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Rapid Stress-Triggered Changes in Catecholamines; 2.2 Catecholamines and Stress-Related Disorders; 2.2.1 Cardiovascular Disease; 2.2.2 Post-Traumatic Stress Disorder; 2.2.3 Depression; 2.2.4 Immune Disorders; 2.2.5 Pain; 2.3 Stress-Triggered Regulation of Catecholamine Biosynthetic Enzymes in Different Locations; 2.3.1 Pathway of Catecholamine Biosynthesis; 2.3.2 Adrenomedullary Hormonal System; 2.3.3 Sympathetic Nervous System 2.3.4 Noradrenergic Systems in the Brain Summary; References; 3: Stress and the Cholinergic System; 3.1 Acetylcholine and Stress; 3.1.1 Cholinergic Innervation of the Brain; 3.1.2 Brain Cholinergic Receptors; 3.1.3 AChR Distribution in the CNS; 3.1.4 The Septohippocampal Pathway and Stress; 3.1.5 Stress-Induced Molecular Adaptations in the Cholinergic System; 3.1.5.1 The Nicotinic Cholinergic System and Stress; 3.2 Contribution of Genetically Engineered Mouse Models to the Understanding of the Role of Cholinergic Receptors in Stress; Summary; References; Part II: Cells and Circuits 4: Effects of Stress on the Function of Hippocampal Cells 4.1 Introduction; 4.2 Non-Genomic Effects of Corticosterone; 4.3 Genomic Effects of Corticosterone; 4.3.1 Ion Currents; 4.3.2 Amino Acid Responses; 4.3.3 Aminergic Responses; 4.3.4 Implications for Hippocampal Function; Summary; References; 5: Stress and Adult Neurogenesis in the Mammalian Central Nervous System; 5.1 Introduction; 5.2 Adult Neurogenesis: a Brief Primer; 5.3 Measuring Neurogenesis: How to Find New Neurons; 5.3.1 Using DNA Replication to Detect New Cells; 5.3.2 Endogenous Markers of Cell Cycle 5.3.3 Retroviral Labeling of New Cells 5.3.4 Determining Cell Fate; 5.4 Stress-Induced Alteration in Cell Proliferation; 5.4.1 Acute Stress; 5.4.2 Chronic Stress; 5.4.3 Cell Cycle Arrest Versus Progenitor Death; 5.5 Stress-Induced Alteration of New Cell Survival; 5.6 Stress-Induced Alteration of Cell Fate Choice; 5.7 Mechanism of Stress-Induced Changes in Adult Neurogenesis; 5.7.1 Direct Effects of Glucocorticoids on Adult Neurogenesis; 5.7.2 Indirect Effects of Glucocorticoids on Adult Neurogenesis; 5.7.2.1 Excitatory Amino Acids; 5.7.2.2 Serotonin; 5.7.2.3 Growth Factors 5.7.3 Intracellular Mechanisms of Glucocorticoids Effects

Sommario/riassunto

This title comprehensively covers the molecular basis of stress responses of the nervous system, providing a unique and fundamental insight into the molecular, physiological and behavioral basis of the stress response of a whole organism. Edited by leading experts in the field and summarizing the latest research advances in this area, this ready reference is an invaluable resource for clinicians dealing with stress-related disorders, biomedical researchers working in the field as well as for pharmacology and biotech companies.
