

探索英语——震撼听说读系列》丛书

TIDETIME  
泰德教育

Discovery

CHANNEL

Genetics  
基因的秘密

探索英语编委会 编



新世界出版社  
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### 基因的秘密

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# Preface

## 前 言

Discovery Channel 是美国著名的电视系列节目，自从播出后便以其丰富的主题、独特的视角、优美的画面和生动的语言感染了全世界的人们并掀起了一场全球性的探索热潮。

Discovery Channel 电视节目在我国各地电视台播出后引起了极大的反响，越来越多的人开始关注我们周围的世界，探知宇宙、自然、历史、科学、人类、动物、军事、医学等各种学科领域的知识。

为了满足人们渴望深入了解 Discovery Channel 探索节目的内容，京文教育将这一著名品牌引进国内，并根据节目内容编排成适于中国人学习的《探索英语——震撼听说读系列》丛书，使其不仅通过电视节目进入千家万户，而且通过图书和视听产品进入读者的手中，让更多的人有机会与经典品牌亲密接触。

《探索英语——震撼听说读系列》是一套集听、说、读为一体的英语学习丛书，共分七大主题——宇宙、自然、动物、历史、科学、探案、军事。每个主题下又由数本小主题组成，独立成册。这套丛书采用中英文双语形式，每本书均设有背景知识、难点注释、词汇解释、综合理解练习。

高品位的节目，高质量的音效，高水准的配音及优美、

流畅、地道的语言表达是这套丛书的特点，也使它独具魅力，可谓是学习英语类图书中难得的上好教材。读者可以借助磁带或 CD 聆听纯正的英语朗读，在享受的同时磨练听力，还可以通过阅读细细体味原汁原味的英语美文、精巧的句式和短语，从而丰富语言知识。此外，读者也可以利用书中设置的讨论题结合主题展开讨论，表述自己的观点和看法，以此达到练习口语的目的。另外，由于本书内容由解说词和谈话构成，所以部分语句不可避免地存在时态不统一、部分语法不符合书面语的情况，而并非错误。

如今英语学习已进入了一个崭新的时代，全面提升英语素质的图书受到越来越多人的欢迎。《探索英语——震撼听说读系列》丛书愿为英语学习爱好者和不断寻求新知的人打开一扇窗，清新的空气会令人心旷神怡，感悟英语学习也能如此惬意、愉悦，同时带来的是前所未有的心灵震撼。

我们衷心希望这套丛书能对读者提高英语素质有所益处，让读者在阅读和聆听的同时感受快乐和满足。让我们一起走进探索英语，体会那份震撼与魅力吧。

编者

2004 年 11 月 30 日

# How to Use This Book

## 学习指南

专家提示您采用以下方法学习：

- 阅读“背景介绍”

它有助于您更好地了解本书的主题和相关的知识。

- 学习“相关词汇”

这里的词汇全部与本书主题紧密相关，大多数取自正文，个别词汇源于他处是扩展词汇。它们对学习者的进行针对性主题展开的讨论大有帮助，也便于记忆。

- “正文”学前的热身

进入正文学习时请先听一遍录音，测试一下自己能听懂多少内容，有心者可做个记录。

- “正文”泛读

在不参考注解的前提下阅读正文，测试一下自己的理解能力，并培养把握中心大意的能力。

- “正文”精读

1. 借助词汇注解仔细阅读全文，全面理解文中的内容；

2. 学习词汇、短语和其在文中的用法；学习或背诵文中的好句子、好段落。文中的词汇和短语均用黑体显示并有标号，方便您随时查找，其音标和中文释义标在书页的一侧，

音标前有标号。好句子和好段落均用下划线标出。当然，您也可以自己采集好句子和好段落，反复回味。

- “理解练习”

这是为检测您对本书的理解而设置的小小练习，您可以在开始泛听和泛读之前先浏览一遍题目。

- “讨论题”

这是针对学生而设置的口语练习，学生可以利用所学的词汇和对主题的了解和掌握表述自己的观点和看法。每个讨论题均有参考答案。

- “译文”

在书后我们提供了译文，供您参考。

- “词汇表”

词汇表中包括单词和短语两部分，所有正文中标出的单词均列在表中，表中的中文释义比正文中的多，含有每个单词在其他的句子中的不同解释。

以上是我们的建议，衷心希望您能学有所获。

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## Genetics

### 基因的秘密

#### Background 背景介绍

基因是本世纪最热门的话题之一。遗传科学家希望借助破解基因密码，治疗人类的致命绝症；植物学家希望通过转基因培育农作物和植物新品种，而动物学家则希望采用 DNA 重组技术克隆生物，创造生物新品种。那么基因到底是什么？

基因是从英文“Gene”音译过来的。基因位于细胞核内的染色体上。从遗传角度看，基因是遗传的基本单位。现代遗传学家认为，基因是 DNA（脱氧核糖核酸）分子上具有遗传效应的特定核苷酸序列的总称，是具有遗传效应的 DNA 分子片段。基因位于染色体上，并在染色体上呈线性排列。基因不仅可以通过复制把遗传信息传递给下一代，还可以使遗传信息得到表达。基因决定了生物的显性特征。不同人种之间头发、肤色、眼睛、鼻子等不同，就是基因差异所致。

人类只有一个基因组，大约有 5-10 万个基因。1985 年美国科学家率先提出人类基因组计划，旨在阐明人类基因组 30 亿个碱基对的序列，发现所有人类基因并搞清其在染色体上的位置，破译人类全部遗传信息，使人类第一次在分子水平上全面地认识自我。该计划于 1990 年正式启动，这一价值 30 亿美元的计划的目标是，为 30 亿个碱基对构成的人类

基因组精确测序，从而最终弄清楚每种基因制造的蛋白质及其作用。

科学家预测，也许过不了几年，我们就能吃上牛肉味的西红柿、含胡萝卜素的大米——这不是幻想，这些都可通过转基因技术生产出来。那么转基因又是什么呢？

通俗地说，就是一种生物体内的基因转移到另一种生物或同种生物的不同品种中的过程。这种俗称杂交的过程就产生了基因的转移。转基因就是利用分子生物学手段，将某些生物的基因转移到其他的生物物种中去，使其出现原物种不具有的性状或产物。也就是说如果我们从苹果中分离到控制红颜色的这个基因，然后通过一定的方法或程序，把它转移到香蕉中去，结果将会使香蕉变成红色。那么了解和研究基因能给人类带来什么好处呢？

利用基因，人们可以改良果蔬品种，提高农作物的品质，更多的转基因植物和动物、食品将问世，人类可能在新世纪里培育出超级作物。通过控制人体的生化特性，人类将能够恢复或修复人体细胞和器官的功能，甚至改变人类的进化过程。

随着人类基因组计划的实施及不断有最新进展的消息传出来，特别是基因工程、克隆生命、干细胞、克隆器官、克隆人，等等讨论，使有关基因的各种说法成为社会关注的焦点之一。对于广大公众而言，的确依然是云里雾里，朦胧而神秘。那么现在就通过探索英语探究一下基因的秘密吧。

 Key Words 相关词汇

- chromosome *n.* 染色体  
dominant gene 显性基因  
egg *n.* 卵子  
fraternal twins 异卵双胞胎  
gene testing 基因测试  
gene *n.* 基因  
genetic material 遗传物质  
genetic code 遗传密码  
genetic odds 遗传几率  
genetic program 遗传程序  
genetic tape 基因带  
genetically-altered 基因改变的  
geneticist *n.* 基因学家  
genetics *n.* 遗传学  
homeosis *n.* 异形发育  
identical twins 同卵双胞胎  
inherit *n.* 继承, 遗传所得  
mutant *n.* 突变异种  
set of genes 基因组  
sperm *n.* 精液, 精子  
spontaneous mutation 自发性突变  
transformation *n.* 变形

**Abbreviations 缩写**

GMC (genetically modified crop) 转基因农作物

GMF (genetically modified food) 转基因食品

GMO (genetically modified organism) 转基因生物，遗传修  
饰的生物

## Text 正文

Genetics<sup>1</sup>

Discover the extraordinary world of genetics and learn what only twins can **reveal**<sup>2</sup>.

"It is like having your most annoying quality standing next to you for the rest of your life."

Hear a **tale**<sup>3</sup> about flies and you, stranger than **science fiction**<sup>4</sup>, and take your pet for a walk, on his genetic wild side.

"Wolves are very hard to train. You cannot get an adult wolf and then say, 'Sit, Stay,' and so on. He will bite you."

Then, look into the future of **gene testing**<sup>5</sup>. See the hopes, and the fears.

Wolves, until recently, thought to be a different **species**<sup>6</sup> from our **domesticated**<sup>7</sup> dogs. But genetic studies have shown just how close our pets are to their wild **brethren**<sup>8</sup>.

The domestic dog is working on the same **genetic tape**<sup>9</sup> as the wolf ancestor. Now, what do I mean by a tape? What I mean is that wolves have a set of genes... **turns out**<sup>10</sup>, um, that dogs have the same set of genes.

1 [dʒi'netiks]

n. 遗传学

2 [ri'vi:l]

vt. 展现, 显示, 揭示, 暴露

3 [teil]

n. 故事

4 科幻小说

5 基因测试

6 ['spi:ʃiz]

n. 种类

7 [də'mestikeit]

vt. 驯养

8 ['breðrən]

n. 兄弟, 同胞

9 基因带

10 结果是, 证明是

1 ['krəʊməsəʊm]  
n. [生物] 染色体

2 遗传物质

3 [i'senʃəli]  
adv. 本质上

4 [ri'ma:kəbl]  
adj. 不平常的, 非凡的, 值得注意的, 显著的

5 [dai'və:siti]  
n. 差异, 多样性

6 引起, 使发生

7 [kævəl'keid]  
n. 队伍, 系列, 序列

8 ['keɪnain]  
n. 犬科动物

9 减慢速度

10 [bi'zɑ:]  
adj. 奇异的

11 ['tekstʃə]  
n. 质地, 纹理, 肌理, 结构

12 [ɑ:tɪfækt]  
n. 人造物品

13 [fəʊndə'menti]  
adj. 基础的, 基本的

14 [maɪ'nju:t]  
adj. 微小的

15 [veəri'eɪʃən]  
n. 变化

Wolves have sets of **chromosomes**<sup>1</sup> with the genes lined up on them.

"And it turns out that dogs are lined up in the exact same way. So we are working with the same messages that are coming from the **genetic material**<sup>2</sup>. And the question is, how do you get out of that same tape so many different shapes and sizes that we see represented in the dog?"

If we think of an unfolding set of genes as a kind of tape that gets played as the animal grows up, the dog and wolf tapes are **essentially**<sup>3</sup> the same. And yet, dogs display such a **remarkable**<sup>4</sup> **diversity**<sup>5</sup> in shapes and behaviors. How does the basic wolf tape **give rise to**<sup>6</sup> the **cavalcade**<sup>7</sup> of **canines**<sup>8</sup>?

"The same tape that makes the wild wolf is slowed way down so that, as a matter of fact, in the lifetime of a dog, it never gets up to the point where it is an adult wolf. When you do that, when on, you **slow** that tape **down**<sup>9</sup> so much that you begin to get a number of **bizarre**<sup>10</sup> features out of it.

"Genes go crazy. And so you will get variations in coat color and coat ... ah, coat **texture**<sup>11</sup>, coat length and so on. And these are all **artifacts**<sup>12</sup> of just selecting an animal for being tame, for example."

It is a **fundamental**<sup>13</sup> truth about genetics. Timing is everything. **Minute**<sup>14</sup> **variations**<sup>15</sup> in DNA can

**dramatically**<sup>1</sup> influence how and when genes turn on and off, creating large effects.

Dog **breeders**<sup>2</sup> can take advantage of these variations in timing and select for novel shapes and forms. In the past, it was done to **optimize**<sup>3</sup> working dogs for different jobs.

“The shape of most **breeds**<sup>4</sup> of dogs originally came about because the dog had some function to perform. In other words, a sled dog is the size and the shape he is because that is the size and shape that performed the best in, in pulling a **sled**<sup>5</sup> through the snow. And here at a dog show, what you are doing is you are looking at kind of a historical representation of all those shapes. They are supposed to look like what they looked in the past.”

For a while, Coppinger and others believed that different breeds **corresponded**<sup>6</sup> to different stages of wolf development in shape and behavior.

The theory was that dogs, like the **Burnese mountain dog**<sup>7</sup> with its **puppy**<sup>8</sup>-shaped skull, were locked in an early wolf puppy behavior stage. The dogs with adult wolf-shape skulls, like **Huskies**<sup>9</sup>, were thought to be closest to a **mature**<sup>10</sup> stage of wolf development. Other breeds, like **beagles**<sup>11</sup>, fit in between. But are different dog breeds really examples of frozen stages of wolf development? It was an **elegant**<sup>12</sup> theory, but untrue.

1 [drə'mætɪkəli]  
adv. 明显地

2 ['bri:də]  
n. 饲养者

3 ['ɒptimaɪz]  
v.t. 使最优化, 使发挥最大效益

4 ['bri:d]  
n. 品种, 种类

5 [sled] n. 雪橇

6 [kə'rɪs'pɒnd]  
v.i. 符合, 对应

7 伯恩山犬

8 ['pʌpi]  
n. (未满一岁的) 小狗

9 ['hʌski]  
n. 爱斯基摩狗

10 [mə'tjuə]  
adj. 成熟的

11 ['bi:gl]  
n. 小猎犬

12 ['elɪɡənt]  
adj. 文雅的, 一流的

“Wolves do not grow up by going through a beagle stage. They do not grow up by going through a Husky stage or whatever.

“They get their different shape is because there is a whole **bunch**<sup>1</sup> of developmental events going on at every given stage, and if you arrest the animal in that stage then those developmental events keep occurring.

“The same thing is true of behavior. If the dog has a developing behavior and that behavior gets arrested at some stage where it is still developing and still in growing, then you end up with a bizarre behavior.”

“This is an eye **stalk**<sup>2</sup>. He is going to, what he is doing, his tail is down, his head is down. He is very ser... **intent**<sup>3</sup> about moving sheep. Ben. Ben. There. He is doing it right there on his own.”

The **instinctive**<sup>4</sup> stalking behavior of this **border collie**<sup>5</sup> puppy, Ben, is **reminiscent**<sup>6</sup> of a wilder **counterpart**<sup>7</sup>. This is a wolf pack hunting **caribou**<sup>8</sup>.

“Right here. Ben.”

But is Ben's grabbing at the sheep really the same as a wolf attack? Within weeks, Ben will be trained to stop **nipping**<sup>9</sup>, not a likely possibility with a wolf.

Herding dogs seem to have inherited part of the wolf genetic tape its hunting motor pattern of stalk, chase and grab, but stopping short of kill. This **garbled**<sup>10</sup> version of the tape allows a handler to shape the dog.

1 [bʌntʃ]

n. 串, 束

2 [stɔ:k]

n. 潜随, 潜近

3 [in'tent]

adj. 专心的

4 [in'stɪŋktɪv]

adj. 本能的

5 博德牧羊犬

6 [remi'nɪs(ə)nt]

adj. 使人想起的

7 ['kauntəpɔ:t]

n. 极相似的人或物

8 ['kæribu:]

n. 北美驯鹿

9 [nɪp]

v. 抓住, 咬住

10 ['gɑ:bl]

vt. 断章取义, 混淆

"There is a lot of training involved. I mean, if we look at a puppy of, of these breeds, you know, there is a lot that a person can do to, to make that a good, their traits good or, or have them so that they never work out as a, a sheep dog. But yet, ge ... it has got to be genetic.

"It has got to be genetic in the same way, they have structures that, that either in their brains or in their bodies that make them do this in a particular way, whereas a **borzoi**<sup>1</sup> or a beagle or a **basset**<sup>2</sup> hound would not have any of those structures, right?"

So are our dogs just like wolves? Maybe it depends on the age of the wolf.

**Golden retriever**<sup>3</sup> pups, barely seven days old. Almost helpless and yet, capable of **sophisticated**<sup>4</sup> behaviors that they share with wolf pups. These genetically preprogrammed **instincts**<sup>5</sup> include a unique canine call that only works for the first two weeks of life and disappears after the third. It is a cry for help.

Even a recording will draw a new mother away from her nest.

"This 'I am lost' call is one of the most interesting calls in canine behavior. It is what we call a motor pattern, meaning it is preprogrammed. It is **innate**<sup>6</sup> with the animal. These puppies know the exact **signal**<sup>7</sup>, the, ah, eooh-eooh-eooh. They know it the minute they are born.

1 ['bɔ:zɔɪ]

n. 猎狼犬, 俄罗斯狼犬

2 ['bæsɪt]

n. 矮脚长耳猎狗

3 金毛猎犬

4 [sə'fɪstɪkeɪtɪd]

adj. 复杂的, 成熟完善的

5 ['ɪnstɪŋkt]

n. 本能

6 ['ɪneɪt]

adj. 先天的, 天生的

7 ['sɪɡnl] n. 信号