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EDITORIAL

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Opening Opportunities for New Drugs Against Neglected Diseases

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Building critical mass against parasitic disease

We decided to organize the second event on "Medicinal Chemistry in Parasitology" in Modena, Italy for two main reasons: first, to draw attention to the medical problems caused by the global diffusion of parasitic diseases, and second, to provide an international forum for scientists involved in parasitic disease research to share their achievements and progress in the field (see the Conference Report by Tait on page 409 in this issue). Parasitic diseases represent an urgent medical problem for the World Health Organization (WHO); malaria, among other parasitic diseases, remains one of the principal causes of morbidity and mortality in developing countries. We believe that any effort to increase communication among researchers working in parasitology is a significant step in the right direction. The possibility of exchanging data and information with scientists from well-known research institutes around the world makes easier to start new and productive collaborations. In particular, this event took place as a *WG1 & WG3 Expert Meeting COST B22* within the COST Action B22, focused on target identification and drug development for parasitic diseases (see the Preamble on COST, below). We are grateful to this European program for giving us the opportunity to create and reinforce

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networks in this area, and we are sure that the participants at the meeting enjoyed the top-level science presented as well as friendly scientific discussions.

Focus on drug discovery to find new chemical entities

The "Drugs Against Protozoan Parasites" meeting took place for the first time three years ago as a workshop, and last year's event was appropriately structured as a multidisciplinary approach to drug discovery and development for neglected diseases. The organization of the expert meeting by working group 1 (WG1, drug target identification) and WG3 (drug evaluation) allowed the presentation of a logical approach to drug development. In this case, medicinal chemistry was selected as the connecting area between the two WGs to generate a continuous landscape within the discovery of new compounds against parasites. Top-ranking scientists from functional genomics, structural biology, and medicinal chemistry had the opportunity to meet and discuss the most important issues relating to malaria, African trypanosomiasis, and leishmaniasis. Issues included new drug target identification, the lack of 'shuttle funding' from lead discovery identification to clinical evaluation, funding opportunities from pharmaceutical companies, and government involvement. The crucial issues of intellectual property and effective cost of final treatment were also discussed.

Comparative studies suggest structural features of unknown proteins

This special issue of *ChemMedChem* includes a collection of articles that are representative of the whole program and that are particularly focused on the medicinal chemistry aspects of the meeting. The beginning of the drug-discovery process spans the chemical space of potential antiparasitic drugs and requires potent computational techniques to effectively isolate the molecules with the best profiles. In particular, the application of computational chemistry in antiparasitic drug discovery is discussed in the Communication on page 413 by Henrich et al. This article presents a new computational method for assessing the conformational spaces of target proteins (PIPSA) and a description of their properties. Another computational approach toward database selection in drug discovery is reported in the Full Paper by Brenk et al.

A contribution to the bioinformatic analysis of existing proteins from known organisms is given in the Minireview by Ferrari et al. (page 392). It introduces the concept of differential protein flexibility among highly conserved folate-dependent enzymes. This allows the identification of previously unknown drug target sites.

Early phase discovery is presented in the Minireview by Brown and co-workers (page 402) about *N*-myristoyltransferase (NMT) as a potential target for the treatment of parasitic disease. Their article presents the characterization of recombinant NMT from target pathogens, the development of assays suitable for high-throughput screening, and the screening for inhibitors that target fungal NMTs.

In their Communication on page 421, Rossi et al. propose *N*-hydroxyamidine derivatives as new molecules that inhibit the classical target dihydrofolate reductase of *Plasmodium falciparum*. These molecules, with previously unexplored activity, were retrieved through a virtual screening approach from the commercially available ACD database. They are effective against resistant *P. falciparum* strains.

Classical antimalarial compounds proposed in single and new combinations are suggested by Dive and Biot in their Minireview (page 383) as well as by Romeo and coworkers in their Communication on page 418. In the former the development of ferroquine was presented. In the latter, the atovaquone (ATQ)–statine system is shown to be very effective against the growth of *P. falciparum*, and these compounds are therefore good candidates for further studies on ATQ-resistant strains.

Drug resistance is the enemy

As final remarks coming from the meeting, the discovery of new drugs and genuine new chemical entities is a crucial starting point toward bridging the gaps present in parasitic disease healthcare. We are aware that the scientific community involved in parasitic disease research needs a critical mass, and we hope that this special issue of *ChemMedChem* helps to broaden the understanding and promotion of this area, where humanitarian issues should outweigh economic concerns in driving drug research and development.

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The COST Program

COST is the acronym for European **co**operation in the field of **s**cientific and **t**echnical research; it constitutes the oldest and widest European intergovernmental network for cooperation in research, and was established by the Ministerial Conference in November 1971. COST is presently used by the scientific communities of 35 European countries to cooperate in common research projects supported by national funds.

The scientific networks that COST supports, the COST Actions, are subsidized by around €100 000 annually, and this support accounts for less than 1% of the total value of the projects, on average, representing the financial worth of the European added value which COST achieves.

COST invites proposals for network funding through a continuous Open Call (with normally two deadlines for collection per year). To assess proposals, a two-stage process is followed: submitted Preliminary Proposals are ranked, and the best are invited to submit a Full Proposal. Following expert peer review and ranking, the top proposals are selected for approval and funding.

The Domain of Biomedicine and Molecular Biosciences (BMBS) (one of the nine scientific Domains of COST), covers all areas of preclinical and clinical medical research developed to materialize the "bench-to-bedside" concept, molecular biosciences encompassing all areas of genomics, proteomics and metabolomics, specific medicine-related technologies, as well as micro- and nano-medicine. BMBS Actions network some 5000 researchers in the above areas.

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COST Action B22 on "Drug Development for Parasitic Diseases" is one of the 19 BMBS running Actions. Since its start in 2003, COST Action B22 has proven to be an excellent example of the spectrum of achievable results under COST financing and networking: high-profile congresses and small, focused meetings with European and international participation, promotion of young scientists through exchange visits, synergy with international bodies (IOCD), development of a dedicated newsletter and web site, industrial involvement, and dissemination activities such as joint article publications, proceedings, and booklets.

The publication of these proceedings, which includes the presentations of participants in one of the Action's specialized meetings ("Medicinal Chemistry in Parasitology" February 19–20, 2007, Modena, Italy) is a follow-up activity of successful networking which COST is proud to support.

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