

## 医学部医学科英語入試問題

下記の注意事項をよく読んで解答してください。

◎注意事項

1. 配付された問題冊子および解答用マークシート（受験番号のマークの仕方）に、それぞれ受験番号(4桁)ならびに氏名を記入し、解答用マークシートの受験番号欄に自分の番号を正しくマークしてください。

受 験 番 号			
千	百	十	一
0	0	7	2

2. マークには必ずHBの鉛筆を使用し、濃く正しくマークしてください。

記入マーク例：良い例 ●

悪い例 ○ ◯ ◯ ◯

受 験 番 号			
千	百	十	一
●	●	○	○
①	①	●	①
②	②	②	●
③	③	③	③
④	④	④	④
⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨

3. マークを訂正する場合は、消しゴムで完全に消してください。
4. 所定の記入欄以外には何も記入しないでください。
5. 解答用マークシートを折り曲げたり、汚したりしないでください。
6. 「止め」の合図があったら、問題冊子の上に解答用マークシートを重ねて置いてください。

- 31 -

受験番号

氏 名

[ I ] 次の(A), (B), (C)の英文は *Lessons from Chernobyl for Japan* という見出しの新  
聞記事です。記事は(A)→(B)→(C)の順に書かれています。(A), (B), (C)それぞれの英  
文を読み、後に続く設問にもっとも適する答えを選びなさい。

(A)

CHERNOBYL, Ukraine — Twelve times a month — the maximum number of  
shifts the doctors will allow — Sergei A. Krasikov takes a train across the no  
man's land and reports for work at a structure enclosing Reactor No. 4 known  
as "the sarcophagus."

(2) \_\_\_\_\_ is to pump out radioactive liquid that has collected  
inside the burned-out reactor. This happens whenever it rains. The  
sarcophagus was built 25 years ago in a panic, as radiation streamed into  
populated areas after an explosion at the reactor, and now it is riddled with  
cracks. (3)

Water cannot be allowed to touch the thing that is deep inside the reactor:  
about 200 tons of melted nuclear fuel and debris, which burned through the  
floor and hardened, in one spot, into the shape of an elephant's foot. \_\_\_\_\_  
\_\_\_\_\_ that scientists cannot approach it. But years ago, when they  
managed to place measurement instruments nearby, they got readings of  
10,000 rem per hour, which is 2,000 times the yearly limit recommended for  
workers in the nuclear industry. (4)

Mr. Krasikov, who has broad shoulders and a clear, blue-eyed gaze, has been  
baby-sitting this monster for eight years. He'll stay until he is pensioned off  
and then leave his job to another man, who will stay until he is pensioned off. (5)

(6) \_\_\_\_\_ how long this will continue, Mr. Krasikov shrugged.

"A hundred years?" he ventured. "Maybe in that time they will invent something."

The death of a nuclear reactor has a beginning; the world is watching this unfold now on the coast of Japan. But it doesn't have \_\_\_\_\_  
(7)

\_\_\_\_\_ some radioactive elements in nuclear fuel decay quickly, cesium's  
(8) half-life is 30 years and strontium's is 29 years. Scientists estimate that it takes 10 to 13 half-lives before life and economic activity can return to an area. That means that the contaminated area — designated by Ukraine's Parliament as 15,000 square miles, around the size of Switzerland — will be affected for more than \_\_\_\_\_ years. All last week, workers frantically tried to cool  
(9) the six reactors at the Fukushima Daiichi plant 140 miles north of Tokyo. But one had to look at Ukraine to understand the sheer tedium and exhaustion of dealing with the aftermath of a meltdown. It is a problem that does not exist  
(10) on a human time frame.

Volodymyr P. Udovychenko drove to Ukraine's Parliament building on Tuesday, \_\_\_\_\_ in a shiny purple shirt and tie. He is the mayor of  
(11) Slavutych, which is home to most of the 3,400 workers who are still employed at the Chernobyl Atomic Energy Station. Most of them have not received their full salaries since January, and the mayor was requesting \$3.6 million to pay them. "The leadership turns away from this, they think that Chernobyl doesn't exist," he said. "Chernobyl \_\_\_\_\_ exist. And those 200 tons — they also  
(12) exist."

1. Phrase (1) is closest in meaning to
  - a) the pool
  - b) the field
  - c) the mountain
  - d) the coffin
  
2. Which phrase goes in blank (2)?
  - a) Among his tasks
  - b) With his tasks
  - c) In his tasks
  - d) At his tasks
  
3. Which does pronoun (3) refer to?
  - a) the burned-out reactor
  - b) the sarcophagus
  - c) a panic
  - d) radiation
  
4. Which of the following goes in blank (4)?
  - a) This remains mass so highly radioactive
  - b) This radioactive mass remains so highly
  - c) This remains radioactive mass so highly
  - d) This mass remains so highly radioactive
  
5. Underlined part (5) is closest in meaning to
  - a) he buys a small house
  - b) he moves into a summer house
  - c) he retires
  - d) he pays off his debt

6. Which word or phrase is most appropriate for blank (6)?

- a) To be asked
- b) Asked
- c) To ask
- d) To have asked

7. Which phrase goes in blank (7)?

- a) an aim
- b) an end
- c) a purpose
- d) a view

8. Which word goes in blank (8)?

- a) When
- b) If
- c) While
- d) Like

9. Which number goes in blank (9)?

- a) 200
- b) 300
- c) 500
- d) 1,000

10. Word (10) is closest in meaning to

- a) consequences
- b) danger
- c) significance
- d) destruction



11. Which word or phrase is most appropriate for blank (11)?

- a) to dress
- b) dressing
- c) dressed
- d) to have dressed

12. Which of the following goes in blank (12)?

- a) do
- b) does
- c) do not
- d) does not

(B)

To visit Chernobyl today is to feel time passing.

\_\_\_\_\_, a little over a mile from the plant, where  
 (13) 50,000 people were given a few hours to evacuate, wallpaper has slipped down  
 under its own weight and paint has peeled away from apartment walls in fat  
 curls. Ice glazes the interiors. On a residential street, where Soviet housing  
blocks tower in every direction, it is quiet enough to hear the sound of  
 individual leaves brushing against branches.

\_\_\_\_\_. Anton Yukhimenko, who leads tours of the  
 (16) dead zone, said that wild boars and foxes had begun to take shelter in the  
 abandoned city, and \_\_\_\_\_ once, skirting a forest, he noticed a wolf  
 soundlessly loping along beside him. \_\_\_\_\_, its  
 supporting structures finally rotted out by 25 winters and summers.

"This is a city that has been captured by wilderness," he said. "I think in 20  
 years it will be one big forest."

\_\_\_\_\_, but a photographer and I made the journey  
 (20) last week with Chernobylinterinform, a division of Ukraine's Emergency  
 Ministry. At the checkpoint leading to the exclusion zone, there is a small  
 statue of the Virgin Mary and a placard listing the amounts of cesium and  
 strontium found in mushrooms, fish and wild game.

13. Which of the following goes in blank (13)?
- a) Not long ago, one of the city's major buildings, School No. 1, came crashing down
  - b) The wild world is gradually pressing its way in
  - c) The public is not allowed within 18 miles of Reactor No. 4
  - d) In Prip'yat, the plant workers' former bedroom community
14. Word (14) is closest in meaning to
- a) move out
  - b) come back
  - c) go forward
  - d) stay
15. Underlined part (15) is closest in meaning to
- a) Blocks of apartment houses built in Soviet times stand high all around.
  - b) There is a tower with groups of apartment buildings from Soviet times around it.
  - c) There is a Soviet housing tower with blocks of apartments around it.
  - d) You can see the building of the housing office from Soviet times stand high.
16. Which of the following goes in blank (16)?
- a) Not long ago, one of the city's major buildings, School No. 1, came crashing down
  - b) The wild world is gradually pressing its way in
  - c) The public is not allowed within 18 miles of Reactor No. 4
  - d) In Prip'yat, the plant workers' former bedroom community



17. What does phrase (17) mean in this context?
- a) It is an area where any living thing will instantly die.
  - b) It is an area where no living things are expected to be found.
  - c) It is the area where people are dying.
  - d) It is the area where dead people are buried.
18. Which word is most appropriate for blank (18)?
- a) before
  - b) like
  - c) as
  - d) that
19. Which of the following goes in blank (19)?
- a) Not long ago, one of the city's major buildings, School No. 1, came crashing down
  - b) The wild world is gradually pressing its way in
  - c) The public is not allowed within 18 miles of Reactor No. 4
  - d) In Pripjat, the plant workers' former bedroom community
20. Which of the following goes in blank (20)?
- a) Not long ago, one of the city's major buildings, School No. 1, came crashing down
  - b) The wild world is gradually pressing its way in
  - c) The public is not allowed within 18 miles of Reactor No. 4
  - d) In Pripjat, the plant workers' former bedroom community



21. What does phrase (21) mean?

- a) the area with some cesium and strontium
- b) the area where only Christians live
- c) the area with a sign warning of radiation
- d) the area that ordinary people are not allowed to enter

22. Phrase (22) is closest in meaning to

- a) wild grass
- b) wild insects
- c) wild animals
- d) wild flowers

(C)

At the six-mile radius begins the zone of <sup>(23)</sup> \_\_\_\_\_ resettlement. A stand of scorched-looking trees marks the so-called Red Forest, <sup>(24)</sup> after the color of dead pines that were bulldozed en masse and buried in trenches. As we approached the plant, the guides' radiation detector suddenly registered 1, 500 microrem — 50 times normal, they said, perhaps because we had been caught by a gust of wind.

At the center of <sup>(25)</sup> it all is the sarcophagus, its sides uneven and streaked with rust.

<sup>(26)</sup> \_\_\_\_\_ the early 1990s, Ukrainian officials have been working on a plan to replace it, finally launching a project called the New Safe Confinement, a 300-foot steel arch that will enclose and seal off the reactor for the next 100 years. Its cost is estimated at \$1.4 billion, to be paid largely by donor nations. The project, originally scheduled to be finished in 2005, has been <sup>(27)</sup> beset by delays and financing shortfalls.

<sup>(28)</sup> \_\_\_\_\_, the winter's snows are turning to rain, and rainwater leaking into the reactor <sup>(29)</sup> could have unpredictable results, said Stephan G. Robinson, a nuclear physicist who works for Green Cross Switzerland, an environmental organization.

"In winter, it will freeze," said Dr. Robinson, who was touring the site last week. "Water expands, and it breaks. Then maybe some of the inside collapses. A little cloud disappears through a crack. If there's rain, it means there is a way in. And if there is a way in, there is also a way out."

But even after the new arch is built, Mr. Krasikov <sup>(30)</sup> \_\_\_\_\_ that it will be

possible to end the long vigil over Reactor No. 4.

30

"Nobody knows \_\_\_\_\_ to do with \_\_\_\_\_ is inside," he said. "There will be enough work for my children and my grandchildren."

By evening, on our way out of the site, light is tilting through the pine forests, a peaceful enough scene except for the vivid yellow-and-orange triangles planted in the forest floor, warning of radiation. Workers stream out through a wall of man-sized Geiger counters, each one waiting for the machine to thunk and flash green \_\_\_\_\_ making his or her way out of the exclusion zone and down the battered highway.

34

Tomorrow, they will come back to Chernobyl Atomic Energy Station for \_\_\_\_\_ day of work.

35

23. Which word is most appropriate for blank 33?

- a) questionable
- b) correlative
- c) mandatory
- d) emotional

24. Which sentence contains the same use of 'after' as 24?

- a) The police are after the murderer.
- b) He ran after her with the book.
- c) Not long after that he resigned.
- d) Shannon was named after her grandmother.

25. What does pronoun (25) refer to?
- a) the zone
  - b) the Red Forest
  - c) the guides' radiation detector
  - d) a gust of wind
26. Which word is most appropriate for blank (26)?
- a) In
  - b) During
  - c) For
  - d) Since
27. Word (27) is closest in meaning to
- a) managed
  - b) unfledged
  - c) troubled
  - d) conducted
28. Which phrase is most appropriate for blank (28)?
- a) On the contrary
  - b) In the meantime
  - c) As a whole
  - d) In particular
29. Which sentence contains the same use of 'could' as (29)?
- a) I could hear what they were saying very clearly.
  - b) Could you lend me a hand?
  - c) Mary said that I could use her phone.
  - d) The question could be difficult for students.

30. Which word is most appropriate for blank (30)?

- a) suspects
- b) doubts
- c) thinks
- d) supposes

31. Word (31) is closest in meaning to

- a) warning
- b) survey
- c) watch
- d) analysis

32. Which word is most appropriate for blank (32)?

- a) what
- b) that
- c) who
- d) which

33. Which word is most appropriate for blank (33)?

- a) what
- b) that
- c) who
- d) which

34. Which word is most appropriate for blank (34)?

- a) after
- b) before
- c) if
- d) because

35. Which of the following goes in blank (35)?

- a) another
- b) other
- c) some
- d) some other

[ II ] 36~40 の英文のそれぞれについて、誤りを含んだ下線部の記号をマークしなさい。

36. Many people are concerned about the detrimental affects of too much cholesterol on their health, but, in fact, cholesterol is essential for bodily function.

(a) (b) (c) (d)

37. According to recently discovered archeological evidence, the migration of early hominids across the European and Asian landmasses may have taken longer it was previously thought.

(a) (b) (c) (d)

38. One of the common complaints heard about healthcare providers is that they lack a certain amount of empathy for them they are trying to cure.

(a) (b) (c) (d)

39. Just as Meiji Japan absorbed a lot of knowledge from the West, too did Western countries receive a lot of influence from Japan during the same period.

(a) (b) (c) (d)

40. While the company's president claimed that he was not responsible for the accident, he could not say for certainty who was to blame.

(a) (b) (c) (d)



〔Ⅲ〕 41～45 までの英文を完成させるために、下線部に入る最も適した語句を a～d の中から一つずつ選びなさい。

41. Cyanosis is a condition characterized by a bluish \_\_\_\_\_ of the skin.
- a. facade
  - b. vividness
  - c. dysfunction
  - d. discoloration
42. Obstructive lung diseases are the fourth leading \_\_\_\_\_ in the United States.
- a. source for death
  - b. reason of dying
  - c. cause of death
  - d. meaning for dying
43. People who suffer from this condition often experience \_\_\_\_\_.
- a. many circumstantial pitfalls
  - b. a wide range of symptoms
  - c. serious priorities of disorders
  - d. multiple cases of fluctuations
44. You must be careful when taking this medicine because it will make you feel \_\_\_\_\_.
- a. light headed
  - b. muddled up
  - c. heavy minded
  - d. clear sighted

45. An asthma attack can be \_\_\_\_\_ a variety of factors.

- a. caused with
- b. caught by
- c. made out of
- d. brought on by

[IV] 次の英文を読み、後に続く設問 46～60 にもっとも適する答えを選びなさい。

Fibromyalgia is described as inflammation of the fibrous or connective tissue of the body. Widespread muscle pain, fatigue, and multiple tender points characterize these conditions. Fibromyalgia is more common than previously thought, with as many as 3-6 % of the population affected by the disorder. Fibromyalgia is more prevalent in adults than children, with more women affected than men, particularly women of childbearing age.

The exact cause of fibromyalgia is not known. Sometimes it occurs in several members of a family, suggesting that it may be an inherited disorder. People with fibromyalgia are most likely to complain of three primary symptoms: muscle and joint pain, stiffness, and fatigue. Pain is the major symptom with aches, tenderness, and stiffness of multiple muscles, joints, and soft tissues. The pain also tends to move from one part of the body to another. It is most common in the neck, shoulders, chest, arms, legs, hips, and back. Although the pain is present most of the time, and may last for years, the severity of the pain changes and is dependent on individual patient perception.

Symptoms of fatigue may result from the individual's chronic pain coupled with anxiety about the problem and how to find relief. The inflammatory process also produces chemicals that are known to cause fatigue. Other common symptoms are tension headaches, difficulty swallowing, recurrent abdominal pain, diarrhea, and numbness or tingling of the extremities. Stress, anxiety, depression, or lack of sleep can increase symptoms. Intensity of symptoms is variable, ranging from gradual improvement to episodes of recurrent symptoms.

Diagnosis is difficult and frequently missed because symptoms of fibromyalgia are vague and generalized. Coexisting nerve and muscle disorders such as rheumatoid arthritis, spinal arthritis, or Lyme disease may

further complicate the diagnostic process. Presently, there are no tests available to specifically diagnose fibromyalgia. The diagnosis is usually made after **ruling out** other medical conditions with similar symptoms and using criteria physicians and researchers have defined.

In 1990, the American College of Rheumatology developed standards for fibromyalgia that health care practitioners can use to diagnose this condition. According to these standards, a person is thought to have fibromyalgia if he or she has widespread pain in combination with tenderness in at least 11 of the 18 sites known as trigger points. Trigger point sites include the base of the neck, along the backbone, in front of the hip and elbow, and at the rear of the knee and shoulder.

There is no known cure for fibromyalgia. Therefore, the goal of treatment is successful symptom management. Treatment usually requires a combination of therapies, exercise, proper rest, and diet. A patient's clear understanding of his or her role in the recovery process is **imperative** for successful management of this condition. In 2004, a study **demonstrated** that a drug called paroxetine HCl (Paxil CR) in controlled release tablet form significantly reduced symptoms in fibromyalgia patients. As of spring 2004, there were no FDA-approved treatments for fibromyalgia.

46. The word "tender" on line 2 is closest in meaning to

- a. vulnerable
- b. yielding
- c. gentle
- d. sensitive

47. The word "severity" on line 15 is closest in meaning to

- a. intensity
- b. danger
- c. heaviness
- d. length of time

48. The word "perception" on line 16 is closest in meaning to

- a. appreciation
- b. impression
- c. pain
- d. background

49. The phrase "coupled with" on line 18 is closest in meaning to

- a. accompanied by
- b. unified to
- c. formed from
- d. transformed into

50. The word "vague" on line 26 is closest in meaning to

- a. precise
- b. painful
- c. indistinct
- d. explicit

51. The phrase "ruling out" on line 30 is closest in meaning to

- a. measuring
- b. diagnosing
- c. treating
- d. eliminating



52. The word "imperative" on line 42 is closest in meaning to
- useful
  - urgent
  - immediate
  - crucial
53. The word "demonstrated" on line 43 is closest in meaning to
- exhibited
  - presented
  - showed
  - displayed
54. According to the text, fibromyalgia is
- diagnosed more often than before
  - not very common
  - quite common recently
  - more widespread than before
55. According to the text, which group is the most susceptible to fibromyalgia?
- male adults
  - female adults
  - male children
  - female children
56. What is suspected as a cause of fibromyalgia?
- It might be genetic.
  - It could be caused by Lyme disease.
  - It might be caused by severe muscle pain.
  - Its cause is completely unknown.

57. What is NOT mentioned as a symptom of fibromyalgia?
- a. neck pain
  - b. fatigue
  - c. lack of sleep
  - d. trouble swallowing
58. What other ailments can often increase the intensity of fibromyalgia's symptoms?
- a. arthritis
  - b. Lyme disease
  - c. diarrhea
  - d. depression
59. Why is the diagnosis of fibromyalgia difficult?
- a. The symptoms are often intermittent.
  - b. The possibility of other diseases has to be excluded first.
  - c. The patient must exhibit at least 11 symptoms.
  - d. The patient usually has other disorders at the same time.
60. The next paragraph in this article will probably discuss
- a. causes of fibromyalgia
  - b. diagnosis of fibromyalgia
  - c. specific treatments of fibromyalgia
  - d. symptoms of fibromyalgia

[V] 次の英文を読み、後に続く設問61～75にもっとも適する答えを選びなさい。

An antibody that recognizes all strains of influenza A could be a universal vaccine blueprint. Scientists have found an antibody that inactivates all influenza A subtypes. The antibody-binding site, tucked away in a **stable** region of the virus, might form the first lasting vaccine against flu.

The influenza virus constantly mutates, forcing scientists to play catch-up and produce a new seasonal vaccine each year. But Antonio Lanzavecchia, an author on the new study, says that observing the human immune response to influenza convinced him that it would be possible to design a vaccine that **prevails over** mutation.

"During the 2009 H1N1 pandemic, we found some people with antibodies to multiple viral subtypes," says Lanzavecchia. Antibodies, which are produced by white blood cells called B cells, bind to specific target sites, inactivating viruses or **flagging** them for destruction by other immune cells.

To test the cross-reactivity of influenza antibodies, the team screened B cells from eight human donors who had been infected with or immunized against different influenza strains. They took the B cells early in the immune response, when the repertoire of antibodies they **secrete** is at its most diverse.

After looking at 104,000 B cells, they hit the jackpot. "Our F16 antibody is the first one ever found that reacts to all 16 of the influenza A subtypes," says Lanzavecchia.

The finding follows other reports of broadly reactive influenza antibodies, but these could only bind to either group 1 viruses, such as the H1N1 'swine flu' and the avian influenza H5N1, or group 2 viruses, which include the seasonal H3N2 strains.

"Finding antibodies to all strains of one group was exciting," says immunologist Patrick Wilson from the University of Chicago, "but getting one to both groups is stunning."



The antibody itself is not a vaccine, but it could be an instruction manual for making one. The scientists say that a small protein **mimicking** the part of the virus bound by the F16 antibody might cajole the immune system into making similarly cross-reactive antibodies.

To **zero in on** the binding site, Lanzavecchia's team used X-ray crystallography. Their structure shows that the F16 antibody binds to the stem region of influenza's haemagglutinin protein. Most influenza antibodies bind to the more **accessible** head region of haemagglutinin.

Because much of the head region is not essential for viral function, it can mutate—allowing the virus to **evade** immune attack. By contrast, the stem region has a structure that is easily disrupted by mutations, so needs to stay stable.

"The stem is so well conserved between influenza subtypes that I would expect there to be high selective pressure against mutation in **this area**," says Wilson. He says there is a real chance a vaccine based on the haemagglutinin stem could work in humans. Previous work has shown that mice immunized with a small stem protein were protected against multiple influenza strains.

- 43 —
61. The word "stable" on line 3 is closest in meaning to
- a. unchanging
  - b. vulnerable
  - c. established
  - d. accessible
62. The term "prevails over" on line 9 is closest in meaning to
- a. covers
  - b. is absorbed by
  - c. responds to
  - d. overcomes

63. The word "flagging" on line 13 probably means
- a. planting
  - b. marking
  - c. damaging
  - d. binding
64. The word "secrete" on line 17 is closest in meaning to
- a. eliminate
  - b. multiply
  - c. discharge
  - d. consume
65. The word "mimicking" on line 29 is closest in meaning to
- a. imitating
  - b. bothering
  - c. attacking
  - d. countering
66. The term "zero in on" on line 32 is closest in meaning to
- a. focus on
  - b. reduce from
  - c. attach to
  - d. subtract from
67. The word "accessible" on line 35 is closest in meaning to
- a. influenced
  - b. vulnerable
  - c. influential
  - d. reachable

68. The word "evade" on line 37 is closest in meaning to
- disrupt
  - avoid
  - notice
  - protect
69. The term "this area" on line 41 probably refers to
- the stem region
  - the head region
  - the antibodies
  - the binding sites
70. Why did Antonio Lanzavecchia first believe that it would be possible to make a lasting vaccine against the flu virus?
- He discovered that viruses constantly mutate.
  - He saw that some people lacked an immune response.
  - He noticed that some people had antibodies that protected against several strains of the virus.
  - He screened eight subjects who had produced cross-reactive antibodies.
71. Why did the scientists test B cells early in the immune response phase?
- B cells produce the strongest antibodies early in the immune response.
  - B cells produced later in the immune response will not react to enough virus subgroups to be useful.
  - Most human donors produce B cells only at the beginning of the immune response phase.
  - B cells early in the immune response produce the greatest variety of antibodies.

72. How is the new FI6 antibody different from previous antibodies?
- It attaches to both group 1 and group 2 flu viruses.
  - It can combine virus groups 1 and 2 together.
  - It is the first antibody that affects H3N2 flu strains.
  - It is the first time that scientists were able to find all strains of viruses together.
73. How might the FI6 antibody be useful for combating the flu virus?
- Scientists can use the FI6 antibody to create more haemagglutinin proteins.
  - It can help scientists make a vaccine based on the binding site of the flu virus.
  - The FI6 antibody can be used as a vaccine.
  - The FI6 antibody zeroes in on the binding site and activates the virus.
74. How does the FI6 antibody attach to the flu virus?
- It attaches to the stem of the haemagglutinin protein.
  - It attaches to the head of the haemagglutinin protein.
  - It connects to both the head and the stem regions of the haemagglutinin protein.
  - It binds to the flu virus while it is mutating.
75. Why doesn't the stem region of the flu virus mutate?
- It conserves itself against influenza antibodies.
  - It is not accessible enough for mutations to occur.
  - It will be damaged if it mutates.
  - It is not essential for viral function.