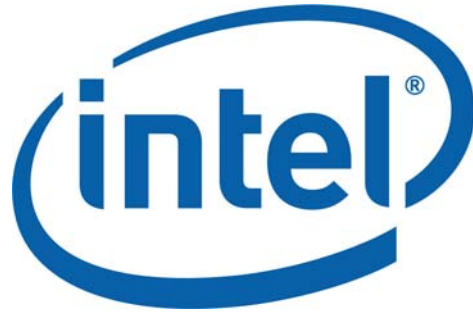


25<sup>th</sup> Annual



# Northwest Science Expo

Portland State University

March 14, 2008

## High School Rule Booklet

Sponsored by:

Intel Foundation

Vernier Software & Technology

Portland State University

Ed and Romell Ackley Foundation

Mentor Graphics Foundation

Youth Exploring Science

JFR Foundation

Madden Industrial Craftsmen

Bill Becker

[www.nwse.org](http://www.nwse.org)

## → Celebrating Science for 25 years ←

The 2008 Intel NWSE, middle and high school projects will continue to be in two different locations at Portland State University. The middle school fair will be in the Stott Center main gym, and high school students in the Smith Center Ballroom. We are celebrating our 25<sup>th</sup> Anniversary, so watch for special events.

The 2008 Intel NWSE is a one day event for high school students. Set-up will take place the morning of March 14, 2008. Activities tailored for high school researchers will be held while the judges review posters.

High school students are still required to qualify for the state fair through a regional fair. All the fairs are listed on the back cover. All high school students are required to follow Intel ISEF rules for their research and register online if seeking to qualify for Intel NWSE.

### Changes to ISEF Rules

- Naturally occurring plant pathogens may be studied at home, but not cultured or introduced into a home/garden environment.
- Clarification has been made to rules involving product testing and vertebrate animal studies conducted outside of research institutions.
- Student Checklist 1A and Student Checklist 1A-Team have been combined into one form.
- An additional box has been added to PHBA Form 6A to document required letter from institutions that do not have a review process for this type of study.

### Registration System Changes

- In preparation for expanding the registration system to other states, the Exhibit Number is now four digits long.
- Also as part of that expansion, adult sponsors and judges are asked to select a fair system when registering.

### Intel NWSE Deadlines

February 13, 2008	Online Registration closes to new projects.
February 21-March 3, 2008	Regional Fairs Held.
<b>March 4, 2008</b>	<b>Last day to edit abstracts or change categories.</b>
March 14, 2008	Intel NWSE set-up, judging and award ceremony.

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Page 8	Display Regulations for Intel NWSE
Page 9	Intel NWSE Awards and ISEF information
Page 10	High School Student Checklist
Back Cover	Fair Contact Information

Request a free copy of the Intel ISEF International Rules and Guidelines by emailing [sciedu@sciserv.org](mailto:sciedu@sciserv.org)

# The Northwest Science Expo System of Fairs

The Northwest Science Expo System (NWSES) is a consortium of student science, math, and engineering project competitions formed in the summer of 2003. The NWSES is structured so that several competitions called regional science expos are held each year in February and early March at sites around the state. They then send their top projects to the state level science competition - the Intel Northwest Science Exposition. Both regional fairs and the Intel NWSE send high school winners to the Intel ISEF.

High school students must qualify for the Intel NWSE by placing in the top one-third at their regional fair.

## Regional Science Fairs

**Aardvark Science Expo:** Serves students in grades 6-12 at Oregon Episcopal School. Held in Portland.

**Beaverton - Hillsboro Science Expo:** Serves students in grades 9-12 in the Beaverton and Hillsboro school districts. Held in Hillsboro.

**Central Western Oregon Science Expo:** Serves grades 6-12 in Yamhill, Marion, Linn, Benton, Tillamook, and Polk counties, Lane County east of the Coast range. Held in Monmouth.

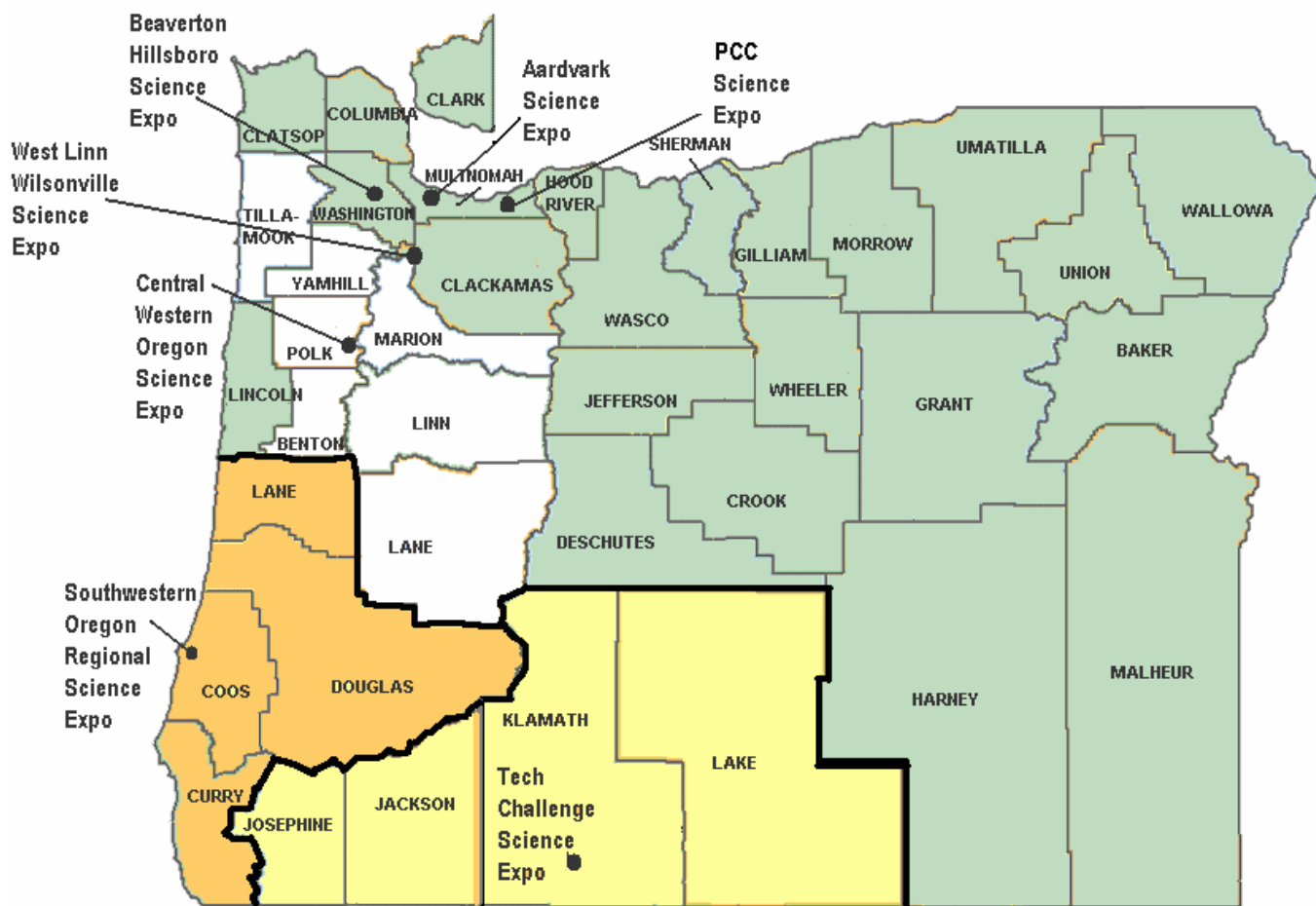
**PCC Science Expo:** Serves students in grades 9-12 in any Oregon or Clark County Washington school not covered by a regional fair. Held in Portland at the Sylvania Campus.

**Southwestern Oregon Regional Science Expo:** Serves students in grades 5-12 in Douglas, Curry, Coos counties, and Lane County west of the Coast Range. Held in Coos Bay.

**Tech Challenge Science Expo:** Serves students in grades 7-12 in Josephine, Jackson, Lake, Klamath and Modoc & Siskiyou counties in California. Held in Klamath Falls.

**West Linn Wilsonville Science Expo:** Serves students in grades 9-12 in the West Linn - Wilsonville school district. Held in Wilsonville as part of the CREST Jane Goodall Science Symposium.

Fair Dates and contact information on page 21.



# Intel ISEF Categories and Subcategories

## **Animal Sciences**

Development  
Ecology  
Genetics  
Animal Husbandry  
Pathology  
Psychology  
Systematic

## **Behavioral & Social Sciences**

Clinical & Development Psychology  
Cognitive Psychology  
Physiological Psychology  
Sociology

## **Biochemistry**

General Biochemistry  
Metabolism  
Structural Biochemistry

## **Cellular & Molecular Biology**

Cellular Biology  
Cellular and molecular Genetics  
Immunology  
Molecular Biology

## **Chemistry**

Analytical Chemistry  
Inorganic Chemistry  
Organic Chemistry  
Physical Chemistry  
General Chemistry

## **Computer Science**

Algorithms, Databases  
Artificial Intelligence  
Networking and Communications  
Computational Science  
Computer graphics  
Software engineering  
Programming languages  
Computer system, operating system

## **Earth Science**

Climatology, Weather  
Geochemistry, Mineralogy  
Paleontology  
Geophysics  
Planetary Science  
Tectonics

## **Engineering: Materials &**

**Bioengineering**  
Bioengineering  
Civil Engineering  
Construction Engineering  
Chemical Engineering  
Industrial Engineering, Processing  
Material Science

## **Engineering: Electrical & Mechanical**

Electrical Engineering,  
Computer Engineering, Controls  
Mechanical Engineering,  
Thermodynamics, Solar  
Robotics

## **Energy & Transportation**

Aerospace and Aeronautical  
Engineering, Aerodynamics  
Alternative Fuels  
Fossil Fuel Energy  
Vehicle Development  
Renewable Energies

## **Environmental Analysis**

Air Pollution and Air Quality  
Soil Contamination and Soil  
Quality  
Water Pollution and Water  
Quality

## **Environmental Management**

Bioremediation  
Ecosystems Management  
Environmental Engineering  
Land Resource Management  
Forestry  
Recycling  
Waste Management

## **Mathematical Sciences**

Algebra  
Analysis  
Applied Mathematics  
Geometry  
Probability and Statistics

## **Medicine & Health Sciences**

Disease Diagnosis and  
Treatment  
Epidemiology  
Genetics  
Molecular Biology of Diseases  
Physiology and Pathophysiology

## **Microbiology**

Antibiotics, Antimicrobials  
Bacteriology  
Microbial Genetics  
Virology

## **Physics & Astronomy**

Astronomy  
Atoms, Molecules, Solids  
Biological Physics  
Instrumentation and Electronics  
Magnetics and Electromagnetics  
Nuclear and Particle Physics  
Optics, Lasers, Masers  
Theoretical Physics, Theoretical  
or Computational Astronomy

## **Plant Sciences**

Agriculture/Agronomy  
Development  
Ecology  
Genetics  
Photosynthesis  
Plant Physiology (Molecular,  
Cellular, Organismal)  
Plant Systematics, Evolution

Small (2-3 member) teams will enter a subject area category.

If you have questions about your category selection please contact Stephanie Jones, NWSE fair director at [nwse@pdx.edu](mailto:nwse@pdx.edu) or at (503) 725-8748. Or contact your regional fair director, whose information is on the web at [www.nwse.org](http://www.nwse.org).

Ultimately the student is responsible for choosing the category he/she will compete under. Once paperwork is submitted, the fair director and/or SRC may recommend changing categories. Categories cannot be changed after March 4, 2008.

## Institutional Review Board (IRB)

An Institutional Review Board (IRB) is a committee that must evaluate the potential physical and/or psychological risk of research involving human subjects according to federal regulations (45-CFR-46). All proposed human research must be reviewed and approved by an IRB before experimentation begins. This includes any surveys or questionnaires to be used in a project. Federal regulations require local community involvement; therefore an IRB should be established at the school level to evaluate human research projects. An IRB at the school must consist of a minimum of three members. **In order to eliminate conflict of interest, the Adult Sponsor, parents, the Qualified Scientist, and the Designated Supervisor who oversee a specific project must not serve on the IRB reviewing that project.** Additional members are recommended to help avoid this conflict of interest and to increase the expertise of the committee.

This IRB must include:

- a) Science teacher
- b) School administrator (a principal or vice principal) and
- c) A medical doctor, physician's assistant, licensed social worker, psychiatrist, psychologist, or registered nurse capable of evaluating the physical and/or psychological risk involved in a given study.

If the IRB needs an expert as one of its members and one is not in the immediate area, then documented contact with an external expert is appropriate and encouraged. A copy of the correspondence (e.g. email, fax, etc.) should be attached to Form 4 and can be used as the signature of that expert. IRB's exist at federally regulated institutions. The institutional IRB must initially review and approve all proposed research conducted at or sponsored by that institution.

**The Adult Sponsor and the local IRB are responsible for ensuring that the project is appropriate for a pre-college student and adheres to the ISEF rules.** An IRB generally makes the final determination of risk. However, in reviewing projects just prior to a fair, if an SRC judges an IRB's decision as inappropriate, thereby placing human subjects in jeopardy, the SRC may override the IRB's decision and the project may fail to qualify for competition.

NWSE has a human subject specialist willing to consult on project reviews; contact Stephanie Jones, Intel NWSE fair director for information.

## Scientific Review Committee (SRC)

A Scientific Review Committee (SRC) is a group of qualified individuals that is responsible for evaluation of student research, certifications, research plans and exhibits for compliance with the Rules and pertinent laws and regulations. Local SRCs must be formed to pre-approve any proposed research in the following areas BEFORE experimentation: projects involving vertebrates and potentially hazardous biological agents. Human studies reviewed and approved by a properly constituted IRB do not have to be reviewed by the SRC until the Fair competition.

ALL projects must be reviewed and approved by the SRC after experimentation and shortly before competition in an ISEF-affiliated Fair competition.

An SRC must consist of a minimum of three persons.

The SRC must include:

- a) A biomedical scientist (Ph.D., M.D., D.V.M., D.D.S., or D.O.)
- b) A science teacher and
- c) At least one other member

Additional Expertise: Many projects will require additional expertise to properly evaluate. If animal research is involved, at least one member must be familiar with proper animal care procedures. If the SRC needs an expert as one of its members and one is not in the immediate area, then documented contact with an external expert is appropriate and encouraged.

**In order to eliminate conflict of interest, the Adult Sponsor, parents, the Qualified Scientist, and the Designated Supervisor must not serve on the SRC reviewing that project.** Additional members are recommended to help avoid this conflict of interest and to increase the expertise of the committee.

The Regional and State SRC examines projects for the following:

- a) Evidence of literature search
- b) Evidence of proper supervision
- c) Use of accepted and appropriate research techniques
- d) Completed forms, signatures and dates showing maximum of one year duration of research and appropriate preapproval dates
- e) Evidence of search for alternatives to animal use
- f) Humane treatment of animals
- g) Compliance with rules and laws governing human and animal research
- h) Compliance with rules regarding potentially hazardous biological agents
- i) Documentation of substantial expansion for continuation projects
- j) Compliance with the ISEF ethics statement

## **ISEF Forms Hints**

Forms indicated by a \* are required for all projects.

### **\*Form 1 Checklist for Adult Sponsor**

All projects require this form; it must be dated before the actual start date of the project.

### **\*Form 1A Student Checklist**

This form has different versions for individuals and teams. The Actual Start Date must be filled in. If a project is still in progress when the forms are due, enter the fair date as the Actual End Date.

### **\*Research Plan**

This gives detailed directions for writing your research plan. The Research Plan needs to be typed on a separate page. There is no room on the form itself for the research plan.

### **\*Form 1B Approval Form**

Each student must fill out one of these forms and check the two boxes. Both student and parent need to sign this form before the Actual Start Date for the experiment.

Projects that require approval before starting experimentation need to have box 2a signed before the Actual Start Date. If work is done at a Regulated Research Institution, box 2b must be signed.

The Adult Sponsor cannot sign in 2 or 3. Section 3 is signed by the fair after experimentation.

### **\*AFOR Abstract**

Although this is not an ISEF form, all high school students are expected to complete the AFOR abstract online.

### **Regulated Research Institution or Industrial Setting Form (1C)**

If your project is done at a location other than home, school or outdoors, this form must be filled out by the scientist in charge. If your project involves humans, animals or Potentially Hazardous Biological Agents you must also attach project approval from the institution.

### **Qualified Scientist Form (2)**

If you work with a qualified scientist, he/she must answer all questions on the form. If a designated supervisor is used he/she also signs this form.

### **Risk Assessment Form (3)**

If your project uses hazardous chemicals, activities or devices or regulated substances, you must answer all questions on the form. Then the designated supervisor or qualified scientist signs it. This must be done before the actual start date.

### **Human Subjects Form (4)**

All questions must be completed by the student; 'none' is not an acceptable answer. All human subjects projects involve risk whether embarrassment, injury, or allergic reaction. The school must hold an Institutional Review Board (IRB) meeting before the actual start date. The IRB must select level of risk, justify if needed, date and sign the middle box. The adult sponsor cannot be on the IRB.

If Informed Consent is required by the IRB, any human subject 18 or younger who is still in school must have a parent sign the form. All consents must be dated before the human subjects participate in the project.

### **Vertebrate Animals Form (5A)**

This form is required for projects involving animals with backbones outside of a Regulated Research Institution. A Scientific Review Committee (SRC) with an animal care specialist must complete the middle box before the Actual Start Date of the experiment. Depending on how the SRC rates the experiment, signatures from a Veterinarian and Designated Supervisor may be required. The adult sponsor cannot be on the SRC.

### **Vertebrate Animals Form (5B)**

Any vertebrate animal project conducted at a Regulated Research Institution must complete this form. An IACUC approval from the institution must be processed before the experiment is started. This document must be attached.

## Potentially Hazardous Biological Agents Form (6A)

This refers to microorganisms, rDNA, fresh tissue, blood and body fluids. Refer below for a reprint of the ISEF rules explaining Biosafety Levels classification and containment. The Scientific Review Committee at your school must approve of this project before experimentation starts. The adult sponsor cannot be on the SRC.

## Human and Vertebrate Animal Tissue Form (6B)

If you are using fresh tissue, primary cell cultures, blood, blood products or body fluids this form is required in addition to 6A. Forms 4, 5A or 5B may also be needed. The designated supervisor or qualified scientist sign must sign it before the Actual Start Date.

## Continuation Projects Form (7)

If you are continuing a project, started in a previous year, you must explain how your current research is different from the previous year.

### Classification of Biological Agents Risk Groups

Biological agents, plant or animal, are classified according to biosafety level risk groups. These classifications presume ordinary circumstances in the research laboratory, or growth of agents in small volumes for diagnostic and experimental purposes.

**BSL-1** risk group contains biological agents that pose low risk to personnel and the environment. These agents are highly unlikely to cause disease in healthy laboratory workers, animals or plants. The agents require Biosafety Level 1 containment. Examples of BSL-1 organisms are: *Aspergillus niger*, *Bacillus thuringiensis*, *Escherichia coli strain K12*, *Lactobacillus acidophilus*, *Micrococcus leuteus*, *Neurospora crassa*, *Pseudomonas fluorescens*, *Serratia marcescens*.

**BSL-2** risk group contains biological agents that pose moderate risk to personnel and the environment. If exposure occurs in a laboratory situation, the risk of spread is limited and it rarely would cause infection that would lead to serious disease. Effective treatment and preventive measures are available in the event that an infection occurs. The agents require Biosafety Level 2 containment. Examples of BSL-2 organisms are: *Mycobacterium*, *Streptococcus pneumonia*, *Salmonella choleraesuis*.

**BSL-3** risk group contains biological agents that usually cause serious disease (human, animal or plant) or that can result in serious economic consequences. These agents are usually not spread by casual contact. The agents require Biosafety Level 3 containment.

#### PROHIBITED

**BSL-4** risk group contains biological agents that usually produce very serious disease (human, animal or plant) that is often untreatable. These agents are usually easily transmitted from one individual to another, from animal to human or vice-versa, either directly or indirectly, or by casual contact. The agents require Biosafety Level 4 containment. **PROHIBITED**

### Levels of Biological Containment

There are four levels of biological containment (Biosafety Level 1 - 4). Each level has guidelines for laboratory facilities, safety equipment and laboratory practices and techniques.

**BSL-1** containment is normally found in water-testing laboratories, in high schools, and in colleges teaching introductory microbiology classes. Work is done on an open bench or in a fume hood. Standard microbiological practices are used when working in the laboratory. Decontamination can be achieved by treating with chemical disinfectants or by steam autoclaving. Lab coats are required and gloves recommended. The laboratory work is supervised by an individual with general training in microbiology or a related science.

**BSL-2** containment is designed to maximize safety when working with agents of moderate risk to humans and the environment. Access to the laboratory is restricted. Biological safety cabinets (Class 2, type A, BSC) must be available. An autoclave should be readily available for decontaminating waste materials. Lab coats, gloves and face protection are required. The laboratory work must be supervised by a competent scientist who understands the risk associated with working with the agents involved.

**BSL-3** containment is required for infectious agents that may cause serious or potentially lethal diseases as a result of exposure by inhalation. The laboratory must be a separate building or isolated zone, with double-door entry, directional inward airflow. Many special procedures and protective devices are required when working with these agents. **PROHIBITED**

**BSL-4** containment is required for dangerous/exotic agents that pose high risk of life-threatening disease. Numerous special facilities and precautions are required when working with these agents. **PROHIBITED**

## High School Adult Sponsor Registration Directions

NWSES requires the use of its online registration system. ALL adult sponsors should complete steps 1-3 as early in the year as possible. Because of the need for signatures on forms, all forms will need to be printed and mailed to the regional fair by the submission deadline.

PLEASE NOTE: Registration fees may be due when you mail in your paperwork. Communicate with your regional fair director about registration fees, deadlines, and late fees.

1. To register go to [www.nwse.org](http://www.nwse.org) and click on "Register Here".
2. If you are a returning user, use last year's login or email address and password. If this is your first year, follow the directions to "Create a new user".
3. Enter or confirm your personal information, school/organization information, system and fair selection.
4. Work with your students to complete a Research Plan for each project and determine which ISEF forms are required. Use the Forms Wizard at [www.nwse.org](http://www.nwse.org) for assistance.
5. After completing the information listed in step 3 above, you will be taken directly to the Adult Sponsor Exhibit Management screen when you return to the registration system. From there use the "Add a project" button. You will need the student's name, project category, and a password for the project. The password is entirely up to you, but must be at least five characters long.
  - If the project is a team project, enter the name of the first student only. Additional students can be added later.
  - After adding a project, you can either add another project, or go to the Form 1 Checklist for Adult Sponsor for the project just entered.
6. Complete Form 1 for all your projects.
7. Your students should be responsible for entering their personal information, Form 1A, Form 1B and abstract. The only forms which are required online are Form 1, 1A, 1B and abstract.
8. **Confirm the project** when you are sure the project will attend the science fair. Select the project and click "Confirm Project". This must be done for all projects competing in a fair by February 13<sup>th</sup>. The deadlines for regional fairs vary, so ensure that the projects are confirmed before those specific deadlines.
9. **Mail copies** of all required ISEF forms for a project to the fair you are attending by their deadline.
10. **Bring originals** of all required ISEF forms to the fair.

Other features of online registration are listed below. Some features are disabled after deadlines pass, so that the regional and state fairs can properly plan for the numbers of projects and students to expect. Adding projects, confirming projects, withdrawing projects, deleting projects, and adding or deleting students are disabled on February 13<sup>th</sup>. Changing categories, abstracts, correcting names and project titles are disabled on March 4<sup>th</sup>.

- Withdraw project: If a project is not able to attend the fair but has already been confirmed, withdraw it.
- Delete project: This button deletes projects from the system. This cannot be undone.
- Change category: This button changes the category of a project of a selected project.
- Edit Project:
  - i. Delete student: The 'Delete Student' button will be next to the student's name and information status in the Student Information section.
  - ii. Add student: The 'Add Student' button is below the current names of students assigned to a project in the Student Information section. Students also have this ability. Spelling corrections to student names can be made by clicking edit next to the student's name.
  - iii. Edit forms: To edit forms, scroll down to Project Status Summary. The edit buttons are next to each form's database status. Form 1 can also be reached from the Exhibit Management page.
- Student Access: Students on a project may edit their forms by logging in with the exhibit number and password created by their Adult Sponsor. Students will see the 'Exhibit Summary' for that project only.

# Intel NWSE High School Display Regulations

Exhibits will be inspected by Intel NWSE staff at check-in. If part of an exhibit does not adhere to the following regulations, or is considered unsafe, the exhibitor will be asked to remove that part of the exhibit. Exhibitors not following directions or conforming to regulations will be disqualified.

All original signed forms including the abstract must be displayed on the table or in the project data book.

## **STUDENT NAMES ARE PERMITTED ON DISPLAY BOARDS.**

### **Maximum Size of Display**

30 inches (76 centimeters) deep

48 inches (122 centimeters) wide

78 inches (198 centimeters) high from top of table

### **Allowed at Display BUT with the Restrictions Indicated**

1. Soil or waste samples if permanently encased in a slab of acrylic.
2. Postal, web and email addresses, telephone and fax numbers of exhibitor(s) only. This information may not be included for anyone else.
3. Only photographs (that is, visual depictions) of the exhibitor, the exhibitor's family, human subjects with consent on Form 4, photographs taken by the exhibitor and/or photographs for which credit is displayed (such as from magazines) if not deemed offensive by the SRC or the Display and Safety Committee.
4. Any apparatus with unshielded belts, pulleys, chains, or moving parts with tension or pinch points may be displayed, but not operated.
5. Any apparatus producing temperatures that will cause physical burns must be adequately insulated.
6. Large vacuum tubes or dangerous ray-generating devices must be properly shielded.
7. Empty tanks that previously contained combustible liquids or gases must be certified as having been purged with carbon dioxide.
8. Pressurized tanks that contained noncombustibles may be allowed if properly secured.

### **Not Allowed at Display**

1. Living organisms, including plants.
2. Taxidermy specimens or parts.
3. Preserved vertebrate or invertebrate animals.
4. Human or animal food.
5. Human/animal parts or body fluids (for example, blood, urine) Exceptions: teeth, hair, nails, dried animal bones, histological dry mount sections, and completely sealed wet mount tissue slides.
6. Poisons, drugs, controlled substances, hazardous substances or devices.

7. Laboratory/household chemicals including water. Water integral to an enclosed apparatus is ok.
8. Plant materials (living, dead, or preserved) which are in their raw, unprocessed, or non-manufactured state. Dried plant materials in acrylic and building materials are ok.
9. Dry ice or other sublimating solids.
10. Sharp items.
11. Flames or highly flammable materials.
12. Batteries with open-top cells.
13. Acknowledgements, awards, medals, business cards, flags, endorsements, etc.
14. Photographs or other visual presentations depicting vertebrate animals in surgical techniques, dissections, necropsies, other lab procedures.
15. Active internet or email connections as part of displaying or operating the project.
16. Names of cooperating research institutions or school(s) may not be on poster display.
17. Class II, III, or IV lasers, see ISEF rules pg 7.

### **Electrical Regulations**

Due to limited electrical outlets, Intel NWSE requires all students wishing electricity to apply for it. Requests should be sent by email no later than March 4, 2008. Requests to light exhibits or display PowerPoint presentations will be denied.

1. Exhibitors requiring 120 Volt A.C. electrical circuits must provide a UL-listed 3-wire extension cord (no more than 9 ft in length) which is appropriate for the load and equipment.
2. Electrical connections in 110-volt circuits must be soldered or made with UL-approved connectors. Wires must be insulated. Maximums are 500 watts @ 130VAC/60 Hz
3. High voltage (over 12 volts) equipment must be shielded with a grounded metal box or cage. High voltage wiring, switches and metal parts must have adequate insulation and overload safety factors and be inaccessible to others.
4. There must be an accessible, clearly visible on/off switch or other means of disconnect from the 120 Volt power source.
5. Wiring which is not part of a commercially available UL-listed appliance or piece of equipment must have a fuse or circuit breaker on the supply side of the power source and prior to any project equipment.
6. Bare wire and exposed knife switches may be used only in circuits of 12 volts or less; otherwise, standard enclosed switches are required.

## Intel NWSE Awards

### Best of Fair and ISEF Awards

One project will be selected from each Intel NWSE fair (State-level Life Science and State-level Physical Science) as the Best of Fair. They will also earn a spot as an Intel ISEF finalist provided that they have not earned a spot as an Intel ISEF finalist at another regional fair in the NWSE System.

- ❖ Two individual projects and one team project (up to three students) will be selected as ISEF Finalists for each of the two Intel NWSE fairs.
- ❖ These students are eligible to compete at the International Science and Engineering Fair. Registration, airfare, lodging and the transportation of the exhibit are paid by Intel NWSE.
- ❖ The students whose exhibits are judged runners-up become ISEF Alternates and are eligible to attend, but not compete at ISEF. Registration for ISEF and travel expenses is the responsibility of the ISEF Alternate.

### Category Awards

- ❖ In both divisions, medallions are presented to each student whose project placed 1<sup>st</sup>-3<sup>rd</sup> in their category. First place winners receive monetary prizes as well. Ribbons are presented to students who earn Honorable Mention.

### Special Awards

- ❖ Special Awards are sponsored by colleges, government agencies, businesses and individuals. Awards ranging from cash to t-shirts to plaques in many different areas will also be presented.

### Scholarships

- ❖ Scholarships are awarded to Intel NWSE participants from several Oregon Universities. Last year scholarships were offered by Portland State University, Oregon State University, University of Oregon, Lewis and Clark College, and Willamette University.

## Intel ISEF Atlanta, Georgia MAY 11-16, 2008



The Intel International Science and Engineering Fair 2008 (Intel ISEF) is the premiere national and international showcase for 1,500 student Finalists. The 2008 competition will attract top high school students representing all 50 U.S. states and 47 countries, territories, and regions. Every student at Intel ISEF qualified by winning an Intel ISEF-affiliated fair in their local area. Each affiliated fair may send up to two finalists and one team to compete at the Intel ISEF. The local fair assumes the students' expenses associated with attending the Intel ISEF.

### Eligibility

Any student in grades 9-12 or equivalent who has not reached age 21 on or before May 1 preceding the Intel ISEF is eligible for the Intel ISEF. The only way to become a competitor in the Intel ISEF is to win at an Intel ISEF affiliated fair.

### Requirements

The requirements for the Intel ISEF and NWSE are very similar. These include:

- The research must have been conducted by the student(s), not by adult supervisors.
- All necessary forms must be complete and available for review at the fair. We recommend keeping all signed forms, certifications and permits in a notebook or folder.
- A 250-word abstract (which summarizes the year's work) and the project data book must be displayed with the exhibit.
- A research paper is strongly recommended by both the NWSE and Intel ISEF. Students aspiring to be Intel ISEF finalists should have a research paper with their display at NWSE. Judges may evaluate the research paper.

### Limitations

- Each student may enter only one project.
- Small Team projects may have a maximum of three members.
- Students may compete in only one Intel ISEF-affiliated fair, except when proceeding on to a state fair affiliated with Intel ISEF from an affiliated regional fair (see page 2).

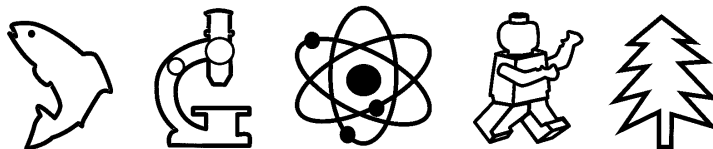
### Intel ISEF Rules Booklet

A copy of the complete set of Intel ISEF rules can be downloaded from the NWSE website.

# Intel NWSE High School Student Checklist

- Find an adult sponsor.  
An adult sponsor is someone who can guide a student through their experimentation. He or she is responsible for some of the student's paperwork. He or she should be someone who is reliable and who can give some guidance to the student. Many adult sponsors are parents, teachers, mentors or relatives.
- Write your Research Plan, fill out Form 1A, or 1A Team, and get it approved by your adult sponsor. Remember it is important that the actual date for the start of experimentation (Form 1A item 5) is *after* the approval dates on Forms 1 and 1B.  
A well written research plan gives an ordinary person a good understanding of what you plan to achieve, and how you plan to achieve it. There are guidelines for specific parts of the research plan on the Research Plan attachment.
- Work with Adult Sponsor to determine which Intel ISEF forms and what kind of prior approvals are required for your project. See the NWSE Forms Wizard at [www.nwse.org](http://www.nwse.org).  
Try to have a good idea of what forms you will need to complete as you formulate your project idea so that you can anticipate filling out the correct forms at the right times. Projects will require a combination of the following forms.
  - \*Form 1 - Checklist for Adult Sponsor / Safety Assessment
  - \*Form 1A - Research Plan; Research Plan Attachment
  - \*Form 1B - Approval Form
  - Form 1C - Regulated Research and Institutional/ Industrial Setting Form
  - Form 2 - Qualified Scientist Form
  - Form 3 - Risk Assessment Form
  - Form 4 - Human Subjects Form
  - Form 5A - Vertebrate Animal Form
  - Form 5B - Vertebrate Animal Form
  - Form 6A - Potentially Pathogenic Biological Agents
  - Form 6B - Human and Vertebrate Animal Tissue Form
  - Form 7 - Continuation Projects Form
  - \*AFOR Abstract Form

\*required for all projects
- Fill out the necessary Intel ISEF forms and obtain the necessary approvals. The actual date for start of experimentation on ISEF Form 1A item 5 should be *after* the approval dates on Forms 1 and 1B.
- Perform your experimentation. Do not start your laboratory experiment/data collection before the needed forms are signed and dated. Plan to finish experimentation around mid-January so you have enough time to prepare a proper display and presentation.
- Prepare an abstract of your research results and enter it on the AFOR Abstract Form online.
- Print all your NWSES and Intel ISEF forms and make at least two sets of copies in addition to the originals; give one set to your adult sponsor; keep one for yourself; **keep the originals of all of the forms**. Put the originals in a notebook or folder that will be part of your display.
- Give a **copy** of the registration form, the abstract form, and each of the Intel ISEF forms to your adult sponsor so that they may be sent to the correct fair with all of the registration materials from your school. **Be sure that you keep the originals of all forms.**
- All entries must be sent to your regional fair by the registration deadline. Give your teacher your forms with plenty of time to get your school packet together.
- Write a research paper that details your experimentation and results. (This is strongly recommended by both NWSE and Intel ISEF). This should become part of your display at the Fair.
- Prepare a display for the fair. Be sure you follow the display regulations.  
A good display should focus on your research. Each piece, whether it is research, experimental procedure, data, diagrams, results, conclusion, or works cited should all further the display's purpose.
- Be prepared to speak to judges or an audience of public observers.  
You should not memorize a speech, but you should be prepared to answer both specific and general questions about your project, such as "Tell me about your project," or "Why did you decide to include that in your experiment?"
- Do well at your regional fair and attend the Intel Northwest Science Expo!



## Intel NWSE Contact Information

Date: March 14, 2008  
Run by: Center for Science Education at  
Portland State University  
Location: Portland, OR  
Grade levels: 5-12  
Website: [www.nwse.org](http://www.nwse.org)

Fair Director: Stephanie Jones  
Email: [nwse@pdx.edu](mailto:nwse@pdx.edu)  
Cell #: 503 703-3590  
Office phone: 503 725-8748  
Assistant HS Fair Director: Gretchen See  
Assistant MS Fair Director: Julie Querido

**All High School Students must qualify for Intel NWSE through a Regional Fair.**

## Regional Fair Contact Information

### Aardvark Science Expo

Date: March 3, 2008  
Run by: Oregon Episcopal School  
Location: Portland, OR  
Fair Directors: Tanja Horvat, Bill Lamb  
Email: [horvatt@oes.edu](mailto:horvatt@oes.edu)  
Phone: (503) 246-9724  
Grade levels: 6-12

### PCC Science Expo

Date: March 1, 2008  
Run by: Portland Community College  
Location: Sylvania Campus, Portland, OR  
Fair Director: Stacey Fiddler  
Email: [stacey.fiddler@pcc.edu](mailto:stacey.fiddler@pcc.edu)  
Phone: 503-977-4145  
Grade levels: 9-12

### Beaverton-Hillsboro Science Expo

Date: February 21, 2008  
Run by: Beaverton and Hillsboro School Districts  
Location: Intel Jones Farm Campus (next to  
airport), Hillsboro, OR  
Fair Directors: Melissa Potter, Chris Steiner  
Email: [Melissa\\_Potter@beavton.k12.or.us](mailto:Melissa_Potter@beavton.k12.or.us)  
Grade levels: 9-12  
Website:  
[www.beavton.k12.or.us/instruction/science/highschool.html](http://www.beavton.k12.or.us/instruction/science/highschool.html)

### Southwestern Oregon Regional Science Expo

Date: March 1, 2008  
Run by: Southwestern Oregon Community  
College  
Location: Coos Bay, OR  
Fair Director: Sarah Recken  
Email: [srecken@socc.edu](mailto:srecken@socc.edu)  
Phone: (541) 888-7297  
Grade levels: 5-12  
Website: [www.socc.edu/sciencefair](http://www.socc.edu/sciencefair)

### Central Western Oregon Science Expo

Date: February 22 & 23, 2008  
Run by: Oregon State University  
Location: Monmouth, OR  
Fair Director: David Hackleman  
Email: [sciencefair@3sigmainstitute.org](mailto:sciencefair@3sigmainstitute.org)  
Phone: 541-737-8988  
Grade levels: 5-12  
Website: [www.3sigmainstitute.org](http://www.3sigmainstitute.org)

### Tech Challenge Science Expo

Date: February 21, 2008  
Run by: Oregon Institute of Technology  
Location: Klamath Falls, OR  
Fair Director: Katie Edwards  
Email: [Katie.Edwards@oit.edu](mailto:Katie.Edwards@oit.edu)  
Grade levels: 9-12  
Website: [www.oit.edu/prec/25?mID=3](http://www.oit.edu/prec/25?mID=3)

### West Linn Wilsonville Science Expo

Date: February 29, 2008  
Run by: West Linn-Wilsonville School District  
Location: Boones Ferry Primary School,  
Wilsonville, OR  
Fair Director: Amy Schauer  
Email: [schauera@wlwv.k12.or.us](mailto:schauera@wlwv.k12.or.us)  
Phone: (503) 673-7350  
Grade levels: 9-12

**Online Registration for All Fairs  
available at [www.nwse.org](http://www.nwse.org)**