

2010年4月入学第1回 長浜バイオ大学大学院

バイオサイエンス研究科 博士課程前期課程

一般入学試験（英語）

【注意事項】

1. 問題1部、解答用紙3枚を配付。事前に受験番号が記入されているので、確認すること。
2. 解答用紙は1問につき1枚を使用すること。解答の際、必ず設問番号を最初に記入すること。
3. 解答用紙の下欄に科目名、学籍番号、氏名の記入は不要。
4. 試験時間は、10:00～11:30（90分）。
5. 電子辞書等の使用および試験時間中の途中退室は不可。
6. 解答用紙は、ホッチキス止めをしているのではずさないこと。
7. 問題用紙、解答用紙は、入学試験終了後全て回収。

次の問 1～問 3 に答えなさい。

問 1 以下の英文を全文和訳しなさい。

Drug treatment requires getting a drug to its target site or sites—specific sites in tissues where the drug performs its action. Typically, the drug is introduced (the process of administration) into the body far from this site. The drug must move into the bloodstream (the process of absorption) and be transported to the target sites where the drug is needed (the process of distribution). Some drugs are chemically altered (the process of metabolism) by the body before they perform their action; others are metabolized afterward; and still others are not metabolized at all. The final step is the removal of the drug and its metabolites from the body (the process of elimination).

Drug absorption is the movement of a drug into the bloodstream. Absorption affects bioavailability—how quickly and how much of a drug reaches its intended target (site) of action. Factors that affect absorption (and therefore bioavailability) include the way a drug product is designed and manufactured, its physical and chemical properties, and the physiologic characteristics of the person taking the drug. Physiologic characteristics that may affect the absorption of drugs taken by mouth include how long the stomach takes to empty, what the acidity (pH) of the stomach is, and how quickly the drug is moved through the digestive tract.

[引用 Merck Manuals より転記]

問 2 以下の英文を全文和訳しなさい。

With the World Health Organization discussing whether to declare that a swine influenza pandemic has arrived, doctors, scientists and government officials say the enormous preparedness efforts of recent years have aided the world's response to the virus.

"In general, the developing countries are not prepared," Oshitani says. The World Bank has released billions of dollars for preparedness in these regions, but many developing nations still do not have plans for dealing with a pandemic — and some that do have simply cut and pasted versions of plans from developed countries, which do not apply to poorer nations unable to afford vaccines and antivirals.

On the whole, Oshitani says, "this pandemic came too early. If we had had two more years, we would have been better prepared."

[引用 “Avian influenza aided readiness for swine flu”, Nature, June 11, 2009]

swine:豚の

問 3 以下の英文を全文和訳しなさい。

In the jellyfish, Dr. Johnson and Dr. Shimomura discovered a small protein, the green fluorescent protein, which is fluorescent rather than luminescent. Bioluminescent proteins require other molecules to provide energy in order to light up. Fluorescent proteins do not. The G.F.P. proteins absorb the energy of ultraviolet or blue light and re-emit the energy as green light.

For biologists, that is an important advantage, because cells with G.F.P.-tagged proteins do not have to be swathed in additional chemicals to make them shine. G.F.P. remained largely a curiosity until 1992, when Dr. Chalfie used it to make *E. coli* bacteria glow. He then made individual cells inside *C. elegans* roundworms glow.

The key to the use of G.F.P. is that biologists now know the gene that produces it. When they want to track the activity of a particular protein in a cell they first must identify the gene that produces it. Then, they can splice in the gene for G.F.P. next to the new gene. The result is that the protein is produced with a slight modification, an attached fluorescent snippet^{注)}. All that remains is to shine ultraviolet light on the cells. The tagged proteins glow, revealing their locations.

注) snippet : 断片

[引用 “A Guiding Glow to Track What Was Once Invisible”, New York Times, October 13, 2008]