

<<神经科学百科全书4>>

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NRP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Albert 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。

神经科学的爆炸性发展也体现在神经科学学会（Society.

for Neuroscience, SFN）的历史上。

SFN于1970年（译者注：SFN网站中所写的时间为1969年）由几百名研究人员在华盛顿特区

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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。

书中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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## 章节摘录

插图：For many years, the understanding of neurotransmission has been dominated by the concept that one neuron releases only a single transmitter, known as 'Dale's Principle.' This idea arose from a widely adopted misinterpretation of Dale's suggestion in 1935 that the same neurotransmitter was stored in and released from all terminals of a single neuron, a suggestion which did not specifically preclude the possibility that more than one transmitter may be associated with the same neuron. Several lines of evidence emerged which were inconsistent with the single transmitter concept, and it is now known that individual neurons contain and can release a large number and variety of substances which are capable of influencing target cells. This phenomenon of 'cotransmission' is widespread, involving virtually all known transmitter systems. Early hints of cotransmission came in the 1950s with evidence for the involvement of both noradrenaline (NA) and acetylcholine (ACh) in sympathetic transmission. Koelle identified acetylcholinesterase in some adrenergic neurons in 1955, while Burn and Rand introduced the concept of a 'cholinergic' link in adrenergic transmission in 1959. Another line of evidence provided by Hillarp concerned the coexistence of adenosine 5'-triphosphate (ATP) with catecholamines, first in adrenal chromaffin cells and later in sympathetic nerves. Inconsistencies in the single transmitter hypothesis provided by these and other studies from the early literature were rationalized in an article by Burnstock in 1976 with the provocative title, "Do some nerve cells release more than one transmitter?"

"Today it is widely accepted that cotransmission is an integral feature of neurotransmission. A role for ATP as a cotransmitter in sympathetic, parasympathetic, sensory-motor, and enteric nonadrenergic, noncholinergic (NANC) inhibitory nerves was supported by research from Burnstock and colleagues, while H6kfelt and colleagues focused on the co-localization, vesicular storage, and release of peptides from both peripheral and central nerves.

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