

## OVERVIEW

Participants will create a display to teach a biotechnology topic and demonstrate understanding of it through documented research, the development of a solution, a display (including a model or prototype [optional]), and an effective multimedia presentation. Participants may choose to recreate or simulate research that previously has been performed within the scientific community. The display must be presented in a fashion that teaches the topic to an elementary school audience.

The topic for the current school year will be posted on the TSA website under Competitions/Themes and Problems.

## ELIGIBILITY

One (1) team, or one (1) individual per chapter may participate.

## TIME LIMITS

1. Semifinalists are allowed up to ten (10) minutes to give a presentation, which is followed questions from judges.
2. The LEAP interview will be conducted as part of the semifinalist presentation/interview and will last a maximum of five (5) additional minutes.

## LEAP REPORT

A team LEAP Report is required for this event and must be submitted at event check-in (see LEAP Report).

## ATTIRE

TSA competition attire is required for this event.

## PROCEDURE

### PRELIMINARY ROUND

1. Team members select and research a contemporary biotechnology issue related to the current year's designated topic. Resources may include but are not limited to books, interviews, websites, magazines, professional journals, etc.
2. Team members then prepare their documentation, display, and multimedia presentation according to the event regulations.
3. Participants check in their entries and submit a LEAP Report at the time and place stated in the conference program. No more than two (2) team members set up the display.
4. Entries are reviewed by judges. Neither students nor advisors are present at this time.
5. A list of twelve (12) semifinalists (in random order) is posted.

### SEMIFINAL ROUND

1. Two (2) representatives from each semifinalist team, with their multimedia presentation, report to the event area at the time and place stated in the conference program.
2. Semifinalist team representatives give a brief presentation and answer questions from judges. Up to ten (10) minutes will be provided for the presentation; with a few minutes more for questions from judges.
3. The LEAP interview will be conducted as part of the semifinalist presentation/interview.
4. The top ten (10) finalists will be announced at the awards ceremony.

## REGULATIONS

### PRELIMINARY ROUND

- A. Students must understand the fundamental concepts and principles of the contemporary biotechnology topic. Research on a problem within that topic should focus on significant impacts (opportunities and risks) on the environment, economy, and society, as well as any important ethical considerations.
- B. Documentation materials (comprising “a portfolio”) are required and should be secured in a [clear front report cover](#). The report cover must include the following single-sided, 8½" x 11" pages, in this order:
  1. LEAP Report
  2. Title page with the event title, the conference city and state, and the year; one (1) page
  3. Table of contents; pages as needed
  4. Definition and explanation of the problem; one (1) page
  5. An explanation of the chosen solution, and other possible solutions and why they were rejected; maximum three (3) pages
  6. A scenario of possible real-life applications; one (1) page
  7. Supplementary information such as logs, graphs, sketches, drawings, illustrations, photographs, etc.; maximum four (4) pages
  8. A print-out of the accompanying multimedia presentation (printed with three [3] slides per page, recommended); pages as needed
  9. Plan of Work log that indicates preparation for the event, as noted by date, task, time involved, team member responsible, and comments (see Forms Appendix or TSA website); one (1) page
  10. A minimum of three (3) different types of resources, such as books, interviews, professional journals, websites, magazines, etc. All must be cited using Modern Language Association (MLA) format; pages as needed.
  11. A USB flash drive of the team’s multimedia presentation. The USB flash drive and the multimedia presentation become the property of TSA.

- C. Display guidelines are as follows:

1. The size of the display may not exceed 15" deep x 3' wide x 4' high.
2. A model or prototype is optional.
3. Power
  - a. AC electricity may not be used.
  - b. Dry cell or photo-voltaic cells may be used for power, if desired.
  - c. Any power source used must fit within the maximum display area.
4. If operating instructions are necessary, they must be clearly displayed.
5. No harmful or illegal substances, viruses, live plants, or animals may be used as a part of the display. No potentially dangerous processes may be demonstrated or included as part of the display.
6. The display must be presented as if it were in a children’s museum that is geared towards educating children in the 5th grade or younger.

### SEMIFINAL ROUND

- A. Each team must be prepared to send two (2) representatives to the semifinalist portion of the event, in which the representatives give a multimedia presentation.
- B. The presentation explains the team’s selection of the problem and its solution and is not to exceed ten (10) minutes. Judges then ask questions.
  1. The two (2) semifinalist team representatives **MUST** bring a laptop computer for their multimedia presentation.
  2. Projection equipment will not be permitted.
  3. Only power will be provided.
- C. The LEAP Report
  1. Teams document the leadership skills the team has developed and demonstrated while working on this event, and on a non-competitive event leadership experience.
  2. Teams will respond to questions about the content of the LEAP Report as part of the LEAP interview, which will be conducted as part of the semifinalist presentation/interview.

3. Specific LEAP Report regulations can be found in the LEAP Program section of this guide and on the TSA website.

## EVALUATION

### PRELIMINARY ROUND

1. The portfolio
2. The display

### SEMIFINAL ROUND

1. The event-specific presentation/interview
2. The content and quality of the LEAP Report and interview

Refer to the official rating form for more information.

## STEM INTEGRATION

This event has connections to the STEM standards of Science, Technology, Engineering, and Mathematics.

## CAREERS RELATED TO THIS EVENT

- Bioinformatics processor
- Food scientist
- Microbiologist
- Radiographer
- Quality control analyst

# BIOTECHNOLOGY DESIGN

## 2019 & 2020 OFFICIAL RATING FORM

### HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

#### Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

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- Documentation is present.
  - Display is present.
  - Multimedia presentation is present.
  - Completed LEAP Report is present.
  - ENTRY NOT EVALUATED

DOCUMENTATION (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
<b>Portfolio components</b> (X1)	Portfolio is unorganized and/or missing three (3) or more components.	Portfolio has most components and is generally organized.	Portfolio is missing no components and is clearly well organized.	
<b>Definition and explanation of problem and solution(s)</b> (X1)	The definition and explanation of the problem and/or solution(s) to the problem are unclear.	The definition and explanation of the problem and/or solution(s) to the problem are generally clear.	A clear and concise definition and explanation of the problem and solution(s) to the problem are evident.	
<b>Research base</b> (X1)	The research is inadequate, and/or very few credible sources are referenced.	The research has been conducted appropriately, with some credible sources cited.	There is a comprehensive research base with credible sources cited.	
<b>Supplementary information</b> (X1)	Supplementary information does not help clarify documentation, or it is of little significance to the problem.	Supplementary information is appropriate and adds to the documentation by providing clarity to the problem.	Supplementary information is of excellent quality and clarifies the problem and solution(s).	
<b>Quality and effectiveness</b> (X1)	The work is sloppy and disorganized, as if thrown together.	The work is mostly organized and of sufficient quality.	The work is well organized and of exceptional quality.	
<b>DOCUMENTATION SUBTOTAL (50 points)</b>				

<b>DISPLAY (60 points)</b>				Record scores in the column spaces below.
<b>CRITERIA</b>	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
<b>Communication of problem</b> (X1)	The problem is difficult to understand as communicated and is presented in an illogical manner.	The problem is communicated adequately, and thoughts are somewhat organized and/or concise.	The problem is communicated in an organized, clear, and concise manner.	
<b>Communication of solution</b> (X2)	The solution is difficult to understand as communicated, is presented in an illogical manner and is not focused on an audience of a 5th grade level or younger.	The solution is communicated adequately, thoughts are somewhat organized and/or concise, and the solution is somewhat focused on an audience of a 5th grade level or younger.	The solution is communicated in an organized, clear, and concise manner and is clearly focused on an audience of a 5th grade level or younger.	
<b>Creativity</b> (X1)	The work lacks creativity, with little or no integration of design principles.	Some creative elements are included, and essential design principles and elements are used somewhat effectively.	The work exudes creativity, and essential design principles and elements are integrated.	
<b>Aesthetics and artanship</b> (X2)	The work is unorganized and sloppy, and the display seems to be an afterthought.	The work is organized, with essential design principles presented in a logical format.	The work reflects an exemplary use of layout and design principles to logically communicate important data.	
<b>DISPLAY SUBTOTAL (60 points)</b>				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

**PRELIMINARY SUBTOTAL (110 points)**

<b>SEMIFINAL PRESENTATION (77 points)</b>				Record scores in the column spaces below.
<b>CRITERIA</b>	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
<b>Organization</b> (X1)	Participants seem unorganized and unprepared for the presentation/ interview, with an illogical explanation of the problem and solution.	Participants are generally prepared for the presentation/interview; explanation of problem and solution are communicated and generally organized.	The presentation/interview is logical, well organized, and easy to follow; the problem and solution are communicated in an organized and concise manner.	
<b>Articulation</b> (X1)	The presentation/interview is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	The presentation/interview is somewhat logical, generally easy to follow, and/or there is sufficient information provided describing the project.	The presentation/interview is clear, concise, and there is ample information provided describing the project.	
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its presentation/ interview; participants' posture, gestures, and lack of eye contact diminish the delivery.	The team is somewhat well-spoken and clear in its presentation/ interview; participants' posture, gestures, and eye contact result in an acceptable delivery.	The team is well-spoken and distinct in its presentation/interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective delivery.	

<b>SEMIFINAL PRESENTATION (77 points) – continued</b>				
<b>Knowledge</b> (X2)	Participants seem to have little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit an understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of the project.	
<b>Team participation</b> (X1)	The majority of the presentation/ interview is made by one member of the team; the partner(s) may be disengaged.	Team members generally are engaged in the process, though one member may take on more responsibility than the other(s).	All team members are actively involved in the presentation/ interview and responses to questions.	
<b>LEAP Report/ Interview</b> (17 points; 10% of total event points)	The team's efforts are not clearly communicated, lack detail, and/ or are unconvincing; few, if any, attempts are made to identify and/or incorporate the SLC Practices and Behaviors.	The team's efforts are adequately communicated, include some detail, are clear, and/or are generally convincing; identification and/or incorporation of the SLC Practices and Behaviors is adequate.	The team's efforts are clearly communicated, fully-detailed, and convincing; identification and/or incorporation of the SLC Practices and Behaviors is excellent	
<b>SEMIFINAL PRESENTATION/INTERVIEW SUBTOTAL (77 points)</b>				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
<b>To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.</b>				
<b>TOTAL (187 points)</b>				

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

**JUDGE**

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_

# BIOTECHNOLOGY DESIGN

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Assistants for check-in, two (2)
- C. Judges:
  - 1. Preliminary round, two (2) or more
  - 2. Semifinal round, two (2) or more

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and for each judge
  - 2. TSA Event Coordinator Report
  - 3. List of judges/assistants
  - 4. Pre-populated flash drives for judges
  - 5. Stick-on labels for entries, as needed
  - 6. Results envelope
  - 7. Envelope for LEAP Reports
  - 8. LEAP Interview Judging Protocol
- B. Tape measure for judges
- C. Stopwatch
- D. Display tables for entries (minimum width 18")
- E. Table and chairs for judges and two (2) semifinalist team representatives
- F. A 50' extension cord AND a power strip (for semifinalist interviews)

### RESPONSIBILITIES

#### AT THE CONFERENCE

1. Attend the mandatory coordinator's meeting at the designated time and location.
2. Report to the CRC room to obtain the coordinator's packet; check the contents.
3. Review the event guidelines and check to see that enough judges/assistants have been scheduled.

4. Inspect the area in which the displays are being placed for appropriate set-up, including appropriate number and size of tables.
5. At least one hour before the event is scheduled to begin, meet with judges to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.

#### EVENT CHECK-IN

1. Check in the entries and collect LEAP Reports at the time stated in the conference program.
2. Anyone reporting who is not on the coordinator's report may check in only after official notification is received from the CRC.
3. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
4. Place an entry number in the upper right-hand corner of each portfolio and display.
5. Position entries for evaluation and viewing.
6. Secure the entries in the designated area.

#### PRELIMINARY ROUND

1. Judges independently assess the entries to determine the twelve (12) semifinalists.
2. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
  - a. To deduct twenty percent (20%) of the total possible points or
  - b. To disqualify the entry
  - c. The event coordinator, judges and CRC manager must initial either of these actions on the rating form.
3. Review and submit semifinalist results and all related items/forms to the CRC room for posting.

### SEMIFINAL ROUND

1. Inspect the area in which the presentations are to take place. Ensure that there is a table and seating for participants and judges.
2. Meet with semifinalist judges to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the semifinalist presentations begin.
3. Conduct semifinalist presentations/interviews.
  - a. Judges should be sure to ask questions.
  - b. The LEAP interview will be conducted as part of the semifinalist presentation/interview and will last a maximum of five (5) additional minutes.
4. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
  - a. To deduct twenty percent (20%) of the total possible points or
  - b. To disqualify the entry
  - c. The event coordinator, judges and CRC manager must initial either of these actions on the rating form.
5. Judges determine the ten (10) finalists and discuss and break any ties. (Determine the procedure for breaking ties before the onsite competition begins.)
6. Review and submit the finalist results and all items/forms in the results envelope to the CRC room.
7. If necessary, manage security and the removal of materials from the event area.