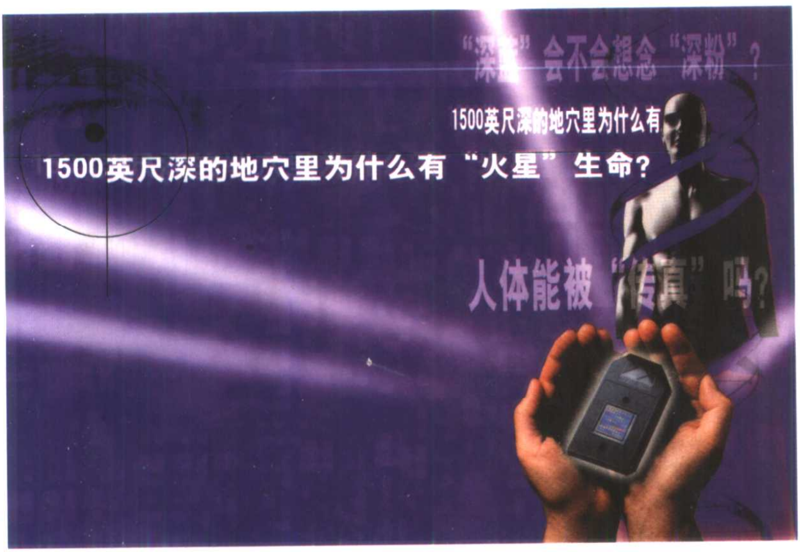
世纪风铃

阅读文库 (英汉对照)

范 红 主编

科学的奥秘

Marvels of Science



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内容简介

千百年来，科学像繁星密布的苍穹一般，展示着它神秘的美丽和永恒。Marvels of Science—科学的奥秘，是一个无穷无尽的话题。

作为世纪之交编选的一本科普题材读物，本书收录的20篇文章，涉及的都是当代科学界的一些前沿问题。文章摘自选入各互联网络全文数据库的多种英文新闻和科普刊物，如《时代周刊》、《发现》等，注重知识性与趣味性相结合，兼顾不同风格。每篇文章还配有注释、全文翻译及理解习题，力求使读者在了解科学新知、促进思考、提高英文阅读能力、掌握新词汇等方面都有较大收获。

如果你想知道：

克隆鼠怎样出世？

深蓝会不会想念"深粉"？

白矮星怎样逃过星云碰撞？

1500英尺深的地穴里为什么有"火星"生命？

人体能不能被"传真"？

一条蠕虫的基因图为什么是世纪末最伟大的成就？

为什么说时间的流逝是一种错觉？

……

那么就打开这本书，在科学的奥秘里尽情畅游吧！

编者的话

阅读是一种语言领受能力，也是一种语言学习的方法。它是学生掌握语言知识，打好语言基础，获取信息的重要途径。阅读技能是大部分学生今后工作中最需要的语言技能，注重阅读能力的培养与提高是语言学习者必不可少的任务。从语言学习的规律来看，语言应用能力的提高是建立在大量的语言输入，尤其是大量的阅读的基础之上的。阅读能力的培养仅靠少量的精读材料是不够的，更重要的是要靠大量的泛读材料。学习者通过大量阅读趣味性强的读物，培养自己的阅读兴趣与自学能力，既可更有效地获取书面信息、扩大词汇量，丰富语言知识，也可更深刻地了解英语国家的社会文化背景，开阔视野，扩大知识面，提高自身的文化素养。

《世纪风铃阅读文库》就是一套专门为大学英语四级水平以上学生精心编写而成的高级趣味阅读丛书。此套丛书的编者均是清华大学长期从事一线教学、经验极为丰富的英语教师。在教学过程中，他们发现虽然许多学生能够通过全国大学英语四级考试，但其英语语言基础知识仍然不够扎实，主要表现在词汇量较小、阅读速度慢、阅读理解不够精确、翻译能力较差等方面，其阅读与翻译能力迫切需要进一步提高。据了解，目前很难从市面上找到适合此类学生自学提高阅读能力的英文读物。为了满足此类学习者的实际需要，本套丛书的编者确定了

培养学生阅读兴趣、提供当代最新信息的选材定位原则，在满足学习者对文章题材及内容的取向要求的同时，努力为他们营造一个寓阅读于乐的课外自学环境，为保证大学英语学习四年不断线创造有利条件。因此，从某种程度上来说，该套丛书填补了此类图书市场的空白。

全套丛书共分为五册，分别是《科学的奥秘》、《电脑大观园》、《当代名人趣闻》、《新闻聚焦》和《美好生活点拨》。全部文章内容选自20世纪90年代末的国外权威性报刊与英特网，涉及社会、人文、科技等诸方面内容。所选文章内容新颖、题材广泛，有强烈的时代气息，不愧为一套融知识性、科学性、实用性、趣味性一体的优秀阅读丛书。

全套丛书各册编写体例一致，语言规范。每册书均由二十个单元组成，每个单元包括正文、难点注释、阅读理解检测题。每册书后附有全部课文译文及阅读理解检测题参考答案。选文中出现的文化背景及语言难点均有脚注，目的在于节约读者查词典的时间，帮助读者理解此类难点在文章中的准确含义。阅读理解检测题紧扣语言素材主题，意在帮助读者归纳文章中心思想及把握关键细节。书后所提供的译文文体优美、文字准确，是读者遇到问题时的可靠参考。此外，在每课正文之前，编者还提供了阅读文章长度，并根据1999年新修订的《大学英语教学大纲》对大学英语应用提高阶段阅读速度每分钟100字的规定，计算出每课所需阅读时间，是读者衡量自己阅读速度的参考标准。

本套丛书适合大学英语基础阶段结束后的英语提高阶段使

用，是一套值得推荐的适合本科生及研究生阅读提高课使用的教材，也适合具有相当水平的英语爱好者课外阅读使用。衷心希望本套丛书的读者能从中有所收益。

由于所选文章来源广泛，同原文作者及有关部门出版单位联系有些不便。在此，谨向他们表示诚挚的谢意。

编　者

2000年1月于清华园

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[redacted]

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Length 1043 words

Expected Reading Time 10 minutes

Dolly, You' re History

Helen Gibson

(*Time*, v152,1998)

In the year and a half since Scottish embryologist[1] Ian Wilmut presented Dolly, the cloned sheep, to an astonished world, ethicists[2] and policymakers[3] have been struggling with the unsettling[4] implications of his research. Could scientists use Wilmut's method to clone not just sheep but also billionaires, basketball players and bodies grown for spare parts? Should medical entrepreneurs[5] be allowed to pursue cloning wherever it leads? Or should the government step in now and outlaw it before it starts?

For reproductive biologists, these issues pale[6] in the face of two more immediate and practical questions: Is Dolly really a clone—and if so, can anybody make one? It's taken a while, but the answers are finally in. The verdict[7], according to a trio of reports in the current issue of *Nature*: yes and yes. Not only have Dolly's pedigree[8] and her immaculate[9] conception[10] been

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1. 胚胎学家 2. 伦理学家 3. 决策者 4. 令人不安的 5. 实业家
6. 变白，失色 7. 判决，结论 8. 谱系，出身 9. 纯洁的，无瑕的
10. 概念，孕育

established beyond all reasonable doubt, but she has been joined by litter upon litter of perfectly cloned mice. Cloning has, with a speed no one anticipated, been transformed from an astonishing technical tour de force[1] into what seems almost a mundane laboratory procedure.

What makes Dolly and these new mice special—and distinguishes them from barnyards of previously cloned pigs, cows and sheep — is that they were cloned from adult cells or, as the scientists call them, differentiated[2] cells. All those earlier clones were made from fetal[3] cells, which have no specialized function but carry the potential to turn into anything and everything the body needs.

Differentiated cells, by contrast, have already become specialized, with some genes turned on and some turned off, making them into breast or liver or pancreas[4] cells. Although a differentiated cell still contains all the genetic information needed to create a whole new creature, much of that information is suppressed. Nobody had ever succeeded in reprogramming its genes back to the comparatively undifferentiated state suitable for cloning.

Until Dolly, that is. What Dolly proved is that you don't have to take your chances with fetal cells. You can wait until the litter has grown up, see which individuals have proved themselves to be great producers of wool, milk or—a stretch[5], perhaps—NBA titles, and then clone the champs.

Still, Dolly would be just a laboratory curiosity[6] if no one could repeat Wilmut's breakthrough. And that's where Teruhiko

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1. （法语）绝技　2. 分化，使不同　3. 胚胎的　4. 胰腺　5. 拉伸，牵强
6. 古董，奇物

Wakayama comes in. He's a 31-year-old Japanese postdoctoral student who was studying cloning as a hobby at the University of Hawaii, where his lab director, Ryuzo Yanagimachi, was famous for telling students "not to be afraid of asking crazy questions. The crazier the better."

Wakayama's idea was truly crazy: he wanted to clone mice, long believed to be among the worst candidates for cloning because their egg cells are particularly delicate and their embryos develop so rapidly. He squeezed in the cloning work during his free time, carefully manipulating one type of mouse cell after another until, just months after Dolly was unleashed[1] on the world, he succeeded in cloning the cumulus[2] cells that surround the egg in the ovary. Wakayama's whimsical[3] name for his new creation: Cumulina.

His technique was almost identical to Wilmut's except for two key steps. First, instead of using electric shocks to coax[4] an adult cell into merging with a host egg whose nucleus had been removed, Wakayama injected just the adult nucleus into a nucleus-free host. And second, he let the hybrid[5] cell sit for up to six hours before stimulating it to start dividing.

He must have done something right. Where Wilmut got only a single cell to flower into an embryo and then a full-term fetus, Wakayama got dozens; up to 3% of his clones survived. That may be in part because his technique treated the cells more gently. It's also possible that injecting just the nucleus introduced fewer contaminants[6] into the host cell.

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1. 解开链索，释放 2. 卷云，堆积 3. 怪异的，突发奇想的 4. 哄骗
5. 混合的 6. 污染，杂质

Whatever the reason, the cloned mice were perfectly normal in all respects. They could mate and give birth, and their DNA was so robust[1] that they themselves could be cloned—and their clones cloned. So far, Wakayama and his colleagues at the University of Hawaii have produced three generations of identical mice, 50 in all.

A reliable cloning technique for an animal that has such well understood genetics and reproduces so rapidly (up to five generations in a year) means that scientists will be able to study in detail the process by which genes turn on and turn off, and thus how cells become specialized for particular jobs in the body. And if Wakayama's technique can be scaled up[2] to larger animals — a question researchers are already making plans to answer—the research could lead to all sorts of applications.

Cows genetically engineered to produce valuable human proteins, for example, or pigs whose organs have been altered to remove proteins that trigger[3] rejection after transplant operations, could be stamped[4] out on an assembly line. Fast racehorses or blue-ribbon pets might be duplicated at will. In humans, both cancer and the aging process involve genetic changes at the cellular level. Thus a better understanding of how genes work might someday have implications for anti-cancer and anti-aging treatments.

It's even conceivable that a human with a failing liver could have a new one grown from, say, a cell taken out of his bone marrow. "This is fantasy now," admits Alan Colman, research director

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1. 健康的，充满活力的 2. 放大尺度，升级 3. 扣扳机，触发
4. 盖章，验收合格

of PPL Therapeutics, the Scottish biotechnology firm that holds the license for the process that created Dolly. "But two years ago, so was the work that is now being presented in *Nature*."

And yes, Wakayama's work does bring complete human cloning a dramatic step closer to reality. Creating a carbon copy of a living adult will always be impossible, however. The difference in age between parent and child alone would prevent it, and because genetics only partly determines who we are, a clone could never be exactly the same person as its parent. The offspring of a brilliant musician or a scientific genius could, depending on his or her life experience, turn out to be a great criminal. But human cloning will happen anyway—perhaps much sooner than anyone thought. And when it does, the hand-wringing of ethicists and politicians will not have been wasted.

Your Reading Time: ____________

***Comprehension Check*:**

1. What distinguishes Dolly from previously cloned animals?
2. What happens to the genetic information in a differentiated cell?
3. Why are mice among the worst candidate for cloning?
4. Why does the author say Wakayama's technique treated the cells more gently?
5. According to the author, what is the prospect of complete human cloning?

多莉：已成历史

海伦·吉普森

一年半之前，苏格兰胚胎学家依安·魏尔马造出了克隆羊多莉，令世界震惊不已。从那时起，伦理学家和决策阶层一直在为这项研究可能造成的令人不安的影响而绞尽脑汁。科学家是否可以用魏尔马的方法，不仅克隆出绵羊，而且克隆出亿万富翁、篮球球星以及提供器官用的人体？医学企业家们是否能够不考虑后果地研究克隆技术？政府是不是现在就应出面干涉，在一切开始之前就立法禁止呢？

对于繁殖学家来说，这些问题与两个更迫切、更实际的问题相比，就显得不那么重要了：多莉真的是克隆羊吗？如果是的话，是不是任何人都能造出来呢？回答这两个问题颇费时日，但答案终于有了。根据最新出版的《自然》杂志上的三篇报告，两个问题的结论都是肯定的。不仅多莉的谱系和她的完美无瑕的孕育得到了确凿证实，而且她还有了伙伴——多达数窝的完全的克隆鼠。克隆已经以出人意料的速度，从惊人的绝技变成了平淡无奇的日常实验室操作。

使得多莉和这些新老鼠与众不同的，也就是使他们区别于以往克隆的一群群猪、牛、羊的特征在于，他们是由成体细胞、即科学中所谓分化细胞克隆而来的。而在此之前，所有的克隆

使用的都是胚胎细胞，这样的细胞不具备专门的功能，只具有转化为身体所需各种细胞的潜力。

与此相反，分化细胞则已经得到分工，有的基因被激活，有的被关闭，使它们分别成为乳腺细胞、肝细胞、胰腺细胞，等等。尽管一个分化细胞中仍然含有制造整个新生物所需的全部遗传信息，但大部分信息是处于抑制状态的。在多莉之前，没有人能够成功地使基因退回到适于克隆的、相对未分化的状态。

但多莉改变了这一切。她的到来证明，我们不必靠胚胎细胞来碰运气。我们尽可以等到幼仔长大，看看哪些羊毛产量高、奶产量高，或者——也许夸张了点——有NBA天才，然后只管克隆这些冠军。

当然，如果魏尔马的突破性进展无人能够重复的话，多莉就只能成为一只实验室古董。说到这里我们要提到Teruhiko Wakayama。他是一位三十一岁的日本博士后，在夏威夷大学作为业余爱好者研究克隆。在那里，他的实验指导Ryuzo Yanagimachi因为教导学生们“不要害怕提出疯狂的问题，越疯狂越好”而非常有名。

Wakayama的想法的确是疯狂的：他想要克隆老鼠。长期以来，老鼠被公认是最难克隆的，因为它们的卵细胞格外娇嫩，而且胚胎发育极快。Wakayama挤出业余时间来研究克隆，小心翼翼地实验着一种又一种老鼠细胞，直到多莉问世几个月之后，他成功地克隆了老鼠卵巢中卵细胞周围的丘状细胞。Wakayama突发奇想，为他的杰作取名为“丘娜”。

他所用的方法与魏尔马几乎完全相同，只有两个关键步骤有差别：首先，Wakayama用注射的方法把成体细胞的细胞核放入无核的宿主细胞中，而不是用电刺激使整个成体细胞与宿

主卵细胞融合。其次，在刺激分裂之前，他给了合成细胞六个小时的休息时间。

他肯定做对了什么。魏尔马仅有一个细胞长成胚胎并发育成了胎儿，而Wakayama却得到了几十个，有3%的克隆鼠存活下来。这也许部分是因为他的方法对细胞更温柔一些吧。也可能是因为只注射细胞核，减少了进入宿主的杂质。

无论原因是什么，这些克隆鼠在各方面都完全正常。他们能够交配生育，DNA活力如此旺盛，以至于它们本身可以再被克隆，而得到的二代克隆还可以再克隆。到目前为止，Wakayama和他的夏威夷大学的同事们已经造出了三代一模一样的老鼠，共五十只。

由于对鼠类在遗传方面已有较深的研究，且鼠类繁殖迅速（一年五代），一种可靠的克隆技术就意味着科学家们将能够深入地研究基因激活和关闭的过程，从而了解细胞是如何进行功能分化的。而且，如果Wakayama的方法能扩展到较大型的动物——研究者们已经在做这方面的计划——研究就会带来各种各样的应用。

例如，我们将能够用生产线造出一排排的经过基因改造过的牛，让它们生产宝贵的人体蛋白质，或者经过改造过的猪，使它们的器官能够清除在移植手术中起排斥作用的那些蛋白质。千里马和冠军宠物可以随意复制。对人类来说，癌症和衰老过程都与细胞内的基因变化有关，因此了解基因的运作原理，今后很可能在抗癌和抗衰老治疗中会发挥作用。

甚至可以想象，肝功能衰竭的病人可以让医生从骨髓中取出一个细胞，培育一个新的肝脏。“现在这还是幻想，”PPL治疗研究所技术所长艾伦·科尔曼说，正是这家苏格兰生物技术研究所持有制造多莉的实验的许可证。“但现在刊登在《自然》