

## OVERVIEW

Applying leadership and 21<sup>st</sup> century skills, participants conduct research on a contemporary biotechnology issue as it relates to a chosen theme on the [TSA website](#) under *Themes & Problems*. Participants will document their research and make a display. The information gathered may be student performed and researched, or a re-creation or simulation of research performed by the scientific community. Semifinalist teams present and are interviewed about their topic.

## ELIGIBILITY

Five (5) teams per state, consisting of at least three (3) individuals, may participate.

## TIME LIMITS

Ten (10) minutes are allowed for the semifinal presentation and interview broken down as follows:

- A. One (1) minute for set-up
- B. Seven (7) minutes for the presentation
- C. Two (2) minutes to respond to questions from judges

## ATTIRE

TSA competition attire is required.

## PROCEDURE

### PRE-CONFERENCE

- A. Participants review the TSA Honor Statement for Competitive Events found in the General Rules and listed in the individual competitive event rules.
- A. Participants access the annual theme on the [TSA website](#) under *Themes & Problems*.
- B. Participants research the issue using credible sources.
- C. Participants prepare their display and documentation portfolio according to the regulations and requirements.

## PRELIMINARY ROUND

- A. No more than two (2) team representatives report at the time and place stated in the conference program to set up the display.
- B. Entries are independently reviewed by judges, with neither students nor advisors present.
  - 1. Judges score the display criteria to determine the top twenty-four (24) preliminary teams, which will not be posted.
  - 2. Judges score the documentation criteria of those top twenty-four (24) teams to determine the top twelve (12) semifinalist teams.
- C. A list of twelve (12) semifinalist teams (in random order) is posted.

## SEMIFINAL ROUND

- A. One (1) team representative reports at the time and place stated in the conference program to sign-up for a presentation/interview time.
- B. Three (3) team representatives report at least ten (10) minutes prior to their assigned time to the designated place for their presentation/interview.
- C. Semifinalist team representatives participate in the on-site presentation and interview.
- D. Team representatives pick-up their entry from the display area at the time and place stated in the conference program.
- E. The top ten (10) finalists are announced at the awards ceremony.

## REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21<sup>st</sup> century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

## PRE-CONFERENCE

- A. Students must understand the fundamental concepts and principles of the contemporary biotechnology issue they research. Research about the issue should focus on significant impacts (opportunities and risks) on the environment, economy, and society, as well as any important ethical considerations.
- B. Display guidelines:
  1. The size of the display may not exceed 15" deep x 30" wide x 48" high.
  2. A/C electricity may not be used.
  3. If the display requires power, they must be powered by dry-cell batteries or photo-voltaic cells.
    - a. The power supply must physically fit within the display dimensions.
    - b. All power must be switched off once the team has completed set-up.
    - c. If teams want judges to activate any electronic device in their display, complete instructions must be provided to judges on how to power up the display.
  4. If operating instructions are necessary, they must be clearly displayed and should include information about turning on devices, logging in, etc.
- C. Documentation Portfolio:
  1. Documentation portfolio is required and must be secured in a [clear front report cover](#) with the following single-sided, 8½" x 11" pages, in this order:
    - a. Title page with the event title, the conference city and state, the year, and the team/chapter ID number; one (1) page
    - b. Table of contents; pages as needed
    - c. Definition and explanation of the issue as it relates to the theme; one (1) page
    - d. Research base: an explanation of the importance of the issue in contemporary biotechnology today, including possible solutions; maximum three (3) pages
    - e. Support materials such as logs, graphs, sketches, drawings, illustrations, photos, etc.; maximum four (4) pages
    - f. Work Log (see 2026 & 2027 Forms Appendix); pages as needed
    - g. A list of references and credible sources; a minimum of three (3) different types of references must be used; pages as needed
    - h. Work must be original or cited, using a professional citation style of the competitors choosing. Failure to use a professional citation style will result in a rules violation of 20% (twenty percent). Some examples of professional citation styles include MLA, APA, Chicago, and IEEE; pages as needed
    - i. Photo/Film/Video Consent and Release forms. If the entry contains images of people (minors require parental consent), proof of consent must be included for each person (see 2026 & 2027 Forms Appendix); pages as needed
- D. Once the display set-up time frame has closed, participants may not re-enter the event area.
- E. Violation of the following will result in disqualification:
  1. No liquids, viruses, live plants, or animals may be used as a part of the display.
  2. No harmful or illegal substances may be displayed.

## SEMIFINAL ROUND

- A. The presentation is limited to three (3) team representatives. Each member should be an active participant in the presentation.
- B. Representatives should reference their display and documentation during the presentation and interview.
- C. Teams may bring and use audio/visual materials or a laptop for their presentation. Projectors and screens are not permitted. Access to power will not be provided.

## D. Time limits:

1. One (1) minute for set-up
2. Seven (7) minutes for presentation
3. Two (2) minutes to respond to questions from judges.
4. A five-(5) point deduction will be incurred for any time infraction.

**EVALUATION****PRELIMINARY ROUND****Tier 1**

- A. The display

**Tier 2**

- B. The documentation portfolio

**SEMIFINAL ROUND**

- A. The presentation
- B. The interview

Refer to the official rating form for more information.

**TSA HONOR STATEMENT**

All work must be created and completed by individual competitors or teams. Plagiarism, the use of Generative Artificial Intelligence (GenAI) software, copyright violation, cheating, and falsification of information are prohibited. Participants may NOT use any generative artificial intelligence (GenAI) tools (e.g. ChatGPT, Google Gemini, GitHub Copilot, etc.). Any attempt to gain an unfair advantage will not be tolerated. Competitors at any level of TSA competition understand and agree to abide by the TSA Honor Statement.

If it is determined that a student violated the TSA Honor Statement, a rules violation of twenty percent (20%) will be incurred.

**STEM INTEGRATION**

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

**LEADERSHIP AND 21<sup>ST</sup> CENTURY SKILLS**

This event provides opportunity for students to build and develop leadership and 21<sup>st</sup> century skills including but not limited to – Communication, Collaboration/Social Skills, Initiative, Problem Solving/Risk Taking, Critical Thinking, Perseverance/Grit, Creativity, Relationship Building/Teamwork, Dependability/Integrity, and Flexibility/Adaptability

**CAREERS RELATED TO THIS EVENT**

This competition has connections to one (1) or more of the careers below:

- Botanist
- Chemical engineer
- Food scientist
- Molecular biologist
- Plant geneticist

# BIOTECHNOLOGY

## 2026 & 2027 OFFICIAL RATING FORM

### MIDDLE 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.

- ☐ TIER 1 – Display is present
- ☐ TIER 2 – Documentation portfolio is present
- ☐ ENTRY NOT EVALUATED

TIER 1 – DISPLAY (90 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>Definition and Explanation of the Issue and Solution</b> (X1)	Unclear definition and explanation of the issue is evident; it is difficult to understand the solution being communicated; an illogical explanation is presented.	Issue is defined and explained adequately; the solution is acceptable.	There is evidence of a clear and concise definition and explanation of the issue; explanation is presented and communicated in an organized and concise manner.	
<b>Explanation of Impacts</b> (X2)	Explanation is missing a discussion of the issue's relevance to environmental, economic, social, and/or ethical considerations.	Explanation addresses some of the issue's relevance to environmental, economic, social, and/or ethical considerations.	Explanation includes a full discussion of the issue's relevance to environmental, economic, social, and/or ethical considerations.	
<b>Supporting Information</b> (X1)	Supporting information does not help to clarify documentation and/or it is of little significance to the issue.	Supporting information is appropriate and helps supplement the documentation by providing clarity to the issue.	Supporting information is highly effective and of excellent quality.	
<b>Research, References, and Resources</b> (X1)	Documentation lacks adequate research base, and/or very few credible sources are referenced.	Research is generally appropriate, with adequate credible sources.	A comprehensive research base that includes credible sources is evident.	
<b>Communication of Issue</b> (X1)	It is difficult to understand the issue being communicated; an illogical explanation is presented.	The issue is communicated and thoughts are somewhat organized.	The issue is communicated in an organized, clear, and concise manner.	
<b>Communication of Solution</b> (X1)	It is difficult to understand the solution being communicated; an illogical explanation is presented.	The solution is communicated and thoughts are somewhat organized.	The solution is communicated in an organized, clear, and concise manner.	
<b>Creativity</b> (X1)	The display lacks creativity; no, or very few, design principles are integrated in the display.	Some elements of creativity exist in the display, and essential design principles are generally evident.	The display exudes creativity; essential design principles and elements are well integrated.	
<b>Aesthetics and Artanship</b> (X1)	Display is unorganized and sloppy; display seems to be an afterthought or thrown together.	Display is somewhat organized and aesthetically pleasing.	Display is logical, organized, cohesive, and aesthetically pleasing.	
<b>TIER 1 – DISPLAY SUBTOTAL (90 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: \_\_\_\_\_

### TIER 1 – SUBTOTAL (90 points)

### TIER 2 – DOCUMENTATION PORTFOLIO (60 points)

CRITERIA	Minimal performance	Adequate performance	Exemplary performance	Record scores in the column spaces below.
	1-4 points	5-8 points	9-10 points	
<b>Portfolio Components</b> (X1)	Portfolio is unorganized and/or is missing three (3) or more components.	Portfolio is missing one (1) or two (2) components and/or is loosely organized.	Portfolio has all required components in order and is well organized.	
<b>Definition and Explanation of Issue</b> (X1)	Definition and explanation of the issue is unclear.	Issue is generally defined and explained, but some points could use additional clarification.	Clear and concise definition and explanation of the issue is evident.	
<b>Research Base</b> (X1)	Research is inadequate, and/or very few credible sources are referenced.	Research has been conducted appropriately, with some credible sources included.	Research indicates evidence of a comprehensive assortment of materials that are credible sources.	
<b>Support Materials</b> (X1)	Support materials do not help clarify the documentation and/or are of very little significance to the issue.	Support materials are somewhat appropriate and lend some clarity to the issue.	Support materials are of excellent quality; if not original, they are cited; support materials clarify the issue.	
<b>Work Log</b> (X1)	Log is poorly organized and/or incomplete.	Log is adequately detailed and organized and contains most of the required components.	Log is well documented and contains all the required components.	
<b>Quality and Effectiveness</b> (X1)	Portfolio appears to have been thrown together; distracting errors in punctuation, grammar, and spelling are evident in the documentation.	Portfolio is generally organized; punctuation, grammar, and spelling are correct for the most part, with few errors.	Work is of exceptional quality and well organized; punctuation, grammar, and spelling are correct, with no errors.	
<b>TIER 2 – DOCUMENTATION PORTFOLIO 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 (150 points)

SEMIFINAL PRESENTATION/INTERVIEW (60 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>Organization</b> (X1)	Participants seem unorganized and unprepared for the presentation, with an illogical explanation of the problem and solution.	Participants are generally prepared for the presentation; explanation of the problem and solution are somewhat communicated and organized.	The presentation is logical, well-organized, and easy to follow; the problem and solution are communicated in an organized and concise manner.	
<b>Articulation</b> (X1)	Communication of the solution is unclear, unorganized, and/or illogical; leadership and/or 21 <sup>st</sup> century skills are not evident.	Communication of the solution is somewhat logical and clear; leadership and/or 21 <sup>st</sup> century skills are somewhat evident.	Communication of the solution is clear, concise, and logical; leadership and/or 21 <sup>st</sup> century skills are clearly evident.	
<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; little to no references are made to the display and/or documentation portfolio.	The team is generally well-spoken and clear in its presentation/interview; participants' posture, gestures, and eye contact are acceptable in the delivery; some references are made to the display and/or documentation portfolio.	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; multiple appropriate and effective references are made to the display and/or documentation portfolio to enhance the delivery.	
<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)	Majority of the presentation/interview is made by one member of the team; the other team members 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.	
<b>SEMIFINAL PRESENTATION/INTERVIEW 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: _____				
<b>TIME DEDUCTIONS</b>				
A five-(5) point deduction will be incurred for any time infraction.				
<b>SEMIFINAL SUBTOTAL (60 points)</b>				
To arrive at the <b>TOTAL</b> score, add any subtotals and subtract rules violation points, as necessary. <b>TOTAL (210 points)</b>				

Comments:

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

**JUDGE**

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

# BIOTECHNOLOGY

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Judges:
  - 1. Preliminary round, two (2) or more
  - 2. Semifinalist round, two (2) or more (preferably the same judges from the preliminary round)
- C. Assistant, one (1)

### 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. Stick-on labels for identifying entries
- B. Display tables for entries
- C. Table and chairs for team presentations, as needed
- D. Stopwatch
- E. Measuring tape
- F. Display tables for entries
- G. Table and chairs for event coordinator and judges

### RESPONSIBILITIES

#### AT THE CONFERENCE

- A. Attend the mandatory event coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.

- E. At least one (1) hour before the event is to begin, meet with judges and assistants to review time limits, procedures, regulations, evaluation, and all other details related to the event. If questions arise that cannot be answered, speak to the event manager before the event begins.
- F. Ensure the judges have access to the online judging system.

#### EVENT CHECK-IN

- A. Check in the entries at the time stated in the conference program.
- B. No more than two (2) team representatives may check in:
  - 1. The display
  - 2. The documentation portfolio
- C. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- D. In order to compete, participants must be on the entry list or must have approval of the CRC.
- E. Requirements for attire do NOT apply during check-in, only on the first full day of the conference.
- F. Each entry must include the team's identification number in the upper right-hand corner of the display and somewhere visible on the documentation portfolio

#### PRELIMINARY ROUND

- A. Judges independently score the display criteria which will determine the top twenty-four (24) teams, which will not be posted.
- B. Judges score the documentation criteria of those top twenty-four (24) teams to determine the top twelve (12) semifinalists.



- C. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and the CRC manager to determine either:
  - 1. To deduct twenty percent (20%) of the total possible points in this round
  - 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must all initial either of the violations on the rating form.
- D. Create a sign-up sheet for semifinalist presentations/ interviews and communicate any instructions to the semifinalist participants.

### SEMIFINAL ROUND

- A. Prepare a list of five to ten (5-10) standard interview questions to be asked of all participants.
- B. Semifinalists report to sign-up for the presentation at the time and place stated in the conference program.
- C. Check in semifinalists and confirm with the teams their order of presentation and the procedure. Team representatives should report at least ten (10) minutes prior to their assigned time to the designated place for their presentation.
- D. Manage the presentations and interviews.
- E. If judges ask questions, they should be the same questions for each team for the purpose of comparing one team to another.
- F. Discuss rule violations and have all relevant parties initial the rating form.
- G. Judges independently assess the semifinal presentation and interview.
- H. If necessary, manage security and the removal of materials from the event area.