

Preface

The present book aggregates the broad variety of interdisciplinary results, which have been achieved within the priority program headed as “Information- and Communication Theory in Molecular Biology (InKoMBio, SPP 1395),” that has been funded by the German Research Foundation DFG, starting from 2010 and beyond the year 2016. After the DFG gave their notable commitment for the priority project InKoMBio in April 2009, the granted applicants were enabled to run their multidisciplinary research from the beginning of the year 2010. A fundamental and mandatory criterion for all the proposed projects to be heard by the DFG consultants (in one of the three turn of application events) was that the later project owners consist of at least one experimental biologist and one expert from the field of information-/communication theory or computer science.

The requirement of such a prerequisite was chosen with wise foresight to enforce strictly interdisciplinary research topics and with the objective to intensively stimulate the knowledge transfer from the engineering sciences to the field of life sciences.

This book is structured as a type of reference guide for projects that were funded in the priority program InKoMBio. The book itself fulfills the qualification of final reports, for which the project applicants committed themselves with accepting aid money of the German Research Foundation. Therefore, the book volume is a collection of reports and structured as follows:

After a very brief introduction to essential demands that lead to the establishment of the priority program InKoMBio, we give mainly some basic facts about the core initiators, the timeline of the program activity, and the given meetings or workshops, as well as an overview of all funded projects and a comprehensible illustration of their topics and funding periods.

The main part of the book is divided into two parts: the first part gives a description of the projects and the second part presents the results generated during the 6 years duration. It is organized as follows:

In part I, we give a very *compact shelving of the projects*, with the objective to outline all the ventures in a condensed manner, reduced to their essential goals and

obtained results, as abstracts, supported by the most important publications that have been released in the funding period.

The part II is reserved for *detailed descriptions* of all specific projects, which includes some administrative data, e.g., the applicants, their scientific staff and affiliation, national and international cooperations, and a summary of all publications and educational qualifications that has been supported and facilitated by project subtopics. The core element of the descriptive parts give background information about the investigated topic and the starting point of the research, as well as the actual work performed in the project. Each detailed report is finalized by concluding remarks about the essential results of the interdisciplinary work and possible future perspectives.

Unfortunately, due to the diversity of project terms and a minor number of stalled or postponed projects, the presented volume can be seen as an almost comprehensive compendium for all the final reports associated with the InKoMBio program, excluding the projects entitled “Identification of functionally important protein residues by means of entropy based methods, and experimental validation by mutational analysis,” “The bacterial chemotaxis pathway—an optimal designed information processing network?” and “Entschlüsselung des transkriptionellen Sanduhrmusters der pflanzlichen Embryogenese.”

In order to close this short preface, please let me spend a few personal words on the essence and feelings that will remain after the priority program InKoMBio is almost expired, yet. Within the role as program coordinator, I was given a particular interest to encourage the discussion about the interdisciplinary aspects of InKoMBio program and the beliefs, ideas, and maybe some disillusionments of the participating parties.

To state a conflating tenor of all the versatile perspectives that has been brought to my attention within the past 6 years is the following:

This particular priority program showed that for interdisciplinary research, all parties have to overcome the barrier of different terminology for meaning the same things via different words, different methodologies, and finally different traditions. However, after some years, the success pays off the effort and gives birth to findings and insights, which are impossible without interdisciplinary.

Finally, I would like to say thank you to some of my research assistant, i.e., Katharina Schilling (née Mir), David Kracht, Steffen Schober, and Henning Zörlein for their help and support to create this compendium: “This work could not be accomplished without your assistance.”

Ulm, Germany
January 2017

Martin Bossert

Information- and Communication Theory in Molecular
Biology

Bossert, M. (Ed.)

2018, XVI, 374 p. 118 illus., 95 illus. in color., Hardcover

ISBN: 978-3-319-54728-2