

**For Teachers:** Please have the students read the sentences one at a time and correct their pronunciation of each sentence then have them repeat after you. Wait until after they read the sentence (use the number in place of the missing word) to have the students choose the correct answer to fill in the blank. When the students finish the article, move on to the further questions.

日本語訳なしタイプ B もございます。スクロールダウンするとございますので好きな方をご利用下さい。

**4[B] – Genetic Clues**

eTOC のレッスン以外で使用禁止 **10.3(4B)A2E**

- 最近 (さいきん) の ありふれた 分析 (ぶんせき)
- In recent years, it has become common for police to use DNA analysis to solve crimes. This usually involves a technique known as "genetic fingerprinting". Most of the genetic information in DNA is the same for everyone, but a small percentage is unique to each individual. By comparing someone's DNA to that found at the scene of the crime, it is possible to prove that he or she was there. Now, though, the police have begun expanding this DNA analysis to cats.

**Further Questions&A**

\*Ask student to answer the question on their own at first. If the student can't answer correctly, have him look at the last page and read the "example answer" for the question. Have the student try to memorize the answer, if it's too long or difficult, you should divide the sentence into 2 or 3 parts to make it easier to remember. Once they have memorized the answer, the teacher should ask the question one last time so that the student can practice answering. Also if you find any mistakes, please mark the page and let me know ASAP.

- 1) What technique has become for police to use to solve crimes ?
- 2) Is most DNA in people different?
- No. Only a small amount of the DNA is different from person to person.

- 役 (やく) に立 (た) っ 最初 (さいしょ) の
- The usefulness of this was first shown in Canada. The police there suspected a man of carrying out a murder, but they had no evidence that he was present at the crime. They did, however, find a jacket nearby on which there were some white hairs. One of the policemen remembered that the parents of the man had a white cat. They asked scientists to compare DNA from both the cat and the white hairs. They also took DNA samples from other cats in the neighborhood. The DNA from the hairs and the parent's cat turned out to be the same, and different from that of the other cats. This showed that the jacket belonged to the man and he was sent to prison for the crime.

**Further Questions&A**

- 3) Where was genetic fingerprinting for cats first used?

23. 4) Why did the police take DNA samples from other cats in the neighborhood?

24. The biggest <sup>困難 (こんなん)</sup> difficulty with genetic fingerprinting is making sure <sup>確実 (かくじつ) にしている</sup> which part of  
 25. the DNA is <sup>特有 (とくゆう) で</sup> unique . For this reason, it is important to have some <sup>例 (れい)</sup> examples of  
 26. DNA of <sup>遺伝的 (いでんてき) に</sup> genetically <sup>関連 (かんれん) した</sup> related animals to <sup>見分ける</sup> identify which <sup>遺伝子 (いでんし)</sup> genes are  
 27. <sup>役割 (やくわり) をあたえられた</sup> shared and which are not. With this <sup>念頭 (ねんとう) において</sup> in mind , the United States  
 28. Federal Bureau of Investigation (FBI) <sup>捜査 (そうさ)</sup> requested <sup>頼 (たの) む</sup> scientists to <sup>制定 (せいてい) する</sup> establish  
 29. <sup>検索可能 (けんさくかのう) にする為 (ため) の機能 (きのう)</sup> databases of animal DNA. In response, a team <sup>導 (みちび) かれた</sup> led  
 30. by Robert Grahn, a scientist at the <sup>大学 (だいがく)</sup> University of California at Davis, began to  
 31. <sup>集 (あつ) める</sup> collect DNA from cats around the world. The team's database now has DNA  
 32. from 1,394 different cats.

**Further Questions&A**

33. 5) What has the FBI <sup>要請 (ようせい) した</sup> requested <sup>設立 (せつりつ) する</sup> scientists to establish ?  
 34. FBI <sup>かがくしゃたち</sup> が <sup>ようせい</sup> 科学者達に <sup>せつりつ</sup> 要請して <sup>なん</sup> 設立したものは何ですか。  
 35. *The FBI asked scientists to establish a database of animal DNA.*  
 36. 6) How many different cats does the database now have the <sup>プロフィール</sup> profiles of?  
 37. このデータベースには <sup>いまなんしゆるい</sup> 今何種類の猫の <sup>ねこ</sup> プロフィールがありますか。  
 38. *It contains the DNA profiles of 1,394 different cats.*

39. Although the scientists plan to <sup>だけども</sup> include <sup>～を含 (ふく) む</sup> the DNA of dogs and other animals,  
 40. they believe that cat DNA will be especially <sup>思 (おも) う</sup> useful . This is because cats <sup>特 (とく) に</sup> leave <sup>役 (やく) にたつ</sup> <sup>残 (のこ) す</sup> behind <sup>毛皮 (けがわ) 去 (さ) ったあとに</sup> wherever <sup>～する所 (ところ) はどこでも</sup> they go. This makes it almost <sup>～になる</sup> impossible <sup>不可能 (ふかのう) な</sup> for  
 41. <sup>近 (ちか) くの</sup> people <sup>避 (さ) ける</sup> nearby to <sup>付くこと</sup> avoid <sup>理由 (りゆう)</sup> getting fur on their clothes. For this reason , police  
 42. <sup>自信 (じしん) をもって</sup> confidently <sup>期待 (きたい) する</sup> expect <sup>役割 (やくわり) をはたす</sup> the DNA of cats to play a part in many  
 43. <sup>将来 (しょうらい)</sup> future <sup>犯罪 (はんざい)</sup> crime <sup>捜査 (そうさ)</sup> investigations.  
 44. \*DNA = deoxyribonucleic <sup>デオキシ・リボ核 (かく) の</sup> acid = <sup>酸 (さん)</sup> 生化学 <sup>せいかがく</sup>

**Further Questions&A**

46. 7) Why do scientists believe that cat DNA will be more useful than other animals?  
 47. なぜ <sup>かがくしゃ</sup> 科学者たちは <sup>ねこ</sup> 猫の <sup>ほか</sup> DNA は <sup>どうぶつ</sup> 他の動物より <sup>やく</sup> 役に <sup>た</sup> 立つと <sup>しんじ</sup> 信じているのですか。  
 48. *Cats leave fur behind more than other common pets.*  
 49. 8) How <sup>役立つ</sup> helpful do you think that this database will be in <sup>解決 (かいけつ) する</sup> solving <sup>おも</sup> future crimes?  
 50. このデータベースは <sup>しょうらい</sup> 将来の <sup>はんざい</sup> 犯罪にどのくらい <sup>やくだ</sup> 役立つと思 <sup>おも</sup> いますか。  
 51. *It is unlikely <sup>ありそうもない</sup> criminals will come <sup>犯罪 (はんざい) の</sup> in contact <sup>接触 (せつしよく) において</sup> with the cats in the database, <sup>ゲノム</sup> so it is more useful for studying the genome than solving crime.*

**\*Choose the correct answer from these choices.**

技術 (ぎじゅつ)

遺伝子鑑定 (いでんしかんてい)

遺伝子鑑定の技術は…

人間 (にんげん)

52. (37) The technique of “genetic fingerprinting” was first tested on cats but is now also being used for human beings.
53. 1 relies on the fact that the DNA of each individual is slightly different.
54. 2 can be used to determine the types of people likely to commit crimes.
55. 3 is a way of discovering similarities between two separate crime scenes.

示 (しめ) す

57. (38) What did genetic fingerprinting show the police in Canada?

遺伝子鑑定によってカナダの警察は何がわかりましたか。

58. 1 That the white hairs found on the jacket belonged to the victim of a murder.
59. 2 That the jacket found at the crime scene belonged to the murderer’s father.
60. 3 That a man they suspected of murder had been at the scene of the crime.
61. 4 That a man had been wrongly sent to prison for murdering someone.

63. (39) What is one thing that the new database will do?

新しいデータベースがすることの何一つは何ですか。

64. 1 Show which genes are shared by genetically related animals.
65. 2 Provide a list of cats that have been at crime scenes around the world.
66. 3 Store information about experts on genetic fingerprinting.
67. 4 Identify which types of DNA are unique to humans.

69. (40) Why do the police think cat DNA will be more useful to them than DNA from other animals?

なぜ警察は猫のDNAが他の動物からのDNAよりも、彼らにとって有用だと考えていますか。

70. 1 Cats are less likely to be noticed at a crime scene.
71. 2 Cats have a wider variety of DNA than other animals.
72. 3 Cat fur tends to remain at a crime scene for a longer time.
73. 4 Cat fur is more likely to be found on criminals’ clothes.

## Review Questions

技術 (ぎじゅつ)

解決 (かいけつ) する 犯罪 (はんざい)

74. 1) What technique has become for police to use to solve crimes?

75. They use genetic fingerprinting.

76. 2) Is most DNA in people different?

量 (りょう)

77. No. Only a small amount of the DNA is different from person to person.

78. 3) Where was genetic fingerprinting for cats first used?

殺人 (さつじん) 事件 (じけん)

79. It was first used on a murder case in Canada.

80. 4) Why did the police take DNA samples from other cats in the neighborhood?

標本 (ひょうほん)

81. *They took DNA from other cats to find out how different they were from the white hairs.*

82. 5) What has the FBI 要請 (ようせい) した requested 設立 (せつりつ) する scientists to establish ?

83. *The FBI asked scientists to establish a database of animal DNA.*

84. 6) How many different cats does the database now have the プロフィール profiles of?  
含 (ふく) む

85. *It contains the DNA profiles of 1,394 different cats.*

86. 7) Why do scientists believe that cat DNA will be more useful than other animals?

87. *Cats leave fur behind more than other common pets.*  
ありふれた

88. 8) How helpful 役立つ do you think that this database will be in 解決 (かいけつ) する solving future crimes?

89. *It is unlikely ありそうもない criminals 犯罪 (はんざい) の will come 接触 (せつしょく) において in contact with the cats in the database, so it is more useful for studying the ゲノム genome than solving crime.*

\*genome = せいぶつ 生物が きのうてき 機能的に かんぜん 完全な せいかつ 生活をするために ひつよう 必要な いでん 遺伝子群 ふく を含む せんしょくたい 染色体の ひとくみ 一組

解答: (37) 2 (38) 3 (39) 1 (40) 4

**Type B 日本語訳なし**

**4[B] – Genetic Clues**

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90. In recent years, it has become common for police to use DNA analysis to solve  
 91. crimes. This usually involves a technique known as “genetic fingerprinting”.  
 92. Most of the genetic information in DNA is the same for everyone, but a small  
 93. percentage is unique to each individual. By comparing someone’s DNA to that  
 94. found at the scene of the crime, it is possible to prove that he or she was there.  
 95. Now, though, the police have begun expanding this DNA analysis to cats.

**Further Questions&A**

96. 1) What technique has become for police to use to solve crimes?  
 97. 2) Is most DNA in people different?

98. The usefulness of this was first shown in Canada. The police there suspected a  
 99. man of carrying out a murder, but they had no evidence that he was present at  
 100. the crime. They did, however, find a jacket nearby on which there were some white  
 101. hairs. One of the policemen remembered that the parents of the man had a white  
 102. cat. They asked scientists to compare DNA from both the cat and the white hairs.  
 103. They also took DNA samples from other cats in the neighborhood. The DNA from  
 104. the hairs and the parent’s cat turned out to be the same, and different from that  
 105. of the other cats. This showed that the jacket belonged to the man and he was  
 106. sent to prison for the crime.

**Further Questions&A**

107. **3)** Where was genetic fingerprinting for cats first used?

108. **4)** Why did the police take DNA samples from other cats in the neighborhood?

109. The biggest difficulty with genetic fingerprinting is making sure which part of the  
 110. DNA is unique. For this reason, it is important to have some examples of DNA of  
 111. genetically related animals to identify which genes are shared and which are not.  
 112. With this in mind, the United States Federal Bureau of Investigation (FBI) requested  
 113. scientists to establish databases of animal DNA. In response, a team led by Robert  
 114. Grahn, a scientist at the University of California at Davis, began to collect DNA  
 115. from cats around the world. The team's database now has DNA from 1,394  
 116. different cats.

### Further Questions&A

117. **5)** What has the FBI requested scientists to establish?

118. **6)** How many different cats does the database now have the profiles of?

119. Although the scientists plan to include the DNA of dogs and other animals, they  
 120. believe that cat DNA will be especially useful. This is because cats leave fur behind  
 121. wherever they go. This makes it almost impossible for people nearby to avoid getting fur on  
 122. their clothes. For this reason, police confidently expect the DNA of cats to play a  
 123. part in many future crime investigations.

124. \*DNA = deoxyribonucleic acid

### Further Questions&A

125. **7)** Why do scientists believe that cat DNA will be more useful than other animals?

126. **8)** How helpful do you think that this database will be in solving future crimes?

### \*Choose the correct answer from these choices.

127. **(37)** The technique of "genetic fingerprinting"

128. **1** was first tested on cats but is now also being used for human beings.

129. **2** relies on the fact that the DNA of each individual is slightly different.

130. **3** can be used to determine the types of people likely to commit crimes.

131. **4** is a way of discovering similarities between two separate crime scenes.

132. **(38)** What did genetic fingerprinting show the police in Canada?

133. **1** That the white hairs found on the jacket belonged to the victim of a murder.

134. **2** That the jacket found at the crime scene belonged to the murderer's father.

135. **3** That a man they suspected of murder had been at the scene of the crime.

136. **4** That a man had been wrongly sent to prison for murdering someone.

137. **(39)** What is one thing that the new database will do?

138. **1** Show which genes are shared by genetically related animals.

139. **2** Provide a list of cats that have been at crime scenes around the world.

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141. **4** Identify which types of DNA are unique to humans.

142. **(40)** Why do the police think cat DNA will be more useful to them than DNA

from other animals?

143. **1** Cats are less likely to be noticed at a crime scene.
144. **2** Cats have a wider variety of DNA than other animals.
145. **3** Cat fur tends to remain at a crime scene for a longer time.
146. **4** Cat fur is more likely to be found on criminals' clothes.

## Review Questions

147. **1**) What technique has become for police to use to solve crimes?
148. **2**) Is most DNA in people different?
149. **3**) Where was genetic fingerprinting for cats first used?
150. **4**) Why did the police take DNA samples from other cats in the neighborhood?
151. **5**) What has the FBI requested scientists to establish?
152. **6**) How many different cats does the database now have the profiles of?
153. **7**) Why do scientists believe that cat DNA will be more useful than other animals?
154. **8**) How helpful do you think that this database will be in solving future crimes?

\*genome = 生物が機能的に完全な生活をするために必要な遺伝子群を含む染色体の一組

解答: (37) 2 (38) 3 (39) 1 (40) 4

