

Neuroscience (or neurobiology) is the scientific study of the nervous system. It is a multidisciplinary branch of biology, that deals with the anatomy, biochemistry, molecular biology, and physiology of neurons and neural circuits. It can also be used to restore health and function by engineering innovative ways that help the brain and spinal cord adapt and recover from injury. It can also include topics such as consciousness or neural ethics. Devices can be designed to record information from, as well as stimulate neurons within the central nervous system to encourage **neural plasticity**, promote recovery and restore sensorimotor function throughout the body. These revolutionary neural-engineered systems can significantly improve the quality of life for people with sensorimotor disabilities, most immediately benefitting patient populations with cervical spinal cord injury and stroke. The engineering principles discovered will also have broader implications for developing neural devices capable of treating other neurological conditions, such as Parkinson's disease and essential tremor, as well as restoring lost body functions, such as visceral organ and bladder control.

If working individually or with a group (2-4 students), each group should submit:

one group Science Background Paper, one group set of storyboards and one group project.

Each member of the group needs to submit their own unique Artist's Statement, Connections and Collaborations, and Annotated Bibliography. Students must justify why a team was needed and document the roles and responsibilities fulfilled by each team member, to be included in the Connections and Collaborations.

Category Requirements – 30%	
10 pts.	<p>Artist/Project Statement (1-3 pages) Purpose and Goals Why did you make the work? What was the purpose of the work? What provided the inspiration for the work? What ideas did you intend to convey? What references are made? What do you hope viewers will get out of the piece? Why did you decide to use this category? Does your work relate to any other Expo categories (Journalism, Art?) If you worked with a group, why was a group needed? What role did each member of the group fulfill?</p>
20 pts.	<p>Project Quality Create a well-crafted, technically proficient, and thought-provoking neural/neural engineering project that relates to neuroscience. You may choose to make a video or demonstrate your project in other formats. Connect your imagery and symbolism to the intent described in your project statement. The form of your project and the media you choose should enhance, rather than detract from, its content. Audio segments should be clear, and shots should be carefully edited. The scenes should flow smoothly from shot to shot. Use different types of transitions to help communicate the main idea. Use special effects sparingly and with careful emphasis. Your finished product should include credits. Multimedia projects should not exceed 10 minutes in length. Please upload your video(s) to www.youtube.com <http://www.youtube.com/> according to the</p>

Science Content– 30%	
30 pts.	<p>Science Background Paper (5-8 pages) What are the main scientific concepts that your multimedia project is based on? For example, if your piece references stem cells, provide information on the science of stem cells. Demonstrate a mastery of relevant scientific ideas by accurately explaining difficult concepts in terms a layperson could understand. The work should provide an appropriate combination of explanations, examples, and details that are specific, clear, and relevant to the topic. The content of your work should reflect critical thinking about the topic.</p>

Connections and Collaborations; General Written Requirements – 10%	
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5 pts.

Connections and Collaborations

Include 1-2 typed pages describing the connections you have made with other people as well as the resources you have used the most. More weight is given in judging to those students who put more effort into locating and using available resources. A good use of resources may include working with an advisor or mentor, making arrangements to tour a company, interviewing an adult in your field, in addition to reading an important paper or uncovering an invaluable website. What did you learn? How did this resource help you? An interview with an adult in the field carries far more weight than a Google search. You do *not* have to request a mentor through NWABR to excel in this area.

If a qualified adult (i.e. your Expo Mentor, someone you interviewed or a tour guide at site visit) significantly helped you with your project, please include:

- a) The person's name, title and contact information.
- b) Dates you emailed, talked on the phone or met.

	<p>c) Your thoughtful reflections on the experience of working with that person</p> <p>If you are working in a team, this is the place to describe the different roles and responsibilities of each team member and the rationale behind why each person took their role.</p>
5 pts.	<p>Paper Format and Annotated Bibliography</p> <p>Papers should be typed/word processed with one-inch margins. Use an easily readable font such as Times Roman or Arial, 10-12 point, double-spaced. If included, illustrations must be neat and applicable, with a title and a source. Number your pages and label section headings. Consistently follow the rules of Standard English for usage, spelling, capitalization, and punctuation.</p> <p>Annotated bibliography should be in standard MLA or APA format. Use a minimum of 5 sources. The bibliography should include all books, papers, journal articles, and communications used in your research. For at least 5 sources, provide one reason why you believe the source is credible and describe how it was used in your project.</p>

Creativity -- 10%	
10 pts.	<p>Creativity</p> <p>Show your ability to creatively approach or solve a problem, or present evidence of your understanding in ways that are novel or unique. Your project should reflect your special insights and abilities.</p>

Interview at Expo Event – 20%	
20 pts.	<p>Interview</p> <p>Multimedia Projects are exempt from the poster requirement - all 20 points will depend on the interview. Judges will be looking at your effectiveness in communicating your project to them, and your understanding of your topic.</p> <p>Your judge will want an overview of your project - practice giving a short (2-3-minute) 'walk-through' of your project that explains it in straightforward terms. You will have the chance to show a short portion of your multi-media project. <i>Be sure to bring all the technical support you will need at the event.</i></p> <p>You will receive written feedback from your judge regarding the strengths of your project, and how you could make it even better in the future.</p> <p><i>The following are samples of the types of additional questions a judge might ask you: Why were you interested in this topic? What did you learn from doing your project? What was the most enjoyable/difficult aspect of doing this project? What else would you like to find out about this topic?</i></p>
100 points total	

What you need to do on or before midnight April 22nd, 2018

Register for the Student Bio Expo. Student registration will be open between Monday April 2nd and the deadline Sunday midnight April 22nd, 2018

Submit an electronic copy of your project to NWABR (and your teacher) using the **BOX cloud storage**. Further registration and submission information will be posted at: <https://www.nwabr.org/events-programs/student-events/student-bio-expo>

What you need to bring to the Expo

Bring a hard copy of your written work. Include the following

- Cover Sheet**
- Artist's Statement**
- Science Background Paper**
- Storyboards**
- Bibliography + Connections and Collaborations**
- Multimedia Project on DVD**
- Any AV or electrical equipment used for viewing your project**

YouTube Uploading Instructions

For the Neuroscience (NS) category, the judges will view your work on YouTube. You can upload your video at www.youtube.com <<http://www.youtube.com>> using the following instructions:

1. The maximum video time on YouTube is 10 min. 59 seconds.
2. Once on the main YouTube page, click "Sign In" on the upper right hand corner. Use the following log-in information:
Username: bioexpo2018@gmail.com
Password: studentbioexpo2018 (Alternatively, use your own Gmail account to upload your video but make sure to label your video as described below.)
3. Once signed in:
 - a. Click on the "upload" link at the top right.
 - b. On the next screen, click the "upload video" link and select your video from your saved files.
 - c. In the title section: Type the title of your project.
 - d. In the description section type: "A multimedia project for the 2017 Student Bio Expo by (your name)."
Next type a brief description of your project topic.
 - e. In the tag section type: "Student Bio Expo 2018, 'multimedia', 'your topic' (eg. Neural Ethics, Consciousness, Brain Computer Interfaces etc.)
 - f. Select an appropriate category from the drop-down menu.
 - g. Under Broadcasting and Sharing Options, change the "comments" section to "Don't allow comments."
Leave the other options as they are by default.
 - h. When you are done uploading your videos, click "save changes".
4. Log out of YouTube and you are done!

Neuroscience/Multimedia Tips

The multimedia category is designed to encompass a broad range of electronically-based projects, from documentaries to multi-media artworks. It encourages students to make use of computer and video technology to create a project related to biotechnology and biomedicine.

As students bring more creativity and technological expertise to the Expo, a new category has been added to support their endeavors. This category provides a way for students to use a multi-media approach to present the content that would have otherwise been presented through one of the other Expo categories such as Journalism, Career/Industry, or Art.

This category could include:

- Documentaries
- Multi-media artwork
- Animation
- Audio slide shows
- Graphic design
- Computer graphics
- Computer-based training

If working with a group (2-4 students), each group should submit:

one group Science Background Paper, one group script/description and one group video/DVD.

Each member of the group needs to submit their own unique Artist's Statement, Connections and Collaborations, and Annotated Bibliography. Students must justify why a team was needed and document the roles and responsibilities fulfilled by each team member, to be included in Connections and Collaborations.

Potential Resources

Student Bio Expo

Student Name:

Student School:

Project Title:

Neuroscience NS

Judging Criteria <small>(Judging criteria are explained in the <i>Student Requirements</i>)</small>	Superior	Excellent	Good	Developing	Limited
Neuroscience Category Req. (30%)					
Artist's Statement (10 pts)					
Project Quality (20 pts)					
Science Content (30%)					
Science Background Paper (30 pts)					
Connections/Written Req. (10%)					
Connections and Collaborations (5 pts)					
Paper Format; Annotated Bibliography (5 pts)					
Creativity (10%)					
Creativity (10 pts)					
Interview at Expo Event (20%)					
Interview (20 pts)					

Comments

(Please continue on back, if needed)

What I found particularly impressive about your project:

Pre-Judging:

Final Judging:

What you could do in the future to make it better:

Overall Rating (circle one)

Superior

Excellent

Good

Developing

Limited

