



世界最新 英汉双解细胞与分子生物学词典

主 编 Robert Hine
主 译 吕社民
主 审 王成记 胡正海

The Facts On File
Dictionary of Cell and Molecular Biology

世界图书出版公司

世界最新

英汉双解细胞与分子生物学词典

The Facts On File

Dictionary of Cell and Molecular Biology

Third Edition

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Robert Hine

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序

这是一部关于重要学科术语和概念的系列词典之一,为学习细胞与分子生物学专业的学生提供一个补充信息源。本系列世界最新英汉双解词典的其他分册分别是《生物学词典》、《无机化学词典》、《有机化学词典》、《化学词典》、《生物化学词典》、《植物学词典》和《生物技术与遗传工程词典》。

本词典涵盖了整个现代细胞与分子生物学领域,包括细胞结构、基础分子生物学与生物化学、分子遗传学、细胞代谢、细胞生理学及实验室技术等。力图定义清晰、信息丰富,尽可能地给出插图和实例。本书也收录了在这些领域做出突出贡献的科学家简单传记,还收录了一些有用的附录,包括本学科主要进展年表,细胞类型及大小的实用信息的表格等。我们也给出了网页列表和参考文献。

对所有学习高级设置生物学,特别是分子与细胞学第一部分的学生,本书是一个实用的辅助信息源。然而,我们并没有将内容局限于教学大纲。现代细胞生物学是当代科学中最有魅力和发展最快的领域,与包括医学、农学、生物技术以及遗传学在内的很多应用领域相关,我们在这本词典中也试图包含这些方面的内容。希望它确实给对此学科感兴趣的所有人提供信息和帮助。

译者序

作为生命科学领域中最具有基础学科地位的细胞与分子生物学,经过半个多世纪的发展,已经涵盖了整个现代生命科学领域,包括细胞结构、生物化学、分子遗传学、细胞代谢、细胞生理学及实验室技术等等。而且细胞与分子生物学更直接地涉及到了生物学的分子基础和生命最本质的基本原理,对有关人类健康的所有领域具有直接、深远的影响,也是医学以及其他生命相关科学发展进步的动力源泉。

为了便于对生命科学领域感兴趣的大众理解常见于各种媒体的现代生命科学的基本词汇,使初具生物学与医学知识的读者能够了解细胞与分子生物学方面的快速发展趋势,我欣然接受了世界图书出版西安公司的邀请,组织翻译了这本《细胞与分子生物学词典》。但是毕竟个人水平有限,翻译中难免出现错误或不确切之处,恳请尊敬的读者指正,并给予谅解。在这本《细胞与分子生物学词典》即将面世之际,我代表参与本词典翻译的所有同事和学生,谨向对词典进行审校的第四军医大学王成济教授、西北大学胡正海教授表示最诚挚的感谢,他们认真严谨的治学作风堪称我们的楷模;也要感谢促成这本书翻译、出版的世界图书出版西安公司;一并感谢本词典的原著作者 Robert Hine 教授。

译者

2007年10月于西安

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致 谢

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凡 例

1 本词典所收录词条内容涵盖细胞与分子生物学领域的基础术语和概念,以及在这些领域做出过重要贡献的人物的简介词条。

2 本词典的编排方式为英汉双解,采用双栏排版,左栏为英文原文,右栏为相应的中文译文。由于两种语言不同,英汉两部分的内容并非完全对应,在尊重原文的基础上,尽量贴近词条本意。

3 英文首词条和相应中文首词条的字体均采用黑体,英(汉)解释部分的字体均采用白体,若英文首词条有缩略语,则该缩略语置于英文首词条后面的括号内,中文首词条后的括号内也加入相应缩略语,例如

colony-stimulation factor (CSF) . 集落刺激因子(CSF)

英文术语的其他名称置于英文首词条后面的括号内,中文的相应名称也置于中文首词条后的括号内,例如

genetic engineering (recombinant DNA technology) 基因工程 (DNA 重组技术)

4 内容的排列顺序以英文部分首词的英文拼法顺序排列,首词后面括号中的缩略语及其他名称不参加排序。

5 词条的解释:

(1)如整体释义分层次解释的,则列小标题讲解,以突出不同梯度的知识点。若从不同学科角度阐述,则学科名称置于括号内。个别词条有词性差别的,也置于括号内。例如。

fiber 1 纤维 1 (植物学)
2 2 (动物学)

(2)词汇中出现的人名一般不予翻译,但已约定俗成的则列出对应中文。

(3)英文中的斜体、大小写均严格按相关规定书写。

(4)有些词条需参照其他词条,则中英文均列出要参阅的英文词条。例如。

herpesvirus See latent virus

疱疹病毒 参阅 latent virus

(5)由于原文疏漏、差错等原因,造成词条解释不详或有误的,均在正确译文后以译者注的形式另行标出。例如。

chromatography * adsorption of 色谱法……

various compounds

* 原版书为 absorption, 为 adsorption 之误,此处改正。——译者注

6 正文后有 4 个附录,包括 年表、氨基酸、遗传密码、网页。

目 录

序

译者序

凡 例

词典正文 1 ~ 603

附 录 604 ~ 619

 I . 年表 606 ~ 613

 II . 氨基酸 614 ~ 616

 III . 遗传密码 617

 IV . 网页 618 ~ 619

参考文献 620

A

ABA See abscisic acid.

A band See sarcomere.

ABC transport protein ATP-binding cassette transport protein; any of a large family of ATP-powered TRANSPORT PROTEINS that move substances across cell membranes. Found in a wide variety of organisms, they have a common basic structure consisting of two transmembrane domains, which form a membrane-spanning channel, and two ATP-binding domains on the cytosolic (inner) face of the membrane. Many bacteria, for example, take up substances such as amino acids from their environment using specific ABC transport proteins called *permeases*. In mammals, cells in the liver, kidney, and intestine can export various natural metabolites or foreign toxins (including certain drugs) using these transport proteins.

abiogenesis The development of living from nonliving matter, as in the origin of life.

abscisic acid (ABA) A plant hormone that is involved in seed development and in the closure of leaf pores (stomata) in response to drought stress. Abscisic acid is thought to induce the formation of storage proteins during the later stages of seed maturation, and might also help to prevent precocious germination of seeds. In a quite different role, it is produced in the wilting leaves of plants that lack suffi-

ABA 参阅 abscisic acid。

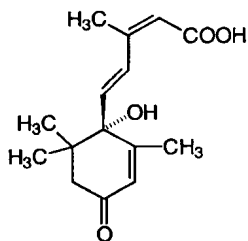
A 带 参阅 sarcomere。

ABC 转运蛋白 ATP 结合盒转运蛋白, 为一大类以 ATP 为动力的转运蛋白, 可运送物质穿过细胞膜, 见于多种生物。它们都具有类似的基本结构, 通常包括 2 个构成跨膜通道的跨膜结构域及 2 个位于细胞膜内侧的 ATP 结合位点。许多细菌可以通过一种被称为通透酶的特殊 ABC 转运蛋白来吸收外界环境中的物质如氨基酸。而哺乳动物肝脏、肾脏和小肠细胞可以利用这些转运蛋白来排出天然代谢物或外来毒素(包括某些药物)。

自然发生说 在生命的起源, 从非生命物质演化出生命的过程。

脱落酸 (ABA) 指存在于植物中的涉及种子发育和叶面气孔因干旱而关闭的激素。脱落酸被认为在种子成熟的末期引起贮存蛋白形成, 还可以帮助防止种子的过早发芽。另外, 缺乏水分的植物叶片也可以产生脱落酸。其可以扩散到保卫细胞, 使其关闭相关的气孔, 从而减少水分从植物流失。脱落酸最先从小无花果树中分离出, 最初被认为与蓓蕾休眠

cient water. It diffuses to the GUARD CELLS, signaling them to close the associated stomata and hence reduce further losses of water from the plant. Absciscic acid was first isolated from sycamore and originally thought to be associated with the onset of bud dormancy (hence its early name 'dormin'). It is also thought to be responsible for the abscission (shedding) of flowers and fruits. However, more recent work has cast doubt on the significance of absciscic acid in these processes.



Absciscic acid

脱落酸

abscission The shedding of part of a plant, usually a leaf, fruit, or unfertilized flower, as part of the plant's usual life cycle. As the leaf or other organ ages, a distinct *abscission zone* develops at the base of the organ. This zone consists of relatively smaller cells, whose walls weaken and separate. The process is linked to environmental cues, such as colder temperatures and shorter days, and is thought to be controlled by plant hormones called AUXINS. Eventually the connecting tissue is broken mechanically, for example by wind, and the organ is released from the plant.

absorption spectrum A graph showing the absorbance by a substance of radiation at dif-

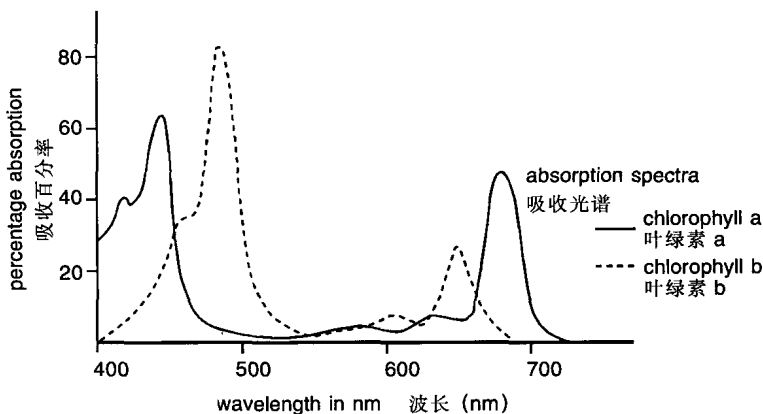
相关(因此早期被命名为休眠素)。它还与植物果实和花朵的脱落有关。然而,近年的研究使人们对其在上述过程中的意义提出质疑。

脱落(作用) 指植物的一部分,通常是叶子、果实或未受精的花朵,从植物上脱落下来,这是植物自然生命周期的一部分。当植物的叶子或者其他器官衰老时,在该器官基部就会产生一个与众不同的分离区。分离区中含有一些相对小的细胞,细胞之间连接较弱,因此容易分离。这一过程与环境因素,如低温和白天较短有关,且被认为受一种被称为生长素的植物激素控制。最后,连接组织在机械力,例如风吹的作用下断裂,器官就从植物上脱落下来。

吸收光谱 指可以反映出某种物质对不同波长的辐射,如紫外线、可

ferent wavelengths, usually of ultraviolet, visible, or infrared radiation. It is obtained using a SPECTROPHOTOMETER, and can give information about the identity or quantity of a substance. Chlorophylls, for example, have absorption peaks in the red and blue (and therefore reflect green light). See illustration overleaf.

见光或者红外线吸收度的图像。该图像是通过分光光度计而获得的, 可以对被测量物质进行定性或者定量。以叶绿素为例, 其吸收峰在红光和蓝光处(因此叶绿素可以反射绿光)。参阅 illustration overleaf 图解。



Absorption spectrum
吸收光谱

accessory cell (subsidiary cell) Any of several specialized epidermal cells found adjacent to each pair of GUARD CELLS in the leaves and other parts of plants. Accessory cells may help in opening and closing the accompanying pore (stoma).

副卫细胞 任何特化的表皮细胞, 与植物叶或其他部分的副卫细胞相邻。副卫细胞可以帮助气孔的开放和闭合。

accessory pigment See photosynthetic pigments.

辅助色素 参阅 photosynthetic pigments。

accommodation See adaptation.

调节(作用) 参阅 adaptation。

acellular Describing tissues or organisms that are not composed of discrete cells. Typically, the cytoplasm is continuous throughout

无细胞的 指不是由分离细胞构成的组织和有机体。有代表性的是细胞质在组织和有机体中连续分布的,

the tissue or organism, and contains many nuclei, demonstrating an equivalence to multicellular structures. Examples are aseptate fungal hyphae and muscle fibers. *Compare* Unicellular. *See also* syncytium.

acentric Denoting a chromosome or fragment of a chromosome that lacks a CENTROMERE.

acetic acid (ethanoic acid) A carboxylic acid, CH_3COOH , obtained by the oxidation of ethanol. Acetic acid is a component of vinegar. This is obtained industrially by the action of acetic acid bacteria, such as *Acetobacter*, on ethanol in wine waste.

acetylcholine (ACh) A NEUROTRANSMITTER found in both vertebrates and invertebrates at synapses in various parts of the nervous system and at NEUROMUSCULAR JUNCTIONS. It can have either excitatory or inhibitory effects, depending on the location. For example, it is excitatory when released by motor nerve endings in skeletal muscle, but has an inhibitory effect on cardiac muscle. It is formed in the presynaptic cell from acetyl coenzyme A and choline, catalyzed by the enzyme choline acetyltransferase. After release, it binds transiently to ACETYLCHOLINE RECEPTORS in the postsynaptic membrane before being broken down by the enzyme acetylcholinesterase to acetate and choline. The choline is then returned to the presynaptic nerve ending to be reused. Nerves that release acetylcholine are called *cholinergic nerves*.

acetylcholine receptors (cholinoceptors) Any of various receptors that bind the neuro-

并且含有许多细胞核,从而形成一种与多细胞结构相类似的结构。典型的例子是真菌菌丝和肌肉纤维。比较 Unicellular。参阅 syncytium。

无着丝粒的 缺乏着丝粒的染色体或染色体片段。

醋酸(乙酸) 一种羧酸, CH_3COOH , 通过乙醇氧化而获得。醋酸是食醋的成分之一。食醋的工业化生产可通过醋酸菌如醋酸杆菌作用于葡萄酒废弃物中的乙醇而获得。

乙酰胆碱(ACh) 一种存在于脊椎动物和无脊椎动物神经系统不同部位突触以及神经肌肉接头中的神经递质。依据其存在部位的不同,可以起到激动和抑制作用。例如,当其被骨骼肌中的运动神经末梢释放时,可起到激动作用;而在心肌中却起着抑制作用。乙酰胆碱是在突触前细胞中,通过胆碱乙酰转移酶的催化作用由乙酰辅酶A和胆碱合成的。当其被释放后,乙酰胆碱短暂地与突触后膜乙酰胆碱受体结合,随后被乙酰胆碱酯酶水解为乙酸盐和胆碱。胆碱会返回到突触前神经末梢以便重新利用。释放乙酰胆碱的神经称为胆碱能神经。

乙酰胆碱受体(胆碱受体) 指在神经突触、神经肌肉接头和其他效应

transmitter acetylcholine at nerve synapses, neuromuscular junctions, or other effector organs. They are described as *cholinergic receptors*, and fall into two broad categories. *Nicotinic (N) acetylcholine receptors* are **LIGAND-GATED ION CHANNELS**, which open to allow the passage of sodium or potassium ions when activated by binding of acetylcholine (i.e. the ligand). These occur at neuromuscular junctions, and enable the rapid transmission of a motor nerve impulse, leading to muscle contraction. *Muscarinic (M) acetylcholine receptors* are **G-PROTEIN-LINKED RECEPTORS**, and have a slower and more prolonged response to the binding of acetylcholine. There are several subtypes, designated M1, M2, M3, etc. They can have either excitatory or inhibitory effects, depending on their location.

acetyl CoA (acetyl coenzyme A) An important intermediate compound in cell metabolism, particularly in the oxidation of sugars, fatty acids, and amino acids, and in certain biosynthetic pathways. It is formed in the mitochondrial matrix by the reaction between pyruvate (from GLYCOLYSIS) and COENZYME A, catalyzed by the enzyme pyruvate dehydrogenase. The acetyl group of acetyl CoA is subsequently oxidized in the reactions of the KREBS CYCLE, to yield reduced coenzymes and carbon dioxide. Acetyl CoA is also produced in the initial oxidation of fatty acids and some amino acids. Other key roles for acetyl CoA include the provision of acetyl groups in biosynthesis of fatty acids,

器中任何能结合神经递质乙酰胆碱的受体。它们被称为胆碱能受体,可以分为2大类。烟碱样(N)乙酰胆碱受体是一种配基门控离子通道,当其与乙酰胆碱(即配基)结合后即被激活,通道开放,允许钠离子和钾离子通过。这一过程发生在神经肌肉接头处,可以快速传播运动神经冲动,导致肌肉收缩。毒蕈碱样(M)乙酰胆碱受体是G蛋白耦联受体,具有较慢但较持久的乙酰胆碱结合效应。毒蕈碱样受体有几个亚型,如M1、M2、M3等。根据其位置不同可具有激动或抑制效应。

乙酰 CoA(乙酰辅酶 A) 一种细胞代谢极为重要的中间物质,尤其是在糖、脂肪酸和氨基酸氧化以及某些特定的生物合成途径中。它是在线粒体基质中由丙酮酸脱氢酶催化,经由丙酮酸(来自于糖酵解)和辅酶 A 反应合成的。乙酰辅酶 A 中的乙酰基随后在三羧酸循环被氧化,产生还原型辅酶类和二氧化碳。脂肪酸和某些氨基酸氧化的初期也可产生乙酰辅酶 A。乙酰辅酶 A 的其他重要作用包括为脂肪酸、萜类生物碱和其他物质的生物合成提供乙酰基。

terpenoids, and other substances.

ACh See acetylcholine.

acid Any molecule or substance that tends to release hydrogen ions (H^+ ; protons). In aqueous solutions, a free hydrogen ion rapidly combines with a water molecule to form a *hydronium ion* (H_3O^+), also called an *oxonium ion* or *hydroxonium ion*. (However, it is conventional to refer to hydrogen ions in solution, rather than hydronium ions.) An acid solution has a pH below 7. Adding acid to a solution increases the hydrogen ion concentration, and hence lowers the pH. Many organic molecules have several acidic and/or basic groups, and dissociation of particular groups usually depends on the pH of the solution. Hence, the acid (or basic) nature of such molecules varies according to conditions. The pH of cells is stabilized by BUFFERS, such as phosphate ions. Compare base.

acid-growth hypothesis A hypothesis proposed by R. Cleland, A. Hager and others in around 1970 to explain cell wall expansion in growing plant cells. According to this, the plant hormone auxin stimulates a proton pump in the cell's plasma membrane, which pumps protons (H^+) into the cell wall. The resultant lowering of cell wall pH activates wall-loosening enzymes, thus enabling extension of the cell wall, and hence cell growth. The wall enzymes, called *expansins*, disrupt hydrogen bonds between the cellulose microfibrils. These bonds re-form when the pH returns to normal, thereby restoring the wall

ACh 参阅 acetylcholine.

酸 指任何具有释放出氢离子 (H^+ ; 质子) 趋势的分子或者物质。在水溶液中, 一个游离的氢离子可以迅速同一个水分子结合形成水合氢离子 (H_3O^+), 也被称为水合离子。(但是, 通常称作溶液中的氢离子, 而非水合氢离子)。酸溶液 $pH < 7$ 。给某种溶液中添加酸可以增加该溶液氢离子的浓度, 因此可以降低 pH 值。许多有机分子有好几个酸性和(或)碱性基团, 特殊基团的解离取决于溶液的 pH 值。因此, 该种分子是酸性还是碱性取决于外界条件。细胞内的 pH 依靠如磷酸盐离子等缓冲液来维持恒定。比较 base。

酸性生长假说 指 1970 年前后由 R. Cleland, A. Hager 和其他学者提出的用来解释正在生长的植物细胞细胞壁膨胀原因的假说。根据此假说, 植物生长激素可以刺激细胞质膜中的质子泵, 使其向细胞壁中泵入质子, 从而使细胞壁 pH 值降低, 继而活化细胞壁松懈酶类, 引起细胞壁的伸展, 导致细胞生长。称为苹果青霉素的细胞壁酶, 可以打断纤维素微纤维之间的氢键。在细胞壁 pH 值恢复正常后, 氢键就会恢复, 这样细胞壁在生长结束后就会恢复正常强度。

strength when growth is completed.

acidic stain See staining.

acquired immune deficiency syndrome
See AIDS.

acquired immunodeficiency syndrome
See AIDS.

acrosome A membrane-bound sac in the anterior head region of a spermatozoon. In a mammalian sperm it usually forms a cap over the nucleus. It contains enzymes that are released on contact with the egg at fertilization, as part of the ACROSOME REACTION. The enzymes break down the egg coats, enabling the spermatozoon nucleus to enter the egg.

acrosome reaction The process by which a sperm penetrates the wall of an egg during fertilization. Contact with an egg of the same species triggers a series of events, including the release of lytic enzymes from the ACROSOME. These enzymes break down the outer layer of the egg, and permit fusion of the sperm's plasma membrane with that of the egg. In many invertebrate sperm, actin filaments in the acrosomal region are lengthened by the addition of actin subunits, to form a fine *acrosomal filament*. This extends from the front end of the sperm and assists penetration.

ACTH See corticotropin.

actin A protein that is a major constituent of the cytoskeleton and of muscle. It is the most abundant protein inside eukaryote cells, accounting for 1–5% of total protein. Actin

酸性染色 参阅 staining。

获得性免疫缺陷综合征 参阅 AIDS。

获得性免疫缺陷综合征 参阅 AIDS。

顶体 指在精子头部前端的一个膜性小囊。在哺乳动物精子,该小囊通常覆盖在细胞核上形成一个小帽。顶体中含有可以降解卵子外层的酶,在精子与卵子相遇时该酶即被释放出来,降解卵子透明带,从而使精子胞核进入卵子完成受精。这一过程是顶体反应的一部分。

顶体反应 指在受精的过程中,精子穿透卵子透明带的过程。精子与同种卵子接触可以触发一系列的反应,包括溶解酶从顶体的释放。这些酶可以降解卵子的外层,允许精子与卵子的质膜融合。在许多无脊椎动物的精子,顶体中的肌动蛋白丝被额外增加的肌动蛋白亚单位延长,从而形成一个纤细的顶体丝。这一延伸从精子前端开始,可以协助精子穿透卵子外层。

ACTH 参阅 corticotropin。

肌动蛋白 指构成细胞骨架和肌肉主要成分的蛋白质。是真核细胞中最为丰富的蛋白质,约占细胞总蛋白的1%~5%。肌动蛋白是以球

exists as globular monomers (*G-actin*), which assemble into long filamentous polymers (*F-actin*). In conjunction with motor proteins, especially MYOSIN, actin is responsible for many types of cell movement and contraction, including muscle contraction. F-actin forms the MICROFILAMENTS of the cytoskeleton, and thus is responsible for maintaining and changing cell shape. The bundles and networks of actin microfilaments are held together by ACTIN CROSS-LINKING PROTEINS, and are attached to the plasma membrane by other proteins, such as filamin and dystrophin. Changes in cell shape involve extension or shortening of actin microfilaments, brought about by the assembly or dismantling of the G-actin subunits. These processes are regulated by other proteins. For example, profilin promotes assembly of actin filaments, whereas cofilin and gelsolin act as severing proteins, breaking actin filaments into fragments. Actin polymers form the thin filaments that are part of the muscle myofibrils, which consist of alternating and overlapping sets of thick myosin and thin actin filaments. In muscle contraction, overlapping actin and myosin molecules interact to form actomyosin complexes. Actin and myosin also interact in nonmuscle cells. For example, they accomplish the cleavage of cells by CYTOKINESIS, and are responsible for CYTOPLASMIC STREAMING in certain green algae. See actomyosin.

actin-binding proteins Proteins that bind to actin filaments – either in muscle to regu-

形单体蛋白形式存在(G-肌动蛋白),但可以聚合为长丝状的聚合物(F-肌动蛋白)。当肌动蛋白与运动蛋白质尤其是肌球蛋白相联系时,它与多种细胞的运动和收缩有关,包括肌肉的运动。F-肌动蛋白可以构成细胞骨架中的微丝,因此负责维持和改变细胞的形状。肌动蛋白微丝束和纤维网被肌动蛋白交联蛋白束缚在一起,并被其他蛋白如细丝蛋白和肌营养不良蛋白连接在细胞膜上。G-肌动蛋白亚单位的聚合和分解可以引起肌动蛋白微丝的伸展和缩短,从而改变细胞的形状,而这一过程受其他蛋白质的调控。例如,肌动蛋白抑制蛋白促进肌动蛋白丝的形成,而切丝蛋白和凝溶胶蛋白则为切割蛋白,降解肌动蛋白丝成为碎片。肌动蛋白聚合物形成的细肌丝是肌肉肌原纤维的一部分,而肌原纤维是由交互重叠的粗的肌球蛋白丝和细的肌动蛋白丝构成的。在肌肉收缩时,相互交错的肌动蛋白和肌球蛋白形成肌动球蛋白复合物。肌动蛋白和肌球蛋白也可以在非肌肉细胞中相互作用。例如,其可完成胞质分裂从而分割细胞,也与绿藻中胞质流动有关。参阅 actomyosin。

肌动蛋白结合蛋白 指与肌动蛋白丝结合的蛋白,可以调节肌肉的

late contraction, or as components of the cytoskeleton. In skeletal muscle they include **TR-OPOMYOSIN** and **TROPONINS**, and additionally **CALDESMON** in smooth muscle. All work essentially by altering the degree to which myosin can bind to actin, under the influence of calcium-ion concentration. In the cytoskeleton, several proteins link actin filaments to each other or to the plasma membrane, including **ankyrin**, **DYSTROPHIN**, **PROFILIN**, and **SPECTRIN**. See also actin cross-linking proteins.

actin cross-linking proteins Proteins that form cross-links between actin filaments in the cytoskeleton. Each cross-linking protein molecule has two actin-binding sites, and can bind two actin filaments. With short linkers, such as **fimbrin** molecules, the actin filaments form parallel bundles; longer linker proteins, such as **spectrin** and **dystrophin**, permit the filaments to form looser networks, as typically occur in the cell cortex just inside the plasma membrane.

actinomycetes (filamentous bacteria) A diverse group of Gram-positive bacteria characterized by a filamentous, often branching growth form that resembles the mycelium of a fungus. They are numerous in the topsoil and are important in soil fertility. Some can cause infections in animals and humans. Many antibiotics (e.g. **streptomycin**, **actinomycin**, and **tetracycline**) are obtained from actinomycetes, especially from members of the genus *Streptomyces*.

收缩,或者作为细胞骨架的一部分。在骨骼肌中,它们包括原肌球蛋白和肌钙蛋白,而在平滑肌中还有钙调蛋白结合蛋白。从本质上来说,它们就是在钙离子浓度影响下调节肌球蛋白与肌动蛋白的结合程度。在细胞骨架,好几种蛋白,例如锚蛋白、肌营养不良蛋白、肌动蛋白抑制蛋白和定形素可以使肌动蛋白丝相互连接或连接肌动蛋白丝到质膜。参阅 actin cross-linking proteins.

肌动蛋白交联蛋白 在细胞骨架中构成肌动蛋白丝之间相互交联的蛋白。每个肌动蛋白交联蛋白具有2个肌动蛋白结合位点,可以结合2条肌动蛋白丝。如有丝束蛋白等短连接物存在时,肌动蛋白丝形成并行的肌动蛋白束;肌营养不良蛋白和定形素等长连接物存在时,肌动蛋白丝形成松散的网状结构,例如紧靠细胞膜内侧的细胞皮质区。

放线菌(丝状细菌) 一大类革兰阳性菌,具有特征性细丝状结构,可以分支生长构成类似真菌菌丝样结构。广泛存在于表层土中,并且对于土壤肥力具有重要作用。某些种类可致动物及人类感染。从放线菌尤其是链霉菌属可以获得许多抗生素(如链霉素、放线菌素及四环素)。