

# 浜松医科大学

平成 26 年 度

医 学 科

## 外 国 語(英語)

### 注意事項

1. 問題は 1 頁から 11 頁に掲載されています。
2. 解答に用いる言語(日本語あるいは英語)は各設問の指示に従って選びなさい。  
ただし、記号で答えるように求められている場合は記号で答えること。
3. 解答は解答用紙に記入しなさい。

次の英文を読んで、設問1～4に日本語あるいは記号で答えなさい。

### **Your Phone vs. Your Heart**

Can you remember the last time you were in a public space in America and didn't notice that half the people around you were bent over a digital screen, thumbing a connection to somewhere else?

Most of us are well aware of the convenience that instant electronic access provides. Less has been said about the costs. Research that my colleagues and I have just completed, to be published in a forthcoming issue of Psychological Science, suggests that one measurable toll may be on our biological capacity to connect with other people.

Our ingrained habits change us. Neurons that fire together, wire together, neuroscientists like to say, reflecting the increasing evidence that experiences leave <sup>(1)\*</sup>imprints on our neural pathways, a phenomenon called neuroplasticity. Any habit molds the very structure of your brain in ways that strengthen your proclivity for that habit.

Plasticity, the propensity to be shaped by experience, isn't limited to the brain. You already know that when you lead a sedentary life, your muscles atrophy to diminish your physical strength. What you may not know is that your habits of social connection also leave their own physical imprint on you.

How much time do you typically spend with others? And when you do, how connected and attuned to them do you feel? Your answers to these simple questions may well reveal your biological capacity to connect.

My research team and I conducted a longitudinal field experiment on the effects of learning skills for cultivating warmer interpersonal connections in daily

life. Half the participants, chosen at random, attended a six-week workshop on an ancient mind-training practice known as metta, or “lovingkindness,” that teaches participants to develop more warmth and tenderness toward themselves and others.

We discovered that the meditators not only felt more upbeat and socially connected, but they also altered a key part of their cardiovascular system called vagal tone. Scientists used to think vagal tone was largely stable, like your height in adulthood. Our data show that this part of you is plastic, too, and altered by your social habits.

To appreciate why this matters, here’s a quick anatomy lesson. Your brain is tied to your heart by your vagus nerve. Subtle variations in your heart rate reveal the strength of this brain-heart connection, and as such, heart-rate variability provides an index of your vagal tone.

By and large, the higher your vagal tone the better. It means your body is better able to regulate the internal systems that keep you healthy, like your cardiovascular, glucose and immune responses.

Beyond these health effects, the behavioral neuroscientist Stephen Porges has shown that vagal tone is central to things like facial expressivity and the ability to tune in to the frequency of the human voice. By increasing people’s vagal tone, we increase their capacity for connection, friendship and empathy.

In short, the more attuned to others you become, the healthier you become, and vice versa. This <sup>(2)\*</sup>mutual influence also explains how a lack of positive social contact diminishes people. Your heart’s capacity for friendship also obeys the biological law of “use it or lose it.” If you don’t regularly exercise your ability <sup>①</sup> to connect face to face, you’ll eventually find yourself lacking some of the basic biological capacity to do so.

The human body — and thereby our human potential — is far more plastic or amenable to change than most of us realize. The new field of social genomics,

made possible by the sequencing of the human genome, tells us that the ways our and our children's genes are expressed at the cellular level is plastic, too, <sup>(3)\*</sup>responsive to habitual experiences and actions.

Work in social genomics reveals that our personal histories of social connection or loneliness, for instance, alter how our genes are expressed within the cells of our immune system. New parents may need to worry less about genetic testing and more about how their own actions — like <sup>(4)\*</sup>texting while breast-feeding or otherwise paying more attention to their phone than their child — leave life-limiting fingerprints on their and their children's gene expression.

When you share a smile or laugh with someone face to face, a discernible synchrony emerges between you, as your gestures and biochemistries, even your respective neural firings, come to mirror each other. It's micro-moments like these, in which a wave of good feeling rolls through two brains and bodies at once, that build your capacity to empathize as well as to improve your health.

If you don't regularly exercise this capacity, it withers. Lucky for us, connecting with others does good and feels good, and opportunities to do so abound.

So the next time you see a friend, or a child, spending too much of their day facing a screen, extend a hand and invite him back to the world of real social encounters. You'll not only build up his health and empathic skills, but yours as well. Friends don't let friends lose their capacity for humanity.

By Barbara L. Fredrickson

*International Herald Tribune*: March 26, 2013

(with small changes)

Notes

plasticity : 可塑性

cardiovascular : 心臓血管の

vagal tone : 迷走神経緊張

anatomy : 解剖学

vagus nerve : 迷走神経

immune : 免疫の

genomics : ゲノム学

設問 1 \*印のついた語は、本文の文脈ではそれぞれどのような意味で使われているか、最も近いものを選んで記号で答えなさい。

(1) \*imprint

- (a) increase
- (b) influence
- (c) inheritance
- (d) inconvenience

(2) \*mutual

- (a) close
- (b) various
- (c) common
- (d) interactive

(3) \*responsive

- (a) active
- (b) sensitive
- (c) detective
- (d) persuasive

- (4) \*text
- (a) read an article
  - (b) study literature
  - (c) use social media
  - (d) send an email message

設問 2 Stephen Porges の研究は何を明らかにしたか, vagal tone とは何かを踏まえて述べなさい。

設問 3 下線部①はどのようなことを指しているか, 本文の内容にしたがって述べなさい。

設問 4 本文の内容と合致するものを 3 つ選んでアルファベット順に記号で答えなさい。

- (a) Gene expressions at the cellular level show plasticity.
- (b) Our habits do not have an influence on our neural pathways.
- (c) Parents should worry about the result of their child's genetic testing.
- (d) If you spend a lot of time sitting down, your muscles will become weaker.
- (e) When we smile at each other, a wave of good feeling goes through our brains and bodies.
- (f) Using smartphones will not just help us connect with other people but also improve our health.
- (g) The author and her team conducted research on the merits and demerits of telephone use in America.

**Read the following texts and answer the questions 1-4 below.**

**Reading A**

Most people, whether hospital staff, patients, or visitors, are familiar with “Code blue, code blue!” Those ( ① ) summon up frightening and fearful feelings as staff are alerted to a medical emergency involving life and death.

Now in some hospitals, “The Chimes of Joy” are becoming familiar to many as well. After the ( ② ) of a baby, chimes are played over the paging system to get everyone’s attention, then soft sounds of a lullaby ( ③ ) down each corridor of the hospital, announcing a new life. Many people ( ④ ) from this moment of happiness, but for two families it became a significant event in their lives.

In a hospital room on the medical floor the Johnson family ( ⑤ ) vigil. Mrs. Johnson, who had fought a brave battle with cancer for many months, was now gravely ill. This frail patient was at peace with God and had no fear of dying. Her family ( ⑥ ) her with their love and support. When the nurses gently made the Johnson family aware that the time was drawing close to her final breath, they each ( ⑦ ) themselves for the loss.

Then they heard the dying woman whisper, “I hope a new life comes into this world as I ( ⑧ ).”

Within seconds, chimes played and a lullaby floated through the air as their mother smiled up at them, closed her tired eyes, and died ( ⑨ ). Amazed and speechless, the family cried tears of ( ⑩ ) and joy.

Feeling a bond with this newborn, the grieving relatives wanted to learn more about this perfectly timed birth. A few days later in the local newspaper, next to Mrs. Johnson’s obituary, they spotted a birth announcement of the same

date. They called the parents and carefully introduced themselves to the puzzled couple, ( ⑪ ) their poignant story. The new parents were delighted to hear from them and eventually graciously ( ⑫ ) a \$100 gift to put into savings for their son's future, in honor of the Johnson family's wife and mother.

Years later, both families still ( ⑬ ) Christmas cards. The Johnson family sends the child a birthday card each year and his parents send them an ( ⑭ ) photograph of him.

As an employee of the hospital, I was ( ⑮ ) to the unfolding of the divine plan; to see the joy of birth lessen the pain of death.

Retrieved with small changes from:

Bailey, Judy. "Chimes of Joy", in *Chicken Soup for the Nurse's Soul: Second Dose*. Jack Canfield, Mark Victor Hansen, and LeAnn Thieman (eds.), Backlist, LLC. 2012, pp. 96–97.

#### Notes

lullaby = a gentle song played or sung to help a child go to sleep.

vigil = a period of time when people watch over a sick person, say prayers, etc.

obituary = an article about somebody's life and achievements printed after they die.

Question 1. Complete the text of Reading A using the following words.

Remember to use the correct word form.

accept	annual	benefit	birth
exchange	float	hold	leave
prepare	serenely	share	sorrow
surround	witness	word	



<パート 2 >

**Reading B**

Animal assisted therapy and animal assisted activity have become popular concepts in Japan following the growth of this area in the United States. The one organization that has led this area in the country is the Companion Animal Partnership Program (CAPP) of the Japan Animal Hospital Association (JAHA). JAHA is an organization of veterinary practitioners that was formed to enhance continuing education in the profession. This organization started a program under which volunteer pet owners would visit human medical facilities with their animals. The program was started in the early 1980's and continues to grow. CAPP has its own internal rules and standards whereby visiting animals and their owners are evaluated for suitability. It is the most well-known animal visitation program in the country and by far the largest. The program is run by a veterinarian's group which conducts health checks and risk control.

As CAPP has become more prominent in the country many smaller groups have emerged. Some are of good quality and others not so. The main problem in Japan with the "animal therapy" issue is in the word itself. First of all, "who" conducts the therapy? Needless to say, the therapy is for the humans, and thus only people or professionals certified to work with people can really "do" anything. In other words, the volunteer and the dog/cat are merely "tools" to be used by the human professionals, assistants that move according to the plans made by the human experts.

However there are now some courses in Japan that are certifying "animal therapists". It is hard to believe that a simple 1 or 2 year course can enable a person to pass any national licensing programs for human professionals while at the same time teaching them the basics of animal handling, welfare, care, and basic concepts in animal assisted interventions. Unfortunately, the media and

the public love the concept of dogs and cats being therapeutic and bringing joy to hospitals and nursing homes and as a result the market is ripe with those who “want to learn”. This in turn encourages those looking for a business chance to make use of the opportunity, often in ways that do not support the quality that the field definitely needs to be safe and effective.

This may not be a phenomenon unique to Japan. Worldwide the concept of animal assisted therapy is becoming more and more renowned and popular but at the same time people are losing their grip on the necessary elements, such as risk control and animal welfare, and most of all coordination with human welfare and medicine.

Retrieved with small changes from:

<http://www.zenoaq.jp/english/aij/0903.html> on 8/6/2013

Choose the correct answer for Questions 2 and 3 and write the letter on the answer sheet.

Question 2. According to Reading B, what is a problem being faced with regard to “animal therapy” in Japan today?

- a. There are not enough courses for certifying animal therapists.
- b. Not enough people want to learn about animal therapy.
- c. Not all of those involved in animal therapy are well-trained and competent to work with both humans and animals.
- d. There are few business opportunities for starting animal therapy training programs.
- e. There are too many volunteers who want their dog/cat to be used for therapy.

Question 3. In paragraph 3 of Reading B, why is it unfortunate that the media and public love the concept of dogs and cats being therapeutic and bringing joy to hospitals and nursing homes?

- a . Because the patients in hospitals and nursing homes don't like dogs and cats.
- b . Because there is no merit in the idea of therapeutic animals.
- c . Because the popularity is good for the economy and new businesses.
- d . Because this situation may encourage people who want to take advantage of a business opportunity to create poor quality training courses.
- e . Because 1 or 2 year courses are sufficient to train and certify animal therapists.

Question 4. Replace each of the underlined words from the first paragraph of Reading B with a word or phrase of the same or similar meaning from the box below.

assessed	consortium	doctors	drop by
guidelines	nation	notable	pets
proceeds	strengthen		

Write an essay on the following topic.

Your essay should:

1. be a minimum of 150 words in English,
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.

In the practice of medicine, doctors must often work in teams with other doctors and health care professionals. Doctors need to both contribute positively to teamwork and show leadership skills in patient care. Describe your leadership skills and give an example of how you have contributed positively to team activities.