

INTEGRATIVE BIOLOGY 245
EXAMINATION III
MAY 12-14, 2009

PART I.

1. Minicase: A 68 year-old-man suddenly developed "the worst headache in his life". He had a history of severe diffuse atherosclerosis, including coronary artery disease and peripheral vascular disease requiring multiple bypass operations. He was also a heavy smoker for over 40 years. The headache began in the bifrontal area and over the next few minutes spread all over his head and down his neck.

What sounds like the most possible explanation?

- a. blockage of the oculomotor arterial distribution
- b. a ruptured blood vessel, possibly the anterior communicating artery, causing a subarachnoid hemorrhage
- c. a posterior inferior cerebellar bleed
- d. a vertebral artery rupture.

2. A large astrocytoma multiforma tumor in the cerebellum over the IV ventricle could not easily encroach upon which nuclei

- a. dorsal motor X
- b. nucleus solitarius
- c. vestibular nuclei
- d. inferior olivary nuclei

3. The preganglionic fiber of the parasympathetic nerve accompanying the III cranial nerve is destined for the

- a. lacrimal gland to cause tearing when sad
- b. submaxillary gland
- c. ciliary ganglion whose postganglionic fiber goes to the olfactory cilia
- d. ciliary ganglion whose postganglionic fiber goes to the iris of the eye

4. How do you test to learn if the nucleus ambiguus is intact?

- a. place something sweet on the tongue
- b. ask the individual to shrug the shoulders
- c. ask the individual to protrude the tongue
- d. ask the individual to swallow

what structure is here?

5. Which neural structure is not associated with the lacrimal gland?

- a. pterygopalatine ganglion
- b. superior salivatory nucleus
- c. facial nerve
- d. glossopharyngeal nerve

after 5 ->

6. The primary olfactory cortex includes the
- entorhinal cortex and the parahippocampal cortex
 - olfactory tubercle and the diagonal band of Broca
 - pyriform cortex and the periamygdaloid cortex
 - perirhinal cortex and the dentate gyrus
7. The amygdala lies ____ to the tip of the inferior horn of the lateral ventricle.
- posterior
 - anterior
 - inferior
 - ventral
8. Shaffer collaterals possibly reinforce memory mechanisms by directly synapsing on the
- dentate gyrus granule cells
 - entorhinal pyramidal cells
 - hippocampal pyramidal cells
 - parahippocampal granule cells
9. The hypophyseal-hypothalamic portal system flows between the median eminence and the
- posterior pituitary gland
 - lacrimal gland
 - anterior pituitary gland
 - thalamus
10. The hippocampal complex or formation forms the
- floor of the inferior or temporal horn of the lateral ventricle
 - floor of the anterior horn
 - floor of the posterior horn
 - none of the above
11. The limbic system functions include
- memory
 - olfaction
 - emotions and drives
 - all of the above
12. In addition to the mitral and tufted cells, the olfactory bulb includes
- molecular cells
 - basal cells
 - granule cells
 - polymorphic cells

go back to A.

with

13. Ganglia in the sympathetic division of the autonomic nervous system do not include the
- a. prevertebral ganglia
 - b. otic ganglia
 - c. paravertebral ganglia
 - d. terminal ganglia
14. The white ramus communicans consists of the ___ of the sympathetic division of the ANS.
- a. post ganglionic fibers
 - b. preganglionic fibers
 - c. interneurons in the lateral horn of the spinal cord
 - d. none of the above
15. The post ganglionic nerve cells receiving input from the dorsal motor nucleus of X, forming part of the vagus nerve, are found in the:
- a. superior salivatory nucleus
 - b. nucleus solitarius
 - c. walls of the abdominal viscera
 - d. dorsal root ganglia
16. The superior cervical ganglion consists of the fusion of ___ ganglia.
- a. C1-C4
 - b. C2-C3
 - c. C4-C6
 - d. C1-C6
17. All preganglionic endings in the ANS are
- a. Gabaergic
 - b. Cholinergic
 - c. Adrenergic
 - d. Dopaminergic
18. All postganglionic endings in the parasympathetic division of the ANS are
- a. Cholinergic
 - b. Adrenergic
 - c. Gabaergic
 - d. Dopaminergic
- ~~19. The white ramus communicans consists of the ___ of the sympathetic division of the ANS.~~
- ~~a. postganglionic fibers~~
 - ~~b. preganglionic fibers~~
 - ~~c. interneurons in the lateral horn of the spinal cord~~
 - ~~d. none of the above~~

20. The cornu ammonis (CA) is found in the

- a. frontal lobe
- b. insula
- c. temporal lobe
- d. parietal lobe

21. Branchiomic muscles, embryonic gill arches, refer to ___ muscles in the adult.

- a. arm
- b. back
- c. head and neck
- d. eye

22. One of the first areas to show plaques and tangles characteristic of Alzheimer's disease is the

- a. post central gyrus
- b. entorhinal cortex
- c. amygdaloid nucleus
- d. precentral gyrus

23. Which cell body is not found in the olfactory epithelium?

- a. basal cell
- b. bipolar neuron
- c. supporting cell
- d. mitral cell

24. The axons from the ___ supply inhibitory functions to the olfactory bulb granule cells.

- a. mitral cells
- b. tufted cells
- c. anterior olfactory nucleus
- d. posterior olfactory nucleus

25. Which olfactory stria does not supply the amygdala either directly or indirectly?

- a. lateral
- b. superior
- c. medial
- d. intermediate

26. The medial olfactory stria influences the amygdala through the

- a. diagonal band of Broca
- b. fornix
- c. stria terminalis
- d. median forebrain bundle

*no slide
check*

27. The cerebellopontine angle is an important neurological landmark in the brain because
- only the VIII cranial nerve exits here
 - only the VII cranial nerve enters here
 - the VII and VIII cranial nerves enter and exit here
 - the dorsal motor nucleus of X sends fibers to exit here
28. The nucleus of Edinger Westphal sends its axons along with the _____ nerve to cause the constriction of the pupil
- III
 - IV
 - V
 - VI
29. A drooping left eyelid as well as a paralyzed left side of the face indicates both the ____ and the ____ nerves are not functioning well.
- IV/V
 - III/IV
 - III/VII
 - V/VII
30. The suprachiasmatic nucleus sends its fibers via the _____ to reach the lateral horn of the spinal cord.
- medial longitudinal fasciculus
 - dorsal longitudinal fasciculus
 - stria medullaris
 - median forebrain bundle
31. The stria terminalis from the amygdala enters the hypothalamus to provide:
- emotional content to behavior
 - thirst regulation
 - appetite regulation
 - temperature regulation
32. The medial forebrain bundle extending from olfactory tracts to septal nuclei to the lateral hypothalamus to midbrain tegmentum is concerned with what function?
- memory
 - water balance
 - emotional drives related to olfaction
 - ovulation
33. The inferior longitudinal fasciculus connects the orbital frontal cortex, with the _____.
- occipital lobe
 - insula
 - parietal lobe
 - septal area

34. Fibers from the _____ were severed in a frontal lobotomy to alleviate anxiety.
- a. ventral lateral nucleus
 - b. ventral medial nucleus
 - c. dorsomedial nucleus
 - d. pulvinar
35. What function is not attributed to the prefrontal cortex?
- a. coordinated speech
 - b. cautiousness
 - c. self critical
 - d. changing set
36. The cingulum in the cingulate gyrus connects the entorhinal cortex in the parahippocamal gyrus with the _____
- a. temporal lobe
 - b. occipital lobe
 - c. parietal and frontal lobes
 - d. insula
37. Somatic motor activity is not influenced by which of these structures?
- a. red nucleus
 - b. substantia nigra
 - c. superior temporal gyrus
 - d. basal ganglia
38. Golgi II cells in the granular layer of the cerebellar cortex keep the firing rate of the _____ cells constant
- a. Purkinje
 - b. basket
 - c. granule
 - d. emboliform
39. The anterior nucleus of the hypothalamus serves which two functions?
- a. rage and appetite
 - b. sympathetic and parasympathetic
 - c. temperature regulation and parasympathetic
 - d. mating behavior and hormonal regulation
40. The arcuate nucleus of the hypothalamus regulates the hormonal output of the anterior pituitary through the hypothalamic-_____ portal system.
- a. pontine
 - b. cerebellum
 - c. hypophyseal
 - d. posterior pituitary

41. Both the lateral nucleus and the ____ medial nucleus regulate appetite in the hypothalamus.

- a. basal
- b. anterior
- c. posterior
- d. ventral

42. Which is not a function of the hypothalamus?

- a. antidiuretic control
- b. taste bud control
- c. circadian rhythm regulation
- d. smooth muscle contraction

43. The nucleus accumbens, part of the reward system, is found

- a. in the lateral wall of the anterior horn of the lateral ventricle
- b. in the medial wall of the posterior horn of the lateral ventricle
- c. where the head of the caudate meets with the anterior portion of the putamen
- d. in the floor of the body of the lateral ventricle

44. Which "pair" is incorrect?

- a. prefrontal lobe and caudate
- b. premotor and putamen
- c. caudate-putamen and striatum
- d. tail of caudate and floor of inferior horn

45. Which symptom is not characteristic of Parkinson's disease?

- a. shuffling gait
- b. intention tremor
- c. tremor at rest
- d. mask-like facial expression

46. Efferent fibers from the substantia nigra connect with the

- a. thalamus
- b. globus pallidus
- c. putamen and caudate
- d. subthalamus

47. Which structure is not directly related to the fornix?

- a. fimbria
- b. diagonal band of Broca
- c. precommissural fibers to septal area
- c. postcommissural fibers to mammillary bodies

48. The fornix has both afferent and efferent fibers extending between the

- a. hippocampus and the septal area
- b. preoptic nucleus and anterior pituitary
- c. lateral olfactory stria and the arcuate nucleus
- d. supraoptic nucleus and the posterior lobe

49. Which of the following characteristics of Purkinje cells do not include

- a. flask-shaped cell body
- b. most axons pass to deep cerebellar nuclei
- c. soma receives basket cell axon branches
- d. axons synapse with granule cell parallel fibers

50. FREE POINT. but see if you can figure it out correctly with the conditions you were given in class.

A case had the following symptoms:

Alcoholic with uncoordinated gait, broad based gait, minor difficulty with finger to nose test, minor dysdiadokokinesis, heel to knee difficulty, no muscle weakness

Which condition was the cause of these symptoms?

- a. alcoholic globus pallidus degeneration
- b. alcoholic subthalamus degeneration
- c. alcoholic cerebellum degeneration
- d. none of the above*

A quote I read and liked many decades ago in China.

HAVE SELF RESPECT
HAVE SELF CRITICISM
DO SOMETHING FOR SOMEONE ELSE EACH DAY!!