Republic of the Philippines
Department of Education
Region VII, Central Visayas
DIVISION OF CEBU PROVINCE
IPHO Bldg., Sudlon, Lahug, Cebu City

August 23, 2019

Division Memorandum
No. 504, s. 2019

DIVISION INVESTIGATORY PROJECT (IP) CONGRESS 2019
FOR ELEMENTARY AND SECONDARY

To: Assistant Superintendents
Chiefs, SGOD and CID
Education Supervisors / Coordinators
District Supervisors / OICs
Elementary and Secondary School Heads
Heads, Private Elementary and Secondary Schools

1. This office announces the conduct of the **Division Investigatory Project (IP) Congress 2019 for Elementary and Secondary** in connection to the 2019 Division Science Fair and Competition with the theme " **Science for the People: Enabling Technologies for Sustainable Development** " on **September 27, 2019** , at **Immaculate Heart of Mary Academy, Minglanilla, Cebu.**

2. Contestants of SSES, STE Schools, Legislated Science High Schools and Special Science Curriculum Implementing Schools will automatically qualify for the division level competition while in regular schools only the first place winners in the area level/cluster unit competition of the following categories will be eligible to participate:

- Life Science IP (Individual& Team Category)
- Physical Science (Individual& Team Category)
- Robotics & Intelligent Machine (Individual & Team Category)
- Science Innovation Expo
- Robot Tournament (**10** recipient secondary schools of robot kits/packages)

3. Deadline for the submission of the research paper with all the attachments will be on **September 19, 2019,** together with all the required attachments at CID Section, Division Office, Cebu Province Division.

4. Relative to this, all public and private secondary schools are enjoined to participate this contest .

5. School heads are directed to ensure that **NO** classes will be left unattended due to the attendance/participation of the said teachers to this competition.

6. Registration is **500.00php/entry** will be collected to defray the expenses for the honoraria of panel of judges of Investigatory Projects (IPs) and transportation, materials and other related expenses to be used in the contest and per dime incurred in connection with the activities shall be chargeable to **Club Funds/ PTA/ SEF /Local /School MOOE** or any available funds subject to the usual accounting and auditing rules and regulations.

7. SSES, STE Schools, Legislated Science High Schools and Special Science Curriculum Implementing Schools and regular schools with winning IP entries are encouraged/adviced to have an advance registration to the office of Ms. Maritess Peralta, Division Disbursing Officer, DepEd Cebu Province a week before the contest/on or before **Sept. 20, 2019 (Friday).**

8. This Memorandum serves as **Authority to Travel** of the participants, coaches, Secondary Science Specialists, Secondary Science Officers, Secondary School Heads and District Supervisors.

9. Please see **Enclosures Nos. 1, 2 & 3**.

10. Immediate dissemination of this Memorandum is desired .

For :

RHEA MAR A. ANGTUD, ED.D.
Schools Division Superintendent

LEAH B. APAO, ED.D., CESE
Assistant Schools Division Superintendent

Enclosure No. A, Division Memorandum No. —

Format of Research Paper

Investigatory papers that were reviewed by the national SRCs in the past years were found to have inadequacies in the content, particularly in the areas cited below. To ensure that the investigatory papers are of good quality, students must adhere to the guidelines shown below. These can be found in the Guidelines and in the Student Handbook and Research Plan Instructions published in the website (https://www.societyforscience.org).

I. **Research Plan:** (This is compiled separately from the rest of the investigatory paper):
All projects should include the following:

A. Question or Problem being addressed

B. Goals /Expected Outcomes /Hypotheses

C. Description in detail of method or procedures (The following are important and key items that should be included when formulating ANY AND ALL research plans.)
- Procedures: Detail all procedures and experimental design to be used for data collection.
- Data Analysis: Describe the procedures to be used to analyze the data/results that answer research questions or hypotheses.

D. Bibliography: List at least five (5) major references (e.g. science journal articles, books, internet sites) from your literature review. If you plan to use vertebrate animals, one of these references must be an animal care reference.

II. **Project Data Book**:

A project data book is your most treasured piece of work. Accurate and detailed notes make a logical and winning project. Good notes show consistency and thoroughness to the judges and will help you when writing your research paper. Data tables are also helpful. They may be a little 'messy' but be sure the quantitative data recorded is accurate and that units are included in the data tables. Make sure you date each entry.

III. **Research Paper:**

A research paper should be prepared and available along with the project data book and any necessary forms or relevant written materials. A research paper helps organize data as well as thoughts. A good paper includes the following sections.

a) **Title Page and Table of Contents**: The title page and table of contents allows the reader to follow the organization of the paper quickly.

b) **Introduction**: The introduction sets the scene for your report. The introduction includes the purpose, your hypothesis, problem or engineering goals, an explanation of what prompted your research, and what you hoped to achieve.

c) **Materials and Methods**: Describe in detail the methodology you used to collect data, make observations, design apparatus, etc. Your research paper should be detailed enough so that someone would be able to repeat the experiment from the information in your paper. Include detailed photographs or drawings of self-designed equipment. Only include this year's work.

d) **Results**: The results include data and analysis. This should include statistics, graphs, pages with your raw collected data, etc.

e) **Discussion**: This is the essence of your paper. Compare your results with theoretical values, published data, commonly held beliefs, and/or expected results. Include a discussion of possible errors. How did the data vary between repeated observations of similar events? How were your results affected by uncontrolled events? What would you do differently if you repeated this project? What other experiments should be conducted?

f) **Conclusions**: Briefly summarize your results. State your findings in relationships of one variable with the other. Support those statements with empirical data (one average compared to the other average, for example). Be specific, do not generalize. Never introduce anything in the conclusion that has not already been discussed. Also mention practical applications.

g) **Acknowledgements**: You should always credit those who have assisted you, including individuals, businesses and educational or research institutions. However, acknowledgments listed on a project board are a violation of D & S Display rules and must be removed.

h) **References/Bibliography**: Your reference list should be written based on the Chicago Manual of Style. For more information, you may visit the websites below:

- http://www.chicagomanualofstyle.org/home.html
- http://www.calvin.edu/library/knightcite/index.php

IV. **Abstract:**

After finishing research and experimentation, an abstract should be written. This needs to be a a maximum of 250 words on one page. It should include the a) purpose of the experiment, b) procedures used, c) data, and conclusions. It also may include any possible research applications. Only minimal reference to previous work may be included. The abstract must focus on work done in the current year and should not include a) acknowledgments, or b) work or procedures done by the mentor. See below for examples of award winning abstracts. See page 27 of the International Rules for the proper formatting of an Official Intel ISEF Abstract and Certification. Please Note: The official abstract form is only for those participating in ISEF. This form may not be required for other levels of competition.

CHECKPOINTS FOR SRC REVIEW

Source: Society for Science and the Public

This document was developed to provide guidance for the Scientific Review Committee to review a project after experimentation.

ABSTRACT

Review the abstract text and checkboxes keeping the following questions in mind, and then review the information provided on each form to see if it answers the questions, has any inconsistencies, etc. that will require follow up.

Did the area of study require **PRE-APPROVAL**?

Human Participants Does the study mention people, interviews, responses, answers, consent, etc? (requires Form 4). Exempt studies include product testing, public data review, some observational studies.

Animals Look for indications of type of study and research site. Strictly observational studies with no interaction are exempt. Tissue studies in which the student is given the tissue and did not interact with the animal do not need animal forms but will still need pre-approval as a PHBA [Potentially Hazardous Biological Agents] tissue study.

A. Projects may be conducted at home, school, or field ONLY IF the study involved agricultural, behavioral, observational, or supplemental nutrition AND was non-invasive AND had no negative effects on health and wellbeing (requires Form 5A).
B. Projects must be conducted at research institution with IACUC [Institutional Animal Care and Use Committee] in all other cases (requires Form 5B).
PHBA's Study included microorganisms, rDNA, or fresh/frozen tissue, blood, body fluids. Used terms like culturing, plating, tissue, source of tissue, etc. Exemptions include non-primate established cell lines, yeast, lactobacillus, meat from a grocery store, and other items listed in the rules (requires Form 6A; Tissue study, requires Form 6A & 6B)

Was the study done at a **Regulated Research Institute/Industrial Setting** (RRI)? Is the terminology or equipment very sophisticated? Look for possible RRI. (Form 1C)

Does this appear to be a **Continuation**? Any mention of previous research? Uses terms like previously, earlier research, improved, redesigned, year 3, etc. (Form 7)

Any discussion of a **Partner** in a non-team study? Uses "we" consistently (math projects and international studies frequently use "we" for all studies). Form 1C answers this question for studies done at a university.

Any possibly **hazardous chemicals, activities, or devices**? Includes high voltage, hazardous equipment, radioactivity, firearms, explosives, prescription drugs, DEA-controlled substances, alcohol and tobacco. (Form 3)

Time Line Project appears too long/too old: more than one year or started before January of last year. (Form 1A contains this information)

CHECKBOXES ON ABSTRACT

Checkbox 1. Project involved human participants, vertebrate animals, or PHBA's. Requires preapproval and additional forms. Exempt studies do not check this box.

Sample Abstracts

2002 ISEF First Grand Award, Physics	**2002 ISEF First Grand Award, Microbiology**
A Novel Application of Locally Formulated Cholesteric Liquid Crystals in Dosimetry	**Antibiotic Substance Obtained from the Parotid Gland Secretions of the Toad (*Bufomarinus*)**
By Estrella, Allan N., Macalintal, Jeric V., Manapat, Richard K.S. Adviser: Mr. Jonathan Derez Manila Science High School	By Rara, Prem Vilas Fortran M. Adviser: Dr. Jose M. Oclarit Integrated Development School-MSU-Iligan Institute of Technology
Radiation has many industrial and economic uses. However, it poses a danger on those people working near it. To settle with this, dosimetry was introduced. Many kinds of dosimeters such as silver halides, thermoluminuscent dosimeters, and semi-conductor dosimeters were developed. This study focuses on the potential use of liquid crystals as a dosimeter. Three mixtures of liquid crystals were prepared using nematic E48, cholesteric TM74A and Canola oil synthesized cholesteric liquid crystal with mass ratios (E48: TM74A) of Mixture A (Mixture A), 30:70 (Mixture B) and (E48: Canola) 30:70 (Mixture C). The liquid crystals were then mounted to cells made from polyethylene sheets. Three samples were prepared for each mixture. The samples were then exposed to cobalt-60 for gamma radiation with doses of 2.5 kgy, 5 kgy, 10 kgy, 15 kgy, 20 kgy, 25 kgy and 30 kgy. After each exposure, the samples were observed and color changes were noted. Color changes corresponding to different gamma radiation dose were observed in all samples. In all responses, the grand jean texture of the liquid crystals was restrained suggesting that the energy that was absorbed did not induce any chemical change. However, observed color changes indicated 'unwinding' of the pitch of the helical conformation for the TM74A-based formulation (Mixtures A and B) and 'winding' for the Canola-based liquid crystals (Mixture C). The application of liquid crystals in dosimetry was determined due to the color changes.	The study showed an antibiotic substance was obtained from the parotid secretions of a toad (*Bufomarinus*). This was isolated by extraction with methanol and initial purification by thin-layer and gravity column chromatography using aqueous methanol in varying concentrations as solvent. The crude extract was assayed on three test microorganisms (*Escherichia coli, Bacillus subtillis* and *Aspergillusniger*). Commercial antibiotics (Streptomycin and Penicillin) were used as controls to compare the potency of the compound. All test organisms were inhibited by the isolated compound, showing similar potency as that of the control antibiotics. Out of 30 fractions that were obtained from the gravity column chromatography only fractions 27-30 inhibited bacteria but not fungi, although at the initial experimentation, the crude extract, revealed effective inhibition against *Aspergillusniger*, a fungal test microorganism. Further purification of the active fractions using high performance liquid chromatography (HPLC) with aqueous methanol yielded a compound with retention time of 3.74 minutes. The compound was collected and assayed on the same test microorganisms. The active compound inhibited *E. Coli* and *B. Subtillis* at 30 and 40 mm, respectively. Infra Red (IR) spectrometry revealed amine, alkene and alkyl halides as functional groups. These spectrometric data revealed a trace of peptide spectra suggesting that the antibiotic principle is peptide-like molecule Bioassay of this compound demonstrated a comparable degree of antibiotic potency as that of streptomycin and penicillin with maximum inhibition of 45 mm in *B. subtilllis* and 34 mm in *E. coli.*

Checkbox 2. Abstract may only reflect their work not the mentor's. May require abstract rewrite.

Checkbox 3. Worked at RRI. (Requires 1C)

Checkbox 4. Project is a continuation. (Requires Form 7, previous abstract & research plan)

CHECKLIST FOR ADULT SPONSOR (1)

This form asks more specifically about projects that required preapproval (humans, animals, PHBA's), continuations, RRI's, and lists the forms that are required. The answers to this checklist need to be consistent with the answers on other forms.

This page is signed when the project is reviewed which should be before the project starts.

STUDENT CHECKLIST (1A)

Grade: Student must have been in high school at the time of research in order to compete.
Contact information: If questions cannot be resolved from the paperwork, it is sometimes necessary to contact the student or adult sponsor. **Continuation**: If a continuation must include Form 7, previous abstracts, and last year's research plan. This information should match the checkmarks on the abstract and on Form 1.
Start/End Dates: Project may only be one year in length and may not have started before January of the previous year. Student should have competed in the first fair which was held after the end date. Fair dates can be found on SSP's website at http://apps.societyforscience.org/find_a_fair.
Information regarding Research Site: This will tell you if you need additional paperwork. For example, Form 1C for RRI, Form 5A if animals at school, field, home, Form 5B if animals at RRI, no culturing of microorganisms is allowed at home (FTQ) [Failing to Qualify], Form 6A for BSL-1 and BSL-2 studies which must be in the appropriate facilities.

RESEARCH PLAN

Review the research plan to find information regarding each of the questions asked in previous section under Abstract. The Research Plan Instructions page lists the items that should be included. The information should be written before the experiment is started (future tense), needs to be very detailed, and must be consistent with the documentation found on all other forms. If more information is needed about the study, the student or adult sponsor may need to be contacted (email, phone or interview).

Human Participants
Look for information about subjects (any risk groups), recruitment, methods, risks and benefits, protection of privacy (HIPPA [Health Insurance Portability and Accountability Act] and FRPA [Family Educational Rights and Privacy Act]), and informed consent (participant knows what they are being asked to do, that they may withdraw at any time, there is no coercion, etc.). Must have preapproval and often will require written consents. (Requires Form 4)

Is the level of risk appropriate? What risk assessment was done? Should the study have written consent/permission/assent? Is the survey attached?

Animals:
Pay particular attention to the detailed procedures and care of the animals in the research

and if they looked for alternatives to animal research. Studies conducted in non-regulated sites are only allowed if they involved agricultural, behavioral, observational, or supplemental nutrition AND involved only non-invasive and non-intrusive methods that do not negatively affect an animal's health or well-being. All others must be at RRI's. (Requires 5A or 5B)

Look for any potential FTQ items such as no indication of preapproval, any animal deaths due to experimental procedures, weight loss ≥15% in any group or subgroup, toxicity studies, studies designed to kill, studies which cause more than momentary pain or suffering, predator/prey, inappropriate water or food restriction, euthanasia by student, etc. Ensure that an allowable embryonic study didn't hatch and become a vertebrate study that is not permitted.

PHBA's:
The source, quantity, and Biosafety Level (BSL) must be indicated for all microorganisms including established cell lines; however, only plant and non-primate established cell lines will not require preapproval or Form 6A.

Culturing of microorganisms may NOT be conducted at home. (FTQ) All BSL-1 studies must be conducted at a BSL-1 facility or higher. If a petri dish or culture container with unknown or BSL-2 microorganisms is opened, it becomes a BSL-2 study and may only be conducted at a BSL-2 facility. (FTQ if opened, subcultured, etc. in BSL-1 lab.) Most high school laboratories are BSL-1 facilities but it is possible that a high school could meet the more stringent requirements of a BSL-2 lab (see BSL-2 checklist). (Requires Form 6A and sometimes 6B.) BSL-3 or BSL-4 studies and studies designed to engineer bacteria with multiple antibiotic resistance are not permitted.

Procedures to minimize risk must be clearly indicated. rDNA studies require close review to ensure proper oversight. Proper disposal methods must be listed (autoclaving, 10% bleach solution/sodium hypochlorite, biosafety pick up, etc.).

Hazardous: Look for detailed descriptions of risks and safety precautions and procedures used including methods of disposal.

APPROVAL FORM (1B)

Dates: Signatures from student and parent should be before the start date shown on 1A.
Pre-approval #2a: Must be signed by SRC or IRB before experimentation begins (Start date on 1A) for human, animal, and PHBA studies but possible FTQ if no preapproval is documented.
Post-approval #2b: SRC signs after experimentation ends (end date on 1A) if the study was conducted at a RRI. Institutional approval forms must also be submitted. (Possible FTQ)
Note: Some fairs will have the fair SRC pre-review a study before it is done at an institution, even if it is approved before experimentation by the institution, and then will also post-approve after the study is complete. They will therefore sign both boxes. Usually, however, it is either pre- or post-approval, not both.
Final SRC Approval: This is signed after the project is complete (end date Form 1A) and immediately before competition.

REGULATED RESEARCH INSTITUTION FORM (1C)

The information provided by the scientist on this form must be consistent with what the student answered on other forms. It must not be filled out by the student. This form is posted so the judges can easily see exactly what the student did rather than what the mentor or others in the research group did. All information must be on the form not "see

attached." This form may only be from a university, college, or industrial site and may not be from their high school.

Checkboxes a) and b) help determine who did what and where.
Questions:
1. "Have you reviewed the rules" helps determine the amount of oversight and if an error was made in following the rules, if this an adult problem or a student problem or both.
2. "How did student get idea" helps determine originality by student.
3. "Was student part of a research group" indicates whether student worked with another high school student, which is only allowed for team projects not individual, or was part of a larger team of adult researchers, undergraduate or graduate students, which is allowed. Students are judged only on their own work, so it needs to be clear what part of the study was done by the entire group or the mentor and what was the student's work.
4-5. "What procedures" and "how independent" again help indicate what was actually done by the student.
Continuation: Frequently, the mentor will say "the student worked with me last year" or "in his previous research" or list dates of research which will indicate that the study must be treated as a continuation with Form 7, etc. It also could indicate that the study is too old, too long, or that the student is presenting multiple years of research.

This form is signed by the mentor AFTER the study is completed (End date on 1A).

QUALIFIED SCIENTIST FORM (2)

Look for answers that are consistent with the information on other forms. For example, if the scientist marks yes to 'used humans' but other human subject forms aren't present, will need to clarify. Any yes responses on #2 will require documentation on additional forms.

This form documents the amount of oversight that the student had and the safety precautions needed. The QS and DS review the study before the experiment begins. All approval signatures must be before research begins (Start date on 1A).

Even when not required, this form may be submitted to show the oversight of the study.

RISK ASSESSMENT FORM (3)

Documents that both the student and the supervisor have assessed the risks involved in the research and describes what safety precautions and procedures are needed including the disposal procedures. This form is completed before experimentation (start date on 1A).

This risk assessment is required for hazardous chemicals, activities, or devices, and for some PHBA's including protists, composting, coliform water test kits, decomposition of vertebrate organisms, etc.

Even when not required, this form may be submitted to show the oversight of the study.

HUMAN SUBJECTS FORM (4)

Make sure Form 4 is complete including decision checkmarks in the box and all 3 signatures. Missing checkmarks or signatures indicates no documentation of prior review and therefore could Fail to Qualify. All approval dates must be before research begins. (start date on 1A.)

Research Plan Refer to the research plan for subject information: any risk groups, recruitment, methods, risks and benefits, protection of privacy (HIPPA & FRPA), and

informed consent (participant knows what they are being asked to do, that they may withdraw, no coercion, etc).

Risk Level Is the level of risk marked appropriate? Was a risk assessment done? Should the study have written consent/permission/assent? Is the survey attached?

HUMAN INFORMED CONSENT FORM

Does the form clearly explain what the participant is being asked to do, how long it will take, the potential risks and steps that will be taken to mitigate risk, the benefits to the participant or to society, how confidentiality will be maintained, that it is completely voluntary and that they may withdraw at any time?

Adult participants sign giving their consent, minors give their assent, and parents of participants give permission. All approval signatures must be before research begins (start date on 1A).

VERTEBRATE ANIMAL FORM (5A)

Since these animals are not in a research institution, which would provide a high level of oversight, special attention must be paid to the housing and husbandry that will be provided by the student. The final disposition of the animals must also be appropriate. Any death, illness, or unexpected weight loss must have been investigated and documented by an attached letter from the QS, DS, or a veterinarian. If there were any deaths due to the experimental procedure, the project will Fail to Qualify.

All approval signatures must be before research begins (Start date on 1A). Capture and Release approvals must be attached when applicable.

VERTEBRATE ANIMAL FORM (5B)

Research which causes more than momentary pain or suffering is prohibited. Appropriate use of anesthetics, analgesics and/or tranquilizers must be documented. Any death, illness, or unexpected weight loss must have been investigated and documented by an attached letter from the QS, DS, or a veterinarian.

Euthanasia by student researchers is prohibited so the final disposition of the animals should also be indicated. If there were any deaths due to the experimental procedure, the project will Fail to Qualify.

If tissues were collected, how were they obtained and how will they be used?

The IACUC approval forms must be attached. They must clearly cover this study and must indicate that the study was approved before the start of the student research. Not all IACUC approval documentation will list the student individually, but the student research training must be indicated on the Form 5B. A letter from the QS or Principal Investigator indicating that the study had IACUC approval is not sufficient.

PHBA FORM (6A)

Identification, Including Biosafety Level (BSL) The source, quantity, and BSL must be indicated. A plant or non-primate established cell line will not require Form 6A but the student may fill out this form in order to document that it is from ATCC, etc. However, human and other primate established cell lines and tissue cultures require Form 6A.

Prohibited Studies BSL-3 or BSL-4 studies, and studies which are designed to engineer bacteria with multiple antibiotic resistance are not permitted. (FTQ)

Site Microorganisms may NOT be cultured at home. (FTQ) All BSL-1 studies must be conducted at a BSL-1 facility or higher. If a culturing plate with unknown microorganisms is opened, except for disinfection or disposal, it becomes a BSL-2 study and may only be conducted at a BSL-2 facility. FTQ if opened, subcultured, etc. in BSL-1 lab. Most high schools are BSL-1 facilities but it is possible that a high school could meet the more stringent requirements of a BSL-2 lab (see BSL-2 checklist).

Risk Reduction Procedures to minimize risk must be clearly indicated. rDNA studies require close review to ensure proper oversight.

Disposal Proper disposal methods must be listed: autoclaving, bleach solution, biosafety pick up, etc.

Approval Dates All approval signatures must be before research begins (start date on 1A.)

HUMAN AND VERTEBRATE ANIMAL TISSUE FORM (6B)

Students may conduct tissue studies with tissue they are given from an IACUC approved study within a research institution but the animal may not be euthanized solely for the student's tissue study. The first checkbox in the signature box indicates this.

The second checkbox in the signature box is marked to indicate that the substances were handled in accordance with the safety standards for Blood Borne Pathogens.

All approval signatures must be before research begins (start date on 1A).

CONTINUATION FORM (7) Previous Year's Abstract & Research Plan

This form is posted with the project so that the judges can tell at a glance exactly what was new and different about this year's study. All information must be on the form, not "see attached." Because research projects may only be one year's work, they will be judged on the current work only not on previous work, and this form is used to document current versus previous research. Previous Intel ISEF projects can be searched at https://apps2.societyforscience.org/AbstractSearch/Abstract/Index.

Frequently, students don't wish to call their project a continuation, but it is good research to continue a line of investigation even when the focus is now totally different. If the study is in the same field, if anything they learned in a previous year helped with the current study, or if the current study refers to any earlier research, then it is a continuation and Form 7 and previous abstract and research plan are required.

Repetition of a previous study that reflects no changes but simply retests or increases sample size is not permitted.

A longitudinal study, in which time is a critical variable, is permitted but the original data from previous years cannot be presented only the comparison between years.

The following are the forms and manuscripts to be submitted in all levels of the competitions:

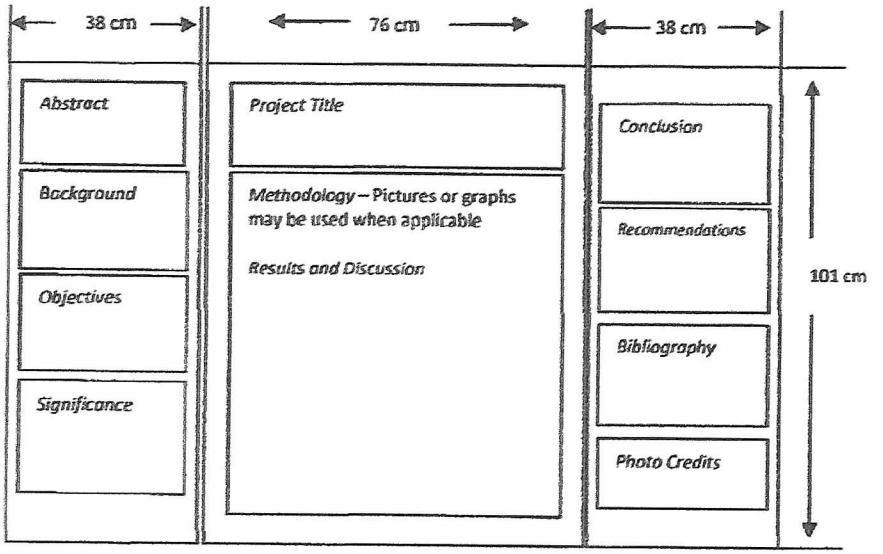
1. RESEARCH PLAN
2. FORMS for all projects
    A. Checklist for Adult Sponsor
    B. Student Checklist (1A)
    C. Research Plan (Note: No need to attach the Research Plan Instructions)
    D. Approval Form (1B)
    E. Regulated Research Institutional/Industrial Setting Form (1C)
3. FORMS depending on the type of research (e.g. involving humans, vertebrate animals, hazardous chemicals. etc.)
    A. Qualified Scientist Form (2)
    B. Risk Assessment Form (2)
    C. Human Participants Form (40)
    D. Human Informed Consent Form
    E. Vertebrate Animal Form (5A)
    F. Vertebrate Animal Form (5B)
    G. Potentially Hazardous Biological Agents Risk Assessment Form (6A)
    H. Human and Vertebrate Animal Tissue Form (6B)
    I. Continuation Project Form (7)
4. Abstract (Maximum of 250 words)
   The abstract should include the following :
    A. Purpose of the experiment
    B. Procedure
    C. Data conclusion
   The abstract may NOT include the following :
    A. Acknowledgement
    B. Work of procedures done by the mentor
5. Research Paper (Include the Title Page, Abstract, Main Body and References)
6. Project Evaluation Form (see Enclosure No. 8)
7. Scanned copy of the log book

Projects of proponents should have been screened by the Institutional Review Board (IRB/SRC) at the school level..

The Research Project

Ethics Statement. Scientific fraud and misconduct is not condoned at any level of research or competition. Plagiarism, use or presentation of other research's work as one's own and fabrication of data will not be tolerated. Fraudulent projects are disqualified from the competition.

5. The Exhibit



5.1 Display and Safety Regulations

The project display using **sets of any paper or board** summarizes the research project and must focus on the proponent's work for this year's study, and if applicable, with only minimal reference to previous research. Tarpaulins will **not** be used in the NSTF in support of the environmetal advocacy of the government in reducing the consumption of non-biodegradable or non-recyclable materials.

The safety regulations that must be adhered to should be consistent with the guidelines found on page 24 of the ISEF guidelines (http://www.societyforscience.org/isef/rulesandguidelines).

The following items should be seen in the project display: Abstract, Background, Objectives, Significance, Methodology, Results and Discussion, Conclusion,

Recommendations, Bibliography and if applicable, Photo Credits (including illustrations and graphics).

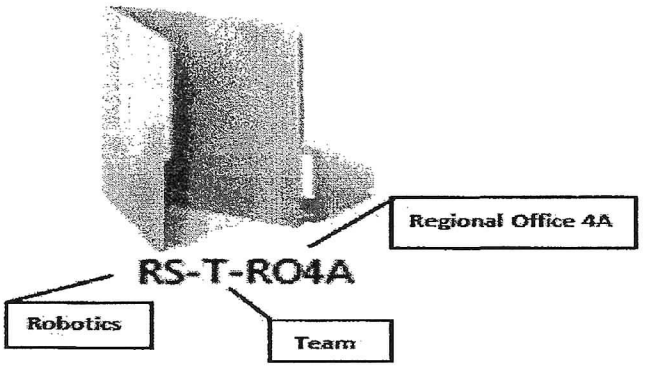
*Note that a proponent should **not** include his/her face in the project's procedure/illustration in the display.*

5.2 **Requirements for presentation by the Project Proponent/s to the BOJ during the exhibit are the following:**

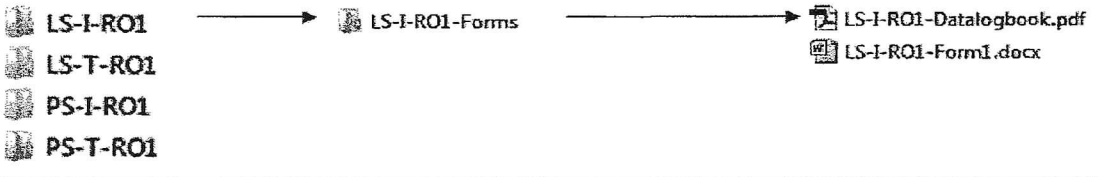
- Copy of the required forms
- Copy of the research write-up
- Project data book or student journal complete with dates of entry, number of pages, and all other details (Refer also at ISEF Student Handbook website: https://member.societyforscience.org/document.doc?id=632).

Sample Folder

Example:



Folder Code	Content of the Folder	Sample Content of the folder for Forms
LS-I-RO1 *life science-individual-region 1	Manuscript: **LS-I-RO1-School Name**	-
	Folder containing the needed forms: **LS-I-RO1-Forms** *name of the folder where all the soft copies of the necessary forms are found	**LS-I-RO1-Form1** **LS-I-RO1-Form 2** **LS-I-RO1-Logbook**



Enclosure No. 2, Division Memorandum No. ___

Scientific Review Committee (SRC)

Review & Recommendation Report

Project Title: _____

Fair Division: [ ] Life [ ] Physical/Applied **Category:** [ ] Individual [ ] Team

Instruction: Please put a check [✓] in the appropriate column and if necessary, write recommendations in the space provided.

PART 1. REQUIRED FORMS FOR ALL RESEARCHES	Complete	Incomplete	Recommendations
1. **Checklist for Adult Sponsor (1). Is it accomplished and signed?**			
2. **Student Checklist 1A. Is it accomplished and signed?**			
If answer to item 5 is **YES**, must also have Form 7 (See Part II, item 13 below)			
If answer to item 7 is **Research Institution** or **Other**, must also have Form IC (See Part II, item 6 below)			
3. **Research Plan** (Attachment to item 2, above). Does it include the following:			
A. **RATIONALE.** Does it include a brief synopsis of background that supports the research problem and explains why the research is important scientifically? If applicable, does it explain the societal impact of the research?			
B. **HYPOTHESIS(ES), RESEARCH QUESTION(S), ENGINEERING GOAL(S), EXPECTED OUTCOMES.** Is this based on RATIONALE?			
C. **RESEARCH METHODS AND CONCLUSIONS**			
a. Procedures. i. Does it show all procedures and experimental designs, including methods for data collection?			

ii. There should be NO inclusion of work of mentor or others. iii. Parameters should NOT be too strict to allow for possible changes			
b. Risk and Safety. Does it identify all potential risks and safety precautions needed?			
c. Data Analysis. i. Does it describe all procedures for data analysis? ii. Parameters should NOT be too strict to allow for possible changes			
D. **BIBLIOGRAPHY.** Does it have at least 5 major references? If using vertebrate animals, include 1 reference on animal care.			
Note: Items 3.E-H are needed ONLY for researches on HUMAN PARTICIPANTS, VERTEBRTE ANIMAL, POTENTIALLY HAZARDOUS BIOLOGICAL AGENTS (see attached Research Plan/Project Summary Instructions)			
E. HUMAN PARTICIPANTS RESEARCH. Does it provide for the following? a. Description b. Recruitment c. Methods d. Risk Assessment e. Protection of Privacy f. Informed Consent Process			
F. VERTEBRATE ANIMAL RESEARCH. Does it provide for the following? a. Potential ALTERNATIVES to vertebrate animal use b. Potential impact or contribution of research c. Detailed procedures d. Detail animal numbers, strain, sex , age, source, etc. e. Describe housing and oversight of daily care f. Disposition of animals at study termination			

G. POTENTIALLY HAZARDOUS BIOLOGICAL AGENTS RESEARCH. Does it provide for the following? a. Biosafety Level (BSL) Assessment and determination b. Source of agent, specific cell line. c. Safety precautions d. Methods of disposal			
H. HAZARDOUS CHEMICALS, ACTIVITIES and DEVICES. Does it provide for the following? a. Risk Assessment process and results b. Chemical concentrations and drug dosages c. Safety precautions and procedures to minimize risks d. Methods of disposal			
4. Approval Form 1B (for ALL students)			
5. Abstract			
VERY IMPORTANT 2: See Part II, Risk Assessment (3) for 1. Studies involving protists, archaea and similar microorganisms. 2. Research using manure for composting, fuel production, or other non-culturing experiments. 3. Commercially-available color change coliform water test kits. These kits must remain sealed and must be properly disposed. 4. Studies involving decomposition of vertebrate organisms (such as in forensic projects). 5. Studies with microbial fuel cells.			

PART 2: ADDITIONAL REQUIRED FORMS	Complete	Incomplete	Recommendations
6. Regulated Research Institutional or Industrial Setting Form (1C). Must be completed AFTER experimentation by the adult supervising the student research conducted in a regulated research institution or any work site aside from home, school or field. **Is it properly accomplished and signed by the DESIGNATED SUPERVISING ADULT?**			
7. Qualified Scientist Form (2) – for researches with human participants, vertebrate animals, potentially hazardous biological agents, Drug Enforcement Administration (DEA)-controlled substances; completed and signed BEFORE			

start of experimentation. **Is it properly accomplished and signed by the QUALIFIED SCIENTIST?**			
8. Risk Assessment Form (3) – for researches using hazardous chemicals, activities or devices and microorganisms exempt from pre-approval. Must be completed BEFORE experimentation. **Is it properly accomplished and signed by DESIGNATED SUPERVISING ADULT OR QUALIFIED SCIENTIST (when applicable)?**			
9. Human Participants Form (4) – for researches involving human participants not at a Regulated Research Institution. **Did the the DESIGNATED ADULT SUPERVISOR/ INSTITUTION approve the research BEFORE experimentation?**			
10. Vertebrate Animal Form (5A) – for researches involving vertebrate animals that is conducted in a school/home/field research site. **A. Is it properly accomplished, approved and signed by SRC BEFORE experimentation?** **B. Is it properly accomplished, approved and signed by DESIGNATED VETERINARIAN BEFORE experimentation?** **C. Is it properly accomplished, approved and signed by DESIGNATED SUPERVISOR OR QUALIFIED SCIENTIST (as applicable) BEFORE experimentation?**			
11. Vertebrate Animal Form (5B) – for researches involving vertebrate animals that is conducted at a Regulated Research Institution. **A. Does it have IACUC approval BEFORE experimantation?** **B. Is it properly accomplished, approved and signed by a QUALIFIED SCIENTIST/PRINCIPAL INVESTIGATOR?**			
12. Potentially Hazardous Biological Agents Risk Assessment Form (6A) – for researches involving microogranisms, rDNA, fresh/frozen tissue (including primary cell lines, human and			

other primate established cell lines and tissue cultures), blood, blood products and body fluids. **A. Does it have SRC/IACUC/Institutional Biosafety Committee (IBC) approval BEFORE experimentation?** **C. Is it properly accomplished, approved and signed by a QUALIFIED or DESIGNATED SUPERVISOR BEFORE experimentation?** **D. Is it properly accomplished, approved and signed by the SRC BEFORE experimentation?**			
E. Human Vertebrate Animal Tissue Form (6B) – for researches involving fresh/frozen tissue (including primary cell lines, human and other primate established cell lines and tissue cultures), blood, blood products and body fluids. If research involves living organisms, ensure that the proper human or animal forms are completed. All researches using any tissue listed above must also complete Form 6A. **Is it properly accomplished, approved and signed by a QUALIFIED or DESIGNATED SUPERVISOR BEFORE experimentation?**			
13. Continuation/Research Progression Projects Form (7) – for researches that are a continuation/progression in the same field of study as a previous research. **A. This form MUST be accompanied by the PREVIOUS YEAR'S ABSTRACT and RESEARCH PLAN** **B. Is it properly accomplished, approved and signed by the student/s?**			

PART 3: RESEARCH PAPER (See attached IMRAD Format)	Complete	Incomplete	Recommendations
1. COVER PAGE			

A. Is the research title present? B. Is/Are the name/s of the student proponent's present? C. Is/Are the appropriate persons credited? **(The Research adviser and Research Consultants, if applicable MUST be present)**			
2. INTRODUCTION. Does it outline the research question and its significance within the topic discussed, making its relevance clear to readers in a CONCISE manner?			
3. METHOD. Does it clearly and comprehensively provide the reader with a description of the methods used in the research?			
4. RESULTS. Does itclearly and comprehensively SHOW the reader what the research came up with? This should be the MAIN section of the paper.			
5. DISCUSSION. Does this show what the findings in RESULTS mean?			
6. LIMITATIONS ON THE RESEARCH DESIGN AND MATERIAL. Does this show knowledge and understanding of research limitations?			
7. CONCLUSION, NOTES, WORKS CITED AND APPENDICES/BIBLIOGRAPHY A. Does the conclusion briefly and clearly analyze what the paper proposed, discussed and concluded? B. Is there in (MLA format) possible Researcher Notes, the research paper's Works Cited and possible appendices?			

PART 4: RESEARCH ABSTRACT (MAX. 250 WORDS)	Complete	Incomplete	Recommendations
1. Does it clearly and concisely state the PURPOSE OF THE RESEARCH?			
2. Does it clearly and concisely state the PROCEDURE/S undertaken in the RESEARCH			
3. Does it clearly and concisely state the DATA COLLECTED from the RESEARCH?			
4. Does it clearly and concisely state the CONCLUSIONS OF THE RESEARCH?			

VERY IMPORTANT: There should be NONE of the following: a. Acknowledgements of the research institutions and/or mentors with which the student were working b. Self-promotions and external endorsements c. Inclusion of work or procedures done by the mentor			

PART 5: RESEARCH LOGBOOK	Complete	Incomplete	Recommendations
1. Is the logbook intact and not tampered with? It should NOT be loose-leafed.			
2. Does the START DATE in the logbook match the START DATE in Student Checklist (1A)?			
3. Does the END DATE in the logbook match the END DATE in Student Checklist (1A)?			
4. Are all the entries in the logbook properly dated?			
5. Does the logbook show accurate and detailed notes and findings throughout the course of the research? Does it include data tables, and the like?			
6. Does the logbook show accurate and detailed description of procedures and processes conducted in the course of the research?			
7. Does the logbook show student notes and questions in the course of the research?			

[ ] Review Complete [ ] Review Incomplete Prepared by: _____ Date: _____

Enclosure No. 3, Division Memorandum No. ___

Board of Judges (BOJ)

Project Evaluation Form

Title of Research Project: _____

Project Proponent/s: _____

School: _____

Project Category: ( ) Life Science ( ) Physical Science

( ) Team ( ) Individual

Category	Score
1. **Creative Ability** (30) 1. Does the project show creative ability and originality in the: a. questions asked? b. approach to solving the problem? c. analysis of the data? d. interpretation of the data? e. use of equipment? f. construction or design of new equipment 2. Creative research should support an investigation and help answer a question in an original way. 3. A creative contribution promotes an efficient and reliable method for solving a problem. When evaluating project, it is important to distinguish between gadgeteering and ingenuity.	
2. **a. Scientific Thought** (30) (If an engineering project, please see 2b. Engineering Goals.) 1. Is the problems stated clearly and unambiguously? 2. Was the problem sufficiently limited to allow plausible attack? Good scientists can identify important problems capable of solutions. 3. Was there a procedural plan for obtaining a solution? 4. Are the variable clearly recognized and defined? 5. If controls were necessary, did the student recognize their need and were they used correctly? 6. Are there adequate data to support the conclusions? 7. Does the finalist/team recognize the data's limitations? 8. Does the finalist/team understand the project's ties to related research? 9. Does the finalist/team have an idea of what further research is warranted? 10. Did the finalist/team cite scientific literature, or only popular literature (e.g. local newspapers, magazines)?	

b. Engineering Goals 1. Does the project have a clear objective? 2. Is the objective relevant to the potential user's needs? 3. Is the solution: workable? Acceptable to the potential user? Economically feasible? 4. Could the solution be utilized successfully in design or construction of an end product? 5. Is the solution a significant improvement over previous alternatives or application? 6. Has the solution been tested for performances under the conditions of use?	
3. Thoroughness (15) 1. Was the purpose carried out to completion within the scope of the original intent? 2. How completely was the problem covered? 3. Are the conclusions based on a single experiment or replication? 4. How complete are the project notes? 5. Is the finalist/team aware of other approaches or theories? 6. How much time did the finalist or team spend on the project? 7. Is the finalist/team familiar with scientific literature in the studied field? 8. Are the relevant details *(including the pages and dates)* of the experiment recorded in the research data logbook?	
4. **Skill** (15) 1. Does the finalist/team have the required laboratory, computation, observational and design skills to obtain the supporting data? 2. Where was the project performed (i.e. home, school laboratory, university laboratory) Did the student or team receive assistance from parents, teachers, scientists or engineers? 3. Was the project completed under adult supervision, or did the student/team work largely alone? 4. Where did the equipment come from? Was it built independently by the finalist or team? Was it obtained on loan? Was it part of a laboratory where the finalist/team worked?	
5. Clarity (10) 1. How clearly does the finalist or team discuss his/her/their project and explain the purpose, procedure, and conclusions? Watch out for memorized speeches that reflect little understanding of principles. 2. Does the written material reflect the finalist's or team's understanding of the research? 3. Are the important phases of the project presented in an orderly manner? 4. How clearly is the data presented? 5. How clearly are the results presented? 6. How well does the project display explain the project? 7. Was the presentation done in a forthright manner, without tricks or gadgets? 8. Did the finalist/team perform all the project work, or did someone help?	
TOTAL	
Signature over printed name of the members of the board of judges	