



# Pittsburgh Regional Science & Engineering Fair GUIDE & Rulebook

**April 1<sup>st</sup> – 2<sup>nd</sup>, 2025 Carnegie Science Center**

Junior and Intermediate Divisions – Tuesday, April 1, 2025

Senior Division – Wednesday, April 2, 2025

Virtual Awards Ceremony – Friday, April 4, 2025

PRSEF 1<sup>st</sup> Place Winner Showcase – Saturday, April 5, 2025

ISEF Winners Mandatory Meeting - Saturday, April 5, 2025

**Pittsburgh Regional Science & Engineering Fair (PRSEF)**

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## 2025 SCIENCE FAIR CALENDAR

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September 1, 2024	Registration opens
November 22, 2024	Deadline for PRSEF School Registration
November 22, 2024	Deadline for pre-approval of PRSEF projects using Human Participants, Non-Human, Vertebrate Animals, Potentially Hazardous Biological Agents, and Hazardous Chemicals, Activities and Devices. The pre-approval deadline also applies to students from schools who have their own science fair.
December 1, 2024	Early Bird Registration fee due (\$25/project---\$50/project after 12/1/24)
December 1, 2024	Grant Funding requests due (Schools with financial hardship may request funding support. on school letterhead. See below)
January 10, 2025	Deadline for PRSEF paperwork for projects not requiring SRC pre-approval
February 7, 2025	Deadline for abstract submission for all projects
February 23, 2025	Deadline for submission of preliminary ISEF applications and research papers (11:59PM)
March 7, 2025	Final Registration fee due (\$50/project)
April 1-2, 2025	PRSEF Competition Days, 7:00AM-4:00PM April 1, 2025 - Junior Division (6 <sup>th</sup> grade) and Intermediate Division (7 <sup>th</sup> -8 <sup>th</sup> grade) April 2, 2025 – Senior Division (9 <sup>th</sup> -12 <sup>th</sup> grade)
April 4, 2025	PRSEF Virtual Awards Celebration, 7:00 p.m. - 8:30 p.m.
April 5, 2025	PRSEF Showcase for all 1 <sup>st</sup> Place PRSEF winners & ISEF Finalists Noon-2PM
April 5, 2025	ISEF Winners Mandatory Meeting 9AM-Noon
May 11-16, 2025	ISEF takes place in Columbus, Ohio

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## Overview

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The Pittsburgh Regional Science & Engineering Fair (PRSEF) is affiliated with the Regeneron International Science & Engineering Fair (ISEF). Therefore, the International Rules for Pre-College Science Research are applied to all projects submitted to PRSEF. The complete rules are available on the Society for Science & the Public's website at <https://www.societyforscience.org/isef/international-rules/>.

Rules and guidelines for conducting research were developed with the intent to do the following:

- protect the rights and welfare of the student researcher and human subjects
- protect the health and well-being of vertebrate animal subjects
- follow federal regulations governing research
- use safe laboratory practices
- protect the environment

This guidebook will answer most questions and cover the details and requirements for students to compete at PRSEF. All other questions can be addressed to the Fair Director at 412.237.1534 or [PRSEF@CarnegieScienceCenter.org](mailto:PRSEF@CarnegieScienceCenter.org).

At PRSEF, students complete independent research projects, display their presentation boards on fair day, and discuss their research with scientists and engineers. Sponsor and other special awards are presented on the exhibit floor on competition day. Category, Scholarship, and ISEF award winners will be announced during the Awards Celebration, April 4, 2025.

Thanks to all the teachers, parents, and volunteers for your long hours of dedication in helping our young scientists and engineers to explore their world through hands-on science research. Without you, PRSEF would not exist. These young scientists and engineers are our future. Thank you for your commitment to our future.

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## 2025 DEADLINES AND REGISTRATION

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School and Student Registration Deadlines:

- School Registration - November 22, 2024; Adult sponsors must register schools online at <https://www.STEMisphere.org/PRSEF>. This includes schools who have their own fair.
- Pre-approval is required for projects involving Human Subjects/Non-Human Vertebrate Animals/Potentially Hazardous Biological Agents and Hazardous Chemicals, Activities and Devices. Paperwork must be submitted through <https://www.STEMisphere.org/PRSEF> on or before November 22, 2024.
- All other students must complete their forms online at <https://www.STEMisphere.org/PRSEF> by January 10, 2025.
- All students must submit an abstract by February 7, 2025 (LATE ABSTRACTS WILL NOT BE ACCEPTED!). The abstract is available to all judges to peruse projects before fair day. The abstract is limited to 250 words. It is to be uploaded on the stemisphere site: <https://www.STEMisphere.org/PRSEF>
- Students in grades 9-12 wishing to compete in the Regeneron International Science and Engineering Fair (ISEF) must submit a research paper. The required ISEF research paper must be submitted via email to [ISEF@carnegiesciencecenter.org](mailto:ISEF@carnegiesciencecenter.org) by February 23, 2025 at 11:59PM. LATE PAPERS WILL NOT BE ACCEPTED!
- The nonrefundable registration fee of \$50/Project is due by March 7, 2025; A nonrefundable "Early Bird" registration fee of \$25/project is available if paid prior to 12/1/24. Grant funding may be available for schools that qualify. Please contact [OrloskyC@CarnegieScienceCenter.org](mailto:OrloskyC@CarnegieScienceCenter.org). Funding requests must be on school letterhead, contain detail on financial need including free/reduced lunch percentage, and must be received by 12/1/24 to be considered.

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# RULES OF PARTICIPATION

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*These rules are intended to protect the student researcher by ensuring that the proper supervision is provided and that all potential risks are considered.*

Scientific fraud and misconduct are not condoned at any level of research or competition. This includes plagiarism, forgery, use or presentation of other researcher's work as one's own, improper use of Artificial Intelligence software, and fabrication of data. Fraudulent projects will fail to qualify for competition. PRSEF reserves the right to revoke recognition of a project subsequently found to have been fraudulent. The project must be solely the work of the exhibitor(s) in research, construction, and design of the exhibit. Parents or sponsors may only advise. Use of AI in writing abstracts, research plans and papers, is unethical. Adult supervision and assistance with the use of power tools are recommended.

The student must be less than 20 years of age as of May 1, 2025.

The student must live in one of the following counties: **PENNSYLVANIA:** Allegheny, Armstrong, Beaver, Bedford, Blair, Butler, Cambria, Clarion, Clearfield, Fayette, Greene, Indiana, Jefferson, Lawrence, Mercer, Somerset, Venango, Washington, Westmoreland; **MARYLAND:** Garrett.

The Pittsburgh Regional Science & Engineering Fair is the **ONLY** science fair in western PA which is affiliated with ISEF. Students may compete in only one ISEF affiliated science fair per school year.

**Team Projects (2 or 3 students)** are permitted in all divisions. All team members must be currently enrolled in grades which are assigned to the same division. All team members must be present for interviews with the judges on fair day to compete. Exceptions may be made for illness or emergency.

Each student **MUST** have an adult sponsor who is ultimately responsible for the health and safety of the student conducting the research and of any human or animal subjects. An adult sponsor may be a teacher, club leader, parent, university professor or scientist who has a solid background in science and will closely supervise the student's research.

PRSEF's Science Review Committee (SRC) must give the final approval for all projects submitted to the competition. Only students whose projects which have been given a status of Approved or Conditionally Approved by the SRC may compete. All forms submitted for review must be completed through the [www.STEMisphere.org/PRSEF](https://www.STEMisphere.org/PRSEF) website.

Any student leaving early on the day of competition **MUST** have completed the early dismissal form and

have approval from the PRSEF staff.

**Pre-approval projects** All students (in all divisions) conducting research involving **vertebrate animals, human subjects, tissue, recombinant DNA, microbes, and potentially hazardous biological agents or hazardous chemicals, activities or devices, MUST** have their research approved **BEFORE** starting the project.

**Human participant Research** - Projects involving consuming, ingesting, tasting, applying, and/or absorbing of any substance will be accepted with the approval of both the school's Institutional Review Board (IRB) on Form 4 and of the PRSEF Scientific Review Committee (SRC). Approval by the SRC for these types of studies will be based on the perceived safety and/or risk of the experiment. Research completed at a Regulated Institution and approved by the institution's IRB on Form 4 will be accepted by the PRSEF SRC if said research falls within the Society for Science's rules. In a human participant study, topics of study which could engender a feeling of shame, inadequacy, social exclusion, or prejudice including studies involving deception, social preference, friends, race/racism, religion, abuse, bullying, weapons, drugs, alcohol, mental illness, depression, girlfriend/boyfriend issues are prohibited.

**Bacteria/Mold Research** - Many students collect bacteria in a home environment. This is acceptable as long as the collected bacteria are immediately transported to a laboratory with the appropriate level of biosafety containment and petri dishes remain sealed. **Bacteria (even BSL-1 bacteria) may not be cultured in a home environment.** BSL-3 and BSL-4 projects are prohibited. All plates and petri dishes where bacteria are cultured must remain sealed throughout the study. Please visit <https://www.societyforscience.org/isef/international-rules/> for additional information and requirements.

Students **MUST** submit ALL required pre-fair project documentation including forms and SRC approval paperwork at <https://www.STEMisphere.org/PRSEF>

Students **MUST** be present at their project boards during the official judging time(s) on fair day. The exhibit area is a restricted area during official judging. **ONLY students, judges, and official PRSEF volunteers/ staff are permitted on the exhibit floor during category judging times.**

All students must remove their project boards from the exhibit area when they leave on fair day. Remaining projects will be discarded due to space limitations.

**The decisions of the judges determined on the day of the fair are final.**

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## PROJECT CATEGORIES

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The project category must be selected at the time of registration. The science fair office reserves the right to modify categories based on the number of projects per category.

### JUNIOR DIVISION (Grade 6)

**Behavioral & Consumer Sciences:** These projects will explore consumer products and the science of how people respond to the world around them. The areas include:

Behavioral Science Related: psychology, human and animal behavior, learning and perception, educational and testing, surveys.

Consumer Related: consumer product testing, consumer product design and enhancements, comparisons and evaluation of commercially available products

**Biological Sciences:** These projects will explore living things, including plants, animals and humans, and the things which affect them. The area includes biology, botany & zoology, nutrition, photosynthesis, allergies, plant growth, exercise, biochemistry, studies of animal/human health, genetics & inherited traits

**Chemistry:** These projects will explore chemistry, which includes study of any kinds of chemicals. These areas include: organic & inorganic chemistry, chemical compounds, household chemicals (chemistry focus, not functional emphasis), chemical engineering. Note: If the project focuses on the biological impact/effect of the chemical, then the project should be placed in the biological sciences category.

**Physical Sciences & Engineering:** These projects will explore physics which includes our mechanical world, and engineering, which includes building things and solving problems.

Physics Related: states of matter, optics and photography, sound and acoustics, heat, cold and thermal conductivity, pressure and vacuum, electricity and magnetism, friction, inertia, gravity, density.

Engineering Related: mechanical engineering, transportation, buildings and bridges, planes, trains, boats and cars, sports, robotics, computers, energy production, conversion and storage, alternative energy, such as wind and solar

### INTERMEDIATE DIVISION (Grades 7 & 8)

**Behavioral and Social Science\*:** human and animal behavior, social and community relationships – psychology, sociology, anthropology, archaeology, ethology, ethnology, linguistics, learning, perception, urban problems, reading problems, public opinion surveys, educational testing, etc.

Note: Social sciences projects which do not involve an experiment or data are not appropriate for competition at PRSEF.

**Biology:** botany, zoology, genetics, biochemistry, including hormones, molecular biology, molecular genetics, enzymes, photosynthesis, blood chemistry, protein chemistry, food chemistry, etc.

**Chemistry:** inorganic, organic, physical materials, plastics, fuels, pesticides, metallurgy, etc.

#### Computer Science/Math:

Computer Science - Scientific study of computers themselves and their uses, including: 1. Methods of programming/coding, computation, data processing, systems control, algorithmic properties, artificial intelligence, computer theory; and 2. Design and development of various application-based software.

Mathematics - including statistical methods, calculus, geometry, abstract algebra, number theory, probability, etc.

Note: Projects that use computers as a tool to investigate another problem, but that do not involve advanced programming, computer science or statistical methods should not be assigned to this category.

**Consumer Science:** consumer product testing and design.

**Earth/Environment:** pollution and sources of control, ecology, geology, mineralogy, oceanography, meteorology, climatology, geology, seismology, etc.

**Engineering/Robotics:** technology; projects that apply scientific principles to manufacturing and practical uses - civil, mechanical, aeronautical, chemical, heating and refrigerating, transportation, electrical, photographic, sound, automotive, marine, etc.

Intermediate Division continued next page.

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## PROJECT CATEGORIES CONT.

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### INTERMEDIATE DIVISION (Grades 7 & 8) cont.

**Medicine & Health/Microbiology:** bacteriology, virology, fungi, bacterial genetics, etc.; study of diseases and health of humans and animals - dentistry, pharmacology, pathology, ophthalmology, nutrition, sanitation, pediatrics, dermatology, allergies, speech and hearing, etc.

**Physics & Astronomy:** solid state, optics, acoustics, particle, nuclear, plasma, superconductivity, fluid and gas dynamics, magnetism, quantum mechanics, biophysics, astronomy, etc.

### SENIOR DIVISION (Grades 9-12)

**Behavioral and Social Science:** human and animal behavior, social and community relationships – psychology, sociology, anthropology, archaeology, ethology, ethnology, linguistics, learning, perception, urban problems, reading problems, public opinion surveys, educational testing, etc.

Note: Social sciences projects which do not involve an experiment or data are not appropriate for competition at PRSEF.

**Biology:** botany, zoology, genetics, biochemistry, including hormones, molecular biology, molecular genetics, enzymes, photosynthesis, blood chemistry, protein chemistry, food chemistry, etc.

**Chemistry:** inorganic, organic, physical materials, plastics, fuels, pesticides, metallurgy, etc.

#### **Computer Science/Math:**

Computer Science - Scientific study of computers themselves and their uses, including: 1. Methods of programming/coding, computation, data processing, systems control, algorithmic properties, artificial intelligence, computer theory; and 2. Design and development of various application-based software.

Mathematics - including statistical methods, calculus, geometry, abstract algebra, number theory, probability, etc.

Note: Projects that use computers as a tool to investigate another problem, but that do not involve advanced programming, computer science or statistical methods should not be assigned to this category.

**Earth/Environment:** pollution and sources of control, ecology, geology, mineralogy, oceanography, meteorology, climatology, geology, seismology, etc.

**Engineering/Robotics:** technology; projects that apply scientific principles to manufacturing and practical uses - civil, mechanical, aeronautical, chemical, heating and refrigerating, transportation, electrical, photographic, sound, automotive, marine, etc.

**Medicine & Health/Microbiology:** bacteriology, virology, fungi, bacterial genetics, etc.; study of diseases and health of humans and animals - dentistry, pharmacology, pathology, ophthalmology, nutrition, sanitation, pediatrics, dermatology, allergies, speech and hearing, etc.

**Physics & Astronomy:** solid state, optics, acoustics, particle, nuclear, plasma, superconductivity, fluid and gas dynamics, magnetism, quantum mechanics, biophysics, astronomy, etc.

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# REQUIRED REGISTRATION FORMS

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The following summarizes which forms are required for different types of projects.

All teachers and/or adult sponsors must review the contents of this PRSEF Guide. It provides important information on common paperwork problems and how to avoid them.

All student registration forms must be submitted online by January 10, 2025.

## Forms required for ALL STUDENTS

- **Form 1 — Checklist for Adult Sponsor**
- **Form 1A — Student Checklist**
- **Research Plan** (Must include detailed description of research and at least five (5) quality references)
- **Form 1B — Approval Form**
- **Form 3 – Risk Assessment**
- **Abstract** (abstracts, 250-word limit, must be submitted online on or before February 7, 2025)

Required forms can be accessed online at <https://www.societyforscience.org/isef/forms/>. **All forms must be completed online at <https://www.STEMisphere.org/PRSEF>. Do not mail hard copies of forms to the fair office.**

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## Pre-Approval Projects

Projects involving Human Participants, Non-Human Vertebrate Animals, Potentially Hazardous Biological Agents and Hazardous Chemicals, Activities and Devices require additional forms. All required forms will be generated by <https://www.STEMisphere.org/PRSEF> when Form 1 is completed. These projects require PRSEF SRC/IRB approval prior to experimentation and must be submitted on or before November 22, 2024. For projects with Human Participants, approval from the school's IRB on Form 4 and informed consent from participants are also required.

**Please note that FORM 2 (Qualified Scientist Form) is not required unless there is a scientist other than the teacher/sponsor involved with the student.**

**Non-Human Vertebrate Animals Projects** — Forms 1, 1A, Research Plan, 1B, 3, and

- Form 2 — Qualified Scientist and
- Form 5A — Vertebrate Animal Form (if conducted in a school, home or field research site), **OR**
- Form 5B — Vertebrate Animal Form (if conducted in a Regulated Research Institution)

If applicable:

- Form 1C — Regulated Research Institution/Industrial Setting Form (if conducted in a Regulated Research Institution)

**Human Participants**— Forms 1, 1A, Research Plan, 1B, 3, and

- Form 4 — Human Subjects Form with applicable consents and surveys

If applicable:

- Form 1C — Regulated Research Institution/Industrial Setting Form (if conducted in a Regulated Research Institution)
- Form 2 — Qualified Scientist (required if more than minimal risk is involved)

**Potentially Hazardous Biological Agents** — Forms 1, 1A, Research Plan, 1B, 3, and

- Form 2 — Qualified Scientist, and
  - Form 6A — Potentially Hazardous Biological Agents
- If applicable:

- Form 1C — Regulated Research Institution/Industrial Setting Form (if conducted in a Regulated Research Institution)
- Form 6B — Human and Vertebrate Animal Tissue Form (for all studies involving tissues and body fluids.)

**Hazardous Chemicals, Activities or Devices (includes DEA-controlled substances, prescription drugs, alcohol and tobacco, firearms and explosives, radiation, lasers, etc.)\*** — Forms 1, 1A, Research Plan, 1B, 3, and if applicable:

- Form 1C — Regulated Research Institution/Industrial Setting Form (if conducted in a Regulated Research Institution)
- Form 2 — Qualified Scientist

Still unsure on which forms are required - Visit <https://ruleswizard.societyforscience.org/>, or contact the PRSEF office at 412.237.1534 or [PRSEF@CarnegieScienceCenter.org](mailto:PRSEF@CarnegieScienceCenter.org) with any questions.

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## FORM COMPLETION AND REVIEW

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**Teachers and/or Adult Sponsor** - All teachers and/or adult sponsors must review this PRSEF Guide prior to submitting students' paperwork.

**Required registration forms** – All students must be registered at <https://www.STEMisphere.org/PRSEF> before January 10, 2025. Forms 1, 1A, Research Plan (see research plan instructions on page 2 of Form 1A and/or within Form 1A at <https://www.STEMisphere.org/PRSEF>, 1B and 3 are required for ALL projects. Other forms may also be required. For more information, see Required Registration Forms on page 6 or visit the ISEF forms wizard at <https://ruleswizard.societyforscience.org/>. All required forms will be generated by <https://www.STEMisphere.org/PRSEF> when the adult sponsor completes Form 1.

An abstract (250 words or less) for each project must be submitted online on or before February 7, 2025.

**Research plan** - At a minimum, the student's research plan should include Rationale, Research Question, Hypothesis, Procedure, Risk and Safety, Data Analysis, and Bibliography. Students' research plans **MUST** include a detailed description of the methods or procedures involved in their projects (list all materials, chemical concentrations, drug dosages, etc.). **The procedure must be clear to the reviewer.**

Research plans must list at least **five (5)** major references (e.g. science journals, books, articles, internet sites etc.) All references must be well documented and formatted in a standard recognized format (APA, MLA etc.). **URLs alone are not acceptable as references.** See <https://www.WLNonline.org/PRSEF> for high quality sources and bibliography formatting guidelines.

All signatures must be added to forms using the [www.STEMisphere.org/PRSEF](http://www.STEMisphere.org/PRSEF) system. When the student or adult sponsor enters contact information for an adult associated with their project (parent, qualified scientist, designated scientist etc.) that individual must log in to the system to add their signature to the form.

Check all forms for completion before submitting the project for review. Signatures on ALL forms (except 1C, if applicable) **must** be dated **prior** to the **start** of the

**student's experimentation on Form 1A.** Adults should enter the date they first approved the project - not the date they signed the form. Projects cannot be submitted to the SRC until the dates associated with the signatures are correct.

**Form (3) Risk Assessment Form is required for ALL projects.**

The deadline for submission of all registration forms is **January 10, 2025** However, projects involving Human Participants, Non-Human Vertebrate Animals, Potentially Hazardous Biological Agents and Hazardous Chemicals, Activities and Devices require approval prior to beginning research and must be submitted on or before **November 22, 2024.**

**A Scientific Review Committee (SRC) within the school is recommended** to support the teacher in reviewing students' research plans. Proper review of students' research plans will eliminate the risk of a student being disqualified from participation in PRSEF due to rule violations. **PRSEF's SRC reserves the right of final approval of all projects submitted to the competition.**

**Vertebrate Animal Studies** - Conducting experiments which pose a threat to the safety and welfare of animals (such as feeding them human food or placing the animal in an unsafe or unethical environment) are prohibited.

**Human Participant Studies - Institutional Review Board (IRB)** Schools are asked to form a school IRB to evaluate the potential physical and/or psychological risk of research involving humans. **The school's IRB must consist of a school administrator, educator (other than the adult sponsor) and medical professional.** The adult sponsor for the project may not serve as the educator on the school's IRB. The student must obtain signatures from the school IRB on Form 4 prior to submitting paperwork to PRSEF. Incomplete forms will not be evaluated by the SRC. **PRSEF's SRC must give the final approval for all projects submitted to the competition.**

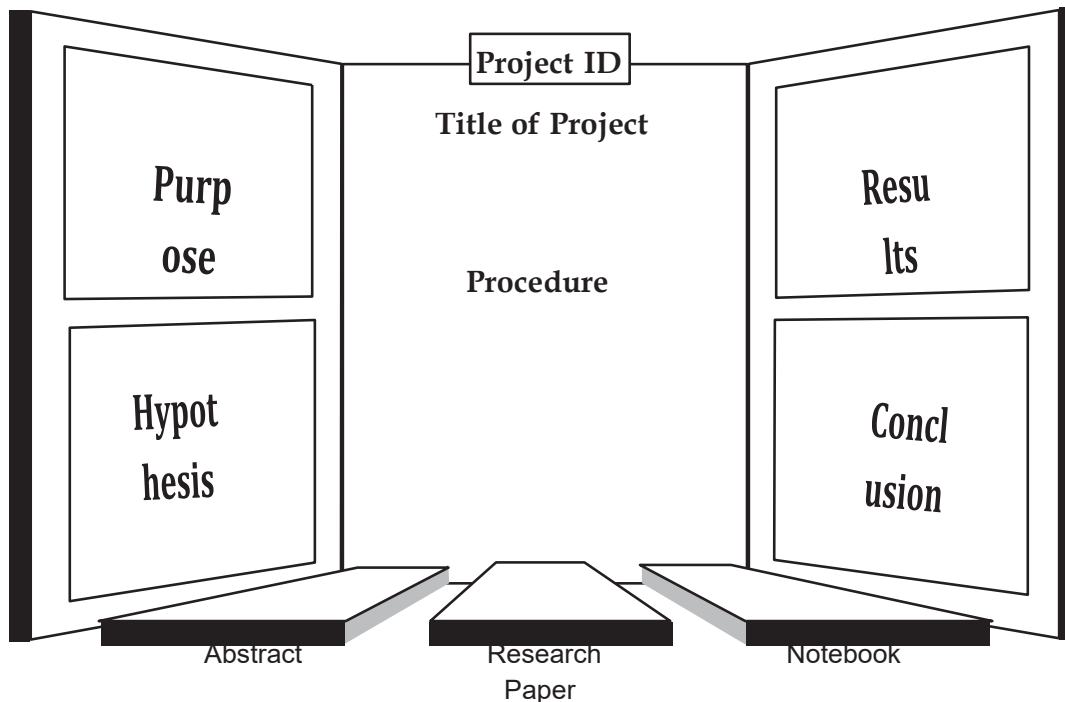
**All projects given a status of Approved or Conditionally Approved may compete at the fair. Do not submit corrections to Conditionally Approved projects to the SRC. Bring the corrected forms to the fair.**



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# PRESENTATION BOARD

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Project ID cards to be displayed at the top center of the presentation board will be provided at the competition on the student's exhibit table.

The standard presentation board is a three-panel, free-standing structure that folds for ease in transportation. Standard board size is 36" wide (122 cm) x 30" deep (76 cm) x 78" high (198 cm).

**Oversized exhibits may be disqualified.**

**IMPORTANT NOTE:** STUDENTS must set up their project displays. Parents and teachers are not permitted on the exhibit floor. Heavy wooden, double-stacked, plastic, or metal display boards are **not** recommended. Please plan accordingly.

**Photographs.** Visual depictions are permitted on the display board IF: a. they are not deemed offensive or inappropriate by PRSEF; b. they include credit lines of their origins ("Photographs taken by..." or "Image taken from ..."); c. they are from the internet, magazines etc., and credit lines are attached; d. they are photographs of the student researcher or e. they are photographs of human participants for whom consent forms were obtained. NOTE: Photographs or visual presentations

depicting vertebrate animals in surgical techniques, dissections or other lab procedures are **not permitted**. Many projects involve elements that may not be safely exhibited at home or at school but are an important part of the projects. Take photographs of important parts/phases of the experiment to use in the display. Photographs of human test subjects must have signed consent forms. Credit must be given for all photographs.

**A Good Title.** The title should be simple, accurate, descriptive and make the observer want to know more.

**Organization.** Make sure the display is logically presented and easy to read. A glance should permit anyone (particularly the judges) to quickly locate the title, experiments, results, and conclusions. When arranging the display, imagine that you are seeing it for the first time.

**Eye-catching.** Make your display stand out. Include photographs. Use neat, colorful headings, charts, and graphs. Pay special attention to the labeling of graphs, charts, diagrams, and tables. Each item must have a descriptive title. Anyone should be able to understand the visuals without further explanation. Avoid large blocks of text which are difficult and time consuming to read.

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# COMPETITION DAY

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## What You Must Bring to the Science Fair at Carnegie Science Center:

- Presentation Board
- Project Data Book (highly recommended by the judges, but not required)
- Research Paper (Senior Division only; recommended, but not required)
- Copies of your final Abstract; Form 1C and Form 7 (if required) for display
- Copies of the forms submitted to PRSEF. You can print these from [www.PRSEF.STEMisphere.org](http://www.PRSEF.STEMisphere.org). (For reference only – NOT FOR DISPLAY)
- **A light snack** - We suggest that you bring a piece of fruit, granola bar and/or water with you, especially if you are leaving early from home or school on fair day! The RiverView café at the Carnegie Science Center will be open for lunch.

### *Other important fair day details to remember.....*

The **Project ID** will be assigned by PRSEF.

Project ID Cards will be provided on the day of the fair. Also, do NOT put your name, school, or any identifying information on your board.

**Judging** - Students will be required to stand by their projects during the entire judging session. Please dress appropriately and wear comfortable shoes.

**Teachers/Adult Sponsors** - A detailed schedule of events will be shared mid-March.

**Be Prepared!** - Practice your presentation! You will be given 2-5 minutes to introduce your project. The judges will then be interviewing you and asking about your work. You must know your research **and** be able to communicate your research to others effectively. The judges are interested in hearing why you chose your research topic, what interested you most in your findings, how your research can enhance the world and its inhabitants. Note cards are permitted, but please do not read directly from them.

Still have questions? Visit the PRSEF website, [www.PittsburghScienceFair.org](http://www.PittsburghScienceFair.org).

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## JUDGING CRITERIA

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One of the most valuable experiences for young scientists and engineers is the opportunity to discuss their findings with established members of the scientific, engineering and technology communities. PRSEF competitors take great pride in their work and judging interviews greatly contribute to the overall educational experience of the competition. Each year, professionals, university faculty, industrial scientists and engineers, representatives of private and federal research centers and agencies, and medical researchers volunteer their time to interview and encourage our region's most promising young scientists and engineers.

There are five different types of judges at PRSEF: **Category Award** judges select winners in each of the 21 categories; **Sponsor Award** judges represent their professional organizations or institutions and judge students' projects for their specific award criteria; **Affiliated Award** judges represent sponsors from the International Science and Engineering Fair (ISEF); **Scholarship Award** judges choose senior division students who qualify for scholarship awards from participating colleges and universities in our region; and **Regeneron International Science and Engineering Fair (ISEF)** judges select the winner(s) to attend ISEF.

**The decisions of the judges determined on the day of the fair are final.**

Pittsburgh Regional Science & Engineering Fair judges all adhere to the following ethics standard:

***To preserve the integrity of the Pittsburgh Regional Science & Engineering Fair, even the appearance of prejudice must be avoided. Judges with a close personal relationship (parent, frequent personal interactions, teacher, mentor, etc) to an entrant will be assigned to a division where that judge will not influence an entrant's award.***

**Judging** –Students will be interviewed by judges at the Carnegie Science Center between 10AM and 4PM on the day(s) of the fair.

**Be Prepared!** - Practice your presentation! Remember that the judges will be interviewing you and asking about your work. You must know your research **and** be able to communicate your research to others effectively. The judges are interested in hearing why you chose your research topic, what interested you most in your findings, how your research can enhance the world and its inhabitants. Note cards are permitted, but please do not read directly from them.

### **Message from the judges:**

Be ready to talk in depth about your research. You should be able to have a conversation about your work and results. Practice explaining your research to your parents, teachers, and friends, especially people who don't understand your research. Tell everyone to ask you at least three questions.

Judges look for well thought out research. They consider how significant your project is in its field, as well as how thorough you were in conducting your research. Did you leave something out? Did you start with four experiments and finish only three? It's OK if you didn't get the result you expected - make sure you can explain why your result was not what you expected.

**Judges recognize students who can speak freely and confidently about their work. They are not interested in memorized speeches but prefer simply to TALK with you about your project to see if you have a good grasp of your research from start to finish.** Besides asking the obvious questions, judges often ask questions to test your insight into your project, such as, "What was your role?" or "What didn't you do?" or "What would be your next step?"

**JUDGES EXPECT STUDENTS TO DEMONSTRATE THAT THEY DID THE WORK AND UNDERSTAND THE RESULTS.**

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## TYPES OF JUDGES

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### Category Judges

Category judges choose the winners in each category (i.e., Junior Division Chemistry, Senior Division Biology etc.). Students are judged on scientific thought or engineering goals, experimental method or procedural plan, analytical approach, visual presentation, and oral presentation. These judges use rubrics which are tailored to specific areas of research. Point scores are used as a judging tool. Check the judges handbook <http://www.carnegiesciencecenter.org/stemcenter/stem-center-science-fair-judges-and-volunteers/> for the judging rubrics, procedure and selection process. The decisions of the judges, determined on the day of the fair, are final.

### Sponsor Judges

Representatives of the Sponsors of PRSEF select winning science fair project(s) in their field of interest. These judges have specific criteria based on their company's mission. For example, PPG will present awards for projects involving chemistry, physics, engineering, or material science which demonstrate creativity and knowledge in topics related to fiberglass, glass, coatings, paints, plastics, inks, adhesive, color, optically transparent material, polymers or chemicals. For a list of project ideas from our sponsors, reference the Teachers' and Students' Handbook at <http://www.carnegiesciencecenter.org/stemcenter/stem-center-science-fair-teachers-and-students/>. For a complete list of PRSEF sponsors, visit <http://www.carnegiesciencecenter.org/stemcenter/stem-center-science-fair-sponsors-and-awards/>.

### Affiliated Sponsor Judges

PRSEF is a regional science fair affiliated with the Regeneron International Science and Engineering Fair (ISEF). Affiliated sponsor awards are presented at PRSEF based on criteria received from ISEF and their sponsors. For example, the National Oceanic and Atmospheric Administration provides certificates and medallions to the projects that emphasize NOAA's mission to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social and environmental needs.

### Scholarship Judges

In 2024, more than 40 scholarships were awarded to PRSEF student researchers from local colleges and universities. Scholarships include full/half/partial tuition scholarships and pre-college program scholarships. For example, Carnegie Mellon University awards two pre-college program commuter scholarships to be utilized for the Advanced Placement/Early Action Program. Preference for scholarship consideration will be given to students who indicate interest in the school through the pre-fair survey and who are a good fit for the college. Visit [www.pittsburghsciencefair.com](http://www.pittsburghsciencefair.com) for a complete list of available scholarships.

### ISEF judges

Senior Division students who submitted a research paper and a preliminary ISEF application may be interviewed by judges selecting finalists for ISEF. Senior Division students selected as ISEF finalists by these judges will represent PRSEF at the Regeneron International Science and Engineering Fair.

TIP: Judges applaud those students who can speak freely and confidently about their work. They simply want to talk with you about your research. Good manners, appropriate attire, confidence, and enthusiasm for what you are doing will impress the judges.

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# AWARDS AND SCHOLARSHIPS

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## CATEGORY AWARDS

### Senior Division:

\$300 - First Place                      \$75 - Third Place

\$150 - Second Place

### Intermediate Division:

\$150 - First Place                      \$50 - Third Place

\$100 - Second Place

### Junior Division:

\$150 - First Place                      \$50 - Third Place

\$100 - Second Place

Multiple second and third place category cash award winners may be awarded if the number of category projects reaches >31. Non-monetary fourth place winners will be awarded in all three divisions with certificates of science excellence.

Checks will be mailed to the first, second, and third place awardees' homes after they complete the W9 form. Teams will split the cash prizes.

## SPONSOR AWARDS

Certificates of Science Excellence and medals will be sent to the winning students' schools. Sponsor awards are defined and selected by the sponsoring organization. Some sponsors invite students to club meetings, recognition dinners or site tours.

Affiliated Sponsor awards (certificates, medallions, items as determined by sponsors) will be awarded at PRSEF because of its affiliation with ISEF.

## SCHOLARSHIPS

Senior Division projects are eligible for full/half/partial tuition and pre-college program.

Scholarships will be determined and selected by the awarding colleges and universities.

## MERIT AWARDS

Category Judges select students who exhibit excellence in Creativity, Presentation, Literature Review or Scientific Method. Recognized students will receive a certificate of excellence that signifies their outstanding performance in one of these areas.

## REGENERON INTERNATIONAL SCIENCE & ENGINEERING FAIR (ISEF) AWARDS

Each student researcher entering an exhibit in the **senior division (9<sup>th</sup>-12<sup>th</sup> grades)** may apply for participation in the International Science and Engineering Fair (ISEF), <https://student.societyforscience.org/isef>. Research papers formatted in the style of a scientific research article must be submitted to [ISEF@carnegiesciencecenter.org](mailto:ISEF@carnegiesciencecenter.org) no later than February 23, 2025 at 11:59PM. Research papers must be no longer than 20 pages excluding data tables and appendices. ISEF finalists will be chosen on fair day and will receive an all-expenses paid trip to compete at Regeneron ISEF.

## THERMO FISHER SCIENTIFIC JUNIOR INNOVATORS CHALLENGE

The top 10% of students from the Junior Division (6th grade) and Intermediate Division (7th - 8th grades) are nominated to advance to the Thermo Fisher Scientific Junior Innovators Challenge (JIC), a program of Society for Science & the Public. Learn more at <https://www.societyforscience.org/jic/>

**All award winners will be announced during the awards ceremony.**

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## Sponsors

The Pittsburgh Regional Science & Engineering Fair is presented by leading corporations, foundations, professional societies, and universities in this region.

The Pittsburgh Regional Science & Engineering Fair is presented by Carnegie Science Center. Please contact us at 412.237.1534 or [PRSEF@carnegiesciencecenter.org](mailto:PRSEF@carnegiesciencecenter.org)