

21 世纪科技新视野丛书

New Horizons in The 21st Century's Science & Technology

(英汉对照读物)

◆丛书主编 吴文智 徐 新

THE FUTURE Medical Care

未来医疗保健

◆ 周 华 熊 震 编 译

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序

人类社会进入 21 世纪的今天,科学技术日新月异的发展速度真正地到了匪夷所思的程度。那些在过去常常被人们认为不可能的梦想,今天大多成了事实。如果将来有一天你突然发现汽车可以像飞机一样在大街小巷穿梭飞行,或当你在某个餐厅就餐时竟然发现你对面就坐着一个与你百分之百相象的你,请不要吃惊,因为这正是现代科学技术创造的结果。

科学探索是一项伟大的冒险活动,充满了刺激与振奋。它使人类的求知欲和好奇心得到满足,并且益发地激起人们愈来愈大的想像力,去欣赏和理解科学技术所带来的种种美妙与神奇。e 时代的到来更使人们对知识的力量不再有丝毫的怀疑,唯有对科学知识的需求更多地增添了紧迫感。“让科学知识为我们插上腾飞的双翅”成了我们绝大多数人潜意识的追求,正是在这样一种背景下,我们构想了这套《21 世纪科技新视野》丛书。意欲从浩瀚的科学海洋中撷取那些对我们明天的开拓进取富有启迪意义的新知识,奉献给一切热爱学习,热爱科学的人们。

《21 世纪科技新视野》是一套以英汉对照方式编排的“语言学习+科技知识”的“链接”式丛书。在编写过程中,所有参编者遵照“应用价值、文化价值、精神价值”相结合的原则精心选择每篇文章,努力把最能体现人类创造力与想像力的科学成果介绍给广大读者,所有原文均摘自英语国家的现版期刊或网络杂志。英文地道,原汁原味。内容讲求知识性、趣味性、通俗性、新颖性,

使得广大英语爱好者在学习英语的同时可以接受新科学知识的熏陶，也使那些钟爱新科学知识的人们在掌握新知识的同时得以强化和提高自己的英语水准，特别是与这个时代特点相融合的那些“与时俱进”的科技英语水准。这在加入 WTO 后的今天犹为重要，因为 WTO 已不容置疑地把每一个中国人深深地卷入到了全球一体化发展的新浪潮中。作为链接未来科学技术的知识纽带——《21 世纪科技新视野》丛书，将把我们与新科学和新知识紧紧地联接在一起，从而为广大读者打造出一个再次提升自己的知识平台，以便可以从容应对 WTO 时代扑面而来的任何挑战。

如果本丛书的出版发行确能使读者对我们的上述编写意图认同十之一二，那就是对我们所有编写人员的莫大奖赏。此外，本书得以顺利出版，除了我们所有编写人员的努力外，还折射了煤炭工业出版社决策者的创新意识和与时俱进的奋发精神，渗透了本丛书责任编辑的辛勤汗水。在此一并表示感谢。

对于书中可能存在的不足之处，我们将在下次再版时改进，敬请广大读者批评指正。

《21 世纪科技新视野》丛书编委会

2002 年元旦于南京

THE FUTURE Medical Care

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- 《未来环境科学》
- 《未来生物技术》
- 《未来医疗保健》
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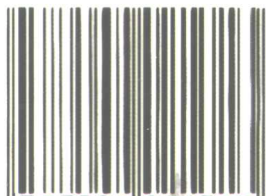
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Every HIV-infected person struggling to keep up with a daily regimen of antiviral drugs must have the same recurrent dream: One day, he or she will toss away the plastic box crammed with pills that once made the difference between life and death and walk away from HIV and free from the specter of AIDS.

每一个挣扎着坚持每天服用抗病毒药品来维持生命的艾滋病病毒感染者肯定都有一个同样的恢复健康的梦想：有一天，他或她将扔掉那些曾经把他们从死亡线上拉回来、装满药片的塑料瓶，走出艾滋病病毒的困扰，远离艾滋病幽灵的纠缠。



A Clone Of One's Own

By Virginia Morell

Last February when Brigitte Boisselier, a French chemist, heard that Scottish scientists had produced Dolly, a sheep cloned from an adult cell, she was one of the few researchers whom the news did not surprise. A member of a fringe religious organization called the Raelian Movement, Boisselier had expected such a development: the group's leader, Rael, had predicted it 23 years before. It seems that Rael, a former French sports journalist, received the news of the impending discovery from *extraterrestrials¹. They send him such announcements periodically, since he's half *E. T.² himself. According to a Raelian fact sheet, his mother was transported aboard a *UFO³, where she was inseminated by one of these otherworldly beings. In 1946, Rael was born "from this union," and 27 years later he began receiving messages from the distant paternal side of his family. Most of these celebrate science and technology predicting a future when we Earthlings will "rationally understand our origins" and begin making synthetic people. Cloning human beings apparently is one of the steps we must take on this path.

"Rael told us this would happen," says Boisselier, "so when we heard the news, we were not shocked, we were organized." Indeed, so organized that one month later—even as medical ethicists, politicians,



克隆出一个你自己

去年2月,当一名叫布里克特·布瓦塞列的法国化学家听说苏格兰科学家已用成体细胞克隆出了克隆羊多莉,她是少数几个不为之所惊奇的研究者之一。作为一个被称为雷尔运动的极端偏激的宗教组织成员之一,布瓦塞列早就预料到会有这样一种结果,这个结果就像这个组织的领导雷尔先生23年前所预言的那样。雷尔原来是一位法国体育新闻记者。他好像是从天外来客那里得到了即将到来的新发现的消息。他们定期向他发出这样的消息,因为他自己就是半个外星人。根据雷尔运动的一份记事表记载,他的母亲曾经被外星球的一个飞碟带走,并在那里怀上了某一个外星球人的孩子。1946年,雷尔在这个“结合”中诞生了。27年后,他开始从他那遥远的父亲那里接受信息。这些高度发达的科学和技术都预测将来人类有一天会“理智地认识我们的起源”,并且开始合成人类。很明显,克隆人类是向这方面必须迈出的步伐之一。

“雷尔告诉我们这是会发生的”,布瓦塞列说,“因此当我们听说这个消息时我们并不惊奇,而是组织起来。”他们确是这样。一个月以后,尽管医学伦理学家、政治家和学者都在辩论这一技术是否

-
1. extraterrestrials: 天外来客,另一个星球的人类
 2. E. T.: 即 extraterrestrial, 天外来客
 3. UFO: 即 Unidentified Flying Object, 不明飞行物, 飞碟



and pundits debated whether the technique should ever be applied to humans. The Raelians launched a company called Valiant Venture Ltd., the world's first human cloning firm. Valiant Venture offers a service to help parents who want to have a child cloned from one of them. Boisselier signed on as the firm's scientific director and is now busy overseeing experiments that she believes will lead to the first cloned human in a mere two years.

"We need to do many experiments first with other species to be sure that it can be done without causing any damage," says Boisselier. "And we also need to raise more funds." Nevertheless, the company, now 14 months old, is making "good progress." It had a list of more than 100 people who would like to be cloned or to have someone they love cloned—for a minimum fee of \$200, 000. Boisselier claims that her firm's research is advancing, although she would not say where the studies are taking place or who is doing them, making it impossible to verify her claims. But because the procedure can be performed in a relatively simple, inexpensive laboratory, as other scientists have noted, there is also no reason to doubt that the Raelians are doing exactly what they say: taking the first experimental steps to produce a human clone. It is important that society knows that this is possible, that it can be—and will be—done...In a few years, there will be a lot of cloned people, that it will be done everywhere in the world. This is what happens with technological advances.

Since Dolly appearance, only one other researcher—Richard Seed, a Chicago physicist—* has jumped publicly into human cloning⁴. He intends to open a shop as soon as he raises the funds. Like Boisselier,



该应用于人类,但雷尔运动组织的成员们还是创办了一个叫做“勇敢探险”的有限公司,也是世界上首家克隆公司。“勇敢探险”为那些想从夫妻双方任何一方身上克隆出一个孩子的父母提供克隆服务。布瓦塞列担当公司的科学指导,现在她正在忙于负责一些她相信仅两年之内就会成功地克隆出第一例克隆人的实验工作。

“我们首先要用其他的物种来做实验以确保这项研究不会对人类造成伤害。”布瓦塞列说,“而且我们也需要筹集更多的资金。”不管如何,这家成立了14个月的公司正在取得很好的进步。已经有100多人愿意被克隆或者把他们所爱的人克隆,而所需的价格最少得20万美元。布瓦塞列声称她公司的研究进展很快,因为她不愿意告诉人们他们进行研究的地点以及是哪些人在从事这项工作,所以人们无法证实她所说的话的真假。因为这个过程可以在相对简单、廉价的实验室里进行,正如其他科学家已经注意到的那样,因此人们没有理由去怀疑雷尔运动成员们所做的同他们所说的是否完全一样:正在进行制造一个克隆人的实验的第一步。很重要的一点是要让社会知道克隆出人类是可能的,而且一定能在不久的将来得以实现。在几年的时间内将会有很多克隆人出现,而且在世界各地都可以进行克隆工作。随着科学技术的进步,这一定会成为现实。

自从多莉诞生以来,只有另外一位名叫理查德·希德的人公开开始着手研究克隆人,他是一名芝加哥物理学家,一旦筹集到资金,他就决定开一家公司。就像布瓦塞列一样,他手头也有许多想要被

4. has jumped publicly into human cloning: 开始公开进行人类克隆



he has a list of people who want to be cloned, and he also thinks human cloning can be a reality in a rather short time and with only a few million dollars for *start-up costs⁵.

For all their faith in science and their apparently more rigorous approach to cloning, Boisselier and the Raelans are obviously far outside the mainstream. Their offer also plays on the fears of parents since they propose to store the cells of living children. These cells could be used later to produce a clone of the child *should the child die⁶. Some researchers think that is exploitation of the worst kind. It plays on every parent's fears. They ask: what about a child who's produced that way? Will he or she be burdened by the memories of the first child?

Yet because cloning offers a way around certain *reproductive⁷ problems—primarily by giving an infertile or homosexual couple a chance to have a *biological child⁸—most researchers agree that one day it's likely to be an option at many *fertility clinics⁹. Human cloning, as horrific as the idea sounds to some, will happen, they say, perhaps not as soon as Boisselier and Seed estimate but far sooner than one would have guessed before Dolly *trotted onto the world's stage¹⁰. It's no longer in the realm of science fiction. The technological breakthrough has already happened, although the details of how to do this with human cells still need to be worked out.

Those refinements are already taking place. Three cloned calves were apparently produced via a more sophisticated technique than the one used to produce Dolly. At human fertility clinics, researchers are pursuing studies of human eggs that could lay the groundwork for cloning, although that is not the purported intent. However, these



克隆的人员名单，他也认为克隆人类在不久的将来一定会成为现实，并且启动资金只需几百万就够了。

尽管他们对科学有着执着的追求，对克隆技术有着严谨的科学方法，但很明显，布瓦塞列和雷尔运动的成员们远远地脱离了主流。他们还可以帮助那些担心孩子会有不幸的父母解除后顾之忧，因为他们计划贮藏活着的孩子的细胞。一旦孩子发生了意外，这些细胞以后可以用来克隆出这个孩子。一些研究者认为这种用途是非常糟糕的，他们是在利用每个父母的恐惧心理。他们这样问到：“用那种方法克隆出来的孩子会怎样呢？他或她会不会生活在对前一个孩子记忆的阴影下呢？”

然而因为克隆在某种意义上为繁殖问题提供了解决方法——首先它为不孕或同性恋夫妇提供了有自己血统孩子的机会——大多数研究者认为将来某一天克隆技术很可能会成为助孕医院的一个选择。他们认为克隆人类——这个对一些人听起来很可怕的想法——一定会实现，虽然结果不会像布瓦塞列和希德所估计的来得那样快，但是总要比人们在多莉诞生前所预计的时间要快得多。这种预想不再是科幻小说中的事了。尽管怎样把这项技术应用于人类细胞的具体实施办法还有待于提高，但是人们已经掌握了这项技术的关键。

这项技术已经得到了精心的改进。科学家们已经用比克隆多莉更复杂的技术克隆出了三头小牛。在助孕医院里，研究者们正在进行对人类卵子的研究，从而为人类克隆打下基础。尽管克隆人类不

-
5. start-up costs: 启动资金
 6. should the child die: 这里是虚拟用法
 7. reproductive: 生殖的，繁殖的
 8. biological child: 有血统关系的孩子
 9. fertility clinics: 助产医院
 10. trotted onto the world's stage: 快步走进世界舞台



types of studies bring human cloning closer to reality.

Making a human clone is not simply a matter of following a recipe. The journal article announcing Dolly's birth did not *spell out¹¹ a formula for cloning mammals; in fact, it did not identify the actual cell that supplied Dolly's genetic material. Yet even without that key piece of information, Dolly's appearance was utterly astounding, since most biologists believed that it was impossible to produce a cloned mammal using any adult cell.

Before Dolly, researchers thought that adult cells could not be induced to produce a clone because they are already *differentiated¹². As a fertilized egg develops into an adult, it divides into two, then four, then eight identical cells. Soon, however, the cells begin to specialize, becoming bone or skin, nerve or tissue. These differentiated cells all share the same *DNA¹³—the blueprint of the body—but they follow different parts of the instructions it contains. "In a sense, they're programmed," says Don Wolf, a senior scientist, and they age, it becomes more and more difficult to reprogram them, to make them switch functions. That's what the Scottish team did when they produced Dolly: they took the genetic material from a differentiated adult cell and made it behave like the genetic material in a newly fertilized egg. Their success, however, does not mean that it is easy to reprogram a human adult cell. *If anything¹⁴, notes Wolf, researchers suspect that every species is unique in its requirements for setting its cellular clock back to zero.

Wolf stepped into the cloning spotlight last year, when the primate center announced that he had produced two monkeys, called Neti and



是人类的最终目的,然而这些类型的研究可以使人类克隆更接近于现实。

克隆人类不是一件简单的按照处方就可以完成的事情。宣布多莉诞生的期刊并没有说出克隆哺乳动物的公式。实际上,它也并没有认出形成多莉基因物质的某个真正细胞。然而,即使没有这方面的关键信息,多莉的出现还是着实让人们大吃了一惊,因为多数生物学家认为利用任何成体细胞克隆出哺乳动物是不可能的。

在多莉诞生以前,研究者们认为成体细胞是不能用于克隆的,因为这些细胞已经被分化了。当受精卵发育成成体细胞时,它就会分裂成2个,然后又分裂成4个,再往后又分裂成8个相同的细胞。很快,这些细胞开始呈现出各自的特征,发展成骨骼、皮肤、神经或组织。这些不同的细胞都有相同的DNA——人体的蓝图——但是它们按照人体其他不同的组成部分的指令生长。“在某种意义上,它们是按照程序进行的,”资深科学家唐·沃尔夫说。它们会衰老,要给它们重新编制程序要它们改变功能变得越来越困难了。这就是苏格兰科学家在克隆多莉时所做的:他们从一个分化的成体细胞中提取基因物质,让它像在一个新的受精卵中的基因物质那样生长。但是,他们的成功并不意味着重新编排一个人类的成体细胞是一件容易的事情。沃尔夫强调,如果有区别的话,研究人员认为每一个物种的细胞钟被调整回原始状态的要求是不一样的。

去年,当灵长类动物研究中心宣布沃尔夫用同克隆多莉相似的

11. spell out: 讲清楚,清楚地说明

12. differentiated: 分化,异化

13. DNA: 脱氧核糖核酸

14. if anything: 如果有区别的话