



Chapter 42 Project

Presenting Nervous System Disorders & Toxins

Project Goal + Timeline

In this project, you will review your knowledge of the nervous system by making a 12- to 15-minute digital presentation about a neurotoxin or a neurological disorder. This project should be completed in groups of three and should take between three and four hours.

Directions

Your group will be assigned either a neurotoxin or a neurological disorder from the following list: Sarin gas, botulinum toxin, tetanus, tetrodotoxin, lead, ethanol, glutamate, nitric oxide, methylmercury, arsenic, Alzheimer's disease, Parkinson's disease, Wernicke-Korsakoff syndrome, or Guillain-Barré syndrome.

The digital presentation must contain an appealing balance of graphics and text. It should contain enough text that the presentation can be understood without the spokesperson but not so much text that the spokesperson has nothing new to add and need only read from the slides.

The three group roles are as follows:

Spokesperson: The spokesperson is responsible for presenting the presentation. This person should clearly and articulately discuss the subject. They should appear practiced and deliver the presentation within the time restrictions. A brief Q&A should follow the presentation, in which the spokesperson should either answer questions themselves or defer questions to specific group members.

Graphic Designer: The graphic designer is responsible for the visual aspects of the presentation, including the graphics and overall organizational layout. The graphic designer must also ensure that the digital presentation contains visual cues or aids to help the spokesperson. These cues could be anything that makes the spokesperson's job easier. For example, they may include bulleted lists to guide the spokesperson or interactive "fly in" reminders. **Note:** The graphic designer is not responsible for creating the entire presentation, but they do have final say on decisions regarding graphics and layout. They are also not any more responsible for actual factual content than any other group member.

Project Manager: The project manager is responsible for ensuring that everyone is on track and that all information and plans are shared among group members. The project manager should take notes during all planning discussions and email those notes to group members. They should help organize the group effort to develop the presentation and delegate specific tasks as needed. They should also work one-on-one with the spokesperson to practice presentations. Finally, they should work with the graphic designer to ensure that visual content is shared with the spokesperson and that the spokesperson is satisfied with the presentation layout. The project manager must submit a 200-word summary of how and when (including dates) they satisfied these responsibilities. They must accompany this summary with two pieces of evidence. (This evidence could include emails, such as the email summary of group discussions.) Alternatively, a signed statement from another group member could suffice (for example, a signed statement from the spokesperson that the project manager helped them practice their presentation).

Note: All group members are responsible for working together to develop the content that will be included in the presentation as well as ensuring the factual accuracy of the digital presentation. The purpose of the roles is so that each person is also accountable for a major aspect of the project. All group members are equally responsible for making sure the presentation includes all the content requirements in the following checklist.

The following are the presentation's content requirements. All requirements must be met but not necessarily in this order.

- ✓ Introduce your toxin/disorder with background information about its history, discovery, source, or any other relevant information.
- ✓ Introduce the nervous system by showing the organizing of the CNS and PNS. Identify the spinal cord, cerebral lobes, and other brain areas on a brain diagram.
- ✓ Would this toxin/disorder affect primarily the CNS, PNS, or both? Specify which parts of the nervous system would be most affected.
- ✓ Show and describe the general structure of a neuron. Explain the primary functions of each part of the neuron. Include a discussion of the function of myelin.
- ✓ List the four neuron types and specify which are affected most directly by the toxin/disorder.
- ✓ Would this toxin/disorder affect an individual neuron's structure? If so, explain how.
- ✓ Include a brief description of how a regular action potential works. Describe the basis of the resting membrane potential. List the stages of an action potential.
- ✓ How would your toxin/disorder affect action potentials, if at all? If applicable, explain in detail the mechanism through which the toxin/disorder exerts its effect.
- ✓ Include a brief description of synaptic function.
- ✓ How would your toxin/disorder affect communication at the synapse, if at all? If applicable, explain in detail the mechanism through which the toxin/disorder exerts its effect.
- ✓ How does the toxin/disorder affect the functioning of the entire body? For example, does it result in paralysis? Is it fatal? Explain how the effect of the toxin/disorder at the neuronal level leads to this whole-body effect.
- ✓ If your presentation covers a neurotoxin, research nervous system disorders and find one with similar effects. Compare and contrast.
- ✓ If your presentation covers a neurological disorder, research neurotoxins and find one with similar effects. Compare and contrast.

Project Materials

- Computer with digital presentation program (such as PowerPoint) and internet access
- Pen and paper (for planning)

Student Checklist

- ☐ Complete digital presentation
- ☐ Deliver presentation (Spokesperson)
- ☐ Submit finalized presentation (Graphic Designer)
- ☐ Submit 200-word summary (Project Manager)