VOLUME XI

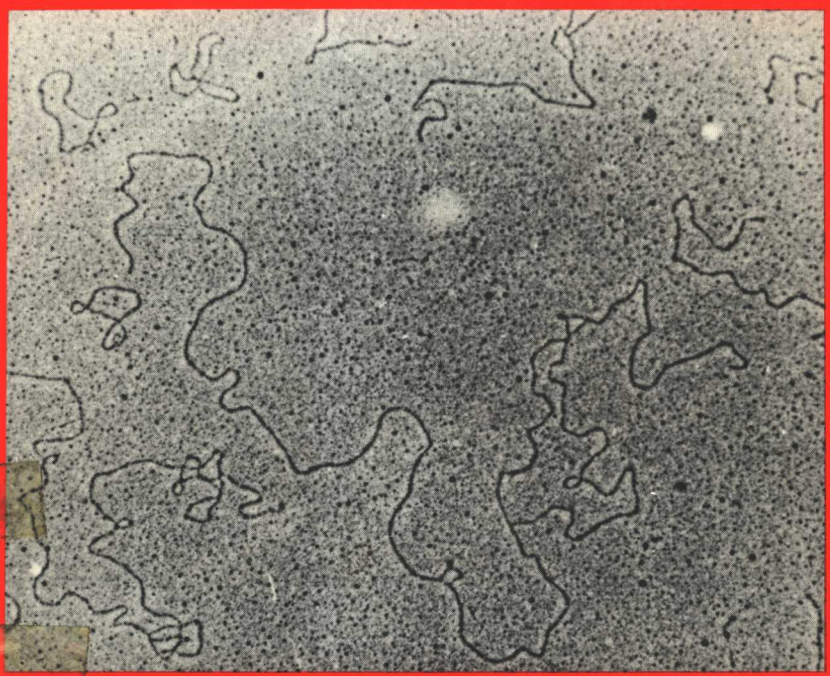
THE CELL NUCLEUS

rDNA PART B

Edited by

HARRIS BUSCH

LAWRENCE ROTHBLUM



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Preface

The progress made on the description, sequences, and analysis of controls of the gene coding for ribosomal RNA and ribosomal proteins since the publication of "The Nucleolus" in 1970 is extensive. Volumes X through XII of "The Cell Nucleus" review the remarkable advances as of 1982 and point to the areas for research in the future.

The ribosomal RNA genes are among those most completely studied. They were the first eukaryotic genes purified and made available in sufficient quantity for detailed biochemical analysis and as molecular clones. Because of the large copy number per cell, these genes can be studied under both normal and amplified conditions.

Volume X deals first with the ribosomal RNA genes of *Escherichia coli* (Morgan), algae (Berger and Schweiger), fungi (Bollon), *Dictyostelium* and *Physarum* (Weiner and Emery), and other proteozoans (Blackburn). Special features of the rRNA product of *Tetrahymena* are discussed by Cech *et al.* The rDNA of higher organisms is reviewed for insects (Beckingham), sea urchins (Wilson and Stafford), and humans (Wilson). Recent developments in structural analysis of 18 S rRNA and rDNA, the evolutionary patterns of 28 S rDNA, and the mitochondrial rDNA are presented in the chapters by Maden, Gerbi *et al.*, and Grant and Lambowitz.

Volumes XI–XII of this treatise deal with the 5 S DNA, nucleolar, and other rDNA-containing chromatin as visualized by light and electron microscopy and with the organization of rDNA in chromatin. In addition, the important subjects of transcription and transcriptional control of the rDNA genes, the amplification of rDNA, and the controls of ribosomal protein genes will be presented.

The pace of progress in this area continues to be very rapid, and increasingly important information on the basic mechanisms that regu-

late rRNA synthesis, coordinate rRNA and r-protein synthesis, control the number of ribosomal RNA genes per genome, and conserve the nucleotide sequence of the multiple copies of rDNA per genome will undoubtedly be forthcoming soon.

Harris Busch
Lawrence Rothblum

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Chromatin

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