MISSISSIPPI SCIENCE AND ENGINEERING FAIR

REGION 1 HANDBOOK

2023 - 2024

PREPARED BY

Kendrick Buford, Ph.D.

Hope Ellison, Region I Co-Director

TABLE OF CONTENTS

MEET OUR HOSTS

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

THE CENTER FOR STEM EDUCATION

MEET OUR PARTNERS

REGENERON ISEF

The International Science and Engineering Fair was founded in 1950 by Science Service (now the Society for Science & the Public) and has been sponsored by the Intel Corporation since 1997. Beginning in 2020, Regeneron has been named the title sponsor for ISEF.

Each May, more than 1,500 students from roughly 70 countries and territories compete in the fair for scholarships, tuition grants, internships, scientific field trips, and grand prizes, including one $75,000 and two $50,000 college scholarships. All prizes together amount to over $4,070,000.

PART I: GENERAL INFORMATION

Registration Deadline

School Registration should be completed by 12/8/2023. Adhering to this registration deadline helps to prevent issues in project placement.

Student Registration Fees

These fees are only for ISEF-affiliated fairs. All JSHS events are free of charge.

Project Type	Early	Late (After Paperwork Deadline)
Single	40.00 USD	45.00 USD
Double	45.00 USD	50.00 USD
Triple	50.00 USD	55.00 USD

Note Triple Projects are not eligible for ISEF or JSHS. We can only send 2 people or projects.

Important Update*

Starting this year, we will not be able to guarantee ISEF participation until 75% of travel cost has been secured or 2 weeks before the fair date. Please help us predict this early by completing the school registration form. We will refund their money if the minimum is not met.

Resource and Contact Methods

Websites to visit

https://region1msef.wixsite.com/mysite

https://jshs.org/region/mississippi/ https://jshs.org/region/virtual/

Phone

Main Office	601-266-4739
Fax	601-266-6145
Dr. Kendrick Buford	601-266-6845

Email

General Inquires	Hope.Ellison@usm.edu
Demonstrations	Kendrick.Buford@usm.edu

2024 FAIR DATES

Event	Location	Date	Submit Paperwork By
Upper Fair	Payne Center	2/23/2024	2/9/2024
Lower Fair	Payne Center	2/23/2024	2/9/2024
Virtual JSHS	Online	2/29/2024-3/1/2024	2/14/2024
JSHS	Lake Terrace Convention Center	3/1/2024	2/19/2024
State Fair	MSU	3/28/2024	N/A
National JSHS	Albuquerque, New Mexico	5/1/2024 - 5/4/2024	N/A
ISEF	LA CA	5/11/2024 - 5/17/2024	N/A

PART II:
RULES AND REGULATIONS

https://ruleswizard.societyforscience.org/

Use this link to help determine which forms you would need for ISEF-affiliated fairs. These rules apply to Society for Science-affiliated science fairs and the Regeneron International Science & Engineering Fair 2024.

Eligibility

A student must be selected by an ISEF-affiliated fair, and meet both of the following:

- be in grades 9–12 or equivalent
- not have reached age 20 on or before May 1 preceding ISEF.

Each student is only allowed to enter one project. That project may include no more than 12 months of continuous research and may not include research performed before January 2023.

Project Evaluation

You will at minimum need the following positions:

- Key Teacher
- SRC Chair/Committee
- IRB Chair/Committee

These positions can overlap if the required qualifications are met.

A Scientific Review Committee (SRC) is a group of qualified individuals that is responsible for the evaluation of student research, certifications, research plans, and exhibits for compliance with the rules, applicable laws, and regulations at each level of science fair competition.

An SRC must consist of a minimum of three persons, including the following:

- a biomedical scientist with an earned graduate degree
- an educator
- at least one additional member of ALL projects, including those previously reviewed and approved by an IRB must be reviewed and approved by the SRC after experimentation and before competition in an Affiliated Fair.

An Institutional Review Board (IRB), is a committee that, according to federal regulations (45-CFR-46), must evaluate the potential physical and/or psychological risk of research involving humans.

All proposed human research must be reviewed and approved by an IRB before experimentation begins. This includes a review of any surveys or questionnaires to be used in a project. Federal regulations require local community involvement. Therefore, it is advisable that an IRB be established at the school level to evaluate human research projects.

An IRB must consist of a minimum of three members including the following:

- An educator
- A school administrator (preferably principal or vice principal)
- A medical or mental health professional. The medical or mental health professional may be a medical doctor, nurse practitioner, physician's assistant, doctor of pharmacy, registered nurse, psychologist, licensed social worker, or licensed clinical professional counselor.

A combined committee is allowed as long as the membership meets both the SRC and IRB requirements listed previously.

Project Consideration

Animal Care: Proper care and respect must be given to vertebrate animals. The use of non-animal research methods and alternatives to animal research are strongly encouraged and must be explored before conducting a vertebrate animal project. Potentially Hazardous Biological Agents (PHBAs): It is the responsibility of the student and adults involved in the project to conduct and document a risk assessment, and to safely handle and dispose of organisms and materials. Stewardship of the Environment:

It is the responsibility of the researcher and the adults involved to protect the environment from harm. Introduction or disposal of native, genetically altered, and/or invasive species,(e.g. insects, plants, invertebrates, vertebrates), pathogens, toxic chemicals, or foreign substances into the environment is prohibited.

Continuation Projects:

Any project based on the student's prior research could be considered a continuation/research progression project. These projects must document that the additional research is a substantive expansion from prior work (e.g. testing a new variable or new line of investigation). Repetition of previous experimentation with the same methodology and research question, even with an increased sample size, is an example of an unacceptable continuation.
Specific rules detailing how to tackle human subjects, vertebrate animals, and other hazardous chemicals can be found in "REGENERGON ISEF International Rules for Pre-College Science Research"

State and Local Rules

Classes of Competition Lower Fair
This is the elementary science fair for 1st-6th grade students. The regional fair shall be the final science fair competition for these students.

Class 0 – K3-K5 grades (*not suggested – listed for information only)
Class I – 1st, 2nd, and 3rd grades
Class II – 4th, 5th, and 6th grades

Upper Fair

This is the middle school and high school science fair for 7th-12th grade students. The regional fair shall be a feeder to the State Science Fair.

Class III – (6th)7th and 8th grades Class IV – 9th and 10th grades Class V – 11th and 12th grades

Upper Fair projects shall be required to submit the proper ISEF forms and additional paperwork as designated by ISEF and the SSP. Each project and its respective paperwork shall be reviewed by the regional SRC and IRB Committees before the regional Upper Fair. Each Region shall select at least one (1) project as an ISEF Finalist unless the Region decides that no projects meet the standards of an ISEF Finalist.

- An ISEF Finalist shall be a Class IV or Class V (9th-12th grade) project.
- Each Region shall designate the regional standards a project must meet to qualify for ISEF.

1st, 2nd, and 3rd placed projects are eligible and shall be registered for the State Science Fair by the Region Directors. The State Science and Engineering Fair of Mississippi is the state-level competition for 7th-12th grade students.

The State Fair shall be hosted by a Region Director and their host institution.

Project Types

Individual Project: Most common; a project whose research and experimentation have been conducted by a single student in or out of a research lab with no or limited help from an Adult Sponsor.

Team Projects: A team project shall be defined as a project whose research and experimentation have been conducted by multiple students in or out of a research lab. A team project shall be limited to three student members.

State Fair Judging

In cases of extraordinary circumstance, the Board of Directors shall form a caucus and determine what course of action will be taken. The course of action shall require a unanimous vote of the present caucus.

The desire for scientific literacy has brought about an increase in nationally backed resources to help our students implement and improve their ideas. Here is one from NASA: https://www.jpl.nasa.gov/edu/learn/activities/science-fair-project/.

Let's wrap this section up with one final link. It is very important to be able to provide a suitable medium to display the fruits of hard work. We typically depict this using a science fair board.

For almost every science fair project, you need to prepare a display board to communicate your work to others. In most cases, you will use a standard, three-panel display board that unfolds to be 36" tall by 48"wide. Display boards can be found at Amazon and other retailers.

Display boards in black or white-colored "foam core" (a sandwich made up of two pieces of smooth surface paper with a polystyrene (plastic) middle) or corrugated cardboard are readily available at many retailers ranging between $4 to $14 per board depending on the material.

Print out or write your information on white paper that you will attach to your display board. Be sure to proofread each sheet before you attach it.

Instead of regular paper, use cover stock (67#) or card stock (110#). These heavier papers will wrinkle less when you attach them to your display board.

Matte paper is preferable to glossy because it won't show as much glare- glare makes your display board difficult to read.

Glue sticks (use plenty) or rubber cement work well for attaching sheets of paper to your display board. Use double-sided tape for items like photographs that may not stick to glue.

Add simple visual accents to your board

INFORMATION ON REQUIRED ABSTRACT & CERTIFICATION FOR ALL PROJECTS AT ISEF

*** This form may not be relevant for your regional or state fair; please refer to instructions from your affiliated fair.***

IN ADDITION TO THE BASIC FORM REQUIREMENTS FOR ALL PROJECTS AND ANY OTHER REQUIREMENTS DUE TO SPECIFIC AREAS OF RESEARCH, AN ABSTRACT & CERTIFICATION IS REQUIRED AT THE CONCLUSION OF RESEARCH. DETAILS ON THIS REQUIREMENT FOLLOW.

Completing the Abstract

After finishing research and experimentation, you are required to write a (maximum) 250 word, one-page abstract. For ISEF, this abstract is written in the online Finalist Questionnaire portal and submitted electronically.

It is recommended that it **include the following:**

a. purpose of the experiment
b. procedure
c. data
d. conclusions

It may also include any possible research applications. Only minimal reference to previous work may be included.

An abstract **must not include the following**:

a. acknowledgments (including naming the research institution and/or mentor with which you were working), or self-promotions and external endorsements
b. logos or proper names of commercial products
c. work or procedures done by the mentor

Completing the Certification

At the bottom of the Abstract & Certification form there are six questions. Please read each carefully and answer appropriately. The ISEF Scientific Research Committee will review and approve the abstract and answers to the questions.

Revisions are permitted via the online portal through late April (please reference the system for current year deadlines.)

Once approved, two copies of the ISEF Abstract & Certification will be provided with a gold embossed seal; only this version of the abstract may be displayed or distributed.

NOTE: Your abstract must be on the International Science and Engineering Fair Abstract & Certification form and have the ISEF Scientific Review Committee approval seal before it is displayed or handed out. No other format or version of your approved Abstract will be allowed for any purpose at the ISEF.

ISEF Sample Abstract & Certification

PROJECT TITLE

FINALIST NAME(S)

FINALIST SCHOOL, CITY, STATE/PROVINCE, COUNTRY

PROJECT ID

Category
Pick one only—mark an "X" in box at right

ABSTRACT BODY

Animal Sciences	☐
Behavioral and Social Sciences	☐
Biochemistry	☐
Biomedical and Health Sciences	☐
Biomedical Engineering	☐
Cellular & Molecular Biology	☐
Chemistry	☐
Computational Biology and Bioinformatics	☐
Earth & Environmental Sciences	☐
Embedded Systems	☐
Energy: Sustainable Materials and Design	☐
Engineering Technology: Statics and Dynamics	☐
Environmental Engineering	☐
Materials Science	☐
Mathematics	☐
Microbiology	☐
Physics and Astronomy	☐
Plant Sciences	☐
Robotics & Intelligent Machines	☐
Systems Software	☐
Technology Enhances the Arts	☐
Translational Medical Science	☐

1. As a part of this research project, the student directly handled, manipulated, or interacted with (check all that apply):

   ☐ human participants ☐ potentially hazardous biological agents
   ☐ vertebrate animals ☐ microorganisms ☐ rDNA ☐ tissue

2. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only.
   ☐ yes ☐ no

3. I/We worked or used equipment in a regulated research institution or industrial setting.
   ☐ yes ☐ no

4. This project is a continuation of previous research.
   ☐ yes ☐ no

5. My display board includes non-published photographs/visual depictions of humans (other than myself):
   ☐ yes ☐ no

6. I/We hereby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work.
   ☐ yes ☐ no

FOR ISEF OFFICIAL USE ONLY

ISEF DISPLAY & SAFETY REGULATIONS

Please address any questions regarding ISEF Display & Safety Regulations to displayandsafety@societyforscience.org

DISPLAY & SAFETY COMMITTEE MISSION

The mission of this committee is to ensure that all competitors qualify for competition according to the rules established in conjunction with the Scientific Review Committee and Society for Science.

The ISEF Display & Safety inspection process can be initiated only when all items are present at the display. The Display & Safety Committee will offer guidance on Display & Safety issues for projects approved by the SRC to compete in ISEF. Occasionally, the ISEF Display & Safety Committee may require students to make revisions to conform to Display & Safety regulations. Persistent issues will be directed to a committee of individuals which may include Society for Science (the Society) personnel, Display & Safety (D&S) and/or Scientific Review Committee (SRC) executive committee members.

The following regulations must be adhered to when a finalist exhibits a project at ISEF. All projects must adhere to the Display & Safety requirements of the affiliated fair(s) in which they compete to qualify for participation in ISEF. Affiliated fairs may have additional restrictions or requirements. Knowledge of these requirements is the responsibility of the Finalist, Adult Sponsor, and Fair Director.

DISPLAY REGULATIONS

Maximum Size of Project

Depth (front to back): 30 inches or 76 centimeters
Width (side to side): 48 inches or 122 centimeters
Height (floor to top): 108 inches or 274 centimeters

Please be aware when ordering posters that the mechanism that supports the poster should conform to the maximum size limitations stated above.

- All project materials and support mechanisms must fit within the project dimensions (including table covers).
- Fair-provided tables at ISEF will not exceed a height of 36 inches (91 centimeters).
- If a table is used it becomes part of the project and must not exceed the allowed dimensions.
- Nothing can be attached to the rear curtain.
- All demonstrations must be done within the confines of the finalist's booth space. When not being demonstrated, all project components must be returned to the project display and must fit within allowable dimensions as defined above.
- Projects can be continued under the table BUT this area is not to be used for storage.

Position of Project

The fair provided table or freestanding display must be parallel to, and positioned at, the back curtain of the booth. Projects may NOT lean against the back curtain.

Forms Required to be Visible and Vertically Displayed at the Project Booth

The placement of the required forms may include the front edge of the table, the display board, or in a free-standing acrylic frame placed on the table top.

Forms required at all projects:

1. An original Official Abstract and Certification as approved (stamped/embossed) by the ISEF Scientific Review Committee.
   a. Upon SRC approval, the stamped/embossed Official Abstract and Certification will be provided.
      - The abstract must be the official International Science and Engineering Fair Abstract and embossed/stamped by the ISEF Scientific Review Committee.
      - No other format or version of your approved Abstract & Certification will be allowed for any purpose at ISEF. Judges are provided the official Abstract and Certification digitally; no handouts are permitted.
   b. The term "abstract" may NOT be used as a title or reference for any information on a finalist's display or materials at the project except as part of displaying the official stamped/embossed abstract.
      - It is the recommendation of the Display & Safety Committee to NOT include the word "abstract" nor the abstract itself when preparing backboards or posters prior to the fair. However, it is reasonable to leave a blank space (8½" x 11") on the backboard/poster so as to facilitate the addition of the official abstract. Keep in mind this document can also be displayed vertically on the front edge of the table or in a free-standing acrylic frame.
2. ISEF Project Set-up Approval Form (received on-site at the Fair)
   a. This form documents the project as approved by the Scientific Review Committee and is used to document the Display & Safety Committee's review process and final approval.
   b. This form must be signed by the finalist and the Display & Safety Committee member at the time of inspection.

Additional Forms required (only when applicable):

1. Regulated Research Institutional/Industrial Setting Form (1C)
   a. If work was conducted in a regulated research institution, industrial setting or any work site other than home, school or field at any time during the current ISEF project year, the **Regulated Research Institutional/Industrial Setting Form (1C)** must be completed and vertically displayed at the project booth.

b. The information provided by the mentor on Form 1C may be referenced to confirm that the information provided on the project board is that of the finalist. Only minimal reference to a mentor's or another researcher's work is allowable and must only reflect background information or be used to clarify differences between finalist's and others' work.

2. Continuation/Research Progression Projects Form (7)
   a. If a study is a continuation/research progression, the Continuation/Research Progression Projects Form (7) must be completed and vertically displayed at the project booth.
   b. The display board and abstract must reflect only the current year's work. The project title displayed in the finalist's booth may mention years of continuing research (for example, "Year Two of an Ongoing Study").
   c. Reference to past work on the display board must be limited to summative past conclusory data and its comparison to the current year data set. No raw data from previous years may be publicly displayed; however, it may be included in the student research notebooks and/or logbooks if properly labeled.

Forms Required at Project but not Displayed

1. Forms, excluding those listed above, that were required for the Scientific Review Committee approval should not be vertically displayed, but must be available in the booth in case asked for by a judge or other ISEF official. These forms include, but are not limited to, Checklist for Adult Sponsor (1), Student Checklist (1A), Research Plan, Approval Form (1B), and a photograph/video release form.
2. A photograph/video release form signed by the subject is required for visual images of humans (other than the finalist) displayed as part of the project.

Forms NOT to be at the Project Display Booth or in the Exhibit Hall

Completed informed consent/assent forms for a human participant study are NOT to be displayed and should NOT be present at the project display. The Finalist may include a sample (incomplete) form in their logbook or research notebook but under NO CIRCUMSTANCE should the completed informed consent/assent forms for a human participant be in the Exhibit Hall.

Photograph/Image Display Requirements

1. Any photograph/visual image/chart/table/student-created logo and/or graph is allowed if:
   a. It is not deemed offensive or inappropriate (which includes images/photographs showing invertebrate or vertebrate animals/humans in surgical, necrotizing or dissection situations) by the Scientific Review Committee, the Display & Safety Committee, or Society for Science
   b. It has a credit line of origin ("Photograph taken by..."or "Image taken from..." or "Graph/Chart/Table taken from..."). If all images, etc. displayed were created by the finalist or are from the same source, one credit line prominently and vertically displayed on the backboard/ poster or tabletop is sufficient.
      - All images MUST BE properly cited. This includes student-created logos, background graphics, photographs and/or visual depictions of the finalist or photographs and/or visual depictions of others.
      - All visual depictions of others require a signed photo/video release form is in a notebook or logbook at the project booth. These signed release forms must be available upon request during the set-up and inspection process, but may not be displayed.
   c. Sample release text: "I consent to the use of visual images (photos, videos, etc.) involving my participation/my child's participation in this research."
2. Finalists using any presentation or demonstration outside of a project board must be prepared to show the entire presentation to the Display & Safety Inspectors before the project is approved. All aforementioned rules apply to this presentation and the presentation may not be altered in any way after the final Display & Safety inspection. Examples of presentations that require approval include, but are not limited to PowerPoint, Prezi, Keynote, software program/simulation and other images and/or graphics displayed on a computer screen or other non-print delivery method.

Items/Materials Not Allowed on Display or at Project Booth

1. Any information on the project display or items that are self-promotions or external endorsements are not allowed in the project booth
   a. The use of commercial logos including known brands, institutional crests or trademarks, flags unless integral to the project and approved by the SRC via inclusion in the Official Abstract and Certification.
   b. Any reference to an institution or mentor that supported the finalist's research except as provided in an acknowledgement section of the poster and wtihin official ISEF paperwork, most notably Form 1C. Published research papers may only be present within a lab notebook.
   c. Any reference to patent status of the project.
   d. Any items intended for distribution such as disks, CDs, flash drives, brochures, booklets, endorsements, give-away items, business cards, printed materials or food items designed to be distributed to judges or the public.
2. Any awards or medals, except for past or present ISEF medals that may be worn by the finalist.
3. Postal addresses, World Wide Web, email and/or social media addresses, QR codes, telephone and/or fax numbers of a project or finalist. Note: The only personal information that is permissible to include on the display is the finalist name, school, city, state, country, age and grade.
4. Active Internet or email connections as part of displaying or operating the project at ISEF.
5. Any changes, modifications, or additions to projects including any attempt to uncover, replenish or return removed language or items after the approval by the Display & Safety Committee and the Scientific Review Committee has been received is prohibited.
   a. Display & Safety inspections will include recording photographic evidence of the approved Project Display and Project booth.
   b. Finalists who do not adhere to this signed agreement on the ISEF Project Set-up Approval Form regarding this regulation may fail to qualify for competition.

   I/we understand that the initial Display & Safety Inspection has been completed, but that additional reviews occur

and that I/we should check back regularly. I/we will vertically display this signed form at our project at all times. I/we have not and will not store packing material under the booth. I/we further understand that returning items that have been removed by the SRC or D&S and/or adding items that are not permitted after final clearance are grounds for failing to qualify for competition and/or forfeiture of all awards received.

SAFETY REGULATIONS

Not Allowed at Project or Booth

Note: In the case in which a Finalist's Project includes an item that is prohibited from display, please consider taking photographs and/or documenting the significance of the prohibited item through video.

1. Living organisms, including plants
2. Glass
3. Soil, sand, rock, cement and/or waste samples, **even if** permanently **encased in a slab of acrylic**
4. Taxidermy specimens or parts
5. Preserved vertebrate or invertebrate animals
6. Human or animal food
7. Human/animal parts or body fluids (for example, blood, urine)
8. Plant materials (living, dead, or preserved) that are in their raw, unprocessed, or non-manufactured state
9. All chemicals including water. Absolutely no liquids can be utilized in the Project Display
10. All hazardous substances or devices (Example: poisons, drugs, firearms, weapons, ammunition, reloading devices, granules or powders, grease/oil and sublimating solids such as dry ice)
11. 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)
12. Sharp items (for example, syringes, needles, pipettes, knives)
13. Flames and highly flammable materials
14. Batteries with open-top cells or wet cells
15. Drones or any flight-capable apparatus unless the propulsion power source removed
16. 3D Printers unless the power source is removed
17. Inadequately insulated apparatus capable of producing dangerous temperatures are not permitted
18. Any apparatus with belts, pulleys, chains, or moving parts with tension or pinch points that are not appropriately shielded
19. Any display items that are deemed distracting (i.e. sounds, lights, odors, etc.)
20. Personal items or packaging materials stored underneath the booth
21. Any apparatus or project material deemed unsafe by the Scientific Review Committee, the Display & Safety Committee, or the Society

Electrical Regulations

1. Electrical power supplied to the project is 120 or 220 Volt, AC, single phase, 60 Hz. No multi-phase will be available or shall be used. Maximum circuit amperage/wattage available is determined by the electrical circuit capacities of the exhibit hall and may be adjusted on-site by the Display & Safety Committee. For all electrical regulations, "120 Volt AC" or "220 Volt AC" is intended to encompass the corresponding range of voltage as supplied by the facility in which ISEF is being held.
2. Electrical devices must be protectively enclosed. Any enclosure must be non-combustible. All external non-current carrying metal parts must be grounded.
3. Energized wiring, switches, and metal parts must have adequate insulation and over-current safety devices (such as fuses) and must be inaccessible to anyone other than the finalist. Exposed electrical equipment or metal that may be energized must be shielded with a non-conducting material or with a grounded metal box to prevent accidental contact.
4. Decorative lighting or illumination is discouraged. If used, lighting must be as low a voltage as possible and must be LED lighting that does not generate heat. Incandescent and fluorescent light bulbs are prohibited. When student is not at the exhibit, all electrical power must be disconnected, or power bars must be switched off (Exception: during pre-judging audio visual displays may be available.)
5. An insulating grommet is required at the point where any wire or cable enters any enclosure.
6. No exposed live circuits over 36 volts are allowed.
7. There must be an accessible, clearly visible on/off switch or other means of quickly disconnecting from the 120 or 220 Volt power source.

Laser/Laser Pointer Regulations

Any Class 1, Class 2, Class 3A, or Class 3R lasers are allowed to be used responsibly. No other lasers may be used or displayed.

1. Laser beams may not pass through magnifying optics such as microscopes and telescopes.
2. Lasers must be labeled by the manufacturer so that power output can be inspected. Lasers without labels will NOT be permitted.
3. Handheld lasers are NOT permitted.
4. Lasers will be confiscated with no warning if not used in a safe manner.

JUDGING CRITERIA

Judging Criteria for Science Projects

I. Research Question(10pts)

A clear and focused purpose identifies contributions to the field of study testable using scientific methods.

II. Design and Methodology (15pts)

A well-designed plan and data collection methods variables and controls are defined, appropriate, and complete.

III. Execution: Data Collection, Analysis and Interpretation (20pts)

Systematic data collection and analysis reproducibility of results appropriate application of mathematical and statistical methods sufficient data collected to support interpretation and conclusions.

IV. Creativity (20pts)

The project demonstrates significant creativity in one or more of the above criteria.

V. Presentation (35pts)

- **Poster (10 pts)**

  Logical organization of material clarity of graphics and legends supporting documentation displayed

- **Interview (25 pts)**

  Clear, concise, thoughtful responses to questions understanding of basic science relevant to the understanding and interpretation/limitations of results and conclusions degree of independence in conducting the project recognition of potential impact in science, society, and/or economics quality of ideas for further research for team projects, contributions to and understanding of the project by all members.

PART III: RESEARCH CATEGORIES

0100 – Behavioral and Social Science
The science or study of the thought processes and behavior of humans and other animals in their interactions with the environment is studied through observational and experimental methods.

0200 – Biochemistry
The study of the chemical processes and molecular mechanisms within and relating to living organisms. Studies exploring the role, function, and structure of bio-molecules; biological processes; and synthesis of biologically active molecules.

0300 – Inorganic Chemistry
The study of the properties and reactions of inorganic and organometallic compounds. Studies exploring the science of the composition, structure, properties, and reactions of matter not involving biochemical systems or carbon.

0400 – Organic Chemistry
The study of carbon-containing compounds, including hydrocarbons and their derivatives. Studies exploring the science of the composition, structure, properties, and reactions of matter not involving biochemical systems.

0500 – Earth and Environmental Sciences
Studies of the environment and its effect on organisms/systems, including investigations of biological processes such as growth and life span, as well as studies of Earth systems and their evolution. (Atmospheric science, climate science, environmental effects on ecosystems, geosciences, water science)

0600 – Animal Sciences

This category includes all aspects of animals and animal life, animal life cycles, and animal interactions with one another or with their environment. Examples of investigations included in this category would involve the study of the structure, physiology, development, and classification of animals, animal ecology, animal husbandry, entomology, ichthyology, ornithology, and herpetology, as well as the study of animals at the cellular and molecular level which would include cytology, histology, and cellular physiology. (Animal Behavior, Cellular studies, development, ecology, genetics, nutrition and growth, physiology, systematics, and evolution)

0700 – Biomedical and Health Sciences

This category focuses on studies specifically designed to address issues of human health and disease. It includes studies on the diagnosis, treatment, prevention, or epidemiology of disease and other damage to the human body or mental systems. Includes studies of normal functioning and may investigate internal as well as external factors such as feedback mechanisms, stress, or environmental impact on human health and disease. (cell, organ, and systems physiology, genetics and molecular biology of disease, immunology, nutrition and natural products, pathophysiology)

0800 – Microbiology

The study of micro-organisms, including bacteria, viruses, fungi, prokaryotes, and simple eukaryotes as well as antimicrobial and antibiotic substances. (Antimicrobial and antibiotics, applied microbiology, bacteriology, environmental microbiology, microbial genetics, virology)

0900 – Physics and Astronomy

Physics is the science of matter and energy and of interactions between the two. Astronomy is the study of anything in the universe beyond the Earth. (atomic, molecular, and optical physics, astronomy and cosmology, biological physics, computational physics and astrophysics, condensed matter and materials, instrumentation, magnetics, electromagnetics and plasmas, mechanics, nuclear and particle physics, optics, lasers, and masers, quantum computation and theoretical physics)

1000 – Engineering Mechanics

Studies that focus on the science and engineering that involve movement or structure. The movement can be by the apparatus or the movement can affect the apparatus. (Aerospace and Aeronautical Engineering, civil engineering, computational mechanics, control theory, ground vehicle systems, industrial engineering-processing, mechanical engineering, naval systems)

1100 – Mathematics and Systems Software

The study or development of software, information processes or methodologies to demonstrate, analyze, or control a process/solution. The study of the measurement, properties, and relationships of quantities and sets, using numbers and symbols. The deductive study of numbers, geometry, and various abstract constructs, or structures. (Algorithms, cybersecurity, databases, human/machine interface, languages and operating systems, mobile apps, online learning, algebra, analysis, combinatorics, graph theory, game theory, geometry and topology, number theory, probability and statistics)

1200 – Robotics and Intelligent Machines

Studies in which the use of machine intelligence is paramount to reducing the reliance on human intervention. (Biomechanics, cognitive systems, control theory, machine learning, robot kinematics)

1300 – Plant Sciences

Studies of plants and how they live, including structure, physiology, development, and classification. Includes plant cultivation, development, ecology, genetics and plant breeding, pathology, physiology, systematics, and evolution. (agriculture and agronomy, ecology, genetics and breeding, growth and development, pathology, plant physiology, systematics and evolution)

PART IV: FORMS

K-6 are only required to fill out the school registration, student abstract, and student registration (lower) form.

All papers and forms will need to be submitted by the due date in the front of the guidebook. Failure to submit without notification will incur a late penalty.

Please, fill out the school registration form and submit it as soon as possible.

Forms are included on the following pages.

REGION I MS SCIENCE AND ENGINEERING FAIR SCHOOL REGISTRATION FORM

The **SCHOOL** registration form can be accessed ...

1. electronically by opening this form link

2. printed and filled out.

(Form included in following pages)

MS Region I Science and Engineering Fairs
School Registration Form

This form needs to be filled out by every school interested in participating in Region I Science and Engineering Fair. Please be as accurate as possible when estimating attendance as it helps with determining final ISEF participation.

Part I. General Information

School Name:_____ School District:_____

Address:_____ Estimated number of Science Fair Projects:____

_____ School Type (Public/Private/Home/Other):

_____

Part II. Committee Information

Name of Local SRC Chairperson: _____
Title:_____
Address: _____
_____
_____

SRC Member #2: _____
Degree(s) and/or Qualifications:

SRC Member #3: _____
Degree(s) and/or Qualifications:

Name of Local IRB Chairperson: _____
Title:_____
Address: _____
_____
_____

IRB Member #2: _____
Degree(s) and/or Qualifications:

IRB Member #3: _____
Degree(s) and/or Qualifications:

_____

_____

Key Teacher Certification: I have reviewed the form(s) for both correctness and completeness. I further certify that (1) this project follows all proper procedures involving humans and/or vertebrates, (2) that school officials pre-approved the questionnaire(s) and that I and others in the school take full legal and ethical responsibility for both the questionnaire and its use in human research, and (3) that the research behind the project and display represent the work of this student. I therefore certify this registration to be a complete, authorized entry in the current year's Regional MSEF Fair.

Key Teacher's Name_____

Key Teacher's Signature_____
Date_____

Please Return Forms To:

The University of Southern Mississippi
Center for STEM Education
118 College Drive
Box #5087
Hattiesburg, MS 39406

2024 REGION I MISSISSIPPI SCIENCE AND ENGINEERING FAIR

STUDENT REGISTRATION FORM (LOWER)

The **LOWER** student registration form can be accessed ...

1. electronically by opening this form link.

2. printed and filled out.

(Form included in following pages)

2024 Mississippi Science and Engineering Fairs Student Registration Form (Lower)

February 23, 2024

Mississippi Science and Engineering Regional and State Fairs will be conducted in accordance with the ISEF 2024 Rules and Guidelines Booklet. The Key Teacher at each school must obtain a copy of the ISEF Rules and Guidelines Booklet and assume responsibility, together with student exhibitors, for complete compliance with these rules. Each school may only participate in the regional fair held for the county in which the school is located.

This form only serves as registration for the regional fair. It is the responsibility of the student entering the project to complete all the required ISEF forms
To assure that all of the correct ISEF forms have been completed correctly and submitted, please refer to the Forms Wizard at http://www.societyforscience.org/isef/rulesandguidelines.

Important Information

Elementary School Registration

- Students in grades K-6 must submit at least the following forms: Abstract Form.
- Electricity is available for projects. However, the box B8 must be checked on the registration form in order for electricity to be provided. The exhibitor should bring an extension cord in case of an emergency.
- The MSEF registration form MUST have the signatures of the exhibitor, exhibitor's parent and sponsoring teacher. Incomplete or unsigned forms will be rejected.

Elementary Project Requirements

- Maximum display dimensions are as follows: 76 cm (30 in) deep; 122 cm (48 in) wide: 274 cm (108 in) high including table height. Table height should not exceed 91 cm (36 in). Do NOT bring a table, MSEF Region I will provide all tables.
- Elementary projects involving human subjects are limited to questionnaires pre-approved by school officials. The Institutional Review Board (IRB) MUST review and approve all projects dealing with humans before experimentation begins. IRB signatures are required on Form 4A. When students conduct questionnaires, the students, their parents, and the school are responsible for protecting the rights and welfare of the participating human subjects. The school MUST monitor administration of all questionnaires; seeing that all legal requirements are met and that informed consent forms are used for any subjects less than 18 years of age. All informed consent forms (Form 4B) MUST be available with the project during judging. One Form 4B MUST be attached to the registration with all other required forms.
- Students in grades K-6 may enter a project in any MSEF Fair involving humans and/or living vertebrate animals. ALL SRC/IRB FORMS REQUIRED BY ISEF

MUST BE COMPLETED. Students/Key Teachers should review In the ISEF Rules and Guidelines Booklet. Any project involving humans and/or living vertebrate animal, which does not comply with this rule, will be disqualified.

The ISEF Rules and Guidelines booklet, can be found athttps://member.societyforscience.org/document.doc?id=396

Student Registration

REGISTRATION DEADLINE FOR REGION I: **February 9, 2024**

Project Title (limited to 80 spaces) _____
Student Name(s)_____ Gender M/F M/F
Phone Number_____
Grade_____ Age_____
First Time Science Fair Participant Y/N
If no, How many years has the student(s) participated? _____ Team Project Y/N
School Type [ ] Public [ ] Private [ ] Home
Grade(s) [ ] 1st [ ] 2nd [ ] 3rd [ ] 4th [ ] 5th [ ] 6th
Is that a continuation of a previous year's project Y/N
If yes, how many years of work? _____
Adult Sponsor/Teacher_____
Adult Sponsor/Teacher Email_____

Exhibit Category

Check the most appropriate one

[ ] 0100 Behavioral & Social Sciences
[ ] 0200 Biochemistry
[ ] 0300 Inorganic Chemistry
[ ] 0400 Organic Chemistry
[ ] 0500 Earth and Environmental Science
[ ] 0600 Animal Sciences
[ ] 0700 Biomedical and Health Sciences
[ ] 0800 Microbiology
[ ] 0900 Physics and Astronomy
[ ] 1000 Engineering and Mechanics
[ ] 1100 Math and Intelligent Machines
[ ] 1200 Robotics and Intelligent Machines
[ ] 1300 Plant Sciences

Competition Category

Check one only

[ ] Class 0 (K)
[ ] Class 1 (1st, 2nd, & 3rd grades)
[ ] Class 2 (4th, 5th, & 6th grades)

Registration Certifications: (Registration will be VOIDED without proper signatures.) Parent Certification: Signature required for ALL Exhibitors. This is to certify that as the parent or legal guardian of the above-indicated student, I give my permission for his/her participation in the Mississippi Science and Engineering Fair program. I further certify that I release any and every liability, claim, right of action of any kind or nature, which my child or legal representative may have for any and all bodily or personal injuries or property damages or any other damages resulting therefrom, whether caused by negligence or other acts or missions or releases or otherwise which might occur during participation in the MSEF programs, any host institution(s), any regional or state fair sponsor(s), or the representative(s) thereof, and the management or owner(s) of any physical facility in which any fair is conducted.

Parent or Legal Guardian Name_____

Parent or Legal Guardian Signature_____
Date_____

Key Teacher Certification: I have reviewed the form(s) for both correctness and completeness. I further certify that (1) this project follows all proper procedures involving humans and/or vertebrates, (2) that school officials pre-approved the questionnaire(s) and that I and others in the school take full legal and ethical responsibility for both the questionnaire and its use in human research, and (3) that the research behind the project and display represent the work of this student. I therefore certify this registration to be a complete, authorized entry in the current year's Regional MSEF Fair.

Key Teacher's Name_____

Key Teacher's Signature_____
Date_____

Please Return Forms To:

The University of Southern Mississippi
Center for STEM Education
118 College Drive
Box #5087
Hattiesburg, MS 39406

2024 REGION I MISSISSIPPI SCIENCE AND ENGINEERING FAIR

STUDENT REGISTRATION FORM (UPPER)

The **UPPER** student registration form can be accessed ...

1. electronically by opening this form link.

2. printed and filled out.

(Form included in following pages)

2024 Mississippi Science and Engineering Fairs Student Registration Form (Upper)

February 23, 2024

Mississippi Science and Engineering Regional and State Fairs will be conducted in accordance with the ISEF 2024 Rules and Guidelines Booklet. The Key Teacher at each school must obtain a copy of the ISEF Rules and Guidelines Booklet and assume responsibility, together with student exhibitors, for complete compliance with these rules. Each school may only participate in the regional fair held for the county in which the school is located.

This form only serves as registration for the regional fair. It is the responsibility of the student entering the project to complete all the required ISEF forms

To assure that all of the correct ISEF forms have been completed correctly and submitted, please refer to the Forms Wizard at http://www.societyforscience.org/isef/rulesandguidelines.

Important Information

Secondary School Registration

- Students in grades 9-12 must submit at least the following forms: Abstract Form, ISEF Form 1, ISEF Form 1A, and ISEF Form 1B.
- The MSEF registration form MUST have the signatures of the exhibitor, exhibitor's parent and sponsoring teacher. Incomplete or unsigned forms will be rejected.
- The 1st, 2nd, and 3rd place exhibitors (grades 9-12) of each Region are automatically pre-registered for the State Fair. Each Regional Fair and State Fair will select individual winners from grades 9-12 to participate at the International Science and Engineering Fair. These winners will receive travel, hotel accommodations, and a reasonable stipend for participating in the 2024 ISEF. Any others who may be eligible to attend ISEF as Official Party must be authorized to participate by the MSEF Directors and are responsible for their own expenses. Starting in the 2022-2023 fair year travel to ISEF is contingient upon enrollment numbers of the Regional Fairs.

Secondary Project Requirements

- Maximum display dimensions are as follows: 76 cm (30 in) deep; 122 cm (48 in) wide: 274 cm (108 in) high including table height. Table height should not exceed 91 cm (36 in). Do NOT bring a table, MSEF Region I will provide all tables.
- Electricity is available for projects. However, the box B8 must be checked on the registration form in order for electricity to be provided. The exhibitor should bring an extension cord in case of an emergency.
- All MSEF Fairs will follow ISEF Rules for Display listed in the ISEF Regulations and Guidelines 2024 Booklet
- An Institutional Review Board (IRB) MUST review and approve all projects dealing with human subjects before experimentation begins. IRB signatures are required on Form 4A, in addition to the SRC signature on Form 1B. When students conduct questionnaires, the students, their parents, and the school are responsible for protecting the rights and welfare of the participating human subjects. The school MUST monitor administration of all questionnaires; seeing that all legal

requirements are met and that informed consent forms are used for any subjects less than 18 years of age. All informed consent forms (Form 4B) MUST be available with the project during judging. One Form 4B MUST be attached to the registration with all other required forms.
The ISEF Rules and Guidelines booklet, can be found athttps://member.societyforscience.org/document.doc?id=396

Student Registration

REGISTRATION DEADLINE FOR REGION I: **February 9, 2024**

Project Title (limited to 80 spaces) _____
Student Name(s)_____ Gender(s) M/F
Student Email(s)_____
Phone Number_____
Phone Number_____
Grade(s)_____ Age(s)_____ First Time Science Fair Participant Y/N
If no, How many years has the student participated? _____ Team Project Y/N
School Type [ ] Public [ ] Private [ ] Home
Grade(s) [ ] 6th [ ] 7th [ ] 8th [ ] 9th [ ] 10th [ ] 11th [ ] 12th
Is that a continuation of a previous year's project Y/N
If yes, how many years of work? _____
Adult Sponsor/Teacher_____
Adult Sponsor/Teacher Email: _____

Exhibit Category

Check the most appropriate one

[ ] 0100 Behavioral & Social Sciences
[ ] 0200 Biochemistry
[ ] 0300 Inorganic Chemistry
[ ] 0400 Organic Chemistry
[ ] 0500 Earth and Environmental Science
[ ] 0600 Animal Sciences
[ ] 0700 Biomedical and Health Sciences
[ ] 0800 Microbiology
[ ] 0900 Physics and Astronomy
[ ] 1000 Engineering and Mechanics
[ ] 1100 Math and Intelligent Machines
[ ] 1200 Robotics and Intelligent Machines
[ ] 1300 Plant Sciences

Competition Category

Check one only

[ ] Class II (6th grades) [ ] Class 3 (7th & 8th grades)
[ ] Class 4 (9th & 10th grades) [ ] Class 5 (11th &12th grades)

Registration Certifications: (Registration will be VOIDED without proper signatures.) Parent Certification: Signature required for ALL Exhibitors. This is to certify that as the parent or legal guardian of the above-indicated student, I give my permission for his/her participation in the Mississippi Science and Engineering Fair program. I further certify that I release any and every liability, claim, right of action of any kind or nature, which my child or legal representative may have for any and all bodily or personal injuries or property damages or any other damages resulting therefrom, whether caused by negligence or other acts or missions or releases or otherwise which might occur during participation in the MSEF programs, any host institution(s), any regional or state fair sponsor(s), or the representative(s) thereof, and the management or owner(s) of any physical facility in which any fair is conducted.

Parent or Legal Guardian Name_____
Parent or Legal Guardian Signature_____
Date_____

Key Teacher Certification: I have reviewed the form(s) for both correctness and completeness. I further certify that (1) this project follows all proper procedures involving humans and/or vertebrates, (2) that school officials pre-approved the questionnaire(s) and that I and others in the school take full legal and ethical responsibility for both the questionnaire and its use in human research, and (3) that the research behind the project and display represent the work of this student. I therefore certify this registration to be a complete, authorized entry in the current year's Regional MSEF Fair.

Key Teacher's Name_____

Key Teacher's Signature_____
Date_____

Please Return Forms To:

The University of Southern Mississippi
Center for STEM Education
118 College Drive
Box #5087
Hattiesburg, MS 39406

MS Region I Science and Engineering Fairs
Abstract Form

This form along with the abstract itself must be complete and attached to each registration.
Failure to attach the abstract form will result in disqualification.

Student Name(s)
_____

Age(s)_____ Gender(s)_____ Grade(s)_____

Project Title_____

School Name_____

Exhibit Category
Check the most appropriate one

[ ] 0100 Behavioral & Social Sciences
[ ] 0200 Biochemistry
[ ] 0300 Inorganic Chemistry
[ ] 0400 Organic Chemistry
[ ] 0500 Earth and Environmental Science
[ ] 0600 Animal Sciences
[ ] 0700 Biomedical and Health Sciences
[ ] 0800 Microbiology
[ ] 0900 Physics and Astronomy
[ ] 1000 Engineering and Mechanics
[ ] 1100 Math and Intelligent Machines
[ ] 1200 Robotics and Intelligent Machines
[ ] 1300 Plant Sciences

The abstract must be a 250-word (maximum), one-page explanation of the project

Write here.

Checklist for Adult Sponsor (1)

This completed form is required for ALL projects.

To be completed by the Adult Sponsor in collaboration with the student researcher(s):

Student's Name(s): _____

Project Title: _____

1. ☐ I have reviewed the ISEF Rules and Guidelines, including the science fair ethics statement.
2. ☐ I have reviewed the student's completed Student Checklist (1A) and Research Plan/Project Summary.
3. ☐ I have worked with the student and we have discussed the possible risks involved in the project.
4. ☐ The project involves one or more of the following and requires prior approval by an SRC, IRB, IACUC or IBC:
   - ☐ Humans
   - ☐ Vertebrate Animals
   - ☐ Potentially Hazardous Biological Agents
     - ☐ Microorganisms ☐ rDNA ☐ Tissues
5. ☐ Items to be completed for **ALL PROJECTS**
   - ☐ Adult Sponsor Checklist (1)
   - ☐ Student Checklist (1A)
   - ☐ Research Plan/Project Summary
   - ☐ Approval Form (1B)
   - ☐ Regulated Research Institutional/Industrial Setting Form (1C) (when applicable; after completed experiment)
   - ☐ Continuation/Research Progression Form (7) (when applicable)

Additional forms required if the project includes the use of one or more of the following (check all that apply):

☐ **Humans,** including student designed inventions/prototypes. (Requires prior approval by an Institutional Review Board (IRB); see full text of the rules.)
- ☐ Human Participants Form (4) or appropriate Institutional IRB documentation
- ☐ Sample of Informed Consent Form (when applicable and/or required by the IRB)
- ☐ Qualified Scientist Form (2) (when applicable and/or required by the IRB)

☐ **Vertebrate Animals** (Requires prior approval, see full text of the rules.)
- ☐ Vertebrate Animal Form (5A) - for projects conducted in a school/home/field research site (SRC prior approval required
- ☐ Vertebrate Animal Form (5B) - for projects conducted at a Regulated Research Institution. (Institutional Animal Care and Use Committee (IACUC) approval required prior experimentation.)
- ☐ Qualified Scientist Form (2) (Required for all vertebrate animal projects at a regulated research site or when applicable)

☐ **Potentially Hazardous Biological Agents** (Requires prior approval by SRC, IACUC or IBC, see full text of the rules.)
- ☐ Potentially Hazardous Biological Agents Risk Assessment Form (6A)
- ☐ Human and Vertebrate Animal Tissue Form (6B) - to be completed in addition to Form 6A when project involves the use of fresh or frozen tissue, primary cell cultures, blood, blood products and body fluids.
- ☐ Qualified Scientist Form (2) (when applicable)
- ☐ The following are exempt from prior review but require a Risk Assessment Form 3: projects involving protists, archae and similar microorganisms, for projects using manure for composting, fuel production or other non-culturing experiments, projects using color change coliform water test kits, microbial fuel cells, and projects involving decomposing vertebrate organisms.

☐ **Hazardous Chemicals, Activities and Devices** (No SRC prior approval required, see full text of the rules.)
- ☐ Risk Assessment Form (3)
- ☐ Qualified Scientist Form (2) (required for projects involving DEA-controlled substances or when applicable)

☐ **Other**
- ☐ Risk Assessment Form (3)

☐ **I attest to the information checked above and that I have read and agree to abide by the science fair ethics statement.**

Adult Sponsor's Printed Name	Signature	Date of Review (mm/dd/yy)
Phone	Email	

Student Checklist (1A)

This form is required for ALL projects.

1. a. Student/Team Leader: _____ Grade: _____

   Email: _____ Phone: _____

   b. Team Member: _____ c. Team Member: _____

2. Title of Project: _____

   _____

3. School: _____ School Phone: _____

   School Address: _____

   _____

4. Adult Sponsor: _____ Phone/Email: _____

5. Does this project need SRC/IRB/IACUC or other pre-approval? ☐ Yes ☒ No Tentative start date: _____

6. Is this a continuation/progression from a previous year? ☐ Yes ☒ No
   If Yes:
   a. Attach the previous year's ☐ Abstract **and** ☐ Research Plan/Project Summary
   b. Explain how this project is new and different from previous years on
   ☐ Continuation/Research Progression Form (7)

7. This year's experimentation/data collection:

   _____ _____

   Actual Start Date: (mm/dd/yy) End Date: (mm/dd/yy)

8. Where will you conduct your experimentation? (check all that apply)
   ☐ Research Institution ☐ School ☐ Field ☐ Home ☐ Other: _____

9. Source of Data:
   ☐ Collected self/mentor ☐ Other Describe/url: _____

10. List the name and address of all non-home and non-school work site(s), whether you worked there virtually or on-site:

Name _____ _____

Address: _____ _____

_____ _____

Phone/email _____ _____

11. **Complete a Research Plan/Project Summary following the Research Plan/Project Summary instructions and attach to this form.**

12. **An abstract is required for all projects after experimentation.**

Research Plan/Project Summary Instructions

A complete Research Plan/Project Summary is required for ALL projects and must accompany Student Checklist (1A).

- All projects must have a Research Plan/Project Summary
  a. The Research Plan is to be written prior to experimentation following the instructions below to detail the rationale, research question(s), methodology, and risk assessment of the proposed research.
  b. If changes are made during the research, such changes can be added to the original research plan as an addendum, recognizing that some changes may require returning to the IRB or SRC for appropriate review and approvals. If no additional approvals are required, this addendum serves as a project summary to explain research that was conducted.
  c. If no changes are made from the original research plan, no project summary is required.
     - Some studies, such as an engineering design or mathematics projects, will be less detailed in the initial project plan and will change through the course of research. If such changes occur, a project summary that explains what was done is required and can be appended to the original research plan.
     - The Research Plan/Project Summary should include the following:
       a. **RATIONALE:** Include a brief synopsis of the background that supports your research problem and explain why this research is important and if applicable, explain any societal impact of your research.
       b. **RESEARCH QUESTION(S), HYPOTHESIS(ES), ENGINEERING GOAL(S), EXPECTED OUTCOMES:** How is this based on the rationale described above?
       c. Describe the following in detail:
          - **Procedures:** Detail all procedures and experimental design including methods for data collection, and when applicable, the source of data used. Describe only your project. Do not include work done by mentor or others.
          - **Risk and Safety:** Identify any potential risks and safety precautions needed.
          - **Data Analysis:** Describe the procedures you will use to analyze the data/results.
       d. **BIBLIOGRAPHY:** List major references (e.g. science journal articles, books, internet sites) from your literature review. If you plan to use vertebrate animals, one of these references must be an animal care reference.

Items 1–4 below are subject-specific guidelines for additional items to be included in your research plan/project summary as applicable.

1. Human participants research:

a. Participants: Describe age range, gender, racial/ethnic composition of participants. Identify vulnerable populations (minors, pregnant women, prisoners, mentally disabled or economically disadvantaged).
b. Recruitment: Where will you find your participants? How will they be invited to participate?
c. Methods: What will participants be asked to do? Will you use any surveys, questionnaires or tests? If yes and not your own, how did you obtain? Did it require permissions? If so, explain. What is the frequency and length of time involved for each subject?
d. Risk Assessment: What are the risks or potential discomforts (physical, psychological, time involved, social, legal, etc.) to participants? How will you minimize risks? List any benefits to society or participants.
e. Protection of Privacy: Will identifiable information (e.g., names, telephone numbers, birth dates, email addresses) be collected? Will data be confidential/anonymous? If anonymous, describe how the data will be collected. If not anonymous, what procedures are in place for safeguarding confidentiality? Where will data be stored? Who will have access to the data? What will you do with the data after the study?
f. Informed Consent Process: Describe how you will inform participants about the purpose of the study, what they will be asked to do, that their participation is voluntary and they have the right to stop at any time.

2. Vertebrate animal research:

a. Discuss potential ALTERNATIVES to vertebrate animal use and present justification for use of vertebrates.
b. Explain potential impact or contribution of this research.
c. Detail all procedures to be used, including methods used to minimize potential discomfort, distress, pain and injury to the animals and detailed chemical concentrations and drug dosages.
d. Detail animal numbers, species, strain, sex, age, source, etc., include justification of the numbers planned.
e. Describe housing and oversight of daily care.
f. Discuss disposition of the animals at the end of the study.

- **Potentially hazardous biological agents research:**
  a. Give source of the organism and describe BSL assessment process and BSL determination.
  b. Detail safety precautions and discuss methods of disposal.

4. Hazardous chemicals, activities & devices:

a. Describe Risk Assessment process, supervision, safety precautions and methods of disposal.
b. Material Safety Data Sheets are not necessary to submit with paperwork.

Approval Form (1B)

A completed form is required for each student, including all team members.

1. To Be Completed by Student and Parent

a. Student Acknowledgment:

- I understand the risks and possible dangers to me of the proposed research plan.
- I have read the ISEF Rules and Guidelines and will adhere to all International Rules when conducting this research.
- I have read and will abide by the science fair ethics statement.

Student researchers are expected to maintain the highest standards of honesty and integrity. Scientific fraud and misconduct are not condoned at any level of research or competition. Such practices include but are not limited to plagiarism, forgery, use or presentation of other researcher's work as one's own, and fabrication of data. Fraudulent projects will fail to qualify for competition in affiliated fairs and ISEF.

Student's Printed Name	Signature	Date Acknowledged (mm/dd/yy) (Must be prior to experimentation.)

b. Parent/Guardian Approval: I have read and understand the risks and possible dangers involved in the **Research Plan/Project Summary**. I consent to my child participating in this research.

Parent/Guardian's Printed Name	Signature	Date Acknowledged (mm/dd/yy) (Must be prior to experimentation.)

2. To be completed by the local or affiliated Fair SRC

(Required for projects requiring prior SRC/IRB APPROVAL. Sign 2a or 2b as appropriate.)

a. Required for projects that need prior SRC/IRB approval BEFORE experimentation (humans, vertebrates or potentially hazardous biological agents).

The SRC/IRB has carefully studied this project's **Research Plan/Project Summary** and all the required forms are included. My signature indicates approval of the **Research Plan/Project Summary** before the student begins experimentation.

SRC/IRB Chair's Printed Name

Signature

Date of Approval (mm/dd/yy) (Must be prior to experimentation.)

OR

b. Required for research conducted at all Regulated Research Institutions with no prior fair SRC/IRB approval.

This project was conducted at a regulated research institution (**not home or high school, etc.**), was reviewed and approved by the proper institutional board before experimentation and complies with the ISEF Rules. **Attach (1C) and any required institutional approvals (e.g. IACUC, IRB).**

SRC Chair's Printed Name

Signature

Date of Signature (mm/dd/yy) (May be after experimentation)

3. Final ISEF Affiliated Fair SRC Approval (Required for ALL Projects)

SRC Approval After Experimentation and Before Competition at Regional/State/National Fair

I certify that this project adheres to the approved **Research Plan/Project Summary** and complies with all ISEF Rules.

Regional SRC Chair's Printed Name	Signature	Date of Approval (mm/dd/yy)
State/National SRC Chair's Printed Name *(where applicable)*	Signature	Date of Approval (mm/dd/yy)

Regulated Research Institutional/Industrial Setting Form (1C)

This form must be completed AFTER experimentation by the adult supervising the student research either virtually or on site, conducted in a regulated research institution, industrial setting or any work site other than home, school or field.

Student's Name(s) _____

Title of Project _____

To be completed by the Supervising Adult in the Setting (NOT the Student(s)) after experimentation:
(Responses must be on the form as it is required to be displayed at student's project booth; please do not print double-sided.)

Research was supported at my work site:

1. Did you or your proxy (e.g. graduate student, postdoc, employee) mentor or provide substantial guidance to the student researcher? ☐ Yes ☒ No
   a. If no, describe your and/or your institution's role with the student researcher and his/her project (e.g. supervised use of equipment on site without ongoing mentorship and sign below.

   b. If yes, complete questions 2–5.

2. Is the student's research project a subset of your ongoing research or work? ☐ Yes ☒ No
   Use questions 3, 4 and 5 to detail how the student's project was similar and/or different from ongoing research or work at your site. If this project is under a grant and needs to be acknowledged, please list the grant statement here.

3. Describe the independence and creativity with which the student:
   a. developed the hypotheses or engineering goals for the research project

   b. designed the methodology for his/her research project

   c. analyzed and interpreted data

(Continued on next page)

Regulated Research Institutional/Industrial Setting Form (1C) Continued

Student's Name(s) _____

4. Detail the student's role in conducting the research (e.g. data collection, specific procedures performed). Differentiate what the student observed and what the student actually did.

5. Did the student(s) work on the project as part of a group? ☐ Yes ☒ No
Were there other high school students present? If yes, please list the student names and describe how their work was related or different from the work of this project.

I attest that the student has conducted the work as indicated above and that any required review and approval by institutional regulatory board (IRB/IACUC/IBC) has been obtained. Copies are attached if applicable. I further acknowledge that the student will be presenting this work publicly in competition and I have communicated with the student research regarding any requirements for my review and/or restrictions of what is publicized.

Supervising Adult's Printed Name	Signature	Title
Institution		Date Signed (must be after experimentation) (mm/dd/yy)
Address		Email/Phone

Qualified Scientist Form (2)

May be required for research involving human participants, vertebrate animals, potentially hazardous biological agents, and hazardous substances and devices. Must be completed and signed before the start of student experimentation.

Student's Name(s) _____

Title of Project _____

_____

To be completed by the Qualified Scientist:

Scientist Name: _____

Educational Background: _____ Degree(s): _____

Experience/Training as relates to the student's area of research:

_____ _____

Position/Institution: Email/Phone:

1. Have you reviewed the ISEF rules relevant to this project and the science fair ethics statement relevant to this project? ☐ Yes ☐ No

2. Will any of the following be used?
   a. Human participants ☐ Yes ☐ No
   b. Vertebrate animals ☐ Yes ☐ No
   c. Potentially hazardous biological agents (microorganisms, rDNA and tissues, including blood and blood products) ☐ Yes ☐ No
   d. Hazardous substances and devices ☐ Yes ☐ No

3. Will this study be a sub-set of a larger study? ☐ Yes ☐ No

4. Will you directly supervise the student? ☐ Yes ☐ No
   a. If no, who will directly supervise and serve as the Designated Supervisor?
   b. Experience/Training of the Designated Supervisor: _____

To be completed by the Qualified Scientist:

I certify that I have reviewed and approved the Research Plan/Project Summary prior to the start of the experimentation. If the student or Designated Supervisor is not trained in the necessary procedures, I will ensure her/his training. I will provide advice and supervision during the research. I have a working knowledge of the techniques to be used by the student in the Research Plan/Project Summary. I understand that a Designated Supervisor is required when the student is not conducting experimentation under my direct supervision.

_____
Qualified Scientist's Printed Name

_____ _____
Signature Date of Approval (mm/dd/yy)

To be completed by the Designated Supervisor when the Qualified Scientist cannot directly supervise.

I certify that I have reviewed the Research Plan/Project Summary and have been trained in the techniques to be used by this student, and I will provide direct supervision.

_____
Designated Supervisor's Printed Name

_____ _____
Signature Date of Approval (mm/dd/yy)

_____ _____
Phone Email

Risk Assessment Form (3)

Must be completed before experimentation; recommended for all projects. May be required for projects involving Human Participants, Hazardous Chemicals, Materials or Devices or Potentially Hazardous Biological Agents.

Student's Name(s) _____

Title of Project _____

_____

To be completed by the Student Researcher(s) in collaboration with Designated Supervisor/Qualified Scientist: (All questions must be answered; additional page(s) may be attached.)

1. Identify and assess the risks and hazards involved in this project.

2. a) List all hazardous chemicals, activities or devices to be used; b) identify and list all microorganisms to be used that are exempt from pre-approval (see Potentially Hazardous Biological Agent rules).

3. Describe the safety precautions and procedures that will be used to reduce the risks.

4. Describe the disposal procedures that will be used (when applicable).

5. List the source(s) of safety information.

To be completed and signed by the Designated Supervisor (or Qualified Scientist, when applicable):
I agree with the risk assessment and safety precautions and procedures described above. I certify that I have reviewed the Research Plan/Project Summary and the International Rules, including the science fair ethics statement and will provide direct supervision.

Designated Supervisor's Printed Name	Signature	Date of Review (mm/dd/yy)

Experience/Training as relates to the student's area of research

Position/Institution	Phone or email contact information

Human Participants Form (4)

Required for all research involving human participants not at a Regulated Research Institution. If at a Regulated Research Institution, use institutional approval forms for documentation of prior review and approval. (IRB approval required before recruitment or data collection.)

Student's Name(s) | Title of Project

Adult Sponsor | Phone/Email

MUST BE COMPLETED BY STUDENT RESEARCHER(S) IN COLLABORATION WITH THE ADULT SPONSOR/DESIGNATED SUPERVISOR/QUALIFIED SCIENTIST:

1. ☐ I have submitted my Research Plan/Project Summary which addresses ALL areas indicated in the Human Participants Section of the Research Plan/Project Summary Instructions.
2. ☐ I have attached any surveys or questionnaires I will be using in my project or other documents provided to human participants.
   ☐ Any published instrument(s) used was /were legally obtained.
3. ☐ I have attached an informed consent that I would use if required by the IRB.
4. ☐ Yes ☐ No Are you working with a Qualified Scientist? If yes, attach the Qualified Scientist Form 2.

BELOW – IRB USE ONLY

MUST BE COMPLETED BY INSTITUTIONAL REVIEW BOARD (IRB) AFTER REVIEW OF THE RESEARCH PLAN. ALL QUESTIONS MUST BE ANSWERED FOR THE APPROVAL TO BE VALID. (IF NOT APPROVED, RETURN PAPERWORK TO THE STUDENT WITH INSTRUCTIONS FOR MODIFICATIONS.)

☐ Approved with Full Committee Review (3 signatures required) and the following conditions: **(All 6 must be answered)**

1. Risk Level (check one) : ☐ Minimal Risk ☐ More than Minimal Risk (a risk assessment form 3 is required).
2. Qualified Scientist (QS) Required (Form 2): ☐ Yes ☐ No
3. Risk Assessment Required (Form 3): ☐ Yes ☐ No
4. Written Minor Assent required for minor participants: ☐ Yes ☐ No ☐ Not applicable (No minors in this study)
5. Written Parental Permission required for minor participants: ☐ Yes ☐ No ☐ Not applicable (No minors in this study)
6. Written Informed Consent required for participants 18 years or older: ☐ Yes ☐ No ☐ Not applicable (No participants 18 yrs or older in this study)

IRB SIGNATURES (All 3 signatures required) None of these individuals may be the adult sponsor, designated supervisor, qualified scientist or related to (e.g., mother, father of) the student (conflict of interest).

I attest that I have reviewed the student's project, that the checkboxes above have been completed to indicate the IRB determination and that I agree with the decisions above.

Medical or Mental Health Professional (a psychologist, medical doctor, licensed social worker, licensed clinical professional counselor, physician's assistant, doctor of pharmacy, or registered nurse) with expertise related to this project.

Printed Name | Degree/Professional License

Signature | Date of Approval (Must be prior to experimentation.) (mm/dd/yy)

Educator

Printed Name | Degree/Professional License

Signature | Date of Approval (Must be prior to experimentation.) (mm/dd/yy)

School Administrator

Printed Name | Degree/Professional License

Signature | Date of Approval (Must be prior to experimentation.) (mm/dd/yy)

Human Informed Consent Form

Instructions to the Student Researcher(s): An informed consent/assent/permission form should be developed in consultation with the Adult Sponsor, Designated Supervisor or Qualified Scientist.
This form is used to provide information to the research participant (or parent/guardian) and to document written informed consent, minor assent, and/or parental permission.

- When written documentation is required, the researcher keeps the original, signed form.
- Students may use this sample form or may copy ALL elements of it into a new document.

If the form is serving to document parental permission, a copy of any survey or questionnaire must be attached.

Student Researcher(s): _____

Title of Project: _____

I am asking for your voluntary participation in my science fair project. Please read the following information about the project. If you would like to participate, please sign in the appropriate area below.

Purpose of the project:

If you participate, you will be asked to:

Time required for participation:

Potential Risks of Study:

Benefits:

How confidentiality will be maintained:

If you have any questions about this study, feel free to contact:

Adult Sponsor/QS/DS: _____ Phone/email: _____

Voluntary Participation:

Participation in this study is completely voluntary. If you decide not to participate there will not be negative consequences. Please be aware that if you decide to participate, you may stop participating at any time and you may decide not to answer any specific question.

By signing this form I am attesting that I have read and understand the information above and I freely give my consent/assent to participate or permission for my child to participate.

Adult Informed Consent or Minor Assent Date Reviewed & Signed: _____ (mm/dd/yy)

_____ _____

Research Participant Printed Name: Signature:

Parental/Guardian Permission (if applicable) Date Reviewed & Signed: _____ (mm/dd/yy)

_____ _____

Parent/Guardian Printed Name: Signature:

Vertebrate Animal Form (5A)

Required for all research involving vertebrate animals that is conducted in a school/home/field research site. (SRC approval required before experimentation.)

Student's Name(s)_____

Title of Project_____

_____

To be completed by Student Researcher:

1. Common name (or Genus, species) and number of animals used.

2. Describe completely the housing and husbandry to be provided. Include the cage/pen size, number of animals per cage, environment, bedding, type of food, frequency of food and water, how often animal is observed, etc. Add an additional page as necessary.

3. What will happen to the animals after experimentation?

4. Attach a copy of wildlife licenses or approval forms, as applicable

5. The ISEF Vertebrate Animal Rules require that any death, illness or unexpected weight loss be investigated and documented by a letter from the qualified scientist, designated supervisor or a veterinarian. If applicable, attach this letter with this form when submitting your paperwork to the SRC prior to competition.

To be completed by Local or Affiliate Fair Scientific Review Committee (SRC) BEFORE experimentation.

Level of Supervision Required for agricultural, behavioral or nutritional studies (select one):

- ☐ Designated Supervisor REQUIRED. Please have applicable person sign below.
- ☐ Veterinarian and Designated Supervisor REQUIRED. Please have applicable persons sign below.
- ☐ Veterinarian, Designated Supervisor and Qualified Scientist REQUIRED. Please have applicable persons sign below and have the Qualified Scientist complete Form (2).

The SRC has carefully reviewed this study and finds it is an appropriate study that may be conducted in a non-regulated research site.
Local or Affiliate Fair SRC Pre-Approval Signature:

SRC Chair Printed Name	Signature	Date of Approval (must be prior to experimentation) (mm/dd/yy)

To be completed by Veterinarian:

- ☐ I have reviewed this research and animal husbandry with the student before the start of experimentation.
- ☐ I have approved the use and dosages of prescription drugs and/or nutritional supplements.
- ☐ I will provide veterinary medical and nursing care in case of illness or emergency. (Fees may apply.)

Printed Name	Email/Phone
Signature	Date of Approval (mm/dd/yy)

To be completed by Designated Supervisor or Qualified Scientist when applicable:

- ☐ I have reviewed this research and animal husbandry with the student before the start of experimentation and I accept primary responsibility for the care and handling of the animals in this project.
- ☐ I will directly supervise the experiment.

Printed Name	Email/Phone
Signature	Date of Approval (mm/dd/yy)

Vertebrate Animal Form (5B)

Required for all research involving vertebrate animals that is conducted in at a Regulated Research Institution. (IACUC approval required before experimentation. Form must be completed and signed after experimentation.)

Student's Name(s) _____

Title of Project _____

Title and Protocol Number of IACUC Approved Project _____

To be completed by Qualified Scientist or Principal Investigator:

1. Species of animals used: _____ Number of animals used: _____

2. Describe, in detail, the role of the student in this project: animal procedures and related equipment that were involved, oversight provided and safety precautions employed. (Attach extra pages if necessary.)

3. Was there any weight loss or death of any animal? If yes, attach a letter obtained from the qualified scientist, designated supervisor or a veterinarian documenting the situation and the results of the investigation.

4. Did the student's project also involve the use of tissues?
   - ☐ No
   - ☐ Yes; complete Forms 6A and 6B

5. What laboratory training, including dates, was provided to the student?

6. **Attach a copy of the Regulated Research Institution IACUC Approval.** A letter from the Qualified Scientist or Principal Investigator is not sufficient.

Qualified Scientist/Principal Investigator	
Printed Name	
Signature	Date (mm/dd/yy)

Potentially Hazardous Biological Agents Risk Assessment Form (6A)

Required for research involving microorganisms, rDNA, fresh/frozen tissue (including primary cell lines, human and other primate established cell lines and tissue cultures), blood, blood products and body fluids. SRC/IACUC/IBC approval required before experimentation.

Student's Name(s)_____

Title of Project_____

To be completed by the QUALIFIED SCIENTIST/DESIGNATED SUPERVISOR in collaboration with the student researcher(s). All questions are applicable and must be answered; additional page(s) may be attached.

SECTION 1: PROJECT ASSESSMENT

1. Identify potentially hazardous biological agents to be used in this experiment. Include the source, quantity and the biosafety level risk group of each microorganism.

2. Describe the site of experimentation including the level of biological containment.

3. Describe the procedures that will be used to minimize risk (personal protective equipment, hood type, etc.).

4. What final biosafety level do you recommend for this project given the risk assessment you conducted?

5. Describe the method of disposal of all cultured materials and other potentially hazardous biological agents.

SECTION 2: TRAINING

1. What training will the student receive for this project?

2. Experience/training of Designated Supervisor as it relates to the student's area of research (if applicable).

SECTION 3: For ALL CELL LINES, MICROORGANISMS AND TISSUES – To be completed by the QUALIFIED SCIENTIST or DESIGNATED SUPERVISOR - Check the appropriate box(es) below:

☐ Experimentation on the microorganisms/cell lines/tissues to be used in this study will NOT be conducted at a Regulated Research Institution, but will be conducted at a (check one) ☐BSL-1 or ☐BSL-2 laboratory (include a copy of the checklist for BSL-2). [This study has been reviewed by the local SRC and the procedures have been approved prior to experimentation.]

☐ Experimentation on the microorganisms/cell lines/tissues to be used in this study will be conducted at a Regulated Research Institution and was approved by the appropriate institutional board prior to experimentation; institutional approval forms are attached.
Origin of cell lines:_____ Date of IACUC/IBC approval _____

☐ Experimentation on the microorganisms/cell lines/tissues to be used in this study will be conducted at a Regulated Research Institution, which does not require pre-approval for this type of study. The SRC has seen and approved the research plan and supporting documentation and acknowledges the accuracy of the responses above.

CERTIFICATION – To be SIGNED by the QUALIFIED SCIENTIST or DESIGNATED SUPERVISOR

The QS/DS has seen this project's research plan and supporting documentation and acknowledges the accuracy of the information provided above. This study has been approved as a (check one) ☐BSL-1/ ☐BSL-2 study, and will be conducted in an appropriate laboratory.

QS/DS Printed Name	Signature	Date of review (mm/dd/yy)

SECTION 4: CERTIFICATION – To be completed by the LOCAL or AFFILIATED FAIR SRC

The SRC has seen this project's research plan and supporting documentation and acknowledges the accuracy of the information provided.

SRC Printed Name	Signature	Date of review (mm/dd/yy)

Human and Vertebrate Animal Tissue Form (6B)

Required for research involving fresh/frozen tissue (including primary cell lines, human and other primate established cell lines and tissue cultures), blood, blood products and body fluids. If the research involves living organisms please ensure that the proper human or animal forms are completed. **All projects using any tissue listed above must also complete Form 6A.**

Student's Name(s) _____

Title of Project _____

To be completed by Student Researcher(s):

1. What vertebrate animal tissue will be used in this study? Check all that apply.
   - ☐ Fresh or frozen tissue sample
   - ☐ Fresh organ or other body part
   - ☐ Blood
   - ☐ Body fluids
   - ☐ Primary cell/tissue cultures
   - ☐ Human or other primate established cell lines

2. Where will the above tissue(s) be obtained? If using an established cell line include source and catalog number.

3. If the tissue will be obtained from a vertebrate animal study conducted at a research institution attach a copy of the IACUC certification with the name of the research institution, the title of the study, the IACUC approval number and a copy of IACUC approval.

To be completed by the Qualified Scientist or Designated Supervisor:

☐ I verify that the student will work solely with organs, tissues, cultures or cells that will be supplied to him/her by myself or qualified personnel from the laboratory; and that if vertebrate animals were euthanized they were euthanized for a purpose other than the student's research.

AND/OR

☐ I certify that the blood, blood products, tissues or body fluids in this project will be handled in accordance with the standards and guidance set forth in U.S. Occupational Safety and Health Act, 29CFR, Subpart Z, 1910.1030 - Blood Borne Pathogens.

Printed Name	Signature	Date of Approval (mm/dd/yy) (Must be prior to experimentation.)

Title	Phone/Email

Institution

Continuation/Research Progression Projects Form (7)

Required for projects that are a continuation/progression in the same field of study as a previous project. This form must be accompanied by the previous year's abstract and Research Plan/Project Summary.

Student's Name(s) _____

To be completed by Student Researcher: List all components of the current project that make it new and different from previous research. The information must be on the form; use an additional form for previous year and earlier projects.

Components	Current Research Project	Previous Research Project: Year: _____
1. Title		
2. Change in goal/ purpose/objec- tive		
3. Changes in methodology		
4. Variable studied		
5. Additional changes		

Attached are:

☐ Abstract and Research Plan/Project Summary, Year _____

I hereby certify that the above information is correct and that the current year Abstract & Certification and project display board properly reflect work done only in the current year.

Student's Printed Name(s)	Signature	Date of Signature (mm/dd/yy)

PART VI: APPENDIX

Appendix I. Submission and Review Process

Regeneron ISEF Paperwork

All finalists must submit a finalist questionnaire that includes all the ISEF paperwork required for their project. Minimally, all projects must have Checklist Forms 1, Student Checklist Form 1A, Research Plan, and Approval Form 1B. The forms that are to be made available at your project booth for the judges to review are the Official Abstract, and if applicable, the Regulated Research Setting Form 1C and/or the Continuation Form 7. These forms will be automatically passed over to ProjectBoard from Finalist Questionnaire. You will not be able to upload them directly on ProjectBoard.

- **Official Abstract** approved by SRC (250-word format)
  The abstract summarizes the information contained in the rest of this document. An abstract includes: (a) the research question or engineering problem, (b) procedures used, (c) data, (d) interpretation and (e) conclusions. It also may include any possible research applications. It should be limited to these essential elements. Consider using the summary created by the Quad chart to inform this narrative.

- **Regulated Research Institutional Setting Form 1C** (if applicable)
  This form is required for work done at a Regulated Research Institution or Industrial Setting and is to be completed after experimentation by the adult supervising. A Form 1C can also be used when support from mentors and those in a laboratory setting has been provided, even when the student received this support remotely. This can also include situations in which a high school teacher is supporting laboratory activities on behalf of a remote student to help clarify the student's involvement in each step of the project.

- **Continuation Form 7** (if applicable)
  Any project that is a continuation of a previous year's work must document that additional research is new and different on Continuation Form 7.

Display & Safety

Display & Safety inspections will include a review of all submitted materials and enforcement of the display guidelines as published in the International Rules and Guidelines. This includes meeting all of the format and size requirements, **providing appropriate credits for photographs, graphs and other visuals** and in having any permissions of individuals depicted in any project materials (on the board, slides or in the video) available.

Calendar of Processes

- All finalists must adhere to the deadlines below to compete at Regeneron ISEF 2024. Deadline to submit Finalist questionnaire: **12 days after your fair** ends and finalists are announced
- Final deadline for abstract rewrites by all finalists: **April 17**
- Final submission of presentation materials on ProjectBoard: **Rolling Basis**
- SRC rolling phone/video conference Interviews: **Completed by May 1**
- Display & Safety inspections of presentation materials: **Completed by May 1**

Appendix II. Project Presentation Instructions

You may prepare your Project Presentation using any software tools that you desire, but the final document submitted for display to the judges and the public must satisfy the following requirements.

Format Requirements

1. The Project Presentation must be uploaded to ProjectBoard as images (JPG, PNG or similar). Each page will need to be a separate image and you are limited to **no more than 12 pages**. *Tip: Powerpoint or Adobe Acrobat pages can be easily converted to separate images when content and formatting has been finalized.*
2. The pages should be created following the templates provided below. The page should be created in Landscape mode so that the entire page is visible at the same time.
3. Your pages must be without animation or active hyperlinks.
4. The page background color must be a light color and should not affect readability.
5. Text color must be predominantly dark to support readability.
6. All text should be easily readable when viewing the entire page at once. The smallest allowable font size of body text is 14 pt. and an 18 pt. font is recommended. *Exception:* You may use a smaller font size, down to 10 pt., for figure captions or photo credits.
7. All Project Presentation elements must conform to all Display & Safety rules as if placed on a physical poster for display to judges and the public. Passing a Display & Safety inspection will be required to compete. (Please see the highlight of Display & Safety Rules below.)

Format Recommendations:

1. Do not use non-standard fonts or colors to "stand out from the crowd" or to be entertaining. It is recommended that you use a font such as Arial, Calibri, Helvetica or Century Gothic.
2. Page titles should all be the same size. That size should be larger than headings within each page. In turn, headings should be larger than body text.
3. Avoid long expository paragraphs. State your points succinctly.
4. Use bullets to set out individual points of interest. Use numbered lists when the ordering of points of interest is important (*e.g.*, instructions to be followed in order, or items needing a reference anchor for citation elsewhere in your Presentation).
5. All body text should adopt a common font style and size. Similarly, all heading text should adopt a common font style and size. There is no recommendation for the relation between body and heading styles.

Display & Safety Rules Highlight for Project Presentation Materials

(Please see Display & Safety rules for full text.)

Photograph/Image Display Requirements

1) Any photograph/visual image/chart/table/student-created logo and/or graph is allowed if:
   a) It is not deemed offensive or inappropriate (which includes images/photographs showing invertebrate or vertebrate animals/humans in surgical, necrotizing or dissection situations) by the Scientific Review Committee, the Display & Safety Committee, or Society for Science
   b) It has a credit line of origin ("Photograph taken by..."or "Image taken from..." or "Graph/Chart/Table taken from..."). If all images, etc. displayed were created by the finalist or are from the same source, one credit line prominently and vertically displayed on the backboard/ poster or tabletop is sufficient.
      - **All images MUST BE properly cited.** This includes student-created logos, background graphics, photographs and/or visual depictions of the finalist or photographs and/or visual depictions of others.
      - All visual depictions of others require a signed photo/video release form is in a notebook or logbook at the project booth. These signed release forms must be available upon request during the set-up and inspection process but may not be displayed.
   c) Sample release text: "I consent to the use of visual images (photos, videos, etc.) involving my participation/my child's participation in this research."
2) Finalists using any presentation or demonstration outside of a project board must be prepared to show the entire presentation to the Display & Safety Inspectors before the project is approved. All aforementioned rules apply to this presentation and the presentation may not be altered in any way after the final Display & Safety inspection. Examples of presentations that require approval include, but are not limited to PowerPoint, Prezi, Keynote, software program/simulation and other images and/or graphics displayed on a computer screen or other non-print delivery method.

NOT ALLOWED in your Presentation Materials

1) Any information on the project display or items that are self-promotions or external endorsements are not allowed in the project booth.
   a) The use of commercial logos including known brands, institutional crests or trademarks, flags unless integral to the project and approved by the SRC via inclusion in the Official Abstract and Certification.
   b) Any reference to an institution or mentor that supported the finalist's research except as provided in an acknowledgement section of the poster and within official ISEF paperwork, most notably Form 1C.
   c) Any reference to patent status of the project.
   d) Any items intended for distribution such as disks, CDs, flash drives, brochures, booklets, endorsements, giveaway items, business cards, printed materials or food items designed to be distributed to judges or the public.
2) Any awards or medals, except for past or present ISEF medals that may be worn by the finalist.
3) Postal addresses, World Wide Web, email and/or social media addresses, QR codes, telephone and/or fax numbers of a project or finalist. Note: The only personal information that is permissible to include on the display is the finalist name, school, city, state, country, age and grade.
4) Active Internet or email connections as part of displaying or operating the project at ISEF.
5) Any changes, modifications, or additions to projects including any attempt to uncover, replenish or return removed language or items after the approval by the Display & Safety Committee and the Scientific Review Committee has been received is prohibited.

Project Presentation Templates

Choose one of the following templates to create your presentation. Do not include information not specified in this template. If you are submitting a continuation project, include only information related to this year's research unless otherwise directed in the instructions below. You may include graphical elements as they would explain or illustrate your work and can be contained within the overall page limits.

Each of the required sections in each template must start on its own page and be in the order provided. Titles per section are provided as recommended titles, but alternate titles may be used. Each section may extend beyond one page as long as the total does not exceed 12 maximum pages.

TEMPLATE I: Science Projects
TEMPLATE II: Engineering Projects
TEMPLATEIII: Mathematics/Computer Science Projects

Project Presentation Template: **Science Project**

1. **Project ID and Title**
   - The following should be included:
     - Project ID. This ID will be provided by Society for Science upon submission of ISEF paperwork.
     - Project Title
     - Finalist Name (s)
     - School(s)
     - City, State, Province, Country

2. **INTRODUCTION - What is your research question?**
   - Explain what is known or has already been done in your research area. Include a brief review of relevant literature. If this is a continuation project, a brief summary of your prior research is appropriate here. Be sure to distinguish your previous work from this year's project.
   - What were you trying to find out? Include a description of your purpose, your research question, and/or your hypothesis.

3. **METHODS - Explain your methodology and procedures for carrying out your project in detail.**
   - What did you do? What data did you collect and how did you collect that data? Discuss your control group and the variables you tested.
   - DO NOT include a list of materials.

4. **RESULTS - What were the result(s) of your project?**
   - Include tables and figures which illustrate your data.
   - Include relevant statistical analysis of the data.

5. **DISCUSSION - What is your interpretation of these results?**
   - What do these results mean? Compare your results with theories, published data, commonly held beliefs, and expected results.
   - Discuss possible errors. Did any questions or problems arise that you were not expecting? How did the data vary between repeated observations of similar events? How were results affected by uncontrolled events?

6. **CONCLUSIONS - What conclusions did you reach?**
   - What do these results mean in the context of the literature review and other work being done in your research area? How do the results address your research question? Do your results support your hypothesis?
   - What application(s) do you see for your work?

7. **REFERENCES/ACKNOWLEDGEMENTS**
   - This section should not exceed one page. Limit your list to the most important references.
   - List the references/documentation used which were not of your own creation (i.e., books, journal articles).
   - It is permissible to include a short statement acknowledging support from supervisors, research groups and others that had a direct role in your project.

Project Presentation Template: **Engineering Project**

1. **Project ID and Title**
   - The following should be included:
     - Project ID. This ID will be provided by Society for Science upon submission of ISEF paperwork.
     - Project Title
     - Finalist Name (s)
     - School(s)
     - City, State, Province, Country

2. **INTRODUCTION - What is your engineering problem and goal?**
   - What problem were you trying to solve? Include a description of your engineering goal.
   - Explain what is known or has already been done to solve this problem, including work on which you may build. You may include a brief review of relevant literature.
   - If this is a continuation project, a brief summary of your prior work is appropriate here. Be sure to distinguish your previous work from this year's project.

3. **METHODS - Explain your methods and procedures for building your design.**
   - What did you do? How did you design and produce your prototype? If there is a physical prototype, you may want to include pictures or designs of the prototype.
   - If you tested the prototype, what were your testing procedures? What data did you collect and how did you collect that data?
   - DO NOT include a separate list of materials.

4. **RESULTS - What were the result(s) of your project?**
   - How did your prototype meet your engineering goal?
   - If you tested the prototype, provide a summary of testing data tables and figures that illustrate your results.
   - Include relevant statistical analysis of the data.

5. **DISCUSSION - What is your interpretation of these results?**
   - What do these results mean? You may compare your results with theories, published data, commonly held beliefs, and/or expected results.
   - Did any questions or problems arise that you were not expecting? Were these problems caused by uncontrolled events? How did you address these?
   - How is your prototype an improvement or advancement over what is currently available?

6. **CONCLUSIONS - What conclusions did you reach?**
   - Did your project turn out as you expected?
   - What application(s) do you see for your work?

7. **REFERENCES /ACKNOWLEDGEMENTS**
   - This section should not exceed one page. Limit your list to the most important references.
   - List the references/documentation used which were not of your own creation (i.e., books, journal articles).
   - It is permissible to include a short statement acknowledging support from supervisors, research groups and others that had a direct role in your project.

Project Presentation Template: **Mathematics/Computer Science**

1. **Project ID and Title**
   - The following should be included:
     - Project ID. This ID will be provided by Society for Science upon submission of ISEF paperwork.
     - Project Title
     - Finalist Name (s)
     - School(s)
     - City, State, Province, Country

2. **INTRODUCTION - What is your research question?**
   - Explain what is known or has already been done in your research area. Include a brief review of relevant literature.
   - If this is a continuation project, a brief summary of your prior work is appropriate here. Be sure to distinguish your previous work from this year's project.

3. **FRAMEWORK - Notation and framework.**
   - Introduce the concepts and notation needed to specify your research question, methods, and results precisely.
   - Define relevant terms and explain prior/background results. (Novel concepts developed as part of your project can be presented here or in Section 4, as appropriate.)

4. **FINDINGS - Present your findings and supporting arguments.**
   - What did you discover and/or prove? Describe your result(s) in detail. If possible, provide both formal and intuitive/verbal explanations of each major finding.
   - Describe your methods in general terms. Then:
     - Present rigorous proofs of the theory results – or, if the arguments are long, give sketches of the proofs that explain the main ideas.
     - For numerical/statistical results, include tables and figures that illustrate your data. Include relevant statistical analysis. Were any of your results statistically significant? How do you know this?

5. **CONCLUSIONS - What is your assessment of your findings?**
   - How do the results address your research question? And how have you advanced our understanding relative to what was already known?
   - Discuss possible limitations. Did any questions or problems arise that you were not expecting? What challenges do you foresee in extending your results further?
   - What application(s), if any, do you see for your work?

6. **REFERENCES /ACKNOWLEDGEMENTS**
   - This section should not exceed one page. Limit your list to the most important references.
   - List the references/documentation used which were not of your own creation (i.e., books, journal articles).
   - It is permissible to include a short statement acknowledging support from supervisors, research groups and others that had a direct role in your project.

Appendix III. Quad Chart Instructions

A "quad chart" is a single page divided into four quadrants providing a high-level summary of the project. It is intended to be bulleted information that a judge could review at a quick glance and then proceed to the Project presentation for more details. Follow the model below that corresponds to the Project Presentation template you selected.

1. The page should be created so that **the entire page is visible at the same time.** The page should be created in Landscape mode.
2. The page will have to upload as an image to ProjectBoard.
3. The page background color should be a light color and text color predominantly dark to support readability.
4. The minimum allowable font size is 14 pt. and larger fonts are encouraged for readability. *Exception*: You may use a smaller font size, down to 10 pt., for figure captions or photo credits.
5. Text should be in list or bulleted form and as brief as possible. This chart is intended as a high-level summary that can be read at-a-glance.
6. All four quadrants of your Quad Chart should each be the same size with a single border line delimiting each, as in the examples below.
7. The Title section should be only tall enough to include the required elements which are the same as the abstract header. The project title should be at the largest header size of the document for easy identification of the project. (See section on Quad Chart Title).
8. The Quad Chart should include all appropriate photo credits, should not include a bibliography, references, or acknowledgments and must adhere to all Display & Safety rules.

Approximate examples of the format of a Quad Chart are listed below. Additional examples and a template will be posted to the Society for Science website.

Science Project Quad Chart — **Booth ID**

Author, School, City, State, Country

Q1: **Scientific Question**

- Bullet 1
- Bullet 2
- Bullet 3

Image

credit

Q3: **Data Analysis & Results**

- Bullet 1
- Bullet 2

Data Chart

credit

Q2: **Methodology**

Image

credit

- Bullet 1
- Bullet 2
- Bullet 3
- Bullet 4

Q4: **Interpretation & Conclusions**

- Bullet 1
- Bullet 2
- Bullet 3

Engineering Project Quad Chart **Booth ID** **Author, School, City, State, Country**	
Q1: Engineering Problem & Objectives	Q3: Data Analysis & Results
Q2. Project Design	Q4: Interpretation & Conclusions
Math/Computer Science Project Quad Chart **Booth ID** **Author, School, City, State, Country**	
Q1: Problem or Question	Q3: Findings
Q2: Framework	Q4: Interpretation & Conclusions

Quad Chart Title:

- In the upper right-hand corner, list the Project ID.
- Line one is the title of your project.
- Line two is your name, school, city, state, country.

Quadrant 1: Research Question/Engineering Objectives

- This should reflect material in #2 of the Project Presentation Template.
- Please state the research question or engineering problem being addressed.
- A leading core graphic or visual is encouraged, but not required.

Quadrant 2: Methodology/Project Design

- This should reflect material in #3 of the Project Presentation Template.
- Please provide a succinct, bulleted summary of the methodology/project design.

Quadrant 3: Data Analysis & Results

- This should reflect material in #4 and #5 of the Project Presentation Template.
- It is advised that this quadrant should primarily be a graphic representation of relevant data and results.
- Text should be kept to a minimum.

Quadrant 4: Interpretation & Conclusions

- This should reflect material in #5 and # 6 of the Project Presentation Template.

Appendix IV. Project Video Instructions

Record a video (maximum duration 2 minutes) explaining your project. The target audience for this video is members of the general public who will view the projects virtually during Regeneron ISEF and in the months following. While judges will have access to this video, it will not be the focus of their project review. This video must comply with all Display & Safety Rules, particularly those involving logos, acknowledgements and properly crediting images/graphs/photos.

What to include in your video:

1. Introduce Yourself: State your full name and your city/state/country. Rather than reciting your project title, consider explaining your project in a single sentence. The video should feature you presenting your project orally as if in front of your physical project board presenting to a judge or a member of the public.

2. **Explain Your Project:** Summarize your research into main points:
   a. What did you do?
   b. What did you find?
   c. What conclusions did you draw?

To note:

- Videos can either be uploaded directly to ProjectBoard or you can embed a YouTube video. The YouTube link will need to be public, but it is not required that it be listed. It is recommended that the video be named the project short title. If uploading directly, videos must be less than 500 MB in size.
- We encourage you to be prominently displayed in the video (as opposed to having the video be prominently your slides).
- You can use any props or visuals you may have that are within the Display & Safety guidelines.
  - *Tip: This video is a summary statement about your project and the scientific or engineering design process you followed; it is not intended as an advertisement or sales pitch.*
- Do not include anyone in your video other than the student researchers of the project.

Best Practices for Filming:

These videos will not be edited. To ensure your video is the best representation of your work, please keep these best practices in mind while filming:

- Please speak in English or provide English sub-titles.
- Film yourself in a well-lit and non-distracting environment so the viewer's focus stays on you and your work.
- For best results, film your video horizontally (landscape).
- Keep the camera still and in place during filming.
- Speak clearly and loudly enough that the recording is able to pick up every word you say.
- Avoid long pauses.
- Listen to your video after recording to ensure your voice is clear and audible, and that the video has not picked up too much background noise.
- Confirm the size of the video is less than 500 MB.

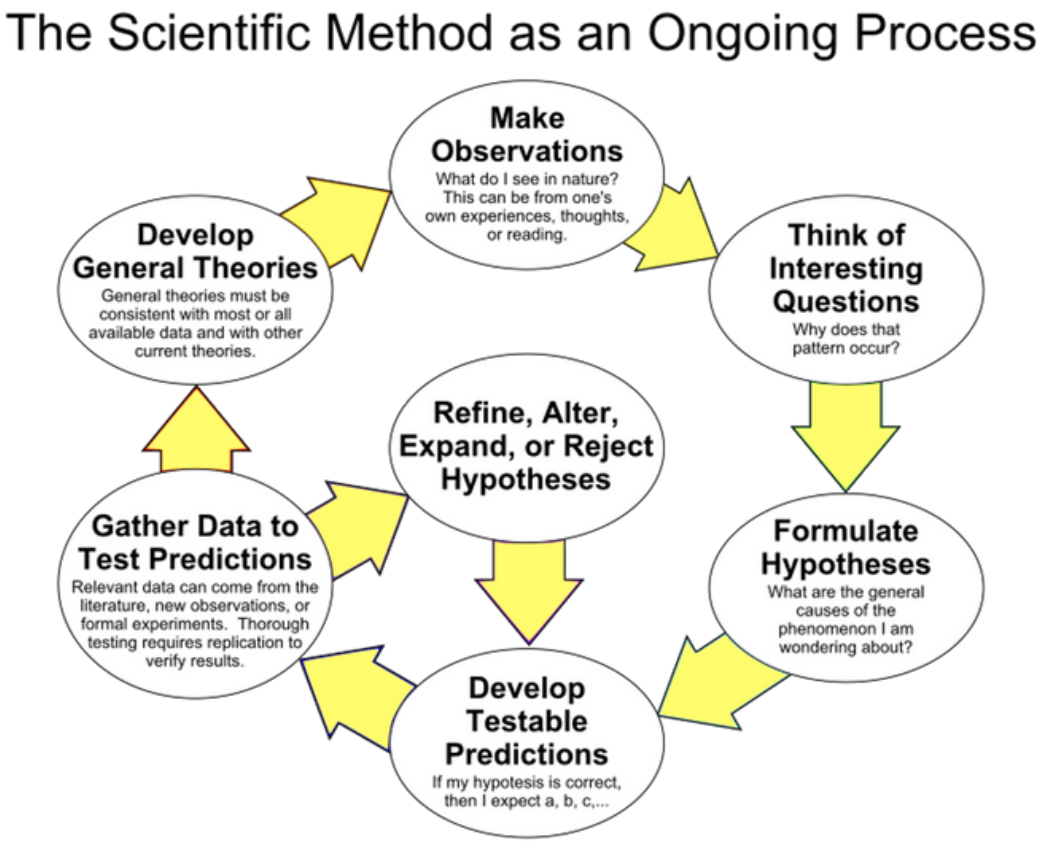
PART V: PROJECT IDEAS

Science fair projects should be developed with inquiry-based learning as the foundation. Inquiry-based learning is a form of active learning that starts by posing questions, problems, or scenarios. Inquiry-based learning is often assisted by a facilitator, rather than a lecturer. Inquirers will identify and research issues and questions to develop knowledge or solutions. Inquiry-based learning includes problem-based learning and is generally used in small-scale investigations and projects, as well as research. The inquiry-based instruction is principally very closely related to the development and practice of thinking and problem-solving skills.

Specific learning processes people engage in during inquiry-learning include:

1. Creating questions of their own
2. Obtaining supporting evidence to answer the question(s)
3. Explaining the evidence collected
4. Connecting the explanation to the knowledge obtained from the investigative process
5. Creating an argument and justification for the explanation

Inquiry learning involves developing questions, making observations, doing research to find out what information is already recorded, developing methods for experiments, developing instruments for data collection, collecting, analyzing, and interpreting data, outlining possible explanations, and creating predictions for future study. This should sound very similar to what we teach with the scientific method.



This section can be used as a guide to help students select a science fair project but directly copying any particular project will not lead to success. Instead, let these projects try to pique interest and have them adapt as needed.

Below are some links to assist with creating new projects.

https://www.weareteachers.com/8th-grade-science-projects/

https://sciencebob.com/science-fair-ideas/ideas/

https://learning-center.homesciencetools.com/article/high-school-science- projects/

https://www.sefmd.org/Resources/200%20Science%20Fair%20Project%20Ideas.pdf

https://www.ulm.edu/sciences/scifairprojectideas.html

The Regeneron International Science and Engineering Fair encourages students to tackle challenging scientific questions and develop the skills needed to solve the problems of tomorrow.

Society for Science

The Society for Science is a champion for science, dedicated to expanding scientific literacy, effective STEM education, and scientific research. Founded in 1921, we are a nonprofit 501(c)(3) membership organization focused on promoting the understanding and appreciation of science and the vital role it plays in human advancement. Through its acclaimed science research competitions, including the Regeneron Science Talent Search, the Regeneron International Science and EngineeringFair, and the Broadcom MASTERS, and its award-winning magazine, Science News, and digital media properties, Science News for Students, the Society is committed to inform, educate and inspire.

Learn more at: www.societyforscience.org and Follow them on

Facebook https://www.facebook.com/societyforscience
Twitter @Society4Science
Instagram @Society4Science
Snapchat Society4Science