

平成31年1月23日実施

名古屋市立大学大学院医学研究科博士課程外国語試験(1回目) 外国人－英語

I. Please read the following sentences and answer the following 5 questions.

この部分に掲載されている文章に就いては、著作権法上の問題から掲載することができませんので、ご了承ください。

Quoted and adapted from: Nature 550, 324–326 (2017) (doi:10.1038/550324a)

Question 1 Regarding the sentence underlined (1), briefly explain the challenge created by the AI revolution, as highlighted in the passage, and how it can be mitigated.

(Questions 2 to 3 are listed on the next page)

Question 2 Regarding the sentence underlined (2), rearrange the words properly.

Question 3 In doing some tasks or works, AI algorithms have strong and weak points that enable them to perform better and worse than humans, respectively. Briefly describe what types of task or work they are.

(Questions 4 to 5 are listed on the next page)

Question 4 Regarding the sentence underlined (3), what are routine jobs? Give an example.

Question 5 Explain why AI might prove to be less of a threat to nurses than doctors as suggested in this article.

II. Please read the following sentences and answer the following 3 questions.

この部分に掲載されている文章に就いては、著作権法上の問題から掲載することができませんので、ご了承ください。

Quoted and adapted from: Hall, L. & Johansson, P. (2009). Choice Blindness: You don't know what you want. *New Scientist*, Issue 2704, 26-27.

Question 1 Regarding the sentence underlined (1), explain the meaning of 'this question'.

(Questions 2 to 3 are listed on the next page)

Question 2 Regarding the sentence underlined (2), explain the meaning of 'this effect'.

Question 3 Summarize the above English sentences within 80 words.

平成31年1月23日実施

名古屋市立大学大学院医学研究科博士課程入学試験(2回目)

医学・生物学一般問題(問題用紙2枚、解答用紙2枚)

Select any two of the following four questions, and write your answers on answer sheets provided. Use one sheet per question (if you need more space for answers, continue them on the reverse side of the sheet). Please make sure that you write the number of question you selected in the answer sheet.

Question 1 Please explain the relationship between mutation frequencies and genetic diseases, such as Mendelian inheritance disorders and complex disorders caused by multiple gene defects. Please also explain the effects of environment on genetic diseases.

Question 2 Regarding “Drug Discovery”, answer the following two questions (I and II).

- I. Explain how to design a medical drug.
- II. Explain the screening of candidate drugs in terms of quantitative structure-activity relationship.

Question 3 Please answer the following two questions (I and II).

- I. Explain each step in the “Central Dogma”.
- II. Explain the synthesis and function of microRNA.

(Question 4 is listed on the next page)



Question 4 Nitric oxide (NO) is a molecule that our body produces to help its 50 trillion cells communicate with each other by transmitting signals throughout the entire body. Regarding NO produced in the vascular endothelium, answer the following questions I-IV.

- I. Briefly describe general features of NO-mediated signal transduction.
- II. Briefly describe the biosynthesis of NO.
- III. Briefly describe the working mechanism(s) of NO.
- IV. List several medical drugs that are clinically available as an agonist of NO, and briefly explain their pharmacological effects.