

WSSF Quarter Note

Celebrate 2016!

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Thank you to all who helped with the 2016 Wyoming State Science Fair!

Here are some quick numbers:

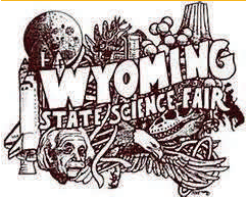
- ~ 68 projects in the senior division (9th-12th grade)
- ~ 231 projects in the junior division (6th-8th grade)
- ~ 330 students participated
- 180+ awards were presented
- ~ 40 schools from 14 counties were represented
- 100+ professional scientists volunteered as judges
- 40+ UW students, staff and Laramie, WY community members kept things running smoothly and volunteered in every capacity possible

Other good things:

- Check-in was really calm and smooth!
- Students fixed paperwork errors and display violations with poise, understanding and open minds!
- The 33 UW tours, planetarium shows, and demonstrations were well attended and students looked like they were enjoying them!

On Facebook?

"Friend" us on Facebook at Wyoming Science—Fair



Have questions?

Visit our website at <http://www.uwyo.edu/sciencefair/> for more detailed information

A BIG THANK YOU GOES TO OUR SPECIAL GUESTS & PRESENTERS:

- Peter Parolin (UW Department Head of English & Awards Program Master of Ceremonies)
- Jordan Wirfs-Brock (Inside Energy Data Analyst & Banquet Mistress of Ceremonies)
- Dr. Jacqueline Leonard (UW Science & Mathematics Teaching Center Director)
- Dr. Bill Gern (UW Vice-President for Research & Welcome Ceremony Presenter)

Congrats!

- * Congratulations to the four students who represented Wyoming at the Intel ISEF 2016.
- * Congratulations to Aruandathi Nair, from Laramie, WY, for being named one of 300 semi-finalists in the Broadcom MASTERS competition!





Get Ready
for 2017!

"I'm not some whiz kid that was born with a beaker in my hand. I found support from people who helped me advance my research." Brittany Wenger— Intel ISEF Alumni from FL

General Areas for Improvement: (Based on Judges Comments from the 2016 Fair)

Put your best foot forward during the interview!

Things to work on are the following:

- ◆ Always being at your project and ready to talk to a judge
- ◆ Knowing the research well enough that reading off the board is not necessary
- ◆ Reducing overly frequent references to an adult mentor (i.e., "my mentor said")
- ◆ Anticipating the questions you might be asked and being prepared to answer them

Readable graphs/charts/tables present a wealth of information.

Work on the following things to make your graphs shine:

- ◆ Simplifying the graph by only showing relevant information
- ◆ Including units (especially on x-axis and y-axis) and statistics.
- ◆ Using scientific notation when the project requires it
- ◆ Label, label, label!

Your poster makes the first impression — take the time to make it great!

Great posters are:

- ◆ free of typos, misspellings, run-on sentences, and poor citations.
- ◆ typed with fonts that are big and clear enough for your grandma to read from 4 feet away.
- ◆ organized in a logical and easy to follow way — we read from left to right and top to bottom.
- ◆ eye catching because they establish a balance between empty space, graphs/charts/photos, and well written text.

Analysis & Results

Take the time to:

- ◆ do a lot of analysis
- ◆ do statistical analysis — it really adds to a project!
- ◆ present your results clearly and make sure you fully understand what they mean

Developing a testable question and hypothesis is a critical part of successful research.

Take the time to:

- ◆ formulate a clear question.
- ◆ match the question and hypothesis to each other.
- ◆ focus on something narrow and testable.
- ◆ conduct background research to learn if your question has been answered already ... if so, then find a new question or ask it in a different way.
- ◆ articulate clear objectives.

Originality is really important in science research.

Original projects generally do better in competition! Judges noticed if your project came off the internet or has been shown before.

Flawed methods may lead to unclear, uninteresting, or irrelevant results and misinterpretations.

Things to work on:

- ◆ Make the methodology your own.
- ◆ Describe the procedures and variables so well that someone else could perfectly replicate what you did.
- ◆ Explain how testing was done, processes used, and calculations made.
- ◆ Match your methodology to the research question.

Data— science research requires lots of it!

Get more data by testing more samples, increasing sample size, running more trials, running multiple tests. More data is almost always better, — you can't really go overboard here.

Looking for some help or advice?

- * Contact us to schedule a school workshop (for classes and students working on a science fair project).
- * If you have a great idea and a research plan but need extra help, give us a call. We'll try to pair you with a UW mentor.

If you're not part of the solution, you're part of the precipitate. ~Henry J. Tillman

Need Supplies? We have free gently used notebooks and poster boards to deserving students. Available while they last.

WSSF Research Plan & Abstract Guidelines

Use only the current year (2016-2017) versions of all ISEF forms.

These are available in the Intel ISEF Rules and Guidelines book online at

<https://student.societyforscience.org/international-rules-pre-collegescience-research> .

Use the following fonts and sizes for the Research Plan & Project Summary, and Abstract

Titles: Calibri (Body) 12 pt bold all caps; Ex. **RESEARCH PLAN**; Subtitles: Calibri (Body) 12 pt bold; Ex. **Rationale**

Text: Calibri (Body) 12 pt; Ex. I am conducting science research to ...

Use underlines and italics as necessary to highlight special information or as required for proper bibliographic citations. Text should be single spaced.

Research Plan (Must be submitted with ISEF paperwork prior to experimentation for projects requiring pre-approval.)

This is **not** the same as a science fair project report/research paper or the text on a project display (a full research paper will be much more detailed than the plan). Written in **future** tense.

Include the following required sections: Rationale; Question/Hypothesis/Research Question/Engineering Goals/Expected Outcomes; Procedures; Risk & Safety; Data Analysis; and Bibliography.

Additional information is required for projects involving human subjects, vertebrate animals, potentially hazardous biological agents, and hazardous chemicals, activities and devices. (Please see full Intel ISEF Guidelines booklet page 31 for detailed requirements).

Add the following sections at the conclusion of research for Project Summary if changes to the original plan were made and carried out: Description of changes that reflect the work actually done and how it differs from plan.

Abstract : Type the abstract on a single piece of white paper **AFTER** completing the research.

Include the following information in Calibri (Body) 12 pt bold font at the top of the page:

Project title Student full name Student school, city and state, country

Abstract body text (using Calibri (Body) 12 pt font) should not exceed 250 words. Written in **past** tense.

Text body should include the following: purpose of the experiment; procedure; data; conclusions, and applications.

Do not include acknowledgements, self promotions or endorsements, or description of work or procedures done by the mentor.

Wyoming State Science Fair Categories for 2016-2017

- 1) Animal & Plant Sciences
- 2) Behavioral & Social Sciences
- 3) Biomedical & Health Sciences/Biomedical Engineering/Translational Medical Sciences
- 4) Chemistry/Energy: Chemical
- 5) Biochemistry/Cellular & Molecular Biology/Computational Biology & Bioinformatics
- 6) Earth & Environmental Sciences/Environmental Engineering
- 7) Engineering Mechanics/Materials Science/Energy: Physical
- 8) Mathematics
- 9) Microbiology
- 10) Physics & Astronomy
- 11) Robotics & Intelligent Machines/Embedded Systems/Systems Software

These categories were carefully selected to allow students to do research with the same breadth of topics as at Intel ISEF.

Descriptions of the categories (including elements of the combined categories) are available at <https://student.societyforscience.org/intel-isef-categories-and-subcategories>.

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Don't forget about the Logo Contest!

What is it? Students draw an original logo for the Wyoming State Science Fair 2017 T-shirt, and for buttons worn by contestants at WSSF and traded at the International Science & Engineering Fair; Winners will be recognized at the WSSF 2017.

Who is eligible? K-12 students attending a school in Wyoming.

Where do I send the art?
Email entry as a PDF or jpeg to wyostatefair@gmail.com

What must be included in the design?

- 1) The words "WSSF 2017" or "Wyoming State Science Fair 2017"
- 2) Four symbols or images representing each of the following: Science, Technology, Engineering, and Math

One entry per student will be accepted

Entry submission dates:
Sep. 1 – Nov. 1, 2016

Visit
<http://www.uwyo.edu/sciencefair/> for more information.

From the Coordinator's Desk—Changes for 2017

The 2016 fair went pretty well overall, however there is room for improvement in 2017. There are going to be some major changes in 2017. Some of this change is necessitated by budget cuts that require 'tightening of the belt'. Other changes are prompted by the continued need to become more compliant with International Science Fair Guidelines and the need to retain affiliation status. All changes are focused on increasing the quality of the Wyoming State Science Fair event and the student research exhibited at it.

Stick with us and we'll have another great science fair year!

Meet our 2016-2017 Science Fair Graduate Assistant

Hi, My name is Emma Griffin and I am a second year Master Student in the Science & Mathematics Teaching Center earning a Masters in Natural Science Education. I spent my first year at Teton Science Schools learning about experiential education and exploring the beautiful Tetons! I am originally from Fort Collins, Colorado and have enjoyed getting to know Wyoming more. I am excited to be helping out with the Science Fair this year, and look forward to meeting all of you young scientists!



Wyoming State Science Fair paperwork

deadlines are earlier in 2017 than in 2016.

- * **(5 business days after regional fair and before February 7, 2017) — ISEF Paperwork and WSSF Registration Forms Due**
- * **February 20, 2017 — Notification of Student Acceptance to Compete in the Wyoming State Science Fair**
- * **March 5-7, 2017 — Wyoming State Science Fair**



NIKOLA TESLA contributed to physics & engineering with a range of futuristic inventions, dramatic demonstrations and the development of alternating current electricity.

Inspirational Scientists!

Need some inspiration?
Get to know a couple of famous scientists!



ROSALIND FRANKLIN
British biophysicist best known for her work on the molecular structures of coal and graphite, and X-ray diffraction