

<<神经胶质细胞>>

图书基本信息

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内容概要

《神经科学百科全书》原书篇幅巨大，为所有神经科学百科全书之首。

由来自世界各地的2400多位专家撰稿人合力打造，覆盖了神经科学全部主要领域。

每个词条在收入书中之前均经过顾问委员会的同行评议，词条中均含有词汇表、引言、参考文献和丰富的交叉参考内容。

主编为著名神经科学家、美国神经科学学会前主席Larry R. Squire。

内容平易，本科生即可读懂。

深度和广度独一无二，足可满足专家学者的需要。

导读版精选原书中的部分主题，按内容重新编排，更适合国内读者购买和阅读。

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书籍目录

神经胶质细胞：起源、多样性与功能 Activity-Dependent Metabolism in Glia and Neurons Astrocyte: Calcium Signaling Astrocyte: Identification Methods Astrocyte: Neurotransmitter and Hormone Receptors Astrocyte: Response to Injury Axon Guidance by Glia Axonal Regeneration: Role of the Extracellular Matrix and the Glial Scar Bergmann Glial Cells Calcium Homeostasis in Glia Calcium Waves in Glia Cytokine Receptors in Glia Enteric Nervous System: Glial Cells and Interstitial Cells of Cajal Ependymal Cells Gap Junctions and Hemichannels in Glia Glia and Stroke Glia Control of Blood Flow Glial Cells: Astrocytes and Oligodendrocytes during Normal Brain Aging. Glial Cells: Invertebrate Glial Cells: Microglia during Normal Brain Aging Glial Cells: T Cell Interactions Glial Energy Metabolism: A NMR Spectroscopy Perspective Glial Energy Metabolism: Overview Glial Glutamate and GABA Metabolism Glial Glutamate Transporters Glial Glutamate Transporters: Electrophysiology Glial Glycogen Metabolism Glial Growth Factors Glial Influence on Synaptic Transmission Glial Ion Homeostasis: A Fluorescence Microscopy Approach Glial Plasticity and Neuroendocrine Regulation Glial Responses to Injury Glial Responses to Virus Infection Glial Steroid Metabolism Glioma Intermediate Filaments Ionic Channels in Glia Macroglial Lineages Microglia Identification Methods Microglia Properties Microglial Response to Injury Myelin: Molecular Architecture of CNS and PNS Myelin Sheath Neuron-Glia pH Regulation Neuron-Glia Coupling in Glutathione Metabolism Neuropeptides and Receptors in Glia Neurotransmitter and Hormone Receptors on Oligodendrocytes and Schwann Cells Neurotransmitter Release from Astrocytes Oligodendrocyte and Schwann Cell Identification Methods Oligodendrocyte Morphology Oligodendrocyte Specification Potassium Homeostasis in Glia Radial Glial Cells: Brain Functions Retinal Glia Schwann Cell Development Schwann Cell Morphology Schwann Cells and Axon Relationship Schwann Cells and Plasticity of the Neuromuscular Junction Transplantation of Myelin Forming Cells Transporter Proteins in Neurons and Glia 能量与离子的细胞内调控 Activity-Dependent Regulation of Glucose Transporters Brain Glucose Metabolism: Age, Alzheimer's Disease, and ApoE Allele Effects Brain Injury: Magnetic Resonance Studies of Metabolic Aspects Brain Na,K-ATPase Cell-Cell Communication Through the Extracellular Space Intracellular Calcium and Neuronal Death Mitochondrial Dysfunction in Nervous System Injury Monocarboxylate Transporters Regulation of Cell Volume in Neural Cells 原书词条中英对照表

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章节摘录

插图： Approximately 10 years ago, transgenic mice were generated in which the green fluorescent proteins S65T-GFP or later EGFP were used to label astrocytes. The unique advantage of fluorescent proteins is buried in their structure, in which the fluorophore is spontaneously generated from three residues of the polypeptide chain (by cyclization and oxidation). No exogenous cofactors are needed as labeling dyes. GFAP-GFP transgenic mice revolutionized the identification of astrocytes in brain tissue. For the first time, it was possible to unequivocally identify astrocytes in all brain regions without prior immunohistochemical labeling, which normally requires tissue fixation. Live astrocytes could be analyzed in acutely isolated brain slices or even in vivo. Via fluorescence-activated cell sorting, fluorescent astrocytes could be isolated and subsequently analyzed in cell culture. Using this approach, the neurogenic potential of embryonic radial glia cells was revealed. In addition, acutely isolated tissue slices from brain regions such as the brain stem or hippocampus served for the analysis of the dynamic interaction of astroglial processes with neighboring active synaptic terminals. Time-lapse recordings demonstrated highly motile lamellipodia and filopodia emanating from major process branches. This work strengthened the view of astrocytes as regulators of neuronal transmission. However, astrocytes do not just modulate neuronal function. In vivo, the pivotal role of astroglial endfeet associated with neighboring capillaries could be demonstrated. Transgenic labeling with the human GFAP promoter has been very helpful in identifying cells with astroglial properties in other species such as the zebra fish. Another important approach to label astrocytes uses viral infections. Baculo-, lenti-, adeno-, and adeno-associated viruses carrying GFAP promoter elements have been used to deliver genes of interest into astrocytes. Depending on brain region and tropism of the viral substrain, even preferential infection of astrocytes can be achieved.

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编辑推荐

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