

WSSF Quarter Note

Inside this issue:

ISEF 2015: Pittsburgh	1
1-2-3 : All In!	1
CERO or ZERO	2
Tips & Project Ideas	2
New Categories	2
USWY50 Official Party News	3
Class of 2015	4

Special points of interest:

- Awards revisited
- Reorganization and expansion of ISEF categories
- Video link to UW STEM Education Initiative
- Top 10% of Junior Division Competitors—Broadcom Masters
- Official Party Perspective

Team Wyoming at the International Science & Engineering Fair 2015

Pittsburgh, PA (USA)...who knew it was so cool? The 2015 International Science and Engineering Fair was held at the Pittsburgh Convention Center. More than 1700 students from more than 75 countries presented their independent research in categories ranging from animal science to robotics and intelligent machines. Team Wyoming took a delegation of seven students from the Laramie competition (including three observers) and two from the Greybull competition. **Cayleigh Brown**, 2015-2016 Mentor Coordinator and UW graduate student chaperone, notes "I am grateful I was invited to travel to ISEF in Pittsburgh with 7 truly inspiring and brilliant young female scientists. Over the week I saw their intelligence shine, but I also saw how uniquely nerdy, caring, and fun they are. I learned about their love for dancing, their dislikes of early



Point State Park Fountain: Where three rivers meet. Can you name them?

mornings, foods they like and hate, their goals for the future, and much more. They aren't just ISEF finalists; they are now true friends".

Look for Sign Up Information for the 2015-2016 Near-Peer Mentoring Program in the next issue of the WSSF Quarter Note!

1, 2, 3 All In!

The 2016 Wyoming State Science Fair will see the return of category winners at every level for junior division competitors. We have heard you...we are **all** winners as long as we are **in** the game! Senior project awards will be discussed at the June RFD Meeting in Casper.



Shout Out! Representatives from each competing country at opening ceremony. Photo courtesy of SSP/ISEF

CERO or ZERO Principle: Learning from Others' Work

One of the standards of academic research is citation. No matter what level of independent research that you are doing, you should always try to base your methods, choices of equipment and general thinking on something that has already been published and reviewed. The National Science Teaching Association takes this position on **Scientific Inquiry**:

"Scientific inquiry is a powerful way of understanding science content. Students learn how to ask questions and use evidence to answer them. In the process of learning the strategies of scientific inquiry, students learn to conduct an investigation and collect evidence from a variety of sources, develop an explanation from the data, and communicate and defend their conclusions". For more information visit <http://www.nsta.org/about/positions/inquiry.aspx>



Confirm * Extend * Refine* Others' work or you've got nothing!

Another way to think about the C in CERO is **confirmation of your own** results; in science these confirmations are called REPLICATES. When a scientist is able to repeat a study and get similar results, the level of confidence in those results increases. Sometimes, a scientist repeats a study and gets different results every time! Sometimes that is what can be expected but as much as possible we want to be able to explain results. If someone else has a similar experience, you're probably ok!

Teacher's Corner: Tips and Project Ideas

Here are a few tips from parent and 2015 Official Party member Kirk Haines:

- Think about the limits of "tweaked" internet projects; perhaps comparison studies with unique Wyoming twists will work!
- Consider the 5-Ws of inquiry: who, what, where, when and why?
- Think about applications of ideas to bigger bodies of knowledge

TECHNOLOGY OPPS:

- CoderDojo (<https://coderdojo.com/>) Consider connecting with a network of programmers in your area
- Raspberry Pi (<https://www.raspberrypi.org/resources/make/>) These little systems can be used to build bigger systems in class or at home for <\$50
- Scratch (<https://scratch.mit.edu/help/videos/>) Tutorials for all

Did you know that there are several programs sponsored by UW that support outreach for students in grades K-20? Check out the video at <https://youtu.be/yZAIgrRkHKM> for more details!

Notable ISEF Category Changes:

- ◆ Computational Biology/ Bioinformatics
- ◆ Embedded Systems
- ◆ Robotics & Intelligent Machines
- ◆ Systems Software
- ◆ Earth & Environmental Sciences
- ◆ Environmental Engineering
- ◆ Material Science (separated)

Category Overhaul: 17 to 20??? Well...not exactly

In 2014 the International Science and Engineering Fair (ISEF) decided to expand and reorganize categories of student research. In many ways, this move has made it easier for students to decide how to position their work. The new category designations include many details about sub-categories that had not been considered before. "The WSSF RF Directors will be deciding how we can organize our categories to meet the expectations of this new system. We will likely have fewer rather than more categories going forward—combining related disciplines in a way that makes sense for Wyoming", says Dr. Joy.

Broadcom Masters

There are only a few more days for students selected as Broadcom Masters to complete their applications. “SSP affiliated science fairs around the country nominate the top 10% of 6th, 7th and 8th grade students to enter this prestigious competition. After submitting the online application, 300 semifinalists are selected and 30 finalists present their research projects and compete in team hands-on STEM challenges to demonstrate their skills in critical thinking, collaboration, communication and creativity”. Please encourage Broadcom Masters Candidates from Wyoming to complete their applications by **June 17th**. For more information visit <https://student.societyforscience.org/broadcom-masters?mode=blog&context=4472>

2015 WSSF Broadcom Masters Candidates:

Mackenzie Jordan, Sean White, Candee Coxbill, Kaylee Wilson, Paige Forkner, Katelin Rogaczewski, Shauna Jones, Taliah Blom, Noah Crowley, Avery Howe, Lillian Gose, Atalie Thatch, Madison Friend, Teegan Johnson, Mary MacGuire,



Student Observer Lily Gose (Lander MS) is in the driver's seat on the “Ride the Duck” tour of Pittsburgh

Observers' View of ISEF

The Wyoming State Science Fair, like all ISEF-affiliated fairs, has the option of bringing student observers to the International Science & Engineering Fair. Dr. Joy Johnson has a very clear perspective on using our three observer positions to build capacity for high quality student research. “We invest in student potential; students who we believe will benefit from being at ISEF we invite to join us”. This year we invited three students to join

the Official Party of the Wyoming State Science Fair: Sierra Spears of Lingle-Fort Laramie High School, Lily Gose of Lander Middle School and Mackenzie Jordan of Lander Middle School. Each student observer gets the opportunity to participate in unique activities designed

for them. This year, student observers also got a chance to spend time with Near-Peer Mentor Coordinator Cayleigh Brown.

“This trip helped me to gain confidence to continue in the field of science and study difficult topics. I’ve also made friends from all over the world. It was such an incredible, once in a lifetime chance. Thank you” —L. Gose, Lander

USWY50 Official Party Member Volunteers at ISEF

As an Intel ISEF alumna and past award recipient (1998, 1999 and 2000), Erin Stoesz attended ISEF as part of the Wyoming Delegation this year. While the students are busy sharing their research, adult chaperones enjoy workshops, seminars, inspirational speeches,

and volunteer opportunities designed to help improve local fairs and encourage STEM. According to Erin, “volunteering to check that projects meet the safety and display requirements is definitely second best to being



Erin Stoesz: 2015 ISEF safety and display volunteer

an actual competitor”. The WSSF wants to thank all of the adult chaperones who were part of the Official Party: E. Stoesz, C. Brown, K. Haines, M. Haines, N. Jordan, S. Strauss and C. Eggleston.

University of Wyoming ~ Science & Mathematics
Teaching Center

Science & Mathematics Teaching Center
1000 E. University Ave., Dept. 3992
Laramie WY 82071

Phone: 307-766-9863
Fax: 307-766-2003
E-mail: wyostatefair@gmail.com

Building capacity to meet grand challenges...

We're on Facebook
@WyoStateFair



The mission for WSSF 2015 has been to **engage teachers, students, families and communities in high quality inquiry activities that celebrate the Wyoming context, build theoretical understanding of STEM content and promote sustainable industry in service to the Rocky Mountain region by designing a year-long program of professional development and student mentoring.** It is my belief that we have a responsibility to the teachers and students of Wyoming to support their efforts to conduct relevant science research that honors the history and traditions of Wyoming.

—Dr. Joy

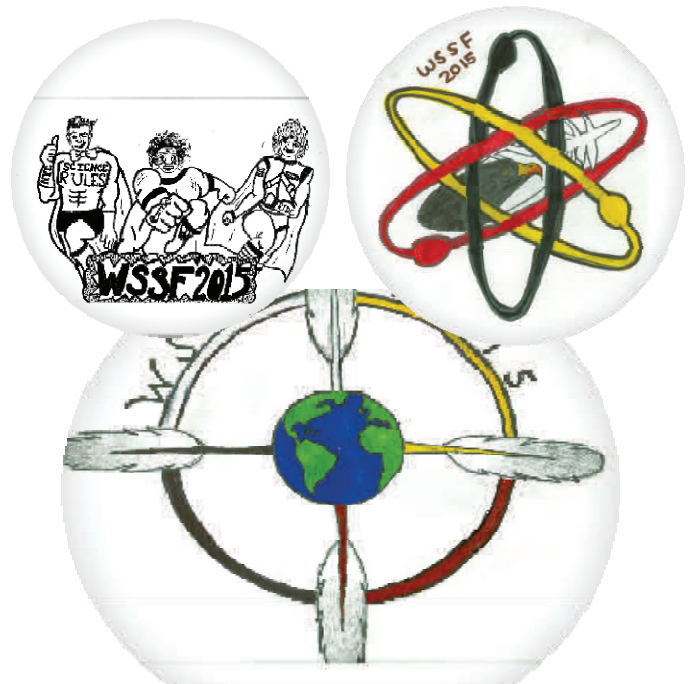


Congratulations to the Class of 2015

We celebrate the accomplishments of all
WSSF participants graduating this year!
Good Luck to You...

May the Force Be With You!

Natalie Artiles, Justin Bacus, Jordan Brooks, Jessica Costalez, Madison Crawford, Burk DeBolt, Michael Espy, Abigail Gettinger, Jacob Gifford, Katrina Haines, Alexander Henkle, Caitlynn Hiser, Brandon Leddy, Josh Miller, Emma Nelson, Nadia Torok, Colton Wardell, Hannah Williams



Coming in September: STEAM T-Shirt Logo Contest for WSSF 2016