

A COURSE OF BIOLOGY ENGLISH

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钱国英 司爱侠 朱秋华 编著

A Course of Biology English

生物专业
英语教程

清华大学出版社

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内 容 简 介

本书以“Unit”为单位,每一“Unit”由以下几部分组成:“Text A”(课文 A)及“Text B”(课文 B)——这些课文语言地道,知识面广;“New Words”(单词)——对课文中出现的新词进行注释,读者由此可以积累生物专业的基本词汇;“Phrases”(词组)——对课文中的常用词组进行注释;“Abbreviations”(缩略语)——对课文中出现的、业内人士必须掌握的缩略语进行注释;“Notes”(难句讲解)——讲解课文中出现的疑难句子,培养读者的阅读理解能力;“Exercises”(习题)——供读者练习使用,可有效地巩固学习效果;“Reading Material”(阅读材料)——选编生物学专业文献,进一步扩大读者视野;“练习答案”——给出全书练习题答案,可供读者检查学习效果。本书以生物学常用知识为主线,运用概念解释、理论阐述、知识介绍等多种形式,帮助读者掌握生物学专业英语的基本术语和表达方式,能切实提高生物工作者实际运用专业英语的能力。

本书既可作为高等院校生物学及相关专业学生的专业英语教材,也可供其他生物学工作者“充电”之用。

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前 言

随着我国与外界交流日益增加,对生物专业从业人员专业英语水平的要求也日益提高,因此,生物专业从业人员必须进行针对性的专门学习。编著者编写本书的目的就在于切实提高读者实际使用生物专业英语的能力。

本书体例上以“Unit”为单位,每一“Unit”由以下几部分组成:“Text A”(课文 A)及“Text B”(课文 B)——这些课文语言地道,知识面广;“New Words”(单词)——对课文中出现的新词进行注释,读者由此可以积累生物专业的基本词汇;“Phrases”(词组)——对课文中的常用词组进行注释;“Abbreviations”(缩略语)——对课文中出现的、业内人士必须掌握的缩略语进行注释;“Notes”(难句讲解)——讲解课文中出现的疑难句子,培养读者的阅读理解能力;“Exercises”(习题)——供读者练习使用,可有效巩固学习效果;“Reading Material”(阅读材料)——选编生物学专业文献,进一步扩大读者视野;“练习答案”——给出全书练习题答案,可供读者检查学习效果。

本书内容比较全面,涉及生物学多个分支学科领域。以生物学常用基本知识为主线,运用概念解释、理论阐述、知识介绍等多种形式,帮助读者掌握生物学专业英语的基本术语和表达方式,能切实提高生物工作者实际运用专业英语的能力。

本书结构非常适合组织教学,词汇加注了音标。

本书既可作为高等院校生物学及相关专业学生的专业英语教材,也可供其他生物学工作者“充电”之用。

作 者

2006年8月

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Unit 1

Text A

Biology: The Science of Our Lives

Biology literally means “the study of life”. Biology is such a broad field, covering the minute workings of chemical machines inside our cells, to broad scale concepts of ecosystems and global climate change. Biologists study intimate details of the human brain, the composition of our genes, and even the functioning of our reproductive system. Biologists recently all but completed the deciphering of the human genome, the sequence of deoxyribonucleic acid (DNA) bases that may determine much of our innate capabilities and predispositions to certain forms of behavior and illnesses. DNA sequences have played major roles in criminal cases (O. J. Simpson, as well as the reversal of death penalties for many wrongfully convicted individuals), as well as the impeachment of President Clinton (the stain at least did not lie). We are bombarded with headlines about possible health risks from favorite foods (Chinese, Mexican, hamburgers, etc.) as well as the potential benefits of eating other foods such as cooked tomatoes. Informercials tout the benefits of metabolism-adjusting drugs for weight loss. Many Americans are turning to herbal remedies to ease arthritis pain, improve memory, as well as improve our moods.

Robert Hooke (1635-1703), one of the first scientists to use a microscope to examine pond water, cork and other things, referred to the cavities he saw in cork as “cells”, Latin for chambers. Mattias Schleiden (in 1838) concluded all plant tissues consisted of cells. In 1839, Theodore Schwann came to a similar conclusion for animal tissues. Rudolf Virchow, in 1858, combined the two ideas and added that all cells come from pre-existing cells, formulating the Cell Theory. Thus there is a chain-of-existence extending from your cells back to the earliest cells, over 3.5 billion years ago. The cell theory states that all organisms are composed of one or more cells, and that those cells have arisen from pre-existing cells.

In 1953, James Watson and Francis Crick developed the model for deoxyribonucleic acid (DNA), a chemical that had (then) recently been deduced to be the physical carrier

of inheritance. Crick hypothesized the mechanism for DNA replication and further linked DNA to proteins, an idea since referred to as the central dogma. Information from DNA “language” is converted into RNA (ribonucleic acid) “language” and then to the “language” of proteins. The central dogma explains the influence of heredity (DNA) on the organism (proteins).

Homeostasis is the maintenance of a dynamic range of conditions within which the organism can function. Temperature, pH and energy are major components of this concept. Thermodynamics is a field of study that covers the laws governing energy transfers, and thus the basis for life on earth. Two major laws are known; the conservation of matter and energy, and entropy. The universe is composed of two things; matter (atoms, etc.) and energy.

These first three theories are very accepted by scientists and the general public. The theory of evolution is well accepted by scientists and most of the general public. However, it remains a lightning rod for school boards, politicians, and television preachers. Much of this confusion results from what the theory says and what it does not say.

New Words

biology	[bai'ɒlədʒi]	n. 生物学, 生物
science	['saɪəns]	n. 科学; 学科
literally	['lɪtərəli]	adv. 照字面意义, 逐字地
broad	[brɔ:d]	adj. 宽的, 阔的, 广泛的
field	[fi:ld]	n. 领域
minute	[mai'nju:t]	adj. 微小的, 异常小的, 极细微的
working	['wɜ:kɪŋ]	n. 工作, 工作方式 adj. 工作的
chemical	['kemɪkəl]	adj. 化学的 n. 化学制品, 化学药品
machine	[mə'ʃi:n]	n. 机器, 机械, 组织
cell	[sel]	n. 细胞; 单元
scale	[skeɪl]	n. 范围
concept	['kɒnsept]	n. 观念, 概念
ecosystem	[i:kə'sɪstəm]	n. 生态系统
global	['glɔ:bl]	adj. 全球的, 全世界的
climate	['klaɪmɪt]	n. 气候; 风土, 思潮
intimate	['ɪntɪmɪt]	adj. 亲密的; 个人的, 私人的
detail	['deɪteɪl]	n. 细节, 详情

composition	[kəmpe'ziʃən]	n. 组成,构成
gene	[dʒi:n]	n. 遗传因子,遗传基因
functioning	['fʌŋkʃənɪŋ]	n. 机能
reproductive	['ri:prə'dʌktiv]	adj. 生殖的,再生的
biologist	[bai'ɒlədʒist]	n. 生物学家
decipher	[di'saifə]	vt. 译解(密码等);解释
genome	['dʒi:nəʊm]	n. 基因组,染色体组
sequence	['si:kwəns]	n. 次序,顺序,序列
determine	[di'tə:mi:n]	vt. 决定,确定,测定
innate	['ineit]	adj. 先天的,天生的
capability	[keipə'biliti]	n. 能力,性能
predisposition	[pri:dispə'ziʃən]	n. 倾向;素质;诱因
behavior	[bi'heivjə]	n. 举止,行为
illness	['ilnis]	n. 疾病,生病
reversal	[ri've:səl]	n. 颠倒,反转,反向,逆转
wrongfully	['rɒŋfʊli]	adv. 错误地,不正当地,不妥地
convict	['kɒnvikt]	vt. 证明……有罪,宣告……有罪
individual	[indi'vidjuəl]	n. 个人,个体 adj. 个别的,单独的,个人的
impeachment	[im'pi:tʃmənt]	n. 非难;指责
headline	['hedlain]	n. 大字标题
risk	[risk]	n. 冒险,风险 vt. 冒……的危险
favorite	['feivərit]	adj. 喜爱的,宠爱的,中意的 n. 特别喜欢的人,喜欢的事物,亲信,心腹,幸运儿
hamburger	['hæmbə:gə]	n. 汉堡包;牛肉饼
potential	[pə'tenʃ(ə)l]	adj. 潜在的,可能的 n. 潜能,潜力
benefit	['benifit]	n. 利益,好处 vt. 有益于,有助于 vi. 受益
informercial	[,infə'mɜ:ʃəl]	n. 商业信息片
tout	[taut]	vt. 吹嘘,吹捧促销或激情洋溢地赞扬
drug	[drʌg]	n. 药,药物,药材
herbal	['hɜ:bəl]	adj. 草药的
remedy	['remidi]	n. 药物,治疗法,补救 vt. 治疗,补救

ease	[i:z]	vt. 使悠闲,使安心,减轻 n. 安逸,安心,不费力,悠闲
arthritis	[ɑ:'θraitis]	n. 关节炎
improve	[im'pru:v]	vt. 改善,改进
memory	['meməri]	n. 记忆,记忆力
mood	[mu:d]	n. 心情,情绪
microscope	['maikrəskəup]	n. 显微镜
examine	[ig'zæmin]	vt. 研究,分析
pond	[pɒnd]	n. 池塘
cork	[kɔ:k]	n. 软木塞,软木
cavity	['kæviti]	n. 洞,孔;空穴
Latin	['lætin]	n. 拉丁文,拉丁语 adj. 拉丁文的,拉丁语的,拉丁人的
chamber	['tʃeimbə]	n. 腔,室;房间
formulate	['fɔ:mjuleit]	vt. 对……作简洁陈述,有系统地表达;把……作为公式,用公式表示
state	[steit]	vt. 声明,陈述,规定 n. 状况;情形;状态
organism	['ɔ:gənizəm]	n. 生物体,有机体
deduce	[di'dju:s]	vt. 推论,演绎出
physical	['fizikəl]	adj. 物质的,自然的,物理的
carrier	['kæriə]	n. 携带者,带菌者;带虫者;传染疾病的媒介
inheritance	[in'heritəns]	n. 遗传,继承;遗产
hypothesize	[hai'pəθisaiz]	vt. 假设,假定,猜测 vi. 假定,作一个假设
mechanism	['mekənizəm]	n. 结构;机械装置;机件
replication	[,repli'keiʃən]	n. 复制
protein	['prəuti:n]	n. 蛋白质 adj. 蛋白质的
heredity	[hi'rediti]	n. 遗传;遗传性;遗传特征
homeostasis	[,həumiəu'steisis]	n. 体内平衡;自我平衡;动态平衡;内环境稳定
maintenance	[men'teinəns]	n. 维持,保持,维护
dynamic	[dai'næmik]	adj. 动态的;动力的;有活力的;精力充沛的;有生命力的
temperature	['temprɪtʃə(r)]	n. 温度;体温
pH	[pi:eitʃ]	n. (表示氢离子活度的)pH 值

energy	[ˈenədʒi]	n. 精力,精神,活力,能量
component	[kəmˈpəʊnənt]	n. 成分,部分 adj. 组成的,构成的
thermodynamics	[ˈθɜ:məʊdaɪˈnæmɪks]	n. 热力学
entropy	[ˈentrəpi]	n. 熵;宇宙在能量与物质平均扩散后的状态,(热、能源的)扩散及消失
universe	[ˈju:nɪvɜ:s]	n. 宇宙,世界,万物
matter	[ˈmætə]	n. 物质;物体;事情,问题
politician	[pəˈlɪtɪʃən]	n. 政治家,政客
preacher	[ˈpri:tʃə]	n. 讲道者;传教士;说教者

Phrases

reproductive system	再生系统,繁殖系统
all but	几乎;差一点
criminal case	刑事案件
as well as	也
death penalty	死刑
play roles in...	在……中起作用
be bombarded with	连珠炮似地,连珠炮般地
weight loss	减肥,重量减轻
turn to	转向
refer to... as	把……看作
plant tissue	植物组织,植物性组织
consist of...	由……组成
come to a conclusion	得出结论
animal tissue	动物组织
pre-existing cell	预有的细胞
cell theory	细胞理论
be composed of...	由……组成
arise from	由……而引起,由……而产生;从……中产生
central dogma	中心法则
convert... into	把……转换成
energy transfer	能量转移
the conservation of matter and energy	物质能量守恒定律
the theory of evolution	进化论
school board	学校董事会

result from. . .

由……而造成

Abbreviations

DNA (deoxyribonucleic acid)

脱氧核糖核酸

RNA (ribonucleic acid)

核糖核酸

Notes

[1] Biologists recently all but completed the deciphering of the human genome, the sequence of deoxyribonucleic acid (DNA) bases that may determine much of our innate capabilities and predispositions to certain forms of behavior and illnesses.

本句中, the sequence of deoxyribonucleic acid (DNA) bases that may determine much of our innate capabilities and predispositions to certain forms of behavior and illnesses 是一个名词短语, 做 the human genome 的同位语, 对其作进一步补充说明。在该名词短语中, that may determine much of our innate capabilities and predispositions to certain forms of behavior and illnesses 是一个定语从句, 修饰和限定 the sequence of deoxyribonucleic acid (DNA) bases。

[2] Robert Hooke (1635-1703), one of the first scientists to use a microscope to examine pond water, cork and other things, referred to the cavities he saw in cork as "cells", Latin for chambers.

本句中, one of the first scientists to use a microscope to examine pond water, cork and other things 是 Robert Hooke 的同位语, 说明其身份。he saw in cork 是一个定语从句, 修饰和限定 the cavities, Latin for chambers 是 cells 的同位语, 对其进行解释。

[3] In 1953, James Watson and Francis Crick developed the model for deoxyribonucleic acid (DNA), a chemical that had (then) recently been deduced to be the physical carrier of inheritance.

本句中, a chemical that had (then) recently been deduced to be the physical carrier of inheritance 是一个名词短语, 做 deoxyribonucleic acid (DNA) 的同位语, 对其作进一步补充说明。在该名词短语中, that had (then) recently been deduced to be the physical carrier of inheritance 是一个定语从句, 修饰和限定 a chemical。

[4] Homeostasis is the maintenance of a dynamic range of conditions within which the organism can function.

本句中, within which the organism can function 是一个介词前置的定语从句, 修饰和限定 conditions。

[5] Thermodynamics is a field of study that covers the laws governing energy transfers,

and thus the basis for life on earth.

本句中, that covers the laws governing energy transfers, and thus the basis for life on earth 是一个定语从句, 修饰和限定 a field of study。在该定语从句中, governing energy transfers 是一个现在分词短语, 作定语, 修饰和限定 the laws。

Exercises

【EX. 1】 根据课文内容, 回答以下问题

- 1) What does biology literally mean?
- 2) What does biology cover?
- 3) What do biologists study?
- 4) What is deoxyribonucleic acid (DNA)?
- 5) What does the cell theory state?
- 6) Who developed the model for deoxyribonucleic acid and when?
- 7) What is homeostasis?
- 8) What are the major components of homeostasis?
- 9) What is thermodynamics?
- 10) what are the two laws mentioned in the passage?

【EX. 2】 根据下面的英文解释, 写出相应的英文词汇(使用本单元所学的单词、词组或缩略语)

英文解释	词汇
The science of life and of living organisms, including their structure, function, growth, origin, evolution, and distribution. It includes botany and zoology and all their subdivisions.	

续表

英文解释	词汇
The smallest structural unit of an organism that is capable of independent functioning, consisting of one or more nuclei, cytoplasm, and various organelles, all surrounded by a semipermeable cell membrane.	
The state of being predisposed; tendency, inclination, or susceptibility.	
A commercial television program or relatively long commercial segment offering consumer information, such as educational or instructional material, related to the sponsor's product or service.	
The act or process by which genetic material, a cell, or an organism reproduces or makes an exact copy of itself.	
The genetic transmission of characteristics from parent to offspring.	
An individual that carries one gene for a particular recessive trait.	
The ability or tendency of an organism or a cell to maintain internal equilibrium by adjusting its physiological processes.	
An ecological community together with its environment, functioning as a unit.	
To reach (a conclusion) by reasoning.	

【EX. 3】 把下列句子翻译为中文

- 1) The core principle of biology is that biological diversity is the result of a long evolutionary journey.
- 2) Science is a way of viewing the world that focuses on objective information, putting that information to work to build understanding.
- 3) All living things share certain key characteristics: order, sensitivity, growth, development and reproduction, regulation, and homeostasis.
- 4) Living things are highly organized, whether as single cells or as multicellular organisms, with several hierarchical levels.

- 5) Both scientists and lay people are drawn to biology, because it seeks to answer the question of how life began.
- 6) The more related two species of multicellular organisms are, the more similar their anatomies in almost all cases.
- 7) Much emphasis in biology is in biotechnology, the use of organisms to create products.
- 8) At the same time, these prospects will challenge scientists with serious ethical considerations in the years to come, as the use of biotechnology requires scientists to manipulate the course of evolution.
- 9) Virtually every organism uses the same genetic code to build its proteins, from the tiniest bacterium to the blue whale and the giant sequoia.
- 10) Biologists use a variety of technical and conceptual tools to study living things.

【EX. 4】 把下列短文翻译为中文

Biology is a fascinating and important subject, because it dramatically affects our daily lives and our futures. Many biologists are working on problems that critically affect our lives, such as the world's rapidly expanding population and diseases like cancer and AIDS. The knowledge these biologists gain will be fundamental to our ability to manage the world's resources in a suitable manner, to prevent or cure diseases, and to improve the quality of our lives and those of our children and grandchildren.

Biology is one of the most successful of the "natural sciences", explaining what our world is like. To understand biology, you must first understand the nature of science. The basic tool a scientist uses is thought. To understand the nature of science, it is useful to focus for a moment on how scientists think. They reason in two ways: deductively and inductively.

Text B

Characteristics of Living Things

Living things have a variety of common characteristics.

Organization. Living things exhibit a high level of organization, with multicellular organisms being subdivided into cells, and cells into organelles, and organelles into