浜松医科大学 前期

平　成　23　年　度

外　国　語(英語)

注意事項

1. 問題は1頁から14頁に掲載されています。
2. PART 1, Question 5だけは日本語で答え，それ以外の記述式問題は英語で答えなさい。ただし，多肢選択形式の場合はアルファベットを選びなさい。
3. 解答に際しては解答用紙を使用しなさい。

Candidates should determine by themselves which of the following three parts to tackle *first*.

PART 1 (配点率 40 %)

After reading each passage, answer the question that follows it.

An excerpt from:

The Smell Report: An overview of facts and findings

Kate Fox, Director, Social Issues Research Centre

About SIRC

The Social Issues Research Centre is an independent, non-profit organization founded to conduct research on social and lifestyle issues, monitor and assess global socio-cultural trends and provide new insights on human behavior and social relations.

〈http://www.sirc.org/publik/smell emotion.html〉

The Smell Report

Emotion

The perception of smell consists not only of the sensation of the odors themselves but of the experiences and emotions associated with these sensations. Smells can evoke strong emotional reactions. In surveys on reactions to odors, responses show that many of our smell-based likes and dislikes are rooted purely in emotional associations.

1. Choose the one alternative that best describes the theme of the underlined clause.

a. Smell and emotion are located in the same network of neural structures.

b. Our sense of smell is our most powerful sense even though we hardly ever use it preferring to use our other senses of sight and hearing.

c. It is not certain whether our sense of smell is connected really well to memory.

d. Often our smell preferences are influenced by our personal experiences that have continued to control them emotionally.

e. Usually our favorite smells bring back our family memories, either happy or sad, one after another.

The association of fragrance and emotion is not an invention of poets or perfume-makers. Our smell-based receptors are directly connected to the limbic system,① the most ancient and primitive part of the brain, which is thought to be the seat of emotion. Smell sensations are relayed to the cerebral cortex,② where 'cognitive' recognition occurs, only after the deepest parts of our brains have been stimulated. Thus, by the time we correctly name a particular scent as, for example, 'vanilla', the scent has already activated the limbic system, triggering more deep-seated emotional responses.

①the limbic system(大脳辺縁系)：a part of the brain that controls our emotions

②the cerebral cortex(大脳皮質)：大脳半球の表面をおおう灰白質の層。知覚，随意運動，思考，推理，記憶など，脳の高次機能を司る。

2. What does the underlined sentence above mean? Answer by filling in the blanks. Please keep in mind that the word ② begins with the letter "e".

Answer: It is more ①(　　) originating from past ②(e-　　) than the human sense of ③(　　) that strongly influences how humans ④(　　) a particular smell.

Mood-effects

Although there is convincing evidence that real pleasant fragrances can improve our mood and sense of well-being, some of these findings should be viewed with caution. Recent studies have shown that our expectations about an odor, rather than any direct effects of exposure to it, may sometimes be responsible for the mood and health benefits reported. In one experiment, researchers found that just telling subjects that a pleasant or unpleasant odor was being sprayed, which they might not be able to smell, altered their self-reports of mood and well-being. The mere mention of a positive odor reduced reports of symptoms related to poor health and increased reports of positive mood!

More reliable results have been obtained, however, from experiments using placebos③ (odorless sprays). These studies have demonstrated that although subjects do respond to some extent to odorless placebos which they think are fragrances, the effect of the real thing is significantly greater. The thought of pleasant fragrances may be enough to make us a bit more cheerful, but the actual smell can have dramatic effects in improving our mood and sense of well-being.

Although smell-based sensitivity generally declines with age, pleasant fragrances have been found to have positive effects on mood in all age groups.

In experiments involving stimulation of the left and right nostrils with pleasant and unpleasant fragrances, researchers have found differences in smell-based cortical neurone activity in the left and right hemispheres of the brain which correlate with the 'pleasantness ratings' of the odorants. These studies are claimed to indicate that positive emotions are predominantly processed by the left hemisphere of the brain, while negative emotions are more often processed by the right hemisphere. (The 'pleasant' odorant used in these experiments, as in many others, was vanillin.④)

③placebo：偽薬(ぎやく，プラセボ，プラシーボ)は，本物の薬のように見える外見をしているが，薬として効く成分は入っていない，偽物の薬。なお，placebos は複数の種類をさす。ここでは本来の意味が拡大されて使われている。

④vanillin：the primary chemical component of the extract of the vanilla bean

3. What does the underlined sentence above suggest? Answer by filling in the blanks.

Answer: Even artificial ①(　　) can significantly ②(　　) the human sense of ③(　　).

Perception effects

The positive emotional effects of pleasant fragrances also affect our perceptions of other people. In experiments, subjects exposed to pleasant fragrances tend to give higher 'attractiveness ratings' to people in photographs, although some recent studies have shown that these effects are only significant where there is some ambiguity in the pictures. If a person is clearly outstandingly beautiful, or extremely ugly, fragrance does not affect our judgment. But if the person is just 'average', a pleasant fragrance will tip the balance of our evaluation in his or her favor. So, the beautiful models used to advertise perfume probably have no need of it, but the rest of us ordinary mortals might well benefit from a spray or two of something pleasant. Beauty is in the nose of the beholder.

Unpleasant smells can also affect our perceptions and evaluations. In one study, the presence of an unpleasant odor led subjects not only to give lower ratings to photographed individuals, but also to judge paintings as less professional.

4. What does the underlined sentence above suggest? Answer by filling in the blanks in this statement related to the theme of the paragraph.

Answer: Comfortable ①(　　) psychologically ②(　　) an individual to ③(　　) rate other people's ④(　　).

Scent-preferences

Scent-preferences are often a highly personal matter, to do with specific memories and associations. In one survey, for example, responses to the question 'What are your favorite smells?' included many odors generally regarded as unpleasant (such as gasoline and body perspiration), while some scents usually perceived as pleasant (such as flowers) were violently disliked by certain respondents. These preferences were explained by good and bad experiences associated with particular scents. Despite these individual peculiarities, we can make some significant generalizations about smell-preference. For example, experiments have shown that we tend to 'like what we know': people give higher pleasantness ratings to smells which they are able to identify correctly. On the other hand, there are also some fragrances which appear to be universally perceived as 'pleasant' — such as vanilla, an increasingly popular ingredient in perfumes which has long been a standard 'pleasant odor' in psychological experiments.

5. Concisely describe what the author means by 'scent-preferences'. Your answer should be written in Japanese (approximately 130 characters).

PART 2 (配点率 30 %)

Texts A and B are on the same topic. Read the texts and answer the questions below. Your answers should be in your own words and not copied directly from the texts.

[Text A]

Instead of the usual required summer-reading book, this year's incoming freshmen at the University of California, Berkeley, will get something quite different: a cotton swab(1) on which they can, if they choose, send in a DNA sample.

The university said it would analyze the samples, from inside students' cheeks, for three genes that help regulate the ability to metabolize alcohol, lactose(2) and folates.(3)

Those genes were chosen not because they indicate serious health risks but because students with certain genetic markers may be able to lead healthier lives by drinking less, avoiding dairy products or eating more leafy green vegetables.

Berkeley's program for the class of 2014 is the first mass genetic testing by a university. Jasper Rine, the professor of genetics who is leading the project, said it was designed to help students learn about personalized medicine and identify their own vulnerabilities.

"The history of medical genetics has been the history of finding bad things," he said. "But in the future, I think nutritional genomics(4) is probably going to be the sweet spot."

The testing will be voluntary and confidential, with no one at Berkeley knowing which sample comes from which student.

Each freshman will get two bar code labels, one to put on the sample and one to keep. After the genotyping is complete, the results will be posted on a website using the bar code identification, so only the person who provided the DNA sample will know whose it is.

"In the decade ahead, the new genetics is going to penetrate① everyday medical practice," said Mark Schlissel, dean of biology at Berkeley. "We wanted to give students a sense of what's coming, through genes that can provide them with useful information. I think it's one of the best things we've done in years."

But some bioethicists say the whole idea of genetic testing outside a medical setting is troubling.

"It's a bad precedent(5) to set up mass testing without some sort of counseling support," said Arthur Caplan, director of the Center for Bioethics at the University of Pennsylvania. "I'd rather people get their results in a medical setting, where they can ask questions about the error rate or the chances of passing it on to their children, and not just see it posted on some website."

Dr. Schlissel said that he understood the concern about counseling but that he believed it applied mostly to testing for genetic diseases, not necessarily the relatively harmless gene variants that Berkeley is looking for.

Berkeley, like many colleges, has for several years tried to create a common intellectual experience for new students by assigning② a summer-reading book. Last year, freshmen and transfer students in its College of Letters and Sciences received "The Omnivore's Dilemma,"(6) by Michael Pollan.

But for the class of 2014, the program will be especially ambitious. After the genetic testing, the university will offer a campuswide lecture by Mr. Rine about the three genetic markers, along with other lectures and panels with philosophers, ethicists, biologists and statisticians exploring the benefits and risks of personal genomics.

While the Berkeley professors see the gene testing as relatively harmless, others say that all genetic knowledge carries risks.

"They may think these are noncontroversial genes, but there's nothing noncontroversial about alcohol on campus," said George Annas, a bioethicist at the Boston University School of Public Health. "What if someone tests negative, and they don't have the marker, so they think that means they can drink more? Like all genetic information, it's potentially harmful."

(Excerpts from *The New York Times*, May 18, 2010)

Notes

(1) swab：綿　棒

(2) lactose：乳　糖

(3) folates：葉　酸

(4) genomics：ゲノム学

(5) precedent：先　例

(6) "The Omnivore's Dilemma"：『雑食動物のジレンマ』

[Text B]

The University of California-Berkeley is an experimental place, and sometimes those experiments start as early as the summer before they step foot on campus.

This summer, the university's College of Letters and Science — home to three quarters of Berkeley's 25,000 undergraduates — will ask freshmen and transfers to return a cotton swab covered in cells collected from their inner cheeks in an effort to introduce them to the emerging field of personalized medicine.

Like so many other institutions, the college usually asks students to read a specific book or watch an assigned movie in the weeks before classes start, to inform discussion during orientation and throughout the fall. But a reading assignment didn't make sense for something as cutting-edge and personalized as genetic analysis.

"Science is moving so fast right now," said Alix Schwartz, director of academic planning for the college's undergraduate division. "If we assigned them a book, it would be out-of-date by the time they read it." Last year's assignment for the program, called "On the Same Page," was Michael Pollan's account of food chains, *The Omnivore's Dilemma*.

This year, said Mark Schlissel, the college's dean of biological sciences, a look at personalized medicine made sense. "For now, it's mostly a research tool, but in the coming years it's going to become part of everyday medical practice, based on your very personal genetics."

Geneticists will analyze each sample for three genes: metabolism of folate, tolerance of lactose and metabolism of alcohol, all relatively innocuous and perhaps useful in students' daily lives. Students will be able to use that information to learn if they should eat more leafy green vegetables, steer clear of milk products or limit alcohol intake.

The idea is not to identify③ potentially dangerous genes in students' samples, but to point out traits that can be managed through behavior, said Jasper Rine, a professor of genetics, genomics and development. "We want to get people to appreciate that there are things you can do that enhance④ your health based on the genes you have," he said. "There are concrete, actionable, specific steps that do enhance quality of life. This is the message of the post-genomic era."

Samples will nonetheless be kept confidential. Students will be sent two barcode stickers, one to attach to the submitted sample and the other to keep. "This is all going to be done with institutional safeguards for privacy," Schlissel said. The university's Committee for Protection of Human Subjects scrutinized the plans closely to ensure that the project would be "ethical and private and the like."

Students will be able to check the analysis of their own samples on a website by entering the barcode they have kept. "This is a very participatory way to get them to engage in the conversation, to have something to talk about with their fellow students and with the faculty," Schwartz said. The college will host a website with optional readings, a public lecture delivered by Rine and a series of panel discussions on legal and ethical issues related to the emergence of personalized genomic technologies.

Schwartz said that faculty from throughout the college "are pretty excited about exploring all the issues around personalized medicine because it's so controversial." Regardless of "what kind of disciplinary leanings the students have, we think there will be something that connects them to this at an intellectual or personal level."

(Excerpts from *USA Today*, May 18, 2010)

QUESTIONS

When answering all these questions, please use the answer sheets.

Question 1. Choose one from the four choices that is closest in meaning to the underlined word in the text.

① *penetrate

(a) open up

(b) see through

(c) do away with

(d) have a strong influence on

② *assign

(a) lend

(b) force

(c) assist

(d) require

③ *identify

(a) customize

(b) recognize

(c) emphasize

(d) personalize

④ *enhance

(a) fail

(b) upgrade

(c) improve

(d) highlight

Question 2. What kind of people are expected to take the genetic test? How is the information different between Text A and Text B? Explain in English in less than 50 words.

Question 3. There are pros and cons of conducting the test. Why are professors and bioethicists for or against it? Explain the reasons in English in less than 50 words.

Question 4. Imagine you are a staff member of the university participating in the orientation for the new students. Explain to them in plain English in less than 50 words how to check the analysis of their genetic information.

Question 5. Choose 3 statements that are consistent with the contents of the texts.

(a) The students can take further genetic tests if they wish.

(b) The new students are not required to read a book this summer.

(c) The students can ask questions about their test results to the university.

(d) The three genes which will be analyzed are considered to be harmless.

(e) The university plans to conduct the same test again next year.

(f) The purpose of this test is to detect dangerous genes which will cause serious disease in the future.

(g) If you have a problem with metabolism of folate, you are advised to eat more leafy green vegetables.

PART 3 (配点率 30 %)

Essay writing

Write an essay on the following topic.

Your essay should:

1. be a minimum of 150 words,
2. be written using paragraph form,
3. have a minimum of three paragraphs,
4. have a clear introduction, body and conclusion,
5. leave a one-line space between each paragraph.

Do not double-space your essay; write on every line.

In your essay, your ideas should be clearly expressed.

"Happiness" is a topic often talked about these days. What "happiness" is to each individual and identifying its sources can be described in a wide variety of terms. Write about your philosophy of happiness and describe three of your ideas about what happiness means to you and how you will work to achieve it in your future.