

Chapter 6

癌を検知する「賢いメス」

医療工学

CD
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What's new?

音声を聞いて、写真（臓器をレーザー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

CD
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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

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。

1～4の数字の読み方を示した語句の（ ）内に適当な語を書き入れましょう。

1. 120,000,000,000 → one hundred and twenty ()
2. 5,000,000 → five ()
3. 250,000 → two () and fifty ()
4. 380,000 → () () 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 「特性」

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)

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。

- ## Summarize what you read

本文の内容に合うように、() 内に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 removed. Surgical knives use (3.) to cut 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.

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"

