

Thank you for expressing interest in participating in BEST Medicine. In order to conduct an experiment and participate in the fair, all students must adhere to the rules and regulations mentioned below. These rules are meant to ensure the safety of all participants, research subjects, and spectators. All projects will be inspected for adherence to these rules on set-up day at the fair and any projects with violations must be corrected in order for the student to compete.

Rules and Regulations

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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 researchers' work as one's own, or fabrication of data. Fraudulent projects will fail to qualify for competition in BEST Medicine fairs.

Eligibility/Limitations

1. Each school fair may send the number of projects provided by their school agreement.
2. A student must have participated in their school fair in grades 6-12 or equivalent to be eligible, none of whom has reached age 21 on or before K 1.
3. Each student may enter only **one** project which covers research done over a maximum of 12 continuous months between January 201 and April 201 .
4. Students may compete in only one school fair.
5. Team projects may have a maximum of three members. Teams may not have more than three members at a local fair, and eliminate members at regionals.
6. There is a broad range of categories in which students can complete BEST Medicine projects. A list of the categories and subcategories with definitions can be found at: www.abiakron.org/bestmedicine
7. A research project may be a part of a larger study done by professional scientists, but the project presented by the student must only be their portion of the complete study.

Requirements

GENERAL

1. All students competing in BEST Medicine must adhere to all of the rules as set forth in this document.
2. All projects must adhere to the Ethics Statement above.

Direct questions to: BEST@abiakron.org or Rita Filer at 330-572-7553
BEST Medicine Engineer Fair, 2012

3. Projects must adhere to local, state, country and U.S. Federal laws, regulations and permitting conditions.
4. The use of non-animal research methods and the use of alternatives to animal research are strongly encouraged and must be explored before conducting a vertebrate animal project.
5. Introduction or disposal of non-native species, pathogens, toxic chemicals or foreign substances into the environment is prohibited. See: www.anstaskforce.gov/Documents/ISEF.pdf
6. BEST Medicine exhibits must adhere to BEST Medicine display and safety requirements.

APPROVAL AND DOCUMENTATION

1. Every student must complete the **Student Checklist Form (1A)**, the **Research Plan and Approval Form (1)** and review the project with the Adult Sponsor as the **Checklist for Adult Sponsor Form (9)** is completed.
2. After initial approval (if required), any proposed changes in the **Student Information Form (1A)** and **Research Plan (pg. 19)** must be re-approved before laboratory experimentation/data collection resumes.
3. Projects which are continuations of previous years' work, and which require IRB/SRC approval must be reapproved prior to experimentation/data collection for the current year.
4. Any continuing project must document that the additional research is new and different. See **Continuation Projects Form (6)**.
5. If work was conducted in a regulated research institution, industrial setting or any work site other than home, school or field at any time during the current BEST Medicine project year, the **Regulated Research Institutional/Industrial Setting Form (2)** must be completed and displayed at the project booth.
6. After experimentation, each student or team must submit a (maximum) 250-word, one-page abstract which summarizes the current year's work. The abstract must describe research conducted by the student, not by adult supervisors. See instructions for the abstract in the BEST Medicine Handbook.
7. A project data book and research paper is required.
8. All signed forms, certifications, and permits must be available for review by 7

Continuation of Projects

1. Any project based on the student's prior research could be considered a continuation project. If the current year's project could not have been done without what was learned from past years' research, then it is a continuation project for competition. These projects must document that the additional research is an expansion from prior work (for example, testing a new variable or new line of investigation, etc.) Repetitions of previous experimentation with the exact same methodology and research question, or increasing sample size are examples of unacceptable continuations.
2. Display boards and abstracts must reflect the current year's work only. The project title displayed in the Finalist's booth may mention years (for example, "Year Two of an Ongoing Study"). Supporting data books (not research papers) from previous related research may be exhibited on the table, properly labeled as such.
3. Longitudinal studies are permitted as an acceptable continuation under the following conditions:
 - a. The study is a multi-year study testing or documenting the same variables in which time is a critical variable. (Examples: Effect of high rain or drought on soil in a given basin, return of flora and fauna in a burned area over time.)
 - b. Each consecutive year must demonstrate time-based change.
 - c. The display board must be based on collective past conclusionary data and its comparison to the current year data set. No raw data from previous years may be displayed.
4. All continuation projects must be reviewed and approved each year and forms must be completed for the New Year.

NOTE: For competition in BEST Medicine, documentation must include the **Continuation Project Form (6)**, the **previous year's abstract and research plan** and abstracts for all other prior years. The documentation should be clearly labeled in the upper right hand corner with the year (ex: 2008-2009). Please retain all prior years' paperwork.

Team Projects

1. At BEST Medicine, team projects compete within the scientific category of their research and will not be a separately judged category.
2. Teams may have up to three members. **NOTE:** Teams may not have more than three members at a local fair, and eliminate members to qualify for regionals.
3. Team membership cannot be changed during a given research year, including conversion from an individual project or vice versa. However, team membership *may* be altered in subsequent years.
4. Each team should appoint a team leader to coordinate the work and act as spokesperson. However, each member of the team should be able to serve as spokesperson, be fully involved with the project, and be familiar with all aspects of the project. The final work should reflect the coordinated efforts of all team members, and will be evaluated using similar rules and judging criteria as individual projects.
5. Each team member must submit an **Approval Form (1)**. However, team members must jointly submit the **Checklist for Adult Sponsor (9)**, one **abstract**, a **Student Information Form (1A)**, a **Research Plan (pg. 19)** and other required forms.
6. Full names of all team members must appear on the abstract and forms.

Project Set-Up

Maximum Display Size:

Depth (front to back): 30 inches or 76 centimeters

Width (side to side): 48 inches or 122 centimeters

Height (floor to top): 108 inches or 274 centimeters

At BEST Medicine, fair-provided tables will not exceed a height of 36 inches (91 centimeters). Maximum project sizes include all project materials, supports, and demonstrations for the public and for judges. If a table is used, it becomes part of the project and must not itself exceed the allowed dimensions nor may the table, plus any part of the project exceed the allowed dimensions.

At BEST Medicine, any project with a component that will be demonstrated by the Finalist must be demonstrated only within the confines of the Finalist's booth. When not being demonstrated, the component plus the project must not exceed allowed dimensions.

Only students may set up the exhibit. No parents, teachers, siblings, etc. are permitted in the Exhibit Halls during set-up. (If the student is unable to set up his/her project, contact BEST Medicine to make other arrangements prior to the day of the event.)

The display must be set up in its entirety, and inspected and approved by BEST Medicine Officials before the student may leave. Students may not add additional material to their display after inspection without permission from a BEST Medicine Official.

While the Exhibit Hall is relatively secure, there is public access to the event. BEST Medicine recommends that you avoid bringing expensive equipment, such as computers, microscopes, calculators, etc.

Required to Be Visible and Vertically Displayed at BEST Medicine

- Originals of official abstract and certification as approved by the BEST Medicine Committee
- Completed BEST Medicine Project Set-up Approval Form (Received on-site at the fair)
- **Continuation Projects Form (6)** — when applicable
- Photograph / image credits

Display Rules/Regulations

We recommended that you take pictures or draw schematics of important steps/results that you wish to convey to the judges. You may bring packaging from non-permitted items, but all packages must be empty. We also suggest using artificial items to substitute for items not permitted in the fair (for example, artificial plants or food).

Not Allowed at Project or in Booth

1. Living organisms, including plants
2. Taxidermy specimens or parts
3. Preserved vertebrate or invertebrate animals
4. Human or animal food
5. Human/animal parts or body fluids (for example, blood or urine)
6. Plant materials (living, dead, or preserved) that are in their raw, unprocessed, or non-manufactured state (Exception: manufactured construction materials used in building the project or display)
7. All chemicals including water (Exceptions: water integral to an enclosed, sealed apparatus.)
8. All hazardous substances or devices [for example poisons, drugs, firearms, weapons, ammunition, reloading devices, or lasers (as indicated in item 5 in the section of these rules entitled “Allowed at project or in Booth BUT with the Restrictions Indicated”)]
9. Dry ice or other sublimating solids
10. Sharp items (for example syringes, needles, pipettes, or knives)
11. Flames or highly flammable materials
12. Batteries with open-top cells
13. **Awards, medals, business cards, flags, logos, endorsements, and/or acknowledgments** (graphic or written) unless the item(s) are an integral part of the project.
14. Photographs or other visual presentations depicting vertebrate animals in surgical techniques, dissections, necropsies, or other lab procedures
15. Active Internet or e-mail connections as part of displaying or operating the project at BEST Medicine
16. Prior years’ written material or visual depictions on the vertical display board. [Exception: the project title displayed in the Finalist’s booth may mention years or which year the project is (for example, “Year Two of an Ongoing Study”)]. Continuation projects must have the **Continuation Project Form (6)** vertically displayed.
17. Glass or glass objects unless deemed by the Display and Safety Committee to be an integral and necessary part of the project (Exception: glass that is an integral part of a commercial product such as a computer screen)

18. Any apparatus deemed unsafe by the Scientific Review Committee, the Display and Safety Committee, or Society for Science & the Public (for example large vacuum tubes or dangerous ray-generating devices, empty tanks that previously contained combustible liquids or gases, pressurized tanks, etc.)

Allowed at Project or in Booth BUT with the Restrictions Indicated

1. Soil, sand, rock, and/or waste samples **if permanently encased in a slab of acrylic**
2. Postal addresses, World Wide Web and e-mail addresses, telephone and fax numbers **of Finalist only**
3. Photographs and/or visual depictions if:
 - a. They are not deemed offensive or inappropriate by the Scientific Review Committee, the Display and Safety Committee, or Society for Science & the Public. This includes, but is not limited to, visually offensive photographs or visual depictions of invertebrate or vertebrate animals, including humans. The decision by any one of the groups mentioned above is final.
 - b. They have credit lines of origin ("Photograph taken by..." or "Image taken from..."). (If all photographs being displayed were taken by the Finalist or are from the same source, one credit line prominently and vertically displayed is sufficient.)
 - c. They are from the Internet, magazines, newspapers, journals, etc., and credit lines are attached. (If all photographs/images are from the same source, one credit prominently and vertically displayed is sufficient.)
 - d. They are photographs or visual depictions of the Finalist.
 - e. They are photographs of human subjects for which signed consent forms are at the project or in the booth.
4. Any apparatus with unshielded belts, pulleys, chains, or moving parts with tension or pinch points **if for display only and not operated.**
5. Any demonstration for judges or the public must be performed within the maximum size of the project permitted, an area 30"(Depth) by 48"(Width) by 108" (Height)
6. Class II lasers **if**:
 - a. The output energy is <1 mW and is operated only by the Finalist
 - b. Operated only during the Display and Safety inspection and during judging
 - c. Labeled with a sign reading "**Laser Radiation: Do Not Look into Beam**"
 - d. Enclosed in protective housing that prevents physical and visual access to beam
 - e. Disconnected when not operating

Note: Class II lasers are found in laser pointers and in aiming and range-finding devices. They pose a risk if the beam is directly viewed over a long period of time.

7. Class III and IV lasers **if for display only and not operated** (See the description of Class III and Class IV lasers in the Radiation section of the Hazardous Chemicals, Activities, or Devices, in the BEST Medicine Handbook.
8. Any apparatus producing temperatures that will cause physical burns **if adequately insulated**

The only items that may be displayed on the front of the provided tables are the ones listed in the section of these rules entitled "Required to be Visible and Vertically Displayed at the BEST Medicine Fair"

Electrical Regulations at BEST Medicine

1. Participants are welcome and encouraged to bring their laptops and other technology as it is needed for their project.
2. Finalists requiring 120 or 220 Volt A.C. electrical circuits must provide a **UL-listed 3-wire extension cord** which is appropriate for the load and equipment.
3. Electrical power supplied to projects and, therefore, the maximums allowed for projects is **120 or 220 Volt, A.C., single phase, 60 cycle**. Maximum circuit amperage/wattage available is determined by the electrical circuit capacities of the exhibit hall and may be adjusted on-site by the Display and Safety Committee. For all electrical regulations, "**120 Volt A.C.**" or "**220 Volt A.C.**" is intended to encompass the corresponding range of voltage as supplied by the facility in which BEST is held.
4. All electrical work must conform to the National Electrical Code or Exhibit Hall regulations. The guidelines presented here are general ones, and other rules may apply to specific configurations. The on-site electrician may review electrical work on any project.
5. All electrical connectors, wiring, switches, extension cords, fuses, etc. must be **UL-listed** and must be appropriate for the load and equipment. Connections must be soldered or made with **UL-listed** connectors. Wiring, switches, and metal parts must have adequate insulation and over-current safety devices (such as fuses) and must be inaccessible to anyone other than the Finalist. Exposed electrical equipment or metal that possibly may be energized must be shielded with a non-conducting material or with a grounded metal box to prevent accidental contact.
6. Wiring **not** part of a commercially available **UL-listed** appliance or piece of equipment must have a clearly visible fuse or circuit breaker on the supply side of the power source.
7. There must be an accessible, clearly visible on/off switch or other means of disconnect from the **120 or 220 Volt** power source.
8. Any lighting that generates considerable and excessive amounts of heat (high-intensity lamps, halogen lights, etc.) must be turned off when the Finalist is not present.

Other BEST Medicine Information and Requirements

1. *Finalists must be present at their projects for the Display and Safety inspection. The inspection is a process that takes place between the Finalist and inspector; therefore, no other persons should be present representing the Finalist except for an interpreter if necessary.*
2. No changes, modifications, or additions to projects may be made after approval by the Display and Safety Committee and the Scientific Review Committee.
3. Society for Science & the Public, the Scientific Review Committee, and/or the Display and Safety Committee reserve the right to remove any project for safety reasons or to protect the integrity of BEST Medicine and its rules and regulations.
4. A project data book and research paper is required.
5. *Display of photographs other than that of the Finalist must have a photo release signed by the subject, and if under 18 years of age, also by the guardian of the subject. Sample consent text: "I consent to the use of visual images (photos, videos, etc.) involving my participation/my child's participation in this research."*
6. Finalists using audio-visual or multi-media presentations (for example, 35mm slides; videotapes; images, graphics, animations, etc., displayed on computer monitors; or other non-print presentation methods) must be prepared to show the entire presentation to the Display and Safety inspectors before the project is approved.

7. If a project fails to qualify and is not removed by the Finalist, Society for Science & the Public will remove the project in the safest manner possible but is not responsible for damage to the project.
8. Any disks, CDs, printed materials, etc. (including unofficial abstracts) designed to be distributed to judges or the public will be confiscated by the Display and Safety Committee and will be discarded immediately.
9. Project sounds, lights, odors, or any other display items must not be distracting.
10. No food or drinks, except small containers of bottled water for personal consumption, are allowed in the Exhibit Hall.

In addition to the rules and guidelines posted above, there are several additional safety concerns that need to be addressed prior to conducting your experiment. All students should be trained and instructed before working with chemical substances, tools, and heat sources. Moreover, adult Permission and supervision is required when using any potentially dangerous or hazardous materials.

Judging

- Students must remain at their project during judging. The award ceremony will be directly after judging.
- Students who are not present at their projects during the judging process will not be eligible for any awards. No exceptions to this rule will be made. BEST Medicine Officials will verify attendance during the judging period.

Judges evaluate and focus on 1) what the student did in the current year; 2) how well a student followed the scientific, engineering, computer programming or mathematical methodologies; 3) the detail and accuracy of research as documented in the data book; and 4) whether experimental procedures were used in the best possible way.

Judges look for well thought-out research. They look at how significant your project is in its field; how thorough you were, and how much of the experiment thought and design is your own work. Initially, judges get their information from your board, abstract and research paper to learn what the project is about, but it is the **Interview** that will be the final determination of your work.

Judges applaud those students who can speak freely and confidently about their work. They are not interested in memorized speeches or presentations – they simply want to talk with you about your research to see if you have a good grasp of your project from start to finish. It is important to start the interview off right. Greet the judges and introduce yourself.

You want to make a good first impression. Appearance, good manners, appropriate attire, and enthusiasm for what you are doing will impress the judges. Judges often ask questions to test your insight into your projects such as: “How did you come up with this idea? “What was your role?”, “What didn’t you do?”, “What further plans do you have to continue research?” and “What are the practical applications of your project?” Remember that the judges need to see if you understand the basic principles of science behind your project or topic area. They want to determine if you have correctly measured and analyzed the data. They want to know if you can determine possible sources of error in your project and how you might apply your findings to the ‘real’ world. Finally, the judges seek to encourage you in your scientific efforts and your future goals/career in science. Relax, smile and enjoy your time to learn from them and accept their accolades for your fine work.

Best Medicine Judging Criteria (points)

	<u>Individual</u>	<u>Team</u>
Creative Ability	30	25
Scientific Thought & Engineering Goals	30	25
Thoroughness	15	12
Skill	15	12
Clarity	10	10
Teamwork	----	16