

Medicinal Chemistry and Chemical Biology Highlights

Division of Medicinal Chemistry and Chemical Biology

A Division of the Swiss Chemical Society

An Element of Community: EFMC, the European Federation for Medicinal Chemistry

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Abstract: The Division of Medicinal Chemistry and Chemical Biology of the Swiss Chemical Society is an active member of the European Federation for Medicinal Chemistry (EFMC), whose mission is to advance the science of medicinal chemistry in Europe. EFMC promotes scientific exchange, rewards scientific excellence, facilitates communication and networking, and provides training and mentoring. We give here an overview of its current initiatives and scientific activities.

Keywords: Chemical biology · EFMC · Medicinal chemistry

The Division of Medicinal Chemistry and Chemical Biology (DMCCB) of the Swiss Chemical Society is an active member of the European Federation for Medicinal Chemistry (EFMC).^[1] It plays a role in many of EFMC's initiatives, most of which are of direct interest to the Swiss scientific community. This article reviews the scope and activities of EFMC in some detail.

The *mission of EFMC* is to advance the science of medicinal chemistry, by promoting scientific exchange, rewarding scientific excellence, facilitating communication and networking, as well as providing training and mentoring. It is an independent

association founded in 1970, representing 26 societies from 24 countries, and over 7500 medicinal chemists.

EFMC defines medicinal chemistry as the design, synthesis and optimization of pharmacologically active molecules. These include tools for chemical biology, therapeutic drug candidates, and molecular diagnostic agents such as radioligands for clinical imaging. All molecules allowing to probe or influence biological systems, with the aim to better understand cell biology or treat patients, fall under this umbrella. EFMC believes in a scientific continuum ranging from chemical biology to medicinal chemistry, where both disciplines intermingle and play key roles in driving innovation, allowing a better understanding of biology and the discovery of transformative medicines to treat patients.

EFMC Organizes Congresses and Events

EFMC aims to improve the visibility of medicinal chemistry and chemical biology, as well as to promote quality in research and reward scientific excellence. It promotes scientific exchange by organizing several events in Europe, independently or in association with its partners.

The most prominent European congress is the *International Symposium on Medicinal Chemistry (EFMC-ISM)*,^[2] organized on a biennial basis. The general concept of the meeting is to offer a combination of plenary lectures and parallel sessions on medicinal chemistry, chemical biology, and related technologies, with speakers equally representing industry and academia. The EFMC-ISM traditionally attracts experts in chemical biology, drug discovery and development. It is one of the leading medicinal chemistry meetings worldwide, and attracts a large international audience. The EFMC-ISM last took place in Ljubljana, Slovenia, while the next edition will be co-organized with the DMCCB on September 6–10, 2020 in Basel, Switzerland.^[3]

The *International Symposium on Advances in Synthesis and Medicinal Chemistry (EFMC-ASM)*^[4] is also organized on a biennial basis, and combines medicinal and organic synthetic chemistry, with invited speakers equally coming from industry and academia. The next event will take place in Athens, Greece, on Sept 1–5, 2019. It will be immediately followed by the annual *Young Medicinal Chemist Symposium (EFMC-YMCS)*,^[5] on September 5–6. This is an annual meeting attracting about 200 participants. Besides plenary talks and flash poster presentations, the delegates of the national organizations member of EFMC, such as the DMCCB, compete for the best presentation award. Through great science, this event highlights the future scientific leaders in medicinal chemistry in Europe.

EFMC has Multiple Partners

EFMC has a broad network of partner organizations, which organize sessions at EFMC events, and provide EFMC the opportunity to participate in their symposia, promoting European science beyond our borders:

For instance, EFMC has strong links with the *Division of Medicinal Chemistry of the American Chemical Society (ACS)*

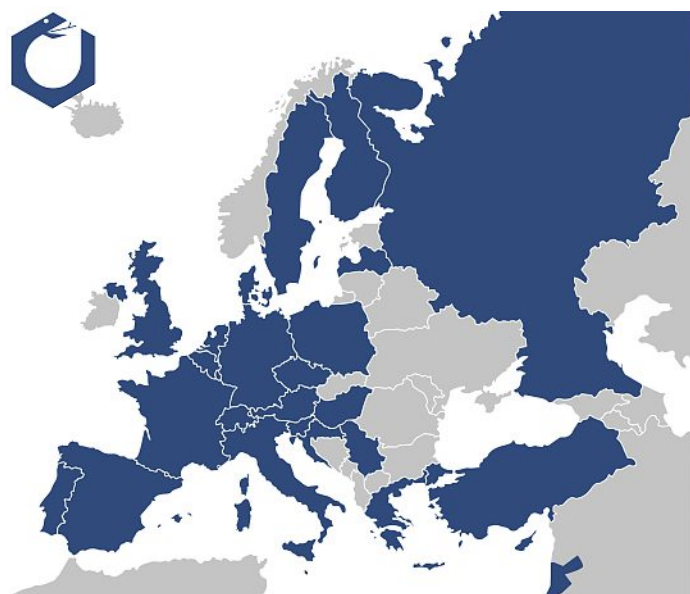


Fig. 1. National medicinal chemistry organizations of EFMC: Austria; Belgium; Croatia; Czech Republic; Denmark; Finland; France; Germany; Greece; Hungary; Israel; Italy; Latvia; Poland; Portugal; Russia; Serbia; Slovenia; Spain; Sweden; Switzerland; The Netherlands; Turkey; United Kingdom.

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MEDI). Besides exchanging scientific sessions at ISMC and ACS annual meetings, both societies co-organize the Medicinal Chemistry Frontiers meeting.^[6] The spirit of this event is to encourage scientific exchange between the American and European medicinal chemistry communities, as well as to highlight the science of the region where the congress takes place, alternatively in Europe and in the US. The next edition will be on June 10–13, 2019 in Krakow, Poland.

The *International Chemical Biology Society* (ICBS)^[7] is dedicated to promoting research and education at the interface of chemistry and biology. It is most active in Asia and North America, nicely complementing the EFMC network in Chemical Biology. Both societies exchange sessions at the ICBS and ISMC meeting. The most recent ICBS meeting took place in Vancouver, Canada in September 2018, and included an EFMC session entitled ‘The Chemical Biology – Medicinal Chemistry Continuum’. ICBS 2019 will take place in Hyderabad, India.

The *Asian Federation for Medicinal Chemistry* (AFMC) biennially organizes the Asian International Medicinal Chemistry



Fig. 2. EFMC's partners across the world.

Symposium (AIMECS). After Melbourne, Australia, the next event will take place in Istanbul, Turkey on Sept. 8–11, 2019, with an EFMC session on antibiotics.^[8]

The *Chinese Pharmaceutical Association* (CPA)^[9] is one of the earliest and largest academic organizations in China. EFMC and CPA meet yearly and exchange sessions at their annual meetings, building a bridge between Europe and the dynamic Chinese research community.

EFMC is a supporting organization of the *European Chemical Society* (EuChemS),^[10] and entertains a special relationship with EuChemS' Division of Life Sciences (LS-EuChemS). EFMC and EuChemS jointly organize information sessions for the European Parliament, to raise awareness of the role of medicinal chemistry in addressing major societal problems in Europe. The most recent such event was a STOA working breakfast on Parkinson's disease (Nov. 8, 2018).^[11]

LS-EuChemS organized a session at the last EFMC-ISMC meeting, and EFMC will chair a session at the ECBS/LC-EuChemS congress on chemical biology in Madrid (April 3–5, 2019).^[12]

EFMC Awards and Prizes

EFMC promotes quality in research and rewards scientific excellence. It presented its most recent awards at the EFMC-ISMC 2018. These consists of a diploma, 7'500 euro and an invitation to present a lecture at an EFMC-ISMC symposium.

Prof. Crista Müller (Germany) was the recipient of the *Nauta Pharmacochimistry Award for Medicinal Chemistry and Chemical Biology*,^[13] conferred to scientists recognized for both the outstanding quality and impact of their scientific contribution,



Fig. 3. Prof. Christa Müller receiving the Nauta Pharmacochimistry Award for Medicinal Chemistry and Chemical Biology. From left to right: Prof. H. Timmermann, founding father of EFMC; Dr A. W. Nauta, Nauta Foundation; Prof. C. Müller, Nauta award recipient; Dr. Y. Auberson, President of EFMC.

but also for their support of the Medicinal Chemistry and Chemical Biology community in Europe. Prof. Crista Müller is well-known for her work on adenosine and purinergic receptors, and for her support of the European Medicinal Chemistry community.

The *UCB-Ehrlich Award for Excellence in Medicinal Chemistry* went to Prof. Adam Nelson (UK), for his groundbreaking work to explore the chemical space, especially natural product-like, diversity-oriented and activity-directed synthesis.

The *Prous Institute – Overton and Meyer Award for New Technologies in Drug Discovery* went to Prof. Benjamin Cravatt (USA), for his contribution to the development of chemical proteomics, and in particular for the introduction and refinement of the activity-based protein profiling technology.

Finally, The *EFMC Prizes for Young Medicinal Chemists* recognize outstanding European medicinal chemists in industry and academia, early in their career. The 2018 EFMC Prizes went to Marton Csékei (Servier Research Institute of Medicinal Chemistry, Hungary), who talked about the challenge of restoring programmed cell death through MCL1 inhibition, and Alexander Titz (Helmholtz-Institut für Pharmazeutische Forschung Saarland, Saarbrücken, Germany) who talked about carbohydrate-binding proteins as targets for anti-infective and diagnostic agents.

Communication

Since 2018, EFMC has a dedicated team to facilitate communication and networking. It shares information through social media: Facebook,^[14] LinkedIn,^[15] as well as Twitter^[16] and Instagram,^[17] where you can follow @euromedchem for fresh news. It also interviews medicinal chemists across Europe. All interviews^[18] are available on EFMC's main website, which provides wide access to information relevant to the medicinal chemistry and chemical biology community.^[1] The photo competition organized in 2018 on the theme of ‘The reality of medicinal chemistry’ was a great success. It will be repeated soon.



As of 2018, the *Young Scientist network* (EFMC-YSN)^[19] provides further opportunities for making connections. Its aim is to inspire, connect and provide opportunities to medicinal chemists and chemical biologists up to the age of 35.

The Official Journal of the EFMC is *MedChemComm*,^[20] published by the Royal Society of Chemistry.

Educational Activities

The accredited *European School of Medicinal Chemistry* (ESMEC),^[21] is organized every year at the beginning of July by the Division of Medicinal Chemistry of the Italian Chemical Society, in the beautiful medieval city of Urbino, EFMC also sponsors several medicinal chemistry schools organized by its member societies:

- Swiss Course on Medicinal Chemistry, Leysin, Switzerland^[22]
- Summer School on Drug Design, Vienna, Austria^[23]
- Summer School on Pharmaceutical Analysis, Rimini, Italy^[24]
- Spanish Society of Medicinal Chemistry Summer School^[25]
- Medicinal Chemistry Residential School, Loughborough, United Kingdom^[26]

EFMC also organizes *Short Courses*^[27] near Leiden in the Netherlands. Its 15th edition, in 2019, will focus on 'Strategies in fragment-based drug design' (28.04 to 01.05 2019). All information on schools and courses is available on the EFMC web page.

The Players behind EFMC

EFMC's members are the national societies. The President is responsible for coordinating the activities of the Federation, and leads the EFMC. He works closely with the Executive Committee (EC), composed of seven members managing the business of the Federation. The EFMC Council consists of one delegate of each adhering organization and of the members of the EC. It decides by vote on the matters related to EFMC's affairs, elects EC members and the President. Observers from EFMC's partner societies also attend Council meetings.

The initiatives of EFMC on communication, EU policy, best practices, chemical biology and young scientist support are led by working groups. These are open to anyone interested in actively contributing to these initiatives. They are a great opportunity to network and be visible in the European medicinal chemistry and chemical biology community.

Finally, much of this would be impossible without the support of EFMC's Corporate members: AstraZeneca, Bayer, Boehringer Ingelheim, Janssen, Merck KGaA, Novartis, Pfizer, Hoffman-La Roche, Sanofi, Servier and UCB. By generously supporting EFMC, they demonstrate their commitment to science and to the research community, and actively contribute to advancing the science of Medicinal Chemistry.

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- [1] EFMC, <https://www.efmc.info/>
- [2] EFMC-ISMC, <https://www.efmc.info/ismc>
- [3] <https://www.efmc-ismc.org/>
- [4] EFMC-ASMC, <https://www.efmc-asmc.org/>
- [5] EFMC-YMSC, <https://www.efmc-ymcs.org/>
- [6] EFMC-ACSMEDI MCF, <https://www.medchemfrontiers.org/>
- [7] ICBS, <https://www.chemical-biology.org/>
- [8] AFMC, <http://www.aimecs2019.org/>
- [9] CPA, <http://www.cpa.org.cn:80/en/english.htm>
- [10] EuChemS, <https://www.euchems.eu/>
- [11] EuChemS, <https://www.euchems.eu/parkinsons-disease-causes-and-cures-workshop/>
- [12] DCBS/LS-EuChemS, <https://congresosalcala.fgua.es/6-ecbss-euchems/>
- [13] Nauta Foundation, <https://nautafoundation.com/page/>
- [14] Facebook, <https://www.facebook.com/EuropeanFederationforMedicinalChemistry/>
- [15] LinkedIn, <https://www.linkedin.com/company/efmc---european-federation-for-medicinal-chemistry/?originalSubdomain=ch>
- [16] Twitter, <https://twitter.com/euromedchem?lang=de>
- [17] Instagram, <https://www.instagram.com/euromedchem/?hl=de>
- [18] EFMC, <https://www.efmc.info/iamamedicinalchemist>
- [19] EFMC-YSN, <https://www.efmc.info/ysn>
- [20] MedChemComm, <http://www.rsc.org/journals-books-databases/about-journals/medchemcomm/>
- [21] ESMEC, <https://eventi.uniurb.it/esmec/>
- [22] SCMS, <https://scmc18.chemistrycongresses.ch/en/1-welcome>
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- [25] SEQT, <https://www.seqt.org/en/events/summer-schools/>
- [26] RSC, <http://www.rsc.org/events/detail/33379/medicinal-chemistry-residential-school-2019>
- [27] EFMC Short Course, https://www.efmc.info/infos.php?langue=english&cle_menus=1201086306