2022-2023 REGION I MSEF

HANDBOOK

RULES
PROJECT IDEAS
DUE DATES

HOSTED BY THE UNIVERSITY OF SOUTERN MISSISSIPPI AND THE CENTER FOR STEM EDUCATION

PREPARED BY
Kendrick Buford, PhD

Meet Our Partners

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. Starting from 2020, the Intel Corporation will no longer be the title sponsor for ISEF. Moving Forward, ISEF will instead be sponsored by Regeneron

Each May, more than 1500 students from roughly 70 countries and territories compete in the fair for scholarships, tuition grants, internships, scientific field trips and the grand prizes, including one $75,000 and two $50,000 college scholarships. All prizes together amount to over $4,070,000.

REGENERON ISEF
A PROGRAM OF SOCIETY FOR SCIENCE & THE PUBLIC

Of Course, none of this would be possible without the help of the University of Southern Mississippi and The Center for Science and Mathematics Education.

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

Part I: General Information

2023 Fair Dates

Dates and/or Location are subject to change. Fairs will become virtual in the case of emergency.

Event	Location	Date	Submit Paperwork By
Upper Fair	Payne Center	2/17	2/4
Lower Fair	Payne Center	2/10	1/27
JSHS	Lake Terrance Convention Center	2/24	2/3
Virtual JSHS	Online	3/3	2/17
State Fair	Ole Miss	3/31	NA
ISEF	Dallas TX	5/13-19	3/31
National JSHS	Virginia Beach, Virgina	4/12-15	NA

School Registration should be completed by 12/4/2022

It is important to adhere to the registration deadlines in order to prevent issues in project placement.

Websites to visit

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	region1msef@gmail.com
Demonstrations	Kendrick.Buford@usm.edu

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	30.00 USD	40.00 USD
Double	35.00 USD	45.00 USD
Triple	40.00 USD	50.00 USD

Note* Triple Projects are not eligible for ISEF or JSHS. We will only be able to send 2 people or projects

Important Update*

Region 1 Science fair has always collected the bare minimum in monies needed from each student to run our fairs. This leaves us with many cases or breaking even or even running a deficit. Our host institution has always been gracious in helping us cover this cost. However, this has been exacerbated over the years due to lowered attendance during the pandemic.

Starting this year, we will not be able to guarantee ISEF participation until 75% of travel cost have secured or 2 weeks before the fair date. Please help us predict this early by completing the school registration form.

Part II: Rules and Registration

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 2023.

Eligibility

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

A. **be in grades 9–12 or equivalent**
B. **b. 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 2022.

Project Evaluation

You will at minimum need the following positions:

A. **Key Teacher**
B. **SRC Chair/Committee**
C. **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 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. **a biomedical scientist with an earned graduate degree**
B. **an educator**
C. **at least one additional member**

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 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:

A. **An educator**
B. **A school administrator (preferably principal or vice principal)**
C. **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

<u>Animal Care:</u>
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.

<u>Potentially Hazardous Biological Agents (PHBAs):</u>
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.

<u>Stewardship of the Environment:</u>

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

<u>Individual Project (most common)</u>
An individual project shall be a project whose research and experimentation has been conducted by a single student in or out of a research lab with no or limited help from an Adult Sponsor.

<u>Team Projects</u>
A team project shall be defined as a project whose research and experimentation has been conducted by multiple students in or out of a research lab.

A team project shall be limited to three student members.

State Fair

<u>Judging</u>
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.

Judging Criteria for Science Projects

I. Research Question(10pts)

- **clear and focused purpose identifies contribution to field of study testable using scientific methods**

II. Design and Methodology (15pts)

- **well-designed plan and data collection methods variables and controls 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)

- **project demonstrates significant creativity in one or more of the above criteria**

V. Presentation (35pts)
a. Poster (10 pts)
logical organization of material clarity of graphics and legends supporting documentation displayed

b. 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 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 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 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 the school registration, student abstract and student registration (lower) form. All paper 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 as submit as soon as possible.

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_____

Return Forms To:
Center for Science and Mathematics Education
118 College Drive
Box #5087
Hattiesburg, MS 39406
Fax: 601-266-6145
Email: region1msef@gmail.com

2023 Mississippi Science and Engineering Fairs Student Registration Form (Upper) February 17, 2023

Mississippi Science and Engineering Regional and State Fairs will be conducted in accordance with the ISEF 2023 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 2023 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 2023 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 4, 2023**

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_____

Return Forms To:
Center for Science and Mathematics Education
118 College Drive
Box #5087

Hattiesburg, MS 39406
Fax: 601-266-6145
Email: region1msef@gmail.com

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.

2023 Mississippi Science and Engineering Fairs Student Registration Form (Lower) February 10, 2023

Mississippi Science and Engineering Regional and State Fairs will be conducted in accordance with the ISEF 2023 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: January 27th

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_____

Return Forms To:
Center for Science and Mathematics Education
118 College Drive
Box #5087
Hattiesburg, MS 39406
Fax: 601-266-6145
Email: region1msef@gmail.com

Part V. Project Ideas

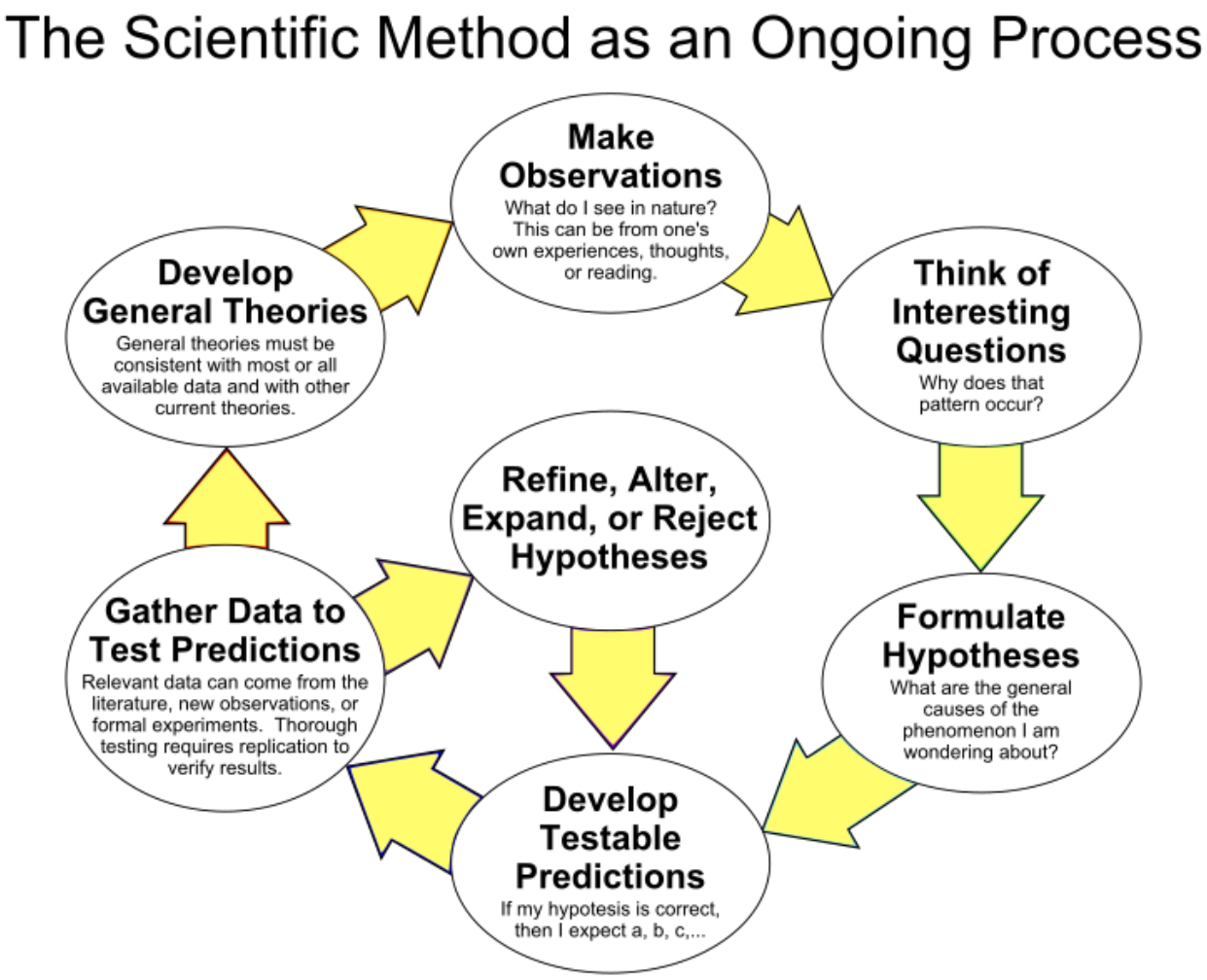
Science fair projects should be developed with inquiry-based learning as the foundation. Inquiry-based learning is a form of active learning that starts by posing questions, problems or scenarios. Inquiry-based learning is often assisted by a facilitator rather than a lecturer. Inquirers will identify 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 that 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.

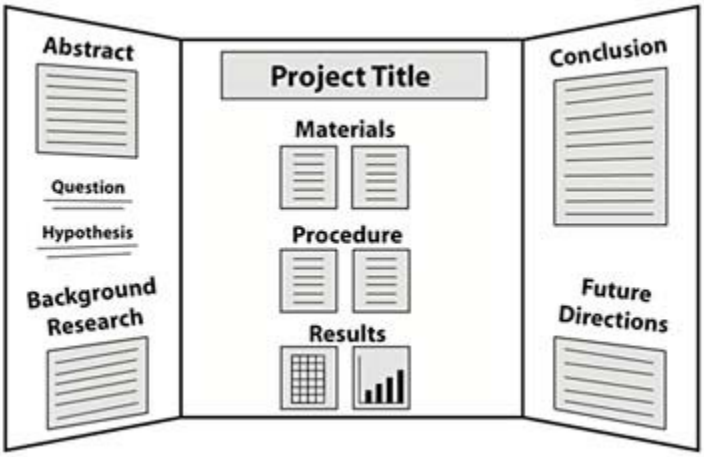
Below are some links to assist with creating new projects.

- 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 desire for scientific literacy has brought about an increase of 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 it 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

Use the website below for more information:

https://www.stevespanglerscience.com/2012/01/30/science-fair-911-display-boards/

Science Fair Project Display Board Checklist

What Makes for a Good Science Fair Project Display Board?	For a Good Science Fair Project Display Board, You Should Answer "Yes" to Every Question
Does your display board include: • Title • Abstract • Question • Variables and hypothesis • Background research • Materials list • Experimental procedure • Data analysis and discussion including data chart(s) & graph(s) • Conclusions (including ideas for future research) • Acknowledgments • Bibliography	Yes / No
Are the sections on your display board organized like a newspaper so that they are easy to follow?	Yes / No
Is the text font large enough to be read easily (at least 16 points)?	Yes / No

What Makes for a Good Science Fair Project Display Board?	For a Good Science Fair Project Display Board, You Should Answer "Yes" to Every Question
Does the title catch people's attention, and is the title font large enough to be read from across the room?	Yes / No
Did you use pictures and diagrams to effectively convey information about your science fair project?	Yes / No
Have you constructed your display board as neatly as possible?	Yes / No
Did you proofread your display board?	Yes / No
Did you follow all of the rules pertaining to display boards for your particular science fair?	Yes / No

Part VI. Appendix

REGENERON

ISEF

A PROGRAM OF

SOCIETY FOR SCIENCE

INTERNATIONAL RULES FOR PRE-COLLEGE SCIENCE RESEARCH

GUIDELINES FOR SCIENCE AND ENGINEERING FAIRS 2022–2023

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

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	☐
Translational Medical Science	☐

ABSTRACT BODY

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

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
If yes, how many individuals were in the group and who were they (e.g. high school students, graduate students, faculty, professional researchers)?

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 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
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)

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 Engineering Fair 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 us on
Facebook **https://www.facebook.com/societyforscience**
Twitter **@Society4Science**
Instagram **@Society4Science**
Snapchat **Society4Science**

Society for Science
1719 N Street, NW
Washington, DC 20036-2801
202.785.2255
societyforscience.org/ISEF