



## Long-range control of gene expression [

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Monografía

This volume covers the current progress in understanding the mechanisms for genomic control of gene expression, which has grown considerably in the last few years as insight into genome organization and chromatin regulation has advanced.\* Discusses the evolution of cis-regulatory sequences in drosophila\* Includes information on genomic imprinting and imprinting defects in humans\*Includes a chapter on epigenetic gene regulation in cancer

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**Contenido:** Front Cover; Long-Range Control of Gene Expression; Copyright Page; Contents; Contributors; Preface; Chapter 1: Chromatin Structure and the Regulation of Gene Expression: The Lessons of PEV in Drosophila; I. Introduction: Position Effect in Drosophila; II. Historical Background of the PEV Phenotype; A. The PEV phenotype and heterochromatin; B. Heterochromatin and euchromatin; III. Types of PEV; A. Chromosomal rearrangement PEV; B. Transposon insertion PEV; C. Pairing-dependent dominant PEV; Trans-inactivation; IV. Genome Organization and PEV; A. Chromatin structure; B. Nuclear organization V. Concluding RemarksAcknowledgments; References; Chapter 2: Polycomb Group Proteins and Long-Range Gene Regulation; I. Introduction; II. Genetic and Biochemical Characterization of PcG Proteins; III. PcG Mechanisms of Action; IV. PcG Proteins and Long-Range Gene Silencing; V. PcG and Very Long-Range Gene Silencing: ""Teleregulation"" of Gene Expression; VI. Conclusions and Prospects; References; Chapter 3: Evolution of Cis-Regulatory Sequences in Drosophila; I. Introduction; A. Evolution of promoter sequences; B. Modularity; C. Experimental

approaches to promoter evolution II. Developmental Homeostasis, Sequence Turnover, and Stabilizing SelectionA. The P2 promoter of hunchback; B. The stripe 2 enhancer of even-skipped; C. The dorsocentral enhancer of scute; D. Conclusions; III. Enhancer Evolution and Loss or Gain of Traits; A. Evolution of yellow and variation in pigment patterns; B. Evolution of scute and variation in bristle patterns; C. Conclusions; IV. Cis-Trans Coevolution; A. The interaction between Bicoid and the hunchback P2 promoter; B. Conclusions; V. Evolution of New Regulatory Modules; VI. Conclusions; References Chapter 4: beta-Globin Regulation and Long-Range InteractionsI. Introduction; II. The beta-Globin Locus; A. The beta-globin LCR; B. The chromatin structure of the beta-globin locus; C. Developmental regulation of beta-globin expression; III. Models of Long-Range Control of Gene Expression by Enhancers; A. The looping model; B. The tracking model; C. The linking model; D. Relocation models; IV. Long-Range Activation by the beta-Globin LCR; A. The LCR is in close proximity to the promoter; B. How are LCR-promoter contacts established? C. How does the beta-globin LCR increase transcription efficiency?V. Enhancement of Transcription by the beta-Globin LCR: Rate-Limiting Steps; A. Promoter remodeling; B. Transcription initiation; C. Promoter escape and elongation; VI. The Concept of an Active Chromatin Hub; VII. Future Directions; Acknowledgments; References; Chapter 5: Long-Range Regulation of alpha-Globin Gene Expression; I. Introduction; II. The Normal Structure and Evolution of the alpha-Globin Cluster; III. Functional Analysis of the alpha-Globin Regulatory Domain IV. Structure of the Upstream Regulatory Elements and the Promoters

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