

2014 Alabama Brain Bee Mock Exam

General

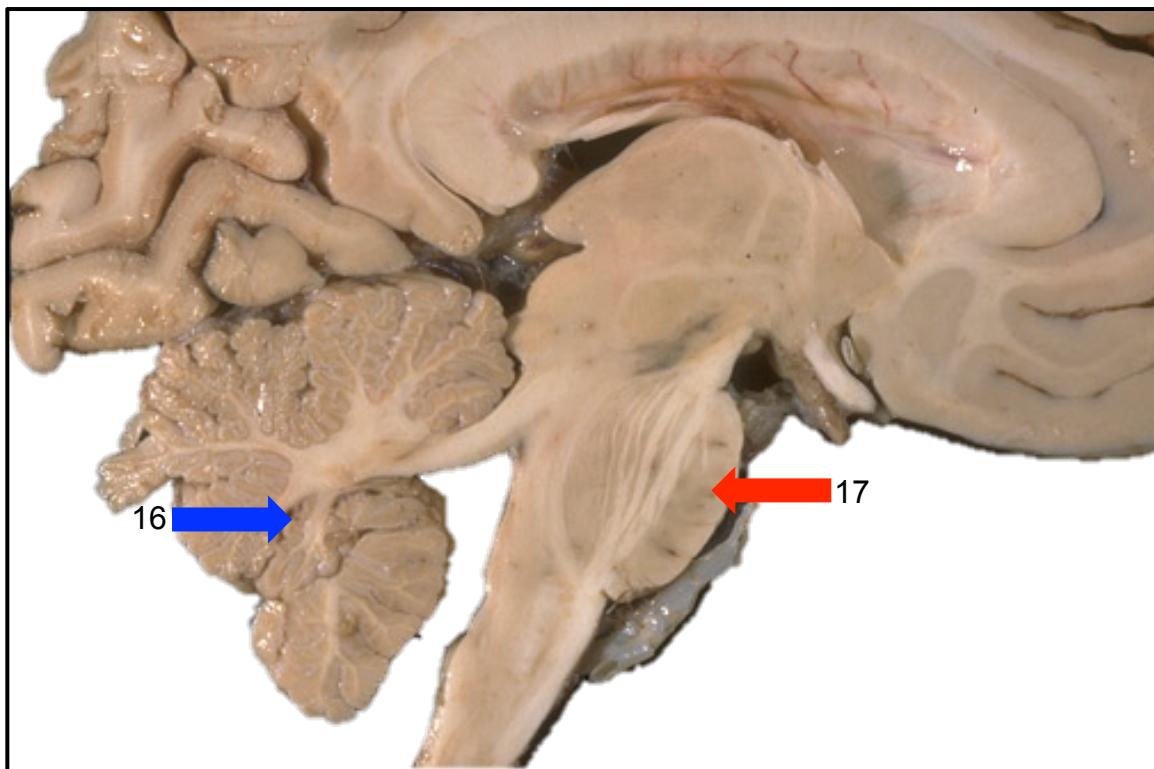
1. Name the cranial nerve that carries information about smell to the brain.
 - a. Abducens Nerve
 - b. Olfactory Nerve
 - c. Vagus Nerve
 - d. Trochlear Nerve
 - e. Oculomotor Nerve
2. The biologic clock is located in what part of the brain?
 - a. Thalamus
 - b. Hippocampus
 - c. Hypothalamus
 - d. Fornix
 - e. Medulla
3. Name the peptide that accumulates in the senile plaques of brains of Alzheimer's patients?
 - a. Beta Amyloid
 - b. BDNF
 - c. IFN-beta
 - d. Tau
 - e. SSRI
4. Name a cognitive disorder associated with chronic alcoholism.
 - a. Korsakoff's Syndrome
 - b. Turner Syndrome
 - c. Fragile X Syndrome
 - d. Autism
 - e. Down Syndrome
5. Down's syndrome occurs when there's an extra of which chromosome?
 - a. 11
 - b. 21
 - c. 18
 - d. 13
 - e. 23
6. The striate cortex processes what kind of sensory information?
 - a. Taste
 - b. Olfaction
 - c. Touch
 - d. Auditory
 - e. Vision
7. Wernicke's area is important for what brain function?
 - a. Vocal Expression
 - b. Short-term Memory
 - c. Language Comprehension
 - d. Long-term Memory
 - e. Emotion

8. Cells that myelinate the peripheral nervous system is called?
- Purkinje Cells
 - Schwann Cells
 - Microglia
 - Oligodendrocytes
 - Astrocytes
9. Which of the following lobes of the cortex is responsible for visual information?
- Parietal Lobe
 - Temporal Lobe
 - Insular Lobe
 - Frontal Lobe
 - Occipital Lobe
10. Dopamine and epinephrine belong to what category of neurotransmitters?
- Ions
 - Peptides
 - Monoamines
 - Amino Acids
 - Proteins
11. Name the primary neurotransmitter by which motor neurons control voluntary muscles.
- GABA
 - Epinephrine
 - Acetylcholine
 - Norepinephrine
 - Dopamine
12. The popular medication fluoxetine, or Prozac, blocks the inactivation of what chemical?
- Serotonin
 - Dopamine
 - Melatonin
 - Oxytocin
 - Tyramine
13. What part of the hindbrain is important for precise timing of muscle movements?
- Pons
 - Cerebellum
 - Medulla
 - Occipital Lobe
 - Temporal Lobe
14. The main focus of action for cortisol is the metabolism of what substance?
- Sucrose
 - Amino acids
 - Glucose
 - Lipids
 - Peptides

15. What nerve extends from the cochlea to the brain?

- a. Auditory Nerve
- b. Vagus Nerve
- c. Trochlear Nerve
- d. Abducens Nerve
- e. Optic Nerve

Human Neuroanatomy

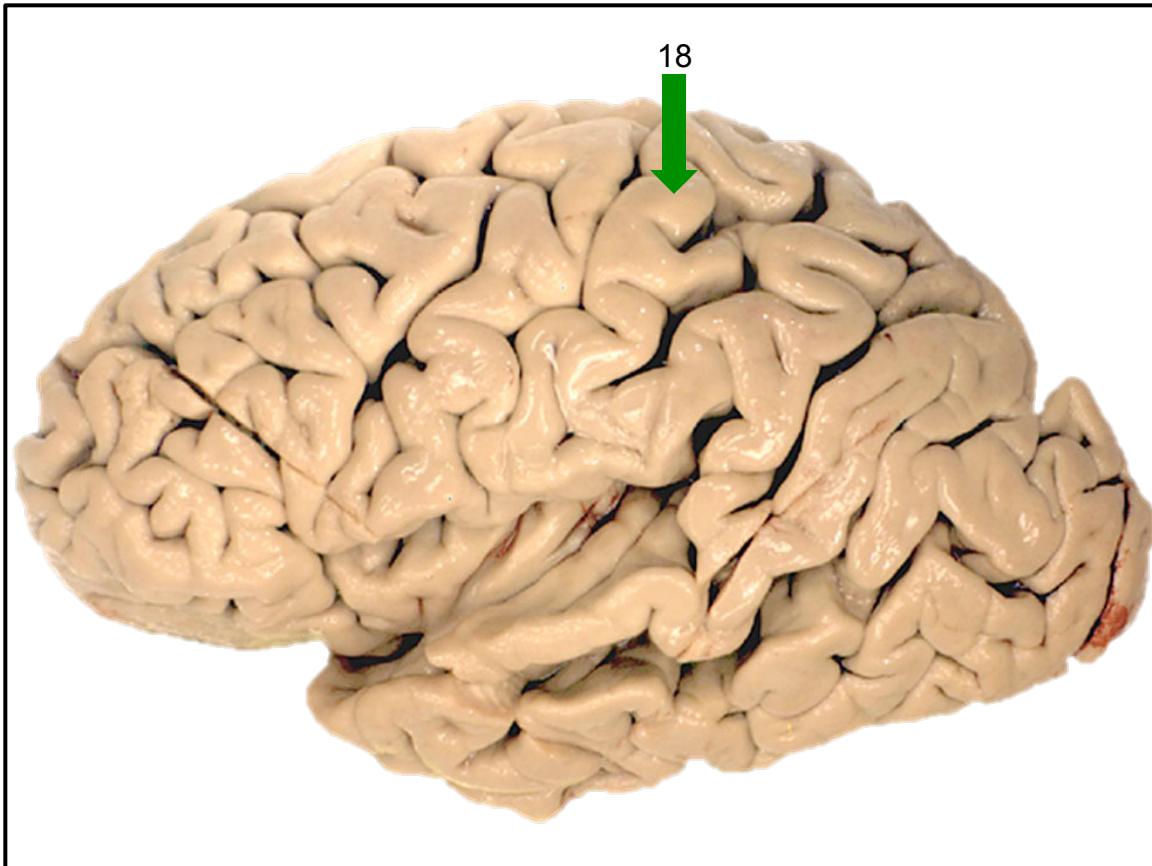


16. Which general structure is indicated by the blue arrow above?

- a. Occipital Lobe
- b. Pons
- c. Cerebellum
- d. Hypothalamus
- e. Medulla

17. Which structure is indicated by the red arrow above?

- a. Medulla
- b. Pons
- c. Hypothalamus
- d. Pituitary Gland
- e. Thalamus

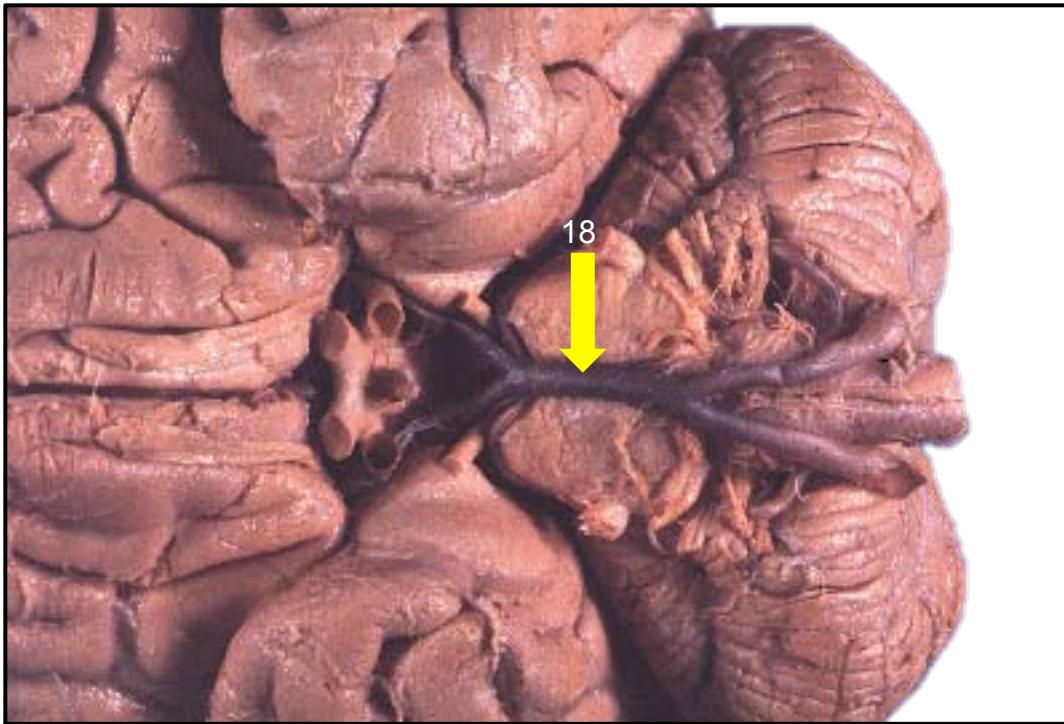


18. Which gyrus or sulcus is indicated by the green arrow above?

- a. Central Sulcus
- b. Postcentral Gyrus
- c. Postcentral Sulcus
- d. Precentral Gyrus
- e. Precentral Sulcus

19. The above gyrus or sulcus is the location of which of the following?

- a. Primary Visual Cortex
- b. Primary Auditory Cortex
- c. Primary Motor Cortex
- d. Primary Olfactory Cortex
- e. Primary Somatosensory Cortex



20. Which major artery is indicated by the yellow arrow above?

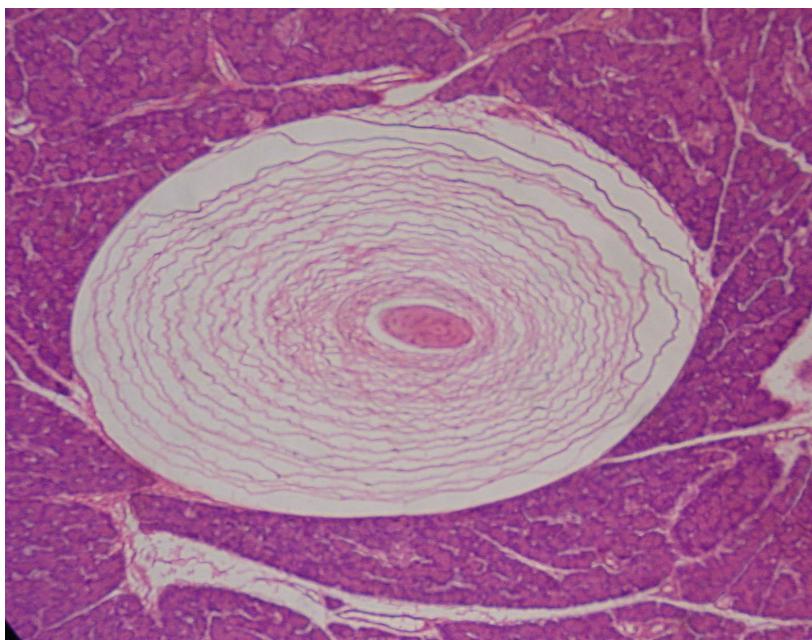
- a. Vertebral Artery
- b. Internal Carotid Artery
- c. Posterior Communicating Artery
- d. Posterior Cerebral Artery
- e. Basilar Artery

Neurohistology



21. Which structure of the nervous system is illustrated above?

- a. Cerebellum
- b. Anterior Horn of Spinal Cord
- c. Posterior Horn of Spinal Cord
- d. Neuromuscular Junction
- e. Neuron Dendrites



22. Which structure of the nervous system is illustrated above?

- a. Neuron Axon
- b. Neuron Nucleus
- c. Pacinian Corpuscle
- d. Node of Ranvier
- e. Purkinje Neuron

Patient Diagnosis

23. Martha, a 73 year-old woman was brought to neurological evaluation by her son because of a three year history of memory impairment. The son had begun to notice gradually worsening memory impairment and difficulty finding words, but the patient became angry at the suggestion that she may have a progressive impairment. On formal testing, she scored well below average in all cognitive domains. PET imaging with Pittsburgh Compound B revealed accumulation of beta amyloid. Which disease or disorder might Martha have?
- a. Alzheimer's Disease
 - b. Bipolar Disorder
 - c. Cruzfeldt-Jakob Disease
 - d. Huntington's Disease
 - e. Rett Syndrome
24. Jackson, a 67 year-old man has an eight year history of involuntary movements. He has brief muscle twitches that developed shortly after a fall. More recently, he has developed slight muscle rigidity and has a disturbed gait. Medical imaging showed some signs of atrophy, yet these may be due to aging. Genetic testing revealed 47 CAG repeats on chromosome 4. Which disease or disorder might Jackson have?
- a. Cerebral Palsy
 - b. Epilepsy
 - c. Huntington's Disease
 - d. Multiple Sclerosis
 - e. Parkinson's Disease