

外 国 語

次の英文は *TIME Special Issue* (Fall 1997) に掲載された記事“The Plant Hunter”の抜粋です。この文章をよく読んで、問題 **1** から **6** に答えなさい。解答は解答用紙の指定された欄に記入すること。

*のついている語句の注は問題のあとに示されています。

The teacher and student sit cross-legged, facing each other on the floor of the open-sided hut in Western Samoa. Behind them the rain-forest rises to the summit of an inactive volcano. The teacher is Salome Isofea, a 30 year-old healer, and her student is an American named Paul Alan Cox. But Cox is no ordinary student—he is a botany professor at Brigham Young University in Utah and a world authority on medicinal plants.

Salome is explaining a traditional cure for pterygium*, an eye affliction common to the tropics in which vision gradually becomes obscured as a layer of tissue slowly covers the cornea*. The traditional cure used by healers is leaves of *Centalla asiatica*, a vine that grows along the ground, which Salome chews into a poultice*, smears on a cloth and then places as a compress on the afflicted eye for three consecutive nights.

Moments like this are typical of Cox’s experience as he scours the world’s plants in search of those that may benefit Western medicine. Cox has spent many years in Samoa interviewing or apprenticing himself to traditional healers. He has also travelled throughout the South Pacific, as well as in Southeast Asia, South America, East Africa and as far north as Sweden’s Lapland. In Samoa alone, healers have led him to 74 medicinal plants which might prove useful.

Samoan healers mix poultices and herbal remedies from the leaves, barks and roots of local plants, using them for conditions that range from high fever to appendicitis*.

Among them are root of Ago (*Curcuma longa*) for rashes*⁽²⁾; leaves of the kuava tree (*Psidium guajava*) for digestive problems, and the bark of vavae (*Ceiba pentandra*) for breathing difficulties. Virtually all the healers are women who learned their art from their mothers, who in turn learned it from their mothers. Now knowledge of the recipes and their uses, and even the location of the plants in the forests, is endangered as more and more daughters reject the long apprenticeships in favor of using Western pills and creams.⁽⁷⁾

For this reason, the discovery of young practicing healers like Salome delights Cox, who believes that only people like her can prevent the loss of centuries of knowledge.⁽³⁾ If he can carry Salome's knowledge to the developed world in the form of plants whose various chemical compounds might help combat incurable diseases—notably cancer, AIDS and Alzheimer's—^(a)the motivation to save the Samoan rain-forest, and all forests, will be that much stronger.

Fewer than 1 % of the world's 265,000 flowering plants, most of which inhabit tropical regions, have been tested for their effectiveness against disease. "We haven't even scratched the surface—not even in our own backyard," says Jim Miller, director of the Missouri Botanical Garden's natural-products program. Yet nearly a quarter of prescription drugs sold in the U.S. are based on chemicals from just 40 plant species.⁽⁴⁾ Morphine*⁽¹⁾ for example, is derived from poppies and medicines such as vincristine* and vinblastine*⁽¹⁾, isolated from the rosy periwinkle*⁽¹⁾, help treat cancers, including Hodgkin's disease* and some leukemias*. Curare, taken from several poisonous Amazonian plants and often used in the tips of hunting arrows, is used in drugs that cause anesthesia*. And reserpine*, an extract of the snakeroot plant, traditionally used in Asia to counteract poisonous snake bites, is the basis of several drugs to reduce anxiety and abnormally high blood pressure.

The drive to collect and screen more natural products for their medicinal effects is intensifying and this is good news for biologists and environmentalists concerned about the dwindling of the planet's biodiversity, mostly concentrated in a wide band around the equator. Human activity, from farming to logging and road building, is making this band ever narrower, driving numerous species to extinction even before they have been discovered. ^(b) "I see ethnobotany—the study of the relationship between people and plants—as the key to the preservation of this vast collection of species as well as a pathway to halting many diseases," says Cox.

Major technological advances in screening processes have helped Cox and other ethnobotanists considerably. Pharmacologists* must analyze between 10,000 and 17,000 chemical compounds before finding one with the potential to be tested for efficacy in humans. Until recently, animal testing and clinical trials of a single drug required an average 12 years of research and cost up to 300 million dollars. But initial screening can now be done in a matter of days without using animals. Molecular* biologists are able to isolate enzymes* that can trigger human diseases, then expose those enzymes to a plant's chemical compounds. If a plant extract blocks the action of a particular enzyme—say, one that causes a skin disease—they know the plant has drug potential. By extracting specific chemicals from the leaves, roots or bark in a series of experiments and testing each sample individually, scientists can determine which of the plant's thousands of compounds actually blocks the enzyme.

As a result of these advances, ⁽⁴⁾ about 100 U.S. companies are searching out plants. Drug companies and scientific institutions are working together on field research all over the world, racing to study as many natural substances as possible before they, or the native people who use them, disappear. Some work with the handful of ethnobotanists like Cox to search

out drug candidates based on their knowledge of native peoples; others use a broader approach, mass-collecting plants whose chemical compounds might contribute to new drugs.

Cox believes that ethnobotanical field research provides a much better organized way of locating plants that have medical potential than random collecting. "Native people have been testing plants on people for thousands of years," he says. Cox recently discovered that *Homalanthus nutans* — a rain-forest tree whose bark Samoans have used for centuries as a cure for hepatitis* — contained a compound which appeared to inhibit growth of the AIDS virus and which is now undergoing further testing for possible use in the future.

Cox has located three other medically promising plants. Two of the plants, used by Samoans to control skin diseases, are being investigated by a drug company. The third doubles the life span of infection-fighting T lymphocytes* in the test tube; its effect in the human body is not yet known.

However, Cox is more than a healer's apprentice. He knows that if the rain-forests of Samoa continue to disappear, hundreds of potential drugs hidden there may never be found. To date more than 80 % of the lowland rain-forest has already been logged and Cox's aim is to offer cash-poor Western Samoans an alternative to selling out to loggers.

In recent years he has set up a charitable foundation, the Seacology Foundation, based at Brigham Young to provide money for the Samoan villagers to enable them to build schools and hospitals without having to sell their forests to logging companies. In the village of Falealupo, a series of platforms and a walkway high in the trees have been constructed to attract ecotourists. The income earned from tourist groups visiting the forest has helped the villagers understand the wealth of their heritage, and Cox hopes they will be encouraged to preserve it rather than sell it. Samoans have

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traditionally used the forest for hunting, collecting medicinal plants and harvesting wild fruits and it is in this interplay between nature and culture that Cox sees hope for conservation and the future of ethnobotany. “We can’t save the forest without saving the culture,” he says, “and we can’t save the culture without saving the forest.”

問題

1 What do the following words, which are underlined in the text, refer to? Answer in English.

- 1) Moments like this
- 2) them
- 3) her
- 4) these advances
- 5) they

2 Explain in English the meanings of the following phrases, which are underlined in the text.

- a) incurable diseases
- b) driving numerous species to extinction
- c) medically promising plants

3 Decide whether the following statements are true or false, and write *T* or *F* in the brackets:

- 1) [] Paul Cox is teaching Salome about traditional healing.
- 2) [] Very few of the healers are men.
- 3) [] Most of the world's plant species lie in tropical areas.
- 4) [] The rain-forest tree *Homalanthus nutans* was only recently discovered.
- 5) [] Ecotourism has helped the Samoan villagers to realize how precious the rain-forests are.

4 *Answer the following questions in English.*

- 1) According to Cox, what is the advantage of ethnobotanical field research over the random collecting of plants?
- 2) Why is Paul Cox concerned about the disappearance of the rain-forests?
- 3) What are the goals of the Seacology Foundation?

5 下線部(ア)～(イ)を日本語に訳しなさい。

6 *Paul Alan Cox* は熱帯雨林の持つ重要性をどのようにとらえていますか。

「文化」「医療」「保護」という3語を用いて600字以内でまとめなさい。

| | | |
|---|-------------------------------|------------------|
| 注 | anesthesia | 麻 酔 |
| | appendicitis | 虫垂炎 |
| | cornea | 角 膜 |
| | enzyme | 酵 素 |
| | hepatitis | 肝 炎 |
| | Hodgkin's disease | ホジキン病(悪性リンパ腫の一種) |
| | leukemia | 白血病 |
| | molecular > molecule | 分 子 |
| | morphine | モルヒネ |
| | periwinkle | ツルニチニチソウ |
| | pharmacologist > pharmacology | 薬理学 |
| | poultice | 湿 布 |
| | pterygium | 翼状片 |
| | rash | 発 疹 |
| | reserpine | レセルピン |
| | T lymphocyte | Tリンパ球 |
| | vinblastine | ビンブラスチン |
| | vincristine | ビンクリスチン |