

Medicinal Chemistry and Chemical Biology Highlights

Division of Medicinal Chemistry and Chemical Biology

A Division of the Swiss Chemical Society

The Best Practices Series from the EFMC is a Wonderful Educational Resource for the Chemical Biology and Medicinal Chemistry Communities

Dennis Gillingham*

*Correspondence: Prof. Dr. D. Gillingham, E-mail: dennis.gillingham@unibas.ch
University of Basel, Department of Chemistry, St. Johannis-Ring 19, CH-4056 Basel

Abstract: The European Federation for Medicinal Chemistry and Chemical Biology (EFMC) curates an open-access resource for the medicinal chemistry community known as the 'Best Practices' series. The series content is created by volunteers across the EFMC community. Although the series is growing in popularity, it is still a relatively unknown gem for our community. This highlight article aims to bring the message to the Swiss Chem Bio and Med Chem community that such a resource exists and brings value to our members.

Keywords: Chemical biology · Crowd-sourcing · Education · Medicinal chemistry

1. Introduction

The European Federation for Medicinal Chemistry and Chemical Biology (EFMC) Best Practices series is emerging as a cardinal educational resource for our community (<https://www.efmc.info/best-practices>). The series is an open-access educational resource developed through a collaborative, volunteer-driven effort spanning academia and industry. It stands as a model for how expert communities can come together to crowdsource knowledge for the benefit of the entire field.

Medicinal chemistry, despite being a cornerstone of drug discovery, remains a discipline traditionally learned through an extended apprenticeship model, only truly beginning after years of academic study at the BSc, MSc, and often PhD level. Much of the field's practical know-how is passed down informally or hidden behind paywalls and institutional silos. Conference presentations also highlight that practices vary significantly among institutions with little opportunity to identify state-of-the-art approaches. The EFMC's initiative disrupts the classical learning model (Fig. 1) by offering structured, high-quality, and freely available content that demystifies essential concepts and workflows.

The Best Practices resources fill a major educational gap with materials that are guided, curated, and informed by real-world practice – all available at a mouse-click. For students, early-career researchers, and even seasoned professionals looking to refresh or expand their knowledge, the Best Practices series represents a democratization of medicinal chemistry education. The series is also meant to help lecturers create their own course materials.

2. The Content

Each topic in the series is split into digestible chunks of themed information, which is delivered in the form of a guided



Fig. 1. Medicinal chemistry is usually learned in a sort of apprenticeship model, where aspiring medicinal chemists need to obtain their first industry position before truly learning the profession.^[1]

webinar delivered by an expert in the topic. All slideshows from the webinar are downloadable after the user agrees that information will only be used for teaching or personal education. In addition to the teaching slides, there are specific case studies that zoom in on critical details that can only be gleaned by seeing the scientific process in action.

To date there are six topics that can be studied:

- Hit Generation
- Hit-to-Lead Optimization
- Validating Chemical Probes
- Phenotypic Drug Discovery
- Copyrights
- PROTAC development

3. The Future

Upon following a single one of these topics, the learner immediately recognizes the care and effort that goes into creating such a resource. If the momentum can be maintained, I believe that this can grow into a sort of Khan academy-like resource for a highly skilled deep-tech profession. This resource is still young and developing. The group is currently working on additional core topics such as covalent ligand development, drug metabolism, pharmacokinetics, and discovery toxicology. Still, in order to cover all essential medicinal chemistry and chemical biology areas, the initiative always needs volunteers. If there are people

Can you show us your Medicinal Chemistry and Chemical Biology Highlight?

Prof. Dr. Nathalie Grob, Dept. of Chemistry and Applied Biosciences, ETH Zurich, Vladimir-Prelog-Weg 1-5/10, CH-8093 Zurich, E-mail: nathalie.grob@pharma.ethz.ch

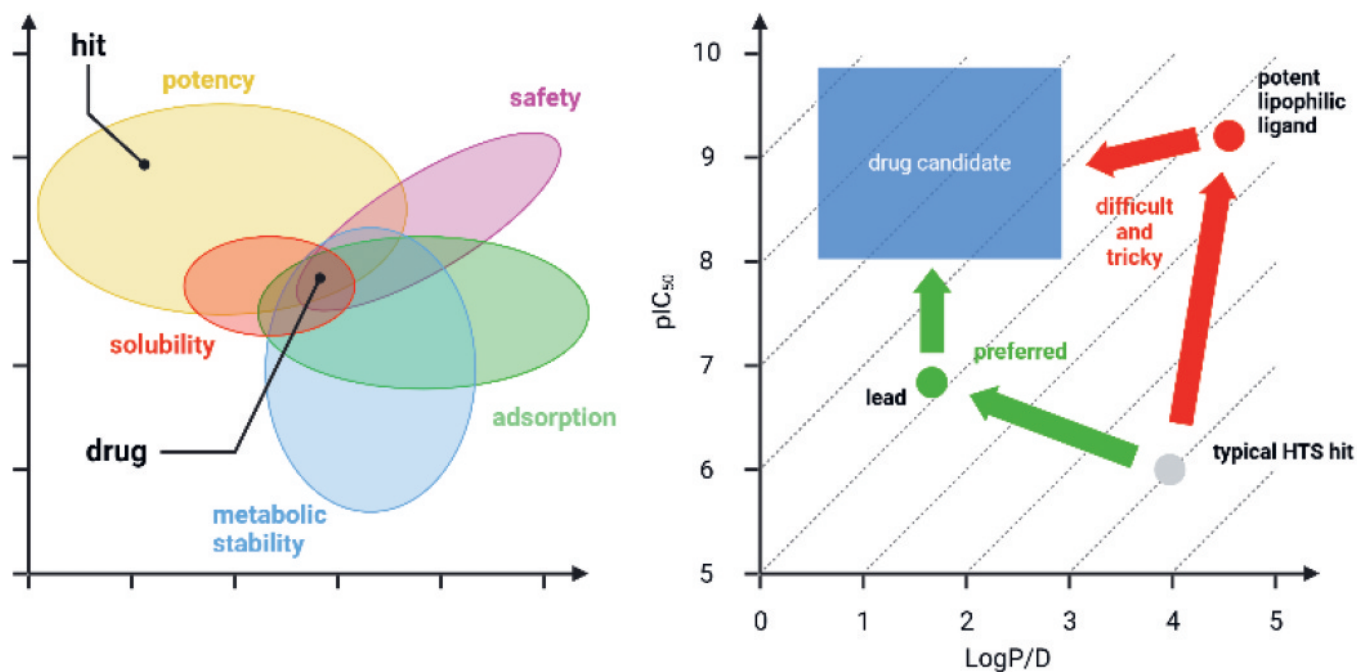


Fig. 2. A representative overview graphic for one of the topics: Hit-to-lead optimization.

in the Swiss community willing to dedicate some of their time and expertise to help expand this resource, please reach out at administration@efmc.info to discuss!

Acknowledgments

Dr. Jean Quancard is acknowledged for his input on this highlight, but also for his tireless efforts to make the EFMC best practices resource a reality!

- [1] Image generated using chatGPT 4 using the prompt: "Generate a cartoony image of a wrecking ball (swinging from a chain) smashing through a brick wall. The destruction reveals a clear path leading toward the Roche Towers 1 and 2, visible in the distance. The towers should have no corporate labeling but should be recognizable as the iconic towers famous in the Basel skyline. In the foreground is a female student with backpack looking through the broken wall towards the towers. The wrecking ball itself is labeled 'Best Practices'. Visible along the path but beyond the wall is an arch over the path, and the label at the top of the arch should read 'Medicinal Chemistry'."

Received: June 30, 2025