

Philosophical Entanglements with Human Physiology

Philosophy Of Mind And Science · Answer Key · 17 Questions

1. Which neurochemical is primarily associated with reward pathways and is implicated in philosophical discussions on hedonism and desire, with a typical resting plasma concentration in healthy adults ranging around 10-20 ng/L?

- A) Serotonin (5-HT)
- B) Dopamine**
- C) Norepinephrine
- D) Acetylcholine

2. The concept of qualia, often debated in philosophy of mind, refers to subjective conscious experiences. Regarding the biological basis, the average number of photoreceptor cells (rods and cones) in a single human retina is approximately:

- A) 500,000
- B) 5 million
- C) 120 million**
- D) 1 billion

3. In discussions of embodiment and the extended mind, the physical substrate of consciousness is crucial. The human brain contains approximately how many neurons, forming the basis for complex cognitive functions?

- A) 10 million
- B) 100 million
- C) 86 billion**
- D) 1 trillion

4. The biological mechanisms underlying memory formation and retrieval are central to understanding personal identity. The typical lifespan of a red blood cell, which carries oxygen essential for neuronal function, is about:

- A) 10 days
- B) 30 days
- C) 120 days**
- D) 1 year

5. Philosophical arguments concerning free will often touch upon determinism and causality. The average adult human heart beats approximately how many times per day, showcasing a fundamental biological rhythm?

- A) 10,000
- B) 50,000
- C) 100,000**
- D) 500,000

6. The gut-brain axis is a significant area of research, influencing mood and cognition. The human gastrointestinal tract harbors trillions of microorganisms, with the number of distinct bacterial species estimated to be in the range of:

- A) 100-500
- B) 1,000-2,000
- C) 5,000-10,000**
- D) 50,000+

7. Epigenetic modifications are increasingly recognized as influencing health and potentially even heritable traits, posing questions for deterministic views of nature. The human genome comprises approximately how many base pairs?

- A) 3 million
- B) 30 million
- C) 3 billion**
- D) 3 trillion

8. Pain perception and its philosophical implications (e.g., the problem of other minds) involve complex neural pathways. The average human adult has a total blood volume of approximately how many liters?

- A) 1-2
- B) 3-5**
- C) 7-8
- D) 10-15

9. The role of glial cells, often overlooked in favor of neurons, is gaining philosophical attention regarding their contribution to consciousness. The ratio of glial cells to neurons in the human brain is approximately:

- A) 1:1**
- B) 1:10
- C) 10:1
- D) 100:1

10. Sleep and dreaming are fertile grounds for philosophical inquiry into the nature of reality and self. The average human adult spends approximately what percentage of their life asleep?

- A) 10-15%
- B) 20-25%
- C) 30-35%**
- D) 40-50%

11. The placebo effect, a well-documented phenomenon, challenges purely materialist explanations of health and illness. The primary sugar used for cellular energy in the human body is:

- A) Fructose
- B) Galactose
- C) Glucose**
- D) Sucrose

12. The philosophical problem of consciousness (the 'hard problem') is intrinsically linked to neural processes. The myelin sheath, which insulates nerve fibers and speeds up signal transmission, is composed primarily of:

- A) Protein and RNA
- B) Lipids and proteins**
- C) Carbohydrates and water
- D) Minerals and salts

13. Philosophical discussions on intentionality often involve representations. The density of mechanoreceptors in the fingertips, crucial for tactile perception and interaction with the environment, is highest in:

- A) The palm
- B) The dorsal side of the hand
- C) The fingertip pads**
- D) The wrist

14. The influence of hormones on mood and decision-making raises questions about agency. The primary hormone responsible for regulating blood sugar levels and directly opposing insulin is:

- A) Cortisol
- B) Adrenaline
- C) Glucagon**
- D) Thyroxine

15. The concept of homeostasis, maintaining a stable internal environment, is fundamental to biological existence and can be philosophically viewed as a form of self-preservation. The average normal body temperature for a human is approximately:

- A) 35.5°C (95.9°F)
- B) 36.5°C (97.7°F)
- C) 37.0°C (98.6°F)**
- D) 38.0°C (100.4°F)

16. Philosophical debates on the nature of sensation involve understanding sensory transduction. The organ responsible for detecting sound waves and converting them into neural signals is the:

- A) Eustachian tube
- B) Cochlea**
- C) Pinna
- D) Tympanic membrane

17. The philosophical implications of aging and mortality are deeply intertwined with biological processes. The average human lung capacity is approximately how many liters in a healthy adult male?

- A) 2-3
- B) 4-5
- C) 6-7**
- D) 8-10