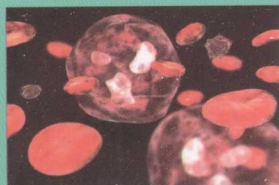
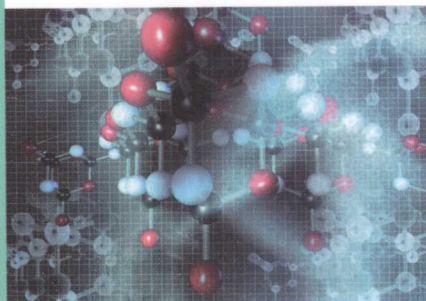


# 生命科学

# 英语读写译

English in Life Sciences:  
Reading, Writing and Translating

■主 编 侯广旭



南京大学出版社

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English in Life Sciences:  
Reading, Writing and Translating

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## 前言

本书根据笔者的电子教案及课件经适当增编练习题与阅读部分而成,适合作生命科学类专业硕博科技英语读写或译写课教材,也可用作相关专业本科大学英语后续(选修)课程以及英语专业复合应用型方向科技语言类选修课教材。

本书阅读部分取材于 GRE 真题中的生命科学类阅读语篇。GRE 真题中的人文、社科、生物、物理等阅读语篇体现了美国等国研究生教育对申请人的四大知识预设。难度合理、语篇短小等特点能克服我国目前科技英语教材取材的诸多流弊:或流于科普,内容、语言及阅读题缺乏挑战性;或“长篇大论”地摘取某一学科教材篇章,“事无巨细,悉究本末”。GRE 真题中的生命科学类阅读题由该领域专家分头编写,又经审定者在不知答案的情况下对选文、问题、最佳选择项、干扰项的合理性及实用性进行试答、分析、测试后,取舍、修订而成。

本书课文标题为主编所加,课文后附有词汇注释、内容注释、语言点注释、GRE 原题带有的阅读理解题。正文后附有课文及阅读题面的参考译文及选择题答案。

生命科学学科综合性强,体现了科学性、人文性和社会性。其英文原文文字性强,语篇结构多样,广泛覆盖自然科学及社会科学学术书面英语中各种科学概念、原理与理论的表达方式。因此,译写部分先以常见的生命科学实证性研究论文结构为框架,举例讲解各个功能结构语篇的写作要点与注

意事项,并附同类语篇汉译英练习。紧接着,利用象似性原理讲解科技英语的构词法、语法、修辞特征,及汉英区别和汉译英处理上的技巧。后一部分在意念功能上不专门为当课写作语篇功能服务,例句题材也不限于生命科学。本教材的译写部分,是本教材的重点部分,突出体现了如下特点与教学思考:

### 一、突出特点,不走极端

科技英语的语言特点,诸如被动语态多,名词化现象多,表达描述的对象及术语同一性强,文化规约性弱,可译性高等,西方学者与我国学者对此都有所揭示。其实,英语本族语科学家在写作过程中使用了大量的各类普通表达法。因此,很多英语本民族语言学家基于语料库调查认为,不能把科技语言当作一种同质性实体(homogeneous entity)。所谓科技英语,本质上还是普通英语,只不过其中略加一些科技文体的词汇及语法。当我们考察科学家的语言特点时,还应更多地考虑到科学家与文学家、人文家一样,都是根据具体环境、写作目的、读者或听众来灵活调动语言资源的。

某些语料库调查显示,有的优秀科学家的优秀论文,有意大量使用主动语态。由于缺乏语言环境,缺乏本民族地道语感或缺乏陆国强教授常说的语义能力(semantic competence),教与学不得法等原因,目前我国英语写作与汉译英的语言实践与科研水平都远远低于汉语写作与英译汉的实践与研究水平。使用英语的学术产出,包括文学创作的质与量,不光低于很多非英语的西方国家,也低于邻国日本,甚至低于很多非英语发展中国家。多年前,笔者以专家身份参加一次学位论文评审会,所在的英语专业专家组评审英语语言文学专业的全英文学位论文,而其他各学科专家组评审的论文虽然正文是汉语的,但都含有构成评审亚指标的英文摘要。中午一起用餐时,当听说有的专家一律使用被动语态的标准打分时,我心里不禁咯噔一下。现在国内出版的书刊及互联网上的学习材料,对于科技英语的特点的认识也有走极端的倾向。

北京大学高一虹教授等学者的调研结果显示,我国两院院士普遍具有超越其所在科技领域的英语读写与跨文化交流水平,可以说是文理兼通,甚至是学贯中西。要想真正提高科技英语译写水平,指望攻下一两本像本书这样的教材是远远不够的,要更多接触研习那些运载人类普世文明的社会、文化、文学等领域里的英语。对这个问题,若读者感兴趣,可参阅拙著《英汉对比语言学史》(南京大学出版社,2013)的第六章中对我国英汉对比研究局限性的评论,继续我们的交流。

## 二、译写结合

笔者在20世纪70年代末80年代初学习与教学时,在学术会议上聆听过王佐良、葛传槿、许国璋、李赋宁等英语教育大师关于中国人用英文写作的教诲。他们都认为在中国受过教育长大的人用英文写作的最优化策略应该是译写不分家,需要精通汉英两种语言。其实,美国很多当红华裔英文作家如哈金等,都承认在英文写作中大量融入了中文元素,或用中文引导其部分语言与思维。本书把写作和汉译英结合在一起,主要目的不是探讨翻译理论或方法问题,而是先引出要表达的内容,然后去思考怎样用更符合英文科学语言特征的表达法将其表达出来。例句和例段讲解尽量做到内容不过于“专业”,具有一定可学性和可教性。

本书的课文取材、译写讲解与练习,参考了国内外多种教育资源。由于很多例证及讲解,网传广泛,被反复援用,难以追本溯源。因此,这些参考书目的著录,不再随文呼应标注出处,一律列于书后。在此,对这些网络资料的整理者与书刊的编著者表示衷心的感谢!还要感谢本书责任编辑裴维维,认真编校,纠正讹误,补足脱漏,精心修改语言与内容,使教材的准确性和一致性有了保障。

笔者负责全书的篇章架构,并编写了译写部分的讲解及译写练习题。胡珊珊、孙雁冰、胡树庭参编了译写练习题。贝倩文、李璐、孔玉洁负责课文及阅读题面的译文翻译,同时,她们还参编了课文词汇注释及语言点注释。

笔者主编的《农业科技英语(生命科学类)》,由中华农业科教基金项目支持,于1999年在中国农业出版社出版,如今已经过去十五年了。我国外语教学已今非昔比,进入了一个通讯、网络普及的信息时代。“现代无大师”(不再像三十年前只有一两本大师编的教材)、“现代无教材”(教材太多、难以取舍,大量电子课件与讲义网络化)、“现代无书”(电子阅读、网络阅读流行)、“现代无课堂”(高校不断压缩学分、学时,鼓励自主学习)等等,虽然这些话有些夸张,但也多少反映了时代的特征。因此,需要我们在教学中实时更新教学内容,同时要独立思考,开发更新语言学习资源,否则,不配做当今时代的语言教学从业者。

囿于编者的语言学、教育学及语言功底之局限性,书中疏漏舛误之处在所难免,欢迎方家雅正。

南京农业大学外国语学院 教授 侯广旭

2013年12月

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# Lesson One



## Part One Reading

### Text A Basic Categories of Living Organisms

It was once assumed that all living things could be divided into two fundamental and exhaustive categories. Multicellular plants and animals, as well as many unicellular organisms, are eukaryotic—their large, complex cells have a well-formed nucleus and many organelles. On the other hand, the true bacteria are prokaryotic cells, which are simple and lack a nucleus. The distinction between eukaryotes and bacteria, initially defined in terms of subcellular structures visible with a microscope, was ultimately carried to the molecular level. Here prokaryotic and eukaryotic cells have many features in common. For instance, they translate genetic information into proteins according to the same type of genetic coding. But even where the molecular processes are the same, the details in the two forms are different and characteristic of the respective forms. For example, the amino acid sequences of various enzymes tend to be typically prokaryotic or eukaryotic. The differences between the groups and the similarities within each group made it seem certain to most biologists that the tree of life had only two stems. Moreover, arguments pointing out the extent of both structural and functional differences between eukaryotes and true bacteria convinced many biologists that the precursors of the eukaryotes must have diverged from the common ancestor before the bacteria arose.

Although much of this picture has been sustained by more recent research, it seems fundamentally wrong in one respect. Among the bacteria, there are

organisms that are significantly different both from the cells of eukaryotes and from the true bacteria, and it now appears that there are three stems in the tree of life. New techniques for determining the molecular sequence of the RNA of organisms have produced evolutionary information about the degree to which 25 organisms are related, the time since they diverged from a common ancestor, and the reconstruction of ancestral versions of genes. These techniques have strongly suggested that although the true bacteria indeed form a large coherent group, certain other bacteria, the archaebacteria, which are also prokaryotes and which resemble true bacteria, represent a distinct evolutionary branch that 30 far antedates the common ancestor of all true bacteria.

## I. Words and Phrases

|                |                  |     |                                 |
|----------------|------------------|-----|---------------------------------|
| multicellular  | [mʌltɪ'seljələ]  | a.  | 多细胞的                            |
| unicellular    | [juːnɪ'seljələ]  | a.  | 单细胞的                            |
| eukaryotic     | [juːkeəri'ɒtɪk]  | a.  | 真核的, 真核生物的                      |
| nucleus        | ['njuːklɪəs]     | n.  | 细胞核                             |
| organelle      | [ɔːgə'nel]       | n.  | 细胞器; 细胞器官                       |
| prokaryotic    | [prə'keəri'ɒtɪk] | a.  | 原核的                             |
| subcellular    | [sʌb'seljələ]    | a.  | 亚细胞的                            |
| molecular      | [mə'lekjələ]     | a.  | 分子的; 由分子组成的                     |
| respective     | [rɪ'spektɪv]     | a.  | 分别的, 各自的                        |
| amino acid     | [ə'miːnəu'æsɪd]  | n.  | 氨基酸                             |
| enzyme         | ['enzaim]        | n.  | 酶                               |
| precursor      | [prɪ'kɜːsə]      | n.  | 先驱, 前导, 前身                      |
| diverge        | [daɪ'vɜːdʒ]      | vi. | 分歧; 偏离; 分叉; 离题                  |
| sustain        | [sə'steɪn]       | vt. | 证实, 证明                          |
| archaebacteria | [ɑːkɪ'bæktɪərɪə] | n.  | 原始细菌; 古细菌类 (单数 archaebacterium) |
| antedate       | [æntɪ'deɪt]      | vt. | 先于; 前于                          |

## II. Notes

1. eukaryotic cell: 真核细胞, 是指含有被核膜包围的细胞核的细胞。其染色

体数在一个以上,能进行有丝分裂,还能进行原生质流动和变形运动。而光合作用和氧化磷酸化作用则分别由叶绿体和线粒体进行。除细菌和蓝藻植物的细胞以外,所有的动物细胞以及植物细胞都属于真核细胞。

2. **prokaryotic cell**: 原核细胞,是组成原核生物的细胞。这类细胞的主要特征是没有明显可见的细胞核,也没有核膜和核仁,只有拟核,进化地位较低。

3. **enzyme**: 酶,一种由氨基酸组成的具有特殊生物活性的物质,它存在于所有活的动植物体内,是维持机体正常功能、消化食物、修复组织等生命活动的一种必需物质。生物体内的化学变化,几乎都要在酶的催化作用下进行,它带动原本不会发生的化学反应,也可加速化学反应而不需改变本质。

4. **archaeobacterium**: 原始细菌或古细菌,是一些生长在极端特殊环境中的细菌。由于其内部构造没有核膜,具备环状 DNA 结构等特点,且细胞产能、细胞分裂、新陈代谢等生活方式与原核细胞相似,故过去将古细菌归入原核生物。

### III. Language Points

1. L1 be divided into two fundamental and exhaustive categories: be classified into two categories with no exception

2. L7 was ultimately carried to the molecular level: (the technology for defining the distinction between eukaryotes and bacteria) finally reached the molecular level

3. L18 have diverged from the common ancestor: have come from the same ancestor

4. L20 Although much of this picture has been sustained by more recent research: Although more recent research has proved much of the opinion

5. L31 far antedates: much earlier than

### IV. Reading Comprehension Questions

Choose the best answer on the basis of Text A.

1. The passage is primarily concerned with \_\_\_\_\_.

A. detailing the evidence that has led most biologists to replace the trichotomous picture of living organisms with a dichotomous one

B. outlining the factors that have contributed to the current hypothesis concerning the number of basic categories of living organisms

- C. evaluating experiments that have resulted in proof that the prokaryotes are more ancient than had been expected
  - D. summarizing the differences in structure and function found among true bacteria, archaeobacteria, and eukaryotes
  - E. formulating a hypothesis about the mechanisms of evolution that resulted in the ancestors of the prokaryotes
2. According to the passage, investigations of eukaryotic and prokaryotic cells at the molecular level supported the conclusion that \_\_\_\_\_.
- A. most eukaryotic organisms are unicellular
  - B. complex cells have well-formed nuclei
  - C. prokaryotes and eukaryotes form two fundamental categories
  - D. subcellular structures are visible with a microscope
  - E. prokaryotic and eukaryotic cells have similar enzymes
3. According to the passage, which of the following statements about the two-category hypothesis is likely to be true?
- A. It is promising because it explains the presence of true bacteria-like organisms such as organelles in eukaryotic cells.
  - B. It is promising because it explains why eukaryotic cells, unlike prokaryotic cells, tend to form multicellular organisms.
  - C. It is flawed because it fails to account for the great variety among eukaryotic organisms.
  - D. It is flawed because it fails to account for the similarity between prokaryotes and eukaryotes.
  - E. It is flawed because it fails to recognize an important distinction among prokaryotes.
4. It can be inferred from the passage which of the following has recently been compared in order to clarify the fundamental classifications of living things?
- A. The genetic coding in true bacteria and that in other prokaryotes.
  - B. The organelle structures of archaeobacteria, true bacteria, and eukaryotes.
  - C. The cellular structures of multicellular organisms and unicellular

organisms.

- D. The molecular sequences in eukaryotic RNA, true bacterial RNA, and archaeobacterial RNA.
  - E. The amino acid sequences in enzymes of various eukaryotic species and those of enzymes in archaeobacterial species.
5. If the "new techniques" were applied in studies of biological classifications other than bacteria, which of the following is most likely?
- A. Some of those classifications will have to be reevaluated.
  - B. Many species of bacteria will be reclassified.
  - C. It will be determined that there are four main categories of living things rather than three.
  - D. It will be found that true bacteria are much older than eukaryotes.
  - E. It will be found that there is a common ancestor of the eukaryotes, archaeobacteria, and true bacteria.
6. According to the passage, researchers working under the two-category hypothesis were correct in thinking that \_\_\_\_\_.
- A. prokaryotes form a coherent group
  - B. the common ancestor of all living things had complex properties
  - C. eukaryotes are fundamentally different from true bacteria
  - D. true bacteria are just as complex as eukaryotes
  - E. ancestral versions of eukaryotic genes functioned differently from their modern counterparts
7. All of the following statements are supported by the passage EXCEPT: \_\_\_\_\_.
- A. True bacteria form a distinct evolutionary group.
  - B. Archaeobacteria are prokaryotes that resemble true bacteria.
  - C. True bacteria and eukaryotes employ similar types of genetic coding.
  - D. True bacteria and eukaryotes are distinguishable at the subcellular level.
  - E. Amino acid sequences of enzymes are uniform for eukaryotic and prokaryotic organisms.
8. The author's attitude toward the view that living things are divided into

three categories is best described as one of \_\_\_\_\_.

- A. tentative acceptance
- B. mild skepticism
- C. limited denial
- D. studious criticism
- E. whole hearted endorsement

## Text B A Mysterious Phenomenon

A mysterious phenomenon is the ability of over-water migrants to travel on course. Birds, bees, and other species can keep track of time without any sensory cues from the outside world, and such “biological clocks” clearly contribute to their “compass sense.” For example, they can use the position of the Sun or stars, along with the time of day, to find north. But compass sense alone cannot explain how birds navigate the ocean; After a flock traveling east is blown far south by a storm, it will assume the proper northeasterly course to compensate. Perhaps, some scientists thought, migrants determine their geographic position on the Earth by celestial navigation, almost as human navigators use stars and planets, but this would demand of the animals a 10 fantastic map sense. Researchers now know that some species have a magnetic sense, which might allow migrants to determine their geographic location by detecting variations in the strength of the Earth’s magnetic field.

### I. Words and Phrases

|            |               |                      |
|------------|---------------|----------------------|
| migrant    | [ˈmaɪgr(ə)nt] | n. 候鸟; 迁徙动物          |
| course     | [kɔ:s]        | n. 行动方向, 路线          |
| sensory    | [ˈsensəri]    | a. 感觉的; 知觉的; 感官的     |
| navigate   | [ˈnævɪɡeɪt]   | vt. 航行于, 飞行于; 横渡, 飞越 |
| compensate | [ˈkɒmpenseɪt] | vi. 补偿, 赔偿           |
| celestial  | [sɪˈlestiəl]  | a. 天上的, 天空的          |
| magnetic   | [mægˈnetɪk]   | a. 地磁的; 有磁性的         |