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Nota di contenuto	Transcription Factors in the Nervous System; Contents; Preface; List of Contributors; Color Plates; Part I Transcription Factors in Neural Development; 1 Roles of Hes bHLH Factors in Neural Development; 1.1 Introduction; 1.2 Structure and Transcriptional Activities of Hes Factors; 1.3 Regulation of Hes Gene Expression; 1.4 Expression of Hes Genes in the Developing Nervous System; 1.5 Maintenance of Neural Stem Cells by Hes Genes; 1.6 Promotion of Gliogenesis by Hes Genes; 1.7 Maintenance of the Isthmic Organizer by Hes Genes; 1.8 Perspective; Acknowledgments; Abbreviations 2 The Role of Pax6 in the Nervous System during Development and in Adulthood: Master Control Regulator or Modular Function?Abstract; 2.1 Introduction; 2.2 Molecular Features of Pax6; 2.2.1 The Paired Domain; 2.2.2 The Paired-Type Homeodomain; 2.2.3 Different Pax6 Isoforms; 2.2.4 Protein-Protein Interactions; 2.2.5 Post-Translational Modifications of Pax6; 2.3 Function of Pax6 in Development; 2.3.1 Function of Pax6 in the Developing Eye; 2.3.2 Function of Pax6 in the

Developing Brain; 2.3.2.1 Telencephalon; 2.3.2.2 Diencephalon; 2.3.2.3 Cerebellum; 2.3.2.4 Spinal Cord
 2.4 Function of Pax6 in the Adult Brain
 2.5 Mechanisms of Pax6 Function; 2.6 Conclusions and Outlook; Abbreviations; 3 Phox2a and Phox2b: Essential Transcription Factors for Neuron Specification and Differentiation; Abstract; 3.1 Introduction; 3.2 Molecular Characteristics of Phox2 Genes and Proteins; 3.2.1 Sequence and Gene Structure Conservation in the Animal Kingdom; 3.2.2 Transcriptional Activation by Phox2 Proteins; 3.3 Physiological Relevance of Phox2 Transcription Factors; 3.3.1 Expression Pattern; 3.3.2 Effects of Phox2 Gene Mutations
 3.3.2.1 Autonomic Neural Crest Derivatives and Visceral Sensory Ganglia
 3.3.2.2 Central Noradrenergic Neurons; 3.3.2.3 Autonomic Centers in the Hindbrain; 3.3.3 Human Mutations; 3.4 Molecular Mechanism of Action in Different Lineages; 3.4.1 Sympathetic Neurons; 3.4.2 Parasympathetic Neurons; 3.4.3 Enteric Neurons; 3.4.4 Visceral Sensory Neurons of the Geniculate, Petrosal and Nodose Ganglia; 3.4.5 Central Noradrenergic Neurons; 3.4.6 Autonomic Centers in the Hindbrain; 3.4.6.1 Afferent Visceral Centers; 3.4.6.2 Efferent Visceral Centers; 3.4.7 Oculomotor (nIII) and Trochlear (nIV) Centers
 3.5 Conclusions and Outlook
 3.5.1 Distinct or Identical Functions for Phox2a and Phox2b?; 3.5.2 Master Control Genes for Noradrenergic Differentiation; 3.5.3 Master Control Genes for Autonomic Reflex Circuit Generation; Acknowledgments; Abbreviations; 4 Functions of LIM-Homeodomain Proteins in the Development of the Nervous System; Abstract; 4.1 Introduction; 4.2 Common Structural Features and Classification of LIM-HD Proteins; 4.3 LIM-HD Proteins and the Development of Invertebrate Nervous Systems; 4.3.1 C. elegans; 4.3.2 Drosophila
 4.4 Functions of LIM-HD Proteins in the Development of Vertebrate Nervous Systems

Sommario/riassunto

This first book to cover neural development, neuronal survival and function on the genetic level outlines promising approaches for novel therapeutic strategies in fighting neurodegenerative disorders, such as Alzheimer's disease. Focusing on transcription factors, the text is clearly divided into three sections devoted to transcriptional control of neural development, brain function and transcriptional dysregulation induced neurological diseases. With a chapter written by Nobel laureate Eric Kandel, this is essential reading for neurobiologists, geneticists, biochemists, cell biologists, ne
