

<<神经内分泌学与神经免疫学>>

图书基本信息

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### 前言

什么是百科全书？

这一名词来自于两个希腊单词：enkuklios（意思是循环的）和paideia（意思是教育）。

在16世纪早期，拉丁手稿的抄写者们将这两个单词合而为一，其在英语中演化为一个单词，意思是具有广泛指导意义的工具书（The American Heritage Dictionary, 2000, Boston: Houghton Mifflin, p.589）。

从其来源可见，其希腊文原词中蕴含着以探索、综合的方式努力获取知识的含义。

无论是拉丁文还是英文，该单词泛指涵盖广泛领域知识的工具书。

希腊文中强调的以创造性手段获取知识，在神经科学领域尤其适用。

神经科学本身就是一个非常新的名词。

Francis Schmitt在本书第一版的前言中指出，本书的编写过程就是将不同领域的科学家们聚集在一起，冲击大脑研究中最顽固的难题。

他推动建立了神经科学研究项目（Neuroscience Research.

Program, 简称NRP）。

早期的NIRP成员包括一些学术巨匠，如因关于光合作用的研究获得诺贝尔奖的Melvin Calvin、诺贝尔奖获得者物理化学家Manfred Eigen、生物化学家Alberc Lehninger，和当时正在努力破解基因编码的年轻分子生物学家Marshall Nirenberg。

Schmitt建立NRP的时候，神经科学作为一门综合学科还几乎不存在。

微电极的发明使神经生理学家们得以记录单细胞的电活动，但是几乎不可能甄别其生物化学特性。

一个重要的推进来自20世纪60年代中期涌现的Falck-Hillarp荧光显微镜技术，它能够选择性地观察儿茶酚胺和5.羟色胺能神经元。

这些胺类通路的研究又很快使得检测选择性损伤后效应的行为学家们和生化学家们开始合作研究，使得后者的工作不再局限于在整个脑组织匀浆的水平研究神经递质。

20世纪70年代关于神经递质受体的生化研究、它们位点的放射自显影研究，以及神经多肽的免疫组织化学研究，更是进一步促进了神经生理学家、神经解剖学家、神经化学家和神经药理学家们的对话。

而过去两个世纪以来，分子生物学技术手段的应用更加丰富了这一交流。

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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。书中覆盖了神经科学全部主要领域，由来自世界各地的2400多位专家撰稿人合力打造。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。其内容平易而深度和广度独一无二。主编Larry R. Squire为美国神经科学学会前主席，畅销教科书《基础神经科学》(Fundamental Neuroscience)的策划人与主编。

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## 章节摘录

插图：Stress activates the sympathoadrenomedullary system as well as the hypothalamic-pituitary-adrenal axis. As a consequence of the latter, large amounts of corticosteroid hormones are released from the adrenal glands. In addition to the stress-related release, there is also a circadian rhythmicity in the circulating hormone levels. Corticosteroid hormones - cortisol in humans and corticosterone in most rodents - not only reach peripheral organs but also pass the blood-brain barrier, thus entering the brain. Within the brain, corticosteroid hormones bind to discretely localized intracellular receptors. Two receptors have been recognized: the high-affinity mineralocorticoid receptor (MR) and the lower affinity glucocorticoid receptor (GR). In view of the receptor affinities and circulating hormone levels, it is generally thought that in brain under rest, mainly MRs are activated. These are primarily localized in limbic regions, such as the hippocampus, lateral septum, and central amygdala, and in motor nuclei in the brain stem. During stress and at the circadian peak, GRs also become substantially activated, next to MRs. The GRs are much more ubiquitously distributed in brain. Activated corticosteroid receptors translocate to the nucleus where they modulate the transcription of responsive genes. This means that corticosterone, through its gene-mediated actions, exerts a slow but persistent control over the cellular protein content, including molecules that are involved in cellular excitability and synaptic transmission. In addition to these slow actions, corticosteroid hormones can also affect neurotransmission through rapid, nongenomic pathways, but these are not considered here. During the past decade, the effects of selective MR and GR activation on electrical properties of neurons have been mainly examined in the CA1 region of the hippocampus, where both receptors are co-localized. It was observed that MR and GR often induce opposite effects on a given parameter, resulting in biphasic effects of adrenal steroid hormones on neuronal properties.

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