Jhapter **6**

癌を検知する「賢いメス」

医療工学



What's new?

音声を聞いて、写真(臓器をレーザで切り取ったときに生じる煙で癌ができているかどうかを検知 できる新型外科ナイフを使って、豚の肝臓で実験している)を説明している英文を a~cから選び ましょう。



a	b	C

😩 Learn useful sci-tech expressions

音声を聞いて、1~5の() 内に適当な単語を書き入れましょう。 1. radiation ([放射線治療] 2. operating ([手術台] **3.** make ([確認する] 4. ([除去する] 5. (「実験的な]

Learn engineering English tips

1。4の粉字の詰み士を子した語句の(

大きな数字を読む時は、数字を区切っているコンマの所にまとまった数字を表す語を入れなが ら読みます。

) 内に海坐な話を書き入れましょう

1 - 2	+ 07女人丁 07 前(07/7) で	ハしん)內吃過日	は四で百さ八れより。	ト <i>)</i> 。		
1.	120,000,000,000	\rightarrow	one hundre	ed and twenty	()		
2.	5,000,000	\rightarrow	five ()			
3.	250,000	\rightarrow	two () and fifty ()	
4.	380,000	\rightarrow	() () and () (



New surgical knife can detect cancer instantly

Surgeons may have a new way to smoke out cancer. An experimental surgical knife can help surgeons make sure they have removed all the cancerous tissue, doctors reported on Wednesday. Surgeons typically use knives that heat tissue as they cut, producing a sharp-smelling smoke.

The new knife analyzes the smoke and can instantly signal whether the tissue is cancerous or healthy.

Dr. Zoltan Takats of Imperial College London suspected the smoke produced during cancer surgery might contain some important cancer clues. So he designed a "smart" knife hooked up to a refrigerator-sized mass spectrometry device on wheels that analyzes the smoke from cauterizing tissue.

The smoke picked up by the smart knife is compared to a library of smoke "signatures" from cancerous and non-cancerous tissues. Information appears on a monitor: green means the tissue is healthy, red means cancerous and yellow means unidentifiable.

Currently, surgeons send samples to a laboratory to make sure they have removed the tumor while the patient remains on the operating table. It can take about 30 minutes to get an answer in the best hospitals, but even then doctors cannot be entirely sure, so they often remove more tissue than they think is strictly necessary. If some cancerous cells remain, patients may need to have more surgery or undergo chemotherapy or radiation treatment.

The new knife and its accompanying machines were made for about £250,000 (\$380,000), but scientists said the price tag would likely drop if the technology is commercialized.

Notes

surgical「外科用の」 surgeon「外科医」

cancerous tissue 「癌組織」 typically「通常」

signal「知らせる」

suspect 「~ではないかと思う」

clue「手がかり」
hook up to...
「~につなぐ」
mass spectrometry
「質量分析」
cauterize「焼き切る」
library「資料」
signature「特件」

unidentifiable「特定で きない」

entirely「完全に」 strictly「厳密に」

undergo chemotherapy 「化学療法を受ける」

accompany「伴う」 commercialize 「商品化する」

(by Maria Cheng, Associated Press, July 17, 2013)

* Imperial College London(インペリアル・カレッジ・ロンドン:イギリス, ロンドンに本部を置くイギリスの公立大学)

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Understand what you read

本文を読んで1と2は質問に答え、3は本文の内容に合うように英文を完成させましょう。

- 1. How is Dr. Takats' new knife different from other surgical knives?
 - a) It produces smoke as it cuts through tissue.
 - b) It offers quicker analysis of whether the tissue is cancerous.
 - c) It reduces the smell of burning tissue to aid analysis.
 - d) It is linked to a refrigerating unit which reduces the heat produced.
- 2. Which of the following statements about the current method of surgery is NOT true?
 - a) The tests are carried out before the operation.
 - b) It can take longer than half an hour to get the test results back.
 - **c**) Surgeons are not able to know for certain whether they have removed all of the cancerous material.
 - d) Some patients may need a course of chemotherapy after surgery.
- 3. The price of the new technology
 - a) means most hospitals cannot afford it.
 - b) will definitely increase in the future.
 - c) is lower for scientists.
 - d) could decrease if it was mass produced.

Summarize what you read

本文の内容に合うように、()内に遺	選択肢から適当な語を選んで書き入れましょう。			
A new type of surgical (1.) has been developed that cancer surgeons			
could use to dramatically reduce the time it takes for them to test whether all cancerous				
(2.) has been remove	red. Surgical knives use (3.			
and the new technology takes advantage of this. It analyzes the smoke which is produced				
and compares its makeup to existing (4.) on cancerous and non-cancerous			
tissue almost instantaneously.				

heat knife data tissue

Get to know engineering genres

Target Genre Note-taking

講義を聞いてノートをとる場合、できるだけ数字や固有名詞など忘れてしまいやすい情報は必 **ずメモ**します。また話の骨子は文章でメモするのではなく、**句や節単位で簡潔に**情報の流れを まとめることが重要です。



🖏 以下は本文で紹介された外科メスに関する講義の一部を聞いた学生の講義ノートの一部です。音声 を聞いてメモ中の間違いを3つ見つけましょう。

Testing the knife · Created database of 3000 + molecular profiles of cancerous smoke Tried the knife (2001-2013) @ 3 hospitals · Compared smoke from 19 operations with database · 100% success rate · published in "Science Translation Medicine"

