

4-H Science & Engineering Fair

Competitor Packet

JANUARY 12, 2013
CATAWBA SCIENCE CENTER
HICKORY, NORTH CAROLINA



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TIMELINE

August – Early September

- Introduction to research and scientific method
- Discuss project with students
- Brainstorm project ideas
- Begin paperwork

Late September

- Topic approval
- Students begin review of literature
- State problem to research
- List materials needed
- Form hypothesis

Early October

October 5, 2012	Science Fair Workshop, Lincoln County 4-H National Science Day
October 20, 2012	Science Fair Workshop, Lincoln County 4-H Office
Finalize procedures	
Have procedures and research plan approved	
Begin experiment	

October

Experiment!
Have data book checks
Begin analysis of data

October 31, 2012 **4-H SEF Early Registration Deadline**

November

Experiment!
Continue to record data and checks
Continue analysis of data

December

- Finish experiment
- Analysis of data
- Write conclusions
- Design graphs
- Finish research paper
- Write abstract and design board

December 1, 2012 4-H SEF Registration Deadline

January 12, 2013 **4-H Science Fair, Catawba Science Center, Hickory**



Region 1 Science Fair, Science and Technology Building, ECU, Greenville
Region 2 Science Fair, Hanover Hall Gym, UNC-Wilmington

Region 3 Science Fair, Wakefield Middle School (tentative)

Region 4 Science Fair, Jones Physical Education Center, UNC-Pembroke

Region 5 Science Fair, Salem College, Winston Salem

Region 6A Science Fair, Horizons Unlimited, Salisbury

Region 6B (Mecklenburg County) Science Fair

Region 7 Science Fair, Stone Center, Wilkes County Schools

Region 8 Science Fair, Ramsey Regional Activity Center, WCU

State Science Fair, Meredith College, Raleigh

Required Project Elements

- 1) Display
- 2) Log Book
- 3) Report
- 4) Bibliography (3 sources for grades 3-8 and 5 sources for grades 9-12)

EARLY REGISTRATION – DUE OCTOBER 31, 2012

**** CONSIDERED FOR REGIONAL COMPETITION ****

- 1) 4-H Enrollment Form
- 2) 4-H Medical Release Form (Notarized)
- 3) 4-H Media Release Form
- 4) NCSU Informed Consent for Research
- 5) Project Form 1
- 6) Project Form 1A
- 7) Project Form 1B
- 8) NC Science and Engineering Abstract Form (completed after project completion and displayed with project)
- 9) Additional Forms may be required after screening early registration entries

REGULAR REGISTRATION – DUE DECEMBER 1, 2012

NOT CONSIDERED FOR REGIONAL COMPETITION

- 1) 4-H Enrollment Form
- 2) 4-H Medical Release Form (Notarized)
- 3) 4-H Media Release Form
- 4) NCSU Informed Consent for Research
- 5) Project Form 1A

Send completed forms and \$5 event entry fee to:

Lincoln County 4-H
Attn: 4HSEF
115 W. Main Street
Lincolnton, NC 28092

For more information or assistance:

[April Dillon@ncsu.edu](mailto:April_Dillon@ncsu.edu), Lincoln County

[Ashley Lee@ncsu.edu](mailto:Ashley_Lee@ncsu.edu), Cleveland County

[Donna Mull@ncsu.edu](mailto:Donna_Mull@ncsu.edu), Catawba County

[Deborah Bost@ncsu.edu](mailto:Deborah_Bost@ncsu.edu), Cabarrus County

[Cynthia Robbins@ncsu.edu](mailto:Cynthia_Robbins@ncsu.edu), Rutherford County

For additional guidelines and rule information:

www.societyforscience.org/isef/rulesandguidelines

<http://www.ncsciencefair.org/index.html>

Display and Safety

Note: Maximum project sizes include all project materials and supports. If a table is used, it becomes part of the project and may not itself exceed the allowed dimensions nor may the table plus any part of the project exceed the allowed dimensions.

- 108 in. (274 cm) height, 48 in. (122 cm) in width, 30 in. (76 cm) in depth
- Project positioned at the back of and parallel to the booth
- NO living organisms or plants
- NO Taxidermy specimens or parts
- NO human or animal food
- NO human / animal parts or body fluids (ex. Blood, Urine, etc.)
- NO laboratory / household chemicals (including water)
- NO poisons, drugs, controlled substances, hazardous substances or devices
- NO dry ice or other sublimating solids
- NO sharp items (ex. syringes, needles, pipettes, knives, etc.)
- NO flames or highly flammable materials
- NO batteries with open-top cells
- NO awards, medals, business cards, flags, endorsements and/or acknowledgements
- NO photographs or other visual presentations depicting vertebrate animals in surgical techniques, dissections, necropsies, or other lab procedures
- NO active internet or e-mail connections as part of displaying or operating the project
- NO glass or glass objects
- NO lasers (class II, III or IV)
- NO apparatus producing temperatures that will cause physical burns
- NO project involving starvation or dehydration of plants and animals
- NO apparatus deemed unsafe by the Display and Safety Committee, or Fair Director (ex. large vacuum tubes, pressurized tanks, etc.)

The following are allowed within a project display or booth with compliance to the restrictions indicated

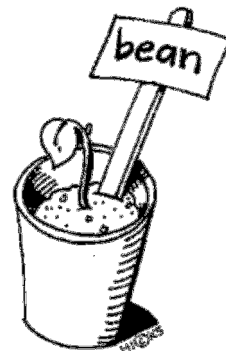
- Soil or waste samples (if permanently sealed in acrylic)
- Photographs and / or Visual Depictions if...
 - NO offensive or inappropriate depictions
 - Credit reference present for all unique sources
 - Any photographs of human subjects other than the student participant must be accompanied by appropriately signed consent form(s)
- NOT OPERATIONAL: any apparatus with unshielded belts, pulleys, chains, or moving parts or pinch points.
- UL-listed 3-wire extension cord with appropriate capacity for any electrical loads used by the display (120 or 220 Volt A.C. only)
- For operational displays using electricity there MUST be an accessible, clearly visible on / off switch or other means of disconnect

Types of Projects

Experimental Projects

Experimental Projects are based on a testable question and includes a hypothesis; materials; procedure; independent, dependent, and control variables; data displayed in the form of a chart or graph; explanation of the results; and a conclusion that answers the question.

Students choosing to complete an **Experimental Project** should follow the guidelines below. Projects will be accepted based on approval of the project research plan.



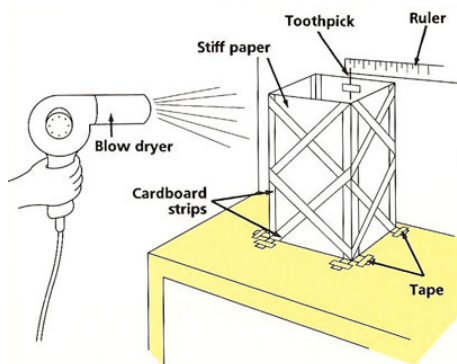
Acceptable examples of **Experimental Projects**: Include any question that is answered by doing an experiment or investigation and includes the control of independent, dependent, and controlled variables; must be testable, gather some form of data, and include graphs and/or charts in the analysis of that data.

Observational Projects

Observational Projects are based on a question formed from prior observations and includes a hypothesis; data collected by scientists, observation, or surveys of people, animals, or the environment displayed in the form of a chart or graph; an explanation of the data identifying patterns and trends; and a conclusion that answers the question.

Students choosing to complete an **Observational Project** should follow the guidelines below. Projects will be accepted based on approval of the project research plan.

Acceptable examples of **Observational Projects**: Include any question / hypothesis that created from prior observations for which data can be gathered and analyzed to demonstrate a pattern or trend. This data analysis is displayed for recognition of identified patterns and/or trends which support a hypothesis and answer the original question. These projects include a question; a hypothetical statement; procedures, including the steps of data manipulation; data collected displayed graphically; an explanatory paragraph interpreting the data, and a conclusion based on the data.



Engineering Projects

Engineering Projects are based on a defined need and includes background research, design criteria, preliminary designs, construction and testing of a prototype, iterative redesign and retesting, and graphic and descriptive presentation of the results.

Students choosing to complete an **Engineering Project** should follow the guidelines below. Projects will be accepted based on approval of the project research plan.

Acceptable examples of **Engineering Projects**: Include any defined need that supports the creation of a problem statement, hypothesized solution to the defined need, method for design of solution, creation of engineering concept, testing and evaluation of engineered concept, gathering of relevant testing data, analysis of testing data and resulting conclusions with further proposed action.

Student Checklist of Judging Criteria

Students: When your Science Fair Project is finished, use this checklist to make sure your project is complete and you have everything you need on your backboard.

Read each bullet in the bold categories below. Check YES or NO for each bullet, based on your project. Then, go back and fix the areas on your project where you checked NO.

	YES	NO
A. Appearance and Organization		
• Is my project arranged in a step-by-step order?	_____	_____
• Are all the parts clearly labeled? (Problem, Hypothesis, etc.)	_____	_____
• Do I have a title?	_____	_____
• Is it neat and organized?	_____	_____
• Is my name on my project?	_____	_____
B. Question/Problem Formulation		
• Did I state the problem or question?	_____	_____
• Is it a testable problem or question that supports the gathering of data?	_____	_____
C. Hypothesis		
• Does my hypothesis state a possible outcome of the experiment and tell why I think it will happen that way?	_____	_____
• Did I base my prediction on research?	_____	_____
• Is my hypothesis stated in the form of an "if... then" statement?	_____	_____
D. Procedure: Written Procedure		
• Did I list the materials and equipment I used with specific amounts, including units (SI or Metric)?	_____	_____
• Did I list all steps of the procedure in detail, clearly and in sequential order?	_____	_____
• Can someone repeat my experiment exactly as I have by just referencing my procedures?	_____	_____
E. Materials and Procedure: Experimental Design		
• Did I test it three or more times (multiple trials) or use a large enough sample size (observational projects) to support the hypothesis?	_____	_____
• Was I careful to control conditions so that something unexpected didn't affect the results (dependent variables)?	_____	_____
• Are the independent and dependent variables, observational factors, and/or design factors clearly identified?	_____	_____

F. Data Collection and Representation

- Does the data show that I did the experiment or observation carefully? _____
- Is the data displayed in an appropriate way such as graphs, charts, drawings, photographs, etc? _____

G. Data: Written Explanation

- Does my explanation summarize and analyze the data? _____
- Does my explanation describe patterns and trends in the data? _____
- Does my explanation interpret my charts, graphs, and other visual organization tools? _____

H. Appropriate Conclusion

- Does my conclusion reflect the data? _____
- Does my conclusion talk about my Hypothesis? _____
- Does my conclusion state whether or not my hypothesis was supported or not supported? _____
- Does my conclusion address my original scientific question? _____

I. Research Paper & Log Book

- Does my research paper address the validity of my original hypothesis? _____
- Does my research paper summarize all of my project related research? _____
- Does my Log Book include organized notes and details supporting all stages of research and project design? _____
- Did I use 3 or more references to support my experiment? _____
- Is my research paper evenly supported by a variety of references? _____

J. Understanding of Experiment

- Can I clearly explain the procedure and results of this experiment to someone who does not know about it? _____
- Can I connect this experiment to real-world application? _____
- Can I effectively explain the scientific and / or engineering concepts involved with my research? _____

K. Application of Experiment

- Can I suggest another experiment that I could do if I wanted to find out more about this topic? _____

Sample Science Fair Interview Questions

Overall Appearance

1. Who helped you with your project?
2. What was your favorite part of the science project process?
3. How did you decide how to organize your information on the display board?
4. How long did it take for you to complete the project?

Question

1. How did you decide on the question that you wanted to investigate?
2. Is this topic something that you've always been interested in finding out more about?
3. Did your question allow you to complete an investigation to gather data?

Hypothesis

1. What did you predict the outcome of your investigation would be?
2. What resources did you use to gather information about your project before you started your investigation?
3. When you finished gathering information from your resources, did you have to adjust your hypothesis at all?

Materials/Procedures **Written Procedure**

1. Have you listed the exact amount of each material used so that someone else could complete your investigation? Did you use metric or customary units?
2. Have you listed the procedure in an organized, step-by-step order?
3. Why do you think it's important to have the procedure listed in a step-by-step order?

Materials/Procedures **Experimental Design**

1. How many times did you repeat your investigation?
2. Why do you think it's important to repeat an investigation more than once?
3. What was the independent variable in your investigation? What was the dependent variable?
4. How were you able to control all the variables except the one you were changing?
5. If you were to complete this investigation 3 more times, what would you think would be the outcome of the investigation?

Results and Graphic Representation

1. How did you decide which kind of graph to use to display your data?
2. Could you have used a different type of graph to show the results of your investigation?
3. Have you included and labeled all of the necessary parts of your graph?
4. Does the information on your graph accurately show the information you collected?

Results: Written Explanation

1. How does your chart/graph show the results of your investigation trials?
2. Have you included information from all of the trials or did you graph the mean of the sets of data?
3. Does the information in your written explanation reflect the results of your investigation trials?

Conclusion

1. Did your investigation have the results that you predicted?
2. Does your conclusion state if your hypothesis was supported or not supported?
3. What did you learn as a result of completing the investigations for this SET fair project?

Interview: Understanding

1. If you had to do this SET fair project again, what would you have done differently?
2. What suggestions would you give to someone who was interested in completing your investigation?

Interview: Application

1. How would what you learned in this investigation be useful in solving a real problem?
2. Can you think of an occupation that would benefit from the information that you gained as a result of this investigation?
3. As you were completing your investigation, did you think of other questions that you would like to find answers to in future investigations?

Judge: _____ Participant: _____

Date: _____ Age: ____ Category: _____

4-H Science Fair Judging Rubric

Creative Ability (score each from 0-6)

The questions asked are student-initiated and original	
The approach to solving the problem is creative	
Equipment is creatively used or had to be made/modified	
Interpretation of the data shows creative and original thinking by student	
Student has understanding of project implications beyond their research	
Total Possible Points	/30

Scientific Thought (score each from 0-6)

Clear and unambiguous statement of problem	
Clearly defined procedural plan for obtaining a solution	
Variables clearly recognized and defined; proper controls used correctly	
Data adequately supports student's conclusions; limitations recognized	
Student understands project's ties to other research	
Scientific literature cited, not just popular literature (i.e. newspapers, web)	
Total Possible Points	/30

Thoroughness (score each from 0-3)

Original question was completely addressed	
Conclusions are based on repeated observations (not single experiments)	
Project notes / lab notebook are complete	
Student is aware of alternate approaches or theories	
Student spent an appropriate amount of time on the project	
Total Possible Points	/15

Skill (score each from 0-5)

Data was obtained & analyzed appropriately by student	
Student worked largely independently	
Student has required skills & understanding to continue research on own	
Total Possible Points	/15

Clarity (score each from 0-2)

Clear discussion of project (not a memorized speech)	
Written material/poster reflects understanding of research project	
Data and results are presented clearly	
Presentation is forthright	
Student designed and created poster largely independently	
Total Possible Points	/10

Maximum Total: **100**

Adapted from Region 6A Science Fair, Horizons Unlimited, Salisbury, NC

Which Forms Do I Need?

REQUIRED FOR EVERYONE:

- 4-H Enrollment
- 4-H Medical
- 4-H Media
- NCSU Informed Consent for Research
- ISEF Forms 1a

REQUIRED FOR EARLY REGISTRATION – CONSIDERATION FOR REGIONAL COMPETITION:

- Forms 1 and 1b
- The Abstract is only required by those meeting early registration for regional competition consideration
- These additional forms may be required if your research:
 - Is conducted in a regulated research institution
 - Uses hazardous materials
 - Involves humans or animals
 - Is a continued project from previous years

These forms may be found at <http://www.societyforscience.org/page.aspx?pid=517>

1(c) Regulated Research Institution

This form is completed by the supervising adult, explains what the student researcher actually did and is signed after the project is completed. This form is only needed if the research was done at a research institution (university lab, for example) or in an industrial setting, but is not completed for work done at a high school.

(2) Qualified Scientist

On this page, the scientist explains what will be done to oversee this project. The qualified scientist (QS) and, if needed, the designated supervisor (DS), will sign with the date that they approve this project (before experimentation takes place).

(3) Risk Assessment Form

Required for projects using hazardous chemicals, activities or devices and must be completed and signed by the DS or QS prior to student experimentation.

(4) Human Subject and Informed Consent

This page, along with the research plan, is submitted by the student researcher to explain to the IRB to explain how the safety and well being of the test subjects and the confidentiality of results will be ensured. The IRB reviews the project, checks the risk level and determines if written documentation of consent/permission is required. Each IRB member signs with the date they approve this project. This review and the date signed must be **BEFORE** any experimentation takes place.

When required by the IRB, a written informed consent/parental permission form is used to explain very

completely to the research subject and their parent/guardian exactly what will happen to the subject in the project. (See Sample Informed Consent Form.) Questionnaires, sample tests, etc. **MUST** be given to the IRB and to the parent/guardian. If the subject wishes to participate and when required, the parent/guardian also agrees, they each sign with the date that they approve. (**Before** the experiment begins).

(5a) Vertebrate Animal Form

This form is filled out by the student researcher when the experiment is conducted in a Non-Regulated Research Site such as home or school and describes the housing and care for the animals. The SRC reviews this document and determines the level of supervision required for the study and signs and dates **BEFORE** experimentation begins. The bottom of the form is filled out by the veterinarian and/or designated supervisor and is signed and dated when they approve this project with these housing conditions. (**Before** experimentation begins.)

(5b) Vertebrate Animal Form

This form is filled out by the student researcher when the research is conducted at a Regulated Research Institution and describes the study. The Qualified Scientist and the IACUC Chair/Coordinator will sign and date to document the student researcher training and other information regarding the study. A copy of the IACUC approval (not a letter from the Qualified Scientist or Principal Investigator) must be attached.

(6a) Potentially Hazardous Biological Agents

This form is filled out by the student researcher and is required for all research involving microorganisms, rDNA and fresh/frozen tissue, blood and body fluids. SRC/IACUC/IBC/RAC approval required **before** experimentation. The qualified scientist will sign and date. The SRC will choose one or more statements that describe the approval process for the study and will add the date that approval occurred.

(6b) Human & Vertebrate Animal Tissue

This form is filled out by the student researcher and explains the source of the tissue. The Qualified Scientist or Designated Supervisor signs and dates to document the source and handling of this tissue (**before** experimentation).

(7) Continuation Projects Form

If the current project is in a similar area of research as any previous project of the student or any team member, it is considered a continuation. Explain as completely as possible how the project is different from previous experimentation because **ONLY** a new and different research project is allowed. The date signed is the date the student researcher is certifying that this information is correct.



4-H Enrollment Form



Name of 4-H Group/Unit: _____ Year: _____

Member Name _____
 First Middle Last

Address: _____
 Street Address City State Zip Code

Phone: (____) _____ Email: _____ County: _____

Gender*: ☐ Male ☐ Female Date of Birth: _____ Grade: _____ School Attending: _____

Do you live*: ☐ Farm ☐ City over 50,000 people
 (Choose only one) ☐ Town under 10,000 people or rural non-farm ☐ Suburbs of city over 50,000 people
☐ City 10,000-50,000 people ☐ Military installation: _____

Do you have parent/guardian(s) active in the military? Yes ___ No ___

If yes, circle all that apply: Army Air Force Navy Marines Coast Guard National Guard(Air & Army) Reserves

Ethnic group*: A. Choose One: ☐ Hispanic or Latino ☐ Non-Hispanic or Latino
 B. Choose all that apply:
☐ White or Caucasian ☐ Asian
☐ Black or African-American ☐ Native Hawaiian or other Pacific Islander
☐ American Indian or Alaska Native ☐ Other _____

Parent or Guardian: _____
 First Middle Last

Address: _____
 Street Address City State Zip Code

Phone: _____ (____) _____ (____) _____
 Area Code Daytime/Cell phone Area Code Home phone Email (if applicable)

Additional Parent or Guardian: _____
 First Middle Last

Address: _____
 Street Address City State Zip Code

Phone: _____ (____) _____ (____) _____
 Area Code Daytime/Cell phone Area Code Home phone Email (if applicable)

1. A parent or guardian should sign below whichever statements you wish to apply to the youth's involvement in 4-H programs.

_____ I agree to allow 4-H to take photographs of my child for use in 4-H and other N.C. Cooperative Extension educational, promotional, and/or marketing materials. Neither individual addresses nor telephone numbers will be published within these materials.

_____ I do not wish for 4-H to take photographs of my child for use in 4-H or N.C. Cooperative Extension educational, promotional or marketing purposes.

2. The enrolling youth is bound by the NC 4-H Code of Conduct and Disciplinary Procedure for 4-H events and activities. The youth should initial here if he/she has received and reviewed the NC 4-H Code of Conduct and Disciplinary Procedure for 4-H events and activities: _____.

**This information is required for all federally assisted programs and is solely used for the purpose of determining compliance with Federal civil rights laws; your responses will not affect consideration of your application. By providing this information, you will assist us in assuring that this program is administered in a nondiscriminatory manner.*

For office use only



4-H Membership # _____

Date entered: _____

Revised 11/6/2006

Distributed in furtherance of the acts of Congress of May 8 and June 30, 1914. North Carolina State University and North Carolina A&T State University commit themselves to positive action to secure equal opportunity regardless of race, color, creed, national origin, religion, sex, age, or disability. In addition, the two Universities welcome all persons without regard to sexual orientation. North Carolina State University, North Carolina A&T State University, U.S. Department of Agriculture, and local governments cooperating.

**4-H MEDICAL INFORMATION AND INFORMED CONSENT FOR TREATMENT
FOR NC 4-H SPONSORED EVENTS**

PLEASE READ AND COMPLETE THE FOLLOWING FORM. THIS FORM MUST BE PRESENTED AT THE OFFICIAL REGISTRATION FOR THE 4-H SPONSORED EVENT BEING ATTENDED.

I. Medical Information

Known allergies to foods, drugs, insect stings or bites, etc: _____
Special medical concerns or conditions that event supervisors should know about, including contagious illnesses, epilepsy, asthma, diabetes, previous injuries to bones/joints, etc.: _____

List special dietary needs: _____

Medications currently being taken (name of medication, dose, and frequency): _____

Family Physician: Name _____ Phone # (____) _____

Address _____

II. Insurance Information

The 4-H program purchases insurance for youth participants for many sponsored events. In some cases, this coverage will not pay for some medical expenses and it may be necessary to bill the family or your insurance company.

Health Insurance Company _____ Health Insurance
Policy # _____ Company Address _____
_____ Phone Company Telephone
Number (____) _____

III.

If you are a person with a disability and desire any assistive devices, services or other accommodations to participate in this activity, please contact _____ [name, office] at _____ [phone number/TTY] during business hours of 8 a.m. and 5 p.m. to discuss accommodations at least _____ [hours/days] prior to the activity.

Signatures Acknowledging Parts I, II, and III

Parent's/Guardian's signature _____ Date: _____

Participant's Signature: _____ Date: _____

Parent/Guardian telephone #: Home _____ Work _____

1 of 2

Must be completed each year by 4-H'er and Parent/Guardian. If health history changes within that year, it is the 4-H'er & Parent/Guardian's responsibility for updating information.

Approved as of 3/02/06

IV. Informed Consent

In the event that a participant needs minor medical care from 4-H or more significant medical care from a qualified health care provider, including in rare cases possible hospitalization and/or surgery, the parent/guardian is asked to sign the informed consent form below. In case of serious medical condition, 4-H will make every effort to notify the parents, but the first priority may be providing care to the participant.

Authorization to Consent to Health Care for Minor _____
I, _____, of _____ County, am the custodial parent having legal custody of _____, a minor child, age _____, born _____. I authorize any adult(s) acting as agents (including official volunteers) or employees of the _____ 4-H program and in whose care the minor child has been entrusted, to do any acts which may be necessary or proper to provide for the health care of the minor child, including, but not limited to, the power (i) to provide for such health care at any hospital or other institution, or the employing of any physician, dentist, nurse, or other person for such health care, and (ii) to consent to and authorize any health care, including administration of anesthesia, X-ray examination, performance of operations, and other procedures by physicians, dentists, and other medical personnel except the withholding or withdrawal of life sustaining procedures.

This consent shall be effective for one year from the date of the execution.

Custodial Parent Signature _____ Date _____

STATE OF NORTH CAROLINA
COUNTY OF _____

On this _____ day of _____, 20____, personally appeared before me the said named, _____, to me known and known to me to be the person described in and who executed the foregoing instrument and he (or she) acknowledged that he (or she) executed the same and being duly sworn by me, made oath that the statements in the foregoing instrument are true.

My commission expires _____, 20_____.

Notary Public

(OFFICIAL SEAL)

2 of 2

Must be completed each year by 4-H'er and Parent/Guardian. If health history changes within that year, it is the 4-H'er & Parent/Guardian's responsibility for updating information.

Approved as of 3/02/06



North Carolina 4-H and _____ County 4-H
Photographic, Video, and Audio
Optional Publicity Release



I do _____ or do NOT _____ give permission to North Carolina State University, through its Cooperative Extension program for North Carolina 4-H, and _____ County Extension staff, to take photographs and/or record video and/or audio or otherwise record images and likenesses of me and/or my property and to use these for 4-H Youth Development nonprofit educational, promotional, and/or marketing materials. I further consent that my name and identity may be revealed therein or by descriptive text or commentary.

I expressly release North Carolina State University, its agents, employees, licensees and assigns from and any and all claims which I may have for invasion of privacy, right of publicity, defamation, copyright infringement, or any other causes of action arising out of the use, adaptation, reproduction, distribution, broadcast or exhibition of such recordings of my image, voice, or likeness.

I understand this permission is entirely optional, and that participants who do not give permission will remain eligible for 4-H services, benefits, and privileges the same as those who do give permission.

Participant Name (please print): _____

Participant Signature: _____ **Date:** _____

If individual is under the age of 18, consent of the legal parent or guardian is needed.

Parent/Guardian signature: _____

Parent/Guardian name (please print): _____

Signature: _____ **Date:** _____

1 of 1 Approved as of 3/02/06

North Carolina State University
INFORMED CONSENT FOR 4-H RESEARCH--PARENT AND YOUTH
This form is valid from February 7, 2012 to February 7, 2013

YOUR INVITATION TO PARTNER WITH 4-H ON RESEARCH “TO MAKE THE BEST BETTER”

As a 4-H member, a child or youth can be part of ongoing research on the benefits of youth programs. 4-H is required to report short- and long-term outcomes of youth programs as part of its accountability to federal, state, and local funding agencies. In addition, feedback from youth and the adults also helps 4-H leaders improve programs and create new learning opportunities. With the consent of both you and your child, you or your child will complete one or more assessments related to learning in a 4-H program and evaluation of the 4-H program. Evaluation activities will always be conducted within the guidelines of the NC 4-H Code of Ethics and North Carolina State University Human Subjects Research guidelines.

BACKGROUND INFORMATION

Projects and Procedures. 4-H evaluation activities may use questionnaires, tests, checklists, journals, observations, audio or videotaping, judging of written or oral performances, interviews, and focus groups. Typically, assessments are given before and after a learning event or extended program by trained adult leaders. Your child may also be randomly selected to participate in discussion groups, case studies, or extended interviews designed to give 4-H leaders more in-depth understanding of specific programs. As appropriate, parents, youth leaders, and teachers will be asked to make observations about a child's interaction and achievement in 4-H activities. We make every effort to avoid a “testing” environment. Our goal in 4-H is that evaluation strengthens relationships, promotes learning, and helps 4-H volunteers and professionals build better programs for your youth.

Risks and Benefits. Participation is voluntary. If either you or your child decline to provide consent to participate in any of the above activities (as indicated by not signing this form), such a decision will in no way affect your child's ability to register for and participate in the program. Also, youth may quit an assessment at any time and this will not affect their participation in current or future 4-H activities. Participating in evaluation often helps youth reflect on learning and contribute to improving 4-H programs for themselves and others. There is no known risk in participating in 4-H evaluation activities.

Confidentiality. Research data will be kept strictly confidential and maintained in a secure location. Youth names may be requested on assessments that involve comparisons (e.g., knowledge before and after events, child and parent attitudes). Once data is recorded, names will be removed, replaced by a 4-H ID number (not the Social Security or Drivers License number), and retained only on a master list. Written or oral evaluation reports will not include names or information that might identify specific participants.

Compensation. No compensation is provided for your participation in this discussion group.

CONTACT: If you have questions at any time about the study or the procedures, you may contact Dr. Ben Silliman at 512 Brickhaven Road, NCSU or (919) 515-8485. If you or your child feels he/she have not been treated according to the descriptions in this form, or his/her rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, Regulatory Compliance Administrator, Box 7514, NCSU Campus (919/515-5414).

PARTICIPATION. You (your child's) participation in this study is voluntary; you or your child may decline to participate without loss of benefits to which he/she is otherwise entitled. If you (your child) withdraw from the study before data collection is completed, your (your child's) data will be returned to you or destroyed.

CONSENT. I have read and understand the above information. I have received a copy of this form. I agree to participate (to allow my child to participate) in this study.

Parent signature _____	Date _____
Youth signature (print and initial) _____	Date _____
Investigator's signature _____	Date _____

Checklist for Adult Sponsor (1)

This completed form is required for ALL projects.

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

Student's Name(s): _____

Project Title: _____

- 1) ☐ I have reviewed the Intel ISEF Rules and Guidelines.
- 2) ☐ I have reviewed the student's completed Student Checklist (1A) and Research Plan.
- 3) ☐ I have worked with the student and we have discussed the possible risks involved in the project.
- 4) ☐ The project involves one or more of the following and requires prior approval by an SRC, IRB, IACUC or IBC:
 - ☐ Humans
 - ☐ Vertebrate Animals
 - ☐ Potentially Hazardous Biological Agents
 - ☐ Microorganisms
 - ☐ rDNA
 - ☐ Tissues
- 5) ☐ Items to be completed for ALL PROJECTS
 - ☐ Adult Sponsor Checklist (1)
 - ☐ Student Checklist (1A)
 - ☐ Research Plan
 - ☐ Approval Form (1B)
 - ☐ Regulated Research Institutional/Industrial Setting Form (1C) (when applicable after completed experiment)
 - ☐ Continuation Form (7) (when applicable)

6) **Additional forms required if the project includes the use of one or more of the following** (check all that apply):

- ☐ **Humans** (Requires prior approval by an Institutional Review Board (IRB); see full text of the rules.)
 - ☐ Human Participants Form (4) or appropriate Institutional IRB documentation
 - ☐ Sample of Informed Consent Form (when applicable and/or required by the IRB)
 - ☐ Qualified Scientist Form (2) (when applicable and/or required by the IRB)
- ☐ **Vertebrate Animals** (Requires prior approval, see full text of the rules.)
 - ☐ Vertebrate Animal Form (5A)—for projects conducted in a school/home/field research site (SRC prior approval required.)
 - ☐ Vertebrate Animal Form (5B)—for projects conducted at a Regulated Research Institution. (Institutional Animal Care and Use Committee (IACUC) approval required prior experimentation.)
 - ☐ Qualified Scientist Form (2) (Required for all vertebrate animal projects at a regulated research site or when applicable)
- ☐ **Potentially Hazardous Biological Agents** (Requires prior approval by SRC, IACUC or Institutional Biosafety Committee (IBC), see full text of the rules.)
 - ☐ Potentially Hazardous Biological Agents Risk Assessment Form (6A)
 - ☐ Human and Vertebrate Animal Tissue Form (6B)—to be completed in addition to Form 6A when project involves the use of fresh or frozen tissue, primary cell cultures, blood, blood products and body fluids.
 - ☐ Qualified Scientist Form (2) (when applicable)
 - ☐ Risk Assessment Form (3) required for projects involving protists, archae and similar microorganisms, for projects using manure for composting, fuel production or other non-culturing experiments, for projects using color change coliform water test kits and for projects involving decomposing vertebrate organisms
- ☐ **Hazardous Chemicals, Activities and Devices** (No prior approval required, see full text of the rules.)
 - ☐ Risk Assessment Form (3)
 - ☐ Qualified Scientist Form (2) (required for projects involving DEA-controlled substances or when applicable)

Adult Sponsor's Printed Name _____ Signature _____ Date of Review _____

Phone _____ Email _____

Student Checklist (1A)

This form is required for ALL projects.

1) a. Student/Team Leader: _____ Grade: _____

Email: _____ Phone: _____

b. Team Member: _____ c. Team Member: _____

2) Title of Project: _____

3) School: _____ School Phone: _____

School Address: _____

4) Adult Sponsor: _____ Phone/Email: _____

5) Is this a continuation from a previous year? ☐ Yes ☐ No

If Yes:

a) Attach the previous year's ☐ **Abstract** and ☐ **Research Plan**

b) Explain how this project is new and different from previous years on ☐ Continuation Form 7

6) **This year's** laboratory experiment/data collection: (must be stated (mm/dd/yy))

Start Date: _____
(mm/dd/yy)

End Date: _____
(mm/dd/yy)

7) Where will you conduct your experimentation? (check all that apply)

☐ Research Institution ☐ School ☐ Field ☐ Home ☐ Other: _____

8) List name and address of all non-school work site(s):

Name: _____

Address: _____

Phone: _____

9) **Complete a Research Plan following the Research Plan instructions and attach to this form.**

10) **An abstract is required for all projects after experimentation.**

Research Plan Instructions

A complete research plan is required and must accompany Checklist for Student (1A)

Provide a typed research plan and attach to Student Checklist (1A). Please include your name on each page.

The research plan for ALL projects is to include the following:

A. Question or Problem being addressed

B. Goals/Expected Outcomes/Hypotheses

C. Description in detail of method or procedures (The following are important and key items that should be included when formulating ANY AND ALL research plans.)

- **Procedures:** Detail all procedures and experimental design to be used for data collection

- **Data Analysis:** Describe the procedures you will use to analyze the data/results that answer research questions or hypotheses

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

- Choose one style and use it consistently to reference the literature used in the research plan
- Guidelines can be found in the Student Handbook

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

1. Human participants research:

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

2. Vertebrate animal research:

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

3. Potentially Hazardous Biological Agents:

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

4. Hazardous Chemicals, Activities & Devices:

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

International Rules: Guidelines for Science and Engineering Fairs 2012–2013, www.societyforscience.org/isef

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Approval Form (1B)

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

1) To Be Completed by Student and Parent

a) Student Acknowledgment:

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

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

Student's Printed Name	Signature	Date Acknowledged (mm/dd/yy) (Must be prior to experimentation.)
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b) Parent/Guardian Approval: I have read and understand the risks and possible dangers involved in the **Research Plan**. I consent to my child participating in this research.

Parent/Guardian's Printed Name	Signature	Date Acknowledged (mm/dd/yy) (Must be prior to experimentation.)
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2) To be completed by the local or affiliated Fair SRC

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

a) Required for projects that need prior SRC/IRB approval BEFORE experimentation

(humans, vertebrates or potentially hazardous biological agents)

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

SRC/IRB Chair's Printed Name

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

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

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

SRC Chair's Printed Name

Signature	Date of Approval (mm/dd/yy)
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3) Final Intel ISEF Affiliated Fair SRC Approval (Required for ALL Projects)

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

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

Regional SRC Chair's Printed Name	Signature	Date of Approval
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State/National SRC Chair's Printed Name (where applicable)	Signature	Date of Approval
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OFFICIAL ABSTRACT and CERTIFICATION

Title Student Name School Name	City and State	Country	
Abstract:			Category Pick one only— mark an “X” in box at right
			<input type="checkbox"/> Animal Sciences
			<input type="checkbox"/> Behavioral and Social Science
			<input type="checkbox"/> Biochemistry
			<input type="checkbox"/> Cellular & Molecular Biology
			<input type="checkbox"/> Chemistry
			<input type="checkbox"/> Computer Science
			<input type="checkbox"/> Earth Science
			<input type="checkbox"/> Eng: Electrical & Mechanical
			<input type="checkbox"/> Eng: Materials & Bioengineering
			<input type="checkbox"/> Energy & Transportation
			<input type="checkbox"/> Environmental Management
			<input type="checkbox"/> Environmental Sciences
			<input type="checkbox"/> Mathematical Sciences
			<input type="checkbox"/> Medicine and Health
			<input type="checkbox"/> Microbiology
			<input type="checkbox"/> Plant Sciences
			<input type="checkbox"/> Physics and Astronomy

1. As a part of this research project, the student directly handled, manipulated, or interacted with (check ALL that apply):

- | | |
|---|---|
| <input type="checkbox"/> human subjects | <input type="checkbox"/> potentially hazardous biological agents |
| <input type="checkbox"/> vertebrate animals | <input type="checkbox"/> microorganisms <input type="checkbox"/> rDNA <input type="checkbox"/> tissue |

2. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only

Yes No

3. I/we worked or used equipment in a regulated research institution or industrial setting:

Yes No

4. This project is a continuation of previous research.

Yes No

5. My display board includes non-published photographs/visual depictions of humans (other than myself):

Yes No

6. I/we hereby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work.

Yes No

This stamp or embossed seal attests that this project is in compliance with all federal and state laws and regulations and that all appropriate reviews and approvals have been obtained including the final clearance by the Scientific Review Committee.

COMPLETING THE ABSTRACT:

Abstracts are limited to a maximum 250 words and must fit within the predefined area. Please be sure to consult the information from your affiliate fair for the proper formatting of the header information as fairs differ in what is required (or not allowed).

The abstract should include the following:

- a) purpose of the experiment*
- b) procedure*
- c) data*
- d) conclusions*

It may also include any possible research applications. Only minimal reference to previous work may be included. An abstract must not include the following:

- a) acknowledgments (including naming the research institution and/or mentor with which you were working), or self-promotions and external endorsements*
- b) work or procedures done by the mentor*

COMPLETING THE CERTIFICATION:

At the bottom of the Abstract & Certification form there are six questions. Read each carefully and answer appropriately. The Affiliated Fair Scientific Research Committee will review and approve the abstract and answers to the questions.

Please bring a copy of your Abstract & Certification to the fair and be sure to consult with your affiliated fair regarding the rules of making copies to distribute.

TIPS ON WRITING A PROJECT ABSTRACT

A project abstract is a brief paragraph or two (limited to 250 words or 1,800 characters) highlighting and/or summarizing the major points or most important ideas about your project. An abstract allows judges to quickly determine the nature and scope of a project.

- Emphasize these aspects: purpose (hypothesis), methods (procedures used), data summary or analysis, and conclusions.
- Focus only on the current year's research.
- Omit details and discussions.
- Use the past tense when describing what was done. However, where appropriate use active verbs rather than passive verbs.
- Use short sentences, but vary sentence structure.
- Use complete sentences. Don't abbreviate by omitting articles or other small words in order to save space.
- Avoid jargon and use appropriate scientific language.
- Use concise syntax, correct spelling, grammar, and punctuation.

AVOID A REWRITE

- Focus on what you did, not on the work of your mentor or of the laboratory in which you did your work.
- Do NOT include acknowledgements, self promotion or external endorsements. Don't name the research institution and/or mentor with which you were working and avoid mentioning awards or honors (including achieving a patent) in the body of the abstract.
- Be sure to emphasize the current year's research. A continuation project should only make a brief mention of previous years' research (no more than a sentence or two).

