生物学专业英语教程

Specialized English in BIOLOGY

刘彩云 赵光强 常志隆 编著

科学出版社
www.sciencep.com

生物学专业英语教程

Specialized English in Biology

刘彩云　赵光强　常志隆　编著

科学出版社

北京

内 容 简 介

本书共分为三大部分，其中第一部分阐述了专业英语的文体特点，第二部分是生物学专业英语词汇与阅读，所选编的20多篇文章基本上涵盖了生物学的主要分支学科的基本内容，使读者通过学习，能最大限度地掌握以上领域的基本专业词汇和文章特点。本书第三部分向读者介绍了英语科技论文的基本要素及其特点，并对各要素的基本翻译方法、原则等进行了举例阐述。另外还针对每一篇文章的内容特点配置了一定量的练习题，还附录了大量常见生物学专业英语词汇、缩略语和练习题的参考答案，以方便读者复习、查阅。

本书力求趣味性、科学性，可作为高等院校相关专业本科生、研究生的专业英语教材，也可作为相关研究领域的科研人员参阅材料。

图书在版编目(CIP)数据

生物学专业英语教程/刘彩云，赵光强，常志隆编著.—北京：科学出版社，2007

ISBN 978-7-03-018702-4

Ⅰ.生… Ⅱ.①刘…②赵… ③常… Ⅲ.生物学-英语-教材 Ⅳ.H31

中国版本图书馆CIP数据核字(2007)第033097号

责任编辑：陈 露 彭克里 席 慧/责任校对：钟 洋

责任印制：刘 学/封面设计：一 明

科学出版社出版

北京东黄城根北街16号

邮政编码：100717

http://www.sciencep.com

常熟华通印刷有限公司 印刷

科学出版社编务公司排版制作

科学出版社发行 各地新华书店经销

*

2007年3月第 一 版 开本：787×1092 1/1

2007年3月第一次印刷 印张：9 3/4

印数：1~4200 字数：230000

定价：20.00元

前　言

根据国家教育部1999年9月颁发的现行《大学英语教学总纲》，大学英语教学可分为基础和应用提高两个阶段。大学英语1~6级属于基础阶段的内容，而应用提高阶段包括专业英语和高级英语。因此，专业英语的教学就是要让学生在较好掌握英语基础阶段内容的前提下，进一步学习专业英语词汇，深入了解专业英语的文体特点，用英语来交流专业知识。

本教程分为三大部分，其中第一部分是关于专业英语的特点的理论阐述，第二部分是生物学专业英语词汇与阅读，是本教程的重点内容。这一部分所收录的20多篇文章都是从国内外最新出版的教材和英文期刊上选编而来，同时为适应实际需要做了一定的整理改编。所选文章基本上涵盖动物学(zoology)、植物学(botany)、微生物学(microbiology)、遗传学(genetics)、细胞生物学(cytobiology)、生态学(ecology)、分子生物学(molecular biology)、免疫学(immunology)及生物工程(bio-engineering)的主要内容，使读者通过学习，能最大限度地掌握以上领域的基本专业词汇和文章特点。在此基础上，教程在第三部分向读者介绍了英语科技论文的基本要素及其特点，并对各要素的基本翻译方法、原则等进行了举例阐述。

本教程还针对词汇和阅读部分每一模块的内容特点配置了一定量的练习题及参考答案，以便于读者进一步理解文章内容，增强学习效果。此外，教程在附录中选编了大量常见生物学词汇和缩略语等内容，以方便读者查阅。

总之，本教程力求科学性、应用性、趣味性，从而使学生在有限的时间内掌握一定量的生物学专业英语词汇，具备一定的英语科技论文阅读、写作、翻译及学术交流能力。

留澳博士罗琼对本书的部分翻译内容进行了校正，山东潍坊学院生物系的阚世红、冯道俊、高明刚等在本书的撰写过程中给予了热情帮助并提出了很好的建议。另外，本教材选编了部分同行作者的文稿内容，在此一并向他们表示诚挚的谢意！

本书一稿、二稿先后经山东潍坊学院2001级、2002级、2003级生物技术和生物科学专业的学生使用，并根据每届学生提出的建议进行了反复修订，但不足之处仍在所难免，恳请广大读者不吝赐教(changyj2006@126.com)，以便有机会再版时做得更好。

编　者

2006年9月于山东潍坊

目　录

试读结束：需要全本请在线购买：　www.ertongbook.com

第一部分　专业英语的特点

近年来，生命科学在各个领域的研究日新月异，新成果层出不穷。这些成果不但在学术界引起了很大反响，而且极大地改变了人们的生活。因此，广大生命科学领域的研究人员、高校教师，甚至普通读者都迫切希望了解和掌握这些最新研究成果及其应用现状。然而，随着全球国际化，英语已经成为一门重要的国际语言，许多科技成果都要借助于英语进行表达和交流。目前，大学生、研究生和科研人员大多都具有了大学英语四级、六级或相当水平的英语基础，掌握了基本的英语词汇及语法特点，但他们在阅读、写作专业英语时仍感到十分吃力，这其中原因除了专业知识欠丰富、专业英语词汇量不足以外，更为重要的是由于对专业英语的词汇和句子特点了解甚少。

1 专业英语的词汇特点

1.1 出现频率低

在英语专业期刊文章中，虽然专业词汇的出现使广大读者在阅读、写作时感到异常费力，但总体而言，专业英语文章中除了少数术语外，用得最多的还是普通词汇。因此提高专业英语阅读和写作能力的前提就是要有一定的英语基本功。

1.2 词义单一

专业英语中一词多义和一义多词的现象较少，阅读、翻译时要根据已经掌握的专业知识进行最确切、最接近的理解。

1.3 缩写词和固定词组较普遍

如 DNA(deoxyribonucleic acid，脱氧核糖核酸)、TMV(tobacco mosaic viruses，烟草花叶病毒)、PCR(polymerase chain reaction，聚合酶链反应)、population(种群)等。

1.4 逻辑性词汇使用广泛

如 because, due to, but, however, therefore, yet, unless, as a result of 等表示原因、转折、假设的词汇在英语科技文章中随处可见。

2 专业英语的句子特点

2.1 大量使用陈述句

专业科技文章一般以事实、原理方法等的描述说明为主要对象，因此陈述句使用较多。

如 Photosynthesis starts with CO_2 and H_2O as raw materials and proceeds through two

sets of partial reactions. In the first set called light reaction, water molecules are split, O_2 is released, and ATP and NADPH are formed. In the second set called dark reaction, CO_2 is reduced to carbohydrates. Both sets of reactions take place in chloroplast.

2.2 被动语态使用较多

英语中，被动句比主动句更能突出需要说明论证的对象，因而在英语科技文章中被动句使用较多。

如 The nature of viruses has been apparent only within the last half century, and the first step on this path of discovery was taken by the Russian botanist Dmitri Lvanovsky in 1892 when he studying the tobacco mosaic disease.

又如 Abscisic acid (ABA), one of the plant hormone, is produced in mature leaves and is transported through the phloem.

2.3 长句子较多

专业英语中所叙述的概念和方法原理等都必须严谨、准确，因而词语、句子的修饰较多，往往多个从句、词组层层嵌套。

如 Mulch is an organic material such as pine needles, home compost, grass clippings, shattered leaves or straw, which protects the plant from weeds, water evaporation and changes in soil temperature and enriches and improves the texture and structure of the soil.

2.4 时态运用较单一

英语有 16 种时态，但在专业英语中一般以过去时、将来时、现在时为主，偶尔会用到完成时。

如 In the ABO blood type system, when A antigen is present (in a person of blood type A), the body produces an anti-B antibody, and similarly for a B antigen. The blood of someone of type AB, has both antigens, hence has neither antibody. Thus that person can be transfused with any type of blood, since there is no antibody to attack foreign blood antigens. A person of blood type O has neither antigen but both antibodies and cannot receive AB, A, or B type blood, but they can donate blood for use by anybody. If someone with blood type A received blood type B, the body's anti-B antibodies would attack the new blood cells and death would be imminent.

第二部分　生物学专业英语词汇与阅读

试读结束：需要全本请在线购买：www.ertongbook.com

Chapter 1 Life and Biology

Lesson 1 The Origin of Life

For decades, religion, mythology and philosophy have proposed a great variety of explanations for the origin of life, and once the belief of spontaneous generation, life from nonliving matter, is also widely held not only by general public but also by scientists. In 1858, the German physician Rudolf Virchow proposed that there is no creation of life from nonliving matter but from life, the theory of biogenesis. In 1862, Louis Pasteur did a series of experiments to identify Virchow's theory. Pasteur showed that microorganisms that cause wine or milk in an open container to go bad are spread by the air—they do not arise spontaneously from the nutrient media. But in scientific manner, we know that life can arise from nonliving matter under the conditions that prevailed on the early earth, and all life has descended from these beginnings. To understand this, we must discuss more about the formation of the solar system first.

According to one more convincing hypothesis, we say that the solar system is formed from a cloud of cosmic dust and gas. This material condensed into single compact mass, the planets, of which the sun and the earth include.

As the earth condensed, a stratification of its components took place. Heavier material such as iron and nickel, accumulating in the center to form the core, the less dense silicates of iron and magnesium forming a partly molten mantle surrounding the core and the lighter substances remaining near the surface. As the surface of the earth cooled, the surface material solidified to form a crust. The intense heat in the interior of the earth drove out various gases through volcanic activities and these formed a second atmosphere of the early earth, which was quite different from today's oxidizing atmosphere.

As the earth's crust cooled, the water vapor in the atmosphere condensed into rain and began to form oceans, in which gases from the atmosphere and minerals from the land dissolved. As the primitive atmosphere contained virtually no oxygen and therefore no ozone layer, the ultraviolet (UV) radiation would have been much more intense on the early earth than it is today, so the ultraviolet, lighting and heat provided the energy for reactions that produced organic molecules from the combination of these dissolved substances. This hypothesis was once estimated by Stanley L. Miller in 1953. Miller set up an airtight apparatus in which a mixture of water, hydrogen, methane and ammonia gases was circulated past electrical discharges from tungsten electrodes.

One week later, he analyzed the contents of his apparatus and found that a variety of organic compounds had been synthesized. This experiment marked a turning point in the scientific approach to the problem of how life began.

Then, those organic compounds could have accumulated slowly in the seas over millions

of years without being destroyed by oxidation or decay. Some think that the concentration was high enough for chance bondings between them to give rise, then over a period of hundreds of millions of years, considerable quantities of macromolecules could form and simple life might begin. The earliest organisms were anaerobic, prokaryotic heterotrophs that obtained energy from the nutrients available in the early oceans.

GLOSSARY

biogenesis [ˌbaiəu'dʒenisis] *n.* 生源说
solar system 太阳系
cosmic dust 宇宙尘埃
stratification [ˌstrætifi'keiʃən] *n.* 分层，层理
nickel ['nikl] *n.* 镍
silicate ['silikit, 'silikeit] *n.* 硅酸盐
magnesium [mæg'ni:zjəm] *n.* 镁
mantle ['mæntl] *n.* 地幔，覆盖物
hydrogen ['haidrəudʒən] *n.* 氢
methane ['mi:θein, 'meθein] *n.* 甲烷，沼气
ammonia [ə'məunjə, 'æməunjə] *n.* 氨
tungsten ['tʌŋstən] *n.* 钨
macromolecule [ˌmækrəu'mɔlikju:l] *n.* 大分子
anaerobic [ˌəneiə'rəubik, æneiə'rəubik] *a.* 厌氧的，厌气的
prokaryotic [prəuˌkæri 'ɔtik,] *a.* 原核生物的
heterotroph ['hetərəutrɔf] *n.* 异养生物

Lesson 2 Fundamental Concepts in Biology

As you begin your study of biology, keep in mind that science is much more than a collection of facts, the goal of biology is to study living things: their structure, function, reproduction and interactions with one another and with the nonliving environment. So we can identify several fundamental concepts in living things:

Living things are organized into units called cells. Many small organisms such as bacteria and protists, consist of one cell each, large organisms, such as grasses and humans, contain up to hundreds of millions of cells. Each cell is a discrete packet of highly ordered living, biochemistry factory. It takes in nutrients and energy and uses these to maintain itself, to grow, to respond to change in environment, and eventually to reproduce. Hence, cells are the units of structure, function, and reproduction in organisms.

Living things respond actively to their environment. 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.

Living things reproduce themselves. All living things must die sometimes, and if their kind is to continue, they must make copies of themselves before they die. This is reproduction. Among plants and the less complex animals, this aspect of reproduction may simply be an extension of the growth process. The growing strawberry sends out horizontal stems on which to develop 'daughter' plants which identical with the parent. This kind of reproduction is called asexual because only one parent is involved. Most organisms engage in another kind of reproduction—sexual reproduction, which requires two parents contribute to the formation of the new individual. In this way, new combinations of traits can be produced.

Metabolism. We see a dog can eat and drink. It defecates and urinates, it breathe. With proper equipment, we can show that the air the dog exhales differ in composition from the air inhaled: carbon dioxide has been removed and oxygen added. All organisms share this property with the dog, and this is called metabolism. The essence of metabolism is the result of energy transfers between substances. When organisms take in material from and give material back to environment, the materials undergo extensive transformations. In this process, energy is produced to maintain the activity of the living organisms. For example, in a process called photosynthesis, plants absorb solar 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. Hence, energy is transferred from the sun to ATP and then to molecules that the cell uses as building blocks or tucks away as energy reserves.

Evolution. 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 characteristic of each kind of organism. Dogs have puppies, not kittens, seeds can germinate and develop into fairly exact replicas of parent plants. This is a storehouse of hereditary information. However, organisms found on earth today are not identical with those that lived in ages past. Over long periods of time, changes have occurred. These changes make the evolution of the organisms. Evolution is often adaptive. That is, the changes have enabled the organisms to live in their environment more efficiently than their ancestors could have in the same environment.

GLOSSARY

reproduction [ˌri:prə'dʌkʃən] *n.* 繁殖，生殖
bacteria [bæk'tiəriə](复)*n.* 细菌，病菌
protist ['prəutist] *n.* 原生生物
discrete [dis'kri:t] *a.* 分立的，不连续的
biochemistry ['baiəu'kemistri] *n.* 生物化学
capacity [kə'pæsiti] *n.* 容量，负载量
horizontal [ˌhɔri'zɔntl] *a.* 水平的，地平的
asexual [æ'seksjuəl] *a.* 无性的
sexual ['seksjuəl] *a.* 性的，有性的
metabolism [me'tæbəlizəm] *n.* 新陈代谢
defecate ['defikeit] *v.* 排粪，澄清
urinate ['juərineit] *v.* 排尿，小便
exhale [eks'heil, eg'zeil] *v.* 呼出(气体)
inhale [in'heil] *v.* 吸入(气体)
carbon dioxide 二氧化碳
transformation['trænsfə'meiʃən] *n.* 转化(作用)、变换，转型
photosynthesis [ˌfəutəu'sinθəsis] *n.* 光合作用
adenosine triphosphate 腺苷三磷酸
starch [stɑ:tʃ] *n.* 淀粉
building block 成分，组成部分
inheritance [in'heritəns] *n.* 遗传
germinate ['dʒə:mineit] *v.* 萌发，发芽
replica ['replikə,ri'pli:kə] *n.* 复制物，复制品

试读结束：需要全本请在线购买： www.ertongbook.com