



世界最新 英汉双解生物学词典

主 编 Robert Hine

主 译 马建岗

主 审 胡正海 李保国

The Facts On File
Dictionary of Biology

世界图书出版公司

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Third Edition

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主 编:(美)Robert Hine

主 译:马建岗

译 者:(按姓氏笔画排列)

马建岗 田利强 许华平 李富强

周立全 祝蒙蒙 赵 晨 高 强

译 校:蔡 霞

主 审:胡正海 李保国

世界图书出版公司

西安 北京 广州 上海



图书在版编目(CIP)数据

世界最新英汉双解:生物学词典/(美)海因(Hine, R.)主编;马建岗译. —西安:世界图书出版西安公司, 2008. 1

ISBN 978 - 7 - 5062 - 7572 - 9

I. 世… II. ①海…②马… III. 生物学 - 词典 - 英、汉 IV. Q - 61

中国版本图书馆 CIP 数据核字(2005)第 098241 号

Published under license from Facts On File, Inc., New York

The Facts On File Dictionary of Biology Third Edition

Robert Hine

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陕版出图字:25 - 2003 - 146

世界最新英汉双解生物学词典

主 编 (美)Robert Hine
主 译 马建岗
策 划 张栓财 任卫军
责任编辑 王 佳 任卫军
封面设计 吉人设计

出版发行 世界图书出版西安公司
地 址 西安市北大街 85 号
邮 编 710003
电 话 029 - 87214941 87233647(市场营销部)
029 - 87235105(总编室)
传 真 029 - 87279675 87279676
经 销 全国各地新华书店
印 刷 陕西大泽印务有限公司
开 本 787 × 1092 1/32
印 张 28
字 数 1250 千字

版 次 2008 年 1 月第 1 版
印 次 2008 年 1 月第 1 次印刷
书 号 ISBN 978 - 7 - 5062 - 7572 - 9
定 价 68.00 元

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序

本词典是为在校学生设计的，其目的是为学习生物学的学生提供参考，但我们也希望它能为其他学科的学生和对生物学感兴趣的读者提供帮助。这套丛书包括《世界最新英汉双解生物学词典》、《世界最新英汉双解细胞和分子生物学词典》、《世界最新英汉双解生物化学词典》、《世界最新英汉双解植物学词典》、《世界最新英汉双解生物技术和遗传工程词典》、《世界最新英汉双解化学词典》、《世界最新英汉双解有机化学词典》、《世界最新英汉双解无机化学词典》。

《生物学词典》第1版于1980年出版。第3版在内容上进行了大量地修订，词条也进行了扩充。目前本词典共收集词条3300多个，覆盖现代生物学的各个方面。本书附录包含动物界、植物界及氨基酸结构的图表。

我们对为这本词典的出版作出贡献的所有同仁表示感谢。在致谢页里我们列出了参与本词典工作的同仁的名字。我们也为本词典提供帮助和建议的所有人士表示谢意。

译者序

该词典的第1版于1980年出版，随后进行了2次修订。目的是为学习生物科学的学生提供参考。目前翻译的第3版在内容上更加新颖，全面。本词典包含当代生物科学最常用的词汇3300多条，本词典既能为学习生物科学的学生提供参考，又能为对生物科学感兴趣的其他读者起到借鉴作用。本词典具有如下鲜明特点：

1. 词条的解释清晰、准确、简洁。
2. 第3版增加了200多个词条，词条内容涵盖生物多样性、全球气候变暖、DNA指纹、人类基因组计划、基因文库、朊病毒等方面，反映了最近几年在遗传学、细胞生物学、生物化学、细胞生物学和其他学科的新进展。
3. 本词典附有40多幅插图，所附插图能使读者对复杂的生物学概念有更直观地、全面地理解和掌握。
4. 书后附有附录，内容包括动物界、植物界及氨基酸的结构图表，以便读者查阅。

《世界最新英汉双解生物学词典》由马建岗担当主译，许华平、李富强、高强、周立全、祝蒙蒙、赵晨、田利强等参加了部分内容的翻译工作。世界图书出版西安公司的王佳编辑为

词典的翻译是一种要求很高、难度很大的工作。由于译者知识和翻译水平的限制，译文中肯定有不妥和值得商榷的地方，热忱欢迎使用本词典的读者不吝指教，以便将来进一步修订和完善。

马建岗

2007年秋于西安交通大学

ACKNOWLEDGMENTS

致 谢

Editor (First and Second Editions) 编者

Elizabeth Tootill B. Sc.

Contributors 参编人员

E. K. Daintith B. Sc.

Dennis J. Taylor B. Sc., Ph. D.

Sue O'Neill B. Sc.

Roderick Fischer B. Sc.

E. A. Martin M. A.

M. M. Richards B. Sc.

Owen Bishop B. Sc.

R. A. Prince M. A.

M. R. Ingle B. Sc., M. I. Biol., Ph. D., F. L. S.

Anne Moorhead B. Sc.

Additional contributions by 协编人员

S. Pain B. Sc.

Lynne Mayers, B. Sc. D. T. A.

Mary Myles B. Sc.

Ruth D. Newell M. Sc., D. I. C.

J. Cohen B. Sc., Ph. D.

B. King B. Sc., Ph. D.

Lesley A. Bradnam B. Sc., M. Sc.

Malcolm P. Hart B. Sc.

Kathryn J. Green B. Sc.

Derek Cooper B. Sc., Ph. D., F. R. I. C.

P. R. Mercer B. A., T. C.

K. R. Dixon B. Ed.

凡 例

1. 本词典收录词条 3 300 多个, 内容涵盖当代生物科学领域内最常用的基本术语和概念。

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, 右栏为相应的中文部分; 由于两种语言的不同, 英汉两部分的内容并非完全对应。

3. 英文首词条和相应的中文首词条的字体均采用黑体, 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中, 中文首词条后的括号中也加入相应缩略语, 例如:

oxaloacetic acid (OAA)... 草酰乙酸(OAA)……

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

abducens nerve (cranial nerve VI)... 外展神经(第VI对脑神经)……

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 从不同学科角度上释义的, 则分类列出, 例如:

parenchyma 1. (*Botany*)... 薄壁组织, 实质 1. (植物学)……

2. (*Zoology*)... 2. (动物学)……

② 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, 例如:

pelvis 1. ... 骨盆 1. ……

2. ... 2. ……

3. ... 3. ……

③ 词汇中一般出现的人名不予翻译, 但已约定成俗的则列出相应中文。

④ 英文中的斜体、大小写均同原版图书保持一致。

⑤ 有些词条需对照其他词条, 则列出要参阅(比较)的词条, 并且中文对照部分标出参阅(比较)的词条所在页码。例如:

abaxial.... *compare* adaxial. 比较 12 页 adaxial.

abducens nerve.... *see* cranial nerves. 参阅 206 页 cranial nerves.

目 录

凡例

词典正文 1 ~ 877

附录 878

1. 植物界 878

2. 动物界 879

abaxial In lateral organs, such as a leaf, the lower surface i.e. the side, facing away from the main axis. Abaxial is synonymous with dorsal when the latter term is being applied to lateral organs. *Compare* adaxial.

abdomen 1. The section of the body cavity of vertebrates that contains the stomach, intestines, and other viscera.

2. The posterior section of the body in arthropods. Primitively it consists of a series of similar segments.

abducens nerve(cranial nerve VI) One of the pair of nerves that arises from the anterior end of the medulla oblongata in the vertebrate brain to supply the posterior rectus muscle of each eyeball. It contains chiefly motor nerve fibers. *See* cranial nerves.

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

abiotic environment The nonliving factors of the environment that influence ecological systems. Abiotic factors include climate, chemical pollution, geographical features, etc.

abomasum The fourth and last region of the specialized stomach of ruminants (e.g. the cow). It is lined with normal mucosa containing gastric pits, producing hydrochloric

酸的。指侧生器官(如叶片)的下表面与植物的主轴相背。当用 dorsal (背面的)来描述侧生器官时与 abaxial 是同义词。比较 12 页 adaxial。

腹 1. 脊椎动物的体腔部分,包括胃、肠和其他内脏。

2. 节肢动物体节的后段,起初它由一些相似的区域组成。

外展神经(第 VI 对脑神经) 脊椎动物大脑内起始于延髓前端的支配眼球后直肌运动的一对神经,它主要由运动神经纤维组成。参阅 206 页 cranial nerves。

自然发生说 生命物质由非生命物质产生的学说,例如生命的起源。

非生物环境 环境中影响生态系统的非生物因素,这些因素包括气候、化学污染、地理特性等。

皱胃 反刍动物(如牛)特有的最后一个胃,即第四胃。它有正常的四形的黏膜,可产生盐酸、胃蛋白酶和凝乳酶,是真正起消化作用的胃。

ric acid, pepsin, and rennin, and is the true digestive stomach.

abscisic acid (ABA) A plant hormone, first isolated from sycamore, that functions chiefly as a growth inhibitor. It promotes abscission (shedding) of flowers and fruits, induces dormancy of buds and seeds, and causes closure of leaf pores (stomata). Formerly it was known as *abscisin II* or *dormin*.

abscission The organized loss of part of a plant, usually a leaf, fruit, or unfertilized flower. An *abscission zone* occurs at the base of the organ. Here a separation layer (*abscission layer*) is formed by breakdown or separation of cells and final severance occurs when the vascular bundles are broken mechanically, e.g. by wind.

absorption The uptake of liquid by cells. Most digested food is absorbed in the small intestine, the inner surface of which is lined with finger-like projections (villi): the liquid products of digestion are absorbed through the villi into the blood and lymphatic systems. In plants, water and mineral salts are absorbed mainly by the root hairs, just behind the root tips.

absorption spectrum A plot of the absorbance by a substance of radiation at different wavelengths, usually of ultraviolet, visible, or infrared radiation. It can give information about the identity or quantity of a substance. Chlorophylls, for example, have absorption peaks in the red and blue (and

脱落酸 最初从无花果中分离出来的一种植物激素,其主要功能为植物生长抑制剂。它可促进花和果实的脱落,诱导芽和种子的休眠,引起叶孔(气孔)的关闭。以前曾被称为脱落素 II 或休眠素。

脱落 指植物的叶片、果实或未受精的花与植物体自然分离的过程。离区位于组织或器官的基部。此区域的细胞解体、分离形成离层(脱落层),最后当维管束受到机械损伤(如风)时,即发生脱离。

吸收 细胞摄取液体物质的过程。绝大多数消化后的食物在小肠吸收。小肠的内壁布满像手指一样的突起(绒毛),消化产生的液体物质通过绒毛吸收进入血液和淋巴系统中。植物主要通过根尖后的根毛吸收水和无机盐。

吸收光谱 指物质对不同波长的射线,例如紫外线、可见光线和红外线的吸收能力,从而可获得该物质定性和定量方面的信息。例如叶绿素在红光和蓝光间(即在绿光处)出现吸收峰。

therefore reflect green light).

abyssal Inhabiting the portion of the ocean deeper than 2000 m and shallower than 6000 m. The abyssal realm is the largest environment on earth. Abyssal fauna tend to be black or gray, unstreamlined, and delicately structured.

accessory cell (subsidiary cell) One of a number of specialized epidermal cells of a plant that are found adjacent to the guard cells, and may help in opening and closing the stomata.

accessory nerve (cranial nerve XI) One of the pair of nerves that arises from the posterior region of the medulla oblongata in the brain of higher vertebrates. It carries motor nerve fibers and merges with the adjacent vagus nerve close to its root. In fishes and amphibians it is considered an integral part of the vagus. See cranial nerves.

accessory pigment See photosynthetic pigments.

accommodation 1. The reflex process in the eye by which an image is focused on the retina. In humans, the eye at rest is focused on infinity, with the lens and cornea flattened. To focus on a near object the ciliary muscles contract, and the lens, being elastic, becomes more convex and thus of shorter focal length; the cornea also becomes more convex and assists in the focusing.

Although the structure of the eye is similar in all vertebrates, the method of accommoda-

深海的 栖息于海洋中水平面 2 000 m 以下、6 000 m 以上的。深海海域是地球上最大的生物环境。深海动物一般为黑色或灰色、具有非流线型和优美的体态结构。

佐细胞(副卫细胞) 位于植物内保卫细胞近旁的特异化的表皮细胞,可协助打开或关闭气孔。

副神经(第 XI 对脑神经) 起始于高等脊椎动物脑部延髓后端的一对神经。它具有运动神经纤维,并与邻近的迷走神经在接近于根部合二为一。在鱼类和两栖类中,副神经被看成是迷走神经的一部分。参阅 206 页 cranial nerves.

辅助色素 参阅 626 页 photosynthetic pigments.

调节 1. 眼睛的反射过程,使注视物体在视网膜上成像。人的眼睛在休息时所注视的物体是不确定的,其晶状体和角膜是平的。当注视近的物体时睫状肌收缩,具有弹性的晶状体弯曲凸起使焦距变短,角膜也变弯曲协助聚焦。

虽然所有的脊椎动物眼睛的结构相似,但一类动物和另一类动物在调节的方法上却有不同。鱼和两栖类生物的调节肌使晶状体(固定焦距)向后方移动,以便看清远距离的物体,而当晶状体向前移动时可

tion varies from group to group. Fishes and amphibians have muscles that move the lens (of fixed focal length) backwards for distant vision and forwards for near vision.

Reptiles and birds accommodate by action of the ciliary muscles, which on contraction actually push the lens into a convex shape.

2. See adaptation.

acellular Denoting relatively large tissues or organisms that are not composed of discrete cells and are, in effect, unicellular. Examples are aseptate fungal hyphae and muscle fibers. The term is used in preference to unicellular to distinguish such structures (which are often multinucleate) from conventional cells and show their equivalence to multicellular structures. See also syncytium.

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

acetabulum A cup-shaped socket on each side of the pelvic girdle in tetrapods that holds the rounded head of the thigh bone (femur) to form the hip joint. This 'ball-and-socket' arrangement allows for great stability and a wide range of movement.

acetic acid (ethanoic acid) A carboxylic acid, CH_3COOH , obtained by the oxidation of ethyl alcohol. Acetic acid is a component of vinegar (which is obtained by bacterial oxidation of wine waste).

acetylcholine (ACh) A neurotransmitter found at the majority of synapses, which oc-

使近距离的物体聚焦。

爬行类和鸟类动物通过睫状肌的运动来调节,当睫状肌收缩时促使晶状体弯曲。

2. 参阅 11 页 adaptation.

无细胞的 指不是由分离的细胞(实际上是由单细胞)组成的较大组织或器官,例如无隔真菌菌丝和肌纤维。这个词语常用来对多核的单细胞结构与传统意义上的细胞加以区分,以表明前者等同于多细胞结构。参阅 798 页 syncytium。

无着丝粒的 指缺少着丝粒的染色体或染色体片段。

髋臼 四足动物腰带四周的杯状的窝形结构,连接大腿骨(股骨)的圆形头部,形成股关节。这种“球-窝”状结构可保证可靠的稳定性和较大的活动范围。

乙酸(冰醋酸) 乙醇氧化后形成的一种羧酸 CH_3COOH 。乙酸是细菌氧化酿酒废液获得的醋中的一种成分。

乙酰胆碱 当一个神经细胞与另一个神经细胞相遇形成突触时,在

cur where one nerve cell meets another. Nerves that produce acetylcholine are called *cholinergic nerves*; they form the parasympathetic nervous system and also supply the voluntary muscles. See neurotransmitter.

ACh See acetylcholine.

achene A dry indehiscent fruit formed from a monocarpellary ovary containing a single seed. Different types of achenes include the caryopsis, cypsela, nut, and samara. See also etaerio.

acid A substance that gives rise to hydrogen ions (or H_3O^+) when dissolved in water. An acid in solution will have a pH below 7. This definition does not take into account the competitive behavior of acids in solvents and it refers only to aqueous systems. The *Lowry-Brønsted theory* defines an acid as a substance that exhibits a tendency to release a proton, and a base as a substance that tends to accept a proton. Thus, when an acid releases a proton, the ion formed is the *conjugate base* of the acid. Strong acids (e.g. HNO_3) react completely with water to give H_3O^+ , i.e. HNO_3 is stronger than H_3O^+ and the conjugate base NO_3^- is weak. Weak acids (e.g. CH_3COOH and $\text{C}_6\text{H}_5\text{COOH}$) are only partly dissociated because H_3O^+ is a stronger acid than the free acids and the ions CH_3COO^- and $\text{C}_6\text{H}_5\text{COO}^-$ are moderately strong bases.

acid - base balance

Maintenance of the

大多数突触中发现的一种神经递质。产生乙酰胆碱的神经称为胆碱能神经,它们形成副交感神经系统,同时支配随意肌。参阅 546 页 neurotransmitter.

乙酰胆碱的英文缩写 参阅 4 页 acetylcholine.

瘦果 由内含一粒种子的单心皮子房形成的不开裂干果。不同类型的瘦果包括颖果、连萼瘦果、坚果和翼果。参阅 289 页 etaerio.

酸 溶于水时能释放出氢离子(或 H_3O^+)的物质。酸在溶液中的 pH 值低于 7。这一定义没有考虑酸在溶剂中的竞争行为,而仅仅涉及水相系统。Lowry - Brønsted 理论定义酸为能够释放出质子的物质,而碱为能够接受质子的物质。因此,当酸释放出质子时,所形成的离子是酸的共轭碱。强酸(如硝酸)可与水完全反应并产生 H_3O^+ ,即硝酸的酸性强于 H_3O^+ ,而共轭碱 NO_3^- 为弱碱。弱酸(如乙酸和苯甲酸)只能部分分解离,因为 H_3O^+ 比游离酸的酸性强,而离子 CH_3COO^- 和 $\text{C}_6\text{H}_5\text{COO}^-$ 为中强碱。

酸碱平衡 通过调节酸碱比例保

optimum pH of body fluids by regulating the acid: base ratio. This usually involves a buffer system (see buffer). For example mammalian blood must be maintained at a pH of 7.4, which requires a ratio of carbonic acid to bicarbonate of 1:20; any serious deviation would result in the conditions of acidosis or alkalosis. The optimum pH for higher plants is around 6.7, and they tend to be somewhat more tolerant to pH changes.

acidic stain See staining.

acid rain The deposition of acids by natural precipitation (e.g. rain, snow, fog), leading to acid pollution. The very dilute acids are formed by reaction of gaseous waste products (e.g. sulfur dioxide, nitrogen oxide, or carbon monoxide), with moisture present in the air. This has led to environmental damage in many areas; for example numerous lakes and streams in Scandinavia are unable to support life, which has been attributed to pollution carried by southwesterly winds from Britain. Unpolluted rain is slightly acidic, having a pH of 5.0 - 5.6; damage will occur to sensitive ecosystems when the pH falls below 4.6.

acid value A measure of the free acid present in fats, oils, resins, plasticizers, and solvents, defined as the number of milligrams of potassium hydroxide required to neutralize the free acids in one gram of the substance.

acoustic nerve See auditory nerve.

acoustico-lateralis system A system found

in many animals, which maintains the pH of body fluids at a constant level. This usually involves a buffer system (see buffer). For example mammalian blood must be maintained at a pH of 7.4, which requires a ratio of carbonic acid to bicarbonate of 1:20; any serious deviation would result in the conditions of acidosis or alkalosis. The optimum pH for higher plants is around 6.7, and they tend to be somewhat more tolerant to pH changes.

酸性染料 参阅 773 页 staining.

酸雨 自然降落的雨、雪、雾造成酸的沉积而导致的酸污染。废气,例如二氧化硫、氧化氮、一氧化碳能与空气中的湿气发生反应,产生很弱的酸,这会使很多地区的环境遭到破坏。例如斯塔的那维亚的许多湖泊和河流已经无法维持生物的生命,其原因归结于来自英国的西南风所携带的污染。未受污染的雨水稍偏酸性, pH 在 5.0 ~ 5.6, 当雨水的 pH 降到 4.6 以下时,将会使敏感的生态系统遭到破坏。

酸值 测量脂肪、油脂、树脂、可塑剂、溶剂中游离酸含量的值。其数值为中和 1g 物质的游离酸所需的氢氧化钾的量。

听神经 参阅 66 页 auditory nerve.

听侧腺系统 鱼和某些两栖类生

in fish and certain amphibians consisting of the neuromast cells in various tracts on or near the surface of the body (i.e. the *lateral-line system*) and the inner ear (*membranous labyrinth*). Neuromasts and receptor cells of the inner ear are similar, consisting of groups of cells with sensory processes innervated by nerves from the medulla oblongata of the brain. They are responsible for the detection of sounds in water.

acquired characteristics Changes in the structure or function of an organ or system during the life of an organism, brought about by the use or disuse of that organ or system, or by environmental influences. For example, sportsmen may develop strong muscles, and plants growing near coasts show adaptations to the drying effects of sea air. Acquired characteristics are not inherited. See also Lamarckism.

acquired immune deficiency syndrome
See AIDS.

acraniate Any chordate animal with a notochord and lacking a brain and skull. Acraniates include the urochordates and cephalochordates. See Cephalochordata, Urochordata.

acropetal Developing from the base upwards so that the youngest structures are at the apex. An acropetal sequence of development is seen in flower formation in which the calyx forms first and the carpels form last. The term may also be applied to the movement of substances towards the apex, for example the transport of

物所具有的一种系统,它由体表、其附近(即侧线)及内耳(膜迷路)的各种管道内的神经丘细胞组成。内耳的神经丘和受体细胞很相似,都包含由大脑延髓神经支配的具有感觉功能的各类细胞。它们用于在水中探测声音。

获得性状 生物个体在其一生中由于外界环境的影响(或器官的使用或不使用)而造成的器官或系统的结构或功能的改变。例如运动员可拥有强壮的肌肉,生长在海岸边的植物适应海洋空气的干燥。获得性状不能遗传。参阅 445 页 Lamarckism。

获得性免疫缺陷综合征 参阅 18 页 AIDS。

无头骨类 指任何脊索动物中具有脊索而缺乏大脑和头骨的动物。无头骨类包括尾索动物和头索动物。参阅 142 页 Cephalochordata; 842 页 Urochordata。

向顶的 指植物的某些器官从基部向上发育,因此最新长出的结构位于顶端。花的形成过程中可见向顶发育的次序,先形成花萼,后形成心皮。这一词语也用来描述物质向顶端的运动,例如根中植物激素的转运。比较 81 页 basipetal。参阅 140 页 centrifugal; 141 页 centripetal。