

## 令和5年度 東北医科薬科大学 入学試験問題

## 医学部 一般・外国語

## 《 注 意 事 項 》

1. 解答用紙左部に氏名、フリガナ、その下部に受験番号を記入し、例にならって○にマークしなさい。

(例) 受験番号10001の場合

フリガナ	
氏名	

受 験 番 号				
万	千	百	十	一
1	0	0	0	1
	●	●	●	○
●	①	①	①	●
②	②	②	②	②
⑨	⑨	⑨	⑨	⑨

2. この問題冊子は、15 ページまであります。
3. 試験中に問題冊子の印刷不鮮明、ページの落丁・乱丁等に気付いた場合は、手を高く挙げて監督者に知らせなさい。
4. 解答方法は次のとおりです。
- (1) 解答は解答用紙の解答欄にマークしなさい。例えば、と表示のある問いに対して③と解答する場合は解答番号1の解答欄の③にマークしなさい。

解答	解 答 欄									
番号	1	2	3	4	5	6	7	8	9	10
1	①	②	●	④	⑤	⑥	⑦	⑧	⑨	⑩

- (2) 解答の作成にはH、F、HBの黒鉛筆またはシャープペンシル(黒い芯に限る)を使用し、○の中を塗りつぶしなさい。解答が薄い場合には、解答が読み取れず、採点できない場合があります。
- (3) 答えを修正する場合は、プラスチック製の消しゴムであとが残らないように完全に消しなさい。鉛筆のあとが残ったり、●のような消し方などした場合は、修正または解答したことにならないので注意しなさい。
- (4) 解答用紙は折り曲げたり、メモやチェック等で汚したりしないよう、特に注意しなさい。

(試験終了後、問題冊子は持ち帰りなさい。)





【 I 】 次の英文を読み、問 1～5 に答えよ。

Chemicals leaking from plastic waste make bacteria grow faster in European lakes, according to research published the other day that authors said could provide a natural way to remove plastic pollution from freshwater (1)ecosystems.

Microplastics have been found in (2)virtually every corner of the globe – from the highest glaciers to the bottom of the deepest sea trench – but ( ア ).

When plastic materials such as carrier bags break down in water, they release simple carbon compounds slightly different to ( イ ) produced when organic matter such as twigs and leaves disintegrate.

Researchers from the University of Cambridge wanted to see what effect these compounds had on bacteria populations in 29 lakes across Scandinavia.

They cut up plastic bags from four major British shopping chains and mixed them with water until the carbon compounds were released.

They then filled glass bottles ( ウ ) water from each lake, mixing a small amount of the plastic water into half of these samples.

In the water with plastic-derived compounds, the bacteria had doubled in mass within 72 hours and already absorbed around half of the carbon present in the samples.

Overall, (3)they found that the bacteria in the plastic water samples grew 1.72 times as easily as the lake bacteria with no plastic water added.

A researcher from the University of Cambridge's Department of Plant Sciences said the study showed the (4)profound impact plastic pollution is likely having on bodies of freshwater where the waste is present.

"It's almost like the plastic pollution is getting the bacteria's appetite going," he said.

"This suggests that plastic pollution is stimulating the whole food web in lakes, because more bacteria means more food for the bigger organisms like ducks and fish."

(5)The study examined how bacteria react to plastic carbon compounds in lakes with different depths, locations, surface temperatures and organic matter content.

It showed that bacteria were better at removing plastic pollution in lakes with fewer unique natural carbon compounds because there were fewer natural food sources.

The results suggested that in some places, specific types of bacteria could be (6)harnessed to help break down plastic waste.

“But you’d want to know more about the ecosystem balance before committing to doing that,” the first study author said.

She also cautioned against assuming that bacteria alone could solve the growing ecological disaster posed by plastic waste.

Plastics are “not only damaging to ecosystems on a macro level, they also contain chemicals that leach out and last beyond when a plastic bag is fished out of the water,” she said.

“I hope that this increases awareness of the (7)multitude of different effects that just one type of pollution can have on the environment.”

問1 下線部(1),(2),(4),(6),(7)の意味に最も近いものを①～⑤の中から一つ選び、マークせよ。ただし下線部(1)のみ、①～④から一つ選べ。

(1) 下線部(1)ecosystem(s)

- ① the scientific study of the chemistry of living things
- ② all the living things in an area and the way they affect each other and the environment
- ③ the study of medicines and drugs, including their actions, uses, and their effects on the body
- ④ the process or science of changing the structure of the genes of a living thing in order to make it healthier, stronger, or more useful to humans

(2) 下線部(2)virtually

- ① almost ② innately ③ legitimately ④ impartially ⑤ nonetheless

(3) 下線部(4)profound

- ① prompt ② clumsy ③ serious ④ competent ⑤ ambiguous

(4) 下線部(6)harnessed

- ① used ② impeded ③ deposited ④ constrained ⑤ discriminated

(5) 下線部(7)multitude

- ① minority ② large number ③ intuition  
④ anticipated amount ⑤ indignation

問2 空欄(ア)が「湖のプラスチック汚染の影響は海洋ほどよく研究されていない」という意味の英文になるように次の  内の語群を並べ替えた時、4番目と7番目に来るものの組み合わせとして、最も適切なものを①～⑤の中から一つ選び、マークせよ。

in oceans / is / less / of / plastic pollution in lakes /  
than that / the impact / well researched

- ① less / of ② is / of ③ well researched / of  
④ less / than that ⑤ is / than that

問3 空欄(イ), (ウ)に入れるものとして最も適切なものを①～⑤の中から一つ選び、マークせよ。

(1) 空欄(イ)

- ① who ② they ③ them ④ those ⑤ where

(2) 空欄(ウ)

- ① with ② as ③ of ④ on ⑤ for

問4 下線部(3),(5)の意味として最も適切なものを①～④の中から一つ選び、マークせよ。

(1) 下線部(3)they found that the bacteria in the plastic water samples grew 1.72 times as easily as the lake bacteria with no plastic water added.

9

- ① 彼らは、プラスチック入り水試料中の細菌が、プラスチック入り湖水を追加で足さなくても、1.72時間で簡単に増殖するということを発見した
- ② 彼らは、プラスチック容器に入れた水試料中の細胞が、プラスチックでない容器に入れた湖水中の細胞と同様に、1.72時間で簡単に増殖するということを発見した
- ③ 彼らは、プラスチック入り水試料中の細菌が、プラスチック水を加えていない湖水中の細菌の1.72倍増殖しやすいことを見つけた
- ④ 彼らは、プラスチック容器に入れた水試料中の細菌が、プラスチックでない容器に入れた湖水中の細菌の1.72倍増殖しやすいことを見つけた

(2) 下線部(5)The study examined how bacteria react to plastic carbon compounds in lakes with different depths, locations, surface temperatures and organic matter content 10

- ① この研究では、深さや場所、外気温、廃棄物含有量が異なる湖において、細菌がプラスチック炭素化合物をどのように分解するかを調べた
- ② この研究では、深さが異なる湖において、細菌がプラスチック炭素化合物をどのように分解するかを調べたところ、場所や外気温、廃棄物含有量の影響も受けることがわかった
- ③ この研究では、深さや場所、表面温度、有機物含有量が異なる湖において、プラスチック炭素化合物に対して細菌がどのように反応するかを調べた
- ④ この研究では、深さが異なる湖において、プラスチック炭素化合物に対して細菌がどのように反応するかを調べたところ、場所や表面温度、有機物含有量の影響も受けることがわかった

問5 本文のタイトルとして最も適切なものを①～④の中から一つ選び、マークせよ。 

11
----

- ① Conveyer belts may support global plastic recycling, study says
- ② Faster growth may help bacteria remove lake plastic waste, study says
- ③ Plastics in lake water may eventually decompose naturally, study says
- ④ The number of bacteria in lakes may exceed the number of bacteria in seawater, study says



【Ⅱ】 次の英文を読み、問 1～15 の解答として最も適切なものを選択肢①～④の中から一つ選び、マークせよ。なお、[1]～[6]はパラグラフ（段落）の番号を表している。

[1] The Centers for Disease Control and Prevention issued an alert to physicians nationwide notifying them of a cluster of severe and unexplained hepatitis cases in otherwise healthy young children. Between October 2021 and February 2022, nine children between the ages of 1 and 6 in Alabama were admitted to the hospital with acute hepatitis; two required liver transplants. Similar cases have also popped up in North Carolina, as well as in Europe. The U.K. Health Security Agency has reported approximately 100 cases of sudden-onset hepatitis in children under 10 since January 2022, 10 of whom required liver transplants. Here’s what we know about these hepatitis cases, and what symptoms parents should watch for.

[2] Hepatitis is a broad term used to describe inflammation of the liver, an organ that carries out hundreds of essential functions every day, from aiding digestion to clearing toxins from the blood. When the liver is inflamed or damaged, it is unable to perform many of those tasks. “Acute” hepatitis refers to inflammation that comes on relatively quickly and does not last more than six months. It can be severe and lead to liver failure, as was the case with several children in Alabama. But hepatitis can also be relatively mild. It’s not uncommon for patients — particularly children — to have liver inflammation in the course of a simple, uncomplicated viral illness, explained Dr. Alexander Weymann, director of the Liver Center at Nationwide Children’s Hospital in Columbus, Ohio.

[3] Hepatitis symptoms are wide-ranging and overlap with many common illnesses. A child with hepatitis may experience fever (low-grade or more significant), fatigue, joint or muscle pain, loss of appetite or nausea, diarrhea and vomiting. Children may also have abdominal pain or tenderness, particularly in the right upper abdomen, which is where the liver is located, Dr. Weymann said, and it is important to seek urgent medical attention any time a child shows sign of severe pain when their

abdomen is touched. Doctors may consider other possible causes of abdominal pain, like appendicitis. Some children may have darker urine, or pale or clay-colored stools.

[4] Jaundice, or yellowing of the skin and eyes, is a hallmark sign of hepatitis — although it is possible to have significant liver inflammation and show no signs of jaundice. “The first change is in the eyes: The white part begins to look yellow,” Dr. Weymann said. He noted that it can be more difficult to detect jaundice in children who have darker skin, so parents should take even subtle changes in tone seriously. “Typically, one won’t see ‘dramatic’ jaundice until the inflammation or dysfunction of the liver has progressed quite far already,” Dr. Weymann said.

[5] ( ① )Hepatitis can have many causes, from autoimmune disease to side effects of certain medications. Most often, it is caused by one of the five hepatitis viruses (hepatitis A, B, C, D and E). ( ② ) Depending on the type, viral hepatitis can spread through contact with blood and other bodily fluids or fecal matter, or by consuming raw or undercooked meats. ( ③ ) Instead, the C.D.C. suspects that the adenovirus is causing the current cases, though health officials caution that the investigation is ongoing. ( ④ )There are more than 50 types of adenoviruses, which tend to cause mild illness, such as colds and fevers, pink eye or vomiting and diarrhea.

[6] In Alabama, all nine children tested positive for adenovirus. And of the five cases that were genetically sequenced, all had adenovirus type 41, which typically causes vomiting and diarrhea. A majority of the affected children in Britain, though not all, tested positive for adenovirus as well. “It’s interesting that we’re really only seeing this in children less than 10 years, meaning that most people over 10 have immunity to adenovirus, and that may be why this hepatitis is showing up in young children,” said Dr. Jennifer Lighter, a pediatric infectious diseases specialist and hospital epidemiologist with N.Y.U. Langone Health in New York City. But doctors and health officials have known that adenovirus infection can cause liver inflammation. That’s not new. What is unusual is for otherwise healthy young children to become so suddenly ill, which is why public health

officials are spreading the word and continuing to probe other possible underlying causes.

問 1 According to paragraph [1], which of the following is TRUE?

12

- ① Nine children were admitted to the hospital for liver transplants in Alabama.
- ② Seven children between 1 and 6 years old were admitted to the hospital in North Carolina.
- ③ The Centers for Disease Control and Prevention put out an alert to doctors around the world.
- ④ The U.K. Health Security Agency stated that around 10 percent of children under 10 with acute hepatitis needed liver transplants.

問 2 According to paragraph [2], which of the following is one of the tasks the liver carries out? 13

- ① Interfering with digestion
- ② Assisting in digestion
- ③ Slowing down digestion
- ④ Normalizing digestion

問 3 The phrase “as was the case with” in paragraph [2] is closest in meaning to ( ). 14

- ① as happened to
- ② not the case with
- ③ well known as
- ④ just in case of

問 4 According to paragraph [2], inflammation of the liver might ( ).

15

- ① prevent the liver from removing toxic substances from the blood
- ② reduce the sufferer’s energy levels
- ③ help the liver perform some of its tasks
- ④ be cured by the liver itself

問 5 According to paragraph [2], Dr. Weymann states that it is ( ) during viral illness.

16

- ① not usual for child patients to have acute inflammation
- ② uncommon for child patients to have liver inflammation
- ③ not rare for child patients to have liver inflammation
- ④ common for child patients to get liver transplants

問 6 According to paragraph [3], which of the following is NOT true of children with hepatitis?

They may experience ( ). 17

- ① pain in the right upper abdomen
- ② increased appetite
- ③ mild fever
- ④ vomiting

問 7 The phrase “overlap with” in paragraph [3] is closest in meaning to ( ). 18

- ① change into
- ② turn over
- ③ differ from
- ④ are similar to

問 8 According to Dr. Weymann in paragraph [4], it is important to look closely at small changes in children’s ( ). 19

- ① way of talking
- ② skin sensitivity
- ③ voice quality
- ④ skin color

問 9 According to Dr. Weymann in paragraph [4], which of the following is true? 20

- ① Hepatitis is one of the signs of jaundice.
- ② Children with hepatitis do not develop jaundice.
- ③ The yellowing of the whites of the eyes is a symptom of hepatitis.
- ④ Hepatitis is always accompanied by signs of jaundice.

問 10 The word “significant” in paragraph [4] is closest in meaning to ( ). 21

- ① painful
- ② chronic
- ③ serious
- ④ trivial

問 11 Look at the paragraph [5]. Where would the following sentence best fit in the paragraph? Choose ( ① ), ( ② ), ( ③ ) or ( ④ ).

22

But viral hepatitis has been ruled out in the recent pediatric clusters in the United States and abroad.

問 12 According to the C.D.C. in paragraph [5], the main cause of the present child hepatitis cluster is likely (      ).

23

- ① the adenovirus
- ② an autoimmune disease
- ③ the five hepatitis viruses
- ④ side effects of certain medications

問 13 According to paragraph[6], which of the following is NOT true?

24

- ① Adenovirus type 41 can cause diarrhea.
- ② All nine children in Alabama were positive for adenovirus type 41.
- ③ Vomiting can be caused by adenovirus type 41.
- ④ Five out of the nine children in Alabama were positive for adenovirus type 41.

問 14 According to paragraph [6], why is Dr. Lighter interested in the cases?

25

- ① Most children are immune to the adenovirus.
- ② The same kind of adenovirus was found in both in Alabama and Britain.
- ③ The research has been done over the past ten years.
- ④ Recent child hepatitis cases have been found only in children under 10.

問 15 According to paragraph [6], public health officials are wondering  
(        ). 26

- ① how liver inflammation is caused by the adenovirus
- ② where the new adenovirus came from
- ③ why healthy young children suddenly develop liver inflammation
- ④ when they should issue an alert

【Ⅲ】 次の問 1～10 に示された英文は、New Zealand Scientists Discover Micro Plastics In Antarctic Snow For the First Time と題する一続きの文章の一部である。各英文中で、文法・語法上の誤りや文脈上の誤り等を含むものを①～④の中から一つずつ選び、マークせよ。

問 1

A New Zealand study ① published Wednesday has revealed ② that scientists say is ③ the presence of microplastics ④ in Antarctic snow.

問 2

Researchers ① from the University of Canterbury in Christchurch, New Zealand, ② say particles of plastic smaller than a grain of rice ③ was found at 19 sites ④ across the Ross Island region of Antarctica.

問 3

The most common type of plastic, ① identifying in freshly ② fallen Antarctic snow, was ③ used to ④ make soft drink bottles and clothing.

問 4

Academics say ① it is possible the tiny particles travelled thousands of kilometers ② through the air, or that the presence of people in Antarctica established a microplastic 'footprint.' Dr. Laura Revell, an associate professor in environmental physics at the University of Canterbury, ③ says microplastics can ④ damaging to people as well as wildlife.

問 5

"① We know that microplastics are ② harmful to humans when ③ inhaled and ④ marine micro-organisms when ingested," said Revell.

問 6

"They can also carry toxic substances ① such heavy metals and other pollutants. So, atmospheric transport of micro plastics ② might mean that some pollutants can reach ③ remote and sensitive environments that they otherwise ④ wouldn't be able to."

問 7

“Overall, ① this study highlight the truly ② global extent of microplastic pollution and we can expect to see ③ more of the impacts of that ④ in the future.”

問 8

Revell also ① warns the debris ② have the potential to “influence the climate” by ③ accelerating the ④ melting of snow and ice.

問 9

Many microplastics ① have dark colors that can ② absorb sunlight, ③ lead to “localized heating.” She hopes the research will ④ lead to greater international efforts to curb plastic pollution.

問 10

“The Antarctic environment is typically ① seen as an indicator of environmental ② change, and the discovery of airborne microplastics ③ in such a remote region points to the need for urgent global cooperation to ④ controlling plastic production and waste management,” she said.



【IV】 次の問 1～5 の和文の意味に合うように[ ]内の語句を並べかえて意味の通る英文を作り、空欄(  )～(  )に入るものを一つずつ選び、その番号をマークせよ。

問 1 彼は、事業を成功させるためなら、どんな手段でも喜んで利用した。

He ( ) ( ) (  ) ( ) ( ) ( ) (  ) ( ) ( ) ( ) business.

[ ① any ② avail ③ himself ④ in ⑤ means ⑥ of ⑦ succeed ⑧ to ⑨ was ⑩ willing to ]

問 2 これは、私が今まで作ってきた中で断然、最高の料理と言っても過言ではない。

It is ( ) ( ) (  ) ( ) ( ) ( ) (  ) ( ) ( ) far the best dishes that I have ever cooked.

[ ① by ② is ③ much ④ not ⑤ say ⑥ that ⑦ this ⑧ to ⑨ too ]

問 3 彼は、自分の時間を犠牲にして会社に貢献してきたが、今ではそれが報われている。

He has contributed ( ) ( ) (  ) ( ) ( ) ( ), but now (  ) ( ) ( ) ( ) it.

[ ① at ② from ③ he ④ his time ⑤ is ⑥ of ⑦ benefiting ⑧ the company ⑨ the expense ⑩ to ]

問 4 彼女が周囲の人々の期待に応え続けることは、我々の想像以上に大変だったことであろう。

It must have been ( ) ( ) (  ) ( ) ( ) ( ) (  ) ( ) ( ) ( ) her than we could have imagined .

[ ① around ② continue ③ for her to ④ harder ⑤ of ⑥ the expectations ⑦ those ⑧ to ⑨ to live ⑩ up ]

問5 思わぬ事故を防ぐため、誤飲のおそれのあるものは、小さな子どもの手の届かない場所に置くべきだ。

To prevent unexpected accidents, ( ) ( ) (  ) ( ) ( )  
( ) (  ) ( ) ( ) little children.

[ ① accidentally swallowed ② anything ③ away ④ be ⑤ from  
⑥ kept ⑦ may be ⑧ must ⑨ that ]