

群馬県立県民健康科学大学大学院

看護学研究科看護学専攻（博士前期課程）

2024年度 一般選抜・社会人特別選抜試験問題

# 外国語試験問題

群馬県立県民健康科学大学大学院

外国語試験問題 問題用紙

以下の文章を読んで、問に答えなさい。

Dr. Caleb Kelly, a gastroenterology fellow at Yale University, was recently asked to review a paper about mammals receiving lifesaving oxygen through their anuses. “I laughed, to be honest,” he said. “I thought it was ①a joke.”

It seems like a no-brainer that bottoms are not for breathing. But the authors of a new study, published Friday in the journal Med, are perfectly serious. They showed that when some mice or pigs are dangerously deprived of air, an enema of oxygen-carrying liquid can rescue them.

“It actually turns out it could be a feasible approach,” said Dr. Kelly, who wrote a commentary accompanying the new paper.

② Dr. Takanori Takebe, of the Tokyo Medical and Dental University and the Cincinnati Children’s Hospital Medical Center, was motivated to study this unusual idea by his father’s struggle with lung disease. Mechanical ventilators can keep patients alive when their lungs are failing, but these tools aren’t always available, and they can run out, as the Covid-19 pandemic has shown.

And although he may be a ways off from studying the idea in human patients, Dr. Takebe said that “we clearly need different strategies to help out patients with severe lung failure.”

His research had focused on using stem cells in dishes to grow miniature organs, such as lungs. Then he decided to try something totally different: Instead of growing new organs, why not repurpose the organs that mammals, including people, already have?

③ Turning to the animal kingdom for inspiration, Dr. Takebe learned that many fish and other creatures have evolved multitasking organs. For example, fish called loaches use their gills to take oxygen from the water, as most fish do. But they can also pop their heads above the surface for a gulp of air. Loaches don’t have lungs, so the air they swallow travels through their digestive tract, where their intestines absorb the oxygen they need.

④ Dr. Takebe and his co-authors set out to see if a mammal’s intestines could also absorb oxygen. They started by simply pumping oxygen gas up the rectums of anesthetized, oxygen-deprived mice. Though the procedure helped the mice survive longer, it worked best when researchers scraped the intestinal wall to thin it, making this method not very appealing for treating sick human patients.

Next the scientists tried delivering oxygen in liquid form. They added oxygen to a perfluorochemical, a compound “that has an incredible capacity to absorb gases,” Dr. Kelly said. Perfluorochemicals were even tested as a kind of artificial blood in the early 2000s.

⑤ The scientists squirted this oxygen-packed liquid into the rectums of mice and pigs. They found that when the animals were dangerously deprived of oxygen, the procedure boosted their blood oxygen. The mice started walking around again; the pale skin of the anesthetized pigs turned a healthy pink.

Dr. Takebe said that he didn’t expect the procedure to work as well as it did. “They are completely recovering from the very, very severe hypoxia,” he said. “That was really astonishing to me.”

(後略)

出典：Elizabeth Preston, “Breathing Through the Rectum Saves Oxygen-Starved Mice and Pigs”,  
The New York Times 電子版, May 14, 2021  
(<https://www.nytimes.com/2021/05/14/science/rectum-breathing-oxygen.html>)

問1 下線部① a joke の内容を 50 字以内の日本語で解答欄に記述しなさい。

問2 下線部②～⑤の日本語訳を解答欄に記述しなさい。ただし、名前や施設名は英語のままにかまわない。

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受験番号	氏名

問 1


50 字

問 2

②

③

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外国語試験問題 解答用紙2

受験番号	氏名

問2 (2ページ目)

④

⑤

得点

## 注 意 事 項 （外国語試験）

- 1 外国語の試験時間は、11時10分～12時40分です。
- 2 英和辞典の持ち込み及び使用を認めます（付箋等が貼られていないもの）。ただし、電子辞書の使用は認めません。
- 3 試験問題用紙の表紙が願書提出時の選抜区分であることを確認してください。
- 4 問題用紙は2枚、解答用紙は2枚です。
- 5 すべての解答用紙の所定の欄に、必ず受験番号・氏名を記入してください。
- 6 解答は、すべて解答用紙に記入してください。ただし、※印欄には記入しないでください。
- 7 問題用紙・解答用紙に不鮮明な部分や汚れなどがある場合は、声を出さずに手を挙げて、監督員の指示に従ってください。
- 8 試験中に質問や用便などの用件がある場合も、声を出さずに手を挙げて、監督員の指示に従ってください。
- 9 試験開始後は途中退室を認めません。
- 10 問題用紙・解答用紙を持ち帰ることはできません。
- 11 不正行為や、他の受験生に迷惑となる行為をした場合は、退場させることがあります。