

Trial/Pilot Event

Contact the organizers of your tournament to find out what trial/pilot events will be held.

6. (Division C) Recognize different neurotransmitter chemicals and describe their role in nervous system disease or toxicity. Examples may include dopamine in Parkinson's disease, serotonin in depression, glutamate in stroke, acetylcholine in nerve gas exposure.
7. (Division C) Describe the neural pathways involved in the following: "knee jerk" reflex, pain-induced limb withdrawal reflex, conscious sensation of pain, constriction of the iris of the eye in bright light.
8. (Division B or C) Given an electroencephalographic recording, identify periods of alpha wave activity, sleep wave activity, seizure activity.
9. (Division C) Given a cross sectional photograph or specimen of the human spinal cord: identify gross anatomical features (e.g. ventral side, dorsal side, central canal, ventral and dorsal roots, major arteries), identify areas of major sensory and motor fibers and describe where their cell bodies are and the location in the brain where the processes terminate.
10. (Division B or C) Name and describe the sensory and motor functions of the twelve cranial nerves. Describe major symptoms that might arise from damage to each nerve.

Scoring:

Each correct response will be assigned a point value. The highest score wins. Selected questions may be used as tiebreakers.

Useful resources:

Internet Resources

Many neuroscience teaching resources targeted at the K-12 level are available on the web.

Neuroscience for Kids: An often updated resource for teaching and learning about neuroscience.

<http://faculty.washington.edu/chudler/neurok.html>

Brain Briefings: A series of two-page newsletters explaining how basic neuroscience discoveries lead to understanding of clinical problems. From the Society for Neuroscience.

<http://web.sfn.org/content/Publications/BrainBriefings/index.html>

Brain Facts: A 52-page primer on the brain and nervous system, published by the Society for Neuroscience. In addition to serving as a starting point for a lay audience interested in neuroscience, the book is used at the annual Brain Bee (<http://web.sfn.org/baw/bee.cfm>), which is held in conjunction with Brain Awareness Week (<http://web.sfn.org/baw/>). Provided by the Society for Neuroscience and downloadable in pdf format.

<http://web.sfn.org/baw/pdf/brainfacts.pdf>

Neuroanatomy & Neuropathology on the Internet: A web site of various links to neuroscience and neuropathology exams and quizzes.

<http://www.neuropat.dote.hu/quiz2.htm>

Neuroscience Education and Basics. A list of links to a variety of neuroscience topics from glossaries to short articles on specific neuroscience topics.

<http://home.earthlink.net/~elektrikmonk/Neuro/inEdu.htm>

International Brain Research Organization. A list of links to neuroscience sites.

http://www.ibro.info/secondary/neuroscience_links/

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Text books

Similar to other Science Olympiad events, the majority of text resources are found in college text books for introductory courses. For Division B, the introductory sections and those chapters which address neuroanatomy and basic electrophysiology provide appropriate content.

Undergraduate College Student Level

Title: Nerve and Muscle 3rd Edition Authors: R. D. Keynes, D. J. Aidley

<http://titles.cambridge.org/catalogue.asp?isbn=0521805848>

Title: Neuroscience : Exploring The Brain Author: Bear M

Title: Human Brain : Introduction To Functional Anatomy Author: Nolte J

Title: Electrophysiology of the Neuron Author John Huguenard and David A. McCormick

[Oxford University Press,](#)

Title: Neurobiology Author: Gordon Shepherd

[Oxford University Press](#)

From Neuron to Brain, by John G. Nicholls, A. Robert Martin, Bruce G. Wallace

[Sinauer Associates, Inc.](#)

Graduate College Student Level

Title: Fundamental Neuroscience, 2nd Edition Edited by: Larry R. Squire and others

<http://www.harcourt-international.com/catalogue/title.cfm?ISBN=0126603030>