

BEST Medicine Engineering Fair March 10, 2018

Student Application

Visit our website at www.uakron.edu/bestmedicine/

Dear Student,

Congratulations on all your hard work on your engineering fair project and the excellence you have achieved to get to this point. We wish you continued success as you begin this next stage of competition.

In order to participate in BEST Medicine you must register online and submit the student application via ground mail. The following checklist will help guide you through the process.

Due to the costs of Xeroxing, your teacher may not have given you an entire copy of the BEST Medicine Handbook and Rules and Regulations Packet, but if you like, it can be downloaded from our website at www.uakron.edu/bestmedicine/.

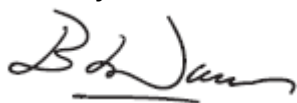
If you need more information or assistance, you can seek help from one of the following resources:

1. your teacher and/or advisor
2. the BEST Medicine Handbook/Rules and Regulations
3. the BEST Medicine website
4. the people at The University of Akron by contacting Brian Davis, Ph.D. at 330-972-6977, bdavis3@uakron.edu, or bestmedicine@uakron.edu.

If you are participating in The 64th Annual Northeastern Ohio Science and Engineering Fair (NEOSEF) or The Western Reserve District 5 Science Day (WRD5 Science Day) you may submit a copy of those forms in place of BEST Medicine Application Forms. However, you still must register online and you must submit a signed Consent and Release Agreement Form 10.

The University of Akron is excited to see you at our upcoming BEST Medicine Engineering Fair on Saturday, March 10th at the NIHF STEM Middle School located at 199 S. Broadway St. in Akron, Ohio. We are looking forward to an outstanding event where (i) patiento focused innovation is a common theme, and (ii) every participant walks away as a winner

Thank you,



Dr. Brian Davis

Directions

Please read carefully

Understanding the rules and guidelines, and properly completing all of the paperwork is an important and necessary part of completing your BEST Medicine project. You may download the 2018 BEST Medicine Student Handbook and Rules and Regulations Packet at www.uakron.edu/bestmedicine/ for all of the guidelines you will need to follow to compete in BEST Medicine. If you are participating in The 64th Annual Northeastern Ohio Science and Engineering Fair (NEOSEF) or The Western Reserve District 5 Science Day (W-D5 Science Day) you may submit a copy of those forms in place of BEST Medicine Application Forms. However, you still must register online and you must submit a signed Consent and Release Agreement Form 10.

1. Visit our website at www.uakron.edu/bestmedicine/ to register online. Complete the online registration by **February 9, 2018**.
2. Complete this Student Application and send via ground mail to The University of Akron by **February 9, 2018**. Applications must be postmarked by February 9, 2018. **(No late entries will be accepted.)**

Department of Biomedical Engineering
The University of Akron
Auburn Science and Engineering Center, West Tower
Room 275
Akron, OH 44325-0302
Attn: BEST Medicine Application

If you are an individual student applying you must complete the following:

1. Required Forms Checklist
2. Student Information (1A)
3. Forms (1B-1E)
4. Approval Form (Form 1)
5. Adult Sponsor Form (Form 9)
6. Consent and Release Agreement (Form 10)

If you are on a team:

Each TEAM must jointly submit the following:

1. Required Forms Checklist
2. Team Information (Form 13)
3. Forms (1B-1E)
4. Adult Sponsor Form (Form 9)

Each TEAM MEMBER must submit the following **individually**:

1. Approval Form (1)
2. Consent and Release Agreement (10)

If applicable, submit Forms 2-8, 11, and/or 12.

Please type or print in blue or black ink the requested information.

Contact: bestmedicine@uakron.edu

Required Forms Checklist

School: _____

Student Name: _____

- INDIVIDUAL Application
- TEAM Application

Return this **checklist along with all required forms** postmarked by **February 9, 2018** to:

Department of Biomedical Engineering
The University of Akron
Auburn Science and Engineering Center, West Tower Room 275
Akron, OH 44325-0302
Attn: BEST Medicine Application

***Registrations WILL NOT BE ACCEPTED without ALL REQUIRED, COMPLETED forms**

**NOTE: for pre-selected projects (you MUST have a letter from the Chair)
all forms are required**

The following forms are REQUIRED with every application:

- Required Forms Checklist
- Student Information (Form 1A) **OR** Team Information (Form 13)
- Abstract (Form 1B)
- Human Subjects Form (Form 1C)
- Animal Subjects Form (Form 1D)
- Microorganisms Form (Form 1E)
- Approval Form (Form 1)
- Adult Sponsor Form (Form 9)
- Consent and Release Agreement (Form 10)

Required if applicable to project:

- Regulated Research Institutional/Industrial Setting Form (Form 2)
- Qualified Scientist Form (Form 3)
- Vertebrate Animal Form (Form 4)
- Vertebrate Animal Form (Form 5)
- Continuation Projects Form (Form 6)
- Human Subject Consent Form (Form 7)
- Human and/or Animal Tissue Form (Form 8)
- Risk Assessment Form (Form 11)
- Potentially Hazardous Biological Agents Risk Assessment Form (Form 12)

Instructions for Research Plan

(not required for application)

A research plan for projects is to include the following:

- A. **Question or Problem being addressed**
- B. **Hypothesis/Engineering Goals**
- 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 you will use to analyze the data that answer the research question or hypothesis
- 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.
 - Choose one style and use it consistently to reference the literature used in the research plan

Items 1-4 below are guidelines to be followed when applicable:

1. **Human subjects research:**
 - **Subjects** – Describe who will participate in your study (age range, gender, racial/ethnic composition). Identify any vulnerable population (minors, pregnant women, prisoners, mentally disabled or economically disadvantaged).
 - **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?
 - **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 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** 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
 - a) Include methods used to minimize potential discomfort, distress, pain and injury to the animals during the course of experimentation
 - b) Detail chemical concentrations and drug dosages
- Detail animal numbers, species, strain, sex, age, 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:**

- 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

Student Information (1A)

(NEOSEF Information Page will suffice)

Section 1. Student Information

(Please note: your age and gender will only be used to compile a demographic summary of fair participants once the fair is completed.)

Student Name: _____ Grade: _____ Gender: _____

Student E-Mail: _____

Phone: _____

Section 2. School Information

School: _____ Teacher: _____

E-Mail: _____ Phone: _____

Did your school host an engineering/science fair? Yes No

Did you participate in your school's engineering/science fair? Yes No

Section 3. Project Information

Project Category and Grade Level (*circle ONLY ONE in each section*)

Project Category	Grade Level
Biomaterials/Polymer Medicine	6
Cardiovascular/Soft Tissue Wound Healing	7
Clinical Trials	8
Health/Medicine	9
Medical Devices	10
Modeling/Simulation/Medical IT	11
Musculoskeletal	12
Sensors/Imaging	
Value-driven Engineering	
	* Categories may be changed or added by the Chair to benefit the student(s).

Title of Project _____

Is your engineering fair project a continuation from a previous year's project? Yes No

Instructions for Abstract

This must be completed for each project

An abstract of 250 words or less is required and must be submitted with applications for the engineering fair. The abstract must contain a heading that includes a project title and name(s) of the author(s). The heading does not contribute to the word count. The purpose of an abstract is to provide a summary of the project that will inform interested individuals of the contents. The wording must be written in a manner that any scientifically minded individual, who may not be familiar with the topic, can quickly understand the project's important points. Summarize in a few sentences:

1. Background information necessary to understand the project and its importance
2. The problem that was investigated and the hypothesis or goal
3. Outline of the materials and methods used in the actual experimentation
4. Summary of the results obtained from experimentation
5. The conclusions drawn from results
6. The importance or potential applications that the research offers

Do not be concerned with including all of the details in the abstract. The key point to remember when writing an abstract is to keep the wording brief and concise. Use complete sentences. Avoid personal pronouns like "I" and "My." Abstracts should provide only information essential to understand the project's basic points and importance. Omit needless words, especially adjectives and adverbs that have no statistical reference or validity.

SAMPLE ABSTRACT

A Novel Method for Determining Screw Locations during Shoulder Surgery
Stu. D. Finder

People who suffer from shoulder injuries or painful arthritis often have to undergo shoulder surgery to replace the damaged cartilage or bone. Sometimes the surgeons need to screw implants into the bone. It is important for the surgeon to put screws in a place where the screws will not loosen. Ideally this would be in a place where the bone is the thickest.

This project uses a principle that a modified stud finder can locate a hidden bone ridge just like a carpenter who finds a stud hidden behind dry wall. To show that this concept could be successful a larger wooden model of the shoulder joint was made. A commercial stud finder was needed because it provided the electronic circuit for detecting studs. The stud finder's internal sensor was modified to match the curve of the wooden model of the shoulder joint. Voltages were measured at many places across the shoulder cavity. A decrease in voltage of 60% (compared to adjacent bone regions) showed that a hidden bone ridge could be found. These results suggests that a cheap method for locating studs in walls may also work for placing screws in a shoulder joint during surgery. If a medical device is designed using this principle, the problem of incorrectly placing screws during shoulder surgery could be overcome.

Abstract (1B)
Required by all applicants

Abstract (of 250 words or less):

Human Subject (1C)

This form must be completed by all applicants. Answer the questions as appropriate in each section. If your research did not involve the topic matter of that section, you must still answer "No" to the first question in that section.

Student Name: _____ School: _____

Title of Project: _____

Section 1: Did your project involve human subjects?

Yes	No	Did your project involve the study of any human subject (including observational studies or questionnaires)?
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If you checked "NO", STOP HERE and go to SECTION 2.

If you checked "YES", continue to answer the questions in this section.

In order to determine if any additional paperwork needs to be completed, please read the following statements and check only those that apply to your project:

- A) My project was a purely observational study. That is, I only watched my test subjects and did not ask them to do anything for the benefit of my experiments. The lives of my test subjects were not altered or interrupted in any way by my presence.
- B) My test subjects were given a questionnaire to complete for my project that did not contain any socially sensitive subject matter (examples of socially sensitive areas: sexual preference, abuse, etc.).
- C) My test subjects were asked to participate in my project in a manner other than mentioned in A and B above, but nothing physical was done to my test subjects. For example, my test subjects were NOT asked to:
 - a. Eat or drink anything (including water)
 - b. Take medication
 - c. Perform any degree of exercise
 - d. Alter their normal sleep patterns
 - e. Provide any tissue or fluid samples (examples: skin cells, blood, saliva, etc.)

Types of projects that fall into this category include those where test subjects listen to music; play non-violent or non-exercise video games; view images or objects; etc.

- D) My experiments using human subjects are not described in options A, B or C.

If you checked A, B or C above, you do not need any additional paperwork!

If you checked D above, you are required to obtain consent from your test subjects (Human Subject Consent to Research Form 7).

Section 2: Did your project involve human tissue or fluid samples?

Yes	No	Did your project use any tissue or fluid samples (examples: blood, urine, etc.) from human beings? If you used teeth, nails or hair, please check the "No" box.
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If you checked "NO", STOP HERE.

If you checked "YES", you must complete the Human and/or Animal Tissue Form 8.

If you have any questions about a project using human subjects or human tissue, please contact Carin A. Helfer, Ph.D. at 330-972-6104 or at bestmedicine@uakron.edu.

Animal Subject (1D)

This form must be completed by all applicants. Answer the questions as appropriate in each section. If your research did not involve the topic matter of that section, you must still answer "No" to the first question in that section.

Student Name: _____ School: _____

Title of Project: _____

Section 1: Did your project involve animal subjects?

Yes	No	Did your project involve the study of any animal subject (including observational studies)?
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If you checked "NO", STOP HERE and go to SECTION 2.

If you checked "YES", continue to answer the questions in this section.

In order to determine if any additional paperwork needs to be completed, please read the following statements and check only those that apply to your project:

- A) My project was a purely observational study. That is, I only watched the animals and did not have them do anything for the benefit of my experiment. The lives of the animals were not altered or interrupted in any way by my presence.
- B) My project involved my household pet and my experiments did not cause the pet to deviate from a lifestyle considered to be normal for the species, and resulted in no harm.
- C) My experiments using animals are not described in option A or B.

If you checked A or B, you do not need any additional paperwork!

If you checked C above, you must complete the Vertebrate Animal Form (FORM 4 or 5).

Section 2: Did your project involve animal tissue or fluid samples?

Yes	No	Did use vertebrate animal tissue or fluid samples (examples: blood, urine, etc.) in your experiments?
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If you checked "NO", STOP HERE.

If you checked "YES", continue to answer the questions in this section.

To assess if additional paperwork is needed, read the following statements and check only the ones that apply to your project:

- A) My project used items from animals that were purchased in a grocery store, such as meat, eggs, milk, etc.
- B) My project used teeth, fur clippings, or nails.
- C) My project used animal hide that was not skinned from an animal specifically for my use.
- D) My experiments with animal tissue are fluid samples and not described in options A, B or C.

If you checked A, B or C above, you do not need any additional paperwork!

If you checked D above, you must complete the Human and/or Animal Tissue Form 8.

Microorganisms (1E)

This form must be completed by all applicants. Answer the questions as appropriate in each section. If your research did not involve the topic matter of that section, you must still answer "No" to the first question in that section.

Student Name: _____ School: _____

Title of Project: _____

Section 1: Did your project involve any microorganisms, such as bacteria, mold or viruses?

Yes	No	Did you grow or test commercially available microorganisms (bacteria, mold or viruses)?
Yes	No	Did you grow or test samples taken from a person (examples: hands, saliva, etc.), your household (examples: door knobs, cheese, bread, etc.), or your environment (examples: water, dirt, etc.) that you believed could possibly be contaminated with microorganisms?
If you checked "NO", STOP HERE and go to SECTION 2.		
If you checked "YES", continue to answer the questions in this section.		

Microorganisms are no longer allowed to be cultured in the home. You must grow microorganisms at an institution under proper supervision. Please indicate the type of microorganism that was used in your project (if it was grown from a sample taken from the environment, indicate the type as unknown), the institution/facility that was used to culture the microorganism and who supervised the experiment.

Bacteria Mold Virus Type: _____

Institution: _____

Supervisor Name: _____ Supervisor Signature: _____

Section 2: Did your project involve any of the following potential hazards?

*(Circle all of the following hazards that were used in your project. If a hazard is not found in the list below, please circle **others** and enter a brief description.)*

NO HAZARDS	Controlled Substances *	Dangerous Machinery	Fire
Fire Arms/Explosives	Flammable Liquids	Radioactivity/Radiation *	Strong Acids
Toxic Chemicals	Weapons/Knives	Others _____	

If you checked "NO HAZARDS", **STOP HERE** and go to SECTION 3.

If your project used any of the above hazards that are indicated by an asterisk (*), you must complete the Qualified Scientist/Engineer Form 3 and the Regulated Research Institutional/Industrial Setting Form 2. For all other hazards, provide a description of the hazard, and the name and signature of the person that supervised your work.

Description of Hazard: _____

Supervisor Name: _____ Supervisor Signature: _____

Section 3: Did you do your research in a setting other than your home or school?

Yes	No	Did you perform your research in a medical or research institution, a university, or at an industrial facility (aside from your home or school)?
If you checked "YES" you must complete the Regulated Research Institutional/Industrial Setting Form 2.		

Approval Form (1)

(NEOSEF Approval Form 1B will suffice)

(You may need to print this form multiple times for each team member)

To be completed by each Student and Parent

Student Acknowledgement:

- I understand the risks and possible dangers to me in conducting my research.
- I have read the BEST Medicine Rules and Regulations and will adhere to all 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 or the BEST Medicine Engineering Fair.*
- I certify that I/we were the only student(s) involved in the design and execution of this project.

Student Printed Name

Signature

Date

Parent/Guardian Approval:

- I consent to my child participating in this research and I have understood the risks and possible dangers to my child while conducting his/her research.
- I have consented to my child's participation in this project and in BEST Medicine.
- I am also aware that my child may be photographed by BEST Medicine and/or the news media during the event.

Parent/Guardian Printed Name

Signature

Date

If you object to your child being featured in a photograph or by the news media, please initial:_____

Checklist for Teacher or Adult Sponsor (9)

This completed form is required for ALL projects prior to experimentation
(NEOSEF Checklist for Adult Sponsor Form 1 and Student Checklist Form 1A will suffice)

To be completed by the Adult Sponsor in collaboration with the student researcher:

Student Name: _____ School: _____

Title of Project: _____

- 1) I have reviewed the BEST Medicine Rules and Regulations and assume reasonable responsibility for the student's compliance.
- 2) I have reviewed the student's completed Student Information (1A). I have read/understand the student's research plan and we have discussed the possible risks and dangers to the student researcher prior to experimentation.
- 3) The project involves one or more of the following and requires prior approval by an SRC, IRB, IACUC or IBC:
Humans Potentially Hazardous Biological Agents
Vertebrate Animals Microorganisms rDNA Tissues
- 4) Forms to be completed for ALL Projects:
Regulated Research Institutional/Industrial Setting Form (2) (when applicable)
Adults Sponsor Checklist (9) Continuation Form (6) (when applicable)
Forms (1A-1E) Approval Form (1)
- 5) **Additional forms required if the project includes the use of one or more of the following** (check all that apply):
 - Humans** (Requires prior approval by an Institutional Review Board (IRB))
 - Human Subjects Form (1C)
 - Qualified Scientist Form (3) (if applicable and/or required by the IRB)
 - Vertebrate Animals** (Requires prior approval)
 - Vertebrate Animal Form (4) – for projects conducted in a non-regulated research site (SRC prior approval required)
 - Vertebrate Animal Form (5) – for projects conducted at a Regulated Research Institution.
 - Qualified Scientist Form (3) – required for all vertebrate animal projects at a regulated research site or when applicable
 - Potentially Hazardous Biological Agents** (Requires prior approval by SRC, IACUC or IBC).
 - Potentially Hazardous Biological Agents Risk Assessment Form (12)
 - Human and Animal Tissue Form (8) – to be completed in addition to Form 12 when project involves the use of fresh or frozen tissue, primary cell cultures, blood, blood products and body fluids
 - Qualified Scientist Form (3) (when applicable)
 - Risk Assessment Form (11) required for projects involving protists, archae and similar microorganisms and for projects using manure for composting, fuel production or other non-culturing experiments (12, 8 and 3 are not required)
 - Hazardous Chemicals, Activities and Devices** (No prior approval required)
 - Risk Assessment Form (11)
 - Qualified Scientist Form (3) (required for projects involving DEA-controlled substances or when applicable)

Adult Sponsor's Printed Name

Signature

Date of Review
(Must be prior to experimentation)

Phone

Email

BEST Medicine Engineering Fair (10)

Consent and Release Agreement

This form is MANDATORY for all participants

In consideration of the right and opportunity of the undersigned to attend and participate in the BEST Medicine Engineering Fair, the undersigned for him/herself and for his/her heirs and legal representatives hereby:

1. Fully and forever releases The University of Akron (herein referred to as UA), and all of its past, present, and future affiliates, officers, directors, trustees, judges, peer-reviewers, committee members, employees, attorneys, agents, successors and assigns, and each of them, from any and all claims, damages, and causes of action whatsoever kind or nature resulting from or relating to the undersigned's involvement, participation in or attendance at the activity, program or event;
2. Authorizes UA and any of its agents to provide, obtain, or designate any reasonable medical treatment and/or emergency medical treatment in the event of illness, injury, accident or incapacity of the undersigned;
3. Agrees to abide by all regulations and rules established by UA;
4. Agrees to indemnify UA against, and to save it harmless from, any and all damages, actions, causes of action, claims, judgments, executions, debts, costs of litigation and attorney fees which may in any way arise out of, or result from, the use by the undersigned of the property and facilities owned, used, or rented by UA;
5. Grants to UA, and its successors, assigns, agents, grantees, and licensees, the right to take and reproduce writings, photographs, films, and voice recordings of the Undersigned while the undersigned participates in the program, and to use the same and the undersigned's name and any past, current, or future biographical information submitted to UA for any and all purposes and in any manner, including commercial publications and advertisements of all kinds in all media;
6. This Consent and Release Agreement contains the entire agreement and understanding between and among the parties as to the subject matter hereof, and shall be binding upon the undersigned and the undersigned's heirs, administrators, executors, and assigns.

I have read and understand each of the above paragraphs. I understand that by signing this Consent and Release Agreement, I give up valuable rights.

Signature of Participant: _____ Date _____

Printed Name: _____

Phone: _____ Email: _____

The following is required for minors: In consideration of the services and facilities provided by the UA, I, parents and/or guardian of the above Participant, a minor, hereby give my express consent to the execution of this Consent and Release Agreement and that I assume all liability and obligations of Participant as set forth in said paragraphs.

Signature of Parent/Legal Guardian: _____ Date _____

Printed Name: _____

Phone: _____ Email: _____

Regulated Research Institutional/Industrial Setting Form (2)

This form must be completed after experimentation by the adult supervising the student research conducted in a regulated research institution, industrial setting or any work site other than home, school or field.

(NEOSEF Regulated Research Institutional/Industrial Setting Form 1C will suffice)

This form MUST be displayed with your project; Responses must be on the form

Student Name: _____ School: _____

Title of Project: _____

To be completed by the Supervising Adult in the Setting (NOT the Student) after experimentation:

(Responses must remain on the form as it is required to be displayed at student's project booth)

1. The student conducted research at my work site (circle):
a) to use the equipment b) to perform experiment(s)/conduct research
2. How did the student get the idea for her/his project?
(e.g. was the project assigned, picked from a list, an original student idea, etc.)
3. Have you reviewed the BEST Medicine Rules relevant to this project? Yes No
4. Did the student work on the project as a part of a research group? Yes No
If yes, how large was the group and what kind of research group was it (students, group of adult researchers, etc.)
5. What specific procedures or equipment did the student actually use for the project?
Please list and describe. (Do not list procedures student **only** observed.)
6. How independent or creative was the student's work?

Student research projects dealing with human subjects, vertebrate animals or potentially hazardous biological agents require review and approval by an institutional regulatory board (Institutional Review Board (IRB), Institutional Animal Care and Use Committee (IACUC) /Institutional Biosafety Committee (IBC)).

Supervising Adult Name

Signature

Title

Institution

Date signed

Address

Email/phone

Qualified Scientist Form (3)

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

(NEOSEF Qualified Scientist Form 2 will suffice)

Student Name: _____ School: _____

Title of Project: _____

To be completed by the Qualified Scientist:

Scientist Name: _____

Educational Background: _____ Degree: _____

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

Position: _____ Institution: _____

Address: _____ Email/phone: _____

- | | | |
|---|-----|----|
| 1) Have you reviewed the BEST Medicine rules relevant to this project? | Yes | No |
| 2) Will any of the following be used? | | |
| a) Human subjects | Yes | No |
| b) Vertebrate animals | Yes | No |
| c) Potentially hazardous biological agents (microorganisms, rDNA and tissues, including blood & Blood products) | Yes | No |
| d) DEA-classed substances | Yes | No |
| 3) 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: _____ | | |
| 4) Describe the safety precautions and training necessary for this project:
_____ | | |

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 technique 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.

Qualified Scientist's Printed Name

Signature

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

Vertebrate Animal Form (4)

**Required for all research involving vertebrate animals that is conducted in a Non-Regulated Research site (SRC approval required before experimentation).
(NEOSEF Vertebrate Animal Form 5A will suffice)**

Student Name: _____ School: _____

Title of Project: _____

To be completed by Student Researcher:

1. Common name (or Genus, species) and number of animals used.

2. Describe completely the housing and husbandry to be provided. Include the cage/pen size, number of animals per cage, environment, bedding, type of food, frequency of food and water, how often animal is observed, etc.

3. What will happen to the animals after experimentation?

To be completed by 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 person sign below.
- Veterinarian, Designated Supervisor and Qualified Scientist REQUIRED. Please have applicable persons sign below and have the Qualified Scientist complete Form (3).

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

SRC Pre-Approval Signature:

_____	_____	_____
SRC Chair Printed Name	Signature	Date of Approval (Must be prior to experimentation)

<p>To be completed by Veterinarian:</p> <p><input type="checkbox"/> I certify that I have reviewed this research and animal husbandry with the student before the start of experimentation.</p> <p><input type="checkbox"/> I certify that I will provide veterinary medical and nursing care in case of illness or emergency.</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center;">_____</td> <td style="width: 50%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Printed Name</td> <td style="text-align: center;">Email/Phone</td> </tr> <tr> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Signature</td> <td style="text-align: center;">Date of Approval (Must be prior to experimentation)</td> </tr> </table>	_____	_____	Printed Name	Email/Phone	_____	_____	Signature	Date of Approval (Must be prior to experimentation)	<p>To be completed by Designated Supervisor:</p> <p><input type="checkbox"/> I certify that 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.</p> <p><input type="checkbox"/> I certify that I will directly supervise the experiment.</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center;">_____</td> <td style="width: 50%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Printed Name</td> <td style="text-align: center;">Email/Phone</td> </tr> <tr> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Signature</td> <td style="text-align: center;">Date of Approval (Must be prior to experimentation)</td> </tr> </table>	_____	_____	Printed Name	Email/Phone	_____	_____	Signature	Date of Approval (Must be prior to experimentation)
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Printed Name	Email/Phone																
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Signature	Date of Approval (Must be prior to experimentation)																

Vertebrate Animal Form (5)

Required for all research involving vertebrate animals that is conducted at a Regulated Research site (Institutional Animal Care and Use Committee (IACUC) approval required before experimentation). (NEOSEF Vertebrate Animal Form 5B will suffice)

Student Name: _____ School: _____

Title of Project: _____

Title and Protocol Number of IACUC Approved Project: _____

To be completed by Qualified Scientist or Principal Investigator:

1. Was this a student-generated idea or was it a subset of your work? _____

2. Have you reviewed the BEST Medicine Rules relevant to this project? _____

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

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

5. USDA Pain Category designated for this study: _____

6. Describe, in detail, the role of the student in this project: procedures and equipment that they used, oversight provided, and safety precautions employed. (Attach extra pages if necessary)

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

Certification or Documentation of Student Researcher Training		
_____	_____	
List Certificate Number or Attach Documentation	Date(s) of Training	
_____	_____	_____
Qualified Scientist/Principal Investigator Printed Name	Signature	Date
_____	_____	_____
IACUC Chair/Coordinator Printed Name	Signature	Date
_____	_____	_____

Continuation Projects Form (6)

Required for projects that are a continuation in the same field of study as a previous project.
(NEOSEF Continuation/Research Progression Projects Form 7 will suffice)

Student Name: _____ School: _____

Title of Project: _____

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.

	Current Year	Previous Year
Title		
Line of investigation/ central theme of research		
Objectives		
Variables studied		
Additional changes		

Attached are:

Current Abstract (1B)

Previous Abstract (list year)

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

Student Printed Name

Signature

Date

Human Subject Consent to Research Form (7)
(NEOSEF Human Participants Form 4 and Human Informed Consent Form will suffice)

Student Name: _____ School: _____

Title of Project: _____

INSTRUCTIONS: If consent is required for your project, please have each test subject in your study complete this form after the top section has been completed. However, only submit one completed consent form with your application to BEST Medicine to demonstrate that consent was obtained from your test subjects. Bring the rest of the consent forms with you to the fair to be placed with your display board.

Provide a brief description of the experimental procedure(s) your test subjects will be performing to assist you with your fair

Human Subject Consent

- I, _____ (name of test subject), or my parents if I am under 18 years of age, understand that the student named above is conducting an experiment for the purposes of an engineering fair project. The student has asked me to be a test subject in this experiment.
- The student has explained the risks of participating in this study and I voluntarily consent to participate in the study (or, my parents' consent to have me participate in the study if I am under 18 years of age).
- I realize that I can withdraw from this study at any time and there will be no negative consequences.
- I give the student named above permission to use photographs or videotapes of me in describing the project.

Test Subject Name: _____ Test Subject Age: _____

Test Subject Signature (if over 18 years of age):

Test Subject Signature

Date

Parent/Guardian Signature (if test subject under 18 years of age):

Parent/Guardian Signature

Date

Human and/or Animal Tissue Form (8)

(NEOSEF Human and Vertebrate Animal Tissue Form 6B will suffice)

INSTRUCTIONS: If you checked “Yes” in Section 2 on Form 1C, or checked box “D” in Section 2 on Form 1D, you are required to complete the appropriate section on this form. In some instances, you may need to submit supporting documentation with this form. See directions below for more details.

Student Name: _____ School: _____

Title of Project: _____

In your engineering fair project, did you experiment on:

Human Tissue/Fluid

Animal Tissue/Fluid

Both



If you used human or animal tissue fluid, please complete the respective section below. If you used human and animal tissue/fluid, please fill out both sections. Research done at an institution, requires Form 3 – Qualified Scientist and/or Regulated Research/Industrial Setting Form 2 and in some cases you may need to provide institutional documentation with your application permitting the use of these samples for your project.

Section 1. Human Tissue/Fluid Samples

1. What type of tissue or fluid samples did you use in the project?
2. Where did you get the samples?
3. Explain what you did with the tissue/fluid samples. Try to be brief, just listing the procedures.
4. Who supervised you while working with these samples? _____
5. What are the qualifications of the person you named in #4 above? _____

Section 2. Animal Tissue/Fluid Samples

1. What type of tissue or fluid samples did you use in the project?
2. Where did you get the samples?
3. Explain what you did with the tissue/fluid samples. Try to be brief, just listing the procedures.
4. Who supervised you while working with these samples? _____
5. What are the qualifications of the person you named in #4 above? _____

Risk Assessment Form (11)

Required for projects using hazardous chemicals, activities, or devices.
Must be completed before experimentation.
(NEOSEF Risk Assessment Form 3 will suffice)

Student Name: _____ School: _____

Title of Project: _____

To be completed by the Student Researcher in collaboration with Designated Supervisor/Qualified Scientist: (All questions must be answered; additional page(s) may be attached.)

1. List/identify the hazardous chemicals, activities, devices, or microorganisms that will be used.
2. Identify and assess the risks involved.
3. Describe the safety precautions and procedures that will be used to reduce the risks.
4. Describe the disposal procedures that will be used (when applicable).
5. List the source(s) of safety information.

To be completed and signed by the Designated Supervisor (or Qualified Scientist, when applicable): I agree with the risk assessment and safety precautions and procedures described above. I certify that I have reviewed the **Research Plan** and will provide direct supervision.

Supervisor's Printed Name

Signature

Date

(must be prior to experimentation)

Position & Institution

Email/Phone

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

Potentially Hazardous Biological Agents Risk Assessment Form (12)
Required for all research involving microorganisms, rDNA, fresh/frozen tissue, blood, and body.
SRC/IACUC/IBC approval required before experimentation.
(NEOSEF Potentially Hazardous Biological Agents Risk Assessment Form 6A will suffice)

Student Name: _____ School: _____

Title of Project: _____

To be completed by Student Researcher 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 method of disposal of all cultured materials and other potentially hazardous biological agents.

4. Describe the procedure that will be used to minimize risk. (personal protective equip., hood type, etc.)

5. What final biosafety level do you recommend for this project given the risk assessment you conducted?

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

<p>To be completed by SRC prior to experimentation:</p> <p>The SRC has carefully studied this project's Research Plan and the risk level assessment above and approves this study as a BSL-1 study, which must be conducted at a BSL-1 or above Laboratory.</p> <p>The SRC has carefully studied this project's Research Plan and the risk level assessment above and approves this study as a BSL-2 study, which must be conducted at a BSL-2 or above laboratory.</p> <p>_____</p> <p>SRC Chair's Printed Name</p> <p>_____ Signature Date of Approval</p> <p align="center">(Must be prior to experimentation)</p>	<p>To be completed by SRC after experimentation with Institutional pre-approval:</p> <p>This project 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 BEST Medicine rules. The required institutional forms are attached. The institution does require approval for this type of study. The student has received proper training. Attached is a letter from an institutional representative certifying the above.</p> <p>_____</p> <p>SRC Chair's Printed Name</p> <p>_____ Signature Date of Approval</p>
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Team Information (13)

One form for each team must be submitted

Section 1. Team Leader Information *(Please note: your age and grade will only be used to compile a demographic summary of fair participants once the fair is completed.)*

Student Name (Team Leader): _____ Grade: _____ Gender: _____

Student E-Mail (Team Leader): _____ Phone: _____

The team leader is responsible for communicating any and **all important information** regarding BEST Medicine to the rest of the team and is responsible for **completing the online registration** for themselves and on behalf of their team members.

Section 2. Team Members *(Please note: your age and grade will only be used to compile a demographic summary of fair participants once the fair is completed.)*

Student Name (Team Member 2): _____ Grade: _____ Gender: _____

Student E-Mail (Team Member 2): _____ Phone: _____

Student Name (Team Member 3): _____ Grade: _____ Gender: _____

Student E-Mail (Team Member 3): _____ Phone: _____

Student Name (Team Member 4): _____ Grade: _____ Gender: _____

Student E-Mail (Team Member 4): _____ Phone: _____

Section 3. School Information

School: _____ Teacher: _____

Teacher E-Mail: _____ Phone: _____

Did your school host an engineering/science fair? Yes No

Did you participate in your school's engineering/science fair? Yes No

Project Category (Circle ONLY ONE in each column)	Grade Level
Biomaterials/Polymer Medicine	6
Cardiovascular/Soft Tissue Wound Healing	7
Clinical Trials	8
Health/Medicine	9
Medical Devices	10
Modeling/Simulation/Medical IT	11
Musculoskeletal	12
Sensors/Imaging	* Categories may be changed or added by the Chair to benefit the student(s).
Value-driven Engineering	

Title of Project _____

Is your engineering fair project a continuation from a previous year's project? Yes No