Singapore Science and Engineering Fair (SSEF)

Operational Guidelines[1] for Scientific Review Committee (SRC) and Institutional Review Board (IRB)

Please refer to the International Rules for Precollege Science Research: Guidelines for Science and Engineering Fairs (https://sspcdn.blob.core.windows.net/files/Documents/SEP/ISEF/2018/Rules/Book.pdf) for details and updates. The Rules are intended to ensure safety of students, to protect the subjects and environments studied and to limit the liability of the adults who assist with the projects. Some sections have been extracted below for your reference.

Scientific Review Committee (SRC)

1. A Scientific Review Committee (SRC) is a group of qualified individuals that is responsible for evaluation of student research, certifications, research plans and exhibits for compliance with the rules, applicable laws and regulations at each level of science fair competition. School-based SRCs may be formed to assist the Affiliated Fair (i.e. SSEF) SRC in reviewing projects. The operation and composition of the school-based and Affiliated Fair SRCs must fully comply with the International Rules.

2. Most proposed research projects involving vertebrate animals and/or potentially hazardous biological agents must be reviewed and approved before experimentation. The Affiliated Fair SRC will also review the documentation for all projects prior to the SSEF to ensure that students have followed all applicable rules and that the projects are eligible for competition.

3. The SRC must:
   a. include a minimum of three persons
   b. include a biomedical scientist (earned doctoral degree, such as Ph.D., M.D., D.V.M., D.D.S., PharmD., or D.O.)
   c. include an educator
   d. include at least one additional member

   Additional expertise: Many project evaluations require additional expertise (e.g., on biosafety and/or of human risk groups.) If the SRC needs an expert as one of its members and one is not in the immediate area, all documented contact with an external expert must be submitted. If animal research is involved, at least one member must be familiar with proper animal care procedures. Depending on the nature of the study, this person can be a veterinarian or animal care provider with training and/or experience in the species being studied.

   No Adult Sponsor, parent or other relative of the student(s), the Qualified Scientist, or the Designated Supervisor who oversees the project may serve on the SRC reviewing that project. Additional members are recommended to diversify and to increase the expertise of the committee.

[1] This is adapted from the Intel ISEF International Rules and Guidelines 2016.

All SRC members must be familiar with the SSEF and ISEF Rules and Guidelines. When reviewing research plans, members are urged to use their best professional judgement coupled with good common sense. Members should counsel and instruct students and help them to avoid violations whenever possible.

4. A Scientific Review Committee (SRC) examines projects for the following:
   a. evidence of literature search and appropriate attribution
   b. evidence of proper supervision
   c. use of accepted and appropriate research techniques
   d. completed forms, signatures and dates showing maximum of one year duration of research and appropriate preapproval dates (where required)
   e. evidence of search for alternatives to animal use
   f. humane treatment of animals
   g. compliance with rules and laws governing human and/or animal research and research involving potentially hazardous biological agents
   h. documentation of substantial expansion for continuation projects
   i. compliance with the ISEF ethics statement

5. The SRC should deliberate, resulting in one of the following decisions:
   a. Approval: If a project is approved, the SRC chair signs the box in #2a on the Approval Form (1B). If the approved project involves vertebrate animals, the SRC chair will also complete and sign the middle section on Form 5A. If the approved project involves potentially hazardous biological agents, the SRC chair will also complete and sign the bottom section on Form 6A. Projects that were conducted at a Regulated Research Institution requiring pre-approval and were approved by the institution's approval bodies (IACUC, IRB etc.) should be reviewed by the SRC/IRB to ensure documentation demonstrates pre-approval and compliance with SSEF and ISEF rules. If this review satisfies the pre-approval and compliance with the rules, the SRC chair will sign the box in #2b.
   b. Disapproval: The SRC chair should provide the student and sponsor with reasons for disapproval and suggestions for changes needed for approval.
   c. Projects that are not allowed: Some projects may be deemed unethical, inhumane or have an unacceptably high risk and should not be done by pre-college students. Examples would be projects that involve killing or inhumane treatment of vertebrate animals, toxicity studies using vertebrate animals, improper treatment of any animal, use of potentially hazardous biological agents at home or lack appropriate supervision.
   d. Biosafety level review and approval: If a project involves a potentially hazardous biological agent and is being conducted in a non-regulated site (e.g. school), the student researcher and the Qualified Scientist or Designated Supervisor must conduct a risk assessment and propose a biosafety level. The SRC shall review the research plan, risk assessment and proposed BSL and must confirm (or change, if needed) the Biosafety Level by completing and signing Potentially Hazardous Biological Agents Form 6A.

Institutional Review Board (IRB)

1. An Institutional Review Board (IRB) is a committee that must evaluate the potential physical and/or psychological risk of research involving human subjects. All proposed human research must be reviewed and approved by an IRB before experimentation begins. This includes review of any surveys or questionnaires to be used in a project.

2. An IRB at the school must:
   a. Consist of a minimum of three members
   b. include an educator
   c. include a school administrator (preferably, a principal or vice principal)
   d. include an individual who is knowledgeable about and capable of evaluating the physical and/or psychological risk involved in a given study. This may be a medical doctor, nurse practitioner, physician's assistant, registered nurse, psychologist, licensed social worker or licensed clinical professional counsellor.

   Additional Expertise: If an expert is not available in the immediate area, documented contact with an external expert is recommended. A copy of all correspondence with the expert (e.g. emails) must be attached to Form 4 and can be used in lieu of the signature of that expert.

   No Adult Sponsor, parent or other relative of the student, the Qualified Scientist, or Designated Supervisor who oversees the project may serve on the IRB reviewing that project. Additional members are recommended to help avoid a potential conflict of interest and to increase the expertise of the committee.

3. The definition of a human participant is a living individual about whom an investigator conducting research obtains (1) data or samples through intervention or interaction with individual(s), or (2) identifiable private information. These projects require IRB review and preapproval and may also require documentation of written informed consent/assent/parental permission. Examples of studies that are considered "human participant research" requiring IRB preapproval include:
   a. Subjects participating in physical activities (e.g., physical exertion, ingestion of any substance, any medical procedure)
   b. Psychological, educational and opinion studies (e.g., surveys, questionnaires, tests)
   c. Studies in which the researcher is the subject of the research
   d. Testing of student designed invention or concept by human participants other than student researcher
   e. Data/record review projects that include data that are not de-identified/anonymous (e.g., data set that includes name, birth date, phone number or other identifying variables).
   f. Behavioural observations that
      (1) involve any interaction with the observed individual(s) or where the researcher has modified the environment (e.g., post a sign, place an object).
      (2) occur in non-public or restricted access settings (e.g., day care setting, doctor's offi ce)
      (3) involve the recording of personally identifiable information

4. IRBs can exist at Regulated Research Institutions (e.g. universities, medical centres). For research that is conducted at or sponsored by a Regulated Research Institution, its IRB must initially review and approve all proposed research conducted at or sponsored by that institution before experimentation begins. The Adult Sponsor and the local IRB are responsible for ensuring that the project is appropriate for a pre-university student and adheres to the Intel ISEF rules.

5. An IRB is responsible for assessing risk and documenting the determination of risk level on Human Participant Form 4. However, in reviewing projects just prior to the Affiliated Fair, if an Affiliated Fair SRC judges an IRB's decision as inappropriate, thereby placing human subjects in jeopardy, they may override the IRB's decision and the project may fail to qualify for competition. It is advised that IRBs consult with the Affiliated Fair SRCs in questionable cases.

6. The IRB may waive the requirement for documentation of written informed consent/assent/parental permission, if the research involves only minimal risk and anonymous data collection and if it is one of the following:
   a. Research involving normal educational practices
   b. Research on individual or group behaviour or characteristics of individuals where the researcher does not manipulate the subjects' behaviour and the study does not involve more than minimal risk.
   c. Surveys and questionnaires that are determined by the IRB to involve perception, cognition or game theory and do NOT involve gathering personal information, invasion of privacy or potential for emotional distress.
   d. Studies involving physical activity where the IRB determines that no more than minimal risk exists and where the probability and magnitude of harm or discomfort anticipated in the research are not greater than those ordinarily encountered in DAILY LIFE or during performance of routine physical activities.

   If there is any uncertainty regarding the appropriateness of waiving written informed consent/assent/parental permission, it is strongly encouraged that documentation of written informed consent/assent/parental permission be obtained.

Expedited Review

7. Most projects require review by the full three-member IRB. An expedited review by one member of the IRB may be conducted for the following types of projects. This person must have the expertise necessary to make such a decision and/or receive advisement from the appropriate expert:
   a. Projects that involve the testing by anyone other than the student researcher of a student-designed invention, program, concept, etc., where the feedback received is a direct reference to the design, where personal data are not collected, and where the testing does not pose a health or safety hazard.
   b. Projects in which the student is the subject of their research and the research does not involve more than minimal risk.

A combined SRC/IRB (Institutional Review Board) committee is allowed as long as the membership meets both the SRC and IRB requirements listed above.

Acknowledgement for SSEF SRC and/or IRB Operational Guidelines

I,_____ (full name), _____ (designation) hereby acknowledge the roles and responsibilities of the SRC and/or IRB* members. As the school-based SRC and/or IRB* Chair, I will assist the Affiliated Fair SRC in reviewing projects and ensure that all projects adhere strictly to the SSEF and Intel ISEF rules and guidelines.

_____ (signature)
SRC and/or IRB* Chair
School : _____
Date : _____

**delete where appropriate*

Endorsed by:

_____
A/P Lim Tit Meng
Fair Director cum SRC Chair of Affiliated Fair
Chief Executive
Science Centre Singapore
Date:

Members of SSEF School-Based Scientific Review Committee (SRC) and/or Institutional Review Board (IRB)					
Position	**Salutation and Name**	**Designation** (E.g. HOD Science, Teacher)	**Qualification** (E.g. PhD in Biology, MD, B.Sc. Chemistry, etc.)	**Email Address**	**Contact No.**
SRC/IRB Chair					
Member					
Member					
Member					
Member					
Member					