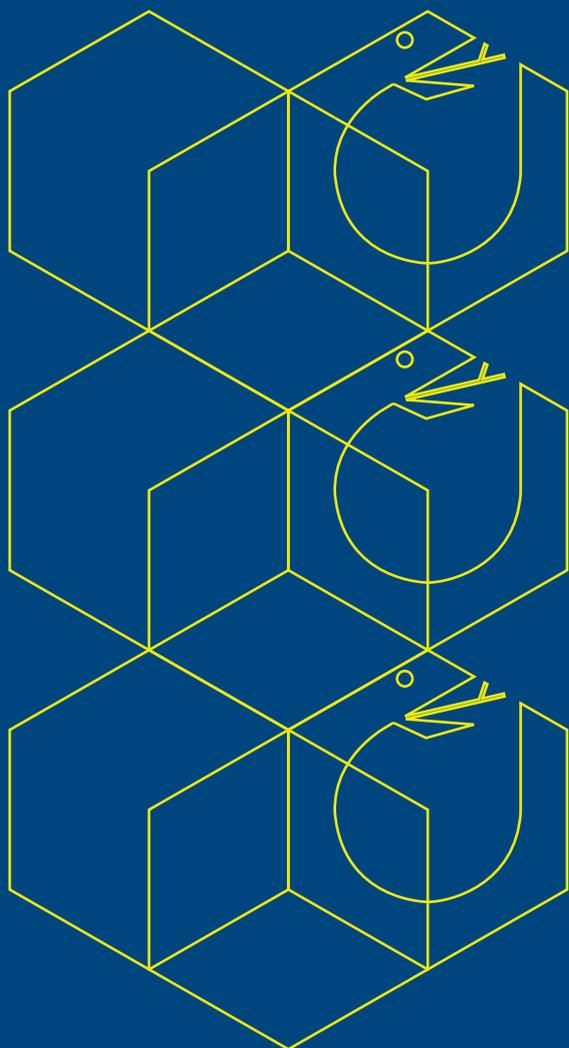
ing libraries in drug discovery process. This mini symposium session covered the use of chemistry to constitute and maximize the potential of HTS small molecule libraries for providing a utility to determine novel drug-like molecules from vast chemical diversity for various range of target classes with the aim of a rational target-driven selection of compounds for further development. Third and fourth days of the meeting continued the same tradition with more case stories on different targets such as BCR-ABL kinase inhibitors, PPAR α agonists, beta-2-adrenoreceptor agonists, PI3K inhibitors, BACE1 inhibitors, orexin receptor antagonists. These stories was very exciting in a way that although the use of modern approaches have widely been utilized to identify and understand the structural interactions of lead compounds for clinical development, the use of conventional and novel chemical strategies was the basic driven force for the success of each story. ■

EFMC 2010 AWARDS

Call for nominations

DEADLINE: JANUARY 31, 2010

The Awards will be conferred on the occasion of the XXIst EFMC 'International Symposium on Medicinal Chemistry' (ISMC) to be held in Brussels, Belgium, September 5-9, 2010



The Nauta Award for Pharmacochemistry

For the advancement of medicinal chemistry and the development of international organizational structures in Medicinal Chemistry. The Award will be given for outstanding achievements in the field of Medicinal Chemistry.

The UCB-Ehrlich Award for Excellence in Medicinal Chemistry

To acknowledge and recognize outstanding research in the field of Medicinal Chemistry in its broadest sense by a young scientist. This Award has been established with the support of UCB Pharma.

The Prous Institute-Overton and Meyer Award for New Technologies in Drug Discovery

To encourage innovation and investigation in technological development related to drug discovery, this Award established with the support of Prous Institute will be given for the discovery, evaluation or use of new technologies.

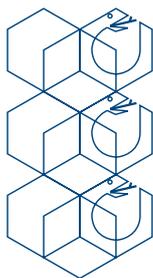
Nominations for these Awards consist of a nomination letter, a brief CV, including a list of selected publications and two supporting letters. The nominations should be submitted to the Chairman of the Juries, Professor Gerhard Ecker, President of EFMC, Department of Medicinal Chemistry, University of Vienna, Althanstrasse 14, A-1090 Wien, Austria. fax: +43 1 4277 9551 e-mail: awards@efmc.info

Please visit www.efmc.info for more information and Award regulations



**EUROPEAN FEDERATION
FOR MEDICINAL CHEMISTRY**

The Summer School on Pharmaceutical Analysis (SSPA), which was an EFMC Sponsored Event in 2009, received the status of EFMC Sponsored School. SSPA is planned yearly under the auspices of the Division of Medicinal Chemistry of the Italian Chemical Society and the EFMC. The 2009 edition, held in September in Milan, focused on advanced analytical methodologies in drug development and attracted about 70 participants. SSPA 2010 will take place in June in Rimini, and will cover advanced analytical methodologies in drug quality control and preformulation.



EFMC 2010 AWARDS

EFMC is conferring every two years three Awards in order to acknowledge outstanding achievements in the field of Medicinal Chemistry. The 2010 Awards will be conferred on the occasion of the XXIst "International Symposium on Medicinal Chemistry" (EFMC-ISMC), scheduled to be held in Brussels, Belgium, September 5-9, 2010. Deadline for submission: January 31, 2010.

More information can be found on: http://www.efmc.info/content.php?langue=english&cl_menus=1176113444

THE EFMC PRIZE

EFMC established two new Prizes, "The EFMC Prize for Young Medicinal Chemist in Industry" and "The EFMC Prize for Young Medicinal Chemist in Academia", to acknowledge and recognize an outstanding young medicinal chemist (≤ 35 years old) working in industry or in academia within Europe. Deadline for submission: January 31, 2010.

More information can be found on: http://www.efmc.info/content.php?langue=english&cl_menus=1201086324

THE EFMC PRIZE FOR A YOUNG MEDICINAL CHEMIST IN ACADEMIA

To acknowledge and recognize an outstanding young medicinal chemist (≤ 35 years old) working in academia within Europe.

The prize is given annually and consists of a diploma, € 1,000 and an invitation to give a short presentation at an EFMC symposium. Two runners up will also be identified and acknowledged.

Applications should consist of:

- A one-page letter by the candidate including a short rationale for their application
- One page with his/her 5 most important publications
- A brief CV of the candidate
- Abstract of potential oral presentation



Deadline for Nominations is January 31, 2010.

See www.efmc.info for full details.

THE EFMC PRIZE FOR A YOUNG MEDICINAL CHEMIST IN INDUSTRY

To acknowledge and recognize an outstanding young medicinal chemist (≤ 35 years old) working in industry within Europe.

The prize is given annually and consists of a diploma, € 1,000 and an invitation to give a short presentation at an EFMC symposium. Two runners up will also be identified and acknowledged.

Nominations should be submitted by the candidate's supervisor and should consist of:

- A letter by the supervisor
- A brief CV of the candidate
- Abstract of potential oral presentation



Deadline for Nominations is January 31, 2010.

See www.efmc.info for full details.



EFMC | **ISMC 2010**
XXIst
International Symposium
on Medicinal Chemistry

The XXIst International Symposium on Medicinal Chemistry (EFMC-ISMC 2010) will take place in Brussels, Belgium on September 5-9, 2010. This symposium traditionally attracts experts in drug research and development, in particular medicinal and synthetic chemists, combinatorial chemists, molecular modelers, pharmacologists, as well as development chemists. It is recognized worldwide as one of the leading Medicinal Chemistry meetings, as proven by its large international attendance. ISMC 2008 Vienna attracted 1400 participants, from industry and academia.



EFMC
Short
Course

In 2009, EFMC launched a series of short courses. The second Short Course on Medicinal Chemistry is entitled "EFMC Safety and Attrition Workshop" and will take place in Oegstgeest, The Netherlands on April 11-14, 2010. This intensive 3 days course is intended for scientists working in the field, and the presentations will be given by senior scientists both from industry and academia. More information is available on www.efmc.info. Contact: administration@efmc.info



"Medicinal Chemistry in Europe", the official EFMC Yearbook, will be distributed in January 2010. It is a valuable instrument for those who are interested in finding information related to the activities and composition of Member Societies, Corporate Members and on the activities and events of EFMC and its Committees.

The 3rd International Symposium on Advances in Synthetic and Medicinal Chemistry, organized by EFMC and ChemBridge Corporation, took place in Kiev and became despite the difficult economic situation a successful event. 300 participants from 33 different countries attended this symposium where American and Western European chemists met Eastern European scientists in the areas of synthetic and medicinal chemistry.

Under the theme of "Emerging Targets, Novel Candidates and Innovative Strategies", Frontiers in Medicinal Chemistry, held in October in Barcelona, brought together medicinal chemists and related scientists in order to share exciting new results and first-time disclosures in various areas of drug discovery and development, including cancer, infectious diseases, CNS, inflammation, pain and metabolic disease. 275 registered participants attended this international meeting. ■

MedChemWatch no.8 December 2009

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