Science Inspirations

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Science Inspirations

To Teachers and Students

Science has the remarkable ability to ignite our curiosity and kindle the flames of inspiration. It unveils the hidden wonders of the natural world, unravels the mysteries of the universe, and shines light on life itself. Science encourages us to question, explore, and innovate. It allows us to dream of new possibilities, whether this is imagining sustainable futures, treating diseases, or venturing into the depths of space. In this book, we look at twenty issues in science and technology that are inspiring people around the world today.

The book is divided into five sections, each covering a different field of scientific exploration. In Section I, we look at Nature and the Environment, answering questions such as whether we should bring back extinct animals and how we can protect our cities from climate change. Section II delves into the world of Humans and Society. We move from the innovative work of a teenage scientist translating sign language to the seemingly mundane – but just as important – issue of how to raise a cat. Section III takes us to Space and Exploration. Are UFOs real? What life-changing discovery did Hayabusa make on Ryugu? Can we grow plants on the Moon? In Section IV, we switch our attention to Health and Medicine. We find out why mosquitoes bite some people more than others and look to the future with microscopic robots that can swim through the bloodstream. In the last section of the book, our focus is on how science is bringing us The Future Now. We hear about Japanese scientists creating robots with living skin and aeronautical companies aiming to produce planes that can fly us to the other side of the world in under an hour.

Each unit has a variety of activities to promote understanding of the topics and development of language skills. Two vocabulary sections introduce and practice key words from the text, extending students' knowledge of scientific terms. The reading passage has two sets of questions, one to assess comprehension of the major themes and the other to encourage a more detailed understanding. There is a writing section that presents important grammatical structures and a listening dictation that encourages students to catch useful expressions and phrases. Finally, students are given the opportunity to discuss their opinions about the topic, the activity scaffolded by a brainstorming exercise to help them generate ideas and vocabulary. Whatever your interest in science, we hope you can find something in this book to inspire you in your own future work. Good luck!

Dave Rear

Table of Contents

Section III: ***Space and Exploration***

Section IV: ***Health and Medicine***

Section V: ***The Future Now***

UNIT 1

Extinct No More

Can We Bring Back Mammoths?

もし，あなたが氷河期にタイムスリップできたら，氷に覆われた地球を歩き回るマンモスの群れを目にするでしょう。狩猟と温暖な気候のために１万年前に絶滅したこの壮大な生き物を，もし生き返らせることができるとしたらどうでしょう。それは，あり得ない話ではありません。

Key Vocabulary

次の単語について，その定義を結びつけましょう。

1. extinction	**(a)** the smallest living part of an animal or plant
2. primitive	**(b)** a small section of DNA
3. gene	**(c)** the natural environment for an animal or plant
4. preserve	**(d)** a type of animal in danger of dying out
5. cell	**(e)** related to early humans
6. endangered species	**(f)** when an animal no longer exists on Earth
7. habitat	**(g)** to prevent something being damaged

Reading

CD 1-03～08

CD 1-03

When the movie *Jurassic Park* came out in 1993, audiences were excited by the sight of ferocious dinosaurs coming to life on the big screen. The film used computer-generated imagery (CGI) to recreate these giants of the Earth's past, but it also inspired a new question for the human race: Could we bring back dinosaurs for real?

CD 1-04

To bring a species back from extinction requires two things: a sample of its DNA and a close relative still living today. Unfortunately, scientists have not discovered any DNA from dinosaurs, which died out too long ago for their genes to have survived. They have, however, collected DNA from another great creature that once roamed the Earth: the wooly mammoth. Wooly mammoths existed during the last Ice Age, protected from the cold weather by the thick coat of hair that covered their bodies. Most of them died out 10,000 years ago through a combination of rising temperatures and hunting by primitive humans, though a small population survived until 2000 BC on an island near Siberia.

CD 1-05

It is in Siberia that mammoth DNA has been discovered, the freezing temperatures preserving enough of their bodies in ice. Although the cells in these bodies are dead, scientists have been able to read the DNA inside them, making the idea of cloning them a real possibility. The next step to doing so involves combining the mammoth genes with those of their nearest living relative, the Asian elephant, in order to create an embryo.

CD 1-06

Ideally, that embryo would be carried in the womb of an elephant, which would give birth in the usual way. The problem is that Asian elephants are endangered, making researchers unwilling to experiment with them. Instead, the aim is to create an artificial womb that would do no harm to a living creature. So far, researchers have only done experiments with mice. Creating a womb large enough to nurture a mammoth is expected to take at least another decade.

CD 1-07

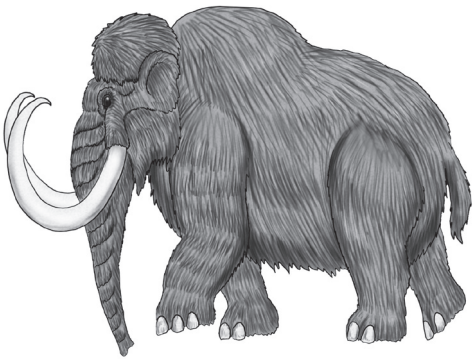
If they do manage to develop the technology to clone a mammoth, the next question is: Should they? There is still a habitat cold enough for mammoths to live comfortably – Siberia where their DNA was discovered – but there are clearly risks involved with bringing back an animal that has been extinct for so long. What will the effect be on the ecosystem? How will they raise the first generation of mammoths who will not have mothers to teach them the skills of life? And with so many current species threatened with extinction, should we not focus on protecting them rather than bringing back old ones?

CD 1-08

These are not easy questions to answer. But the idea of mammoths roaming the Earth once more is an exciting one. And, unlike *Jurassic Park*, let's hope this story has a happy ending.

Notes

ferocious 猛烈な　**roam** 歩き回る　**embryo** 胚　**womb** 子宮　**nurture** 育てる
ecosystem 生態系



True / False

次の文が本文の内容と一致する場合は T，一致しない場合は F を記入しましょう。

1. (　　) It is currently possible to bring dinosaurs back from extinction.

2. (　　) Some mammoths survived until about 4,000 years ago.

3. (　　) Scientists have collected mammoth DNA but they do not have a living relative.

4. (　　) It is problematic to use living Asian elephants to nurture a mammoth embryo.

5. (　　) There is no place on Earth where mammoths could live comfortably today.

Understanding Details

次の質問に英語で答えましょう。

1. What are the two things needed to bring a species back from extinction?

_____

_____

2. How long is it expected to be before an artificial womb for mammoths can be created?

_____

_____

3. Why would the first generation of mammoths have a particular problem?

_____

_____

Vocabulary in Context

次の英文の空所に入れるのに正しい語句を下から選びましょう。

1. Every (　　) in the human body carries DNA.

2. Many species face (　　) due to climate change.

3. Can we find a suitable (　　) for wooly mammoths?

4. Stone Age humans had very (　　) tools.

5. We have to (　　) the rainforest for future generations.

extinction	primitive	cell	habitat	preserve

Writing Sentences—Making a Contrast 1

対比を表す表現を学びます。次の英文の ( ) 内の単語を並べ替えて，意味の通る文にしましょう。
大文字の語も小文字で記されています。

1. 細胞は死んでいたが，科学者たちは DNA を読み取ることができた。
(the / were / although / dead / cells), scientists could still read their DNA.
( )

2. マンモスのクローンを作ることは可能かもしれないが，それをやってみるべきか？
Cloning a mammoth might be possible, (should / try / to / but / do / we) it?
( )

3. マンモスを復活させるのは，リスクがあるとしてもワクワクする。
It would be exciting to bring back mammoths, (doing / the / of / risks / despite) so.
( )

Listening Summary

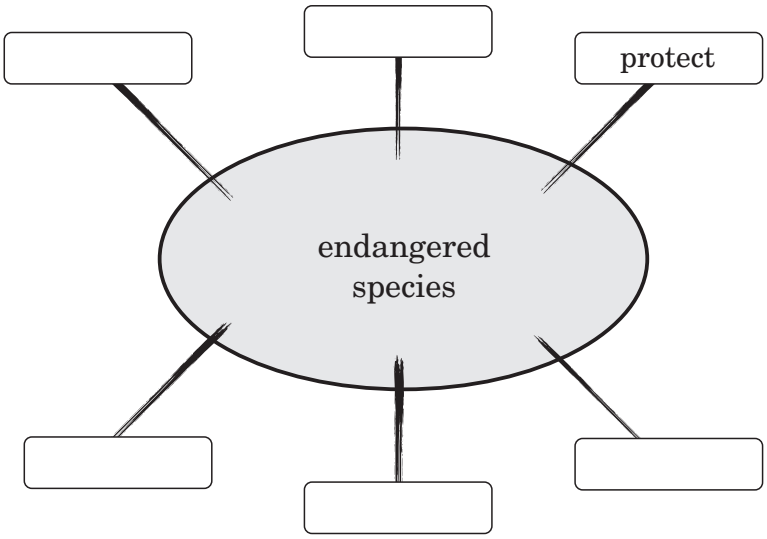
CD 1-09

音声を聞いて，次の英文の空所を埋めましょう。

Bringing back animals from extinction [1)]_____ the movie *Jurassic Park*. But what if we could do it for real? Surprisingly, it is not an impossible dream. To recreate [2)]_____, you need a sample of its DNA and a close living relative. Unfortunately, no DNA has [3)]_____ for the dinosaurs of *Jurassic Park*; however, we do have DNA from another great animal of the past: the wooly mammoth. We also have [4)]_____, the Asian elephant. So, can and should we bring mammoths back? There are two problems. One is that scientists [5)]_____ experiment with Asian elephants, which are an endangered species, so they have to create an artificial womb for the mammoth embryo. [6)]_____ that we can't predict the consequences of returning an extinct animal to a modern ecosystem. The technology for doing so, however, could be ready soon.

Express your Ideas

A. クラスメートと話し合って，円の中にあるテーマに関係している単語をリストアップしてみましょう。



B. 次の英文を読んで，自分の考えを書きましょう。

1. Why are some species on Earth in danger of becoming extinct?

2. How can we protect endangered species?