

英 語

〔注 意 事 項〕

- 1. 監督者の指示があるまでは、この問題冊子を開かないこと。
- 2. 解答用紙は、コンピュータで処理するので、折り曲げたり汚したりしないこと。
- 3. 解答用紙に、氏名・受験番号を記入し、受験番号をマークする。マークがない場合や誤って記入した場合の答案は無効となる。

受験番号のマーク例(13015の場合)

受 験 番 号				
1	3	0	1	5
万位	千位	百位	十位	一位
●	①	●	①	①
②	②	①	●	②
③	●	②	②	③
④	④	③	④	④
⑤	⑤	④	⑤	●
⑥	⑥	⑤	⑥	⑥
⑦	⑦	⑥	⑦	⑦
⑧	⑧	⑦	⑧	⑧
⑨	⑨	⑧	⑨	⑨

- 4. 解答用紙にマークするときは、HBまたはBの黒鉛筆を用いること。誤ってマークした場合には、消しゴムで丁寧^{ていねい}に消し、消し^{ていねい}くずを完全に取り除いたうえで、新たにマークし直すこと。
- 5. 下記の例に従い、正しくマークすること。
(例えば3と答えたいとき)

正しいマーク例

①	②	●	④	⑤	⑥	⑦
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誤ったマーク例

①	②	③	④	⑤	⑥	⑦	マークが薄い
①	②	●	④	⑤	⑥	⑦	マークが不完全
①	②	③	④	⑤	⑥	⑦	マークが○印
①	②	③	④	⑤	⑥	⑦	マークがV印

- 6. 解答は、すべて解答用紙の所定の位置に記入すること。
- 7. 最後の問題Ⅴに自由英作文があるので、時間配分に注意すること。

I 次のインタビュー記事を読み、以下の設問に答えなさい。

以下は、DNA 研究におけるゲノム編集開発で 2020 年ノーベル化学賞を受賞したジェニファー・ダウドナにインタビューした時の内容である。

Interviewer: Why did you decide to pursue science?

Jennifer Doudna: I loved math when I was growing up. Nobody in my family was a scientist, but my father loved doing puzzles. So we did a lot of puzzles. I was growing up in a small town in Hawaii and I loved the natural environment there. I found myself fascinated by the evolution of plants and animals that survived in that native island environment. This was long before I knew anything about DNA, but I thought it was so interesting that I wondered about the chemistry of natural systems and natural organisms. I decided I wanted to be a chemist. Then when I learned about biochemistry, I thought that's what I really want to do. I want to study the chemistry of living things. I set off on that journey in college and kind of never looked back.

Interviewer: Did you have a particular person, a mentor or role model, who really influenced you?

Doudna: I would say it's probably first and foremost my father, because even though he was not a scientist, he was very interested in science and he read everything. He was an ^(a)avid reader and a literature professor. He gave me lots of books. He gave me Jim Watson's book about the double helix^{注1} as well as books by Harold Morowitz and a lot of classic writers who wrote about science for a non-scientific audience. He really encouraged me early on to pursue my interests. Later when I was in grad school^{注2}, he was the one person in my family that when we got together, his first question would always be, 'What are you working on in the lab?' He would really want to know, like he didn't just want a one-sentence answer. He really wanted to get into it. 'What are you doing and why are you doing it? Why is it interesting?' So that was great.

Beyond that, I did have some wonderful teachers. My biology and chemistry teachers in high school were very encouraging. I had multiple great professors in college who also encouraged my interest. My biochemistry professor in college gave me a chance to work in her lab over the summer, which was critical, where I really figured out^{注3}, 'Wow! I love lab work. This is really great. This is exactly what I want to be doing.' When I got to grad school, I really got lucky. I got into a lab of a

wonderful person who now is a Nobel Laureate himself, Jack Szostak. He was an incredible mentor, very passionate about science and encouraging for all of us that were in the lab at the time. I feel like I really lucked out. (途中略)

Interviewer: How do you cope with failure and with unexpected problems?

Doudna: I sort of have three ways of coping. The first is that I always remind myself to take a long view of things; something that's frustrating or disappointing in the moment, is it frustrating today or next week? I try to think about, 'How am I going to feel about this in six months or a year from now, or 10 years from now?' I also ask myself, 'In the scheme of problems in the world, how big is this problem?' Often, it's not very big. I try to remind myself of the context, and I try to remember all the things I'm grateful for. I'm fortunate that I have a family, that I've had the successes, and I've had my career.

That takes me to the second thing; I do really rely on friends, family and colleagues and I've been so fortunate to have a really great network of people who I rely on for support. I guess I actively now, even more than when I was younger, look for people that are going to be supportive and who I can in turn be supportive for as well. People that you can really build strong relationships with, I think, are very valuable.

The third thing is because there was certainly some adversity^(b) when I was growing up in Hawaii — it sounds like a paradise, but it wasn't. There were a number of issues when I was growing up. I had to learn to rely on myself. I had to kind of find an internal strength to deal with^{註4} bullying, to deal with all kinds of name calling and resentment. I feel like I go back to that now, too. I kind of go to my inner core^(c) and I know that there's a part of me that no one can touch and that no matter what happens, I know that I know who I am. I know what I value. If there's adverse things going on there, there's a part of me that no one can touch that way. That gives me some strength as well.

Interviewer: Do you have any advice for young researchers or students?

Doudna: I honestly think the most important advice is to (A). That means to embrace your interests, your passions, and really give it your all. I think that is what I've seen both for myself and other people. People that I've had the pleasure to work with in my laboratory, the most successful of them are people who are able to deal with their fears. We all have fears but sometimes you try something and there is failure, right? You have to deal with that.

I think for me and for people that I've seen that are highly successful, they deal

with that. Each of us has to find our own way to deal with that as we just discussed. But I just think you have to embrace your passions. You have to really (A). People that have been less successful in my opinion, are those that ^(d)dabble in something, but then don't really give it their all. They almost never give themselves a chance to succeed, as they back off too soon. I think for young people, I tell them to (A), find supportive mentors who will help you through the tough times, and then just keep going. Because if you have a good idea, it's probably going to ^(e)work out in some way. You may not be able to predict how, but you should just keep pursuing it.

Interviewer: Today it's the International day for Women and Girls in Science. Do you think (B) is important in science?

Doudna: (B) is really important in science. First of all, I think that if you want to have the best scientific outcomes, you need a lot of different brains working on it. We all come to science (or anything really) with different perspectives, skill sets, interests, passions and ways of approaching a problem. The more of that we have, I think the more likely there is to be interesting science that gets done and frankly, interesting solutions to real problems. The pandemic is one very real example we're dealing with right now where, thank goodness, there was creative work done years ago on using mRNA delivery. And now we have these wonderful vaccines, but it came together very quickly.

注 1 : double helix 二重らせん

注 2 : grad school 大学院(graduate school の縮約形)

注 3 : figure out 気づく

注 4 : deal with 対処する

出典 : The Nobel Prize. (2021). *Interview with Jennifer A. Doudna*, February 2021.

Retrieved from <https://www.nobelprize.org/prizes/chemistry/2020> なお分かりやすさのために、表現を修正した箇所がある。

問 1 英文の内容に合うように、(1)~(5)の各文の空所を補うものとして最も適したものを、それぞれ選択肢 1 ~ 4 の中から選びなさい。

- (1) The word avid is closest in meaning to _____.
(a) 1. calm 2. enthusiastic 3. satisfied 4. indefinite
- (2) The word adversity is closest in meaning to _____.
(b) 1. suggestions 2. comments 3. hardship 4. pleasure
- (3) The word resentment is closest in meaning to _____.
(c) 1. illness 2. commitment 3. fairness 4. bitterness
- (4) The phrase dabble in is closest in meaning to _____.
(d) 1. play around with 2. speed up
3. set up 4. hang up on
- (5) The phrase work out is closest in meaning to _____.
(e) 1. help 2. succeed 3. challenge 4. exercise

問 2 英文の内容に合うように、(1)~(3)の質問に対する答えとして最も適したものを、それぞれ選択肢 1 ~ 4 の中から選びなさい。

- (1) How did Jennifer Doudna's father influence her career?
1. He used his connections as a science professor to help her prepare for grad school.
 2. He gave her advice on how to do her research.
 3. He translated chemistry textbooks for non-scientific readers.
 4. He encouraged her to learn, solve problems, and pursue her interests.
- (2) What did Doudna say about her mentors?
1. She had mentors in high school who gave her research ideas.
 2. She shared a Nobel Prize for her joint research with her mentor, Jack Szostak.
 3. She had supportive mentors who helped her continue her research.
 4. She felt lucky to have such great classmates as mentors in university.

(3) According to the interview, how are successful people different from unsuccessful people?

1. Successful people avoid situations in which they may fail.
2. Successful people quickly abandon a failing project.
3. Successful people are too clever to fail.
4. Successful people learn from failure and move forward.

問 3 英文の内容に合うように、(A)および(B)に入る語及び語句として適切なものを、それぞれ選択肢 1 ～ 4 の中から選びなさい。

(1) (A)

- | | | | |
|---------------|--------------|------------|-------------|
| 1. rely on it | 2. go for it | 3. give up | 4. cheer up |
|---------------|--------------|------------|-------------|

(2) (B)

- | | | | |
|-----------------|--------------|--------------|--------------|
| 1. disagreement | 2. agreement | 3. diversity | 4. sincerity |
|-----------------|--------------|--------------|--------------|

II

次の英文を読み、下記の設問に答えなさい。①～⑦は段落番号を表す。

- ① Eating local honey to prevent the springtime sniffles^{注1} seems like it should work: local bees collect pollen, pollen gets into the honey, you get exposed to the allergens, and your body learns they're safe. 1 The belief that this works is so widespread that a group of scientists decided it was worth testing.
- ② First, they started with an open-label trial. That's the technical term for a study where participants know whether they're getting the real treatment or a placebo. Volunteers with seasonal allergies showed up and were told either to eat a tablespoon of honey every day or to eat corn syrup^{注2} flavored with artificial honey. 2 Those eating the honey reported statistically significantly lowered symptoms^(a) — it was so promising^(b) that the researchers decided they really did need to see whether honey could help with allergies. So, they progressed to a double-blind trial — one where no one knew what they were getting.
- ③ Participants this time got divided into three groups: one got local honey, one a national pasteurized^{注3} honey, and one the flavored corn syrup. They ate a full tablespoon every day. 3 Out of 36 initial volunteers, 13 dropped out because the regimen^{注4} was too sweet for them. Those who survived eating a tablespoon of honey every day for 30 weeks mailed in journals regularly tracking their perceived allergy symptoms.
- ④ By the end of the study, those who ate the honey were doing no better with their allergies than those who ate the corn syrup (though their blood sugar might have been in better shape). It's possible, of course, that the participants simply weren't eating enough honey. The scientists note in their paper that oral consumption of allergens has historically been shown to be an effective way to train the immune system not to overreact. It follows that the allergens in honey should help train people's bodies. If that's the case, though, we're still out of luck. Not many people will be able to tolerate eating multiple tablespoons of honey every day.
- ⑤ One more promising study suggests that it might also be about the *type* of honey. Local honey will have a variety of pollen sources, each of which may not be enough to have substantial microbial communities to train the eater's immune system. Finnish researchers decided to test the effect of birch pollen honey — regular honey, but with added bee-collected birch pollen. 4 Birch pollen is one of the dominant seasonal allergy sources in Finland, so the scientists gathered volunteers who were allergic to the tree and prescribed^{注5} them either regular honey or birch pollen-enriched honey. A third control group ate no honey. Those who got the extra birch pollen and the regular honey had significantly reduced symptoms and more symptom-free days than the control group.

- ⑥ The one problem with this study is that the control group didn't get a placebo. They were simply advised not to eat any honey-containing foods during the study period. It's very possible that both forms of honey produced a strong placebo effect. The differences between the regular honey and birch pollen honey group weren't statistically significant, so this study may be a fluke. Or, the extra pollen may really have helped. We're still not sure.
- ⑦ All this being said, like all naturopathic^{注6} remedies, you may genuinely^(d) feel better taking honey. These studies prove that the results you see are most likely the placebo effect — but the placebo effect can be helpful. If you believe the honey helps, then the honey helps. All that matters in the end is that you feel better, and if eating a tablespoon of honey is what enables you to spend summer days outside in the grass, you should go for it. Honey is delicious. Worst case scenario, you're consuming a natural sweetener that's less of a blood sugar rush than table sugar. Best case scenario, you help your allergies. It's no surprise this particular remedy has a lot of buzz.^(e)

注 1 : snuffle 鼻づまり

注 2 : corn syrup コーンシロップ(コーンスターチから作るシロップ)

注 3 : pasteurized 殺菌された

注 4 : regimen 摂取すること

注 5 : prescribe 処方する

注 6 : naturopathic 自然療法の

出典 : Chodosh, S. (2021). *Popular Science*. April 22, 2021. Retrieved from <https://www.popsci.com/> なお分かりやすさのために、語を削除するなど訂正した箇所がある。

問 1 英文の内容に合うように、(1)~(5)の各文の空所を補うものとして最も適したものを、それぞれ選択肢 1 ~ 4 の中から選びなさい。

- (1) The word artificial in paragraph ② is closest in meaning to _____.
(a) 1. sweet 2. special 3. fake 4. fresh
- (2) The word promising in paragraph ② is closest in meaning to _____.
(b) 1. surprising 2. encouraging 3. devoting 4. guaranteeing
- (3) The phrase a fluke in paragraph ⑥ is closest in meaning to _____.
(c) 1. a riddle 2. a failure 3. a danger 4. an accident
- (4) The word genuinely in paragraph ⑦ is closest in meaning to _____.
(d) 1. honestly 2. falsely 3. slowly 4. quickly
- (5) The word buzz in paragraph ⑦ is closest in meaning to _____.
(e) 1. experiments 2. excitement 3. confusion 4. concerns

問 2 英文の内容に合うように、(1)~(4)の質問に対する答えとして最も適したものを、それぞれ選択肢 1 ~ 4 の中から選びなさい。

- (1) How does a double-blind trial differ from an open-label trial?
1. Double-blind trial participants do not take a placebo during the study.
 2. Double-blind trial participants are split into three groups instead of two groups.
 3. Double-blind trial participants do not quit the study easily.
 4. Double-blind trial participants are not told what they are taking.
- (2) What suggestion does the writer give to explain why honey did not significantly reduce allergy symptoms in the double-blind trial?
1. Too many participants dropped out of the study before it was over.
 2. The honey may not have affected the participants' blood sugar enough.
 3. The honey was too sweet for the participants to eat every day.
 4. The participants may not have been eating enough honey to have an effect.

(3) According to the passage, what can be inferred from the results of the Finnish study?

1. The birch pollen-enriched honey is significantly more effective at reducing allergy symptoms than regular honey.
2. The results proved that taking honey is responsible for decreasing allergy symptoms.
3. It is not possible to draw a meaningful conclusion because the control group was not given a placebo.
4. Taking honey that contains a variety of pollen sources is the best way to decrease allergy symptoms.

(4) What is the best title of this passage?

1. Honey is the best treatment option for people with seasonal allergies.
2. Local honey might help your allergies, but only if you believe it will.
3. Studies show that only birch pollen-enriched honey improves allergy symptoms.
4. Naturopathic remedies are a safe and affordable solution to allergies.

問 3 次の文は文中の

1

 ~

4

 で示したいずれかの位置に入る。最も適した場所を選択肢 1 ~ 4 の中から選びなさい。

If this sounds thoroughly gross to you, you are not alone.

1.

1

3.

3

2.

2

4.

4

Ⅲ 次の英文を読み、下記の設問に答えなさい。①～⑨は段落番号を表す。

- ① Cancer should be a near certainty for whales, the longest-living and largest mammals there are — but scientists are finding that cetaceans are excellent at protecting themselves against the deadly disease. Just how do they do that? It could all come down to good genes, according to a new study published by The Royal Society. “The odds of developing cancer increase with longevity^{注1} and body mass,” explained lead study author Daniela Tejada-Martinez, a postdoctoral researcher at Thomas Jefferson University in Philadelphia. Having more cells means having a higher probability that some of them may develop dangerous mutations^{注2} as they grow and divide over the course of their life cycle.
- ② “ 1 However, the cetacean’s mechanisms against cancer and aging remain a mystery,” Tejada-Martinez said. Her research, aimed at solving that mystery, suggests cetaceans could have evolved “additional mechanisms” to protect against diseases like cancer, according to Tejada-Martinez.
- ③ 2 Tejada-Martinez focused on this work as part of her doctoral thesis at the Universidad Austral de Chile. There, she combined her love of whales, her favorite animals since childhood, with her research interests. “Cetaceans are an amazing model for aging and disease resistance research, since they are the longest-living mammals. Some cetaceans, like the bowhead whale, can live over 200 years,” she said via email.
- ④ 3 Specifically, the study investigates the evolution of tumor suppressor genes^{注3}, or TSGs, in the ancestor of cetaceans, as well as in two main lineages^{注4}: baleen whales (such as bowhead whales), and toothed whales (like orcas, belugas, dolphins, and porpoises).
- ⑤ 4 Actions of tumor suppressing genes, Tejada-Martinez explained, are considered among the most important anti-cancer responses in the body, and are involved in hundreds of biological functions including DNA damage repair, cell cycle arrest^{注5} and apoptosis^{注6}. “Cancer happens precisely when the TSGs are not working properly,” Tejada-Martinez said. Scientists have identified more than a thousand tumor suppressing genes in humans, and we share 99% of them with whales, Tejada-Martinez explained via email.
- ⑥ The study shows that over the course of evolution in cetaceans, genes involved in the control of cancer onset and progression were positively selected. It also found cetaceans have a 2.4 times faster turnover^{注7} rate of tumor suppressing genes than other mammals. The high turnover rate, according to the research, is associated with gene duplications^{注8}. Of the 71 genes with duplications identified in cetaceans during the study, 11 are associated with longevity and the aging process, the researchers said.

- ⑦ According to Tejada-Martinez, the molecular variation observed in cetaceans — the faster gene turnover rate, the genes with positive selection and the gene duplications — could provide additional protection against molecular damage that can cause cancer. This might even be responsible for the longer life spans and larger sizes of cetaceans like baleen whales, a finding she thought was most surprising.
- ⑧ Understanding how whales protect themselves against cancer could help humans ^(d) make strides against the disease, which killed an estimated 10 million people worldwide in 2020. “Cancer is the original problem of multicellularity^{注9}, and it is clear across numerous studies that nature has beat cancer in a myriad of ways in order to increase the fitness of organisms over the history of life,” said Marc Tollis, an assistant professor at Northern Arizona University. “Since cancer is a body-size and age-related disease, the search for whale-specific changes in protein coding genes that are linked to human cancers can help target potential human cancer therapies,” he explained.
- ⑨ Tollis previously researched the genomes of whales as connected to gigantism^{注10} and cancer resistance, but was not involved with The Royal Society study. Much more remains to be discovered about cancer resistance across species and the molecular mechanisms involved in it, but scientists are making strides. “The study of medical conditions under an evolutionary perspective leads to a better understanding about how other species can fight diseases more efficiently than us,” Tejada-Martinez said. “The discovery of new molecular variants, including additional copies of important regulatory genes, could lead to the creation of innovative treatments for cancer and age-related diseases,” she added.

注 1 : longevity 寿命

注 2 : mutation 突然変異

注 3 : tumor suppressor gene がん抑制遺伝子

注 4 : lineage 系統

注 5 : arrest 停止

注 6 : apoptosis プログラムされた細胞死

注 7 : turnover 再生

注 8 : duplication 複製

注 9 : multicellularity 多細胞性

注 10 : gigantism 巨大症

出典 : Giuliani-Hoffman, F. (2021). *CNN News*. March 5, 2021. Retrieved from <https://edition.cnn.com/2021/03/05/us/> なお分かりやすさのために、語を削除するなど訂正した箇所がある。

問 1 英文の内容に合うように、(1)~(4)の各文の空所を補うものとして最も適したものを、それぞれ選択肢 1 ~ 4 の中から選びなさい。

- (1) The word cetaceans in paragraph ① is closest in meaning to .
(a) 1. whales 2. fish 3. humans 4. plankton
- (2) The phrase come down to in paragraph ① is closest in meaning to .
(b) 1. be out of 2. be separate from 3. be immediate to 4. be dependent on
- (3) The word precisely in paragraph ⑤ is closest in meaning to .
(c) 1. regularly 2. roughly 3. exactly 4. easily
- (4) The phrase make strides in paragraph ⑧ is closest in meaning to .
(d) 1. argue 2. advance 3. accuse 4. arrive

問 2 英文の内容に合うように、(1)~(5)の質問に対する答えとして最も適したものを、それぞれ選択肢 1 ~ 4 の中から選びなさい。

- (1) What was Tejada-Martinez's motivation to pursue research on whales?
1. She was interested in cancer research as a child and wanted to gain information from whales.
 2. She realized that many whales were at risk of dying from cancer and wanted to protect them.
 3. She was attracted to whales at a young age and was curious about this research topic.
 4. She was surrounded by animals at a young age and wanted to study whales more closely.
- (2) According to the passage, which of the following is true?
1. Ancestors of cetaceans produced more TSGs than modern cetaceans.
 2. Scientists have discovered whales have many of the same TSGs as humans.
 3. The amount of TSGs declines when they protect the body from cancer.
 4. Other mammals generally produce copies of TSGs faster than whales.

- (3) What finding surprised Tejada-Martinez the most?
1. More than half of the duplicated genes identified in whales are related to aging.
 2. The longer life spans and larger sizes of baleen whales are due to their ability to cure cancer faster.
 3. The high turnover rate of TSGs can sometimes do harm to whales.
 4. The molecular variation recognized in whales may contribute to their longevity.
- (4) According to the passage, what impact does whale genetic research have on humans?
1. Research on whale protein coding genes can be applied to human health.
 2. Research on whale and human evolution can be used to investigate gigantism.
 3. Research on whale behavior can be used to improve human therapies.
 4. Research on whale size can help us understand weight gain in humans.
- (5) What is the best title of this passage?
1. Does cancer cause a decrease in the population of whales?
 2. Can human research protect whales from getting cancer?
 3. How do whales reduce their chances of getting cancer?
 4. What is the best cancer therapy for humans and whales?

問 3 次の文は文中の 1 ~ 4 で示したいいずれかの位置に入る。最も適した場所を選択肢 1 ~ 4の中から選びなさい。

Paradoxically, big and/or long-lived species have lower cancer risk.

1. 1
3. 3

2. 2
4. 4

Ⅳ 次の英文を読み、下記の設問に答えなさい。①～⑩は段落番号を表す。

- ① Having cardiovascular^{注1} risk factors from childhood to adulthood is linked to poor cognitive^{注2} performance in a person's 30s, 40s, and 50s, according to new research that followed children over three decades. Researchers said the study was the first to highlight the impact of lifelong cardiovascular risk factors on the brain at midlife. The more cardiovascular risk factors a person had — such as obesity^{注3}, high blood pressure, and high cholesterol levels — the lower they performed on memory and thinking tests, according to the study published Monday in the American Heart Association (AHA) journal *Circulation*.
- ② “One-third of U.S. children are overweight or have obesity which puts them at higher risk of Type 2 diabetes^{注4} and high blood pressure in childhood and a higher risk of heart disease and stroke^{注5} in adulthood,” said Dr. Eduardo Sanchez, chief medical officer for prevention at the AHA, in a statement. Insights^(a) such as these are important for early detection^(b) and prevention, the study said, as there are currently no cures for Alzheimer's or other major causes of dementia.
- ③ “If we can resolve some of these issues early on, it's been shown that it not only leads to a much better cognitive life but also a much better cardiovascular life as you hit midlife and beyond,” said AHA spokeswoman Dr. Thuy Bui, the associate medical director of the emergency department at Children's Healthcare of Atlanta, who was not involved in the study.
- ④ Three decades of study: The research began in 1980 when about 3,600 randomly selected Finnish boys and girls, ranging in age from 3 to 18, were chosen to be part of the Cardiovascular Risk in Young Finns Study. It was designed to study cardiovascular risk from childhood to adulthood. The children, all of whom were White, were followed every three years until age 12, then periodically^(c) over a 31-year span^{注6}. On each visit, researchers checked weight, cholesterol, blood pressure, and insulin levels, while also looking at lifestyle factors such as smoking, alcohol use, diet, and physical activity.
- ⑤ In 2011, more than 2,000 of the study participants, ranging in age from 34 to 49, underwent a computerized cognitive function test that measured episodic memory, short-term working memory, reaction time, visual processing, and attention. Researchers found that children who grew to adults with a consistently high systolic blood pressure — that's the top reading — or high total cholesterol and LDL (bad) cholesterol performed poorly in memory and learning tests in midlife.
- ⑥ People who were obese from childhood to adulthood had lower visual processing speed and more problems paying attention. People who had all three risk factors — high blood pressure, cholesterol, and obesity — from the time they were kids scored poorly in many areas: They

had poorer memory, worse visual processing, and associative learning^{注7} skills, a decreased attention span, and slower reaction speeds.

- ⑦ “We can use these results to turn the focus of brain health from old age and midlife to people in younger age groups,” said first author Juuso Hakala, a doctoral student in preventive cardiology at the University of Turku in Finland. “Children who have adverse cardiovascular risk factors might benefit from early intervention and lifestyle modifications,” Hakala said in a statement.^(d)
- ⑧ The study was observational, and therefore cannot confirm cause and effect without additional research, the authors said. In addition, since all participants were White, the study may not be generalizable to all populations.
- ⑨ Childhood interventions: If you’re concerned about your child’s current and future health, the first place to start is your pediatrician^{注8}, Bui said. Not only can pediatricians check to make sure your child’s blood pressure, weight, and cholesterol are within normal limits for their age, but they are a wealth of information. “Pediatricians are the gatekeepers^{注9} for prevention,” Bui said. “They can give you great ideas, tips, advice, and guidelines about how much activity your child needs or what fruits and vegetables kids need to eat.”
- ⑩ It’s up to parents to help their child overcome physical health challenges such as obesity, experts say, by being an example of healthy behavior. “We know children tend to copy adults, especially when they’re younger,” Bui said. “If they see you trying to eat healthy, if they see you trying to get out and take a walk around the neighborhood, those are things that they imitate and copy, and the more they copy, the more ingrained it will become in their future lives.”^(e)

注1 : cardiovascular 心血管系の

注2 : cognitive 認知的な

注3 : obesity 肥満

注4 : diabetes 糖尿病

注5 : stroke (脳卒中などの)発作

注6 : span 期間

注7 : associative learning 連合学習

注8 : pediatrician 小児科医

注9 : gatekeeper 門番

出典 : LaMotte, S. (2021). *CNN News*. May 10, 2021. Retrieved from <https://edition.cnn.com/2021/05/10> なお分かりやすさのために、語を削除するなど訂正した箇所がある。

問 1 英文の内容に合うように、(1)～(5)の各文の空所を補うものとして最も適したものを、それぞれ選択肢 1 ～ 4 の中から選びなさい。

- (1) The word insights in paragraph ② is closest in meaning to _____.
(a) 1. descriptions 2. worries 3. guesses 4. understandings
- (2) The word detection in paragraph ② is closest in meaning to _____.
(b) 1. correction 2. relief 3. cure 4. discovery
- (3) The word periodically in paragraph ④ is closest in meaning to _____.
(c) 1. at regular intervals 2. daily
3. never 4. by appointment only
- (4) The word intervention in paragraph ⑦ is closest in meaning to _____.
(d) 1. action 2. creation 3. expectation 4. inspiration
- (5) The word ingrained in paragraph ⑩ is closest in meaning to _____.
(e) 1. exposed 2. confused 3. repaired 4. established

問 2 英文の内容に合うように、(1)～(5)の質問に対する答えとして最も適したものを、それぞれ選択肢 1 ～ 4 の中から選びなさい。

- (1) According to the article, what is associated with poor outcomes on tests that measure mental functions?
1. Lifelong threats to blood flow and heart function
 2. Always eating more food than the body needs
 3. Childhood infections and frequent bodily injury
 4. Poor physical health performance in people aged 30 to 59
- (2) What is implied by paragraphs ② and ③?
1. Unhealthy children create many problems for adults.
 2. Scientists may have a way to fix Alzheimer's disease.
 3. Various health conditions should be checked from childhood.
 4. Dr. Thuy Bui's involvement in the study could save lives.

- (3) According to the article, what study limitation was implied?
1. The study results were generalizable.
 2. There were few participants.
 3. The study group was ethnically uniform.
 4. The data was useless.
- (4) According to the article, what is the best way parents can help their children to be healthy?
1. Provide health education materials to their children.
 2. Become good examples for their children.
 3. Feed their children more fruits and vegetables.
 4. Force their children to go for walks around the neighborhood.
- (5) What is the best title of this passage?
1. Childhood health conditions are linked to poor cognitive performance in adulthood.
 2. Cognitive tests help to accurately predict cardiovascular risks in children.
 3. You are what you eat: a study of how food affects health in later life.
 4. The cure for Alzheimer's and other cognitive disorders is good health.

V**自由英作文問題**

下記テーマについて、英語で自分の考えを述べなさい。書体は活字体でも筆記体でもよいが、解答は所定の範囲内に収めなさい。

The writing will be evaluated from the viewpoint of both quantity and quality. The evaluation will also consider whether what you write responds to the question.

You are expected to write one complete essay. Your essay should also include an introduction, main text, AND conclusion. Please write as if you are writing for someone who has not read the topic question.

Except for weapons of mass destruction, if you could prevent one invention from having been created, what would it be and why? Be sure to describe not only your reasons for your choice, but also how the world would be impacted.

