**PART III HUMAN EVOLUTION AND ITS CONSEQUENCES**

Chapter 5

1. What is the difference between a hominid and a hominin?
2. Hominids are just members of the Homo genus, Hominins include Homo sapiens, chimps and gorillas and their ancestors back to the common ancestor of these three species
3. Hominins are Homo sapiens only, Hominids include all member of the Homo genus
4. Hominids are humans and their ancestors up to the branching away from chimps. Hominins are Humans, chimps and gorillas
5. Hominins are Homo sapiens and their ancestors back to the branch point connecting with the chimpanzee lineage. Hominids are modern humans, chimps, gorillas and their ancestors back to the common ancestor of these groups.
6. Hominids are Homo sapiens and their ancestors back to the branch point away from the chimpanzee lineage. Hominins are modern humans, chimps, gorillas and their ancestors back to the common ancestor of these groups.
7. Which sequence is most accurate in terms of species through time starting with the most distant past?
8. Australopithecines, *Homo habilis, Homo erectus, Homo sapiens*
9. *Homo erectus*, Neanderthal man, *Homo habilis, Homo sapiens*
10. Homo sapiens, Homo neanderthalis, Homo erectus, Homo ergaster
11. *Homo erectus, Homo habilis*, Australopithecines, *Homo sapiens*
12. *Homo erectus, Homo habilis*, *Homo neanderthalensis*, Australopithecines, *Homo sapiens*
13. Which statement best describes our relationship to chimps?
14. We evolved from chimps about 7 million years ago
15. Chimps evolved from *Homo erectus*
16. The brain of a chimp is 98.6% similar to that of a human
17. Both chimps and humans have symbolic culture
18. We last shared a common ancestor with the chimps about 7 million years ago
19. Which sentence best describes recent human evolution?
20. Homo sapiens appeared about 7 million years ago and genetically the species hasn’t changed much since
21. The sequence of evolution was : *Homo erectus*, Australopithecines, *Homo habilis,* Neanderthal man and then *Homo sapiens*
22. *Homo sapiens* appeared about 180,000 years ago
23. Culture began about 10,000 years ago with the Neolithic revolution
24. Stone tools appeared about 35,000 years ago
25. Which statement best describes the “multiregional model” the evolution of *Homo sapiens ?*
26. *Homo sapiens* evolved in Africa and then spread out to many regions of the globe
27. *Homo sapiens* evolved from Homo habilis in many parts of the world simultaneously
28. *Homo erectus* species moved out of Africa and then gradually(with cross breeding) evolved to give many different populations of *Homo sapiens* in many regions of the world.
29. *Homo sapiens* colonized the globe in the following sequence: Africa-Asia-Europe – New World
30. The autralopithecines moved out of Africa to give rise to *Homo erectus* and then to *Homo sapiens*

8. Which statement best describes the “Out of Africa” model of human evolution?

1. *Homo sapiens* originated in Africa about 180,000 years ago and spread out across the globe displacing other hominin species
2. *Homo erectus* interbred with *Homo neanderthalis* in Africa and this new species spread out of Africa to become Homo sapiens
3. *Homo neanderthalis* originated in Europe but died out leaving *Homo sapiens* that then moved across the globe
4. *Homo erectus* moved out of Africa to give rise to Homo sapiens in Europe and Asia.
5. *Homo habilis* moved out of Africa to give rise to *erectus* and then *sapiens* all over the world.

9. Why is *Homo floresiensis* such an enigma?

1. It appears too late in the paleographic record and should have existed alongside Australopithecines
2. Only male specimens have been found
3. It is a small hominin with a low EQ yet tools have been found near their sites
4. It died out about 200,000 years ago yet is very much like *Homo sapiens*
5. It shows eveidnec of tool use long befiore *Homo habilis.*

10. Which sentence best describes the significance of human female exogamy?

1. Mitochondrial DNA evidence shows that all human females can be traced back to Mitochondrial eve
2. There is less variation in local mitochondrial DNA than Y chromosome DNA showing that women have tended to marry out of their natal group more frequently than men.
3. There is more variation on the X chromosome than the Y chromosome for local groups – suggesting that women have migrated further in history.
4. There is greater local variation in mitochondrial DNA than Y chromosome DNA which supports the idea of women (more so than men) moving out of their natal group to marry and disperse.
5. Mitochondrial DNA is much more variable in Africa than other continents suggesting a female exodus from Africa about 150,000 years ago

11. Which sentence best describes the changing sexual dimorphism of the Hominins and its significance?

1. Sexual dimorphism has gradually reduced over the last 4 million years and this is evidence for a drift away from polygyny to more monogamous mating behaviour
2. Sexual dimorphism has increased since *Homo habilis* suggesting that human females are gradually behaving more polyandrously
3. Sexual dimorphism has gradually reduced since *Homo erectus* suggesting that males now behave more polygynously than in the past
4. Sexual dimorphism has remained fairly constant since the time of the Australopithecines suggesting that this is a species defining characteristic.
5. Increases in sexual dimorphism since the Australopithecines is evidence for both concealed ovulation and covert polyandry

12. Which sentence best describes current understanding of *Homo neanderthalenis*.

1. Fossils were found in the Neander valley in Africa showing that this species lived there about 80,000 years ago and interbred with Homo sapiens before the great Africa diaspora
2. Neanderthal man was a precursor to *Homo erectus* and Neanderthal genes can still be found in *Homo sapiens* since we evolved from *Homo erectus*.
3. Neanderthal humans died out about 35,000 years ago in Europe. There is some evidence of interbreeding with non-African populations of *Homo sapiens*
4. *Homo neanderthalenis* is a member of the Homo genus displayed by *Homo erectus* when the latter moved out of Africa about 1.5 million years ago
5. *Homo neanderthalenis* is a puzzle since it died out only about 18,000 years ago and had a very diminutive stature
6. Which statement **best describes** currnet thinking about the origins of *Homo sapiens* and how they spread across the globe?
7. *Homo sapiens* originated in Africa about 150,000 years ago and then spread out across the globe about 72,000 years ago displacing other hominin species
8. *Homo erectus* interbred with *Homo neanderthalis* in Africa and this new species spread out of Africa to become Homo sapiens
9. *Homo neanderthalis* originated in Europe but died out leaving their descendants ,*Homo sapiens,* that then moved across the globe
10. *Homo erectus* moved out of Africa to give rise to *Homo sapiens* in Europe and Asia.
11. *Homo habilis* moved out of Africa to give rise to *erectus* and then *sapiens* all over the world
12. **Which sentence best describes** the system of classification introduced by Carl Linnaeus
13. Linnaeus introduced his system to show evolutionary relationships between phyla and taxa
14. The Linnaean system is hierarchical but Linnaeus did not intend to describe lines of evolutionary descent
15. The Linnaean system, is binomial meaning that each creature is given a species name followed by a kingdom name e.g. *Vulpes* *Animalia* (fox)
16. It is a hierarchical system in which Linnaeus took pains to delineate the three domains and six kingdoms of life showing how all life descended from a common ancestor
17. Linnaeus was inspired by Mendel and Darwin to classify life according to the ideas of these two great biologists

Chapter 6.

1. Here are some statements about the implications of a large human brain
   1. The human brain consumes about 2% of resting metabolic energy
   2. The human brain consumes about 22% of resting metabolic energy
   3. The human brain is so large that brain growth continues after birth
   4. The strong male- female and male- offspring bonds in humans (compared to other primates) are likely to be a reflection of the vulnerability of infant humans and their need for care from both parents
   5. The EQ for humans is about 10.5
   6. Scholars are now agreed that it was the use of tools that prompted the huge increase in brain size of humans through evolutionary time

Which of the statements are most correct?

1. a) and c)
2. b), c), d)
3. a),d), e), f)
4. a) and d)
5. b) and f)
6. Which sentence best decribes the concept of Encepahlisation quotient (EQ)?
7. The degree to which the gut of an organism has shrunk relative to brain size
8. The size of brain divided by size of body rasied to the allometric power function
9. The density of neurons in the brain per cm3
10. A measure of the actual brain size divided by the brain size expecetd of an organism of that size from its allometric line
11. A measure of negative somatisation as a deviation of of the allometric line
12. Which sentence best decsribes the concept of Machiavellian intelligence
13. A measure of intelligence that stresses social interactions and the advantages of using deceipt and cunning
14. Intelligence that has been increased through the demands of a complex diet
15. First order theory of mind
16. Intelligence that Machiavelli proposed was increased by ballistics and warfare
17. A model of the brain that suggests it can be thought of as three parts.
18. The table below shows some data on the mass of organs of the human body and their expected mass if humans were a typical primate.

Which of the following statements **are consistent** with this data?

1. The human brain is about 3 times larger than expected
2. The human liver is smaller than expected because humans evolved to eat more nutrient-dense foods
3. The small size of the human gut is consistent with the evolution of humans towards a diet richer in nutrients than our ancestors 4 million years ago.
4. This data is consistent with the “expensive tissue hypothesis” of Aiello and Wheeler that a reduction in the metabolic demands of the gut facilitated brain expansion
5. This data proves the evolution of lactose tolerance in pastoral communities

Answer

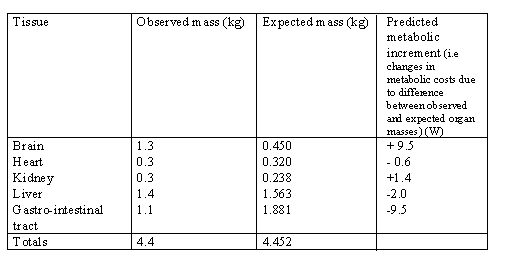
(a) (i), (iii) and (iv)

(b) (v) only

(c) (ii) (iv) and (v)

(d) (i), (ii) and (iv)

(e) (i), (ii), (iii), and (iv)



1. If the EQ of humans is about 4.7 and our brains weight 1250 g with a typical body weight of 65 kg, what would be the brain weight of a typical mammal of 65 kg body mass?

A About 13.8 kg

B About 47 g

C About 19.2 g.

D About 266g

E About 52 g

1. The predicted weight of the brain of a mammal is given by

BW= 0.058 (W)0.76; where BW = brain weight in grammes, and W = body weight in grammes. A new species in the Homo genus is discovered with an estimated body weight of 50 kg and brain weight of 0.8 kg. What is the encephalisation quotient of this species?

1. 5.4
2. 3.7
3. 2.7
4. 1.0
5. 6.6
6. Which sentence best describes the study of allometry
7. It is the study of allopatric speciation and the calculation of timescales for species divergenmce
8. It is a measure of the number of alleles on a chromosome
9. It is the study of how brain weight rises in direct proportion to body weight
10. It is the measurement of brain growth in the evolutionary lineage of a species from its first branching point to the present day
11. It is the study of how one feature of a body scales mathematically with another (often in non-linear ways) for different body sizes