

Gunakan PETUNJUK A untuk menjawab soal nomor 31 sampai dengan nomor 45!

Text 1

The first ancient DNA sequences to be gathered - 3400 base pairs from a 2400-year-old Egyptian mummy – were a proof of principle. A full genome sequence would be far more informative – perhaps explaining what killed King Tut, for instance. At present, Inuk's is the only published ancient human genome. However, a team led by Svante Paabo and Ed Green at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, will soon publish the complete genome sequence combined together from several Neanderthals, from between 38,000 and 70,000 years ago.

Neanderthals are not the only hominids whose genomes could be sequenced, says Willerslev. *Homo erectus*, a species that emerged in Africa about 2 million years ago, survived in east Asia until less than 100,000 years ago. If well-preserved bones can be found, a genome might be possible, Willerslev says. Willerslev's laboratory has just received bones from Spain belonging to *Homo heidelbergensis*, the predecessor to Neanderthals. "We are basically starting on it right now," he says. If these genomes ever materialize - and that's a big if - they could lead to a better understanding of how different hominid species are related, and when and where they branched off. If the genetic information is good enough, it may tell us something about the nature of past peoples – possibly even what they looked like. Ancient human genomes could give us insights into the evolution of our own species, explaining when genes involved in disease and higher cognitive skills emerged.

But DNA is not forever. As it ages, its long strands shred into ever smaller pieces. Eventually they become too small to reassemble, and all information is lost. "There seems to be a time horizon of 100,000 years or so under most preservation conditions during which intact DNA survives," Green says. Stephan Schuster at Pennsylvania State University, who led the woolly mammoth genome project, thinks ancient genomics is already plateauing. Large chunks of Inuk's genome couldn't be filled in because his DNA had crumbled into small pieces. "We will face an uphill battle in trying to apply this to a large number of human remains," he says.

31. With reference to the whole text, the writer mainly deals with the topic on ...
- (A) the use of ancient DNA in anthropology.
 - (B) the past life of the Neanderthals.
 - (C) the role of DNA in fossil studies.
 - (D) DNA research on the Neanderthals.
 - (E) DNA engineering in the Max Planck Institute.
32. The writer is mainly of the opinion that tracing ancient humans' life using their DNA ...
- (A) is technologically possible through it has natural challenges.
 - (B) promises a new horizon of understanding past illnesses.
 - (C) is a new breakthrough in modern anthropological studies.
 - (D) provides a better picture of old peoples' DNA structures.
 - (E) requiring a longer chain of complete DNA sequences.
33. The physical look of hominid species can even be reconstructed using the DNA technology under the condition that ...
- (A) the DNA forms a solid fossil in a good shape.
 - (B) the genetic information in the DNA is high-quality.
 - (C) the DNA had not been smaller in chunks.
 - (D) the sequence of the DNA pieces is systematic.
 - (E) the DNA sequences can be easily reassembled.
34. Based on the text, the following would be the kind of information that could be revealed

about ancient people through modern genome analyses, EXCEPT ...

- (A) typical illnesses.
- (B) thinking potentials.
- (C) evolutionary phases.
- (D) migratory directions.
- (E) nutritional patterns.

empirically validated, if contemporary DNA analyses are supported by the following factors, EXCEPT ...

- (A) more discovery of early human remains.
- (B) modern genomic laboratories.
- (C) expertise associated with ancient DNA.
- (D) better management in fossil excavation.
- (E) availability of complete ancient human genomes.

35. Based on the text, soon Darwin's human evolution theory will be most likely

Text 2

Further research, conducted by Dean Mobbs, then at Stanford University in California, uncovered a second point of activity in the brain's limbic system - associated with dopamine release and reward processing - which may explain the pleasure felt once you "get" the joke. Examining one particular part of the limbic system-the ventral striatum-was especially revealing, as its level of activity corresponded with the perceived funniness of a joke. "It's the same region that is involved in many different types of reward, from drugs, to sex and our favourite music," says Mobbs, now at the MRC Cognition and Brain Sciences Unit in Cambridge, UK. "Humour thus taps into basic rewards systems that are important to our survival."

Yet humour is a far more multifaceted process than primeval pleasures like food. In addition to the two core processes of getting the joke and feeling good about it, jokes also activate regions of the frontal and cingulate cortex, which are linked with association formation, learning and decision-making. The team also found heightened activity in the anterior cingulate cortex and the frontoinsula cortex - regions that are only present in humans and, in a less developed form, great apes. Indeed, the fact that these regions are involved suggests that humour is an advanced ability which may have only evolved in early humans, says Watson, who conducted the research.

No two brains are the same, however, and how these differences are reflected in our sense of humour is the subject of much research. Men and women, for example, seem to process jokes slightly differently. Although both sexes laugh at roughly the same number of jokes, women show greater activity in the left prefrontal cortex than men. "This suggests a greater degree of executive processing and language-based decoding," says Mobbs. As a result, women take significantly much longer than men to decide whether they find something funny, though that does not seem to spoil their enjoyment of the joke. Indeed, women show a greater response in the limbic system than men, suggesting they feel a greater sense of reward.

36. Which of the following statements in the text above contains an opinion?

- (A) Basic rewards systems associated with humor are vital to human continued existence.
- (B) The anterior cingulate cortex and the frontoinsula cortex regions belong to humans.
- (C) Women's limbic system reacts more responsively than men's does to a humor stimulus.
- (D) Different types of reward like drugs and our favorite music are linked to the ventral striatum.
- (E) Joke funniness relates with the amount of dopamine release and reward processing.

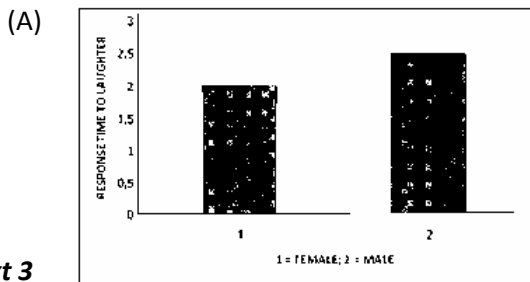
37. The part that comes before the text would most likely describe ...

- (A) Mobbs' same study conducted on humans' brain limbic system sensitiveness.
- (B) another activity found in the brain's limbic system of Mobbs' different study.
- (C) a researcher's study other than Mobbs' on another activity found in the brain limbic system.
- (D) the importance of conducting a study on responses by humans' brain limbic system.
- (E) the timely reaction of humans' brain limbic system to perception on humor.

38. The scientists see that the internal mechanisms in a human's brain related with enjoyment in having good meals are ...
- (A) more explainable than those in perceiving a joke.
 - (B) less observable than pleasures in getting a prize.
 - (C) as quick as those in seeing funniness of a joke.
 - (D) more complex than those in perceiving a joke.
 - (E) less clear than those of enjoyment in winning a prize.

39. Humor is worth in these four facets, EXCEPT ...
- (A) experiencing the sense of the humor itself.
 - (B) having good feelings about the humor.
 - (C) activating parts of the frontal and cingulate cortex.
 - (D) enhancing activities in two humans' cortex areas.
 - (E) triggering more dynamic responses in all cells.

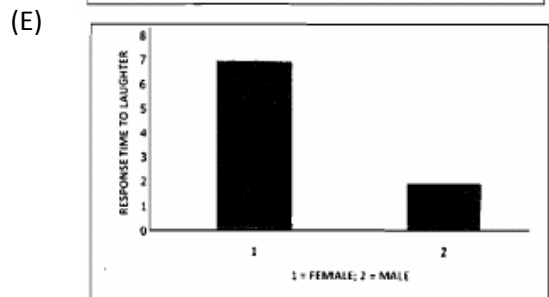
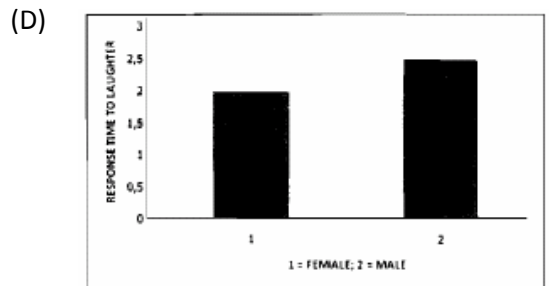
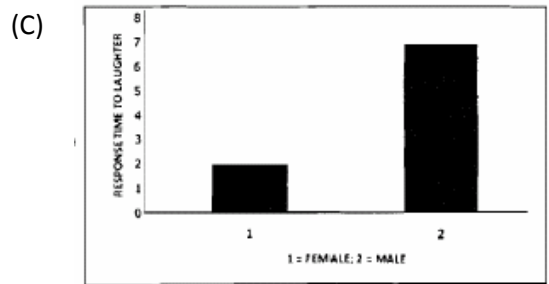
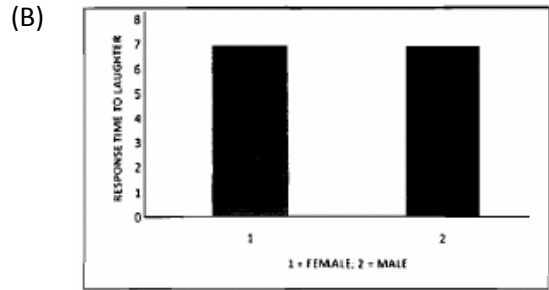
40. Which chart below most likely indicates the response time needed by women and men to laugh on a joke?



Text 3

John Apollos is losing weight the old-fashioned way – by eating less. A whole lot less. As a volunteer in the two-year Comprehensive Assessment of Long-Term Effects of Reducing Intake of Energy (CALERIE) study at Tufts University in Boston, Apollos has lowered his daily calorie intake 25% over the past eight months. The fat, not surprisingly, has melted away; the 52-year-old physical trainer has lost more than 11 kg since the study began 5 and is down to his high school weight.

Yet, that's not the real reason Apollos and the other participants in the program are eating only three-quarters of what they used to. The researchers running the multicenter CALERIE study are trying to determine whether restricting food intake can slow the aging process and extend our life span. "I feel better and lighter and healthier," says Apollos. "But if it could help you live longer, that would be pretty amazing." The idea is 10 counterintuitive: If we eat to live, how can starving ourselves add years to our lives? Yet, decades of calorie-restriction studies involving organisms ranging from microscopic yeast to rats have shown just that, extending the life spans of the semi starved as much as 50%. Last July a long-term study led by researchers at the University of Wisconsin nudged the implications of this a bit closer to our species, finding that calorie restriction



seemed to extend the lives of humanlike rhesus monkeys as well. The hungry primates fell victim to diabetes, heart and brain disease and cancer much less frequently than their well-fed counterparts did.

However, there may be more than just the absence of disease operating here. Anytime you go on a diet, after all, you stand a good chance of lowering your blood pressure, cholesterol level and risk of diabetes and other health woes. All that can translate into extra years. With calorie restriction, usually defined as a diet with 25% to 30% fewer calories than normal but still containing essential nutrients, something else appears to be at work to extend longevity.

41. Which of the following ideas from the text above contains an opinion?

- (A) Restricting calorie consumption for longevity.
- (B) Absence of disease due to controlling calorie intake.
- (C) Apollo's feeling better and lighter and healthier.
- (D) The melting of body fat by having less foods.
- (E) Apollos' restricting his daily calorie consumption.

45. As mentioned in the text, the study held at the multicenter CALERIE, Tufts University in Boston has employed a research method that seems to be ...

- (A) complicated.
- (B) temporary.
- (C) ultramodern.
- (D) conventional.
- (E) methodological.

42. The study aims at evaluating the impact of calorie restriction on ...

- (A) minimizing the risks of getting serious illnesses.
- (B) enhancing the feeling of happiness and health.
- (C) reducing the amount of extreme fat accumulation.
- (D) controlling blood pressure and cholesterol levels.
- (E) aging-process slowing and life span extension.

43. If the information in the text is true, the risks that someone whose calorie consumption is controlled up to the portion suggested in the study suffers from bone cancer are ...

- (A) substantial.
- (B) negligible.
- (C) unpredictable.
- (D) serious.
- (E) indefinite.

44. The following is among other things the empirical impacts of the study mentioned in the text, EXCEPT ...

- (A) slender body shape.
- (B) long life expectancy.
- (C) good healthiness.
- (D) emotion stability.
- (E) good feelings.