

Anatomy & Physiology

NCSO 2016-2017

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Event Description

This event encompasses the anatomical structures and physiological mechanisms that take place in the body. It is limited to 3 specific topics/body systems on a yearly basis.

This year, the topics are:

1. Nervous System
2. Sense Organs
3. Endocrine System

Rules

See the official Science Olympiad rules manual for the specific topics regarding each of the three systems. There are slight differences between the division B and division C versions of the event. For the purposes of regionals and state, expect any of the **non** – **national** topics to be asked for all tournament levels in North Carolina.

Types of questions

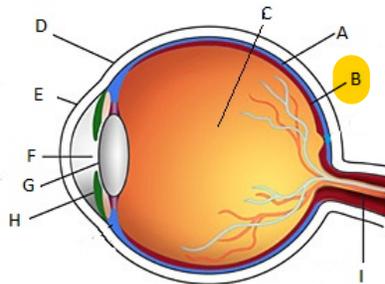
Many of the regional tournaments will vary in the exact format of the event. For example, one region may utilize stations while another may just utilize a sit-down exam and so forth. Some regions may also include a combination of both to some degree as well. These range from multiple choice to free response short answers, with an emphasis on multiple choice for regional levels. Depending on the exact tournament and tournament level, penalties for misspelling words varies. The state tournament format for this year has not been determined as of yet, but in the previous years, it has mostly been in the format of stations that are characterized by mostly free response short answers and limited multiple choice. Changes are possible, so be aware of that. Typically, anatomical understanding is tested by the use of diagram labelling as well as asking the function of a labelled part. Physiological understanding is evaluated through a series of multiple choice and free response questions that are related to the main functions and abilities of parts of these body systems. There are also disease questions that will be asked in the form of either case studies with patients or simple details about the diseases in regards to their causes, symptoms, and so forth (see rules for more clarification).

Recommendations

1. Work with your partner. Science Olympiad is purely team-based, which is why it is really fun!
2. Be efficient with dividing up information to study, but keep in mind that if your partner does not show up to a tournament, you may be at a disadvantage.
3. Utilize the training handouts and powerpoints on the Anatomy & Physiology page on the soinc.org website.
4. Obtain any Anatomy & Physiology textbook at your discretion. This is **highly recommended**.
5. Very nice tools are Anki and Quizlet, as these allow you to create easy flashcards of physiological terms and anatomical diagrams.
6. Learn to pace yourselves. This event is very fast and it is easy to fall behind during a competition. That's why developing team chemistry with your partner is important.
7. Take it slowly. Learning all of the information at once is not efficient. This event is very vast in comparison to the other events, so it's important to study content thoroughly rather than quickly.

Sample Questions

1. Which lobe of the brain is involved with processing visual input?
A. Parietal Lobe **B. Occipital Lobe** C. Frontal Lobe D. Insula
2. In the diagram of the eye below, select the letter that corresponds to the light-sensitive layer.



3. What is the name of the of the eye region you selected in the previous question? 
4. What is the name of the autoimmune disorder in which antibodies stimulate overproduction of thyroid hormone? 
5. Select the gland that is sometimes called the master switchboard.
A. Pituitary B. Adrenal C. Pineal **D. Hypothalamus**
6. Sam, a 58-year old male, visits his neurologist after experiencing progressive weakness and "pins & needles" sensations. He has also been feeling more fatigued lately, even when he is not exercising. The neurologist has a spinal tap done on the individual and the results show the presence of numerous immunological entities within the cerebrospinal fluid. What is your diagnosis? 
7. If your frontal lobe is damaged and affects your ability to comprehend speech, you most likely have damage to the?
A. Broca's area B. Substantia nigra **C. Wernicke's area** D. Midbrain E. Cerebellum