

<<神经科学百科全书3>>

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

此百科全书篇幅巨大，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，本科生即可读懂；而深度和广度独一无二，足可满足专家学者的需要。

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。

此为本套书的第三册，内容为神经肽与神经营养因子。

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章节摘录

插图：A core of gene clusters within the granular gland cells of frog skin codes for these secreted peptides. A mild transdermal electrical stimulation of the frog releases granular gland contents on the skin surface as a result of glandular syncytia rupture produced by the contraction of myoepithelial cells surrounding the glands. These skin secretions contain the entire peptide, transcriptome, and genome of the granular gland syncytia (olocrine secretion). The polyadenylated mRNAs constituting the secreted transcriptome and the peptides constituting the secreted proteome are protected from degradation by interactions with co-released amphipathic peptides and mucoproteins endowed with antimicrobial, RNase-, and protease-inhibitory activities. Thus, amino acid sequencing of secreted peptides, nucleic acid sequencing of peptide-encoding mRNAs, and genomic information retrieving from the secreted DNA can be easily performed in secretion samples collected from few frogs on a regular basis and stored, lyophilized or frozen, for at least 6 years. This is a powerful method of determining evolutionary information on the ancestral sequences of biologically active peptides and proteins and understanding the sequence-function relationship of the human orthologs. Because difficult-to-synthesize bioactive peptides and proteins are currently obtained in large quantities from skin secretions of few amphibian specimens, extensive pharmacological studies have been performed with these amphibian molecules in order to elucidate the functional role of the mammalian orthologs. Whereas some of amphibian skin peptides represent analogs of already known mammalian peptide families (Table 1), others represent prototype peptides not encountered before in nature. In many instances, the discovery of new amphibian skin peptides led to the discovery of novel mammalian neuropeptides; notable examples are caerulein, bombesin, and sauvagin (Table 2). In the amphibian skin, opioid peptides are represented by two prototypes named dermorphin and deltorphin.

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