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Protein Synthesis and Ribosome Structure

Translating the Genome

Edited by

Knud H. Nierhaus and

Daniel N. Wilson



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Cover

The cover shows the small and large subunit of the ribosome surrounded by various accessory factors involved in protein biosynthesis. Cover layout by Grafik-Design Schulz, Fußgönheim, based on an illustration by K. H. Nierhaus and D. N. Wilson.

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Preface

A large part of this book is the offspring of a series of more than 30 lectures covering all the aspects of translation that excite us. The lectures have been offered at two Berlin universities every year for the past decades, and every time the students have enquired where they can read about the topics of lectures, since none of the classical textbooks are treating the subjects in depth. When we received the offer from Wiley-VCH to write a book about the translational machinery, we agreed immediately, as this gave us a chance to provide future students with an appropriate reference. Furthermore, we felt that the timing was perfect because of the recent advances in terms of ribosome structure contributed by the cryo-electron microscopy and crystallography groups, which have sharpened our view of ribosome function in a revolutionary way.

It was immediately clear to us that we could not fulfill this enormous task without the help of specialists in fields where we have limited expertise. This is particularly true for the topics concerning the history of ribosome research, synthetases, mRNA decay, recoding events and protein folding, as well as the highly complex areas of eukaryotic translation, namely, the assembly, initiation and regulation of eukaryotic ribosomes. We are therefore pleased, grateful and honoured that leading scientists in these fields accepted our invitation and provided such wonderful contributions.

We would also like to thank all the members of the Nierhaus group, both past and present, who have participated directly as authors or indirectly with stimulating and enthusiastic literature discussions every Friday afternoon. Last but not least, we appreciate the understanding, leniency and wonderful support of Dr. Frank Weinreich at Wiley-VCH, who has allowed this book to be as colorful as it is.

Berlin, July 2004

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Daniel N. Wilson

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