31ST Annual Greater Capital Region Science and Engineering Fair (GCRSEF)
Saturday, March 20, 2021

For detailed rules and registration forms, download the
Regeneron ISEF Rules and Guidelines Booklet

REGISTRATION DEADLINE: January 25, 2021

GCRSEF Board

Len Behr, University at Albany, **Consultant**
Nate Covert, Shaker HS, **Awards**
Ulysses deArmas, Rensselaer Polytechnic Institute **Liaison for Food, Rooms and RPI Scholarship**
Robert Keefe, NYS Department of Health, **SRC/IRB Chair**
Fran Lohnes, Saratoga Springs High School, **Senior Division Registrar**
Donna Mooney, **Secretary, Junior Division Registrar**
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Peter Robinson, Saratoga Springs High School, **Webmaster**
Amanda Troutman, Regeneron Pharmaceuticals, **Regeneron Liaison**
Joan Wagner, Eastern Section of STANYS, **Director/President**

ATTENTION TEACHERS: You must register online before your students can register.

ATTENTION RESEARCH STUDENTS: Once your teacher has registered you must create an account to continue with the Science Fair registration process.

JUNIOR DIVISION RULE CHANGE: The Junior Division now requires the same forms as the Senior Division.

NEW THIS YEAR: Registration for the Science Fair is digital. All required materials and forms must be uploaded to the GCRSEF website (gcrsef.org) by midnight, January 25, 2021. Make sure all forms have required signatures.

Goals

Science fairs provide a vehicle by which talented science, mathematics and engineering students can be recognized for their achievements just as athletes are recognized in sporting events. When students do original research, they better understand the nature of science while developing their critical thinking skills, an essential goal of the science standards. Importantly, they are provided with a venue to network with other students who share their interests. As a result of this experience, many of these students go on to pursue STEM careers.

This is the 31st year of the Regeneron Greater Capital Region Science and Engineering Fair, an affiliate of the Regeneron International Science and Engineering Fair (ISEF) and the STANYS Science Congress. STANYS State Science Congress is sponsored by the Science Teachers Association of New York State (STANYS). Top projects from the Senior Division (grades 9–12) will be chosen to compete in Regeneron ISEF and the STANYS State Science Congress. Top projects from the Junior Division (grades 6-8) will be chosen to compete in the STANYS State Science Congress and the Broadcom Masters National Competition.

REQUIRED REGIONAL FORMS:

The following Regional Forms on other pertinent information can be found on the Regional Fair website (**gcrsef.org**)

- ✓ **Online Teacher Registration Form**
- ✓ **Online Student Registration Form**
- ✓ **Regional Registration Form B (SRC/IRB)**
- ✓ **Official 21 Category ISEF Abstract Form**
- ✓ **Media and Press Release Form**

ISEF FORMS:

For all international **rules**, **guidelines** and **forms** visit the SOCIETY FOR SCIENCE website.

To insure you submit all required forms with your project use the **RULES WIZARD**

Registering for the Greater Capital Region Science and Engineering Fair

All students registering a project must submit completed forms exactly as requested. **Incomplete forms will not be processed**. All forms downloaded from websites are in interactive PDF format**. No hand-written forms** will be accepted! Please make sure to read all rules posted on the ISEF Fair website. Please make sure to check both the Fair's GCRSEF website and the ISEF website for any new rules.

JUNIOR DIVISION PROJECTS:

Sponsoring Teachers:

- Make sure students create an account on the Science Fair website.
- Make sure students upload their forms to the Science Fair website by January 25, 2021.
- Send **Registration Payment Form** with the **registration fee** ($35.00 per student) to Mrs. Donna Mooney, Junior Division Registrar, 228 Spring Avenue, Troy, NY 12180.
  - Make check out to GCRSEF, Inc
  - Students will not be registered for the fair until payment is received. Postmark deadline is January 25, 2021
- SRC/IRB Regional Form B must be included when applicable*

***If there are any questions or a problem forming or having access to an SRC/IRB Committee, please email Donna Mooney at gcrsefjuniordivisionregistrar@gmail.com or call: (518) 225-2858.**

Junior Division forms required for registration

- Teacher Registration Form (online)
- Student Registration Form (online)
- Regional SRC/IRB Registration Form B: (GCRSEF website) Completed by School, when applicable
- Media and Press Release Form (GCRSEF website)
- Checklist for Adult Sponsor Form 1 (International Science Fair website and GCRSEF website)
- Student Checklist Form 1A (International Science Fair website and GCRSEF website)
- Research Plan
- Approval 1B (International Science Fair website and GCRSEF website)
- Additional ISEF Forms may be required of your project. See RULES WIZARD

SENIOR DIVISION PROJECTS:

Sponsoring Teachers:

- Make sure students create an account on the Science Fair website.
- Make sure students upload their forms to the Science Fair website by January 25, 2021.
- Send **Registration Payment Form** with the **registration fee** ($35.00 per student) to Ms. Fran Lohnes, Senior Division Registrar, 1 Blue Streak Blvd., Saratoga Springs, NY 12866.
  - Make check out to GCRSEF, Inc
  - Students will not be registered for the fair until payment is received. Postmark deadline is January 25, 2021
- SRC/IRB Regional Form B must be included when applicable

If there are any questions, please email Fran Lohnes at gcrsefseniordivisionregistrar@gmail.com or call: (518) 409-6216.

Senior Division forms required for registration

- Teacher Registration Form (online)
- Student Registration Form (online)
- Regional SRC/IRB Registration Form B: (GCRSEF website)Completed by School, when applicable
- Press Release Form (GCRSEF website)
- Checklist for Adult Sponsor Form 1 (International Science Fair website and GCRSEF website)
- Student Checklist Form 1A (International Science Fair website and GCRSEF website)
- Research Plan
- Approval 1B (International Science Fair website and GCRSEF website)
- Additional ISEF Forms may be required of your project. See RULES WIZARD

SRC/IRB APPROVAL

To provide for prior approval for projects listed below, each school district is responsible for forming a local review panel (See p. 9 of this brochure).

The following projects require SRC/IRB approval **BEFORE** research begins. Please review the ISEF rules book, which can be downloaded from both the GCRSEF website and ISEF website

- *Human subjects* including surveys (Requires IRB approval. It is recommended that schools combine the SRC and IRB into one committee called the SRC/IRB Committee). (See p. 9-10 of this brochure for more information)

- *Potentially hazardous biological agents (rDNA technologies, human or animal fresh tissues, blood, or body fluids)*.

- *Vertebrate animals*

- *Controlled substances, devices, equipment*:
  - Chemicals (*i.e.*, hazardous, flammable, explosive or highly toxic; carcinogens; mutagens and all pesticides).
  - Equipment *(i.e.,* welders; lasers; voltage greater than 220 volts).
  - Firearms
  - Radioactive substances
  - Radiation (*i.e.*, x-ray or nuclear; unshielded ionizing radiation of 100- 400 nm wavelength).

Every student participating should download and read a copy of this Fair brochure.

FAIR FINALISTS

Grand prize finalists in the Junior and Senior Division may be eligible to compete (with all expenses paid) in the ***STANYS State Science Congress*** hosted at Milton J. Rubenstein Museum of Science & Technology (MOST) in Syracuse, NY, June 12, 2021.

The top three senior division projects will be invited to compete at the **72nd Virtual *Regeneron International Science and Engineering Fair*** (May 9-14, 2021)

The top 4-6 junior division projects will be invited to compete in the **Broadcom Masters Competition.** The top 300 Masters will be announced on (TBA) and then 30 finalists will be awarded an all-expense paid trip to Washington, DC to compete in the finalist week from (TBA).

Many prizes and special awards will be presented to winners in both divisions, including cash awards, as well as a Rensselaer $50,000 Scholarship in the senior division.

RULES FOR THE FAIR

WHO MAY ENTER: Students in grades 6 – 12 may enter if attending a school in one of the 15 counties listed below. This includes all schools, public and private, and any home-schooled students in the counties of Albany, Columbia, Fulton, Greene, Hamilton, Montgomery, Orange, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Ulster, Warren, and Washington.

JUDGING: Students will be judged only on laboratory experiment/data collection performed over the past 12 continuous months. See ISEF rules for longitudinal studies and continuation studies. A copy of the Judging criteria is available on the GCRSEF website.

TEACHER AND ADULT SPONSORS: Every student must have a *teacher sponsor* in the school where he/she is enrolled. Parents/guardians, friends, or any other adult mentor cannot be a teacher sponsor unless the student is home-schooled. HOWEVER, any qualified adult may act as a research mentor for the student. The *adult sponsor* is the person who is directly involved with the student and his/her research and may be a parent. The adult sponsor is responsible for the safety of the student at all times.

PRIOR APPROVAL: Participants working on projects dealing with human subjects (including surveys), vertebrates, potentially hazardous biological agents and controlled substances must have prior approval. These projects must submit SRC/IRB Regional Form B.

STUDENTS MUST DO ALL WORK: Sponsors may help in planning and advising, but parents, teachers, or friends may not actually design, conduct, or build the project. Abuses of this rule will result in disqualification. All students are expected to be able to answer questions regarding the design and development of every phase of their project.

A student may not display a group project from a previous competition as an individual project.

A research project that is a new phase of a previously entered project must include a copy of Continuation Form 7, of ISEF rules for 2021.

Borrowed or purchased displays or collections are not permitted. All collections must have a label describing how, where, and when they were assembled and must be protected by safety glass or screen.

CONTENTS OF EXHIBITS: After student registration closes on January 25, 2021, students will be sent a project number and link to upload presentation material starting on March 8, 2021 and closing at noon on March 12, 2021.

Presentation Materials to Upload for Virtual GCRSEF:

- ✓ Official Abstract Form. See research paper and abstract section below.
- ✓ Project Presentation. This replaces the poster of in-person fairs and is a single pdf document with a maximum of 12-pages. *Project Materials Guidelines* can be downloaded from the gcrsef website.
- ✓ Quad Chart. This is a single page summary for quick overview (See Project materials Guidelines)
- ✓ Project Video (2-minute maximum). This video summarizes the project for the public. While judges will review the items above, they are not required to view the video, so do not include any key information not already provided.
- ✓ Video Demonstration/Simulation/Animation (1-minute maximum). If a project is best explained by showing a demonstration, simulation, or animation, a short video may be submitted. This is not required.
- ✓ Research Paper. See research paper and abstract section below.
- ✓ Lab Notebook Image/ Excerpt. Up to 4 pages of your lab notebook may uploaded to show evidence of its use. It is strongly advised not to share the notebook in totality.

SAFETY: Any visitor must easily and safely operate animated or push buttons exhibits. Use shields (wire, plastic, or safety glass) around any hot substances. Any exhibit using harmful, poisonous, or explosive materials, or electrical apparatus under potentially dangerous conditions will not be accepted under any circumstances. **The following is not allowed in the exhibits**:

- Aquariums, live plants, or live animals are not acceptable.
- Telescopes mounted on tripods must be securely anchored to a wooden or plywood base not larger than 48 in (121.9 cm) by 30 in (76.2 cm) and must not protrude beyond the mounting base.
- No glass
- Soil, sand, rock, cement and/or waste samples, even if permanently encased in a slab of acrylic
- Taxidermy specimens or parts
- Preserved vertebrate or invertebrate animals
- Human or animal food
- Human/animal parts or body fluids (for example, blood, urine)
- Plant materials (living, dead, or preserved) that are in their raw, unprocessed, or non-manufactured state
- All chemicals including water. Absolutely no liquids can be utilized in the Project Display
- All hazardous substances or devices (Example: poisons, drugs, firearms, weapons, ammunition, reloading devices, grease/oil and sublimating solids such as dry ice)
- Items that may have contained or been in contact with hazardous chemicals (Exception: Item may be permitted if professionally cleaned and documentation for such cleaning is available). Filters including microbial) may not be displayed unless the Display & Safety Committee can reasonably determine that the device was cleaned or was never used (please include receipts in your notebooks and/or logbooks)
- Sharp items (for example, syringes, needles, pipettes, knives)
- Flames and highly flammable materials
- Batteries with open-top cells or wet cells
- Drones or any flight-capable apparatus unless the propulsion power source removed.
- 3D Printers unless the power source is removed.
- Inadequately insulated apparatus capable of producing dangerous temperatures are not permitted
- Any apparatus with belts, pulleys, chains, or moving parts with tension or pinch points that are not appropriately shielded
- Any display items that are deemed distracting (i.e. sounds, lights, odors, etc.)

THE RESEARCH PAPER AND ABSTRACT: Should be word-processed on 8.5 by 11.0 in. paper. The recommended length for the senior division is 5 to 10 pages, and 3 to 5 pages for the

junior division. Graphs, pictures, and diagrams do not count as written pages. The cover page should contain the title of your project as well as your name. The abstract should follow the cover page and should be no more than 250 words and written on the Official 21 Category Abstract Form, which can be downloaded from the Society for Science and the Public website or the GCRSEF website. For detailed information on how to begin your research and write a paper and abstract see: "Handbook download" from GCRSEF website.

ORAL PRESENTATION: You will be required to present a short summary (up to 5 minutes for an overview of project, i.e., research goals, procedure, and conclusions) to the judges, which will be followed by questions from the judges. This year, they will take place in Zoom Rooms.

JUDGING: Specific details about judging protocols are forthcoming. THE DECISIONS OF THE JUDGES ARE FINAL AND NONREVIEWABLE.

STANDARDS: The Planning Committee of the Greater Capital Region Science and Engineering Fair reserves the right to disqualify any exhibit on the day of the Fair for work that is unsuitable in subject matter or treatment that is potentially dangerous or that violates any rules of the fair. Exhibits that lack any of the necessary paperwork or required signatures will be disqualified!

HELPFUL HINTS: Have your teacher sponsor provide you a copy of this Regional Student Brochure or download it from GCRSEF website. Make sure to download a copy of the ISEF 2021 Rules from the ISEF website or our regional website.

REGISTRATION FEE: $35.00 for students living in the counties of Albany, Columbia, Fulton, Greene, Hamilton, Montgomery, Orange, Rockland, Rensselaer, Saratoga, Schenectady, Schoharie, Ulster, Warren, and Washington. Only students living in the above counties can participate in this science fair.

INSPECTION OF EXHIBITS: Projects will be inspected for safety and any rule infringement. Students and sponsoring teachers will be notified if a project did not pass inspection and will be provided with the information needed to pass inspection and be able to participate in the fair.

STUDENTS SEEKING PATENTS: If you plan to obtain a patent on your research, make sure the rights to your ownership is protected. Patent information can be found here:

United States Patent and Trade Office
Customer Service: 1-800-786-9199 (toll-free);
571-272-1000 (local); 571-272-9950 (TTY)
https://www.uspto.gov/
https://www.uspto.gov/patents-getting-started/patent-basics/types-patent-applications/utility-patent/process-obtaining

FORMING A LOCAL SRC/IRB Committee (Form B)

Q. WHEN MUST STUDENT RESEARCH BE LOCALLY REVIEWED?

A. ALWAYS! Some will require the approval of a local SRC Committee (Regional Form B) while others will need approval of the sponsoring teacher (Checklist for Adult Sponsor 1).

Q. WHAT STUDENT RESEARCH PROJECTS MUST BE REVIEWED BY an SRC/IRB COMMITTEE?

A. Any research projects involving human subjects (including surveys), vertebrate animals, potentially hazardous biological agents, and controlled substances must be reviewed. **Research conducted by pre-college students at a Regulated Research Institution** (e.g., university, college, medical center, government lab, correctional institution) must be reviewed and approved by that institution's IRB. A copy of the IRB approval for the entire project (which must include the research procedures/measures the student is using) and/or an official letter from the IRB attesting to approval is required. A letter from the mentor is not sufficient documentation of IRB review and approval. This is in addition to **Form C: Regulated Research Institutional/Industrial Setting Form.**

Q. WHEN SHOULD A LOCAL SCHOOL DISTRICT BEGIN TO ORGANIZE A REVIEW COMMITTEE?

A. IMMEDIATELY! Each September or October, local school districts should **officially** appoint a panel to review and approve student research projects that require approval.

Q. WHAT IS THIS REVIEW PANEL CALLED?

A. There are two types of review panels:

1. A general review panel, the **Scientific Review Committee (SRC)**, examines projects for the following:
    a. Evidence of literature search
    b. Evidence of proper supervision
    c. Use of accepted and appropriate research techniques
    d. Completed forms, signatures and dates showing maximum of one-year duration of research and appropriate pre-approval dates (when needed)
    e. Evidence of search for alternatives to animal use
    f. Humane treatment of animals
    g. Compliance with rules and laws governing human and animal research
    h. Compliance with rules regarding potentially hazardous biological agents, controlled substances and hazardous substances and devices
    i. Documentation of substantial expansion for continuation projects
    j. Compliance with the ISEF ethics statement

The Fair's Regional Science Review Committee will review all projects entered in the Greater Capital Region Science and Engineering Fair. Participants and sponsors will be notified of any missing or incomplete forms.

2. A second review panel, the **Institutional Review Board (IRB)**, is a committee used to evaluate projects that involve human subjects. Such oversight is mandated by federal law to assess potential physical or psychological risks that may be associated with proposed research involving human subjects, as well as to evaluate the methodology the student will use to

protect study subjects' private, personal or sensitive information. All proposed human research must be reviewed and approved prior to experimentation! This includes the research plan as well as any questionnaires or surveys used in the project.

A local school or school district can combine both the SRC and IRB into ONE review panel as long as all prerequisites for both panels are met.

Q. WHO SHOULD SERVE ON A LOCAL SRC/IRB COMMITTEE?

A. In order to combine both review panels (SRC and IRB) into one local SRC/IRB committee, a minimum of four persons with the following credentials must be members:

1. A biomedical scientist (Ph.D., M.D., D.V.M., D.D.S., or D.O.)
2. A science teacher (the teacher supervising the student may NOT serve on the panel)
3. A school administrator
4. And **one** of the following: a medical doctor, physician's assistant, registered nurse, psychiatrist, psychologist, or licensed social worker, Pharm D.

5. If the project involves human behavior, a psychologist, psychiatrist, or individual with human behavioral training **must** serve on the panel. If students are using non-human vertebrate animals, a veterinarian, or an individual with training in animal care should serve on the panel. SEE ISEF RULES, pp 8-14.

Q. WHAT IS Regional SRC/IRB FORM B?

A. This form is required for all projects that require senior division **prior approval.** Form B can be downloaded from the regional website. (gcrsef.org)

Q. WHERE CAN I GET HELP? WHERE DO I START? HOW DO I GET MORE INFORMATION?

A. If a sponsor teacher needs help forming a local SRC/IRB, you can call Joan Wagner at (518) 505-7507, email at gcrsef@gmail.com.