

Chapter 2

1. The search for the “engram” was the search for

- a) the physical location of retrieval operations in the brain.
- b) the processes that link language and memory.
- *c) the physical location in the brain of specific memories.
- d) the actual weight of the brain in kilograms.

2. In Quiroga et al.’s (2005) neuroimaging study, it was found that

- a) cells in the parietal cortex only responded when the word “Engram” was repeated.
- b) cells in the visual cortex responded but only when complex stimuli were deleted from the scene.
- *c) cells in the visual cortex responded to a particular “person” regardless of whether that person was presented as photograph or as a written name.
- d) cells in the parietal cortex responded to the repetition of episodic memories.

3. Traumatic brain injuries

- *a) occur when the brain violently and suddenly hits a hard object, such as an automobile windshield.
- b) occur when the brain experiences a temporary lack of blood flow.
- c) occur when we think too hard.
- d) occur when the brain cannot handle its cognitive workload.

4. What are neurons?

- *a) They are biological cells that specialize in the transmission and retention of information.
- b) They are multi-cellular parts of the brain responsible for encoding engrams.
- c) They are the cells that cover axons and protect the flow of information in the nervous system.
- d) They are viruses that disrupt the workings of memory and can be classified as TBIs.

5. Which two features makes neurons unique biological cells?

- a) soma and nucleus
- b) protoplasm and ribosomes
- c) mitochondria and nucleus
- *d) axons and dendrites

6. Which part of the neuron receives information from other neurons?

- a) axons
- b) nucleus
- *c) dendrites
- d) myelin

7. Which part of the neuron transmits information to other neurons?

- *a) axons
- b) nucleus
- c) dendrites
- d) myelin

8. In between the axon of one neuron and the dendrite of the next is a small space, in which neurotransmitters are released. This space is known as the

- *a) synapse
- b) fovea
- c) somatic cleft
- d) terminal button

9. Transmission of information along the axon takes place via a electrochemical process called the

- a) synaptic flow
- b) neuronal junction
- c) dendritic gap
- *d) action potential

10. The disease, Multiple Sclerosis (MS), is caused by

- a) the loss of neurons in the spinal cord.
- *b) the loss of myelin sheaths, which protect the axon.
- c) the loss of neurotransmitters in the substantia nigra of the brain.
- d) the loss of mirror neurons in the frontal lobe.

11. Neurotransmitters are proteins that

- a) cause neurons to wither and die.
- *b) bridge the synapse and induce or inhibit an electric current in a dendrite.
- c) react to neuronal firing, thereby causing conscious experience.
- d) replace aging neurons in older adults.

12. In Parkinson's Disease,

- a) Myelin sheaths erode, causing erratic transmission of information to the muscles.
- *b) The substantia nigra no longer produces an adequate supply of the neurotransmitter, dopamine.
- c) Axon potential occurs at lower thresholds, thus triggering the characteristic shaking.
- d) Dendrite degenerate, leaving neuronal transmission at dangerously low levels.

13. Many legal and illegal drugs (such as nicotine and LSD) affect the nervous system by

- a) destroying neurons.
- *b) altering the amount of neurotransmitters in the synapse.
- c) making the synapse itself smaller.
- d) causing axons to swell, thus speeding transmission.

14. Studies have shown that songbirds with damage to the left hippocampus

- a) no longer remember migratory routes.
- *b) no longer learn species-typical songs.
- c) lose their ability to spatially navigate by the earth's magnetic fields.
- d) show immediate compensation in the right hemisphere.

15. Although most modern neuroimaging research shows that there is much cross-talk and sharing of function across the hemispheres of the brain, it has been generally found that

- *a) the left hemisphere specializes in language, whereas the right hemisphere specializes in spatial cognition.
- b) neither hemisphere is responsible for memory; that is solely the domain of the limbic system.
- c) the corpus callosum only transmits a small amount of information across the hemispheric boundary.
- d) the right hemisphere is largely dormant; it is only used when the left hemisphere is damaged.

16. Which of the following are NOT functions of the cerebral cortex?

- a) language and memory.
- b) creativity and emotion.
- c) attention and inhibition of impulses.
- *d) regulation of sleep and breathing.

17. The function of the hippocampus in memory processing is thought to be

- a) the storage of old episodic memories.
- *b) the encoding of new long-term memories.
- c) source monitoring.
- d) storage of engrams.

18. The hippocampus and the amygdala are part of which brain system?

- a) The reticular formation
- b) The diencephalon system
- c) The Raphe complex
- *d) The limbic system

19. Damage to the hippocampus is associated with which problem?

- a) sleep deprivation
- b) hyperamnesia
- c) a lack of conscious awareness
- *d) amnesia

20. In birds, the hippocampus is associated with what function?

- a) control of flight
- b) thermoregulation
- *c) memory
- d) problem-solving

21. The amygdala is most associated with what aspect of human behavior?

- *a) emotion
- b) sex
- c) hunger and thirst
- d) higher cognition

22. The diencephalon is critical to memory because

- a) memories are stored in this area.
- *b) it connects the limbic system to areas of the brain in the pre-frontal lobe.
- c) visual information is largely processed in the diencephalon.
- d) its neurons are sheathed in neurotransmitters more than other areas.

23. The names of the four lobes of the cerebral cortex are

- a) anterior, posterior, exterior, and inferior.
- *b) frontal, parietal, temporal, and occipital
- c) dorsal, lateral, littoral, and limbic.
- d) neuronal, reticular, somatosensory, and embryonic.

24. The role of the occipital lobe is

- a) audition.
- b) the senses of smell, taste, and touch.
- c) creativity and music.
- *d) vision.

25. Among the functions of the parietal lobe are

- a) regulation of hunger and thirst.
- *b) attention and the somatosensory system.
- c) control of complex movement.
- d) understanding language.

26. The part of the temporal lobes involved in memory are called the

- a) parietal temporal junction.
- b) the pre-temporal lobe.
- *c) the medial temporal lobe.
- d) the mammillary bodies.

27. Damage to the medial temporal lobes can cause

- *a) amnesia
- b) agnosia
- c) amusia
- d) prosopagnosia

28. The pre-frontal lobes appear to be important in which memory functions?

- a) encoding new information
- b) storing old information
- *c) metamemory and self-regulation
- d) adding visual imagery to verbal memories

29. Source memory is mostly a function of the

- *a) pre-frontal lobes.
- b) temporal lobes.
- c) limbic system.
- d) hippocampus.

30. Novel items in the Von Restorff effect show up as bigger p300 waves using

- a) fMRI
- b) PET
- *c) EEG
- d) DOGs

31. EEG measures the

- a) magnetic activity in the brain.
- b) small vibrations along axons.
- *c) the sum total of electrical activity in the brain, as measured on the scalp.
- d) only activity in the cerebral cortex and not activity in the limbic system.

32. Which of the neuroimaging techniques requires a small amount of radioactivity to be injected into the bloodstream?

- *a) PET
- b) fMRI
- c) MRI
- d) EEG

33. Cabeza and Nyberg (1997) showed, using PET technology, that

- a) PET and MRI are functionally equivalent when looking at memory responses.
- *b) the right pre-frontal lobe was involved in retrieval from memory.
- c) areas of the hippocampus are activated as soon as person experiences the PET scan.
- d) the left occipital lobe is involved in encoding into semantic memory.

34. The term MRI means to ____ imaging and the term fMRI refers to _____ imaging.

- *a) structural; functional
- b) hypothetical; free
- c) visual; focused
- d) neurological; fantastic

35. Koshino et al (2008), using fMRI found that autistic individuals, relative to controls,

- a) were equivalent in episodic memory performance.
- b) showed no activity at all in the left prefrontal lobe.
- c) showed higher levels of activation throughout the frontal lobes.
- *d) showed lower levels of activation in areas of the left prefrontal lobe, known to be involved in working memory.

36. The patient HM suffered anterograde amnesia after removal of

- a) his occipital lobe.
- b) parts of his frontal lobe.
- c) the retina of his left eye.
- *d) both hippocampi.

37. Retrograde amnesia refers to

- a) difficulty learning new events.
- *b) difficulty retrieving old events.
- c) difficulty retrieving words in sentences.
- d) an enhanced ability to retrieve episodic events.

38. Anterograde amnesia refers to

- *a) difficulty learning new events.
- b) difficulty retrieving old events.
- c) difficulty retrieving words in sentences.
- d) an enhanced ability to retrieve episodic events.

39. Neuropsychological patients contribute to our understanding of the brain because

- a) scientists can correlate the damage in the brain with the cause of the trauma.
- *b) scientists can correlate the damage in the brain to the deficits in function.
- c) brain damage is always manifested in deficits in behavior.
- d) brain damage cannot be measured by conventional cognitive tests.

40. Drugs called cholinergics have been shown to improve memory in

- a) college students
- b) rats
- c) healthy older adults
- *d) patients with Alzheimer's Disease

41. Which class of drugs, available by a prescription, is associated with temporary amnesia?

- a) cholinergics
- b) endorphins
- c) nicotine-derivatives
- *d) benzodiazepines

42. The strong connection between the sense of smell is mediated by what pathway in the brain?

- *a) the connections between the olfactory bulb and the limbic system.
- b) the connections between the olfactory bulb and the occipital lobe.
- c) the connections between the lateral geniculate nucleus and the hippocampus.
- d) the connections between the lateral geniculate nucleus and the anterior cingulate gyrus.

43. Research on music and the brain shows that

- a) the brain has no role in music perception or memory.
- b) professional musicians show more activity in the hypothalamus while performing than do amateurs.
- c) the left hemisphere is more active in amateurs than it is in professionals.
- *d) the right hemisphere is heavily involved in music processing.

44. Which of the following statements are false?

- a) the brain is divisible into two symmetrical halves, oriented in the left-right direction.
- b) The cerebral cortex is the outer layer of the brain most associated with higher cognitive and

emotional functioning.

c) Amnesia means memory deficits acquired through brain damage.

*d) The thalamus of the brain is an integral part of the occipital lobe.

45. Which lobe of the brain is associated with the sense of touch (somatosensory system)

*a) parietal.

b) temporal.

c) occipital.

d) maniacal.

46. With transcranial magnetic stimulation (TMS),

a) accurate images of sub-cortical brain structure can be recovered.

*b) temporary disruption of certain brain regions can occur.

c) Korsakoff's disease can be reversed.

d) the magnetic impulses of the brain can be accurately collected.

47. Which of these neuroimaging techniques presents some health risks to the participant because it uses radioactive tracers.

a) fMRI

b) structural MRI

*c) PET

d) MEG

48. Lucus is an 57-year old man who suffered a stroke to his medial temporal lobe. What outcome might you expect with Lucus?

*a) He will show some anterograde amnesia.

b) He will not be eligible for an fMRI

c) Exposure to TMS will correct any cognitive deficits.

d) He will show a selective deficit in source monitoring and motion detection.

49. MEG technology is based on

a) sensing the flow of electrons through the brain.

*b) detecting the magnetic fields created by the brain.

c) taking an optical picture of a brain prior to surgery.

d) tracing the flow of blood in the cortex.

50. Phineas Gage and HM are

*a) well-known neuropsychological patients.

b) researchers who developed the fMRI technique.

c) are important areas in the Limbic system.

d) are important brain regions the prefrontal lobe.