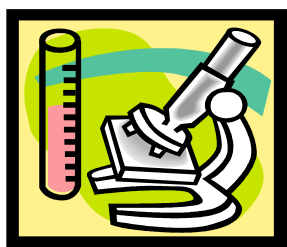


# Science and Engineering Fair of Metro Detroit

September, 2015  
59<sup>th</sup> Annual Science Fair  
Volume 13, Issue 1

Kathy Kitzmann & Tim Fino,  
Fair co-Directors



## Fair Director's Comments

**Why enter the Science Fair?** That question is frequently asked by students, parents, teachers, and school administrators. And yet, the Science Fair continues to be the single most important event that is directed towards competition of students requiring an experiment or actual project. In 2014, 1,569 projects were entered representing 140 schools and 187 teachers. Over 19% of those entering received a 'Gold' award for their achievements. In the Senior Division (9<sup>th</sup>-12<sup>th</sup>), 8 students got an all expense paid trip to the International Science Fair where several received awards (see article later).

The Science Fair competition reinforces the scientific method in completing a

project. The concepts of creating an initial hypothesis, developing an experiment to prove/disprove the hypothesis, keeping a 'log book', and formulating conclusions form a framework for years to come, whether a student chooses a technical field or not. Students learn to develop the art of presenting a concept and 'selling' or explaining that concept to professionals in the field. Furthermore, they can earn the recognition and awards that go with completing a project successfully.

If your school does not participate in the Science Fair, maybe you should consider adding it -- for the students!

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### Upcoming Deadlines

- ◆ Affiliation Deadline -12/1
- ◆ SRC/IRB - 12/1
- ◆ Entries Due - 2/12/16
- ◆ Setup -3/8/16
- ◆ Judging-3/9/16

## Important Information For This Year's Fair!

- Categories have been revamped! Project categories have changed and are now consistent with the International Categories. There are many new categories, like Robotics, Systems Software, & Bioinformatics!

- IRB (Institutional Review Board) - Each school that has students doing projects with human subjects (surveys, taste tests, etc), must have a functional IRB. The IRB must review all related projects by 12/1/2015 and submit its findings to the Scientific Review Committee (SRC).

- SRC Forms have changed this year. Refer to the detailed ISEF Rules on the web site.

- School Affiliation Agreement: Before students can submit entries on-line, the school must complete a 'Science Fair-School Affiliation Agreement'. There are several school options to be

configured. **Again this year**-schools may 'self affiliate' via the web site.

- Quota: For the 59<sup>th</sup> SEFMD, all schools may send up to 50 PROJECTS to the Science Fair. This quota may be increased to 70 if the school supplies an active working member to the 'Operating Council' or increased slightly for community service to the SF.

- Team projects for 6<sup>th</sup>-8<sup>th</sup> Grade Junior Division Students (up to FOUR team projects).

- Entry fee structure remains as follows: Schools pay a \$50.00 affiliation fee and affiliate online. Individual projects remain at \$5.00 each, Team projects will be \$15.00 per project. All students must enter on line!

## Major Events Calendar

Nov 21, 2015 -  
Workshop at Library

Dec 1, 2015 - SRC  
Deadline

Feb 12, 2016 - All  
entries due ON LINE.

Feb 15 - Teachers  
emailed notices

Mar 8 (9AM-7PM)  
Project Setup

Mar 9 (8AM-5PM)  
Judging

Mar 10-11(9AM-8PM)  
Public Viewing

Mar 12 (10AM-1PM)  
Project Removal

To be determined,  
State Fair

May 8-13 ISEF in  
Phoenix, AZ

## Grade Levels - Types of Projects

The Science Fair is open to 6<sup>th</sup> through 12<sup>th</sup> grade students. A student may compete in one of eighteen different categories. Students in grades 6-12 may also enter a 'team' project (2 or 3 students).

Categories that a student may select include: Animal Sciences; Behavioral & Social sciences; Biomedical & Health Sciences; Biochemistry; Chemistry; Earth and Environmental Sciences;

Mathematics; Microbiology; Physics & Astronomy; Robotics & Intelligent Machines and Team. There are many additional NEW categories. (See the 2016 science fair poster.) A detailed description of each of the categories is located on the web site.

A student should choose his or her project category carefully. Absolutely no changes will be allowed once the entry form is submitted!

## How to Write an Research Plan and/or Abstract

One of the first steps towards entry is to complete the entry form (via the internet) and write a research plan or abstract about your project. The abstract gives the essence of the information describing your project in a very brief (approximately 250 words) but complete form. An abstract should include the (a) purpose of the experiment; (b) procedures used; (c) data; and (d) conclusions. It may also include any possible research

applications. Only minimal references to previous work may be included. The abstract should not include acknowledgements or work or procedures done by a mentor. **Samples of abstracts (both good and poor) are on the web site.** Check under Entry Form Info - Sample Abstracts. Remember that your abstract is the first part of judging and may determine whether your project will be accepted for further judging at Cobo or not!

## Do You Need Additional Forms? Animals? Humans?

Projects that use vertebrate animals, human subjects, human or animal tissue, recombinant DNA, or pathogenic agents require additional forms. These forms may be obtained from the web site. All of these forms must be completed before beginning your project. In addition, the student **must enter online** before submitting the forms.

Senior Division students (grades 9-12)

must submit these forms by Dec. 1 in order to receive approval from the Science Fair's SRC. Projects involving human subjects must first be approved by the school's IRB.

**Junior Division** students (Grades 6-8) should keep these completed forms in their project notebooks and bring them to the Fair. SRC pre-approval is not needed. School IRB approval is required for work with human subjects.

## Enter On-Line via the Internet!

This year all projects must be entered on-line via the internet! The school must first 'authorize' internet entries (on the School Affiliation Form). When students enter on-line, their projects can not be rejected due to 'mechanical' errors (such as omitting a category).

Students may revise their entries up until the deadline and will be notified first regarding acceptance (or rejection)

of their project. Award information is also emailed directly to the students!

Teachers also receive updates as their students send in their on-line entries.

To enter on-line, use the web site and click on 'Entry Form Info'. Note - if your school has not authorized internet entries, a teacher may do so in about three minutes.

## Professional Awards in Recognition for Excellence

Various special awards are given at the Fair by technical societies, professional associations and institutions, governmental agencies, and businesses. These are in addition to the many awards given by the Fair itself.

At the 2015 SEFMD, the value of all awards given, including scholarships, was close to \$100,000. The particular awards are varied: plaques, books, certificates, company dinners and recognitions, cash awards and savings bonds. A four week trip is awarded to attend the Weizmann Institute in Israel.

A list of those organizations that provided awards in the past is on the web site under Awards/Winners.

In 2015, Wayne State University, Oakland University, Lawrence Technological University, and the University of Detroit-Mercy all provided scholarships to the top winners. We anticipate that the universities will continue their support for 2016!

If you know of someone who would like to provide a special award, ask him or her to contact the Science Fair Office.

## Sixth Grade students may again compete!

This year, we will allow sixth grade students to compete in the Science Fair. They will be judged with the 7<sup>th</sup> and 8<sup>th</sup> grade students in the Junior Division and may enter all categories INCLUDING the Team category.

One of the biggest changes several years ago was the introduction of Junior Division (7<sup>th</sup> and 8<sup>th</sup> grade) TEAM projects. This year each Junior Division school may send FOUR team

projects for competition at SEFMD. Unlike the individual Junior division projects, the team students will need to be present during judging on the judging day (from 8 AM until noon).

**CONGRATULATIONS** to Rohit Mital, 7<sup>th</sup> grader from Indus Center for Academic Excellence for being one of 30 finalists in the 2015 Broadcom MASTERS competition. Winners will be named on October 6, 2015!

## International Science Fair 2015 Results - Pittsburgh, PA

At the International Science Fair in Pittsburgh, PA in May, 2015, three Metro Detroit students received awards. The awards received include: **Jason Wu** from Cranbrook Kingswood School: 2<sup>nd</sup> award of \$1500 in Biomedical & Health Sciences; **Frank Wang** from Troy High School: 4<sup>th</sup> award of \$500 in Behavioral Sciences; and **Amina Mustafa** from Dearborn Center for Math, Science, and Technology: 4<sup>th</sup> award of \$200 from the Association for Computing Machinery.

This year the ISEF will be in Phoenix, AZ. The top six students in the Senior Division (9<sup>th</sup>-12<sup>th</sup>) and one team project

will be selected to attend the International Science Fair from May 8-13, 2016. Over \$2 million in awards and scholarships will be presented. In addition to the student, the teacher of the student is encouraged to attend on a cost-sharing basis. At this competition, there are approximately 1,300 students from over 45 different countries.

This event is frequently called the Olympics of Science - a very prestigious event where all the judges are PhD's, MD's, Nobel Laureates, etc!!

### Judging - 3 Phases

#### 1-Entry Form

- is received on time
- is completed correctly
- is a project-not a book report
- complies with SRC/IRB pre-approvals (if necessary)

#### 2-Judging - Preliminary Round

- At Cobo Hall
- Interviews (Sr)
- Interviews (Jr Teams)
- Stand alone (Jr)

#### 3-Judging - Final Round

- Selection of ISEF Finalists (Sr)
- Selection of Jr Grand Awards

#### Scoring/Judging

- 10%-Research Question
- 15%-Design/Methodology
- 20%-Execution
- 20%-Creativity
- 35%-Presentation
  - 10%-Board
  - 25%-Interview

### Entry Fees:

#### School Affiliation Fee:

\$50/school (discounted to \$25 if paid before 12/1 and affiliated online)

#### Individual Projects

\$5/project

#### Team Projects:

\$15/project

## Project Displays - Size Matters!



Our 'virtual' office is:

**SEFMD**  
PO Box 158  
Farmington, MI  
48332-0158

**Phone:**  
(248) 471-9900

**Fax:**  
(248) 479-0383

**E-mail:**  
SF2016@sefmd.org

We're on the Web!  
[www.sefmd.org](http://www.sefmd.org)  
OR  
[www.sciencefair.info](http://www.sciencefair.info)

All projects entered and accepted for display at the SEFMD must follow certain "Display and Safety" guidelines (detailed on the web site). Briefly, the most critical items are:

1. Display must stand on its own.
2. Must not exceed size restrictions:  
Jr Div - 36" x 108" x 24" (w/h/d)  
Sr Div - 48" x 108" x 48" (w/h/d)
3. Certain items are not allowed on

displays, including live material, cultures, fungi, chemicals, dry ice, food (human or animal), etc. (see web site)

4. Displays should not include valuables (make use of photographs instead).
5. Display must be **completely** set up during project setup and approved by a Rules Committee member.
6. No electricity will be available.
7. Anything potentially hazardous to the public is **prohibited**.

## Sponsors and Press Releases

Although there is a nominal \$5.00 entry fee per individual project (and \$15.00 entry fee for team projects), the majority of the cost of the science fair is borne by individual and corporate sponsors.

For a complete list of the sponsors for the fair, please look at the web site under 'sponsors'.

Periodically, news releases are issued regarding the science fair and individual projects and are posted on the web site.

## Reflections on my summer at the Weizmann Institute By Phillip An

Starting off this incredible journey, we were immersed in one of the foremost research intuitions in the world, an environment that cultivates innovative scientific research, amazing breakthroughs, for pursuing research to the fullest. I mean, which ordinary research institution has a freaking particle accelerator on a beautiful, expansive 280 acre-campus?

Taking full advantage of these resources, I collaborated with my partners from Florida and China on our biology project investigating the role of excess glucose levels on one's levels of Reactive Oxygen Species, a project highly relevant to American society. While I initially thought that coming to the conclusion would be incredibly easy, I realized I had learned so much in the process, about Chinese food, Israeli foreign policy, and life (and a tiny bit of science as well), from a hilarious mentor and awesome lab partners. Unlike the five previous years of research I had conducted, in the short three weeks that flew by, I felt fully engaged in the lab, ready to laugh, learn and occasionally work.

But even more exciting than our lab-work ... were the experiences outside. Our group of 80 students hailed from 19 countries, but literally every corner of the globe. There even was a girl from an Inuit village of 1000 who sacrificed hunting for Beluga whales (I am not kidding) to come. On the cosmopolitan side, it was not uncommon to find a student from Hong Kong who was born in the United States and lived in China, while several others spoke 7 languages. But even as we made fun of our accents and were utterly confused about "chips", "fries", and "crisps", we 80 eccentric misfits became a loud, lively family. I still find myself being excessively polite, using metric units and saying "sorry" after bumping into a tree. Thank you Europeans. We were separate in features but became united in complaining about how bad dinner was (there was no meat or eggs), how many mosquitoes there were, and bragging about how long our nap times were during lab. Yes, we became so close that conversations extended past 4am, with productivity during the day proportionally reduced.

(Want to know what it was like to have rockets bursting over head or sirens going off on a daily basis? Read the rest of Phillip's article on the science fair website.)

[Phillip attended the Weismann Institute during the summer of 2014.]