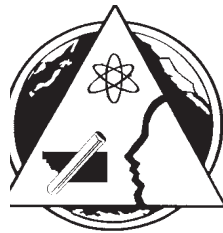


**Official Rules and Entry Forms  
for the**

**2008 KERN COUNTY  
REGIONAL SCIENCE FAIR**

**Intermediate Grade Division  
(4 & 5)**

**April 1-2, 2008  
Rabobank Convention Center**



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Kern County Science Foundation  
1300 17th Street - CITY CENTRE  
Bakersfield, CA 93301-4533



# KERN COUNTY SCIENCE FOUNDATION

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## Introduction: What the Science Fair is about

Scientists do some of the most important and interesting work in our society. They ask questions about nature. They try to find the answer to those questions by observing and doing experiments. They then think about what they observe and the results of their experiments. Sometimes they get a definite answer to their questions; sometimes the results lead to new questions and new experiments. As this process goes on, they understand more and more. The Science Fair will give you a chance to actually do the kind of things scientists do. You will find out that it really is possible to ask questions about our world and get answers to those questions. And most of all, you will learn a lot and have fun doing it.

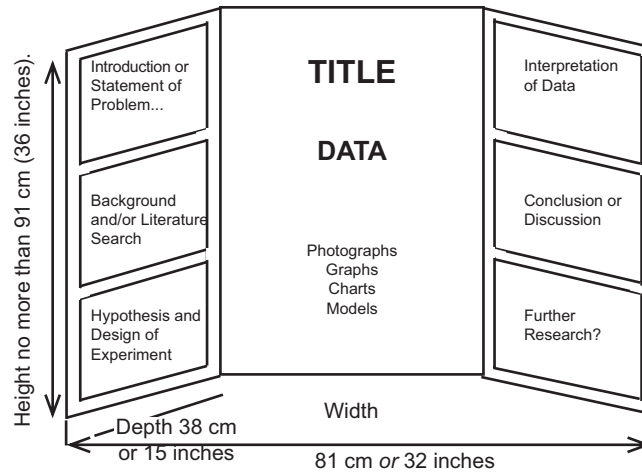
### Rules for Entering a Project in the Kern County Regional Science Fair, Intermediate Grades Division

1. You must be a Kern County student in grades 4 or 5.
2. Your project must be selected by your school or school district.
3. You must turn in a completed Kern County Regional Science Fair 2008 Student Entry Form by February 29, 2008.
4. Projects entered after February 29, 2008 will be for display only. They will not be judged and will not be eligible for awards.
5. Only one project may be submitted by a student. Only individual projects are allowed.
6. For restricted projects (see below), you must complete the required forms by February 8, 2008. You should do this if there is any possibility that the project will be entered in the Kern County Regional Science Fair.
7. There is an entry fee of \$10.00 *per student*. Please note that it is not the intent of the Kern County Science Foundation to eliminate any student from competition because of an inability to pay. In such cases, please contact the Kern County Science Foundation at (661) 636-4640.
8. Each student is responsible for the entry fee. However, some schools may pay fees for all students.
9. The quality of the project must be acceptable for entry in the Kern County Regional Science Fair. This means that the project should:
  - a. Exhibit the scientific method. It must ask a question, suggest an answer, and then see if the answer is correct by performing one or more experiments and analyzing the experimental results. Projects which only are collections, demonstrations of scientific principles, or summaries of scientific literature are unlikely to do well unless they are used as part of a scientific investigation.
  - b. Show a level of knowledge that is appropriate to the student's grade level but beyond what is normally found in grades 4 & 5 textbooks.
  - c. Be complete.
10. Applications may be rejected for not following one or more of the above rules.
11. Science Fair staff may change the entry category or combine a submitted project with others into a larger category if the change is considered necessary.

***Give entry forms and fees to your teacher/adult sponsor or send them to the Kern County Regional Science Fair, 1300 17<sup>th</sup> Street, City Centre, Bakersfield, CA 93301-4533. If hand delivering, bring forms and fees to University Square, 2000 K Street, fifth floor. They must be received by the Science Fair on or before February 29, 2008.***

## Project Display Rules

1. The project display board must be sturdy and self-standing. It must fit within a rectangular space that is 81 cm (32 inches) wide by 38 cm (15 inches) deep and can be no more than 91 cm (36 inches) tall. Displays which are admitted but are later changed to exceed these space limitations will be disqualified until brought into compliance. See the diagram below for some idea of what your display might look like.



**This is the suggested exhibit format.**  
**To organize and display your project, use your own creative ability.**

2. Projects must be set up and ready for judging before judging begins.
3. Students must be present at their display during the judging period or the project will not be judged.
4. The student's *original* laboratory notebook must be present for inspection during judging. However, it would be a good idea to have the notebook on display *only* during the judging period.
5. Electronic media such as computers or video displays may be used if they are battery-powered. If a video presentation is included there is no assurance that the judges will view all or part of it. The length of a video presentation should be no more than two minutes.
6. No electrical, gas, or water outlets are provided.
7. No flames are permitted.
8. No glass items are permitted.
9. Photographs which identify the student or team members are fine. Other people may be shown in photographs only with their written permission. [Public Health Service Act, section 42, USC 241(d)]  
**See forms.**
10. No liquids are permitted.
11. Fair officials reserve the right to remove any project or item(s), which they deem hazardous or inappropriate, including cell phones found to be in use during judging.
12. The following items may **NOT** be displayed and are not allowed in the Science Fair premises.
  - a. Anything you cannot afford to lose. The Science Fair does not take responsibility for lost or stolen items.
  - b. Contraceptives.
  - c. Cultures of bacteria or molds.
  - d. Hazardous or otherwise dangerous materials or items. This includes glassware, mercury, controlled substances, and materials which are corrosive (such as acids), easily flammable, toxic (poisonous), radioactive, or carcinogenic (cancer causing).
  - e. Human parts.
  - f. Hypodermic syringes.
  - g. Live animals, food, plants or other living things.
  - h. Preserved animals, including animal parts or fluids (examples: teeth, blood, other body fluids, animal tissue).

- i. Sharp items such as razor blades, knives, and dissection kits.
  - j. Unlabeled containers.
  - k. Photographs, drawings, or descriptions which are offensive.
13. Copies of your Kern County Regional Science Fair Student Entry Form and all restricted project forms, if any, must be available at your display.
14. At least five (5) copies of your abstract must be available at your display. You will give one of these to each judge when he/she interviews you.

**IMPORTANT: LOSS OR DAMAGE** Valuable equipment, such as computers or scientific instruments, may be used as part of the display only if the **student participant** takes full responsibility for any loss or damage. Any valuable items should be on display only when the student is present, including the judging period. The Kern County Regional Science Fair assumes no responsibility for loss or damage of any project or a part of any project. Students should have copies of their laboratory notebooks and other printed materials.

### **Choosing a Category**

Choose your preferred category carefully. First read the descriptions of each of the categories and find the one which fits your project the best. Remember that it is the subject matter and scientific objectives of your project and not the experimental methods you used which determine the correct category. For example, if you do a study on how fast iron rusts when exposed to different chemicals, the correct category would be Chemistry and Chemical Reactions. Even if you used mathematics and a computer to analyze your results, your category would not be Engineering and Mathematics. On the other hand, if your objective were to write a computer program that is most effective in the analysis of experimental data, and you used iron rusting as an example of the program's use, your category *would* be Mathematics.

Science Fair officials will review all Project Abstracts. They may assign your project to a different category than the one you chose when filling out your entry form. This is done to make sure that similar projects are placed in the same category and, in some cases, to ensure that all categories are the right size for judging. Generally, if the number of entries in a category is less than three, those entries will be combined with another category.

\*Project categories are described on pages 8 to 10.

### **Awards**

- *A certificate of participation will be presented to each exhibitor.*
- Medals will be awarded to the top three projects in each category or groups of categories if they are combined for judging. Special recognition ribbons may be awarded to other students at the discretion of the judges.
- Additional awards, some monetary, are often presented in addition to the above listed awards.

By participating in the Kern County Regional Science Fair, student, parent, teacher and coach agree to the following creed:

#### **Participant's Creed**

I am a parent, coach or student participating in the Kern County Regional Science Fair. I agree that I will be courteous and model good sportsmanship at all times. I am aware that the decision of the judges is final. I will respect the judges' decisions and discuss any concerns with the event coordinator in a respectful manner.

### **Communicating with the Kern County Regional Science Fair**

- The names, telephone numbers, and Web addresses of people and resources you may need to contact are listed on the back cover of this pamphlet.

## School Responsibilities

- **Selection of projects** Projects selected must:
  - o Meet Science Fair criteria for scientific quality.
  - o Meet all guidelines and submission deadlines, including those for Restricted Projects.
  - o Be completed under safe conditions.
- **Rules and Regulations** School officials should be thoroughly familiar with the Science Fair participation rules and Restricted Project regulations. School official signatures are **required** for all students on the Student Entry Form and, if needed, on some restricted projects forms. School official signatures are not required on the Qualified Scientist/Designated Supervisor Form unless a staff member meets the guidelines as a qualified scientist or designated supervisor (advanced science degree in appropriate field).
- **Teacher/Adult Sponsor** The school must designate a Teacher/Adult Sponsor for each student project entered. The Teacher/Adult Sponsor is responsible for the health and safety of the student conducting the research and of humans or animals used as subjects. This individual reviews the student's project plan to make sure that experimentation is done within local, federal and Kern County Regional Science Fair rules, ascertains that forms are completed by other adults involved in approving or supervising any part of the project, and certifies that the project is sponsored by the school as an official entry in the Kern County Regional Science Fair. The Teacher/Adult Sponsor may call upon a Qualified Scientist (one with an earned doctoral/professional degree in the biomedical sciences or other appropriate discipline) or Designated Supervisor for approval(s) required for Restricted Projects. The Teacher/Adult Sponsor must acknowledge on the entry form that the student has complied with all research regulations. This is particularly important for Restricted Projects.
- **Institutional Review Board** For some projects, those involving human subjects, for example, an Institutional Review Board must review the proposed Research Plan. This Board should be established at the school site, if possible, and consists of 1) a teacher, 2) a school administrator, and 3) one of the following: psychologist, psychiatrist, medical doctor, or nurse. The nurse may come from a school district, county office, or private agency. IRB members should be familiar with State, Federal, and Science Fair regulations. If a school has difficulty in establishing an Institutional Review Board, assistance is available from the Science Fair Coordinator. Names and professions of IRB members must be reported to the Kern County Regional Science Fair on the Institutional Review Board Information Sheet.
- **Student Forms** The Teacher/Adult Sponsor has the responsibility for collecting completed Student Entry Forms as well as restricted project approval forms from students, summarizing all restricted projects on the Restricted Projects Forms Cover Sheet, and submitting the forms and Cover Sheet to the Kern County Regional Science Fair on or before the appropriate deadline. (Note that the deadlines for the restricted project forms and the Student Entry forms are different.) In some cases students may elect to submit the forms directly to the Science Fair. If this is done, the Teacher/Adult Sponsor still has the responsibility of summarizing all restricted projects on the Restricted Projects Forms Cover Sheet and submitting the sheet along with any forms completed by students and given to the Teacher/Adult Sponsor for submission.
- **School Participation Quotas** are based on size and history of participation; each school has been given its quota. See <http://ci.kern.org/sciencefoundation>.

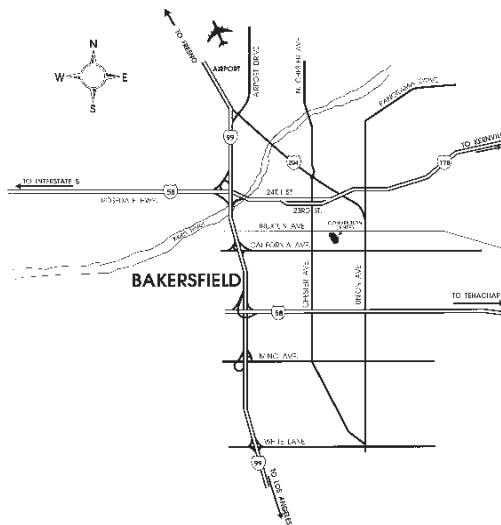
Projects will be selected by the local school. It is recommended that this selection be based on school science fair competitions.

## Student/Parent Responsibilities

- Each student is responsible for following the rules of the Kern County Regional Science Fair, including completion of all forms, meeting restricted project and other deadlines, fee payments, and project completion. Students should check with their teacher/adult sponsors to make sure the forms requiring his/her signatures are mailed on time so that they are received by the Science Fair by the deadline date. **After February 29, 2008, projects may not be entered.**

## Kern County Regional Science Fair Location

The Science Fair will be held at the Rabobank Convention Center, 1001 Truxtun Ave., Bakersfield, CA.



### ***Travel to the Rabobank Convention Center***

*Take California Avenue exit (east) to Chester Avenue.*

*Take Chester Avenue north to Truxtun Avenue.*

*Take Truxtun Avenue east to the Rabobank Convention Center.*

## Notice of News Media Visit (Photography/Filming/Interview)

1. Local news media representatives may wish to [either come on campus or cover this event] and interview, photograph/film students.
2. So long as news media representatives conduct business in a responsible manner, school officials may not control content, limit access to pupils, restrain a pupil's right to speak freely with news media representatives, or restrict the use of information and images acquired by news media representatives.
3. If on campus, news media representatives will be accompanied by school officials for the sole purpose of minimizing disruption to the educational environment. If off campus, news media representatives will not be accompanied by school officials.
4. Although school officials may not limit access to pupils or restrain a pupil's right to speak freely with news media representatives, parents may direct their child not to approach news media representatives.
5. Upon request by news media representatives, school officials may provide directory information, including but not limited to the name of a pupil, school of attendance, grade level, honors, and activities, unless the pupil's parent/guardian has submitted a written request that this information not be disclosed.
6. School officials will not release information that is private or confidential as required by law, board policy, or administrative regulation. No other access to student records or personally identifiable student information will be provided without written parent/guardian permission.
7. If you have particular concerns in light of this notification, please call Christine Goedhart-Humphrey at (661) 636-4330.

## What makes a good science fair project?

We all have questions about our world. We might ask why the sky is blue or why grass grows better when it gets water. A good Science Fair project is about trying to answer questions like that. It typically starts with an interest in something which may not even seem very “scientific” at first. As a result of learning about it, you might think of a question along with a possible answer. This is called a *hypothesis*. After finding out more about the subject, you would make up an experiment to find out if the hypothesis is true. The experiment will produce *data*. From the data, you can draw conclusions to prove or disprove the hypothesis. More often than not, new questions and possible answers (new *hypotheses*) will result from the experiment, leading to new experiments and further results that may be done in the future.

A hypothesis typically looks like this: “If I do this, then that should happen.” **A good hypothesis is not just a guess about what might happen if something is done. It is based on some knowledge of the subject, usually gained from reading and observation.** It is important that you have some idea of what might happen in your experiments, even though things don’t always work out the way we expect them to. A hypothesis can be written as a statement or a question. For example, a hypothesis could be: *Are lighter colored cars easier to see than darker ones when they are viewed from ¼ mile away?* or you might say: *Lighter colored cars are easier to see than darker ones when they are viewed from ¼ mile away.* Note that this hypothesis says what we will do – look at lighter and darker cars from ¼ mile away – and what we expect to happen – it will be easier to see the lighter ones.

Your science fair project should include the following steps:

- Conduct background reading and study.
- Write a hypothesis.
- Do further reading and study.
- Develop an experiment to investigate the hypothesis.
- Obtain or construct the apparatus needed for the procedure.
- Operate the apparatus or conduct the procedure to collect experimental data. Record the data as you collect it.
- Repeat the procedure and record new data to make sure that you are getting reliable results.
- Analyze the experimental data and arrive at conclusions.
- If necessary, propose new hypotheses and new experiments that result from your conclusions. These might even be part of a future science fair project.

The final step before coming to the Science Fair is to prepare a display to illustrate what you did and to rehearse (but not memorize!) the following:

- An explanation of the hypothesis.
- A description of your experimental procedures and how you conducted the experiment(s).
- How you got your experimental results and conclusions.
- An explanation of your results and conclusions.

It is important to understand that proving your hypothesis is NOT the purpose of a Science Fair project. It is the intent of a Science Fair that you go through the process of asking questions and performing experiments in an attempt to find answers. You may not get an answer to your question, but that doesn’t mean you have not done good science. Real scientists often do many experiments before they begin to get answers to their questions.

Teachers and Parents are advised to encourage students to develop a project which genuinely interests them. Judges will often ask students why they chose to do a particular project, and it usually turns out that the best work is done by students who are motivated and inspired by their curiosity about what they are investigating. Students who developed a project simply because a teacher or parent expected them to do so often will produce poor results.

*The above section was written partially by Anita Gale with assistance from the California State Science Fair Judging Policy Advisory Committee and was revised and condensed by Robert Allison of the Kern County Science Foundation.*

## What to Expect and Some Tips on How to Prepare for the Judging Process

1. **Please remember that the judges are volunteering their time. Their decisions will be based on their best judgment and Science Fair guidelines, and will be final.**
2. Your display needs to clearly show what you did, why you did it, and your results and conclusions. You need to be very familiar with your project, but do not memorize long speeches or explanations.
3. You should prepare an oral summary of important points that you can present in no more than 60 seconds. Your judges will already have read your abstract, so if you've done a good job there, your summary will remind them of questions that occurred to them earlier.
4. Following your summary, you may find it useful to present one or more short descriptions of important parts of your project. You know your project better than anyone, so you should have the best ideas of what is important. You should prepare answers for such questions as "Where did you get the idea for this project?" "What is special about your project?" "What is the next thing you would do with your results?" "What new questions has your project generated?" You might also prepare for the questions you hope the judges will ask.
5. You probably will be interviewed by at least three different judges for your category who will spend about 5 to 8 minutes discussing your project with you. The judges may talk to you one at a time or in groups. It is difficult to space these interviews equally, so don't get discouraged if there is a long wait between judges.
6. Many judges prefer to learn about your project by asking questions. Be prepared for them to interrupt your presentation.
7. You probably will not be able to predict all of the questions you will be asked. Some of the judges are experts in their subjects, so they may ask you questions you cannot answer. Don't let this bother you. Just answer truthfully and to the best of your ability. If you don't know the answer to a question, say so. **DO NOT** try to "snow" or bluff a judge.
8. The Kern County Regional Science Fair is a major local event. Your interviews with the judges might be covered by newspaper reporters (some with photographers), radio reporters, TV cameras (with their bright lights) and others. Videos might be used in promotional materials for future science fairs.

The above section was adapted and revised from material first prepared for the California State Science Fair.

## Resources

The website <http://ci.kern.org/sciencefoundation> has links to many science fair sites. Also see back cover.

## Entry Categories and Descriptions

The category definitions and examples are intended to assist the correct placement of projects into categories. Fair officials reserve the right to assign students to a different category.

1. **Astronomy, Earth and Environmental Science** - Includes: Studies in surface geology, geophysics, seismology, earthquake engineering, atmospheric physics, physical oceanography, marine geology, comparative planetology, orbital mechanics, astronomical surveys, astrophysics and environmental science. Projects using biological systems/ organisms to study the impact of natural and man-made change on the environment may be included here. Also included are projects which apply technologies such as recycling, reclamation, restoration, composting and bioremediation to control the environment or the effects of pollution on the environment.

***Examples:** New Planets, Earthquake, Volcanoes and Erosion, Does Sand or Soil Hold More Water?, Seismograph, The Formation of Stalactites and Stalagmites, Killer Rain, Plants and Sulfur Dioxide, What's My Niche?, Effects of Acid Rain on the Pond.*

2. **Behavioral, Animal, and Field Studies** - Studies of behavior in humans and invertebrate animals, field studies of any animal (including vertebrates), and any study of invertebrates belongs in this category. *Behavior and field studies are restricted projects and need approval before beginning. Some projects are prohibited. READ rules carefully.*

*Examples: Lung Capacity, Which Earthworm Will Grow Faster and Bigger?, How Do Most Children Cross the Street?, Human Reaction Time.*

3. **Chemistry and Chemical Reactions** - Studies in which chemical and physical properties of organic and inorganic materials are observed. This division includes studies more specifically of reactions in which materials change composition. Exception: Phase changes due to gain or loss of heat belong in category 5: Heat Chemistry. A knowledge of the chemical structure of materials being tested is implied.

*Examples: Slowing Down the Browning of Apples, The Effects of Household Bleach, Fermentation, Hair Dyeing, Breaking the Tension, Does the Acidity of Grapefruit Change Over Time?*

4. **Engineering, Mathematics & Games** - Engineering includes studies concerning the design, manufacture and operation of structures and mechanisms, fatigue/fracture evaluations, aerodynamics, thermodynamics, energy utilization and other industrial processes. Mathematics includes studies in geometry topology, number theory, algorithm analysis, artificial intelligence, computer modeling and simulation, programming environments and languages. Projects merely using mathematics to understand a different subject should be in that subject.

*Examples: Bridge Busters, Strength of Woods, Why We Need Certain Size Fuses, Which Gear Ratio Can Lift the Most Weight?*

*Examples: Explore the Cone, Bell Curve, Tessellations, Mandelbrot Set, The Great Pascal's Triangle, Video Game Strategies.*

5. **Heat Chemistry and Heat Physics** - Studies in which the heat of reaction, heat energy, or change in state (examples solid to liquid) are the primary focus.

*Examples: Boiling Point, The Effect of Rock Salt on the Freezing of Ice Cream, Does Temperature Affect the Elasticity of Rubber?*

6. **Food and Health Science** - In this category are included studies of health, exercise, nutrition and microorganisms (including yeast, fungi and molds) that affect the food we eat. The growth of yeast, fungi and molds may be studied without restriction. Studies on human health must be accompanied by a pre-authorized Human Subjects form, an Informed Consent Form and a Qualified Scientist/Designated Supervisor form.

*Examples: Does Bread Mold Grow at Different Rates Depending on Light?, Bread Destroyers, Does Consistent Aerobic Exercise Lower Your Blood Pressure Over Time?, The Effects of Hand Sanitizers on Laboratory Strains of E. Coli.*

7. **Materials and Consumer Science** - Studies of materials, characteristics, and properties with respect to their static (not in motion) application in the real world. Includes measures and comparisons of materials strength, durability, insulating properties, flammability and effectiveness for intended use. These characterizations do not imply knowledge of the chemical structure of materials being tested.

*Examples: Which Paper Towel is the Best Buy?, Does Silica Clay Litter Absorb Better than Other Litters?*

8. **Physics** (Laws of Matter, Motion and Energy) - Experimental or theoretical studies of the physical properties of matter and its motion and of energy, including sound, light, and electrical, but not heat energy.

*Examples: What Makes a Better Electromagnet?, Floating and Sinking, Mr. Archimedes' Bathtub, What Makes a Rainbow?, Do Different Angles Affect the Sun's Rays?, Which Gear Ratio Can Lift the Most Weight?, That's the Way the Ball Bounces.*

9. **Plant Biology** - Studies of the genetics, growth, morphology, pathology, or physiology in plants or algae. Studies using plants to restore the environment or other environmental changes may belong in Environmental Science.

*Examples: What Light of the Visible Spectrum Runs the Process of Photosynthesis?, Plant Growth and Acid Rain, Does the Plant Starter (B1) Benefit Early Root Development?*

### Restricted Projects

Some projects require special approval **before you can begin**. In some cases, project supervision by a Qualified Scientist or Designated Supervisor is required. In addition, approval by the school Institutional Review Board and/or the Scientific Review Committee sometimes will be needed. Project advisors, whether they are teachers or qualified scientists/designated supervisors, must certify their approval(s) on the appropriate forms that the student has complied with all project regulations. **The required approvals must be obtained BEFORE starting work and no later than February 8, 2008.**

The **Qualified Scientist** must possess an advanced earned degree (examples, Ph.D., M.D., D.D.S.) in a field related to the project. Further, he/she must be familiar with all regulations - local, state and federal - which relate to that project. The Qualified Scientist and the Teacher/Adult Sponsor may be the same person if qualified as indicated above, as long as that person is not the student's parent.

**Designated Supervisor** supervises the work approved by the Qualified Scientist. Generally this person will have practical experience related to the specific project to be supervised. Such projects can include those involving DNA, animal tissues, human research, hazardous materials, toxins, or controlled substances. Designated supervisors might be 4-H project leaders, butchers, farm advisors, single subject credentialed teachers, police officers, or others, depending on the project. The Teacher/Adult Sponsor may act as a Designated Supervisor.

**Scientific Review Committee** This committee reviews all Restricted Projects and may become involved with any project to ensure there was appropriate supervision or to deal with other concerns. Its formal approval is required for some projects.

Dr. Ron Hughes  
Dept. of Teacher Education  
CSU, Bakersfield  
Bakersfield, CA 93311

Shelley Northrop, PHN  
Kern County Supt. Of Schools  
1300 17<sup>th</sup> Street  
Bakersfield, CA 93301-4533

Dr. Paul Fuller  
Kaiser Permanente  
1200 Discovery Dr. #600  
Bakersfield, CA 93309

Dr. John Tolley  
Bakersfield Veterinary Hosp.  
4408 Wible Road  
Bakersfield, CA 93313

The following pages include descriptions and the forms/approvals needed for each type (I-VIII) of restricted project. In some cases, other forms may be needed. These have been included in the forms section of this booklet.

Note Section I, Human Subjects, has three major subsections, A. Rules, B. Risk Evaluation, and C. Informed Consent.

## **I. Human Subjects**

- Surveys/questionnaires
  - Approval by the school Institutional Review Board (IRB)
- Other research
  - Approval by the IRB
  - Completion of the following forms:
    - Qualified Scientist or Designated Supervisor Form
    - Human Subjects Form
    - Informed Consent Form
    - Human, Animal Tissue, and Microorganisms Form, if using human tissue

### **A. Rules**

1. All research projects involving human subjects, including any revisions, must be reviewed and approved by an Institutional Review Board (IRB) before the research begins.
2. Human subjects research includes projects involving: Subjects participating in physical activities (e.g., physical exertion, ingestion of any substance, any medical procedure), Psychological and opinion studies (e.g., survey, questionnaire, test of any kind), Behavioral observations, Studies in which the researcher is the subject of the research.
3. When developing the Research Plan student researchers must evaluate and minimize the physical and/or psychological risks to their human subjects.
4. The documentation of written Informed Consent is required for most projects. Children/Minors participating in most research will require special consent procedures including assent of the child/minor and consent of the parent/guardian. Children/Minors are persons who have not attained the legal age for consent; in most jurisdictions the legal age is 18.
5. Research conducted by a pre-college student at federally registered research institutions (e.g., universities, medical centers, NIH, correctional institutions, etc.) must be reviewed and approved by that institution's IRB. A copy of the IRB approval for the entire project (which must include the research procedures/measures the student is using) or an official letter from the IRB attesting to this approval is required. A letter from the mentor is not sufficient documentation of IRB review and approval.
6. A student may observe and collect data for analysis of medical procedures and medication administration only under the direct supervision of a qualified professional. The qualified professional must be named in the research protocol to be specifically approved by the IRB. Students are prohibited from administering medications and performing medical procedures on human subjects. The IRB must confirm that the student is not violating the medical practice act of the particular state or nation in which he/she is conducting the research.
7. Student researchers may NOT publish or display information in a report that identifies the human subjects directly or through identifiers linked to the subjects, (including photographs), without written consent. (Public Health Service Act, 42, USC 241 (d)).
8. All standardized tests that are not in the public domain must be administered, scored and interpreted by a qualified scientist as required by the instrument publisher. Any and all use and distribution of the test must be in accordance with the publisher's requirements, including procurement of legal copies of the instrument.
9. The use of the Internet to obtain data for human subjects research is permissible. The Student Researcher, Adult Sponsor and IRB must take additional care to ensure that survey responses remain confidential and that, when required, informed consent is documented.
10. Any proposed changes to a previously approved research plan must be resubmitted to the IRB for another complete review. The proposed changes must not be implemented until the modified project is approved by the IRB.

## B. Risk Evaluation

Once a study population is chosen, the student researcher must assess any potential physical and/or psychological risks when developing the research plan. In evaluating risk, students and IRBs must use the following federal definition of minimal risk as a guide: No more than minimal risk exists when the probability and magnitude of harm or discomfort anticipated in the research are not greater (in and of themselves) than those ordinarily encountered in DAILY LIFE or during performance of routine physical or psychological examinations or tests.

**Risk Groups** The following risk groups require additional safeguards because they have been judged as vulnerable to coercion or undue influence:

1. Any member of a group that is naturally at-risk (e.g., pregnant women, individuals with diseases such as cancer, asthma, diabetes, cardiac disorders, psychiatric disorders, dyslexia, AIDS, etc.).
2. Special vulnerable groups that are covered by federal regulations (e.g. children/minors, prisoners, pregnant women, mentally disabled persons, or economically or educationally disadvantaged persons).

**Risk Activities** The following are examples of activities that contain more than minimal risk:

1. Physical
  - a. Exercise other than ordinarily encountered in DAILY LIFE by that subject.
  - b. Ingestion of any substance or exposure to any potentially hazardous materials.
2. Psychological
  - a. Any activity (e.g. survey, questionnaire, viewing of stimuli) or experimental condition that could potentially result in emotional stress. For example, answering questions related to personal experiences such as sexual, physical or child abuse and divorce and/or psychological well-being (e.g. depression, anxiety, suicide) must be considered more than minimal risk. Additionally, research activities that involve exposing subjects to stimuli or experimental conditions that could potentially result in emotional stress must also be considered more than minimal risk. Examples include violent or distressing video images, distressing written materials or activities that could potentially result in feelings of depression, anxiety, or low self-esteem in subjects.
  - b. Any activity that could potentially result in negative consequences for the subject due to invasion of privacy or breach of confidentiality. When research activities involve collection of personal information (e.g. history of abuse, drug use, opinions, fingerprints) or health-related data (genetic material, blood, tissue) the researcher must consider risks related to invasion of privacy and possible breach of confidentiality. Ways to reduce these risks include collecting data anonymously or developing data collection procedures that make it impossible to link any identifying information (e.g. subject's name) with his/her responses or data.

## C. Informed Consent

The process of obtaining informed consent provides information to the subject about the risks and benefits associated with participation in the research study and allows the subject to make an educated decision about whether or not to participate. Informed consent is an on-going process, not a single event that ends with a signature on a page. It must incorporate procedures that do not involve coercion or deception.

Documentation of informed consent is required:

1. When the IRB determines that a research study involves physical or psychological activities with more than minimal risk.
2. When the IRB determines that the project could potentially result in emotional stress to a research subject.
3. When the IRB determines that the research subjects belong to a risk group and the study does not meet any of the criteria below for a waiver.

Informed consent is required for most research projects involving human behavior. However, the IRB may waive the requirement for documentation of written informed consent if the research involves **only minimal risk and anonymous data collection and if it is one of the following:**

- a. Research involving the observation of legal public behavior.

- b. Research involving collection or study of existing publicly available data or records.
- c. Research involving normal educational practices.
- d. Research on individual or group behavior or characteristics of individuals where the researcher does not manipulate the subjects' behavior and the study does not involve more than minimal risk.
- e. Surveys and questionnaires that are determined by the IRB to involve perception, cognition, or game theory and do NOT involve gathering personal information, invasion of privacy or potential for emotional distress. If there is any uncertainty regarding the appropriateness of waiving informed consent, it is strongly recommended that informed consent be obtained.
- f. Studies involving physical activity where the IRB determines that no more than minimal risk exists and where the probability and magnitude of harm or discomfort anticipated in the research are not greater (in and of themselves) than those ordinarily encountered in DAILY LIFE or during performance of routine physical activities.

**If a research subject is under 18 years of age, it is recommended that, in all cases, informed consent be obtained.** Both the parent/legal guardian and the school age research subject must sign Form (Human Subjects and Informed Consent Form). However, an IRB may decide that informed consent is not required because of the allowable exceptions listed above. **When the IRB waives informed consent of research subjects under the age of 18 for studies involving surveys or questionnaires, documentation justifying this waiver must accompany the Human Subjects and Informed Consent Forms.**

Patient Privacy HIPAA, the Health Insurance Portability and Accountability Act, as well as the Code of Federal Regulations 45 CFR 46 §46.102 now have very strict regulations on research on human subjects and privacy rights. It is essential that any projects involving human subjects comply with these regulations.

Regulations involving humans as the subject of research:

The Code of Federal Regulations 45 CFR 46 §46.102 defines:

**“Human Subject”** means a living individual about whom an investigator (whether professional or student) conducting research obtains (1) data through intervention or interaction with that individual, or (2) identifiable private information. In order for the obtaining of private information to constitute research involving human subjects, the identity of the subject must be readily associated with the information.

**“Minimal Risk”** means that the risks of harm anticipated in the research are not greater, considering probability and magnitude, than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. Examples of unacceptable risk include: (1) ingestion or physical contact with any potentially hazardous materials including toxic chemicals, known or suspected pathogens or carcinogens, or exposure to ionizing radiation; (2) intentionally inducing emotional stress through questioning or invasion of privacy; (3) physical stress to pregnant women or anyone suffering debilitating physical illness; and (4) psychological stress to the mentally handicapped or those suffering psychiatric disorders. This list is intended to be illustrative, not exhaustive.

**The regulations of the Fair are intended to protect human subjects, both physically and psychologically. The regulations supplement, and do not supplant, relevant State and Federal regulations dealing with such protection.**

## II. Nonhuman Vertebrate Animals – Field Studies Only

- Approval by the IRB
- Completion of the following form:
  - o Vertebrate Field Study Form

Field Studies are observational, behavioral, and natural history studies that do not affect an animal's health or well-being. Animal experimentation is not allowed for grades 4 & 5.

### III. Pathogenic Agents

- Approval by the IRB
- Completion of the following forms:
  - Qualified Scientist or Designated Supervisor Form

This includes bacteria, viruses, rickettsia, fungi, molds, or parasites. Any of these collected, isolated and/or cultured from any environment during student research projects should be considered potentially pathogenic (disease causing), and appropriate biosafety procedures must be followed under the direction of a Qualified Scientist/Designated Supervisor.

**No research will be allowed on unknown bacteria. This includes swabbing surfaces and culturing them to try to find out what germs are present. Research using bacteria will be allowed only on known strains which are non-pathogenic. The research must be under the supervision of a trained teacher or qualified scientist, and Federal regulations must be followed.** For example, the effectiveness of an antiseptic may be tested on a regulated laboratory with a known non-pathogenic strain acquired by that laboratory.

Students working with any microorganisms must always follow standard microbiological practices (for example, National Institute of Health and National Association of Biology Teachers guidelines). **Students must not use ethidium bromide or handle gels stained with ethidium bromide.**

### IV. Recombinant DNA

- Approval by the IRB
- Approval by the Scientific Review Committee
- Completion of the following form:
  - Qualified Scientist or Designated Supervisor Form

Students working with any microorganisms, whether or not they involve DNA, must always follow standard microbiological practices (for example, National Institute of Health and National Association of Biology Teachers guidelines). **Students must not use ethidium bromide or handle gels stained with ethidium bromide.**

Recombinant DNA studies may be conducted on bacterium *Escherichia*, bacterium *Bacillus subtilis*, and yeast *Saccharomyces cerevesiae* in non-federally registered laboratories, including school laboratories, under the direct supervision of a trained teacher following federal regulations.

### V. Human and Animal Tissue:

- Approval by the IRB
- Completion of the following forms:
  - Qualified Scientist or Designated Supervisor Form

**Above approvals and forms not required for USDA approved food products unless those products are needed for a bacterial study.**

Live tissue samples must be taken either from a continuously maintained tissue culture line already available to institutional researchers, or from animals already being used in an on-going institutional research project. Any tissue used must be certified by a qualified scientist to be free of communicable disease. These regulations do not apply to plant tissue. **Students may not be involved in the direct acquisition of these samples from living human or vertebrate animals.**

### VI. Controlled Substances

- Approval by the IRB
- Completion of the following forms:
  - Qualified Scientist or Designated Supervisor Form
  - Human Subjects Form, if humans are part of the experimentation
  - Informed Consent Form, if humans are part of the experimentation

**Projects using controlled substances are not allowed, but surveys of adult users of such substances are permitted.**

Drug Enforcement Administration classified substances, prescription drugs, alcohol, and tobacco must be acquired and used according to existing local, state, and federal laws. Students under 21 years of age are prohibited from purchasing and/or handling smokeless powder or black powder.

**VII. Hazardous Substances**

- Approval by the school IRB
- Completion of the following forms:
  - o Qualified Scientist or Designated Supervisor Form

**VIII. Firearms**

- Approval by the IRB
- Hunter safety certificate
- Student must be age 12 or over
- Completion of the following forms:
  - o Qualified Scientist or Designated Supervisor Form

**Completion of Forms** An excellent aid to students in obtaining approval prior to beginning their research can be found on the Web Site for the International Science and Engineering Fair (ISEF). Students will find a rules wizard to help them navigate the forms that must be submitted. **For restricted projects only, ISEF forms may be used in place of forms from the Kern County Regional Science Fair Official Rules and Entry Forms as long as they are submitted on or before February 8, 2008.** The Web Site is <http://www.sciserv.org/isef> and students doing research on restricted projects should click on the Rules Wizard link. Alternatively, they may type in <http://www.sciserv.org/isef/students/wizard/index.asp>. If the ISEF forms are used, the Kern County Regional Science Fair Student Entry Form as well as other required materials not related to restricted projects still must be completed and submitted.

**Application Checklist and Calendar**

<u>Form</u>	<u>Who</u>	<u>Due</u>
Restricted project forms	Projects with restrictions requiring approvals	February 8, 2008
Student Entry Form & photo/video release	ALL participants	February 29, 2008
Entry fee (\$10.00)	ALL participants	February 29, 2008

Important points:

- The deadline for submitting the Restricted Project forms is **February 8, 2008**. It is not necessary to submit the entry form along with the restricted project forms. Since the project experimentation cannot begin until the restrictions have been approved, it would not be possible to fill out the abstract and summary portions of the entry form until after the approval. Therefore it is best to turn in the entry form after the project is done but no later than **February 29, 2008**.
- The entry form is not complete until all parts are completely filled out.

**Application Procedure Summary**

1. Does project have restrictions? Yes No If Yes, go to Step 2; if No, go to Step 3.
2. Complete required restricted project forms and turn them into your teacher/adult sponsor or directly to the Science Fair by **February 8, 2008**. It is not necessary to complete the Student Entry Form at this time.
3. Complete Student Entry Form and turn it in with your \$10.00 per person fee by **February 29, 2008**. Turn it in to your teacher/adult sponsor or directly to the Science Fair.
4. Any projects submitted after **February 29, 2008** may be admitted for display but will not be eligible for competition or prizes.

## Filling out the Student Entry Form

### General considerations

1. The application must be complete. Your application will not be accepted if it is incomplete or the Project Summary and Abstract page is not adequate.
2. The name should be clearly printed or typed.
3. The address should be your mailing address, including a post office box if needed.
4. Electronic mail. If you have an e-mail address, include it.
5. Some projects include restrictions requiring approvals. This is explained above and in the checklist below. Attach copies of the completed and approved forms to the Student Entry Form.
6. The Student Entry Form is incomplete without all required signatures. This includes the student, teacher/adult sponsor, and parent/guardian. If the project requires the assistance of a Qualified Scientist or Designated Supervisor, that person must sign too.
7. Complete and sign Photo/Video Release Form.

### Project Summary and Abstract

**Project title** This should be a short description of the project and cannot exceed 120 letters. It should clearly state the subject and not be so general or “cute” that a judge or a member of the public will not be able to understand what it is about. For example, if your project is to study the effect of color on visibility of automobiles, your title might be: *The Effect of Color on the Visibility of Automobiles When Viewed at Various Distances.*

**Preferred category** See “Choosing a Category,” above. Remember that Science Fair officials may change your category as they deem necessary or appropriate.

**Abstract**—This is very important because it will be read by the judges before they see your project and have a chance to talk with you about it. They will not use the abstract by itself to judge your project, but it will be their first impression of your work. In addition, the judges will prepare some of their interview questions after reading your abstract.

Fair officials *will* use the abstract to decide the best category for your project. If you want your project to be in a particular category, it is important that the abstract supports your preference.

**Please bring five (5) copies of your abstract to the Kern County Regional Science Fair so that all judges may review it before interviews begin.**

The abstract must contain the following:

**Hypothesis**—State your hypothesis, objective or goal. This will be the basis for your project. Examples: *The lighter the color of an automobile, the farther away it can be seen.* **Or you might say it this way:** *The objective of this project is to determine the effect of automobile color in the distance from which a person can see it.*

**Experimental methods and materials**—Describe the experimental design, including the materials and methods you used. Example: *Five automobiles, identical except for color, were driven between two marked locations four miles apart. Twenty people observed the automobiles from the same location at the same time on a cloudless day. Each person recorded the time when he or she first saw each automobile. All observers were between the ages of 15 and 17; 10 were male and 10 were female; all provided informed consent.*

**Results**—Summarize your results and, if necessary, explain how they relate to your hypothesis, objective or goal. Example: *70% of the males and 90% of the females saw the white car first; 90% of males and 60% of females saw the black car last and none saw it first. Most of the subjects saw the other cars in the following order: light blue and gray the same, then metallic orange.*

**Conclusions and discussion**—Relate your experimental results to your hypothesis, objective or goal. Do the results support it, not support it, or are they inconclusive? What did you find out from your project? What might you do differently next time? What further hypotheses and experiments might you do to learn more? What new science did you learn from the project? Example: *White cars are easier to see than black ones. Based on the limited sample of other colors, it seems that lighter cars in general are easier to see than darker ones. Therefore I can conclude that my experimental results support my hypothesis. In the future I might do experiments using more car colors which are similar except for their brightness, using various shades of gray, for example. This would eliminate the effect of color on people's ability to see the cars. Because I did not get the same results with males and females, I learned that there is a possibility that gender differences affect how people see. I might want to test this by using greater numbers of males and females.*

#### Example of completed abstract

*The objective of this project was to determine if a lighter colored automobile could be seen from further away than a darker one. Five automobiles, identical except for color, were driven between two marked locations four miles apart. Twenty people, equal numbers of males and females, observed the automobiles from the same location at the same time on a cloudless day. Each person recorded the time when she or he first saw each automobile. All observers were between the ages of 15 and 17. The results showed that 70% of the males and 90% of the females saw the white car first; 90% of males and 60% of females saw the black car last and none saw it first. Most saw the other cars in the following order: light blue and gray the same, then metallic orange. Based on the limited sample of colors, it appears that lighter colors are easier to see than darker ones. Therefore the hypothesis was supported. Further experiments might use additional colors, which are similar except for brightness, various shades of gray, for example. Because the results for males and females were different, further experiments could test this by using greater numbers of males and females.*

**Help received**—Describe any help received while conducting the project. Although the project must be the work of the student, some help is allowed. However, there must be a clear distinction between the work of the student and others. Students participating in a research opportunity in industry, a university, or other institutions other than their school must display only their own research. If a student does a project of this type, the project documentation must include a letter from the principal researcher indicating the level of his/her involvement in the student's project.

#### **Restricted project checklist**

For any boxes you check in this list, you must complete the forms and get the approvals shown for that item.

While doing my project, I will be experimenting with:

- Humans — Surveys only
  - o Prior approval from Institutional Review Board (IRB)
- Humans—Other than survey
  - o Prior approval by the IRB
  - o Completion of the following forms:
    - Qualified Scientist or Designated Supervisor Form
    - Human Subjects Form
    - Informed Consent Form
    - Human, Animal Tissue and Microorganisms Form, if using human tissue
- Non-human vertebrates - Only field studies are allowed!
  - o Prior approval by the school IRB
  - o Completion of the following form:

- Vertebrate Field Study Form
- Pathogenic agents (e.g., bacteria)
  - o Prior approval by the IRB
  - o Completion of the following forms:
    - Qualified Scientist or Designated Supervisor Form
- Recombinant DNA
  - o Prior approval by the school IRB
  - o Approval by the Scientific Review Committee
  - o Completion of the following forms:
    - Qualified Scientist or Designated Supervisor Form
- Human/Animal Tissue
  - o Completion of the following forms:
    - Human, Animal Tissue and Microorganisms Form
    - Qualified Scientist or Designated Supervisor Form

Above not required for USDA approved food products unless they are being used for a bacterial study
- Controlled substances
  - o Prior approval by the IRB
  - o Completion of the following forms:
    - Qualified Scientist or Designated Supervisor Form
    - Human Subjects Form, if humans are part of the experimentation
    - Informed Consent Form, if humans are part of the experimentation
- Hazardous Substances
  - o Approval by the IRB
  - o Completion of the following forms:
    - Qualified Scientist or Designated Supervisor Form
- Firearms
  - o Prior approval by the IRB
  - o Completion of the following forms:
    - Qualified scientists or Designated Supervisor Form
  - o Hunter safety certificate
  - o Student must be 12 years or older

**If any of the above is checked, you must submit the required restricted project forms for clearance by February 8, 2008.**



## PROJECT SUMMARY AND ABSTRACT

Student name: _____	Grade _____
School _____	Preferred category _____
Project title (120 characters maximum) _____	
_____	

**Project abstract** This includes the project hypothesis and summaries of experimental methods, results, and conclusions (if known). The abstract will be used in the screening process, possible category changes, and will be read by the judges. Be as specific and complete as possible. Type or print, or attach a computer printout that fits within this space. **Please bring five (5) copies of your abstract to the Science Fair.**

**Summary statement** In one sentence describe what your project is about.

**Help received**

*Return this form to your teacher/adult sponsor or to the Kern County Regional Science Fair,  
1300 17th Street, City Centre, Bakersfield, CA 93301-4533.*

*It must be received by the Science Fair on or before February 29, 2008.*

*Keep a copy of this completed and signed form in your logbook and submit a copy with your Student Entry Form.*

# PHOTO/VIDEO RELEASE

## Parent Consent and Waiver of Rights

Program or Series Title:

Production Date(s): (Working Title)

Production Locations):

I hereby grant consent for the child named below ("Child") to participate and appear in a still photograph or audio-visual programming (collectively "the programming"), whether via television, film, video, audio tape or electronic media for the Kern County Superintendent of Schools and waive any right to control approval use or reuse of the Programming.

All rights of any nature which may also arise from the Programming are hereby granted, world-wide and in perpetuity, to the Kern County Superintendent of Schools.

On behalf of myself and Child, I hereby waive any rights to fees, royalties, or other compensation which may arise from Child's participation in the Programming under the laws of the United States or any state thereof, or under the laws of any other nation or jurisdiction.

On behalf of Child, I grant full permission for the use of Child's name, likeness, performance, voice and biography for the purpose of publicizing, advertising or promoting the Programming in any medium, including the print media, radio, television, film, and audio or video tape.

I expressly represent that I have authority, either as a parent or legally appointed guardian, to execute this Consent and Release on behalf of Child.

### PLEASE PRINT THE FOLLOWING:

Name of Child (please print): \_\_\_\_\_ Age: \_\_\_\_\_

Name of Parent or Legal Guardian (please print): \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Phone Number (including area code): \_\_\_\_\_

\_\_\_\_\_  
Signature of Parent or Legal Guardian

\_\_\_\_\_  
Date

***Return this form to your teacher/adult sponsor or to the Kern County Regional Science Fair,  
1300 17th Street, City Centre, Bakersfield, CA 93301-4533.***

***It must be received by the Science Fair on or before February 29, 2008.***

***Keep a copy of this completed and signed form in your logbook and submit a copy with your Student Entry Form.***

# Exoneracion Para Tomar Fotografias o Videos

## Consentimiento del Padre y Renuncia a Sus Derechos

Programa o Título de la Serie:

Fecha(s) de la Producción: (Título del Trabajo)

Localidad de la Producción:

Por la presente, doy permiso al niño cuyo nombre aparece abajo (“Niño”) para que participe y aparezca en una fotografía (inmóvil) o en una programación audio-visual (colectivamente llamada “la Programación”), ya sea por medio de la televisión, película, vídeo, cinta de audio o medio electrónico para la Superintendencia de Escuelas del Condado de Kern y renuncio a cualquier derecho del control para aprobar el uso o re uso de la Programación.

Todos los derechos de cualquier naturaleza que puedan originarse de la Programación, son por medio de la presente, concedidos a nivel mundial y en perpetuidad para la Superintendencia de Escuelas del Condado de Kern.

De parte mía y del Niño, por la presente renuncio a cualquier derecho por honorarios, regalías u otra compensación que pudiesen originarse de la participación del Niño en la Programación bajo las leyes de los Estados Unidos o de cualquier otro estado, o bajo las leyes de cualquier otra nación o jurisdicción.

De parte del Niño, concedo pleno permiso para que se use el nombre del Niño, su semejanza, actuación, voz y biografía para propósitos de publicidad, propaganda o promoción de la Programación en cualquier medio, incluyendo los medios de prensa, radio, televisión, películas, y cintas de audio o vídeos.

Yo, explícitamente represento, ya sea como padre o como guardián legal asignado, que tengo la autoridad para firmar este Consentimiento y Permiso de parte del Niño.

**POR FAVOR USE LETRA DE MOLDE PARA LLENAR LO SIGUIENTE:** (letra de molde)

Nombre del Niño: \_\_\_\_\_ Edad: \_\_\_\_\_

Nombre del Padre o Guardián Legal: \_\_\_\_\_

Dirección: \_\_\_\_\_

Ciudad: \_\_\_\_\_ Estado: \_\_\_\_\_ Zona Postal: \_\_\_\_\_

Número de Teléfono (incluya el código de área): \_\_\_\_\_

\_\_\_\_\_  
Firma del Padre o Guardián Legal

\_\_\_\_\_  
Fecha

***Return this form to your teacher/adult sponsor or to the Kern County Regional Science Fair,  
1300 17th Street, City Centre, Bakersfield, CA 93301-4533.***

***It must be received by the Science Fair on or before February 29, 2008.***

***Keep a copy of this completed and signed form in your logbook and submit a copy with your Student Entry Form.***

## Qualified Scientist or Designated Supervisor Form

Student name: _____ Grade _____
School _____ Preferred category _____
Project title (120 characters maximum) _____
_____

**Attach additional sheets if necessary**

<b>Section 1 – To be completed by the student</b>  1. Nature of restriction – check all that apply: <table style="width: 100%; border: none;"><tr><td style="width: 50%;"><input type="checkbox"/> Human subjects (other than survey)</td><td style="width: 50%;"><input type="checkbox"/> Human/animal tissue</td></tr><tr><td><input type="checkbox"/> Non-human vertebrates</td><td><input type="checkbox"/> Controlled substances</td></tr><tr><td><input type="checkbox"/> Pathogenic organisms</td><td><input type="checkbox"/> Hazardous substances</td></tr><tr><td><input type="checkbox"/> Recombinant DNA</td><td><input type="checkbox"/> Firearms</td></tr></table> 2. Purpose of project. What are the project hypothesis and anticipated outcomes?  3. Describe your proposed experimental methods.  4. Describe the anticipated risks – to yourself and others.  5. Who will handle disposal of tissues/animals/hazardous materials/bacteria?	<input type="checkbox"/> Human subjects (other than survey)	<input type="checkbox"/> Human/animal tissue	<input type="checkbox"/> Non-human vertebrates	<input type="checkbox"/> Controlled substances	<input type="checkbox"/> Pathogenic organisms	<input type="checkbox"/> Hazardous substances	<input type="checkbox"/> Recombinant DNA	<input type="checkbox"/> Firearms
<input type="checkbox"/> Human subjects (other than survey)	<input type="checkbox"/> Human/animal tissue							
<input type="checkbox"/> Non-human vertebrates	<input type="checkbox"/> Controlled substances							
<input type="checkbox"/> Pathogenic organisms	<input type="checkbox"/> Hazardous substances							
<input type="checkbox"/> Recombinant DNA	<input type="checkbox"/> Firearms							

### Section 2 – To be completed by the Qualified Scientist or Designated Supervisor

Name _____ Institution/company _____
Address _____ City _____ State _____ Zip _____
Phone(s) _____ FAX _____ E-mail _____
Specialty and/or degrees related to project _____
Degrees/fields _____
<input type="checkbox"/> I certify that I reviewed and approved the experimental methods proposed for this project prior to the start of the project.
<input type="checkbox"/> I have a working knowledge of the experimental methods and techniques proposed for this project.
<input type="checkbox"/> If the student or Designated Supervisor is not trained in the procedures involved, I will conduct that training and ensure that the project is executed in a safe and responsible manner. I will provide advice and supervision during the student research.
<input type="checkbox"/> I have read and understand the Kern County Regional Science Fair Restricted Project rules, including applicable Federal and State regulations.
<input type="checkbox"/> If a controlled substance is used in this project, I certify that I possess a DEA license required for procuring and dispensing such a substance. I assume responsibility for the lawful and appropriate use of this substance. (License # _____).
<input type="checkbox"/> Qualified Scientist <input type="checkbox"/> Designated Supervisor
_____
Print name _____ Signature _____ Date _____

**Return this form to your teacher/adult sponsor or to the Kern County Regional Science Fair,  
1300 17th Street, City Centre, Bakersfield, CA 93301-4533.**

**It must be received by the Science Fair on or before February 8, 2008.**

**Keep a copy of this completed and signed form in your logbook and submit a copy with your Student Entry Form.**

**Human Subjects Form**  
**Required for all projects involving humans**

Student name: _____	Grade _____
School _____	Preferred category _____
Project title (120 characters maximum) _____	
_____	

**Attach additional sheets if necessary**

<p><b>Section 1 – To be completed by the student</b></p> <p>1. Purpose of project. What are the project hypothesis and anticipated outcomes?</p>  <p>2. Describe your proposed experimental methods.</p>  <p>3. Explain why human subjects are necessary for this research:</p>  <p>4. Describe the anticipated risks, including physical, psychological, social, legal, and/or others.</p>  <p>5. Describe the procedures proposed to minimize the above risks.</p>
--

**Section 2 — To be completed by an Institutional Review Board (IRB) member prior to experimentation**

Risk includes, but is not limited to, exercise, ingestion, physical and emotional stress, and invasion of privacy. I reviewed 45CFR 46, section 46.102 and the student research plan and have determined the following:			
<input type="checkbox"/> No risk involved. The project is approved			
<input type="checkbox"/> Acceptable risk. The project is approved. A sample of the Informed Consent Form with the Student section filled out is attached.			
<input type="checkbox"/> Unacceptable risk. The project is not approved. The project must be revised, and a qualified scientist must supervise.			
_____	_____	_____	_____
Member of IRB (print)	Signature	Position	Date

***Return this form to your teacher/adult sponsor or to the Kern County Regional Science Fair,  
1300 17th Street, City Centre, Bakersfield, CA 93301-4533.  
It must be received by the Science Fair on or before February 8, 2008.***

***Keep a copy of this completed and signed form in your logbook and submit a copy with your Student Entry Form.***

## Informed Consent Form

Copy this form before obtaining individual signatures or attach a roster to this form containing all required signatures.

**Required for all research or surveys involving risk to humans.**

**Recommended for all surveys in which no risk is determined.**

Student name: \_\_\_\_\_ Grade \_\_\_\_\_  
School \_\_\_\_\_ Preferred category \_\_\_\_\_  
Project title (120 characters maximum) \_\_\_\_\_  
\_\_\_\_\_

**Attach additional sheets if necessary**

### Section 1 — To be completed by student

1. Describe the project, including the experimental methods to be used.
  
  
  
  
  
  
  
  
  
  
2. Assess any potential risks to humans (physical, psychological, social, legal, or other), which may be involved in this project. What are the possible discomforts that may reasonably be expected?
  
  
  
  
  
  
  
  
  
  
3. Who will supervise the project?
  
  
  
  
  
  
  
  
  
  
4. Where and when will the project experimentation be done?

### Section 2 — To be completed by human subject prior to experimentation

**Contact teacher/adult sponsor \_\_\_\_\_ if you have any questions about this experiment.**

- I have read and understand the conditions stated above, and I consent to participate in this experimental procedure.  
 I understand that I am free to withdraw my consent and to withdraw from this project at any time.

I consent to the use of visual images (e.g., photographs, videos) involving my participation in this project.  Yes  No

\_\_\_\_\_  
Participant (print) Signature Date

If participant is under 18 years old, a parent/guardian signature is required.

\_\_\_\_\_  
Parent/Guardian (print) Signature Date

**Return this form to your teacher/adult sponsor or to the Kern County Regional Science Fair,  
1300 17th Street, City Centre, Bakersfield, CA 93301-4533.**

**It must be received by the Science Fair on or before February 8, 2008.**

**Keep a copy of this completed and signed form in your logbook and submit a copy with your Student Entry Form.**

## VERTEBRATE FIELD STUDY FORM

Student name: _____ Grade _____
School _____ Preferred category _____
Project title (120 characters maximum) _____
_____

**Attach additional sheets if necessary**

<b>Section 1 – To be completed by student</b>  <ol style="list-style-type: none"><li>1. What animals will be studied?</li> <li>2. What will be your sample size?</li> <li>3. How many times will you repeat your observations?</li> <li>4. What animal behavior will you be observing?</li> <li>5. How will you find out if your observations are or are not causing stress to the animals?</li> <li>6. If you will be observing feeding behavior, (a) will the foods the animals eat be a normal part of their diet and (b) will the animals have free choice of what to eat?</li></ol>
--

**Section 2 – To be completed by Qualified Scientist or Designated Supervisor.**

Name _____
Institution/company _____ Position _____
Address _____ City _____ State _____ Zip _____
Phone(s) _____ FAX _____ E-mail _____
Specialty and/or degrees related to project _____
_____
Degrees/fields _____
<p>I certify that I have discussed this project with the student <b>prior</b> to its start. I will supervise the student's work and accept primary responsibility for the care and handling of the live vertebrate animals used in the project. I further certify that I am competent in the proper care and handling of laboratory animals and that I meet generally accepted animal care supervisory standards. When an animal is to be euthanized, I will personally perform the procedure, using generally accepted agents and methods. I have read and will comply with California Educational Code provisions regarding the use of live vertebrate animals in elementary or high school activities and classes.</p>
_____
Animal Care Supervisor or Qualified Scientist (print)                      Sign                      Date

**Section 3 – To be completed by an Institutional Review Board member prior to experimentation**

I approve the project described above.
_____
Member of IRB (print)                      Sign                      Date

**Return this form to your teacher/adult sponsor or to the Kern County Regional Science Fair, 1300 17th Street, City Centre, Bakersfield, CA 93301-4533. It must be received by the Science Fair on or before February 8, 2008. Keep a copy of this completed and signed form in your logbook and submit a copy with your Student Entry Form.**

## Human, Animal Tissue, and Microorganisms Form

Required for all research using viable fresh tissue, organs, and human or animal parts, including blood, blood products, other body fluids, teeth, and cell cultures.

Not required for USDA approved food products unless the food products are used to study bacteria.

Student name: _____	Grade _____
School _____	Preferred category _____
Project title (120 characters maximum) _____	
_____	

Attach additional sheets if necessary.

<b>Section 1 – To be completed by student</b>
1. What tissue(s), organ(s), or microorganism(s) are proposed for use in this project?
2. Where and how were the tissues and/or microorganisms obtained?
- If obtained from an animal source, was the animal euthanized? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, why was the animal euthanized?
3. How will you dispose of the tissue or microorganisms after experimentation is complete?

### Section 2 – To be completed by the provider of tissue when obtained from a non-commercial source

1. I certify that any: (a) human blood or blood products used in this project have been tested and found free of HIV and hepatitis B and C antibodies and antigens, and that such has been properly documented; and (b) human teeth used in this project have been found free of blood and blood products, and that such has been properly documented.		
_____ Certifying authority (print)	_____ Sign	_____ Date
2. I certify that tissues and fluids used in the project will be handled in accordance with the standards and guidance set forth in Occupational Health and Safety Act, 29CFR, Subpart Z, 1910.1030 – <i>Blood Borne Pathogens</i> .		
_____ Qualified Scientist (print)	_____ Sign	_____ Date
3. I certify that the above listed materials were provided by me for use in this project and that the student was not involved in their direct acquisition.		
_____ Materials provider (print)	_____ Sign	_____ Date
_____ Institution	_____ Title	_____ Phone
4. I have reviewed the proposed project and approve the use of the materials indicated above.		
_____ SRC Chairperson (print)	_____ Sign	_____ Phone

**Return this form to your teacher/adult sponsor or to the Kern County Regional Science Fair,  
1300 17th Street, City Centre, Bakersfield, CA 93301-4533.**

**It must be received by the Science Fair on or before February 8, 2008.**

**Keep a copy of this completed and signed form in your logbook and submit a copy with your Student Entry Form.**

## Restricted Projects Forms Cover Sheet

**THIS FORM IS FOR TEACHER/SCHOOL USE ONLY**

School name \_\_\_\_\_ Date \_\_\_\_\_

Teacher name \_\_\_\_\_ Principal name \_\_\_\_\_

All restricted projects must have been approved before they are started. This sheet and all completed forms must be submitted by the deadline date shown below.

**Part A Human Surveys** Students are to complete the **Human Subjects** and **Informed Consent** forms, including all signatures required for approval, and submit them to you. When this has been done by a student, you may allow her/him to proceed. Please list in the space provided those students whom you have approved to conduct Human Surveys: (Use additional pages if necessary.) Submit the completed forms to the Science Fair at the address shown below.

Students approved to proceed on human surveys (alphabetical order, last name first):

_____	_____
_____	_____
_____	_____
_____	_____

**Part B Other Restricted Projects** Students are to complete the appropriate forms (see the Restricted Projects section), including all signatures required for approval, and submit them to you. When this has been done by a student, you may allow her/him to proceed. Please list in the space provided those students whom you have approved to conduct Other Restricted Projects: (Use additional pages if necessary.) Submit the completed forms to the Science Fair at the address shown below.

<u>Student name (last, first)</u>	<u>Restricted area (e.g., non-human vertebrates)</u>
_____	_____
_____	_____
_____	_____
_____	_____

***This form must be submitted on or before February 8, 2008 to the Kern County Regional Science Fair, 1300 17th St., City Centre, Bakersfield, CA 93301-4533***

***For questions about restricted projects, please call Kathy Hill at (661) 636-4640.***

**Institutional Review Board Information Sheet**

**THIS FORM IS FOR TEACHER/SCHOOL USE ONLY**

School name \_\_\_\_\_ Principal name \_\_\_\_\_

Date \_\_\_\_\_

**Institutional Review Board Members**

Name _____	Occupation/title _____
Institution or company _____	
Address _____	
Telephone number(s) _____	E-mail address _____
Signature _____	

Name _____	Occupation/title _____
Institution or company _____	
Address _____	
Telephone number(s) _____	E-mail address _____
Signature _____	

Name _____	Occupation/title _____
Institution or company _____	
Address _____	
Telephone number(s) _____	E-mail address _____
Signature _____	

***This form must be submitted on or before February 8, 2008 to the Kern County Regional Science Fair, 1300 17th St., City Centre, Bakersfield, CA 93301-4533***

## Judging Criteria

### 1. ORIGINALITY/CREATIVITY (30 points)

- The problem is original or a unique or unusual approach to an old problem.
- Experimental design shows creativity.
- Resources - materials and equipment - are used ingeniously.
- Application and interpretation of data demonstrate student's creativity and original thinking.
- Student shows understanding of unanswered questions.
- Project goes beyond textbooks found at the student's grade level.

<b>Poor</b>	<b>Weak</b>	<b>Average</b>	<b>Strong</b>	<b>Exemplary</b>	<b>Score</b> _____
<b>0-11</b>	<b>12-17</b>	<b>18-22</b>	<b>23-26</b>	<b>27-30</b>	

### 2. SCIENTIFIC THOUGHT AND UNDERSTANDING (35 points)

- The hypothesis is well stated and based on reading, study and/or observation.
- Project demonstrates depth of study.
- Student demonstrates depth of knowledge regarding the scientific and/or engineering principles involved.
- The experimental design is effective in testing the hypothesis.
- Results and conclusions are clearly and honestly stated, and are logical, relevant, and related to the hypothesis.
- Implications of the experimental results are discussed, and one or more further hypotheses and experiments are suggested.
- Student can extrapolate what was learned from the project to the subject in general or to related subjects.

<b>Poor</b>	<b>Weak</b>	<b>Average</b>	<b>Strong</b>	<b>Exemplary</b>	<b>Score</b> _____
<b>0-13</b>	<b>14-20</b>	<b>21-25</b>	<b>26-31</b>	<b>32-35</b>	

### 3. ORGANIZATION AND COMPLETENESS (15 points)

- The project has a well-defined goal/objective.
- Well-organized and executed experimental procedures.
- The scientific literature (considering grade level) has been searched.
- Experimental data recorded in a careful and orderly manner.
- Experiments have been repeated as needed.
- Implications of the project fully addressed.
- Well-organized display board.

<b>Poor</b>	<b>Weak</b>	<b>Average</b>	<b>Strong</b>	<b>Exemplary</b>	<b>Score</b> _____
<b>0-5</b>	<b>6-8</b>	<b>9-11</b>	<b>12-13</b>	<b>14-15</b>	

### 4. EFFORT AND MOTIVATION (10 points)

- Amount of time spent on project.
- Amount of time conducting background reading and study.
- Extent to which depth of background reading and study was reflected in the project.
- The student learned a considerable amount about the subject on the project.
- The display board was informative and attractive.

<b>Poor</b>	<b>Weak</b>	<b>Average</b>	<b>Strong</b>	<b>Exemplary</b>	<b>Score</b> _____
<b>0-3</b>	<b>4-5</b>	<b>6-7</b>	<b>8-9</b>	<b>10</b>	

### 5. CLARITY (10 points)

- Original project notebook is available for inspection.
- Project notebook is well organized and accurate.
- The purpose, hypothesis, procedures, results, and conclusions are clearly stated.
- The project title accurately portrays the actual project.
- The abstract is clear and well written.
- Oral presentations are clear and reflect knowledge of the problem and the basic science underlying it.
- Audio-visual materials, including the display board, are clear and relevant to the project.

<b>Poor</b>	<b>Weak</b>	<b>Average</b>	<b>Strong</b>	<b>Exemplary</b>	<b>Score</b> _____
<b>0-3</b>	<b>4-5</b>	<b>6-7</b>	<b>8-9</b>	<b>10</b>	

# KERN COUNTY REGIONAL SCIENCE FAIR

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# KERN COUNTY REGIONAL SCIENCE FAIR

## Resources

### **Beale Memorial Library**

Reference: General information, literature searches  
Librarian  
(661) 861-2136

### **Mentor Information**

Dr. Ralph Phillips  
(661) 845-0594

### **Kern County Superintendent of Schools Office**

- Rules -  
Kathy Hill, Coordinator  
(661) 636-4640  
e-mail:kahill@kern.org

### **Look for Science Fair Home page at**

<http://ci.kern.org/sciencefoundation>

### **Tips for a good project at**

[http://www.usc.edu/CSSF/Resources/Good\\_Project.html](http://www.usc.edu/CSSF/Resources/Good_Project.html)