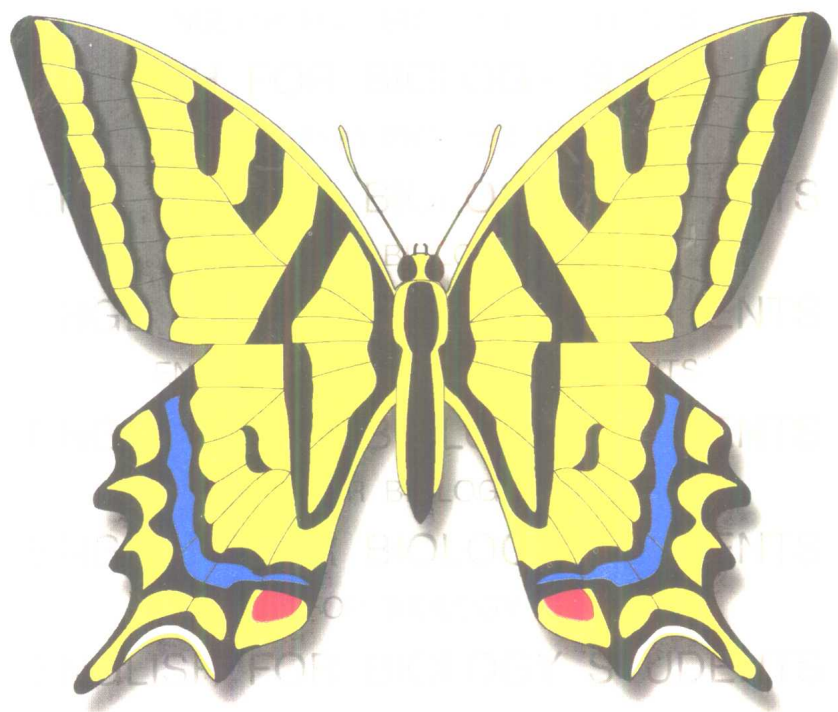


曹仪植 王子仁 曹依民 曹 玉

生物学专业英语



兰州大学出版社

English for Biology Students
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前 言

克隆绵羊的诞生标志着 21 世纪作为生物学世纪的提前到来。近年来,随着生物科学的飞速发展,新知识、新概念、新方法不断涌现。这一方面给生物学发展增添了活力,而另一方面给从事生物学、医学、农学及相关学科的广大师生、科技工作者阅读英文书刊、文献,借鉴国外先进科技成就,加强国际学术交流带来了困难。广大生物学工作者迫切希望能在较短时间内熟悉现代生物科学的基本英语词汇,熟练查阅、阅读英语文献,掌握用英语撰写学术论文和提高在英特网上进行学术交流的能力。为此,我们编写了这本教材,奉献给生物学工作者,希望对他们学习生物学英语有所帮助。

由于生物科学研究的是集物理、化学等各种物质运动形式于一体的最复杂的生命运动形式,因此生物学是一个分支多、门类广的庞大学科,涉及的专业名词多,词汇范围广,再加上生物学迅速发展创造了许多新概念、新名词,因此一本生物学专业英语教材企图包括生物学的全部内容是困难的。我们在编写教材时,一方面力求课文能反映当代生物学的发展趋势,另一方面尽可能编入当代生物科学中常见的英语词汇、术语以及生物学专业英语中常见的语法现象。

本书计 40 课,内容涉及细胞学、遗传学、生物化学、分子生物学、基础医学、植物学、动物学、生态学和生物技术等各个领域,书末附有总词汇表。本书涉及面广、取材新、文体多样、句型各异。对生物学词汇与术语均注有国际音标,有利于读者自学。每课课文后,对课文中出现的典型句或难句进行选注,对一些语法现象进行解释。在认真阅读全书后,可使读者扩大大约 2000~3000 个生物学专业词汇,顺利阅读生物学相关专业的英语文献和撰写基本的英语稿件。

本书课文精选自近年出版的原版外文书,编写时作者略作删改。其中主要

本书课文精选自近年出版的原版外文书,编写时作进略作删改。其中主要选自《Plant Physiology》(1992, F. B. Salisbury & C. W. Ross);《Biology》(1989, C. Starr & R. Taggart.);《Bacteria》(1980, D. H. Patent);《The Human side of Biology》(1987, W. H. Mason & N. L. Marshall);《Physiology of Woody Plants》(1979, P. J. Kramer & T. T. Kozlowski);《General, Organic & Biochemistry》(1991, F. A. Bettelheim & J. March);《Human Physiology》(1990, S. I. Fox);《Molecular Plant Development》(1988, T. M. Murphy & W. F. Thompson);《Life; The Science of Biology》, (1987, W. K. Purves & G. H. Orians);《Biology》(1987, K. Arms & P. S. Camp);《Elements of Biology》(1982, C. K. Levy);《Biotechnology》(1985, I. J. Higgins, D. J. Best, J. Jones);《Introduction to Embryology》(1975, B. I. Balinsky);《Developmental Biology》(1991, S. F. Gilbert). 在此向原书作者表示感谢。

本书可供掌握了基本英语语法并熟悉基本英语词汇的生物学、医学、农林专业的大学作为专业英语教学用书,也可作为研究生、函授生、职称考试和出国学习的生物学专业有关人员作为学习辅导教材。由于本书受编者英语和生物学知识水平的限制,在选材和注释方面难免有错误与不足之处,望使用此教材的师生予以指正。

编者

1997年12月于兰州

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1. Fundamental Concepts and Methods in Biology

Biology is the branch of science that studies living things: their structure, function, reproduction, and interactions with one another and with the nonliving environment. We can identify several fundamental concepts in biology.

1. **Living things are highly ordered.** The chemicals that make up a living organism are much more complex and highly ordered on a molecular level than are the chemicals that make up most nonliving systems¹. This chemical organization is reflected in the organized structure and function of the organism's body. All organisms contain very similar kinds of chemicals, and the chemical makeup of an organism's body differs from that of its nonliving environment.

2. **Living things are organized into units called cells.** Most cells are so small that we must use a microscope to see them. Many small organisms, such as bacteria and protists, consist of one cell each. Larger organisms, such as grasses and humans, contain up to hundreds of millions of cells.

Each cell is a discrete packet of highly ordered living material, biochemical factory. It takes in nutrients and energy and uses these to maintain itself, to grow, to respond to changes in the environment, and eventually to reproduce, forming two new cells. Hence, cells are the units of structure, function, and reproduction in organisms.

3. **Living things obtain and use energy from their environments to maintain and increase their high degree of orderliness.** Most organisms depend, directly or indirectly, on energy from the sun. Green plants use solar energy to make food, which supports the plants themselves. It is also used by all organisms that eat plants, and eventually by those that eat the plant-eaters too. All organisms use energy from their food to maintain their bodies, to grow, and to reproduce.

4. **Living organisms respond actively to their environments.** Most animals respond rapidly to environmental changes by making some sort of movement—exploring, fleeing, or even rolling into a ball. Plants respond more slowly but still actively; stems and leaves bend toward light, and roots grow downward. The capacity to respond to environmental stimuli is universal among living things.

5. **Living things develop.** Everything changes with time, but living organisms change in particularly complex ways called development. A nonliving crystal grows by addition of identical or similar units, but a plant or animal develops new structures, such as leaves or

teeth, that may differ chemically and structurally from the structures that produced them.

6. Living things reproduce themselves. New organisms—bacteria, protists, animals, plants, and fungi—arise only from the reproduction of other, similar, organisms. New cells arise only from the division of other cells.

7. The information each organism needs to survive, develop, and reproduce is segregated within the organism and passed from each organism to its offspring. This information is contained in the organism's genetic material—its chromosomes and genes—which specifies the possible range of the organism's development, structure, function, and response to its environment. An organism passes genetic information to its offspring, and this is why offspring are similar to their parents. Genetic information does vary somewhat, though, so parents and offspring are usually similar but not identical.

8. Living things evolve and are adapted to their environments. Today's organisms have arisen by evolution, the descent and modification of organisms from more ancient forms of life. Evolution proceeds in such a way that living things and their components are well suited to their ways of life. Fish, earthworms, and frogs are all so constructed that we can predict roughly how they live merely by examining them. The adaptation of organisms to their environments is one result of evolution.

How is it that scientists probe so skillfully into the monument of life and discover so much about its foundations? What is it about their manner of thinking that yields such precise results? The scientific method is a formalized way of answering questions about causation in the natural world. In principle, the scientific method has three main steps (although in practice scientists work in many different ways). The first step is to collect **observations**, phenomena which can be detected by the senses (vision, hearing, smell, taste, and touch). Observations can be also made indirectly, through use of special equipment (such as a microscope) that extended the range of perception. With practice, we can become skilled at making systematic observations. This means focusing one or more senses on a particular object or event in the environment, and screening out the "background noise" of information that probably has no bearing on our focus[®]. Second, the scientist thinks of **hypothesis**, ideas about the cause of what has been observed. The third step is **experimentation**, performing tests designed to show that one or more of the hypothesis is more or less likely to be incorrect.

Hypothesizing means putting together a tentative explanation to account for an observation. No scientist can put forward an idea and demand that it be believed as true, no questions asked. In science, there are no absolute truths. There are only high probabilities that an idea is correct in the context of observations and tests made so far. Instead of absolutes, there is suspended judgment. This means a hypothesis is tentatively said to be valid if it is consistent with observations at hand. You won't (or shouldn't) hear a scientist say, "There is no other explanation!" More likely you will hear, "Based on present knowledge, this explanation is our best judgment at the moment."

Often the weight of evidence is so convincing that the hypothesis becomes accepted as a theory: a coherent set of ideas that form a general frame of reference for further studies. In science, the word "theory" is not used lightly. It is bestowed only on hypothesis that can be relied upon with a very high degree of confidence.

Testing the hypothesis through experiments is at the heart of scientific inquiry. Experiments must be designed so that their results are as unambiguous as human ingenuity can make them. For this reason, experiments have to include control treatments as well as experimental treatments. The two differ only by the factor(s) in which you are interested.

Collecting and organizing test results is a necessary process in biological experiments. Data tables or graphs are used to organize and display information for analysis. Graphs are especially useful in illustrating trends of patterns. Data analysis is less mechanical and more conceptual than collecting and organizing the information. Often, statistical tests are used to determine if differences between experimental data and control data are significant or are likely due only to chance. If it can be argued that the differences are due to chance only, then it can also be argued that the independent variable had no effect.

Generalizing from test results requires careful and objective analysis of the data gathered. Usually, the hypothesis under test is accepted or rejected on the basis of conclusions drawn. A statement is written about what new insights (if any) have been gained into the original problem. Apparent trends are noted when the same data appear in test results gathered over a period of time. Often, further questions and hypothesis are posed in an attempt to guide additional studies of the problem.

词 汇

biology [bai'ɒlədʒi] *n.* 生物学
 living thing 生物
 function [fʌŋkʃən] *n.* 功能, 作用
 reproduction [ˌri:prə'dʌkʃən] *n.* 繁殖, 生殖;
 复制
 environment [in'vaiənmənt] *n.* 环境; 围绕
 order ['ɔ:də] *n.* 秩序, 顺序; 级, 阶; 目
 organize ['ɔ:gənaɪz] *vt.* 使成有机体
 organism ['ɔ:gənɪzəm] *n.* 生物体; 有机体
 cell [sel] *n.* 细胞; 小室
 microscope ['maɪkrəskəʊp] *n.* 显微镜
 bacteria [bæk'tɪəriə] [复] *n.* (bacterium 的
 复数) 细菌
 protista [prə'tɪstə] *n.* 原生生物
 discrete [dis'kri:t] *a.* 分离的; 不连续的

biochemical [ˌbaɪəu'kemɪkəl] *a.* 生物化学的
 nutrient ['nju:triənt] *a.* 营养的 *n.* 营养物质
 respond [ris'pɒnd] *vi.* 响应, 有反应
 explore [ɪks'plɔ:] *vt.* 探究, 考察 *vi.* 探险
 flee [fli:] *vi.* 逃, 逃避; 消失
 stem [stem] *n.* 茎, (树)干, (叶)梗
 leaf [li:f], [复] leaves [li:vz] *n.* 叶
 root [ru:t] *n.* 根; 地下茎; 块根
 stimulus ['stimjʊləs], [复] (stimuli) *n.* 刺激
 universal [ˌju:ni'vɜ:səl] *a.* 普遍的, 一般的;
 全世界的
 development [di'veləpmənt] *n.* 发育; 发展
 plant [plɑ:nt] *n.* 植物; 作物 *vt.* 栽培
 animal ['æniməl] *n.* 动物, 牲畜 *a.* 动物的;
 肉体的

fungi[ˈfʌŋɡaɪ]〔复〕*n.* 真菌(fungus 的复数)
 division[diˈviʒən] *n.* 分裂;分开
 segregate[ˈsegrɪgeɪt] *vt.* 使分离 *vi.* 分开, 分离
 offspring[ˈɒf(ɪ)fsprɪŋ] *n.* 后代;儿女
 genetic[dʒiˈnetɪk] *a.* 遗传学的
 chromosome[ˈkrəʊməsəʊm] *n.* 染色体
 gene[dʒiːn] *n.* 基因
 evolve[ɪˈvɒlv] *vt.* 使进化,使演化 *vi.* 进化,发育,进展
 adapt[əˈdæpt] *vt.* 使适应,改编 *vi.* 适应(to)
 evolution[ɪˈvɒljʊːfən] *n.* 进化;进展;系统发育;个体发生
 descent[diˈsent] *n.* 下降;血统
 modification[,mɒdɪfɪˈkeɪʃən] *n.* 修饰,修改;缓和;诱发变异
 earthworm[ˈə:θwɜ:m] *n.* 蚯蚓
 frog[frɒɡ] *n.* 蛙
 probe[praʊb] *vt.* 探索 *vi.* 探查 *n.* 探针
 causation[kɔ:ˈzeɪʃən] *n.* 因果关系
 observation[,ɒbzə(ɪ)ˈveɪʃən] *n.* 观察,观测
 detect[diˈtekt] *vt.* 检测;发觉
 sense[sens] *n.* 感觉;感官 *vt.* 感觉
 hypothesis[haɪˈpɒθɪsɪs],〔复〕(hypotheses) *n.* 假设
 equipment[ɪˈkwɪpmənt] *n.* 设备,装置
 perception[pəˈsepʃən] *n.* 感觉;感受
 systematic[,sɪstɪˈmæɪtɪk] *a.* 分类学的;有系统的,有秩序的
 screen[skri:n] *vt.* 筛选 *n.* 屏幕
 tentative[ˈtentətɪv] *a.* 试验的;暂时的
n. 试验
 suspend[səsˈpend] *vt.* 悬浮;使悬而不决
 judgment[ˈdʒʌdʒmənt] *n.* 判断,评价
 valid[ˈvælɪd] *a.* 正确的,有根据的;健康的
 convince[kənˈvɪns] *vt.* 使确信,使信服
 accept[əkˈsept] *vt.* 接受,承认 *vi.* 同意
 coherent[kouˈhɪərənt] *a.* 粘着的;连贯的;相

干的
 bestow[biˈstəʊ] *vt.* 把……给予,把……赠与
 与
 inquiry[ɪnˈkwaɪəri] *n.* 探究;调查;询问
 unambiguous[ˈʌnæmˈbɪɡjuəs] *a.* 清楚的,明确的
 ingenuity[ɪndʒɪˈnju(ː)ɪti] *n.* 精巧;机灵
 control[kənˈtrəʊl] *vt.* 控制 *n.* 控制,调节,对照
 table[ˈteɪbl] *n.* 表格 *vt.* 制成表格
 graph[græf] *n.* 图表;曲线 *vt.* 用图表表示
 display[disˈpleɪ] *n.* 显示,展览 *vt.* 陈列,显示
 analysis[əˈnæləsɪs] *n.* 分析,分解
 illustrate[ˈɪləstreɪt] *vt.* 说明,阐明
 statistical[stətɪstɪkəl] *a.* 统计的;统计学的
 variable[ˈveəriəbl] *a.* 易变的;可变的;变异的,畸变的 *n.* 变量
 conclusion[kənˈklu:ʒən] *n.* 结论,推论;结束
 statement[ˈsteɪtmənt] *n.* 陈述,声明
 attempt[əˈtempt] *vt.* 尝试,试图 *n.* 企图

词组

interactions with one another 相互作用
 on a molecular level 分子水平上
 differ from 不同于
 consist of 由……组成
 highly ordered 高度有序的
 take in 吸收
 respond to 对……响应
 arise from 由……而产生
 adapt to 对……适应
 no bearing on…… 与……无关
 account for 是……的原因
 consistent with 与……一致的
 significant difference 显著性差异
 draw a conclusion from 由……得出结论

课文注释

1. The chemicals that make up a living organism are much more complex and highly ordered on a molecular level than are the chemicals that make up most nonliving systems. 本复合句主语为“The chemicals”,从句“that make up a living organism”作其定语,谓语为“are much more...ordered”。“on a molecular level”为状语,“than...systems”为比较状语从句,其中“that...systems”为定语从句修饰“the chemicals”,与主句主语作比较。

此句可译成:在分子水平上,组成生命有机体的化学物质比构成大多数非生命系统的化学物质要复杂得多,而且更加高度有序。

2. This means focusing one or more senses on a particular object or event in the environment, and screening out the “background noise” of information that probably has no bearing on our focus. 本句主语为“This”,“means”作谓语。有两个宾语,其一为“focusing...on...”,意为“把……集中于……”;其二为“screening out...”,其中,“that probably...focus”为“information”的定语从句。

此句可译成:这意味着(我们)可把一种或几种官能集中到环境中的某个特殊目标或事件,同时从中去除与我们注意的目标或事件无关的“背景噪音”。

2. Unity in Basic Life Processes

Metabolism

Raw materials do not assemble on their own to form each new organism. The assembly processes—indeed, all processes associated with life—are the result of energy transfers between substances. For example, in a process called photosynthesis, plants absorb sunlight energy and use it to form compounds such as adenosine triphosphate, or ATP; then the energy of ATP is used to build sugar, starch, and other molecules. Here, energy is transferred from the sun, to ATP, and then on to molecules that the cell uses as building blocks or tucks away as energy reserves. In another process, called aerobic respiration, cells tap their energy reserves by breaking apart molecules so that some energy becomes available to form ATP—which in turn delivers energy to sites where specific cellular activities take place.

This example tells us something about the nature of energy transfers. Energy stores can be used up. Organisms cannot create “new” energy from nothing; to stay alive, they

must tap an existing energy source from their surroundings (the sun, nectar from a flower, a chicken dinner), then transform the acquired energy into forms that can be stored and used to do cellular work.

All forms of life extract and transform energy from their surroundings, and they use it for manipulating materials in ways that assure maintenance, growth, and reproduction. More briefly, they show what is called "metabolic activity."

Growth, Development, and Reproduction

Through metabolic events, living things come into the world, grow and develop, and reproduce. Most then move on through decline and death according to a timetable for their kind. Even as individual organisms die, reproduction assures that new organisms having much the same traits will replace them. ^①

Yet "an organism" is much more than a single organized form having a single set of functions during its lifetime. One example will make the point, even though actual details vary considerably among organisms.

A tiny egg deposited on a branch by a female moth is a compact transitional form. It contains all the instructions necessary to become an adult moth. Before becoming a moth, developmental events inside the egg lead to an entirely different form: a wingless, many-legged larva called a caterpillar.

The caterpillar hatches during a warm season when tender new leaves unfold. Not coincidentally, the caterpillar is a streamlined "eating machine" able to tear and chew tender plant tissues. It has a capacity for extremely rapid growth. It eats and grows until some internal alarm clock goes off, setting in motion events that lead to profound changes in form. Some cells are disassembled, other cells multiply and are assembled into entirely different patterns. Tissues, too, are moved about during this wholesale remodeling, the so-called pupal stage. From the pupa, the adult moth emerges.

The moth is the "reproductive machine" stage. Its head has a tubelike extension (a proboscis) that draws nectar from flowers. From the nectar comes energy that powers free-wheeling flights. For this insect, wings are emblazoned with colors and move at a frequency that can attract a potential mate. The moth has organs in which egg or sperm develop, and which enhance fertilization of an egg and the production of offspring.

None of these stages is "the insect". "The insect" is a series of stages in organization, with different adaptive properties emerging at each stage.

Homeostasis

Any attempt to define the nature of life cannot focus only on the organism, for an organism cannot exist apart from its surroundings. The living state is maintained within

rather narrow limits. Concentrations of substances such as carbon dioxide and oxygen must not rise above or fall below certain levels. Toxic substances must be avoided or eliminated. Certain kinds of foods must be available, in certain amounts. Water, oxygen, carbon dioxide, light, temperature—such environmental factors dictate the terms of survival. And such terms are subject to change.

How do living things respond to changes in the environment? They respond in two ways. First, all organisms have built-in means of making internal adjustments to outside changes. The adjustments help maintain operating conditions within some tolerable range. This capacity for maintaining the “internal environment” is known as homeostasis. Individual cells have homeostatic controls. (For instance, they have mechanisms for bringing in substances that are in short supply and for eliminating other substances.) Multicelled organisms also have homeostatic controls. (Birds, for instance, have sensors that signal the brain when the outside temperature drops. The brain may send signals to cells that control feather movements. Special movements lead to feather fluffing, a behavior that retains heat and helps maintain body temperature.)

Homeostasis implies constancy, a sort of perpetual bouncing back to some limited set of operating conditions. In some respects, constancy is indeed vital. Your red blood cells will not function unless they are bathed in water that contains fairly exact amounts of dissolved components.

Yet living things also respond in a second way to changing conditions. All organisms adjust to certain directional changes in the internal and external environments. We might call this dynamic homeostasis, for the living state is maintained through adjustments that shift the form and function of the organism over time.

A simple example will do here. In humans, irreversible chemical changes trigger puberty, the age at which sexual reproductive structures mature and become functional. At puberty, the body steps up its secretions of such hormones as androgens (in males) and estrogens (in females). The increased secretions are necessary for sexual maturation. They call for entirely new events such as the menstrual cycle. This cycle includes a rhythmic accumulation of substances that prepare the female body for pregnancy, followed by disposal of substances when pregnancy does not occur.² It is not that homeostasis no longer operates. It is that developmental events now demand new kinds of adjustments in the internal state.

DNA: Storehouse of Constancy and Change

Upon thinking about the preceding examples of development, you might wonder what could be responsible for inheritance—the transmission, from parent to offspring, of structural and functional patterns characteristic of each kind of organism.³ How is it that a bacterium can divide and develop into two fairly exact copies of itself? How is it that corn

seeds can germinate and develop into fairly exact replicas of parent corn plants? Within each individual, there must be a storehouse of hereditary information.

This storehouse of information has a remarkable characteristic. Although offspring resemble their parents in form and behavior, variations can exist on the basic plan. A newly produced bacterium might not be able to assemble (as it is supposed to) some molecule that is vital to its functioning. Some humans are born with six digits on each hand instead of five. Overall, hereditary instructions must remain intact to assure faithful transmission of traits—yet they also must be subject to change in some details!

As you have probably learned by now, we know where the instructions reside. In all living cells, they are encoded in molecules of deoxyribonucleic acid, or DNA. We also know that changes can occur in the kind, structure, sequence, or number of component parts of DNA. These changes are mutations. Most mutations are harmful, for the DNA of each kind of organism is a package of information that is finely tuned to a given environment. In addition, its separate bits of information are part of a coordinated whole. When one crucial part changes, the whole living system may be thrown off balance.

However, sometimes a mutation may prove to be harmless, even beneficial, under prevailing conditions. For example, mutation produces a dark-colored form of a moth that otherwise is light-colored. When the mutant moth rests on soot-covered trees, bird predators simply do not see it. In places where there happen to be lots of soot-covered trees (as in industrial regions), the mutant stands a better chance of not being eaten—hence surviving and reproducing—than its light-colored kin. ^④

词 汇

metabolism [me'tæbəlɪzəm] *n.* 新陈代谢, 代谢作用

assemble [ə'sembl] *vt.* 装配

transfer [træns'fɜ:] *vt.* 传递, 传输; 变换

substance [ˈsʌbstəns] *n.* 物质

photosynthesis [ˌfəʊtəʊ'sɪnθəsis] *n.* 光合作用

absorb [əb'sɔ:b] *vt.* 吸收(水、热、光等)

adenosine [ə'denəsi(:)n] *n.* 腺嘌呤核苷

starch [stɑ:tʃ] *n.* 淀粉

aerobic [ɛərəʊbɪk] *a.* 需氧的

respiration [ˌrespə'reɪʃən] *n.* 呼吸作用

tap [tæp] *vt.* 开发, 发掘

nectar ['nektə] *n.* 花蜜

extract [ɪks'trækt] *vt.* 提取; 萃取 *n.* 提取

物; 摘录

manipulate [mə'nɪpjuleɪt] *vt.* 操作; 操纵

assure [ə'ʃʊə] *vt.* 使确信; 向……保证

maintenance [ˈmeɪntɪnəns] *n.* 保持; 维持

trait [treɪt] *n.* 特征; 特性

moth [mɒθ] *n.* 蛾

compact [kəm'pækt] *a.* 紧密的

instruction [ɪn'strʌkʃən] *n.* 指导; 指示

larva ['lɑ:və], [复](larvae) *n.* 幼虫; 幼体

caterpillar ['kætəpɪlə] *n.* 毛虫

hatch [hætʃ] *vt.* 孵出 *vi.* 孵化 *n.* 孵化

tender ['tendə] *a.* 嫩的; 幼弱的

streamlined ['stri:mlaɪnd] *a.* 现代化了的; 流线型的

multiply ['mʌltɪplaɪ] *vi.* 繁殖; 增多

tissue[ˈtɪʃuː] *n.* 组织
 wholesale[ˈhəʊlseɪl] *n.* 批发 *a.* 大批的, 无选择的
 remodel[ˈriːmɒdl] *vt.* 重建
 pupal[ˈpju:pəl] *a.* 蛹
 emerge[ɪˈmɜːdʒ] *vi.* 出现; 形成
 proboscis[prəˈbɒsɪs] *n.* (昆虫的) 喙; 长鼻
 emblazon[ɪmˈbleɪzən] *vt.* 饰……以纹章; 装饰
 sperm[spɜːm] *n.* 精子; 精液
 fertilization[ˌfɜːtɪlaɪˈzeɪʃən] *n.* 受精; 施肥
 homeostasis[ˌhəʊmɪəʊˈsteɪsɪs] *n.* (体内) 稳态, (体内) 平衡
 avoid[əˈvɔɪd] *vt.* 避免 *a.* 可避免的
 eliminate[ɪˈlɪmɪneɪt] *vt.* 排除, 消除, 消灭
 adjust[əˈdʒʌst] *vt.* 调节, 调整; 校正
 tolerable[ˈtɒlərəbl] *a.* 可忍受的
 signal[ˈsɪgnəl] *n.* 信号 *v.* 发信号
 feather[ˈfeðə] *n.* 羽毛 *vi.* 长羽毛
 fluff[flʌf] *n.* 绒毛 *vt.* 抖松羽毛
 perpetual[pəˈpetʃuəl] *a.* 四季开花的; 重复不停的; 永恒的
 bounce[baʊns] *vi.* 跳起 *n.* ~back 反冲, 反射
 vital[ˈvaɪtl] *a.* 生命的; 致命的
 dissolve[diˈzɒlv] *vt.* 使溶解 *vi.* 溶解, 融化
 dynamic[daiˈnæmɪk] *a.* 动力学的; 动态的
 irreversible[ˌɪrɪˈvɜːsəbl] *a.* 不可逆的
 trigger[ˈtrɪgə] *n.* 触发物, 引发剂 *v.* 触发
 puberty[ˈpju:bə(:)ti] *n.* 青春期
 constancy[ˈkɒnstənsi] *n.* 坚定; 经久不变
 secretion[sɪˈkriːʃən] *n.* 分泌

hormone[ˈhɔːmoun] *n.* 激素, 荷尔蒙
 androgen[ˈændrədʒən] *n.* 雄激素
 estrogen[ˈɪːstrədʒən] *n.* 雌激素
 menstrual[ˈmenstruəl] *a.* 每月一次的; 月经的
 rhythmic[ˈrɪðmɪk] *a.* 有节奏的
 pregnancy[ˈpregnənsi] *n.* 怀孕, 怀胎
 inheritance[ɪnˈherɪtəns] *n.* 遗传
 germinate[ˈdʒɜːmɪneɪt] *vt & vi* (使) 发芽
 hereditary[hɪˈredɪtəri] *a.* 遗传的
 variation[ˌvæəriˈeɪʃən] *n.* 变异; 变种; 变化
 digit[ˈdɪdʒɪt] *n.* 手指; 数字
 encode[ɪnˈkəʊd] *vt.* 编码
 deoxyribonucleic
 [diːˈɒksiˈraɪbounjuːˈkliːɪk] *a.*
 脱氧核糖核酸的
 mutation[mju(:)ˈteɪʃən] *n.* 突变; 变种
 coordinate[kouˈɔːdɪnɪt] *vi & vi* (使) 同等,
 (使) 协调 *n.* 同等
 prevailing[prɪˈveɪlɪŋ] *a.* 普遍的; 占优势的
 predator[ˈpredətə] *n.* 食肉者
 soot[suːt] *n.* 煤烟

词组

tuck away 使隐藏
 apart from 撇开
 adjust to 适应于
 throw off 出现偏差
 adenosine triphosphate 三磷酸腺苷, 简称
 ATP
 step up 逐步增加
 stand a good chance 很有可能, 大有希望

课文注释

1. Even as individual organisms die, reproduction assures that new organisms having much the same traits will replace them. “Even as...die”为让步状语从句, 主句主语为“repro-