

Illinois Junior Academy of Science

Policy & Procedure Manual



September 2026 – August 2028

This Policy and Procedure Manual replaces and supersedes all previous publications.

A copy of this manual should be given to all project sponsors and student participants

**This Manual May Be Downloaded from the IJAS
Website and Duplicated as Needed**

Official Website

www.ijas.org

The Illinois Junior Academy of Science

Policy and Procedure Manual

Effective September 2026 through August 2028

This Policy and Procedure Manual replaces and supersedes all previous publications.

This Policy and Procedure Manual is reviewed and revised every two years.

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Aims and Objectives of the Policy and Procedure Manual

The primary aim of this manual is to communicate the information needed by the student and sponsor so that a safe and humane experimental project or paper is presented at the regional and state expositions. Please read this book carefully and resolve any questions **before** you enter a project or paper.

The Illinois Junior Academy of Science expects all schools and regions to follow all rules, regulations, and guidelines of the state organization. The Illinois Junior Academy of Science will insist that all projects and papers entered into state competition meet **all** of the rules, regulations, and guidelines of the Illinois Junior Academy of Science. No arbitrary safety procedures or rules may be instituted at the regional level that will limit a school or student's participation at a regional fair and potentially prevent a student advancing to the state level.

Projects that are sent to the State Science Exposition that do not meet the rules, regulations, and guidelines of the Illinois Junior Academy of Science will be disqualified.

The Board of Directors of the Illinois Junior Academy of Science will allow no exceptions to the rules and guidelines as stated in this policy and procedure manual.

Safety rules are not meant to be barriers to progress that have been arbitrarily imposed to make it difficult for students to present a project. The objective of the *Policy and Procedure Manual* is to provide policies and procedures that are designed for the safety of the experimenter, as well as the safety of those that will judge and/or view the project.

Policy and Procedure Manual Editors

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August/September 2026

This manual may be downloaded
from the IJAS website and duplicated as
needed.

Join IJAS!

**Membership in IJAS is open to all
public and private schools, including
home schools, in the State of Illinois.**

Find out how rewarding participation in IJAS activities
can be. Visit us on the web at:

www.ijas.org

Join by **December 31** to take advantage of our regular
annual membership fee.

**Note: All participants in IJAS activities, projects or
sessions at the State Exposition must be enrolled in
IJAS member school, club or as an individual. IJAS
Membership is determined at the state level. No
regional rules, regulations, or procedures regarding
membership may supersede those of the state.
Regions must accept schools placed in their region by
the state. Any discriminatory practices against a
school, group, or program will not be tolerated.**

The Science Project

Categories

Students must design an experiment to investigate a question or problem, design or develop a new model, computer program, solve a mathematical proof, and so forth. A project based solely on library research is **not** an acceptable project. The following guidelines should give one an indication of what type of experimentation or project can be done within each category and should help to place a given project in the proper category for judging. **Note that building without purposeful design, testing or demonstration is not an acceptable project. A control group may not always be possible or necessary for all projects; a comparison among trials is appropriate and may be used instead.**

Projects in *any* of the listed IJAS categories below may need an endorsement sheet(s), see pages 8-9. Please make sure that all safety rules are followed, and that all endorsements are completed and displayed.

Aerospace Science...is the science of the study and investigation of the Earth's atmosphere and outer space. In the wide sense, it would include the design, manufacture, and operation of aircraft. Some topics that fall within this division are the operation of rockets, guided missiles, anything related to space travel, operation, and/or construction of satellites, observations of airflow patterns within tunnels, and the use of navigational equipment.

Agriculture... involves the “implementation, production, management, and processing of agricultural commodities and services from the farm to the grocery store. It encompasses all aspects of protection and management of land and natural areas. Research that fits into this category shall be the application of scientific principles to improve the food, fiber, or fuel production or management.” Projects involving animal husbandry include the hands-on care, feeding, breeding, and management of livestock like cattle, swine, sheep, and poultry. Such projects are related to farm work, veterinary science basics, and real-world projects (from National FFA AgriScience Fair Guidelines).

Astronomy...is the science dealing with all of the celestial bodies in the universe, including the planets and their satellites, comets and meteors, the stars, and interstellar matter, the star systems known as galaxies, and clusters of galaxies. Modern astronomy is divided into several branches: astrometry, the observational study of the position and motions of these bodies; celestial mechanics, the mathematical study of their chemical composition and physical condition from spectrum analysis and the laws of physics; and cosmology, the study of the universe as a whole.

Behavioral Science...is the science that studies the demeanor or deportment of humans and other animals by means of observable response and the interpretation of the same as offered by the social sciences, sociology, psychology, and so forth. Some topics that fall within this division are the effect of stimuli on organisms and their responses, learning, motivation, emotion, perception, thinking, individuality, personality, and adjustment.

Biochemistry...is the branch of chemistry relating to the processes and physical properties of living organisms. Topics that fall within the biochemistry division are the properties and reaction of carbohydrates, lipids, proteins, enzymes, blood, urine, vitamins, hormones, poisons, and drugs. The chemistry of absorption, digestion, metabolism, respiration, and photosynthesis as organic processes also belong in this category.

Botany...is the division of biology that deals with plant structure, reproduction, physiology, growth, classification, and disease. Some topics included in this category are specialization in plants, functions of various plant structures, reproduction, and heredity.

Cellular and Molecular Biology...is the study of the organization and functioning of the individual cell; molecular genetics focusing on the structure and function of genes at a molecular level. Other topics may include the structure and function of the immune system, innate and acquired immunity, and the interaction of antigens with antibodies. Molecular biology concerns itself with understanding the interactions between the various systems of a cell, including the interrelationships of DNA, RNA, and protein synthesis and learning how these interactions are regulated.

Chemistry...is the science that deals with structure, composition, and properties of substances and of their transformations. Topics included in this category are the composition of various compounds, the formulation of various compounds, the study of gas laws, atomic theory, ionization theory, and the analysis of organic and inorganic products.

Computer Science... includes the study and development of computer hardware, software engineering, internet networking and communications, graphics (including human interface), simulations/virtual reality or computational science (including data structures, encryption, coding, and information theory). Topics in this category may include writing an original program or developing a new language and comparing them to existing ones, designing a network system, projects involving AI, testing computer speed and efficiency, overclocking, and so forth.

Earth Science... is the science concerned with the origin, structure, composition and other physical features of the Earth. Some topics that fall within this division are geology (earth composition, rock formation, fossils, minerals, and fossil fuel); geography (landforms, soils, classification of streams, erosion, and sedimentation); oceanography (ocean waves, ocean currents, composition of ocean water and coastal zone management); seismology; geophysics; and meteorology.

Electronics... is the branch of engineering and technology that deals with the manufacture of devices such as radios, television sets, and computers that contain electron tubes, transistors, chips, or related components. Topics in this category are circuits (electrical, digital and analog) for communication such as radio, radar, laser, transistor, television, and integrated circuits; electricity; electric motors; solar cells and amplifiers.

Engineering... is concerned with the practical application of scientific knowledge in the design, construction, and operation of roads, bridges, harbors, buildings, and machinery, lighting, heating, and communication systems. Some topics in this category are stress testing of building materials, strength composition of building materials, collection of data from operating systems to compare and contrast their effectiveness.

Environmental Science... is the study of the protection and care of natural resources. Topics included in this category are solar energy and its uses, water purification and usage, pollution control, soil chemistry, and insecticides. Within this area is ecology, which is the study of ecological systems, and ecological population studies.

Health Science... is the study of the diseases/conditions and the health of humans, and/or the technologies associated with health. Topics to be found under this category may include anatomy, dentistry, pharmacology, physiology, pathology, ophthalmology, nutrition, sanitation, pediatrics, dermatology, neurology, allergies, speech and hearing, technical applications, and so on. May include studies using animals as models for human health studies.

Materials Science... is the study of materials, nonmetallic as well as metallic, and how they can be adapted, fabricated, and/or tested to meet the needs of modern technology. Using the laboratory techniques and research tools of physics, chemistry, and metallurgy, science is finding new ways of using plastics, ceramics, and other nonmetals in applications formerly reserved for metals.

Mathematics... is the science dealing with the measurement, properties, and relationships of quantities as expressed in numbers or symbols whether in the abstract or in their practical connections. Some topics included under mathematics are arithmetic (use of numbers, symbols, and numerical systems); algebra (probability, theory of equations, progressions, permutations and combinations); geometry (topology, study of geometric figures, similar figures, and scale drawings); calculus; trigonometry; statistics; and graphing.

Microbiology... is the branch of biology concerned with the study of microorganisms. Topics to be found in this category are the structure and physiology of bacteria, viruses, yeasts, fungi, and protozoa, and studies involving cells or tissues in cultures.

Physics... is the science that deals with the laws governing motion, matter, and energy under conditions susceptible to precise observation as distinct from chemistry or sciences dealing with living matter. Topics found in the category of physics are hydrostatic force and pressure, gravity, Newton's Laws, relativity, kinetic theory, motion forces, work, energy, sound, light, and magnetism.

Product/Consumer Science... is the study of comparisons and evaluations of manufactured or commercial products. Topics included in this category are taste tests, color preferences, quality comparisons, and product efficiency.

Zoology... is the science that focuses on animals with reference to their structure, physiology, health, behavior, development, evolution, and classification. Some topics that fall within this category are structural and functional studies of vertebrates and invertebrates, reproduction, heredity, and embryology.

Rules and Regulations

The student and the sponsor have ultimate responsibility for the safety of the student and test subjects while doing experiments or otherwise developing a project for the Science Exposition. Because many dangers may not be readily apparent, some guidelines are presented here to aid in developing a safer project. Even if a project follows the rules listed, if a sponsor feels the project is not appropriate, the sponsor has the right to not approve the project.

All project development and experimentation must be conducted only with proper supervision. This is particularly true for chemicals, radiation sources, biological cultures, and so forth, many of which are governed by rules and regulations, both State and Federal, that affect both handling and disposal. (See the full list of safety rules).

All exhibits must conform to the following regulations for Region and State expositions. These same rules should be used, where applicable, at local as well as regional expositions.

- Schools must be a member of the Illinois Junior Academy of Science (IJAS). If the school does not have an IJAS membership, students may be able to participate as a homeschool student, through an independent group, or as an individual member. Students wishing to participate through one of these options must contact IJAS leadership for information about eligibility, registration requirements, and the appropriate procedure for entering.
- To participate at the State Exposition, the project must have participated in a Regional Fair and have been selected as a competitor for the State Exposition by the Region.
- No projects presented in previous years will be allowed at the Region or State Exposition unless they are the result of further research and experimentation. Differences from previous projects should be clearly stated.
- The IJAS State Exposition is open to students in 7th-12th grades. Students are divided into two divisions.
Junior division : 7-8th grade **Senior division** : 9-12th grade.
- Projects may involve one or two students. The number of students may not exceed two students.
- Students may enter under only ONE project.
- No apparatus may be on top of, under, behind, in front of, alongside, or hanging off of the display table. Any materials displayed with the board will be removed by safety judges and stored at the safety table by the Safety Chair. Students may retrieve items at the end of the judging session.
- Only a display board, Safety Forms packet, and computer may be on top of the table. The computer must be battery operated; no electricity will be supplied.
- All safety guidelines outlined in this manual (pg 8-33) must be followed by all students. High School students must also follow all ISEF rules and regulations. They are outlined here: [ISEF Safety Rules](#).
 - At the State Exposition, the student must have **THREE complete** copies of the research paper including the Abstract. Also, one packet which includes Safety Sheets and any needed Endorsement Sheets signed in ink by the student(s) and the teacher sponsor must be available. If no safety hazards exist, a statement to that effect must be made. (See Appendix page 48). Middle school students will use all appropriate IJAS safety forms (pg 56-62) and high school students will use all appropriate [ISEF forms](#). The lack of a correctly filled out and signed forms, or violation of any safety rules, will result in the project being disqualified by the Head Safety Judge/President.
- A copy of the abstract form will be attached to the **front** of the display board. The safety sheet, and all applicable endorsement sheets **MUST** also be displayed as a packet **next** to the display board.
- Students shall remain with their projects during the official period of judging.
- Normal wear and tear on the exhibit is to be expected during the time that the exhibit is open to the public. If valuable equipment is with display, such as a computer, it is the student's responsibility for its supervision. Neither the Illinois Junior Academy of Science, Inc. nor the sponsors assume any responsibility for loss or damage to such equipment, materials, or research paper.

NEW RULE EFFECTIVE beginning in 2026-2027
High School Students Will Use ISEF Forms while Middle School Students will use IJAS forms

Instructions for ISEF Forms

Because our fair is an ISEF-affiliated fair, all students in grades 9–12 must follow the current [ISEF Rules](#) and complete all required [ISEF forms](#). These forms document that the project was properly planned, reviewed, supervised, and approved according to ISEF requirements. Most ISEF forms must be completed and signed before experimentation or data collection begins. Forms should not be completed retroactively. Middle school students DO NOT use ISEF forms. Middle school students should use the IJAS forms and approval procedures provided in this manual.

[ISEF Forms](#) Required for ALL High School Students

- **Form 1 — Checklist for Adult Sponsor/Safety Assessment — BEFORE experimentation**
- **Form 1A — Student Checklist and Research Plan — BEFORE experimentation**
- **Form 1B — Approval Form — BEFORE experimentation**
- **Form 2A — Student Support Disclosure Form — BEFORE experimentation**
- **ISEF Abstract — AFTER experimentation**

Additional Forms Required for Certain Projects

- **Form 2B — Qualified Scientist Form — BEFORE experimentation — [see description](#)**
 - Required when ISEF rules, the IRB, or the SRC determine that a [Qualified Scientist](#) is needed.
- **Form 2C — Regulated Research Institution Form — AFTER experimentation**
 - Required when research is conducted at a Regulated Research Institution, such as a university, research laboratory, medical facility, or certain industrial research settings.
 - The supervising adult completes the form to document what the student actually did at the institution.
- **Form 3 — Risk Assessment Form — BEFORE experimentation**
 - Required for applicable projects involving hazardous chemicals, hazardous devices, hazardous activities, or other procedures requiring a formal risk assessment.
 - It is also required for human participant testing of student-designed inventions, prototypes, or consumer products.
- **Form 4 — Human Participants Form — BEFORE experimentation**
 - Required for all projects involving human participants.
 - An IRB (Institutional Review Board) must include an educator or science teacher who is not the student's sponsor, a school administrator (such as a principal), and a medical or mental health professional (such as a doctor, nurse, or psychologist). **Note:** To avoid conflicts of interest, the student's Adult Sponsor, parent or guardian, or Qualified Scientist for the project cannot serve on the IRB reviewing that specific study.
 - Students must also provide the IRB with copies of surveys, questionnaires, tests, interview questions, consent forms, IJAS rules and other materials that will be used with participants.
 - IRB approval must be obtained before recruitment, interaction with participants, experimentation, or data collection begins.
- **Form 5A — Vertebrate Animal Form — BEFORE experimentation**
 - Used for applicable vertebrate animal research conducted at school, home, or a field site.
- **Form 5B — Vertebrate Animal Form — AFTER experimentation**
 - Used for vertebrate animal research conducted at a Regulated Research Institution.
- **Form 6A — Potentially Hazardous Biological Agents Form — BEFORE experimentation**
 - Required for applicable projects involving microorganisms, recombinant DNA, biological agents, fresh or frozen tissue, blood, body fluids, or other potentially hazardous biological materials.
- **Form 6B — Human and Vertebrate Animal Tissue Form — BEFORE experimentation**
 - Required for applicable projects involving human or vertebrate animal tissue, blood, body fluids, or related biological materials.

- **Form 7 — Continuation Projects Form — AFTER experimentation**

- Required when the current project continues or builds upon research conducted by the student in a previous year.
- Students must explain how the current research differs from their previous work.

How Do I Know If I Need a Qualified Scientist?

A Qualified Scientist is NOT required for every project. A Qualified Scientist is an adult with advanced education and/or extensive experience and expertise in an area related to the student's research. The Qualified Scientist must understand the risks, procedures, and applicable safety requirements for the project. Students should review their proposed research with their Adult Sponsor during the planning stage to determine whether the project requires additional scientific supervision.

A Qualified Scientist may be required for higher-risk or specialized research, including:

- BSL-2 potentially hazardous biological agent research;
- projects involving DEA-controlled substances;
- certain vertebrate animal projects; and
- certain human participant projects, depending on the procedures and level of risk, the IRB may determine that a Qualified Scientist is needed before the study can be approved.

When required, the Qualified Scientist:

- reviews the student's research plan before experimentation begins;
- determines whether appropriate safety precautions are in place;
- makes sure the student has received appropriate training;
- provides appropriate supervision or arranges for a trained Direct Supervisor; and
- completes and signs the required ISEF Qualified Scientist form.
- If unsure whether the project requires a Qualified Scientist, ask the Adult Sponsor before beginning experimentation. Do not begin the project until all required approvals and forms have been completed. Missing or improperly filled out paperwork will result in the project being disqualified by the Head Safety Judge or the IJAS President or their designated representative..

Middle School students will find the IJAS Safety forms on pg 56-62

Safety Guidelines for Experimental and Design Investigations

Why Are These Rules Necessary?

Many science and engineering projects involve chemicals, equipment, electricity, heat, or other potential hazards. Following safe laboratory practices helps protect students, sponsors, judges, families, and the environment. Professional scientists receive safety training before working in laboratories. These rules are designed to help students learn and follow the same safe laboratory practices expected in schools, universities, and research facilities.

Projects that do not follow these safety rules may be disqualified from any Illinois Junior Academy of Science (IJAS) Science Fair or Exposition.

Before Beginning a Project, Students and Sponsors Must...

1. Read these General Laboratory Safety Rules below and read any [additional safety sections](#) that apply to student projects.
2. High School students must also read ALL [ISEF Safety Rules](#).
3. All sponsors must discuss the proper use of [AI in research](#) with all of their students.
4. Write the procedure for the research project following all IJAS and ISEF (high school) safety rules. High School students will use this in their [ISEF Research Plan form 1A](#).
5. Complete a Background Research document or Literature Review. High School students will use this in their [ISEF Research Plan form 1A](#).
6. Complete the required Safety Sheets and any necessary endorsement form(s). High School students must use the [ISEF forms](#), and Middle School students should use the IJAS forms [in this manual](#).

General Safety Rules for All Projects

All students must:

- work under the supervision of a responsible adult;
- wear appropriate personal protective equipment (PPE), such as safety glasses, gloves, or protective clothing, whenever required by the project;
- use equipment only as instructed and for its intended purpose;
- keep work areas clean and organized;
- follow all school, laboratory, local, state, and federal safety rules and regulations; and
- safely store and properly dispose of all chemicals, biological materials, and other hazardous waste.
- keep all completed approval forms and safety documentation with the project records.

Additionally, sponsors are responsible for teaching students safe laboratory practices before experimentation begins.

AI Usage During Research

All sponsors are responsible for discussing the proper use of AI in research with all of their students, both middle and high school. Generative AI may be used as a support tool in student research, but it may not replace the student's own thinking, analysis, interpretation, or writing. Students are responsible for verifying AI-generated information and citations, documenting AI use when required, and following all applicable ISEF rules regarding acceptable and unacceptable uses of generative AI.

See the full [ISEF Generative AI Use Guidelines](#) for details and examples.

If a student uses an artificial intelligence (AI) tool at any stage of the project, the student must complete an **AI Disclosure Statement** when registering for the regional science fair. The disclosure must identify the AI tool used and explain how it was used in the project. This requirement applies to AI use during project development, experimentation, data analysis, coding, writing, editing, creation of figures or images, and preparation of presentation materials.

Special Rules for Work Done at a Certified Laboratory

If research is conducted at a certified laboratory or research facility, high school students must complete the “Regulated Institution - 2C” form. Middle school students must include a letter from the laboratory director or supervising scientist along with the safety sheet and any appropriate endorsement form. The letter must verify that:

- the research was conducted under appropriate adult supervision;
- the student followed all required laboratory safety procedures;
- the laboratory is certified or otherwise authorized to conduct the research;
- the supervising scientist's name, title, and contact information are provided; and
- the work described in the project was completed at that facility.
- approval from the institution’s IRB and/or SRC

If Students or Sponsors have questions about Safety Assessment:

After reading the rules in this document, students or sponsors may have questions about assessing safety. If a teacher sponsor is unsure whether a student project can be done safely, the sponsor should ask the Regional Safety Chair **before** a student begins their research. The Regional Safety Chair may ask the State Safety Chair for clarification. Students and parents may NOT contact the Regional Safety Chair or State Safety Chair directly. Instructions for contacting the State Safety Chair can be found using [this link](#).

Middle school projects must follow the rules in the IJAS Policy and Procedure Manual. High school students must also follow all the rules in the [ISEE Safety Rules](#).

Which Safety Rules May Apply to a Project?

In addition to these General Laboratory Safety Rules, students and sponsors must read the section(s) below that apply to the project.

If a project involves...	Read this section (in addition to the General Rules).
Chemicals - Even common household chemicals	<u>Chemical, Fire, Heat and Radiation Safety</u>
Burning anything	
Heating anything beyond room temperature	
Radiation - Lasers, UV light, x-rays, nuclear radiation	
Computer Programming	<u>Computer, Artificial Intelligence and Data Projects</u>
Artificial Intelligence in any part of the project	
Creating Apps, Robots or other programmable devices	
Large Data Sets that were not measured by student	
Robots or other programmable devices	

If a project involves...	Read this section (in addition to the General Rules).
Firearms/Guns of any kind	Firearms, Explosives, Rockets, and Projectile Safety
Rockets	
Fireworks	
Explosives	
Drones	Electrical, Drone and Mechanical Safety
Electrical devices	
Motors	
Engineered machinery	
Tools	
Vehicles - full sized or models	
Giving humans surveys or tests of any kind	Use and Care of Human Participants
Testing human reactions or senses	
Humans eating or drinking anything	
Humans doing physical activity	
Humans learning or being tested on something	
Observing people in public	
Human mental health	
Human testing of an engineered device, app, game or website	
Bacteria or Viruses	Use and Care of Live Biological Material (excluding vertebrate animals)
Mold – even from bread or rotting food	
Fuel cells or compost involving soil or bacteria	
Water testing for bacteria or fecal contaminants	
If a project involves...	Read this section (in addition to the General Rules).
Any vertebrate animals or materials from them, except for humans	Use and Care of Non-Human Vertebrate Animals

A topic or method that can potentially be conducted safely but may appear to conflict with or violate an IJAS Safety Rule	<u>Contacting the SRC for Project Approval</u>
Involves a situation that is not clearly addressed by the IJAS Safety Rules	

Use and Care of Biological Materials (Excluding Vertebrate Animals)

Why Are These Rules Necessary?

Biological materials play an important role in medicine, agriculture, environmental science, biotechnology, and many other fields of research. When handled properly, microorganisms, cultured cells, environmental samples, algae, fungi, and non-vertebrate organisms can be studied safely and provide valuable scientific information. However, some biological materials can cause disease, produce harmful substances, or negatively impact the environment if handled or disposed of improperly.

Professional scientists who work with biological materials receive specialized training and follow established laboratory safety procedures, institutional policies, and government regulations. Some biological materials may only be handled in laboratories that meet specific legal and safety requirements.

These rules are designed to protect students, teachers, families, judges, research personnel, and the environment while helping students develop the safe and responsible laboratory practices expected of professional scientists.

Does This Project Involve Biological Materials (Excluding Live Vertebrate Animals)?

These rules apply if a project involves:

- bacteria, archaea, fungi, yeast, molds, protists, algae, or viruses;
- culturing or growing microorganisms;
- fermentation using microorganisms;
- microbial fuel cells;
- recombinant DNA techniques or genetically modified microorganisms;
- cultured cells or tissues;
- environmental samples such as soil, compost, wastewater, or natural water sources;
- biological specimens, including blood, tissues, or body fluids;
- non-vertebrate organisms, including insects, worms, crustaceans, mollusks, *Daphnia*, brine shrimp, planaria, hydra, or *Caenorhabditis elegans* (*C. elegans*); or
- any other project involving biological materials other than live vertebrate animals.

If a student is unsure whether these rules apply to their project, contact the teacher/sponsor or Regional Safety Chair before beginning the research. If the project also involves human participants or vertebrate animals, read the separate section for safety for those projects. High school students must also read and follow all applicable [ISEF Safety Rules](#).

Before Beginning a Project, students working with Biological Materials must:

1. Read these IJAS **Biological Materials Safety Rules** with their sponsor.
2. High school students must also read and follow all applicable [ISEF Safety Rules](#).
3. Discuss proper use of any [AI in research](#) with their sponsor.
4. Prepare all surveys, interview questions, consent forms, tests, and other materials that will be used with human participants.
5. Write the procedure for the experiment following all IJAS and ISEF (high school) safety rules. High School students will use this in their [ISEF Research Plan form 1A](#).
6. Complete a Background Research document. High School students will use this in their [ISEF Research Plan form 1A](#).
7. Identify all biological materials that will be used and understand the potential hazards associated with them.
8. Determine the appropriate laboratory or research setting and ensure that appropriate adult supervision will be provided.
9. Learn the laboratory techniques and biosafety procedures needed to safely conduct the project.
10. Develop procedures for the safe handling, storage, disinfection, and disposal of all biological materials.
11. Ensure that they have read, and their sponsors have discussed, proper use of AI in research with them.
12. Prepare a written experimental procedure describing the biological materials, methods, safety precautions, and disposal procedures that will be used.
13. Obtain SRC approval before beginning the project when required by these rules.
14. Begin the project only AFTER all required paperwork and approvals have been completed. Missing, incorrectly completed, unsigned forms, or violation of any safety rules, will result in the project being disqualified by the Head Safety Judge/President.
15. Middle school students working with microorganisms must complete the **IJAS Microorganism Endorsement Form on pg 62**.
16. High school students working with potentially hazardous biological agents must complete the applicable [ISEF Form 6A](#) and any other required ISEF forms. Hazardous biological agents are defined as any BSL-2 agents; any bacteria, viruses, viroids, prions, rickettsia, fungi, and parasites; any Recombinant DNA (rDNA) technologies; any Biological tissues and fluids: any human or animal fresh/frozen tissues, blood, primary cell cultures, and body fluids.
17. Keep all completed approval forms and safety documentation with the project records and have them on the table with the project display at the science exposition.

General Rules for Working with Biological Materials

Sponsors are responsible for teaching students appropriate laboratory safety procedures before experimentation begins. Students working with biological materials must:

- wear appropriate personal protective equipment (PPE), including eye protection, protective clothing, and gloves when appropriate;
- wash hands thoroughly before and after handling biological materials;
- use proper aseptic (sterile) technique whenever appropriate;
- disinfect work surfaces before and after experimentation;
- clearly label all cultures, biological materials, and containers;
- safely store biological materials to prevent contamination or accidental release;
- conduct biological materials research only in locations permitted by these rules and follow all laboratory safety procedures established by the school or research facility;
- properly disinfect biological cultures before disposal using approved methods such as autoclaving or an appropriate sodium hypochlorite (bleach) solution;
- prevent the intentional release of laboratory organisms or biological materials into the environment; and
- immediately report spills, contamination, injuries, or unsafe conditions to the supervising adult.

Unless specifically permitted under IJAS rules and conducted in an appropriately approved research laboratory under qualified supervision, students may not conduct recombinant DNA experiments or culture mammalian cells.

Safety Rules for Working with Microorganisms (*bacteria, archaea, fungi, yeast, molds, protists, algae, or viruses*)

Projects involving microorganisms must:

- use only known, non-pathogenic microorganisms obtained from reputable commercial suppliers, educational institutions, or research laboratories;
- include documentation of the source of all microorganisms with the endorsement form, research paper, and project display;
- conduct microorganism research in a school laboratory or professional research facility unless the project uses only commercially obtained baker's yeast (*Saccharomyces cerevisiae*);
- NOT culture microorganisms obtained from people or other vertebrate animals, including from the mouth, nose, throat, skin, blood, body fluids, tissues, or waste;
- NOT culture microorganisms collected from objects or surfaces that have been in contact with people or other vertebrate animals, including doorknobs, keyboards, telephones, countertops, eating utensils, or restroom surfaces;
- NOT culture or intentionally propagate unknown microorganisms collected from environmental samples;
- NOT conduct experiments using known disease-causing microorganisms or viruses unless specifically permitted under IJAS rules and conducted in an appropriately approved research laboratory under qualified supervision;
- use only sealed microbial fuel cell systems;
- observe mold growth studies only until visible mold growth occurs. Once visible growth is present, cultures must remain sealed and be properly disinfected and disposed of without further manipulation; and
- NOT distill, concentrate, purify, or consume alcohol or other products produced during microorganism experiments when doing so creates additional safety hazards or violates applicable laws or school policies.

Safety Rules for Working with Non-Vertebrate Organisms

Projects involving non-vertebrate organisms must:

- minimize unnecessary injury, stress, or harm to living organisms;
- provide appropriate housing, food, water, and environmental conditions whenever organisms are maintained during the investigation;
- prevent the escape or intentional release of organisms into the environment;
- comply with regulations governing invasive or regulated species; and
- properly dispose of organisms at the conclusion of the project.

Special Rules for Work Done at a Certified Laboratory

If research is conducted at a certified laboratory or research facility, high school students must complete the Regulated Institution form-2C . Middle school students must include a letter from the laboratory director or supervising scientist along with the safety sheet and any appropriate endorsement form. The letter must verify that:

- the research was conducted under appropriate adult supervision;
- the student followed all required laboratory safety procedures;
- the laboratory is certified or otherwise authorized to conduct the research;
- the supervising scientist's name, title, and contact information are provided; and
- the work described in the project was completed at that facility.
- approval from the institution's IRB and/or SRC

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Use and Care of Human Participants

Why Are These Rules Necessary?

Research involving people can lead to new discoveries and help solve real-world problems. However, the safety, health, privacy, dignity, and rights of every participant must always come first. Professional researchers receive specialized training in research ethics, and their studies are reviewed by Institutional Review Boards (IRBs) to protect participants. Although student research differs from professional research, the Illinois Junior Academy of Science (IJAS) follows these same ethical principles.

These rules apply whenever a project involves people in any way and includes surveys, interviews, questionnaires, observations, testing products or prototypes, measuring physical or psychological responses, recording images or video, taste testing, or asking participants to perform an activity. Lack of correctly completed, signed forms, or violation of any safety rules, will result in the project being disqualified by the State Safety Chair or the IJAS President or their representative.

Before Beginning a Project, students working with Human Participants must:

1. Read these IJAS **Use and Care of Human Participant Rules** with the sponsor.
2. High school students must also read and follow all applicable [ISEF Safety Rules](#).
3. Discuss proper use of [AI in research](#) with their teacher sponsor.
4. Prepare all surveys, interview questions, consent forms, tests, and other materials that will be used with human participants.
5. Write the procedure for the experiment following all IJAS and ISEF (high school) safety rules. High School Students will use this in their [ISEF Research Plan form 1A](#).
6. Complete a Background Research document. High School students will use this in their [ISEF Research Plan form 1A](#).
7. Submit the research procedure and all participant materials to the IRB for review and approval before beginning any experimentation or data collection.
 - The IRB must include an educator or science teacher who is not the student's sponsor, a school administrator (such as a principal), and a medical or mental health professional (such as a doctor, school nurse, or school psychologist). **Note:** To avoid conflicts of interest, the student's Adult Sponsor, parent or guardian, or Qualified Scientist for the project cannot serve on the IRB reviewing that specific study.
 - The IRB may approve the project or require changes before approval is granted.
 - IRB members will sign the IJAS Human Endorsement Sheet (p. 58-59) for middle school students or the applicable [ISEF Human Participants Form](#) for high school students.
 - By signing, each IRB member confirms that they have reviewed the proposed research procedure and participant materials and, based on their professional judgment, believe that the study provides appropriate protections for the safety and welfare of the human participants and may proceed as approved.
8. Obtain the required signatures from participants and, when required, from a parent or guardian for participants under 18 years of age.
9. Missing, incorrectly completed, or unsigned forms, or violation of any safety rules, will result in the project being disqualified by the State Safety Chair or IJAS President or their designated representative.
10. Complete the required Safety Sheets and any necessary endorsement form(s). High School students must use the [ISEF forms](#). Middle School students should use the IJAS forms on p. 56-62 of this manual.
11. Keep all completed approval forms and safety documentation with the project records and have it on the table with the project display at the science exposition.

General Rules for Working with Human Participants

All human participant research must:

- Present no greater than minimal risk than that encountered during everyday life or routine educational activities;
- Obtain [informed consent](#) from all participants, unless this is waived by the IRB.
- Protect participant privacy and confidentiality by collecting only necessary information, securely storing identifiable information, and reporting results without identifying participants whenever practical;
- Minimize physical, emotional, psychological, social, legal, and economic risks; and
- Not involve medical diagnosis, treatment, invasive procedures, bodily fluids, or administration of drugs or medical devices unless specifically permitted under separate IJAS rules.

Informed Consent for Human Participants

Unless waived by the IRB, before participating, participants — or their parent or legal guardian when required — must be informed of:

- the purpose of the study;
- what participants will be asked to do;
- any reasonably foreseeable risks and expected benefits;
- how their information will be protected; and
- that participation is voluntary and they may withdraw at any time without penalty.
- Photographs, audio recordings, and video recordings may only be collected with appropriate consent.

A sample consent form that may be used is found with the endorsement forms and [using this link](#).

Safety Rules for Physical Activity Projects

Projects involving physical activity must present no greater than minimal risk. Students must:

- limit activities to those comparable to routine physical education classes or recreational activities;
- Include with safety documentation that each participant has a current school physical examination on file with the school nurse or written medical clearance from a licensed healthcare provider;
- provide appropriate adult supervision; and
- allow participants to stop the activity at any time without penalty.

Safety Rules for Food and Beverage Studies

Projects involving food or beverages must protect participants from allergic reactions, foodborne illness, and other avoidable health risks. Students must:

- use only foods and beverages safe for human consumption and prepared using appropriate food safety practices;
- Ingredients, amount of food or beverage and preparation method must be included on the informed consent form;
- include evidence in the paper and on the display board that quantities of food and non-alcoholic beverages are limited to normal serving amounts or less and must be consumed in a reasonable amount of time.
- identify participant food allergies and dietary restrictions;
- not administer alcohol, nicotine, caffeine, cannabis, medications, or dietary supplements unless specifically permitted under separate IJAS rules.

Safety Rules for Behavioral Science Projects

Behavioral science projects involve studying human thoughts, emotions, attitudes, opinions, decision-making, behavior, or social interactions. While all human participant projects require IRB approval, **additional care should be taken when a study involves sensitive topics, deception, or the potential for emotional, psychological, social, or privacy-related harm.** For these projects, the IRB should pay particular attention to the level of risk involved, the wording of questions, the age and vulnerability of participants, how privacy and confidentiality will be protected, and whether participation could cause discomfort, embarrassment, distress, or other harm.

Examples of sensitive topics include:

- physical or mental health;
- medical conditions or diagnoses;
- trauma, abuse, or neglect;
- family relationships, including divorce or family conflict;
- bullying, friendships, or social acceptance;
- body image or self-esteem;
- gender identity, sexual orientation, or sexual behavior;
- political beliefs or other strongly held personal beliefs;
- race, ethnicity, discrimination, or religion;
- alcohol, nicotine, vaping, cannabis, or illegal drug use;
- illegal activities; or
- any topic that could reasonably cause embarrassment, emotional distress, social harm, or an invasion of privacy.

Special Rules for Work Done at a Certified Laboratory

If research is conducted at a certified laboratory or research facility, high school students must complete the Regulated Institution form-2C . Middle school students must include a letter from the laboratory director or supervising scientist along with the safety sheet and any appropriate endorsement form. The letter must verify that:

- the research was conducted under appropriate adult supervision;
- the student followed all required laboratory safety procedures;
- the laboratory is certified or otherwise authorized to conduct the research;
- the supervising scientist's name, title, and contact information are provided; and
- the work described in the project was completed at that facility.
- approval from the institution's IRB and/or SRC

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Use and Care of Non-Human Vertebrate Animals

Why Are These Rules Necessary?

The basic aim of experiments involving animals is to achieve an understanding of life processes and to further society's knowledge. Experiments requiring the use of vertebrates must have a clearly defined objective, investigate a biological principle, and/or answer a scientific inquiry. Such experiments must be conducted with a respect for life and an appreciation of humane considerations.

To the degree possible, students should be cautioned about doing projects that involve vertebrates. However, if the teacher and the student feel that vertebrates must be used, the following rules must and will apply.

It is strongly recommended that living organisms such as plants, bacteria, fungi, protists, worms, snails, insects, or other invertebrates be used. Their wide availability, simplicity of care, and subsequent disposal make them very suitable for student work.

These rules are designed to protect vertebrate animals while helping students develop the humane and responsible research practices expected of professional scientists.

Projects that do not follow these rules may be disqualified from the Illinois Junior Academy of Science (IJAS) Science Fair.

Does a Project Involve Non-Human Vertebrate Animals?

These rules apply if a project involves:

- mammals, birds, reptiles, amphibians, fish;
- chicken or other bird embryos;
- maze running, learning, conditioning, or behavioral studies involving vertebrate animals;
- changing the environment, diet, housing, or other conditions of a vertebrate animal; or
- any other experimentation involving a living non-human vertebrate animal.

If a student or teacher sponsor is unsure whether these rules apply to a project, students should contact their teacher sponsor. The teacher sponsor must clarify questions with the Regional Safety Chair before students begin research.

If a project involves human participants, microorganisms, biological materials, or non-vertebrate organisms, read the separate section for safety for those projects.

Before Beginning a Project, Students Must:

1. Read these IJAS **Use and Care of Non-Human Vertebrate Animals** with their sponsor.
2. High school students must also read and follow all applicable [ISEF Safety Rules](#). All sponsors must discuss proper use of [AI in research](#) with all of their students.
3. Prepare all surveys, interview questions, consent forms, tests, and other materials that will be used with human participants.
4. Write the procedure for the experiment following all IJAS and ISEF (high school) safety rules. High School Students will use this in their [ISEF Research Plan form 1A](#).
5. Complete a Background Research document. High School students will use this in their [ISEF Research Plan form 1A](#).
6. Clearly define the objective of the investigation;
7. Ensure that the project investigates a biological principle and/or answers a scientific inquiry;
8. Consider whether plants, microorganisms, protists, worms, snails, insects, or other invertebrates could be used instead;
9. Develop procedures that respect life and humane considerations;
10. Obtain any required approval for Special Circumstances/Exceptions; and
11. Begin a project only AFTER all required paperwork and approvals have been obtained and completed.
12. Complete the Non-Human Vertebrate Endorsement Form with a sponsor prior to experimentation;

No non-human vertebrate projects will be allowed that are in violation of these rules. No person may perform an experiment for the student that violates these rules, and no person may give permission for a project that violates these rules except in approved Special Circumstances/Exceptions.

General Care Requirements

Students and sponsors working with non-human vertebrate animals must:

- provide proper care in well-ventilated and properly lighted locations;
- provide proper nutrition;

- maintain proper temperature;
- provide adequate water;
- maintain sanitary surroundings;
- ensure that organisms are properly cared for during weekends and vacation periods; and
- conduct all experimentation with respect for life and an appreciation of humane considerations.

The student and the sponsor are responsible for ensuring that all animals receive proper care throughout the investigation.

Working with Behavioral, Learning, or Conditioning Studies

Projects involving maze running and other learning or conditioning activities must:

- not withhold food or water for more than 24 hours; and
- not withhold food or water from an animal with a high metabolic rate for a length of time that would produce undue stress on the animal.

Behavioral studies must follow all other applicable non-human vertebrate animal rules.

Working with Chicken or Other Bird Embryos

Chicken or other bird embryo projects are allowed, but:

- experimental treatment must be discontinued at or before 72 hours before the scheduled hatch day; and
- Seventy-two hours before the scheduled hatch day time or before, the egg must be destroyed.

Projects involving behavioral studies of newly hatched chickens or other birds are allowed if no changes have been made in the normal incubation and hatching of the organism and all vertebrate animal rules are followed.

Only non-manipulated eggs may be hatched.

Cultures from Vertebrate Animals

Projects involving cultures from warm-blooded animals must follow the applicable Biological Materials rules.

No primary or secondary cultures involving warm-blooded animals may be taken:

- directly from the mouth, throat, skin, or other parts of the animal; or
- indirectly from cage debris, droppings, countertops, or similar materials or surfaces.

Primary or secondary cultures include the growth of microorganisms, tissue cells, or other living matter in a specially prepared nutrient medium.

Cultures purchased from reputable biological supply houses or research facilities are suitable for student use when conducted according to the applicable microorganism rules.

These Actions Are Not Allowed When Working with Vertebrate Animals that:

- use invasive or pain-producing procedures, including surgery, injections, blood collection, burns, or electrical stimulation;
- subject animals to undue stress, pain, injury, or risk of death;
- administer over-the-counter, prescription, illegal drugs, or alcohol to measure their effects;
- make potentially harmful environmental changes without prior approval;
- withhold food or water long enough to cause undue stress or for more than 24 hours in learning/conditioning studies;
- prepare primary or secondary cultures from warm-blooded animals or materials contaminated by them;
- experimentally manipulate bird embryos within 72 hours of hatching or hatch experimentally manipulated eggs.

Special Rules for Work Done at a Certified Laboratory

If research is conducted at a certified laboratory or research facility, high school students must complete the Regulated Institution form-2C. Middle school students must include a letter from the laboratory director or supervising scientist along with the safety sheet and any appropriate endorsement form. The letter must verify that:

- the research was conducted under appropriate adult supervision;
- the student followed all required laboratory safety procedures;
- the laboratory is certified or otherwise authorized to conduct the research;
- the supervising scientist's name, title, and contact information are provided; and
- the work described in the project was completed at that facility.
- approval from the institution's IRB and/or SRC has been obtained.

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Chemical, Fire, Heat, and Radiation Safety

Why Are These Rules Necessary?

Many science and engineering projects involve chemicals, heat, flames, lasers, ultraviolet (UV) light, or other forms of energy. When used properly these materials and equipment can be handled safely. However, they can also cause burns, fires, poisoning, eye injuries, radiation exposure, or other serious harm if used incorrectly. Professional scientists receive specialized safety training before working with hazardous materials and equipment. These rules help students conduct research safely while learning the laboratory practices expected in schools, universities, and research facilities.

Does This Project Involve These Hazards?

These rules apply if a student project involves:

- chemicals or chemical reactions;
- acids, bases, solvents, cleaning products, or laboratory reagents;
- fuels or combustible materials;
- heating or burning materials;
- open flames or hot equipment;
- lasers, ultraviolet (UV) light, infrared light, microwaves, or other non-ionizing radiation sources;
- any procedure that could create a chemical, fire, heat, or radiation hazard.

Before Beginning a Project, Students Must:

1. Read these IJAS Chemical, Fire, Heat, and Radiation Safety with their Teacher/Sponsor.
2. High school students must also read and follow all applicable [ISEF Safety Rules](#).
3. Discuss proper use of AI in research in their research project.
4. Write the procedure for the experiment following all IJAS and ISEF (high school) safety rules. High School Students will use this in their [ISEF Research Plan form 1A](#).
5. Complete a Background Research document. High School students will use this in their [ISEF Research Plan form 1A](#).
6. Learn how to safely use all chemicals and equipment involved in the project.
7. Read the Safety Data Sheet (SDS), manufacturer's instructions, or another reliable scientific reference for every chemical used.
8. Understand the hazards associated with all materials and equipment that will be used.

9. Plan how chemicals and waste will be safely stored and disposed.
10. Complete the required safety sheet and any required endorsement forms.
11. Keep all completed approval forms and safety documentation with the project records and have it on the table with the project display at the science exposition.

General Safety Requirements for Chemical, Fire, Heat, and Radiation Safety

These rules apply to **all** projects involving chemical, fire, heat, or radiation hazards. Students must:

- wear appropriate personal protective equipment (PPE), including safety glasses whenever there is potential of eye injury;
- work only under a qualified adult's supervision required for the hazards involved;
- keep work areas clean and organized;
- know the location and proper use of emergency equipment, including eyewash stations, safety showers, fire extinguishers, and first aid supplies; and
- immediately report spills, injuries, equipment malfunctions, or unsafe conditions to the supervising adult.

Students may **not**:

- use explosive materials or explosive chemicals or intentionally create explosions;
- use known carcinogens, mutagens, teratogens, or chemicals used as illegal drug precursors
- obtain, possess, manufacture, or use prescription medications, controlled substances, illegal drugs, nicotine products, or cannabis products (including THC, CBD, and CBG);
- intentionally produce, distill, concentrate, or purify hazardous chemical products;
- use x-rays or radioactive materials;
- conduct experiments that create unnecessary chemical, fire, heat, or radiation hazards.

Note: Projects involving fermentation with baker's yeast (*Saccharomyces cerevisiae*) are covered under the **Use of Biological Materials** section. Any alcohol produced during permitted fermentation studies must remain incidental to the investigation and may not be distilled, concentrated, purified, or consumed.

Chemical Safety

When working with chemicals students must:

- use chemicals only for their intended purpose and according to instructions;
- clearly label all chemical containers;
- never mix chemicals unless the procedure specifically requires it and store incompatible chemicals separately;
- avoid inhaling vapors or allowing chemicals to contact skin or eyes;
- dispose of chemicals according to school, laboratory, or local regulations; and
- conduct experiments involving hazardous fumes or vapors in a laboratory fume hood or another appropriately ventilated area.

Fire Safety

When working with combustible materials or open flames, students must:

- keep flammable materials away from ignition sources;
- conduct burning procedures in a laboratory fume hood or another well-ventilated area that safely exhausts smoke and combustion products;
- use open flames only when necessary and under appropriate adult supervision;
- never leave an open flame unattended;
- secure loose clothing and tie back long hair;
- know how to extinguish fires safely; and
- have appropriate fire safety equipment readily available before beginning the experiment.

Heat Safety

When working with hot equipment or heated materials, students must:

- use heat-resistant gloves or appropriate tools when handling hot objects;
- assume heated equipment remains hot until it has cooled completely;
- place hot equipment on heat-resistant surfaces;
- avoid rapid temperature changes that could cause glassware to break; and
- allow equipment to cool before storing or cleaning it.

Radiation and Light Source Safety

Projects involving lasers, ultraviolet (UV) light, infrared radiation, microwaves, or other non-ionizing radiation sources must be conducted safely and under appropriate adult supervision.

Students must:

- Projects involving X-rays or radioactive materials are **not** permitted.
- Only commercially manufactured Class 1, Class 2, or Class 3R lasers may be used. High-powered Class 3B and Class 4 lasers are **not** permitted.
- Use radiation-producing equipment only when appropriate for the project and under qualified adult supervision;
- Follow all manufacturer instructions and institutional safety requirements;
- Use appropriate shielding, barriers, or enclosures when required;
- Never look directly into a laser beam or aim a laser at any person or reflective surface;
- Wear protective eyewear appropriate for the wavelength of the laser or UV source whenever there is a risk of eye exposure;
- Wear clothing that protects exposed skin when working with ultraviolet (UV) light; and
- Never intentionally expose themselves or others to lasers, ultraviolet (UV) light, infrared radiation, or other radiation sources.

Storage and Disposal

Students must safely store and dispose of all chemicals and hazardous materials.

- Store chemicals according to the manufacturer's instructions or the Safety Data Sheet (SDS).
- Keep incompatible chemicals separated.
- Clearly label all containers.
- Dispose of chemicals according to school procedures and all applicable local, state, and federal regulations.
- Never pour hazardous chemicals down a sink or place them in regular trash unless specifically permitted by the school or laboratory.

Special Rules for Work Done at a Certified Laboratory

If research is conducted at a certified laboratory or research facility, high school students must complete the Regulated Institution form-2C . Middle school students must include a letter from the laboratory director or supervising scientist along with the safety sheet and any appropriate endorsement form. The letter must verify that:

- the research was conducted under appropriate adult supervision;
- the student followed all required laboratory safety procedures;
- the laboratory is certified or otherwise authorized to conduct the research;
- the supervising scientist's name, title, and contact information are provided; and
- the work described in the project was completed at that facility.
- approval from the institution's IRB and/or SRC

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Firearms, Explosives, Rockets, and Projectile Safety

Why Are These Rules Necessary?

Projects involving firearms, explosives, rockets, projectile-launching devices, or other energetic systems present some of the highest risks encountered in student research. These activities can result in serious injury or death from ballistic impact, blast pressure, fragmentation, fire, burns, or unintended launches.

Because of these risks, projects involving these hazards require enhanced supervision, appropriate facilities, and, when specified below, approval by the Illinois Junior Academy of Science State Safety Review Committee (SRC) before experimentation begins.

Does a Student's Project Involve These Hazards?

These rules apply if a project involves:

- firearms or ammunition or ballistic testing;
- explosives or energetic materials;
- pyrotechnics or propellants;
- rockets or rocket motors;
- compressed-gas launchers;
- projectile-launching devices; or
- any device designed to launch an object at high speed.

Before Beginning a Project, Students Must:

1. Read these IJAS Firearms, Explosives, Rockets, and Projectile Safety Rules with the sponsor or teacher.
2. High school students must also read and follow all applicable [ISEF Safety Rules](#).
3. All sponsors must discuss proper use of AI in research with all of their students.
4. Write the procedure for the experiment following all IJAS and ISEF (high school) safety rules. High School Students will use this in their [ISEF Research Plan form 1A](#).
5. Complete a background research paper. High School Students will use this in their [ISEF Research Plan form 1A](#).
6. Determine whether the proposed project requires review and approval by the Illinois Junior Academy of Science State Safety Review Committee (SRC).
7. When State SRC approval is required, submit the complete proposed research procedure and all required safety documentation before beginning experimentation.
8. Do not begin any experimentation, testing, demonstration, or data collection requiring State SRC approval until written approval has been granted.
9. Conduct the project only according to the procedures approved by the State SRC.
10. Keep all completed approval forms and safety documentation with the project records and have it on the table with the project display at the science exposition.

General Safety Rules

All projects involving firearms, explosives, rockets, projectile-launching devices, or other energetic systems must:

- be conducted under the supervision of an appropriate responsible adult;
- use appropriate eye protection and all other required personal protective equipment (PPE);
- be conducted only in locations appropriate for the activity being performed;
- maintain appropriate distances between the experiment, operators, observers, and other persons;
- comply with all applicable local, municipal, state, and federal laws and regulations;
- follow all applicable manufacturer instructions and recognized safety practices; and
- immediately stop any activity if unsafe conditions develop.

State Safety Review Committee (SRC) Review and Approval

Projects involving firearms, explosives, certain energetic materials, or other activities identified in these rules as requiring additional safety review must be approved by the Illinois Junior Academy of Science State Safety Review Committee (SRC) before experimentation begins. The State SRC reviews proposed procedures to determine whether the project includes appropriate safeguards, qualified supervision, suitable facilities, and compliance with applicable IJAS safety requirements.

Before beginning experimentation, the student must submit the complete proposed research procedure and all required safety documentation to the State SRC.

Firearm Safety Rules

Students May NOT:

- possess, handle, or utilize any firearm at any time while conducting a science fair demonstration or experiment;
- hand-load or reload ammunition;
- utilize black powder or muzzle-loading firearms;
- modify or alter any firearm for experimental purposes; or
- bring firearms or ammunition to any school, Regional, State, IJAS, ISAS, or ISEF Science Exposition.

Any demonstration or experiment involving a firearm requires prior approval from **the Illinois Junior Academy of Science State Safety Review Committee (SRC)**.

When a firearm-related project is approved:

1. At all times, the firearm shall be handled and the demonstration or experiment shall be conducted by a person over 21 years of age who is certified as a police officer by the Illinois Law Enforcement Training and Standards Board or by a person licensed as a Private Detective or Private Security Contractor who possesses a currently valid Firearms Control Card issued by the Illinois Department of Financial and Professional Regulation (IDFPR). A Concealed Carry License issued by the Illinois State Police or a Permanent Employee Registration Card (PERC) issued by IDFPR does not satisfy this requirement.
2. The student and all bystanders shall remain behind a ballistic shield and wear appropriate eye and hearing protection.
3. The supervising police officer or IDFPR-licensed professional shall provide a signed statement:
 - describing the demonstration or experiment;
 - certifying that it is safe;
 - explaining why it is safe; and
 - providing copies of all required credentials.
4. The supervising police officer or IDFPR-licensed professional shall provide a Certificate of Liability Insurance in the amount of not less than \$1,000,000, naming the Illinois Junior Academy of Science, Inc., as Additional Insured.
5. The facility where the demonstration or experiment is conducted shall provide a Certificate of Liability Insurance in the amount of \$1,000,000, naming the Illinois Junior Academy of Science, Inc., as Additional Insured.
6. The student, parent or guardian, supervising professional, and all persons present during the demonstration or experiment shall execute any liability releases required by the Illinois Junior Academy of Science.
7. Only commercially manufactured firearms less than 50 years old may be used.
8. Only commercially manufactured fixed-cartridge ammunition manufactured in accordance with SAAMI standards may be used.

Safety Rules for Explosives and Energetic Materials

Students may not independently manufacture, modify, or test:

- explosives;
- explosive mixtures;
- improvised energetic materials; or
- other materials intended to produce an uncontrolled or hazardous energetic reaction.

Projects involving explosives, explosive mixtures, or other hazardous energetic materials require prior approval from the Illinois Junior Academy of Science State Safety Review Committee (SRC) before experimentation begins.

Approved work involving these materials must:

- be conducted under appropriate professional supervision;
- be conducted only at a facility appropriate for the proposed activity;
- use appropriate barriers, shielding, distance, and personal protective equipment;
- follow all applicable professional safety procedures; and
- comply with all applicable local, municipal, state, and federal laws and regulations.

Safety Rules for Rockets and Projectile-Launching Devices

Projects involving rockets, rocket motors, projectile-launching devices, compressed-gas launchers, or other energetic launching systems must:

- operate only under appropriate adult supervision;
- be conducted only in locations appropriate for safe operation;
- maintain safe distances between operators, observers, and launch areas;
- inspect all equipment before each launch or test;
- secure launchers or other equipment appropriately before operation;
- use appropriate barriers, shields, restraints, or other protective measures when necessary;
- ensure that projectiles are directed toward an appropriate and controlled target or recovery area;
- follow all manufacturer instructions and applicable safety codes; and
- comply with all applicable local, municipal, state, and federal laws and regulations.

Projects involving unusually powerful, modified, improvised, or potentially hazardous launching systems may require review by the State SRC before experimentation begins.

Model Rocketry

Model rocketry projects using commercially manufactured motors are exempt from the firearm provisions of this section.

These projects must:

- be conducted under the supervision of a parent, guardian, or teacher who is at least 21 years of age;
- use commercially manufactured rocket motors;
- use rockets and launch systems appropriate for the commercially manufactured motor being used;
- be conducted in a location appropriate for safe launch and recovery;
- maintain appropriate distances between the launch area, participants, observers, buildings, roads, and other hazards;
- comply with all applicable laws and regulations; and
- follow recognized model rocket safety practices.

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Electrical, Mechanical, and Drone Safety

If a student is uncertain whether a project falls under this section, he or she consult their teacher or Regional Safety Chair **before beginning an investigation.**

Why Are These Rules Necessary?

Many science and engineering projects involve electrical devices, mechanical systems, robotics, drones, motors, batteries, tools, or moving equipment. When properly designed and operated, these technologies are valuable tools for scientific investigation. However, improper use can result in electrical shock, burns, fires, cuts, crushing injuries, entanglement, or damage to people and property.

These rules help students safely design, construct, test, and operate electrical and mechanical systems while developing the engineering practices used by professional scientists and engineers.

Does a Project Involve These Hazards?

These rules apply if ANY project involves:

- electrical circuits or electronic components;
- batteries, capacitors, or electrical power supplies;
- motors, generators, actuators, or solenoids;
- robots or automated systems;
- drones or other remotely operated vehicles;
- mechanical devices with moving parts;
- power tools or hand tools used to construct a project;
- compressed springs, pneumatic or hydraulic systems; or
- any equipment capable of producing electrical, mechanical, thermal, or kinetic hazards.

Before Beginning a Project, Students Must:

1. Read these IJAS Electrical, Mechanical, and Drone Safety with the sponsor or teacher.
2. High school students must also read and follow all applicable [ISEF Safety Rules](#).
3. All sponsors must discuss proper use of AI in research with all of their students.
4. Write the procedure for the experiment following all IJAS and ISEF (high school) safety rules. High School Students will use this in their [ISEF Research Plan form 1A](#).
5. Complete a background research paper. High School Students will use this in their [ISEF Research Plan form 1A](#).
6. Learn how all electrical and mechanical components will operate before beginning construction or testing.
7. Identify the electrical, mechanical, thermal, fire, and other hazards associated with all equipment and components that will be used.
8. Ensure that all equipment and components are appropriate for their intended use.
9. Develop procedures for safe operation, testing, emergency shutdown, and battery charging, when applicable.
10. Inspect all equipment and components for damage before use.
11. Complete the required safety sheet and any required endorsement forms.
12. Obtain all required approvals before construction or testing begins.
13. Keep all completed safety sheets, endorsement forms, approvals, and other required safety documents with the project records.

General Safety Requirements

Students must:

- work under appropriate adult supervision when using electrical or mechanical equipment;
- wear appropriate personal protective equipment (PPE), including safety glasses whenever there is a risk of flying debris, electrical failure, or eye injury;
- keep work areas clean, organized, and free of unnecessary hazards;
- secure long hair, loose clothing, jewelry, and other items that could become entangled in moving equipment;
- use equipment only for its intended purpose and according to the manufacturer's instructions;
- disconnect power before servicing or modifying equipment whenever practical;
- immediately disconnect power if equipment malfunctions or becomes unsafe; and
- immediately report damaged equipment, injuries, or unsafe conditions to the supervising adult.

Students may not:

- intentionally bypass, disable, or remove safety guards or protective devices;
- operate equipment with damaged electrical cords, plugs, batteries, wiring, or mechanical components;
- operate machinery without appropriate supervision;
- construct or operate equipment that presents an unreasonable risk of injury to themselves or others; or
- intentionally create unnecessary electrical or mechanical hazards.

Electrical Safety When working with electrical systems, students must:

- use electrical components within their rated voltage, current, and power limits;
- inspect wires, connectors, batteries, and power supplies before each use;
- disconnect power before modifying electrical circuits whenever practical;
- properly insulate exposed electrical conductors to prevent accidental contact or short circuits;
- keep electrical equipment away from water or other liquids unless specifically designed for such use;
- use only batteries, chargers, and power supplies recommended for the equipment;
- safely charge, store, and transport rechargeable batteries according to the manufacturer's instructions; and
- immediately discontinue use of any electrical component that overheats, emits smoke, swells, leaks, or shows signs of damage.

Students may not:

- use damaged lithium-ion or lithium-polymer batteries;
- puncture, crush, disassemble, or modify batteries or their safety features;
- intentionally short-circuit batteries or electrical power sources;
- incorporate line voltage (120/240 VAC) into any student-built or student-modified electrical circuit unless the work is conducted in an approved laboratory under the direct supervision of a qualified adult; or
- expose themselves or others to energized electrical conductors unnecessarily.

Line voltage (120/240 VAC) refers to the electrical power supplied by standard household wall outlets. Commercially manufactured equipment and power supplies may be used according to the manufacturer's instructions.

Mechanical Safety

Projects involving mechanical systems must:

- securely mount or stabilize equipment during operation;
- keep hands, clothing, hair, and other objects away from moving parts;
- use guards or protective barriers whenever rotating, cutting, pinch, or projectile hazards are present;
- ensure that moving parts have completely stopped before making adjustments or repairs;
- safely contain springs, flywheels, pressure vessels, or other devices that store mechanical energy;

- operate equipment only within the manufacturer's intended operating limits; and
- ensure that emergency shutdown procedures are readily available whenever equipment is operating.

Students may not:

- remove required machine guards during operation;
- operate equipment that is unstable or improperly secured;
- intentionally create uncontrolled mechanical hazards; or
- operate equipment that could reasonably endanger participants, spectators, or property.

Drone Safety

Projects involving drones or other remotely operated aircraft must:

- comply with all applicable federal, state, and local laws and regulations;
- operate drones only under appropriate adult supervision;
- conduct flights only in locations where operation is permitted;
- inspect the aircraft before each flight;
- maintain a safe distance from people, buildings, vehicles, and power lines;
- keep the aircraft within the operator's visual line of sight;
- immediately land the drone if unsafe conditions develop; and
- respect the privacy of others when collecting photographs, video, or other data.

Students may not:

- fly drones over people or moving vehicles;
- operate drones indoors unless the location has been evaluated and approved for safe flight;
- fly in restricted airspace without required authorization; or
- operate drones in a reckless or unsafe manner.

Documentation

Students must describe in their Safety Sheet:

- the electrical, mechanical, or drone-related hazards associated with the project;
- the procedures used to minimize those hazards;
- the personal protective equipment (PPE) used during construction and testing;
- any operating procedures, testing protocols, or emergency shutdown procedures; and
- any required supervision, approvals, or specialized training.

Special Rules for Work Done at a Certified Laboratory

If research is conducted at a certified laboratory or research facility, high school students must complete the Regulated Institution form-2C . Middle school students must include a letter from the laboratory director or supervising scientist along with the safety sheet and any appropriate endorsement form. The letter must verify that:

- the research was conducted under appropriate adult supervision;
- the student followed all required laboratory safety procedures;
- the laboratory is certified or otherwise authorized to conduct the research;
- the supervising scientist's name, title, and contact information are provided; and
- the work described in the project was completed at that facility;
- approval from the institution's IRB and/or SRC.

[back to General Safety Rules](#)

Computer, Artificial Intelligence, Data, and Programmable Device Safety

Why Are These Rules Included?

Many science and engineering projects use computers, artificial intelligence (AI), programmable devices, sensors, robotics, and electronic datasets to collect, analyze, or interpret data. When used responsibly, these technologies are valuable research tools. However, they can also create risks related to physical safety, eye strain, repetitive motion injuries, privacy, data security, and research integrity. These rules help students use technology safely, ethically, and responsibly while conducting scientific research.

Does This Project Involve These Hazards?

These rules apply if a project involves:

- using AI tools during any stage of the project;
- computer programming or software development;
- artificial intelligence (AI) or machine learning;
- electronic or online datasets;
- internet-based data collection;
- programmable devices, including microcontrollers, single-board computers, robots, drones, or embedded systems;
- sensors or automated data collection systems; or
- extended computer use as part of the research process.

Before Beginning a Project, Students must:

1. Read these IJAS Computer, Artificial Intelligence, Data, and Programmable Device Safety with the sponsor.
2. High school students must also read and follow all applicable [ISEF Safety Rules](#). All sponsors must discuss proper use of [AI in research](#) with all of their students.
3. Write the procedure for the experiment following all IJAS and ISEF (high school) safety rules. High School Students will use this in their [ISEF Research Plan form 1A](#).
4. Complete a Background Research document. High School students will use this in their [ISEF Research Plan form 1A](#).
5. Clearly define the objective of the investigation; all students must read these with their sponsor or teacher. High school students must also read and follow all applicable [ISEF Safety Rules](#). Plan the project according to these rules;
6. Understand how the software, AI tools, datasets, or programmable devices will be used;
7. Obtain permission to use software, datasets, and online resources when required;
8. Determine whether a project involves human participants or protected information;
9. Understand any legal, ethical, copyright, licensing, or privacy requirements that apply to a project; and
10. Complete any required safety or endorsement forms.

General Requirements

Students must:

- use computers, AI tools, datasets, and programmable devices responsibly and ethically;
- follow school policies and all applicable laws;
- accurately document the methods, software, AI tools, and datasets used in the project;
- protect confidential or personally identifiable information;
- securely store research data; and
- immediately report damaged equipment, electrical hazards, or unsafe conditions to the supervising adult.

Students may not:

- access computers, networks, or online accounts without authorization;
- bypass security measures or attempt unauthorized access to computer systems;
- create or distribute malicious software or intentionally damage computer systems;
- falsify, fabricate, manipulate, or selectively alter research data or AI-generated results;
- violate copyright, software licenses, or terms of service; or
- present AI-generated work or analyses as entirely their own without appropriate disclosure.

Computer and Ergonomic Safety

When working on a computer for extended periods, students must:

- maintain good posture while seated;
- position monitors to reduce neck strain and glare;
- take regular breaks to reduce eye strain and repetitive motion injuries;
- follow the 20-20-20 Rule by looking at an object at least 20 feet away for 20 seconds every 20 minutes of screen use;
- keep work areas organized to reduce tripping hazards from power cords and cables; and
- avoid eating or drinking near computers or electronic equipment.

Electrical and Programmable Device Safety

Projects involving programmable devices, robotics, sensors, drones, or other electronic equipment must:

- inspect equipment for damaged cords, batteries, or components before use;
- use equipment according to the manufacturer's instructions;
- disconnect power before modifying electrical circuits whenever possible;
- use only power supplies appropriate for the device;
- ensure moving parts do not create hazards for people or property; and
- operate drones or remotely controlled devices only where permitted and under appropriate adult supervision.

Artificial Intelligence and Data

IJAS adopts the [Society for Science/Regeneron ISEF guidelines for the use of generative artificial intelligence](#) in student research as part of this policy. AI may be used as a supporting research tool but may not replace the student's independent scientific reasoning, authorship, analysis, or interpretation.

Students using AI or electronic datasets must:

- independently verify important facts, calculations, references, code, analyses, and other AI-generated content;
- disclose substantive AI use and maintain a record of relevant prompts as required by Society for Science guidelines;
- understand and be able to explain any AI-assisted code, analysis, or other material included in the project;
- ensure that all interpretations and conclusions are based on the student's own analysis;
- legally obtain datasets and comply with applicable copyright, licensing, and usage restrictions; and
- comply with Human Participant Safety rules whenever human data are collected or analyzed.

Prohibited Uses of AI

Consistent with Society for Science guidelines, students may not use AI to perform work that is required to be their own. AI may not be used to:

- write the initial **research plan, abstract, research paper, poster, or substantive sections** of these materials;
- generate or add the student's **scientific reasoning, interpretation of results, conclusions, or future research directions**;
- replace the student's own **experimental design, data analysis, or understanding of the project**;
- substitute for **reading and evaluating original sources** used in the research; or

- generate **citations, references, or a bibliography** in place of the student's own literature research.

AI may be used to refine student-created work where permitted by Society for Science guidelines, provided that the underlying ideas, reasoning, and scientific content remain the student's own. AI assistance limited to grammar and syntax is permitted, provided it does not modify, add to, or replace the student's substantive content.

AI Disclosure Statement

If artificial intelligence (AI) tools were used during any stage of the project, students must complete an AI Disclosure Statement when registering for their regional science exposition.

Special Rules for Work Done at a Certified Laboratory

If research is conducted at a certified laboratory or research facility, high school students must complete the Regulated Institution-2C . Middle school students must include a letter from the laboratory director or supervising scientist along with the safety sheet and any appropriate endorsement form. The letter must verify that:

- the research was conducted under appropriate adult supervision;
- the student followed all required laboratory safety procedures;
- the laboratory is certified or otherwise authorized to conduct the research;
- the supervising scientist's name, title, and contact information are provided; and
- the work described in the project was completed at that facility.
- approval from the institution's IRB and/or SRC

[back to General Safety Rules](#)

Contacting the IJAS Scientific Review Committee (SRC) About a Safety Concern

1. After reviewing all applicable IJAS Safety Rules, if a sponsor believes that a proposed project:
 - can be conducted safely, but may appear to conflict with or violate an IJAS Safety Rule;
 - may require special approval according to the safety rules;
 - involves a situation that is not clearly addressed by the IJAS Safety Rules

The teacher sponsor must first contact the Regional Safety Chair for clarification. When contacting the Regional Safety Chair the sponsor should identify the potential rule concern and explain why the sponsor believes the project or procedure can nevertheless be conducted safely. These factors include the supervision, facilities, equipment, precautions, or modifications that would reduce or eliminate the identified risk.

2. If the Regional Safety Chair agrees that the project may be conducted safely but requires review because of a possible rule conflict, special circumstance, sensitive topic, or issue not clearly addressed by the IJAS Safety Rules, they must instruct the sponsor to submit the project to the IJAS Scientific Review Committee (SRC) for review before the student begins the activity in question. See “Instructions for Contacting the SRC” below. Sponsors should send the information described below to the current IJAS State Safety Chair and their Region Chair and/or Regional Safety Chair.
3. After reviewing the request, the IJAS SRC may:
 - approve the proposed procedure;
 - approve the procedure with required modifications;
 - require additional supervision, documentation, facilities, containment, equipment, or safety precautions;
 - require the student to use a different procedure; or
 - determine that the proposed activity is not permitted under IJAS rules.
4. If modifications are required, the student must revise the procedure and submit the revised procedure for SRC review before conducting the activity.

Instructions for Contacting the SRC

The student's sponsor must submit the request for review. Students and parents or guardians should not contact the Regional Safety Chair or State Safety Chair directly to request a project safety determination. The sponsor serves as the primary point of contact throughout the review process and is responsible for communicating the SRC's determination and any required changes to the student and the student's parent or guardian. Unless specifically authorized by the SRC, the student may not begin or resume the activity under review until the SRC has issued its determination. Include a copy of the approval on the board and in the paper of the project at the regional and state science fairs.

Format for an SRC Request - Use [this form](#)

- Student / Grade / School / Region / Sponsor / Project Title
- Research question / project purpose
- Proposed procedure
- Safety or rule concern
- Relevant IJAS rule/section
- Nature and level of risk
- Risk-reduction measures
- Student training/experience
- Supervision/qualifications
- Facility and safety controls
- PPE / containment / ventilation / shielding
- Material handling / storage / transport / disposal and emergency procedures
- Procedural modifications
- Experimentation status: Not begun / Procedure not yet performed / Already performed
- If performed: date, location, supervision, circumstances
- Specific SRC determination or approval requested

~Presentation~

Science Exposition is the time for presentation. Students will be judged on their ability to present their research as a researcher. The Written Report and the Oral Presentation are common components to both Poster and Paper Sessions.

Written Report

Writing a Research Paper for a Science Investigation

Scientists, regardless of their level of achievement, are only as effective as their ability to communicate to others, in spoken or written word, the results of their endeavors. A scientific paper is, very simply, a clearly written, concise report of an experimental research project. Three copies of the paper are required for Poster Session and two copies of the paper are required for Paper Session.

References and embedded citations follow APA format; however, charts, graphs, tables, etc. do not have to follow APA format.

Technical Points of a Research Paper

In preparing the paper, the author should be concerned with the following mechanics:

- The paper must be **typed, doubled spaced** and have at least one-inch margins on standard 8 ½" X 11" paper.
- Printed pages may be double-sided.
- The font and type size must be appropriate for a scientific paper: for example, 12 pt. Times New Roman.
- Correct grammar and spelling are evident.
- The paper must be neat and legible.
- The primary scientist's last name is in the upper right-hand corner of each page after the Table of Contents.
- Graphs should be suitably titled and have all axes correctly labeled. Do not forget to include the correct units of measurement for any numbers.
- Photographs should be of good quality and contrast and should have captions typed with them.

The Physical Arrangement of the Written Report of the Experimental Investigation

The following section establishes the basic written report requirements. Familiarity with the basic techniques and requirements will help students read and understand scientific publications, give a view of how scientists think, and help students write their own scientific paper that describe and explain results of the research investigation. Keep in mind, students must think before writing, then rethink, revise, rewrite, and reread again and again. Make it clear and concise.

The paper must include (in this order):

1) Abstract - Use the IJAS Abstract form, <https://sites.google.com/ijas.org/ijas/rules-and-forms>

- The abstract is a concise summary of the work and the first sheet of the research paper, it will help the reader form an opinion of the work. Students will find writing and rewriting will help produce a good short summary of the project in the required form.
- The physical form of the abstract is as follows: typed single-spaced, limited to 250 words or fewer, and limited to three paragraphs - purpose, procedure, conclusion.

2) Title Page - The title should be concise and clear. A scientific title includes the independent and dependent variable.

3) Table of Contents - Include subsection name and page numbers.

4) Acknowledgements – Give credit to those who have given guidance, materials, and/or use of facilities.

5) Purpose and Hypothesis – State precisely the question that is being investigated. Include the hypothesis or the expected outcome of the testable question. Use If/Then/Because format when feasible.

6) Background Research – Report the background information and/or work done in the past that pertains to the investigation. These references should be properly documented and listed on the Reference List. Traditional footnotes are not to be used for citing references.

7) Materials and Methods – A simple step-by-step account of what was done and must be clear and detailed enough so that the reader can duplicate the work. The apparatus and materials used should be listed. Explain the workings of any apparatus constructed or used. Drawings, diagrams that are clearly labeled, and photographs are appropriate if they enhance and clarify students' explanations, but do not use them as filler.

8) Results and Discussion –

Data

- Data are to be organized in tables and/or figures with graphic presentations that are easily read by someone not familiar with the work. All data should be listed, when possible. Summary data should follow the raw data.
- Choosing the appropriate type of graph is important. Graphs should be presented so that someone not familiar with the work easily reads them. Axes should be labeled with titles and correct units of measurement in metric when appropriate.
- If quantitative data are not involved, a day-by-day log may be used in place of tables and charts. In either case, care should be taken to ensure accuracy and clarity.

Data Analysis and Discussion

- The results section should also include a description and explanation of figures and tables.
- Discussion should include an evaluation and interpretation of the data and/or results of investigation, and comparison of the experimental data to what others have found.

Error Analysis

- Finally, experimental and/or measurement errors potentially affecting the conclusion have been considered and are discussed. Ways in which error was/could have been avoided may also be addressed.

9) Conclusion – This should be a concise evaluation and interpretation of the data and/or results. The conclusion should be limited to the results of the investigation and should refer back to the stated purpose and hypothesis. Internal citations from references used in the Background Research are encouraged.

10) Reference List - This is a list of published articles, books, and other communications actually cited in the paper. Sources should be current. The reference list section is arranged alphabetically according to the author/editor's last name when it is known or the first significant word in the title if the author/editor is not known. The correct style to use for citing references in the reference list section is discussed in detail in the *APA, 7th Edition*.

The Physical Arrangement of the Written Report of the Design Investigation

The following section establishes the basic written report requirements. Familiarity with the basic techniques and requirements will help students read and understand scientific publications, give an inside view of how scientists and engineers think, and help students write their own scientific paper that describes the results of their research investigation. The main point to keep in mind is to think before writing, then rethink, revise, rewrite, and reread again and again. The objective is to make the writing clear and concise.

The paper must include (in this order):

1) Abstract - Use the IJAS Abstract form, <https://sites.google.com/ijas.org/ijas/rules-and-forms>

- The abstract is a concise summary of students' work and the first sheet of the research paper, it will help readers form an opinion of the work. Students will find writing and rewriting will help produce a good, short summary of the project in the required form.
- The physical form of the abstract is as follows: typed single-spaced, limited to 250 words or fewer, and limited to three paragraphs - Purpose, Procedure, Conclusion.

2) Title Page - The title should be concise and clear. A scientific title includes the independent and dependent variable if feasible..

3) Table of Contents - Include subsection name and page numbers.

4) Acknowledgements – Give credit to those who have given guidance, materials, and/or use of facilities.

5) Problem or Need – Precisely state the question being investigated. Include a discussion of the problem or the need and the expected outcome of the testable question.

6) Background Research – Report the background information and/or work done in the past that pertains to the investigation. These references should be properly documented and listed on the Reference List. Traditional footnotes are not to be used for citing references.

7) Design Plan – This should be a simple step-by-step account of what was done. The design plan includes the criteria with a rubric by which the prototype and redesign will be evaluated. A flowchart is also included. The explanation of what was done must be clear and detailed enough so that the reader could duplicate the work. The apparatus and materials used are listed and described. Explain the workings of any apparatus that was constructed or used. Drawings and diagrams that are clearly labeled, and photographs are appropriate if they enhance and clarify the explanation.

8) Results and Discussion

- **Constructing and Testing the Design Prototype** – A description of the prototype/computer program/mathematical algorithm is included. The prototype has been tested and the results have been discussed. After the initial testing, design modifications are made and the redesigned product is tested and evaluated again. This may involve targeted users and/or analysis of data sets. (This may or may not include traditional data such as tables and graphs).
- **Results of Testing and Redesign** - Testing results have considered the parts and subsystems that required redesign in order to meet the performance criteria. The redesign shows the changes in parts and subsystems.
- **Redesign and Retest** - This portion of the design process gives evidence that changes in design were made to better meet the performance criteria established at the beginning of the project. Test results may be included in tables, if applicable. Data analysis/validation may be present.

9) Conclusion – This should be a concise evaluation and interpretation of the data and/or results. The conclusion should be limited to the results of the investigation (including background research) and should refer to the stated problem or need.

10) Reference List - This is a list of published articles, books, and other communications actually cited in the paper. Sources should be current. All sources cited in the report are to be included. Other sources studied but not used in the report should not be included. The reference list section is arranged alphabetically according to the author/editor's last name when it is known or the first significant word in the title if the author/editor is not known. The correct style to use for citing references in the reference list section is discussed in detail in the *APA, 7th Edition*.

Oral Presentation

In presenting the investigation to the judges at a science exposition, the following approaches have proven successful for many students. Time should be limited to 15 minutes in total: 10-12 minutes for presentation, leaving 3-5 minutes for questions and discussion. **PLEASE, PUT AWAY ALL CELL PHONE!**

1) Introduction

- Students state name(s), age, school and town.

2) Acknowledgments

- Give credit to those who have given guidance, materials, and/or use of facilities.
- Discuss any work done in the past pertaining to this project.

3) Purpose, Hypothesis, Need

- State exactly what the investigation is attempting to discover or the need it addresses.
- Make a prediction about the outcome.
- What is the student's interest in this project? Give the reason for choosing it.

4) Background Information

- Background explanation for the project (to familiarize the judges), scope of the study, and so forth.
- This should include a summary of the Background Research.

5) Procedure/Design Process

- Summarize the experimental procedure and/or design process.
- Use visual aids: charts, pictures, graphs, and so forth. Point to the display, but students should stand to the side when presenting.
- Explain how any apparatus was used. Let judges know if the apparatus was student-constructed. Students should tell the judges what they did. If not, credit should be given to those who helped the student. For an experiment, judges are more interested in the results and conclusions than in the apparatus. Students with design projects should explain the design process.
- Discuss ways experimental error such as use of appropriate instrumentation and measurements, large enough sample size was avoided and/or having controls when possible.

6) Results (Data and Conclusion)

- Explain both the controls and the experimental variables or prototype(s).
- Remember to use proper units of measure with the data.
- Point to tables, figures when referring to them.
- Analyze and discuss statistical aspects of experimental errors such as averages, ranges, and/or other statistical analogies.
- State in a concise and logical order the conclusions that can validly draw from the experimentation that has been done and the data and/or observations obtained.

7) Discussion

- Discuss how the project could or will be continued, if applicable.
- Be sure to explain what new knowledge has been gained and how it leads to further questions.
- Discuss how this work, positively or negatively, relates to what others have done.

8) Any Questions

- When a student has finished, ask the judges if there are any questions they would like to ask.
- When asked a question, think before answering. Answer slowly! If unsure of an answer, it is appropriate to say, "I'm not sure but I think ..."
- If judges ask a student a question that is not related to the project and the student does not know the answer, then they may say, "I really haven't been concerned with this in my project, but it might be interesting to look into it."
- Thank the judges for any suggestions they may have for improving the research.

9) Other Suggestions

- Speak slowly!
- Be forward but polite, dynamic, and above all interested in the research done.
- Students should remember that they are salespeople. Therefore, students should endeavor to explain their work carefully to the judges. The judges are interested in this work - which is why they judge..
- The presentation should not exceed 10-12 minutes. An additional 3-5 minutes for questions should follow.

Poster Session

Display Guidelines/Rules

This is neither the time nor place to demonstrate the experiment. No apparatus will be allowed to be displayed - display board and computer only can be used. Pictures, drawings, diagrams and video footage of the experiment should replace equipment. Computers may be used to enhance the presentation but media presentations, such as PowerPoint or Google Slides are not acceptable.

- Before judging, all of the displays will be carefully inspected by the safety committee at the regional and state expositions. A copy of the abstract, signed safety sheet(s), and possible endorsement(s) are required documents and one copy of the Abstract must be displayed on the front of the exhibitor's display board. In addition, for each of the 3 copies of the printed final papers that are brought to the science exposition. attach a copy of the abstract. A packet containing signed safety sheets, and endorsements (if applicable) should be placed in front of the display board
- The display must not exceed the dimensions of 61 centimeters (24" inches) front to back, 107 centimeters (40" inches) from side to side, and 152 centimeters (60" inches) from table to top. This applies to all parts of the project.
- No apparatus may be on top of, under, behind, in front of, alongside, or hanging off of the display table.
- Only a display board, a computer (if necessary), **THREE copies** of the final paper, and the safety packet may be on the table. The safety packet should contain the Safety Sheet and Endorsement Sheets signed in ink by the student and sponsor. The computer must be battery operated since no electricity will be supplied, WiFi may not be available depending on the location of the science fair, and presenting the science project must be through the display board (not a computer). The computer may only be used for showing models, data, and experiments if performed virtually.
- The display must be designed to sit on a table and be self-supporting.
- Material used for packing displays must be kept under the table.
- Table drapes or covers are not allowed beyond what is provided by IJAS.
- Spotlights, floodlights, or decorative lighting may not be used to illuminate the display.
- Any violation of these safety regulations will result in a letter to the sponsor with the reason for disqualification or potential disqualification. No project will be disqualified if the safety violation can be corrected on the spot with a minimum of effort.
- Poster session projects and presentations may involve one or two student(s). All awards will be presented to the student whose name is first on the Abstract. This designated student will then share the award with the other project member equally.

Paper Session

The Following Set of Rules Applies Exclusively to Entering the IJAS Regional or State Paper Session

If a student decides to enter their project in the Paper Session, write the report following the guidelines given in the section entitled - Writing a Scientific Research Paper for an Investigation.

Below are additional regulations and procedures for the Paper Session:

- Paper session projects and presentations may involve one or two student(s). All awards will be presented to the student whose name is first on the Abstract. This designated student will then share the award with the other project member equally.
- The paper should be an accurate presentation of a project done by the student(s) and should explain the experimentation and/or designs that have been made. Experimentation or design is required as explained in the Category section. A paper based solely on library research is not acceptable.
- Previously presented papers will *not* be allowed unless they include a significant amount of additional research, experimentation, and refinement. These previously presented papers must be made available to the State Paper Session Chair if requested.
- A digital copy (pdf) of the complete paper including the Abstract must be submitted to the Regional Paper Session Chair by the date established at the regional level. A copy of the signed Safety Sheet and any required Endorsements must be submitted as well.
- The student should bring **TWO copies** of their complete paper including their Abstract to their presentation room on the day of the State Exposition.
- The presentation may be read, given from notes, or include slides projected on a computer (preferred). Students may use programs such as PowerPoint or Google Slides to create their presentation. The complete presentation may take no longer than 10-12 minutes, with additional time (7 minutes) allowed for questions and answers.
- WiFi may not be available. Make sure there is a copy of the presentation on the laptop/computer being used.
- Display boards are not permitted; however tables, figures, and so forth may be presented manually, but may not exceed the dimensions of a standard 8.5" X 11" sheet of paper.
- Further research, conducted after the regional fair, may be presented as a written addendum given to the judges at the time of the oral presentation, but a revised paper **may not** be submitted at the exposition.
- State awards for Paper Session will be given at the Awards Assembly on the final day of the State Exposition.

Judging Criteria for Experimental Investigation - Poster and Paper Sessions

[Poster Experimental Rubric](#)

[Paper Experimental Rubric](#)

The following are criteria for the Illinois Junior Academy of Science judging procedure. Judges who are not agents of the Illinois Junior Academy of Science may use other criteria for selection of their special awards. **The decision of the judges is final.**

- There are usually three scoring levels for each factor being examined during the judging procedure.
- Student experimenters should strive to achieve the top criteria listed below.

Evidence of Experimental Processing Skills

Science Processing Skills

- Exhibits a thorough understanding and the application of the scientific method. The student has acquired scientific skills.

Understanding Scientific Principles Involved

- Exhibits thorough understanding of the basic scientific principles involved with the project.

Scientific Approach: Overall

- Has a well-defined problem and a clearly stated hypothesis. Uses a logical, orderly method for solving the problem. The problem was solved using scientific principles. The method was appropriate and effective.

Scientific Approach: Variables

- The independent (experimental) and dependent variables have been thoroughly defined. Those significant variables not manipulated have been held constant.

Scientific Approach: Control/Comparison Group

- A control (known standard) was present OR when a control group is not possible or appropriate a comparison was made among trial groups.

Accuracy of Data and Observations

- An adequate sample size and/or sufficient repetitions were performed to gather enough data to reach a reliable conclusion. Data collected is numerical and metric, if applicable. Observations were carefully recorded and accurate.

Data Analysis and Discussion

- The data has been analyzed and its importance has been discussed. Logical inferences were made.

Experimental Error

- Experimental and/or measurement error affecting the conclusion has been considered and discussed. Ways in which error was/could have been avoided may also be addressed.

Validity of Conclusion

- Conclusion is consistent with data and observations and is supported by the data collected.
- Conclusion referred to purpose and hypothesis.

Originality

- Demonstrates a novel approach and/or idea. Exhibits a creative approach to problem-solving.

Scientific Communication - Oral Presentation

Presentation Quality

- Clear presentation; concisely summarizes the project. Information is relevant and pertinent. The student(s) exhibit(s) a thorough understanding of their topic area.

Dynamics

- Speaks fluently with good eye contact; polite, dynamic, and interested in their project.

Answer to Questions *(Paper Session Only)*

- Response to questions showed insight and thorough understanding of background material.

Scientific Communication - Display *(Poster Session Only)*

Information: Experimental

- Gives complete explanation of the project. Display includes abstract, graphics, charts, and/or pictures on the FRONT of the board only. a packet containing safety sheet and any endorsements should be next to the board.

Artistic Qualities

- Display board is neat, organized, and appealing. No spelling errors are present.

Written Report

The parts of the written report should be evaluated for their merits as further evidence of scientific processing skills.

Abstract

- Abstract present; contains a concise summary of the purpose, procedure, and conclusion in 250 words or fewer. The proper IJAS form was used.

Title Page/Table of Contents

- The title page is clear and concise. The table of contents is complete and includes pagination.

Acknowledgements

- Credit has been given to those who have helped with the project.

Purpose and Hypothesis

- The testable question (purpose) has been identified and a prediction has been made.

Background Research (BR)

- Background research is in-depth and the information is pertinent and supports the experiment. BR is adequately cited in-text using APA format. All referenced materials are included in the References section.

Materials

- All materials are listed and measurements are in metric, if applicable.

Procedure

- The procedure is complete and easily followed; all steps included. Measurements are in metric, if applicable.

Results

- Results (data) are organized in tables or graphs and can be easily read by someone not familiar with the work. Discussion or interpretation of data and effect of error is included.

Conclusion

- A concise evaluation and interpretation of the data and/or results.

Reference List

- Quality, quantity and variety of sources are adequate for the research topic. All sources listed are cited within Background Research.
- Most sources are current.

Technical Aspects

- Good grammar and spelling are evident. The student's last name is in the upper right-hand corner of all pages after the table of contents. Font size and type are appropriate.

Neat and Orderly

- The full report is neat and follows the Policy and Procedure Manual order as illustrated on the left side of the judging rubric.

Judging Criteria for Design Investigation - Project and Paper Sessions

[Poster Design Rubric](#) [Paper Design Rubric](#)

Evidence of Design Processing Skills

Design Processing Skills

- Exhibits a thorough understanding and the application of the design process. The student has acquired design skills.

Understanding Scientific Principles Involved

- Exhibits thorough understanding of the basic scientific principles involved with the project.

Design Approach: Overall

- Has identified a need or real world problem. Uses a logical, orderly method for addressing the problem or need. The method was appropriate and effective.

Design Approach: Performance Criteria

- Clear performance criteria have been developed to address the features of the product, algorithm, proof, model, etc.

Design Approach: Preliminary Design Plan

- A clear plan had been presented using a block diagram, flowchart or sketch. The design plan shows all of the parts and/or subsystems of the design and how all parts of the design work together.

Constructing and Testing the Design Prototype

- Have constructed and tested a prototype of their best design. This may involve targeted users and/or analysis of data sets. (This may or may not include traditional data).

Redesign and Retest

- Shows evidence that changes in design were made to better meet the performance criteria established at the beginning of the project. Test results may be included in tables, if applicable. Data analysis/validation may be present.

Validity of Evaluation/Conclusion

- The conclusion accurately reports the successes and failures of the preliminary design, what changes were made, and how the redesign more closely met the performance criteria.

Originality

- Demonstrates a novel approach and/or idea. Exhibits a creative approach to design. Shows evidence that other designs were investigated that addressed the same need or real world problem.

Scientific Communication - Oral Presentation

Presentation Quality

- Clear presentation; concisely summarizes the project. Information is relevant and pertinent. Exhibits a thorough understanding of their topic area.

Dynamics

- Speaks fluently with good eye contact; polite, dynamic, and interested in their project.

Answer to Questions

(Paper Session Only)

- Response to questions showed insight and thorough understanding of background material.

Scientific Communication - Display *(Poster Session Only)*

Information: Experimental

- Gives complete explanation of the project. Display includes abstract, graphics, charts, and/or pictures on the FRONT of the board only. a packet containing safety sheet and any endorsements should be next to the board.
- The Display board is neat, organized, and appealing. No spelling errors are present.

Written Report

The parts of the written report should be evaluated for their merits as further evidence of design processing skills.

Abstract

- Abstract present; contains a concise summary of the purpose, procedure, and conclusion in 250 words or less. The proper IJAS form was used.

Title Page/Table of Contents

- The title page is clear and concise. The table of contents is complete and includes accurate pagination.

Acknowledgements

- Credit has been given to those who have helped with the project.

Problem or Need

- Described in detail a real world problem or need.

Background Research (BR)

- Background research is in-depth and information is pertinent and supports the design. BR is adequately cited in-text using APA format. All referenced materials are included in the References section.

Design Plan

- The design plan is complete and easily followed; all of the parts and/or subsystems of the design are included.

Results of Testing and Redesign

- Testing results have considered the parts and subsystems that required redesign in order to meet the performance criteria, and the redesign shows the changes in parts and subsystems.

Evaluation/Conclusion

- A concise evaluation and interpretation of the design, redesign and testing were made as they are related to the performance criteria.

Reference List

- Quality, quantity and variety of sources are adequate for the topic. Sources listed are cited within Background Research.
- Most sources are current.
- APA format is followed.

Technical Aspects

- Good grammar and spelling are evident. The student's last name is in the upper right-hand corner of all pages after the table of contents.
- Font size and type are appropriate.

Neat and Orderly

- The full report is neat and follows the Policy and Procedure Manual order as illustrated on the left side of the judging rubric.

Judging Information for the Experimental and Design Investigation - Poster and Paper Sessions

An Overview

Judging is, without a doubt, one of the most important phases of any science exposition. Because of its extreme importance, all judges should carefully review the following.

- Expositions are not intended to be contests between students or schools. Each exhibitor is to be judged based on the rating criteria and not in comparison to another exhibitor.
- Even though many exhibits show a remarkable degree of scientific knowledge, all judges are asked to keep in mind that all of the exhibitors are junior or senior high school students, many of whom are experiencing their first taste of scientific evaluation by a distinguished critic.
- Judges should use their own good judgment at all times. Be honest with themselves and the student. Keep in mind that only a small percentage of the students will ever actually go into scientific research; however, many of them will have a great deal to say about the future of science. Certainly, a valuable experience with science at this level might potentially reap valuable rewards later.
- The opportunity to discuss their project with interested adults acting as judges is a high point for most students. Be aware that most students have spent many months preparing for a judging period, which normally lasts fifteen minutes. Feel free to discuss any aspect of the student's work; they deeply appreciate all questions and comments.
- All judges must be beyond high school age.

Judging Mechanics - Information for Judges

- Be sure to report for final instructions promptly on the day of the Exposition. Allowing enough time to park the car, and to allow for traffic interference in order to report on time. The Judging Chair will send information about when and where to report.
- Judges will be informed of any last minute changes and/or special instructions concerning judging assignments at the judges meeting.
- Each judging team is to be assigned about four to five projects or papers to judge. Again, each exhibitor is to be judged based on the rating criteria and not in comparison to other exhibitors or based on personal preferences.
- The Regional and State Expositions are planned so that each judging team is allowed fifteen to thirty minutes for each project or paper.
- Judges may be asked to judge projects in both divisions: Junior, grades 7 and 8 and Senior, grades 9,10, 11, and 12. If so, remember to judge them based on individual merit, and please keep the age of the exhibitor in mind.
- Each project judged must have a final score so that the certificate of award can be made. Be certain to use the correct rubric when scoring the project. Do not show or discuss students' scores with them. Information on specific guidelines and procedures concerning ratings will be supplied by and discussed with the judging chair.
- Be pleasant and interested. Do not use cell phones while judging.
- Judges must please remember that they are working with tomorrow's scientists; their "decision for science" may rest on the impression given to them by the judges.
- Students must be with their project or at their assigned paper session room at the time of judging. If the student(s) cannot be located within a reasonable period of time, then the project or paper is considered a No Show, and no rating is to be given.
- Many intangible factors are involved in judging. These can be evaluated only by talking with the student and cannot be estimated merely by looking at the physical aspects of the exhibit. Judges should keep in mind that a spectacular exhibit or one composed of costly equipment is not necessarily the best science project.
- Fill out the judges' comment sheet which will be sent to the student. Please indicate comments that would help the student improve. Comments might be positive or constructive, but they should not be sarcastic. Please make sure that the comments are clear and to the point. Do not indicate the award on this sheet.
- It is imperative that each judging team finish its judging responsibilities in the allotted time and have its judging results turned in. The Awards Chair must have enough time to prepare the awards. Please allot time accordingly so that results and rubrics are turned in when due.
- Judges must be sure every project for which they are responsible is judged. **Return the scoring rubric**

immediately to the Tally/Awards Room following the judging of each project by giving it to one of the Runners. Do not hold all scoring rubrics until finished judging all projects.

- Judges must return all materials belonging to the student. Judges may not keep any portion of a student's report.

Rating Criteria

When rating the project and paper, the judges should consider the following:

Gold Award - The following criteria may identify an outstanding project.

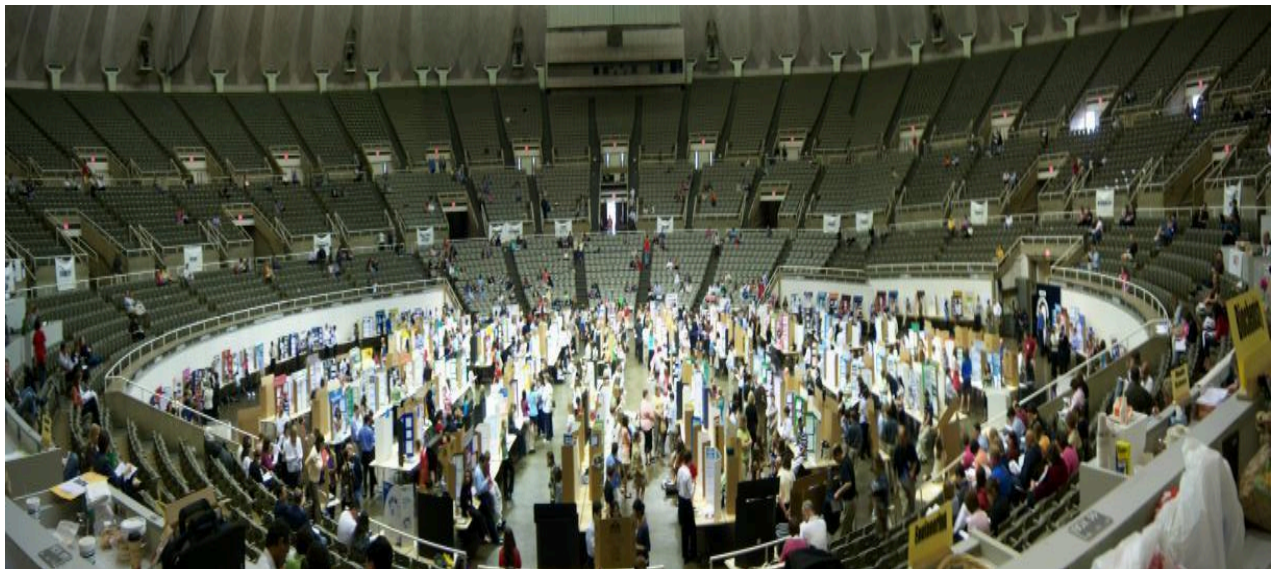
- A scientific approach to a specific problem is supported with relevant experimentation.
 - Approach indicates creativity.
 - Conclusions logically deduced from experimental data.
 - Clear concise research paper containing abstract in required form, safety sheet, and endorsement sheet(s) when appropriate.
- Students can speak knowledgeably on the content of paper and area of investigation.
- Good quantity and quality of background information is reflected in the Background Research (BR) section and Reference List.

Silver or Bronze Award

A silver or bronze award is given for a lesser degree of the above criteria; for example, insufficient reference list, lack of thoroughness in experimental technique, number of trials, observation, or lack of knowledge of the subject area.

Participation Certificate

A serious omission or mistake is present; for example, no proof of experimentation or no scientific approach is evident. Any model or demonstration will be issued a participation certificate. The judging chair will supply specific tips and pointers for a given category.



Sponsors and Teachers

Behind the student is the sponsor, often a teacher of a science subject, but occasionally a dedicated citizen. These volunteers are the unsung heroes of the local, regional, and state expositions. The ways in which they can assist the students are:

- Instill interest within the students.
- Register in the fall with the State Illinois Junior Academy of Science (IJAS). Registration deadline is December 31 [using the link on the IJAS website](#).
- Check with the Regional Chair for specific regional fees, deadlines, and registration requirements; regional fees and registrations will vary. [Contact information for Regional Chairs is on the IJAS website](#).
- Provide materials that will help the student select the project: [The Illinois Junior Academy of Science Policy and Procedure Manual](#), regional mailings, state mailings, and access to the IJAS website at www.ijas.org.
- Discuss how to develop a project and show results of past projects.
- Review all rules, regulations, and safety policies and procedures. If students intend to carry out human or other vertebrate animal experimentation, make certain that they are aware of the procedures to follow and that they complete the proper endorsement forms. (Middle School see Appendix pages 58-62; High school see pg 8-9).
- Participate in a local Science Exposition. This local exposition will give the students experience in the displaying and explaining of their projects and may determine which projects are worthy of Regional competition.
- Establish a deadline calendar. For example, project selection to be by the first week in October, progress reports by December, final sketches by January, and projects completed and ready for presentation by early February. This will leave time for final adjustments before the regional fairs.
- Arrange periodic small group discussions of progress on projects and provide an opportunity to analyze and solve problems related to individual projects.
- Offer encouragement and guidance.
- Ask others to assist, such as an English teacher for writing assistance, a mathematics teacher for assistance with statistics, or a science teacher with special expertise.
- Check the project and paper carefully to be sure the student has complied with all safety regulations and with the regulations for writing the paper and abstract before signing the safety and any necessary endorsement sheets. Sponsors are responsible for all aspects of the student's project.
- Request the necessary entry materials for both the Project and Paper Sessions. Since regional procedures may vary, consult with the regional chair for specific details.
- Be sure all projects being sent to the Regional fair also register online on the [IJAS website](#). Only projects registered online will be considered for the state exposition.
- Provide qualified judges for both the Regional and State Expositions. Failure to comply with this requirement may result in the return of the project and/or paper entries. Judges must be aware of their responsibilities. If they cannot attend, they must provide a suitable replacement in the same judging area.

- Provide safety inspectors, runners, awards room workers, and other volunteers as required by the regional and/or state organization. **In all stages of competition, the judges' decision is final.**

Parents

Parents are proud of the accomplishments of their son or daughter, and parents are anxious to see them succeed in this introductory phase of a possible career or a lifelong interest in science. The role of the parent is to support the child's independent efforts, not to take over the project. The challenge is to provide just enough assistance to allow a child's own efforts to take center stage, while offering ideas and resources that might help them raise their efforts to a higher level.

Keep in mind the following suggestions:

- Review this *Policy and Procedure Manual* in its entirety and any other materials the child's science teacher (sponsor) provides about the requirements of the project. All State information is available at www.ijas.org.
- Encourage students as they brainstorm ideas for the project. Do not be too quick to shoot ideas down as impractical or expensive – let the student explore ideas first. If there are concerns, form them into questions for the student to consider. If possible, allow the student to rule out impractical ideas before the parent does.
- Parents must understand what is required before approving a science project topic. Will it be able to be accomplished with all the other activities that students are involved in, along with other academic requirements?
- Support the child in researching the topic and conducting the experiment; assist by supplying transportation (if needed), and access to information and materials. Often excellent learning opportunities will present themselves. Parents could teach the child to use a piece of equipment or machinery rather than doing it for the child just because it might be easier.
- It is recommended that parents become familiar with the safety guidelines and see that they are followed. See pp 7-33. A student may be denied participation at the next level of exhibition if the project or paper is found to violate the established rules and regulations published in the most recent copy of the *Policy and Procedure Manual* of the Illinois Junior Academy of Science. **Some projects may be disqualified if these projects are done at home.**
- Assist a student in thinking through experimental or design procedures and how they plan to record and organize their data.
- Students might need assistance in preparing their display board and presentation. A parent's role should be secondary to their efforts. Parents can help their child by reading through and suggesting editorial changes to their report, assisting with advanced computer applications or the display board layout, and listening to their presentation.
- In general, show an interest in the child's progress, offer support and encouragement, help them overcome problems, and praise their good efforts.
- If in doubt, contact the child's science teacher or sponsor for assistance or encourage the child to do so.
- The Illinois Junior Academy of Science attempts to award and recognize as many students as possible. Proper handling of the successes and disappointments of a competition can lead to the continued efforts towards a higher goal.
- Celebrate the successes and spend a moment looking at what went wrong. Encourage a discussion as to how things might have been done differently. This process is an important part of both learning and science.
- **In all stages of competition, the judges' decision is final. Volunteers are NOT agents of IJAS.** Special Award judges, who are also not agents of the Illinois Junior Academy of Science, may use other criteria for selecting their special awards. Not all projects will be judged for special awards.

Appendix

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Student Checklist for Experimental Projects	
Abstract	
	First page of paper
	Three paragraphs with proper headings: Purpose, Procedure, and Conclusion
	Typed single-spaced 250 words or fewer
Safety Sheet for Poster Session Only	
	High School students use ISEF forms/ Middle School students use IJAS forms in separate packet next to display board
	Hazards listed, precautions described
	Signed by sponsor
Endorsement(s)/Required Documents, if applicable for Poster Session Only	
	High School students use ISEF forms/ Middle School students use IJAS forms in separate packet next to display board
	Completed as directed by guidelines
	Signed by student and sponsor; proper documentation is attached, if necessary
Title page	
	Clear and concise
Table of Contents	
	Pagination is present and accurate
Acknowledgements	
	Credit is given to those who have helped
Purpose & Hypothesis	
	States precisely what the investigation is attempting to discover or solve
	States a definite question or problem
	Hypothesis is in IF-THEN-BECAUSE format
Background Research (BR)	
	Consistent voice is evident.
	Logical and/or related grouping of information
	Accuracy in calculations, spelling, grammar, and quotations
	Typed double spaced, 1 inch margins, may be double sided
	Parenthetically cited (in-text) using APA formatting
Materials & Methods of Procedure	
	Any apparatus and materials are listed.
	Step by step chronological procedures are present. Metric measurements are used (SI), if possible.
	Drawings and photographs are present if they enhance and clarify the procedure.
	Number of test groups and number of trials within each test group is adequate.
	Control or comparison group is defined.
	Independent, dependent, and constant variables are defined.
Results	
	Data is organized into tables or charts with accompanying graphs.
	Data is quantitative and correct metric units (SI) are used.
	Data is sufficient, clear, and accurate.
	Data is analyzed and discussed.
Conclusions	
	Evaluation and interpretation of data is present.
	Refers back to purpose & hypothesis; answers the original question with substantive experimental and BR information.
	Is valid and limited to the results of the experiment.
References	
	References come from a variety and type of resources.
	References are current and all are cited in text.
	References are alphabetical.
	Proper APA format is used for all references.

Student Checklist for Design Projects	
Abstract	
	First page of paper
	Three paragraphs with proper headings: Purpose, Procedure, and Conclusion
	Typed single-spaced 250 words or fewer
Safety Sheet for Poster Session Only	
	High School students use ISEF forms/ Middle School students use IJAS forms in separate packet next to display board
	Hazards listed, precautions described
	Signed by sponsor
Endorsement(s)/Required Documents, if applicable for Poster Session Only	
	High School students use ISEF forms/ Middle School students use IJAS forms in separate packet next to display board
	Completed as directed by guidelines
	Signed by student and sponsor; proper documentation is attached, if necessary
Title page	
	Clear and Concise
Table of Contents	
	Pagination is present and accurate
Acknowledgements	
	Credit is given to those who have helped
Problem or Need	
	States need being investigated or explains how design will solve a problem
Background Research (BR)	
	Consistent voice is evident.
	Logical and/or related grouping of information
	Accuracy in calculations, spelling, grammar, and quotations
	Typed double spaced, 1 inch margins, may be double sided
	Parenthetically cited (in-text) using APA formatting
Materials & Methods of Procedure	
	Any apparatus and materials are listed.
	Establish design criteria.
	Step by step chronological procedures are present. Metric measurements are used (SI), if possible.
	Drawings and photographs are present if they enhance and clarify the procedure.
	Description of prototype and redesigns is included.
	Description of how prototype and redesigns are tested and evaluated.
Results	
	Results are organized into tables or charts with accompanying graphs if appropriate.
	Results are quantitative if possible and correct metric units (SI) are used.
	Results are sufficient, clear, and accurate.
	Results are analyzed and discussed.
Conclusions	
	Evaluation and interpretation of results is present.
	Refers back to problem or needs statement; Explains how redesigns affected performance or results.
	Is valid and limited to the results of the investigation.
References	
	References come from a variety and type of resource.
	References are current and all are cited in text.
	References are alphabetical.
	Proper APA format is used for all references.

The experiences of participation in authentic research inquiry and presentation at the IJAS Exposition aligns with the first dimension of the Next Generation Science Standards (NGSS), the College Readiness Standards (CRS), and the Common Core State *Literacy in Science and Technical Subjects and Writing*, and *Writing for Literacy in Science and Technical Subjects: Research to Build and Present Knowledge*.

Next Generation Science Standards

As students progress through a research investigation they will engage in the first dimension of the NGSS, which involves the processes of science. This dimension relates to the behaviors that scientists engage in as they investigate and build models and theories about the natural world and the key set of engineering practices that engineers use as they design and build models and systems.

1. Asking Questions and Defining Problems

1a. Ask and evaluate questions that challenge the premise of an argument, the interpretation of a data set, or the suitability of a design.

2. Developing and Using Models

2a. Develop a model based on evidence to illustrate the relationships between systems or between components of a system.

3. Planning and Carrying Out Investigations

3a. Design an investigation individually and collaboratively and test designs as part of building and revising models, supporting explanations for phenomena, or testing solutions to problems. Consider possible confounding variables or effects and evaluate the investigation's design to ensure variables are controlled.

3b. Design and conduct an investigation individually and collaboratively, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly.

3c. Design and conduct investigations and test design solutions in a safe and ethical manner including considerations of environmental, social, and personal impacts.

4. Analyzing and Interpreting Data

4a. Use tools, technologies, and/or models (e.g., computational, mathematical) to generate and analyze data in order to make valid and reliable scientific claims or determine an optimal design solution.

4b. Evaluate the impact of new data on a working explanation of a proposed process or system.

5. Using Mathematics and Computational Thinking

5a. Use mathematical representations of phenomena to describe explanations.

6. Constructing Explanations and Designing Solutions

6a. Make quantitative and qualitative claims regarding the relationship between dependent and independent variables.

6b. Apply scientific reasoning, theory, and models to link evidence to claims to assess the extent to which the reasoning and data support the explanation or conclusion.

7. Engaging in Argument from Evidence

7a. Evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions to determine the merits of arguments.

7b. Evaluate the evidence behind currently accepted explanations to determine the merits of arguments.

8. Obtaining, Evaluating, and Communicating Information

8a. Produce scientific and/or technical writing and/or oral presentations that communicate scientific ideas and/or the process of development and the design and performance of a proposed process or system.

College Readiness Standards (CRS)

Engaging in authentic research investigations addresses the process standards of the College Readiness Standards (CRS), which align to the process of inquiry. The three CRS standards include:

- 1) Interpretation of data,
- 2) Scientific Investigation, and
- 3) Evaluation of Models, Inferences, and Experimental Results

College Readiness Standards — Science			
	Interpretation of Data	Scientific Investigation	Evaluation of Models, Inferences, and Experimental Results
13–15	Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)		
16–19	Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation	Understand the methods and tools used in a simple experiment	
20–23	Select data from a complex data presentation (e.g., a table or graph with more than three variables; a phase diagram) Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram	Understand the methods and tools used in a moderately complex experiment Understand a simple experimental design Identify a control in an experiment Identify similarities and differences between experiments	Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model
24–27	Compare or combine data from two or more simple data presentations (e.g., categorize data from a table using a scale from another table) Compare or combine data from a complex data presentation Interpolate between data points in a table or graph Determine how the value of one variable changes as the value of another variable changes in a complex data presentation Identify and/or use a simple (e.g., linear) mathematical relationship between data Analyze given information when presented with new, simple information	Understand the methods and tools used in a complex experiment Understand a complex experimental design Predict the results of an additional trial or measurement in an experiment Determine the experimental conditions that would produce specified results	Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Identify strengths and weaknesses in one or more models Identify similarities and differences between models Determine which model(s) is(are) supported or weakened by new information Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion
28–32*	Compare or combine data from a simple data presentation with data from a complex data presentation Identify and/or use a complex (e.g., nonlinear) mathematical relationship between data Extrapolate from data points in a table or graph	Determine the hypothesis for an experiment Identify an alternate method for testing a hypothesis	Select a complex hypothesis, prediction, or conclusion that is supported by a data presentation or model Determine whether new information supports or weakens a model, and why Use new information to make a prediction based on a model
33–36†	Compare or combine data from two or more complex data presentations Analyze given information when presented with new, complex information	Understand precision and accuracy issues Predict how modifying the design or methods of an experiment will affect results Identify an additional trial or experiment that could be performed to enhance or evaluate experimental results	Select a complex hypothesis, prediction, or conclusion that is supported by two or more data presentations or models Determine whether given information supports or contradicts a complex hypothesis or conclusion, and why



Common Core Reading

Literacy in Science and Technical Subjects

Key Ideas and Details

RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

Craft and Structure

RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

RST. 11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

RST. 11-12.6 Analyze the author's purpose in providing an explanation, describing procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

Integration of Knowledge and Ideas

RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

Common Core Writing

Writing for Literacy in Science and Technical Subjects: Research to Build and Present

Knowledge

W.11-12.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

W.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

W.11-12.9. Draw evidence from informational texts to support analysis, reflection, and research.

Common Core Mathematics
Standards for Mathematical Practice

- Make sense of problems and persevere in solving them
- Reason abstractly and quantitatively
- Construct viable arguments and critique the reasoning of others
- Model with mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure
- Look for and express regularity in repeated reasoning

ILLINOIS JUNIOR ACADEMY OF SCIENCE

Region 1 - Central

Fulton, Henderson, Henry, Knox, Marshall, Mason, McDonough, Menard, Mercer, Peoria, Rock Island, Stark, Tazewell, Warren, and Woodford Counties.

Region 2 - Chicago and Metropolitan Area Non-Public Schools

East of Route 83, North of Route 12/20, South of I-90 to O'Hare Field, West of Lake Michigan.

Region 3 - Chicago Public Schools

Region 4 - East Central

Champaign, DeWitt, Ford, Grundy, Iroquois, Kankakee, Livingston, Logan, Macon, McLean, Piatt, and Vermillion Counties.

Region 5 - Northern

Boone, Bureau, Carroll, DeKalb, Jo Davies, Kane, Kendall, LaSalle, Lee, McHenry, Ogle, Putnam, Stephenson, Whiteside, and Winnebago Counties.

Region 6 - North Suburban

North Half of Cook and DuPage Counties (Route 20 extended is the dividing line), and Lake County.

Region 7 - Southeastern

Clark, Clay, Coles, Crawford, Cumberland, Douglas, Edgar, Edwards, Effingham, Fayette, Jasper, Lawrence, Moultrie, Richland, Shelby, and Wabash Counties.

Region 8 - Southern

Alexander, Franklin, Gallatin, Hamilton, Hardin, Jackson, Jefferson, Johnson, Marion, Massac, Perry, Pope, Pulaski, Randolph, Saline, Union, Wayne, White, and Williamson Counties.

Region 9 - South Suburban

Southern Half of Cook and DuPage Counties (Route 20 extended is the dividing line) and Will County.

Region 10 - Southwestern

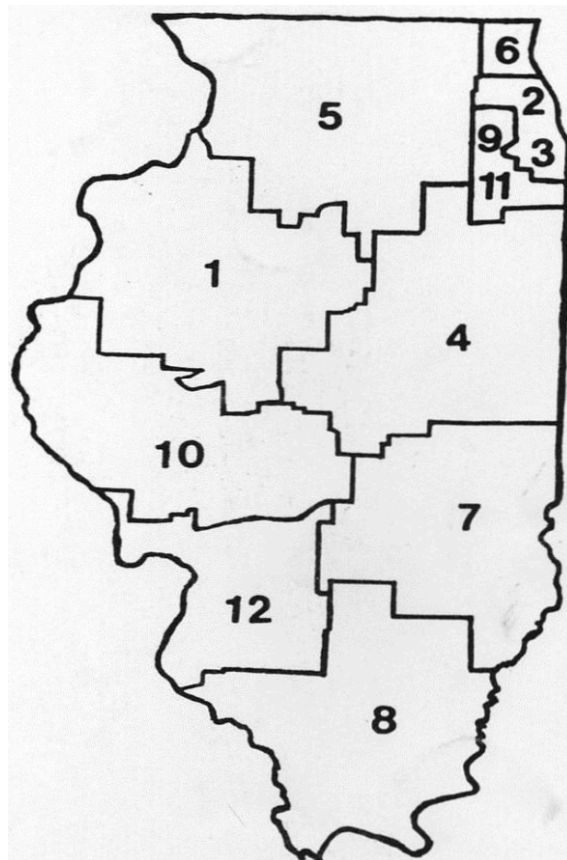
Adams, Brown, Calhoun, Cass, Christian, Green, Hancock, Macoupin (North of Route 16), Montgomery (North of Route 16), Morgan, Pike, Sangamon, Schuyler, and Scott Counties.

Region 11 - Joliet Area Non-Public Schools

DuPage, Grundy, Kankakee, Kendall, and Will County Parochial and Private Schools.

Region 12— Edwardsville Area

Bond, Calhoun, Clinton, Jersey, Macoupin (South of Route 16), Madison, Monroe, Montgomery (South of Route 16), St. Clair, and Washington Counties.





ABSTRACT 2026-2028

Middle School Projects

The Illinois Junior Academy of Science

This form/paper may not be taken without IJAS authorization.

CATEGORY	_____	STATE REGION #	_____
SCHOOL	_____	IJAS SCHOOL #	_____
CITY/ZIP	_____	SPONSOR E-MAIL	_____
SPONSOR	_____	SPONSOR CELL (optional)	_____

MARK ONE: EXPERIMENTAL INVESTIGATION ☐ DESIGN INVESTIGATION ☐

NAME OF SCIENTIST*	_____	GRADE	_____
NAME OF SCIENTIST	_____	GRADE	_____

* If this project is awarded a monetary prize, the check will be written in this scientist's name, and it will be his/her responsibility to distribute the prize money equally among all participating scientists.

PROJECT TITLE _____

Purpose or Problem:

Procedure:

Conclusion:

- 1) Limit Abstract to 3 paragraphs (about 250 words or fewer). a) Purpose - what the student sets out to investigate; b) Procedure how it was done; c) Conclusion - based on the results. Label each paragraph.
- 2) Must be typed, single-spaced on the front of this form. Do not write on the back of this form.
- 3) Three copies of the complete paper are required at the State Science Project Exposition. Four copies of the complete paper are required for the State Paper Session Competition.

This form must be used. This form **must** be displayed on the front of the exhibitor's display board. It may be reduced to half a sheet of paper; 8.5 inches (vertical) X 5.5 inches (horizontal).



SAFETY SHEET

2026-2028

Middle School Projects



The Illinois Junior Academy of Science

Experimentation or design may involve an element of risk or injury to the student, test subjects and to others. Recognition of such hazards and provision for adequate control measures are the joint responsibilities of the student and the sponsor. Any projects that violate any of the safety rules without a special circumstance that has been presented to and accepted by the IJAS State board will be disqualified from the competition.

Follow each of the following steps:

1. The sponsor, student, and parent (when appropriate) need to read ALL of the safety guidelines in the current IJAS Policies and Procedures carefully **PRIOR** to starting the project.
2. Determine whether the project violates any of the IJAS safety regulations. If there are any questions related to any of the safety rules, the **sponsor** should contact the Regional Safety Chair. Sponsors, students and parents must not contact the State Safety Chair directly.
3. If the Regional Safety Chair has further questions, they should contact the State Safety Chair stating the region and specific questions related to the project. Sponsors, students and parents must not contact the State Safety Chair directly.
4. No project is without any hazards. A blank safety sheet or one without any listed hazards will **not** be accepted as complete.
5. If the project involves humans in any way, microorganisms, vertebrate animals, or cells or tissue cultures, the proper endorsement form must also be filled out and included with this safety sheet.
6. This Safety Sheet must be included in the paper, on the project board and turned in electronically when the project is entered into the State Competition. (Rules for regional competitions may vary).

Fill out the following charts. Multiple pages may be used if necessary.

Location(s) where procedure was conducted:	_____ If project was done at an outside facility, check here and include a letter from the facility with this form assuring safety was adhered to and that the student role in the project.
Were microorganisms involved in any way?	_____ If yes, check here and fill out a Microorganisms Endorsement sheet
Were humans involved in as a test subjects?	_____ If yes, check here and fill out a Humans Endorsement Sheet
Were cells or tissue cultures involved in any way?	_____ If yes, check here and fill out a Tissue Culture Endorsement Sheet
Were cells or vertebrate animals involved in any way?	_____ If yes, check here and fill out a Vertebrate Animal Endorsement Sheet
Were there any violations of IJAS Safety Rules that were either approved by the IJAS SRC or by a qualified institution?	_____ If yes, check here and include the letter from the IJAS SRC or the qualified institution where the project was conducted.
List any chemicals used:	Precautions taken with use of chemicals:
List any other safety hazards that are not covered on the endorsement sheets:	For each listed safety hazard, describe what precautions were taken: (note this can extend to the next page if needed)

I/We the student(s) who conducted this project have followed each of the steps listed above and have used all of the safety precautions stated.

Signature(s) _____ Date _____

I, the sponsor of this project take responsibility for the instruction of the student on safety precautions and/or verified the safety credentials of any institution with which they worked.

Signature _____ E-mail _____ Date _____



Human Participants IRB Review Form (Page 1 of 2)

Both pages required for all Middle School Projects with any Human Participants

2026-2028

The Illinois Junior Academy of Science



For proposed research involving human participants. IRB review and approval must occur BEFORE recruitment or data collection.

Student researcher(s):	Project title:
School / IJAS school number:	Grade(s):
Adult sponsor:	Sponsor phone/email:

PART A - STUDENT RESEARCHER / ADULT SPONSOR SUBMISSION

Submit this form with the research plan and all participant-facing materials. Check each item that applies.

- ☐ Research plan describes purpose, methods, participant population, recruitment, risks, benefits, privacy/confidentiality, and data handling.
- ☐ Copies of all surveys, tests, interview questions, scripts, advertisements, emails, or other participant materials are attached.
- ☐ Proposed informed consent document is attached. If minors are involved, proposed minor assent and parent/guardian permission materials are attached.
- ☐ Participant population and estimated number: _____
- ☐ Ages / grade range: _____ ☐ Minors included ☐ Adults age 18+ included
- ☐ Research location(s): _____
- ☐ Food or drink will be consumed. If checked, describe item(s), amount(s), and normal-serving documentation in the research plan.
- ☐ Exercise or physical activity is involved. If checked, describe type, intensity, duration, screening, and supervision.
- ☐ Survey / test / interview is involved. If checked, all instruments are attached and questions comply with current IJAS rules.
- ☐ Human bodily fluids or human-derived data are involved. If checked, identify the source and attach source documentation.
- ☐ Research will occur at an outside institution / regulated research institution. If checked, attach institutional approval or documentation.
- ☐ A Qualified Scientist / Direct Supervisor is involved. Name/role: _____
- ☐ The project has been reviewed against the current IJAS Policy & Procedure Manual and applicable ISEF human-participant rules.

Briefly describe how human participants will be used:	Identify foreseeable risks or discomforts:
How will risks be minimized?	How will privacy/confidentiality and data security be protected?

Student researcher certification: I certify that no recruitment or data collection will begin until required IRB approval is obtained.

Student signature(s): _____ Date: _____

Adult sponsor signature: _____ Date: _____



Human Participants IRB Review Form (Page 2 of 2)

Both pages required for all Middle School Projects with any Human Participants

2026-2028

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PART B - INSTITUTIONAL REVIEW BOARD (IRB) USE ONLY-This is made up of a school administrator, medical professional and professional educator.

The IRB must review the complete research plan and participant materials before approval. All determinations below should be completed. If revisions are required, return the project to the student before approval.

IRB decision:	☐ Approved ☐ Approved with conditions ☐ Revisions required / not yet approved ☐ Not approved
Risk level:	☐ Minimal risk ☐ More than minimal risk
Qualified Scientist / Direct Supervisor required:	☐ Yes ☐ No
Additional risk assessment / safety review required:	☐ Yes ☐ No
Minor participants:	☐ Written minor assent required ☐ Written parent/guardian permission required ☐ Not applicable
Participants age 18 or older:	☐ Written informed consent required ☐ Documentation waived by IRB ☐ Not applicable
Protected / vulnerable population or special facility:	☐ Additional institutional approval required/obtained ☐ No / not applicable
Privacy and data protections:	☐ Adequate as submitted ☐ Conditions listed on separate paper
IJAS-specific review:	☐ Food/drink compliant ☐ Exercise compliant ☐ Survey/interview compliant ☐ Bodily-fluid/data source compliant ☐ N/A

IRB Signatures:

IRB attestation: We reviewed the proposed project and the determinations above. No IRB member signing below is the student's adult sponsor, direct supervisor, qualified scientist, parent/guardian, or otherwise has a conflict of interest.

Medical or Mental Health Professional (with expertise appropriate to the project)

Print name	Degree / professional license	Email
Signature	Date (before recruitment/data collection)	IRB role / title

Educator

Print name	Degree / professional license	Email
Signature	Date (before recruitment/data collection)	IRB role / title

School Administrator

Print name	Degree / professional license	Email
Signature	Date (before recruitment/data collection)	IRB role / title



**Non-Human Vertebrate Endorsement
2026-2028
Middle School Projects
The Illinois Junior Academy of Science**



Students and sponsors conducting a project involving **non-human vertebrates must complete this form and obtain all required approvals PRIOR to beginning experimentation or data collection.** Before starting the project, both the student(s) and sponsor must **read and follow all applicable rules in the IJAS Policy and Procedure Manual.** Projects requiring review by a **Scientific Review Committee (SRC) or other required review body must receive approval before any experimentation or data collection begins.** Non-human vertebrate projects include, but are not limited to, projects involving **live vertebrate animals, parts of animals, embryos, animal behavior, feeding, environmental conditions, physical manipulation, observation, and other procedures that may affect an animal's health, safety, or well-being.**

The signatures of the student(s) and sponsor certify that the project was conducted in accordance with all applicable **IJAS rules, regulations, safety requirements, and approval procedures.** Failure to obtain required approvals or comply with IJAS requirements may result in **disqualification of the project at the state level.** This completed form must **follow the Safety Sheet in the project paper and be displayed on the project board.**

Fill out the following charts. Multiple pages may be used if necessary.

Scientific and common name of animal(s) being used.	
Were there any violations of IJAS Safety Rules that were either approved by the IJAS SRC or by a qualified institution?	_____ If yes, check here and include the letter from the IJAS SRC or the qualified institution where the project was conducted.
Brief description of use of the organism(s).	

Describe the possible risks to the non-human vertebrates	Describe how each risk was handled or avoided

I/We the student(s) who conducted this project have followed each of the steps listed above and have used all of the safety precautions stated.

Signature(s)_____ **Date**_____

I, the sponsor of this project take responsibility for the instruction of the student on safety precautions and/or verified the safety credentials of any institution with which they worked.

Signature_____ **E-mail**_____ **Date**_____



Tissue Culture Endorsement
2026-2028
Middle School Projects
The Illinois Junior Academy of Science



Students and sponsors conducting a project involving **tissue culture must complete this form and obtain all required approvals PRIOR to beginning experimentation**. Before starting the project, both the student(s) and sponsor must **read and follow all applicable rules in the IJAS Policy and Procedure Manual**. Projects involving **cell lines requiring BSL-2 procedures, viruses, recombinant DNA, or other regulated biological agents must receive all required approvals before experimentation begins**. Tissue culture projects include, but are not limited to, projects involving **established cell lines, insect cell cultures, viruses, recombinant DNA, and other cultured cells or tissues**.

The signatures of the student(s) and sponsor certify that the project was conducted in accordance with all applicable **IJAS rules, regulations, safety requirements, and approval procedures**. Failure to obtain required approvals or comply with IJAS requirements may result in **disqualification of the project at the state level**. This completed form must **follow the Safety Sheet in the project paper and be displayed on the project board**.

Fill out all boxes in the chart below. Multiple pages may be used if necessary.

Published name of cells or tissue used	
List the location where the lab work was conducted along with the biosafety level (BSL-1 or BSL-2).	
Source from where the cells or tissues were obtained	
Cell disposal method used	
Were there any violations of IJAS Safety Rules that were either approved by the IJAS SRC or by a qualified institution?	____ If yes, check here and include the letter from the IJAS SRC or the qualified institution where the project was conducted.
Brief description of how cells were used	
Safety precautions taken	

I/We the student(s) who conducted this project have followed each of the steps listed above and have used all of the safety precautions stated.

Signature(s) _____ Date _____

I, the sponsor of this project take responsibility for the instruction of the student on safety precautions and/or verified the safety credentials of any institution with which they worked.

Signature _____ E-mail _____ Date _____



**Microorganism Endorsement
2026-2028
Middle School Projects
The Illinois Junior Academy of Science**



Students and sponsors conducting a **microorganism project must complete this form and obtain all required approvals PRIOR to beginning experimentation.** Before starting the project, both the student(s) and sponsor must **read and follow all applicable rules in the IJAS Policy and Procedure Manual.** Projects requiring review by a **Scientific Review Committee (SRC)** or other required review body must receive approval before experimentation begins.

The signatures of the student(s) and sponsor certify that the project was conducted in accordance with all applicable **IJAS rules, regulations, safety requirements, and approval procedures.** Failure to obtain required approvals or comply with IJAS requirements may result in **disqualification of the project at the state level.** This completed form must **follow the Safety Sheet in the project paper and be displayed on the project board.**

Fill out all boxes in the chart below. Multiple pages may be used if necessary.

Genus and species of organism(s) being used.	
List the location where the lab work was conducted.	
Name of the reputable source that supplied the organism(s).	
Method of disposal of the organism(s) being used.	
Were there any violations of IJAS Safety Rules that were either approved by the IJAS SRC or by a qualified institution?	_____ If yes, check here and include the letter from the IJAS SRC or the qualified institution where the project was conducted.
Describe the use of microorganisms in this project.	
Other precautions taken to ensure microorganisms are used safely in this investigation.	

I/We the student(s) who conducted this project have followed each of the steps listed above and have used all of the safety precautions stated.

Signature(s) _____ Date _____

I, the sponsor of this project take responsibility for the instruction of the student on safety precautions and/or verified the safety credentials of any institution with which they worked.

Signature _____ E-mail _____ Date _____