

Student Checklist (1A)

This form is required for ALL projects.

1. a. Student/Team Leader: Mackenzie English Grade: 12
Email: mackenzie.e.english@gmail.com Phone: 937-667-3217
b. Team Member: _____ c. Team Member: _____
2. Title of Project:
An Evaluation of Spray Foam Insulation When Used to Stabilize Paleontological Specimens During Excavation
3. School: Tippecanoe High School School Phone: 937-667-8448
School Address: 615 E. Kessler-Cowlesville Rd.
Tipp City, OH 45371
4. Adult Sponsor: Mike McCray Phone/Email: info@ohiouvmsd.com
5. Does this project need pre-approval? Yes No Tentative start date: 09/03/05
6. Is this a continuation/progression from a previous year? Yes No
If Yes:
a. Attach the previous year's Abstract **and** Research Plan
b. Explain how this project is new and different from previous years on Continuation/Research Progression Form (7)
7. This year's laboratory experiment/data collection:
09/03/05 02/03/06
Actual Start Date: (mm/dd/yy) End Date: (mm/dd/yy)
8. Where will you conduct your experimentation? (check all that apply)
 Research Institution School Field Home Other: _____
9. List name and address of all non-school work site(s):
- | | |
|------------------------------------|----------------------------|
| Name: <u>Rosburg Mastodon Site</u> | <u>Tartan Farms</u> |
| Address: <u>N. St.Rt. 118</u> | <u>700 E. Shoop Rd.</u> |
| <u>Rosburg, OH 45362</u> | <u>Tipp City, OH 45371</u> |
| Phone: _____ | <u>937-667-3217</u> |
10. **Complete a Research Plan/Project Summary following the Research Plan instructions and attach to this form.**
11. **An abstract is required for all projects after experimentation.**

Research Plan and Post Project Summary Instructions

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

1. The Research Plan is a succinct detailing of the rationale, research question(s), methodology, and risk assessment of your research project and should be completed before experimentation. For all projects requiring preapproval, this document must be reviewed and approved by the appropriate approval committee (e.g. IRB, IACUC, SRC) before experimentation. ALL changes made to the original plan should be added to the final document as part of the Post Project Summary. For projects not requiring preapproval, this document may be completed either pre- or post-experimentation.
2. All projects should complete a Post Project Summary after experimentation.

The Research Plan and Post Project Summary should include the following::

- a. What is the **RATIONALE** for your project? Include a brief synopsis of the background that supports your research problem and explain why this research is important scientifically and if applicable, explain any societal impact of your research.
- b. State your **HYPOTHESIS(ES), RESEARCH QUESTION(S), ENGINEERING GOAL(S), EXPECTED OUTCOMES**. How is this based on the rationale described above?
- c. Describe the following in detail:
 - **Procedures:** Detail all procedures and experimental design including methods for data collection. Describe only your project. Do not include work done by mentor or others.
 - **Risk and Safety:** Identify any potential risks and safety precautions needed.
 - **Data Analysis:** Describe the procedures you will use to analyze the data/results that answer research questions or hypotheses.
 - **Discussion of Results and Conclusions:** Discuss the data/results and the conclusions that can be drawn.
- 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.

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

1. Human participants research:

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

2. Vertebrate animal research:

- Briefly discuss potential **ALTERNATIVES** to vertebrate animal use and present a detailed justification for use of vertebrate animals
- Explain potential impact or contribution this research may have
- Detail all procedures to be used
 - ◊ Include methods used to minimize potential discomfort, distress, pain and injury to the animals during the course of experimentation
 - ◊ Detailed chemical concentrations and drug dosages
- Detail animal numbers, species, strain, sex, age, source, etc.
 - ◊ Include justification of the numbers planned for the research
- Describe housing and oversight of daily care
- Discuss disposition of the animals at the termination of the study

3. Potentially hazardous biological agents research:

- Describe Biosafety Level Assessment process and resultant BSL determination
- Give source of agent, source of specific cell line, etc.
- Detail safety precautions
- Discuss methods of disposal

4. Hazardous chemicals, activities & devices:

- Describe Risk Assessment process and results
- Detail chemical concentrations and drug dosages
- Describe safety precautions and procedures to minimize risk
- Discuss methods of disposal

Approval Form (1B)

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

1. To Be Completed by Student and Parent

a. Student Acknowledgment:

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

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

Mackenzie English

08/29/05

Student's Printed Name

Signature

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

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

Jennifer English

08/29/05

Parent/Guardian's Printed Name

Signature

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

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

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

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

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

SRC/IRB Chair's Printed Name

08/30/05

Signature

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

OR

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

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

SRC Chair's Printed Name

Signature

Date of Approval (mm/dd/yy)

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

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

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

Regional SRC Chair's Printed Name

Signature

Date of Approval

State/National SRC Chair's Printed Name
(where applicable)

Signature

Date of Approval

Qualified Scientist Form (2)

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

Student's Name(s) Mackenzie English

Title of Project An Evaluation of Spray Foam Insulation When Used to Stabilize Paleontological Specimens During Excavation

To be completed by the Qualified Scientist:

Scientist Name: Scott Etherington

Educational Background: Construction Contractor Degree(s): _____

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

30 years working directly with structural insulation materials, including those chosen for this project.

Owner/Contractor _____

Scott Construction Co.

Position: _____

Institution: _____

6810 Tipp-Cowlesville Rd., Tipp City

937-667-6499

Address: _____

Email/Phone: _____

- 1) Have you reviewed the Intel ISEF rules relevant to this project? Yes No
2. Will any of the following be used?
- a. Human participants Yes No
- b. Vertebrate animals Yes No
- c. Potentially hazardous biological agents (microorganisms, rDNA and tissues, including blood and blood products) Yes No
- d. DEA-controlled substances Yes No
3. Was this study a sub-set of a larger study? Yes No
4. Will you directly supervise the student? Yes No
- a. If no, who will directly supervise and serve as the Designated Supervisor? _____
- b. Experience/Training of the Designated Supervisor: _____

To be completed by the Qualified Scientist:

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

Scott Etherington

Qualified Scientist's Printed Name

Signature

08/29/05

Date of Approval

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

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

Designated Supervisor's Printed Name

Signature

Date of Approval

Phone

Email

Human Participants Form (4)

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

Mackenzie English	An Evaluation of Spray Foam Insulation When Used to Stabilize Paleontological Specimens During Excavation
Student's Name(s) Mike McCray	Title of Project info@ohioumvsd.com
Adult Sponsor Contact	Phone/Email
Must be completed by Student Researcher(s) in collaboration with the Adult Sponsor/Designated Supervisor/Qualified Scientist:	
1. <input type="checkbox"/> I have submitted my Research Plan which addresses ALL areas indicated in the Human Participants Section of the Research Plan Instructions.	
2. <input type="checkbox"/> I have attached any surveys or questionnaires I will be using in my project or other documents provided to human participants. <input type="checkbox"/> Any published instrument(s) used was /were legally obtained.	
3. <input type="checkbox"/> I have attached an informed consent that I would use if required by the IRB.	
4. <input type="checkbox"/> Yes <input type="checkbox"/> No Are you working with a Qualified Scientist? If yes, attach the Qualified Scientist Form 2.	

BELOW — IRB USE ONLY

Must be completed by Institutional Review Board (IRB) after review of the research plan. All questions must be answered for the approval to be valid. (If not approved, return paperwork to the student with instructions for modifications.)

Approved with Full Committee Review (3 signatures required) and the following conditions: (All 5 must be answered)

1. Risk Level (check one): Minimal Risk More than Minimal Risk
2. Qualified Scientist (QS) Required: Yes No
3. Designated Supervisor (DS) Required: Yes No
4. Written Minor Assent required for minor participants:
 - Yes No Not applicable (No minors in this study)
5. Written Parental Permission required for minor participants:
 - Yes No Not applicable (No minors in this study)
6. Written Informed Consent required for participants 18 years or older:
 - Yes No Not applicable (No participants 18 yrs or older in this study)

Approved with Expedited Review (1 signature required). Study involves either of the following:

- Human participants will only provide feedback on project design/student-designed invention or prototype. etc., no personal data will be collected and there are no health or safety hazards.
- Student is the only subject of the research and no more than minimal risk is involved.

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

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

Medical or Mental Health Professional (a psychologist, medical doctor, licensed social worker, licensed clinical professional counselor, physician's assistant, or registered nurse)

Printed Name	Degree/Professional License
Signature	Date of Approval (Must be prior to experimentation.)
Educator	
Printed Name	Degree
Signature	Date of Approval (Must be prior to experimentation.)
School Administrator	
Printed Name	Degree/Professional License
Signature	Date of Approval (Must be prior to experimentation.)

Human Informed Consent Form

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

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

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

Student Researcher(s): Mackenzie English
Title of Project: An Evaluation of Spray Foam Insulation When Used to Stabilize Paleontological Specimens During Excavation

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

Purpose of the project:

If you participate, you will be asked to:

Time required for participation:

Potential Risks of Study:

Benefits:

How confidentiality will be maintained:

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

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

Voluntary Participation:

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

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

Adult Informed Consent or Minor Assent Date Reviewed & Signed: _____

Research Participant Printed Name: _____ Signature: _____

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

Parent/Guardian Printed Name: _____ Signature: _____

Vertebrate Animal Form (5A)

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

Student's Name(s) Mackenzie English

Title of Project An Evaluation of Spray Foam Insulation When Used to Stabilize Paleontological Specimens During Excavation

To be completed by Student Researcher:

1. Common name (or Genus, species) and number of animals used.
2. Describe completely the housing and husbandry to be provided. Include the cage/pen size, number of animals per cage, environment, bedding, type of food, frequency of food and water, how often animal is observed, etc. Add an additional page as necessary.
3. What will happen to the animals after experimentation?
4. Attach a copy of wildlife licenses or approval forms, as applicable
5. The Intel ISEF Vertebrate Animal Rules require that any death, illness or unexpected weight loss be investigated and documented by a letter from the qualified scientist, designated supervisor or a veterinarian. If applicable, attach this letter with this form when submitting your paperwork to the SRC prior to competition.

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

Level of Supervision Required for agricultural, behavioral or nutritional studies:

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

The SRC has carefully reviewed this study and finds it is an appropriate study that may be conducted in a non-regulated research site.

Local or Affiliate Fair SRC Pre-Approval Signature:

SRC Chair Printed Name

Signature

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

To be completed by Veterinarian:

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

Printed Name

Email/Phone

Signature

Date of Approval

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

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

Printed Name

Email/Phone

Signature

Date of Approval

Vertebrate Animal Form (5B)

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

Student's Name(s) Mackenzie English

Title of Project An Evaluation of Spray Foam Insulation When Used to Stabilize Paleontological Specimens During Excavation

Title and Protocol Number of IACUC Approved Project _____

To be completed by Qualified Scientist or Principal Investigator:

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

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

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

4. Did the student's project also involve the use of tissues?

- No
- Yes; complete Forms 6A and 6B

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

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

Qualified Scientist/Principal Investigator

Printed Name

Signature

Date

Potentially Hazardous Biological Agents Risk Assessment Form (6A)

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

Student's Name(s) Mackenzie English

Title of Project An Evaluation of Spray Foam Insulation When Used to Stabilize Paleontological Specimens During Excavation

To be completed by Student Researcher(s) in collaboration with Qualified Scientist/Designated Supervisor:

(All questions are applicable and must be answered; additional page(s) may be attached.)

1. Identify potentially hazardous biological agents to be used in this experiment. Include the source, quantity and the biosafety level risk group of each microorganism.
2. Describe the site of experimentation including the level of biological containment.
3. Describe the procedures that will be used to minimize risk (personal protective equip., hood type, etc.).
4. What final biosafety level do you recommend for this project given the risk assessment you conducted?
5. Describe the method of disposal of all cultured materials and other potentially hazardous biological agents.

To be completed by Qualified Scientist or Designated Supervisor

1. What training will the student receive for this project?
2. Do you concur with the biosafety information and recommendation provided by the student researcher above?
 Yes No If no, please explain.
3. Experience/training of Designated Supervisor as it relates to the student's area of research (if applicable)

QS/DS Printed Name

Signature

Date of Signature (mm/dd/yy)

To be completed by Local or Affiliate Fair SRC: (Check all that apply.)

- The SRC has carefully studied this project's Research Plan and the risk level assessment above **prior to experimentation** and approves this study as a BSL-1 study, which must be conducted at a BSL-1 or above laboratory.
Date of SRC approval (prior to experimentation) _____
- The SRC has carefully studied this project's Research Plan and the risk level assessment above **prior to experimentation** and approves this study as a BSL-2 study, which must be conducted at a BSL-2 or above laboratory.
Date of SRC approval (prior to experimentation) _____
- This project was conducted at a Research Institution and was reviewed and approved by the appropriate institutional board (e.g. IACUC, IBC) before experimentation at a BSL-1 or BSL-2 laboratory and complies with the Intel ISEF rules. The required institutional forms are attached.
Date of SRC approval (after experimentation) _____
- The Research Institution where this study was conducted does not require approval for this type of study. Attached is institutional documentation certifying the above. The student has received proper training and the project complies with Intel ISEF rules.
Date of SRC approval _____

SRC Chair's Printed Name

Signature

Human and Vertebrate Animal Tissue Form (6B)

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

Student's Name(s) Mackenzie English

Title of Project An Evaluation of Spray Foam Insulation When Used to Stabilize Paleontological Specimens During Excavation

To be completed by Student Researcher(s):

1. What vertebrate animal tissue will be used in this study? Check all that apply.
 - Fresh or frozen tissue sample
 - Fresh organ or other body part
 - Blood
 - Body fluids
 - Primary cell/tissue cultures
 - Human or other primate established cell lines
2. Where will the above tissue(s) be obtained. If using an established cell line include source and catalog number.
3. If the tissue will be obtained from a vertebrate animal study conducted at a research institution attach a copy of the IACUC certification with the name of the research institution, the title of the study, the IACUC approval number and date of IACUC approval.

To be completed by the Qualified Scientist or Designated Supervisor:

- I verify that the student will work solely with organs, tissues, cultures or cells that will be supplied to him/her by myself or qualified personnel from the laboratory; and that if vertebrate animals were euthanized they were euthanized for a purpose other than the student's research.
- AND/OR**
- I certify that the blood, blood products, tissues or body fluids in this project will be handled in accordance with the standards and guidance set forth in Occupational Safety and Health Act, 29CFR, Subpart Z, 1910.1030 - Blood Borne Pathogens.

Printed Name

Signature

Date of Approval
(Must be prior to experimentation.)

Title

Phone/Email

Institution

Continuation/Research Progression Projects Form (7)

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

Student's Name(s) Mackenzie English

To be completed by Student Researcher:

List all components of the current project that make it new and different from previous research. The information must be on the form; use an additional form for 2014–2015 and earlier projects.

Components	Current Research Project	Previous Research Project
1. Title	An Evaluation of Spray Foam Insulation When Used to Stabilize Paleontological Specimens During Excavation	2014–2015 2013–2014
2. Change in goal/purpose/objective		2014–2015 2013–2014
3. Changes in methodology		2014–2015 2013–2014
4. Variables studied		2014–2015 2013–2014
5. Additional changes		2014–2015 2013–2014

Attached are:

2014–2015 Abstract and Research Plan

2013–2014 Abstract

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

Mackenzie English

Student's Printed Name(s)

Signature

Date of Signature