

R2年度 卒業考査について

試験範囲 : Lesson3 iPS Cells, Lesson4 Roman Baths

○Lesson3 ; 下線部の語句の意味を選んで記号で答える問題が50問 (50点) です。
以下の下線部から出題します。

iPS cells are artificial pluripotent stem cells that are made to help cure injuries and diseases. Yamanaka Shinya succeeded in producing them for the first time in the world. This discovery was a major scientific advancement.

Therefore, he was given the 2012 Nobel Prize in Physiology or Medicine. Theoretically, iPS cells can grow to be any cell type in a body. It is hoped that these cells can replace tissue which cannot be repaired with today's medical technology. For instance, people whose eyes do not work well may recover their eyesight with tissue made from iPS cells. Also, there are people who cannot walk because of nerve damage in their spine. iPS cells may be able to become new nerve cells. This could be the key to their recovery. Moreover, it may become possible in the future that a whole organ will be produced from iPS cells. This would make organ transplants easier. It would be safer to use organs produced from one's own cells than to transplant organs from one person to another.

As you know, the human body consists of various kinds of cells. Our bodies develop from just one fertilized egg cell. The cell continues to divide, resulting in a human body which consists of about 37 trillion cells. During the early stages of division, each cell can become any part of the body. In the later stages, all cells play certain roles in the creation of skin, hair, and bones, to name a few. Once the cells get their roles, they cannot be used to make different types of tissue or organs.

However, in 2006, Professor Yamanaka created a method of changing the cells back to their initial state. He discovered four genes that can turn skin cells into iPS cells. That was a revolutionary discovery.

There are still some problems to overcome before we can fully apply the potential of iPS cells to the real world. Today, however, research on medical treatments that use iPS cells is making rapid progress. iPS cells will surely bring medical miracles in the future.

○Lesson4 ; 空所補充問題 (選択問題) 8問
空所補充問題 (記述問題) 2問
下線部訳 9問
語形変化 5問
その他 1問
各2点計50点です。

何度も音読し、英語の意味や動詞や名詞の形が分かるようにしておきましょう。

試験範囲の英文と日本語訳（試験勉強に活用してください）

Lesson 3 iPS Cells

① iPS cells are artificial pluripotent stem cells that are made to help cure injuries and diseases. Yamanaka Shinya succeeded in producing them for the first time in the world. This discovery was a major scientific advancement. Therefore, he was given the 2012 Nobel Prize in Physiology or Medicine.

iPS細胞は、けがや病気の治療に役立つよう作られる人工の多能性幹細胞です。山中伸弥氏が、世界で初めてそれを作ることに成功しました。この発見は大きな科学上の進歩でした。そのために、彼は2012年にノーベル生理学・医学賞を与えられました。

② Theoretically, iPS cells can grow to be any cell type in a body. It is hoped that these cells can replace tissue which cannot be repaired with today's medical technology. For instance, people whose eyes do not work well may recover their eyesight with tissue made from iPS cells. Also, there are people who cannot walk because of nerve damage in their spine. iPS cells may be able to become new nerve cells. This could be the key to their recovery. Moreover, it may become possible in the future that a whole organ will be produced from iPS cells. This would make organ transplants easier. It would be safer to use organs produced from one's own cells than to transplant organs from one person to another.

理論的には、iPS細胞は体のどの細胞の型にも成長することができます。これらの細胞は、今日の医療技術では修復されえない組織を置き換えることができると期待されています。例えば、目がうまく機能しない人は、iPS細胞から作られた組織を使って視力を回復する可能性があります。また、脊椎の神経の損傷が原因で歩くことができない人たちがいます。iPS細胞は、新しい神経細胞になれるかもしれないのです。これは、かれらの回復のカギとなる可能性があります。さらに、将来的には、ある臓器全体がiPS細胞から作り出されることが可能になるかもしれません。これにより、臓器移植はより容易になるでしょう。ある人から別の人へ臓器を移植するよりも、自分自身の細胞から作られた臓器を使う方がより安全だと言えるでしょう。

Lesson 4

Roman Baths

① There are many public baths in Japan. They seem to be a part of Japanese culture. However, Japanese are not the only people who enjoy public baths. If we examine the history of bathing, it appears that ancient Romans also loved public baths.

日本には多くの公衆浴場があります。それらは日本文化の一部であるように思われます。しかし、日本人だけが公衆浴場を楽しむ国民なのではありません。入浴の歴史を調べると、古代ローマ人も公衆浴場を愛していたようです。

② For the Romans, bathing in a public bath was one of the most popular daily pastimes. They usually worked only in the mornings, so many of them spent their afternoons at the public baths. The entrance fee was so cheap that almost anyone could use them. According to historical records, even some emperors often visited the public baths to talk with the citizens. At the peak of the Roman period, there were more than 950 public baths in the city of Rome.

ローマ人にとって、公衆浴場での入浴は、最も人気のある日々の娯楽の1つでした。かれらは普通午前中だけしか働かなかったので、かれらの多くが公衆浴場で午後を過ごしました。入場料はとても安かったので、ほとんど誰でもそれらを利用することができました。歴史的な記録によると、市民と話をするためにしばしば公衆浴場を訪れた皇帝すらいました。ローマ時代の最盛期には、ローマ市には950を超える公衆浴場がありました。

③ As you know, the human body consists of various kinds of cells. Our bodies develop from just one fertilized egg cell. The cell continues to divide, resulting in a human body which consists of about 37 trillion cells. During the early stages of division, each cell can become any part of the body. In the later stages, all cells play certain roles in the creation of skin, hair, and bones, to name a few. Once the cells get their roles, they cannot be used to make different types of tissue or organs.

ご存知のように、人体はさまざまな種類の細胞でできています。私たちの体は、たった1つの受精卵細胞から育っていきます。その細胞は分裂を続け、その結果、およそ37兆の細胞から成る人体になります。分裂の初期の段階では、それぞれの細胞は体のどの部分にでもなることができます。のちの段階では、すべての細胞は、例えば皮膚、髪の毛や骨などを作る中で特定の役割を担います。一度役割を得ると、それらの細胞は違う種類の組織や臓器を作るために使われることはできません。

④ However, in 2006, Professor Yamanaka created a method of changing the cells back to their initial state. He discovered four genes that can turn skin cells into iPS cells. That was a revolutionary discovery.

しかし、2006年に山中教授は、それらの細胞を初期状態に戻す方法を作り出しました。彼は、皮膚細胞をiPS細胞に変えることができる4つの遺伝子を発見したのです。それは革命的な発見でした。

⑤ There are still some problems to overcome before we can fully apply the potential of iPS cells to the real world. Today, however, research on medical treatments that use iPS cells is making rapid progress. iPS cells will surely bring medical miracles in the future.

iPS細胞の可能性を実世界で完全に用いることができるようになるまでには、まだ克服すべき問題がいくつかあります。しかし、今日、iPS細胞を用いた治療に関する研究が急速に進んでいます。iPS細胞は将来きっと医学的な奇跡をもたらすことでしょう。