

# FLINT REGIONAL SCIENCE FAIR

Inquire. Innovate. Inspire.

## HANDBOOK



**MARCH 16-19, 2018**  
**KETTERING UNIVERSITY**  
**FLINT, MI**

Inspiring Students in Grades 4-12 from Bay, Genesee, Lapeer,  
Midland, Saginaw, Shiawassee, St. Clair and Tuscola Counties

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

For more information call: 810-797-5290  
or email: [director@flintsciencefair.org](mailto:director@flintsciencefair.org)



2 0 1 7

SPONSORS

				
				
 Countywide Youth Initiative Program				

---

---

# CONTENTS

2	2017 Sponsors	8	Project Categories and Judging Criteria
3	Contents, Eligibility and Dates to Remember	9	2017 Top Divisional Winners
4	From the 2017 Science Fair Winner	10	2017 Science Fair Finalists and Special Congratulations
4	Contributors to the 2017 Science Fair	11	2017 All Science Fair Winners
4	2017 Science Fair Participating Schools	12-13	Special Award Sponsors and Winners
5	Awards, Prizes and Scholarships	14	A Day-by-Day Guide to What Happens at the Fair
6	Registering for the Flint Regional Science Fair	15	Map and Site Information for the 2018 Science Fair
7	Checklist for the 2018 Fair	15	Schedule of Events

---

---

## ELIGIBILITY

Students in grades 4-12 who reside in or attend any public, parochial, private school or home study in Bay, Genesee, Lapeer, Midland, Saginaw, Shiawassee, St. Clair and Tuscola counties are encouraged to enter the Flint Regional Science Fair.

- Students from other Michigan counties may participate if not served by an ISEF affiliated fair.
- Projects will be divided into divisions as follows:
  - Elementary: Grades 4 and 5
  - Junior: Grades 6, 7 and 8
  - Senior: Grades 9–12
  - Group Projects: All Grades

Group Projects (made by more than one pupil) will be judged against other Group Projects only.

\*If you are uncertain of your eligibility, contact [director@flintsciencefair.org](mailto:director@flintsciencefair.org).

---

---

## DATES TO REMEMBER

**January 12, 2018** Deadline for Submission of Senior Project Scientific Review Committee (SRC) Paperwork

**February 16, 2018** Deadline for Submission of Elementary and Junior Project SRC Paperwork

**March 5, 2018** Deadline for Registration for All Projects

**March 13, 2018** Deadline for All Project Registrations (with Late Fee)

**March 16, 2018** Flint Regional Science Fair, Kettering University

**March 16, 2018** Project set-up between 3:00-6:30 pm at Kettering University; Setup Deadline: 6:30 pm; Preliminary Judging

**March 17, 2018** Judging interviews in the morning; Open viewing in the afternoon (usually 2:00 pm)

**March 18, 2018** 1:30 pm Elementary Awards Ceremony; 3:15 pm Junior & Senior Awards Ceremony; Open viewing and media interviews

**March 19, 2018** Projects on display for school field trips

**March 19, 2018** Project removal 3:00-7:00 pm. Project Display Area teardown begins at 7:00 pm sharp!

**April 7, 2018** Michigan State Science & Engineering Fair, Kettering University

**May 13-18, 2018** International Science & Engineering Fair (ISEF), Pittsburgh, PA



---

---

Visit the Flint Regional Science Fair on Our Website  
[www.flintsciencefair.org](http://www.flintsciencefair.org)

Phone: 810-797-5290  Like us on Facebook

### Note

This handbook is provided as a free service by the Flint Regional Science Fair, Inc. Please feel free to copy any or all portions.

---

# From the 2017 Science Fair Winner



Clara Wagner

Dear fellow students,

Did you ever have something really annoy you and not have an answer for it? Maybe it's something adults can't find an answer for, either. An original idea or solution that seeks to solve a problem which interests you – or nobody else has been able to solve – is a great place to start a science fair project.

It might be hard to see our young brains as an advantage in solving a problem, but consider the young brains at Intel, Apple, Facebook, Netflix, and Google. Wondering how something can be better, instead of finding all the reasons it can't, is a big advantage of a young brain.

Being inspired by the world's problems, or getting encouragement from the things you read or the places you visit are also opportunities for science fair projects. For example, at a visit to the Smithsonian, I saw a woodpecker exhibit and wondered why scientists couldn't do better in preventing concussions in collegiate and professional sports. I started investigating and experimenting on my own. I failed many times in my attempts, but eventually there was success (as Thomas Edison said, "Genius is 1% inspiration and 99% perspiration.").

Then, each year at Science Fair, I looked forward to presenting to the judges who provide extremely helpful feedback, and hearing about other in-depth and exciting research each fellow student and competitor has completed.

Since first thinking about that woodpecker's head, I have been fortunate to win many awards, scholarships, trips to ISEF, prize money, and even travel to India to present my work! It sounds cheesy to say it, but all that was of secondary importance to proving to myself (and the adults that inspired me) that I could do it!

And there's more. At every level of competition, meeting people has been one my main highlights -- spending time with both the Flint group and getting to know many international students. The best part is getting to speak with international students about our scientific interests and how our cultures vary.

Each year this experience has further cemented my career goal and passion to become a researcher and inventor. Without the opportunities and support provided by The Flint Regional Science Fair, none of this would have been possible.

Did you know the Flint Regional Science Fair awarded thousands of dollars in prize money and scholarships to high school students this year alone? It can seem as though these awards are a long way off, but I am living proof that it's not impossible!

So, consider entering your local science fair. Along the way you will enjoy the competition and meet new interesting people who have asked questions about science like yourself. Don't forget to ask questions, read papers, and keep an open mind to other ideas. Pick a project you find fun and interesting, and you can make the perspiration worthwhile.

---

## Contributors to the 2017 Science Fair

A-Frame Awards

A Family Who Believes in Science

Drs. Nasir & Aneerah Ali

Ben Aubin

Drs. Qazi & Zareena Azher

John Burleson

Carol Cerny

Clarkson Smiles - Daniel M. Burns, DDS

Albert Ekladyous

Sam and Jacqueline Ekladyous

Flint Children's Museum

Genesee County Parks & Recreation

Genesys Regional Medical Center

Kamal & Sashi Gupta - Gupta Science Foundation of CFGF

i-60 Media

Kettering Physics Dept. & FIRST Robotics

Meijer

The Moyer Group - web hosting

Earnest Pouncy

Jim & Claudia Studak

University of Michigan-Flint Chemistry Dept. & Chemistry Club

Mike and Linda Vincil

John & Jane Ann Wambaugh

Andrew Watchom

---

## 2017 Participating Schools

### Elementary Division

Borland Elementary School

Central Elementary School

City School

Col. Donald McMonagle Elementary

Dye Elementary

Genesee Academy

Hahn Elementary

Handley School

Homeschools

Keewahdin Elementary School

Lillian G. Mason Elementary School

Merrill Elementary School

Randels Elementary School

Rankin Elementary School

### Junior Division

Bishop Kelly Memorial School

Davison Middle School

Fort Gratiot Middle School

Genesee Academy

Homeschools

Marshall Greene Middle School

Saginaw Arts & Sciences Academy

St. John The Evangelist School

### Senior Division

Arthur Hill High School

Genesee Early College

Grand Blanc Community High School

Hamady Community High School

Port Huron Northern High School

Saginaw Arts & Sciences Academy

---

# Awards, Prizes and Scholarships

At the 2017 Fair, awards, prizes and trips valued at nearly \$30,000 were presented by the Fair Board, with thousands of dollars more in special awards, camps and scholarships presented thanks to the generosity and commitment of Fair sponsors.

The FRSF Board believes everyone who develops and exhibits a project at the FRSF is already a winner. For that reason, every exhibitor at the Fair receives a prize and ribbon. At the 2017 Flint Fair, a “goodie bag” filled with neat stuff was presented to all experimenters.

## FRSF Finalists

In 2017, awards valued at more than \$14,000 were distributed to 69 Finalists (not counting costs for ISEF trips). Students who develop high quality projects are designated “Finalists” and are awarded prizes, scholarships and gift cards. It is from among the finalists that judges select winners of the various categories within divisions for top awards.

## 2017 Senior Division Top Prizes

Five Senior Division winners were awarded all-expense paid trips to the INTEL International Science & Engineering Fair (ISEF) held in Los Angeles, CA. Three winners compete and two outstanding freshman or sophomore finalists attend ISEF as observers. An “Alternate” is also selected in case a winner is unable to attend ISEF or becomes eligible for sponsorship through the Michigan State Science & Engineering Fair.

## 2017 Junior Division Top Prizes

Junior Division winners received scholarships, including a \$750 award to the Grand Award Winner. Twenty Junior Division finalists were nominated to participate in the Broadcom MASTERS program.

## College and University Scholarships

Kettering University, University of Michigan-Flint and Baker College selected students for scholarships through the Fair, including scholarships to special pre-college programs.

## Special Awards

At the 2017 FRSF, 32 scientific, engineering, local and government organizations presented 132 Special Awards to 90 students, including 42 non-finalists. Donors assign judges to select winners of their respective awards for projects they deem worthy and appropriate to their mission. Special Awards include:

- Scholarships to special summer programs
- Cash awards
- Expense-paid trips to scientific and engineering installations, national conventions, etc.
- Equipment
- Plaques
- Medals
- Books
- Magazine subscriptions
- Certificates

All Fair participants are considered for special awards.

Note: Scholarship levels and prizes awarded are subject to availability and may change without notice.

## Michigan Science & Engineering Fair

Senior Division finalists are eligible to participate in the Michigan State Science & Engineering Fair - a one-day fair in which students from across Michigan compete for additional recognition, prizes and scholarships, including sponsored trips to compete in ISEF.

## International Science & Engineering Fair

The FRSF awards all-expense paid trips to participate in the ISEF (the 2018 ISEF is in Pittsburgh, PA). Three Senior Division finalists are sponsored to compete in ISEF and two finalists in grades 9 or 10 are sponsored to attend ISEF as “Observers.”

ISEF brings together more than 1,600 students from 70 countries and includes special tours and workshops that offer great educational value that cannot be obtained in any other way. ISEF prizes include:

- Over \$3,000,000 in prizes and scholarships were awarded at the 2017 ISEF.
- Grand Awards (\$5,000), first place (\$3,000), second place (\$1,500), and third place awards (\$500) are sponsored by Science Service in each of 13 categories.
- Two finalists are chosen to attend the Nobel Prize Ceremonies in Stockholm.
- Schools and regional fairs of the Grand Award Winners receive plaques and a \$1,000 grant.

## SSP Broadcom MASTERS Competition for 6th, 7th and 8th Graders

MASTERS (Math, Applied Science, Technology & Engineering for Rising Stars) is a competition for grades 6 through 8. The FRSF will nominate several students from our Fair to enter this challenge.

300 Semifinalists will be evaluated from which 30 Finalists will be selected to win an all-expense paid trip to Washington, D.C., where they will compete for awards and prizes, including the top education award of \$25,000.

Over the last 12 years, including the earlier middle school Young Scientist Challenges, FRSF is proud that our participants have earned 15 Semifinalist and four Finalist selections.

## ISWEEEP

The International Sustainable World Engineering Energy Environment Project (ISWEEEP) draws hundreds of the brightest STEM-focused students in the world each year to Houston, TX.

Student projects compete in such areas as renewable energy, sustainable development and medical breakthroughs to earn more than \$100,000 in awards and scholarships.

Several FRSF students have won medals and other awards at ISWEEEP in recent years. One Senior Division finalist from the 2017 Fair won a Gold Medal at the 2017 ISWEEEP.



---

# Registering for the Flint Regional Science Fair

The registration process for the Flint Regional Science Fair is changing slightly for 2018. These changes will enable a more streamlined process and allow our Fair to stay in line with the ISEF standards.

## There is a two-part registration process that can be completed online.

Step 1. Complete the FRSF Online Registration Form. An email confirmation will be sent.

Step 2. Download FRSF Supplemental Registration Forms (an interactive PDF that can be saved on your PC, printed and sent by email). If your web browser does not support the interactive PDF, download the form and save with Acrobat Reader.

- Save the interactive PDF on your PC. Complete appropriate forms. Save the document and email the document to [registration@flintsciencefair.org](mailto:registration@flintsciencefair.org).
  - When saving your supplemental forms, use the “Save As” command and add your name at the end of the document name -- example: 2018 FRSF Supplemental Registration Form John Appleseed.
  - Additional forms that may be required in Step 2 vary with the nature of the student’s project and are easily identified using the ISEF Rules Wizard that is accessible from the FRSF website. Examples: Human Subjects, Vertebrate Animals, Hazardous Substances, etc.
- All students must complete Form 1, Form 1A, Form 1B and a Research Plan as outlined on page 3 of the supplemental forms. Email forms to [registration@flintsciencefair.org](mailto:registration@flintsciencefair.org).
- Forms should also be printed and signed by the student and adult sponsor. Signed forms should be brought to the Fair on March 16.
- Junior and Senior Division students must also complete the Abstract Form when you complete your project and bring it to the Fair on March 16.

Students are encouraged to print all completed forms for their files and reference.

## Notes:

- Projects will be approved via email upon review by the FRSF Scientific Review Committee (SRC).
- Projects requiring forms additional to Forms 1, 1A and 1B need to be submitted for approval from the FRSF SRC for ISEF compliance.
  - Senior Division deadline for additional forms is January 12. Deadline extensions will be considered on a case-by-case basis.
  - Elementary and Junior Division deadline for additional forms is February 16.

- Students can assume approval of non-human or non-vertebrate projects once their application has been signed by their Teacher/Supervisor. You will be notified if there is a problem.
- SSP Student Member Registration - Required for high school projects only.
  - Senior Division students who have not previously registered for ISEF must get a 10 digit ID number that is assigned by SSP (Society for Science and the Public that coordinates ISEF). It is easily obtained via the link on the FRSF website. You will receive an email confirmation upon registration.
  - Paper registration forms are also available at [www.flintsciencefair.org](http://www.flintsciencefair.org).
  - If you cannot download the forms, please contact us at [director@flintsciencefair.org](mailto:director@flintsciencefair.org).

## Registration Deadlines:

- Elementary – March 5, 2018
- Junior High – March 5, 2018
- High School – March 5, 2018
- All Projects (with Late Fee) – March 13, 2018

If you have any questions concerning the registration process or are unable to meet the deadlines, please contact us at [director@flintsciencefair.org](mailto:director@flintsciencefair.org).

## Local Fair Directors Note:

Directors of local fairs that are near or after the March 5 registration deadline need to contact the Director of the Flint Fair **BEFORE FEBRUARY 23, 2018** if they desire to have their students enter the FRSF using the alternate **BLOCK RESERVATION** method.



---

---

# Checklist for the 2018 Fair



If you **NEED HELP**, don't hesitate to ask.

- For technical aid or help finding equipment, write or email the FRSF. The contact information is on the back cover.
- A mentor or tutor is a great help and can help to make your project even better. Please contact the FRSF Director at 810-797-5290 or [director@flintscience.org](mailto:director@flintscience.org) if you need help finding one.
- For questions or to order more Handbooks, call the FRSF Director at 810-797-5290 or email [director@flintsciencefair.org](mailto:director@flintsciencefair.org).

---

---

## To help you in planning your project:

Visit the **FRSF website Students Menu for great helps**. Topics include: Planning a Good Science Fair Project, Writing a Scientific Report, the Scientific Method, Getting Started, Project Idea Tool, etc.

### Potentially Hazardous Practices — Special Rules Apply

Special safety or handling rules may apply for conducting your experiment and what or how items can be included in your project display. Some items are prohibited or special handling rules apply due to safety concerns and ethical issues. The Rules and Regulations page on the website and the Rules Wizard provide comprehensive guidance and specific directions for many situations and identify any special forms you might need to submit to the Scientific Review Committee (SRC). If you have any questions, please contact [director@flintsciencefair.org](mailto:director@flintsciencefair.org).

### Projects involving the following items are examples of those requiring special handling or attention:

- Animals
- Food – animal or human
- Projectiles
- Lasers
- Humans
- Acids
- Heat
- Heavy metals
- Live tissue
- Caustics
- Batteries
- Potentially hazardous materials or equipment
- Molds
- Hazardous chemicals
- Electricity
- Certain plants and soils
- Fungi
- Explosives
- High voltage
- Liquids
- Combustion

**Additional rules required by ISEF may apply to Senior Division projects. See the Rules Wizard.**

### Final Fair Checklist

- Yes  No 1. Have you completed the FRSF Online Registration and FRSF Supplemental Registration Form?
- Yes  No 2. Have you read and complied with the International Rules and Guidelines (available on the FRSF website)?
- Yes  No 3. Do you have a report and signed copy of the FRSF Supplemental Registration Form to leave with your project?
- Yes  No 4. Does your project contain any prohibited photos including dissection or other visuals of vertebrates in other-than-normal conditions?
- Yes  No 5. Do you have written permission to display photos of anyone other than yourself?
- Yes  No 6. Do you have any living creatures, yeast, molds, microbes, opened or unpackaged food in your display?
- Yes  No 7. Does your display meet the size requirements? (Max Dimensions: 30" deep, 48" wide, 108" high)
- Yes  No 8. Have you arranged to have your project transported for set up by 6:30 pm on Friday evening?
- Yes  No 9. Have you arranged to be present for Saturday's judging interviews?
- Yes  No 10. Have you arranged to be present for Sunday's awards ceremony?
- Yes  No 11. Have you arranged to pick up your project on Monday after the Fair?

NOTE: Project pickup is on Monday, March 19, before 7:00 pm.

# Project Categories

Junior Division will be judged in the following three categories:

## Life

### BEHAVIORAL AND SOCIAL SCIENCE

Psychology, Human Behavior, Social Relationships

### MICROBIOLOGY

Study of bacteria and viruses

### PLANT SCIENCES

Study of plant life

### MEDICINE AND HEALTH SCIENCES

Study of humans and their biology, diseases and health

### CELLULAR AND MOLECULAR BIOLOGY

Biology of microorganisms

### ANIMAL SCIENCES

Study of animals

## Earth & Environment

### BIOCHEMISTRY

Chemistry of life processes

### CHEMISTRY

Study of the nature and composition of matter and laws governing it

### EARTH & PLANETARY SCIENCE

Geology, Mineralogy, Oceanography, Climatology, Space Science

### ENVIRONMENTAL SCIENCE

Study of air, water and land pollution

### ENVIRONMENTAL MANAGEMENT

Recycling and ecosystem management

## Physical

### COMPUTER SCIENCE

Study and development of computer software, hardware and associated logical devices

### ENGINEERING

Materials and Bioengineering - Electrical, Mechanical, Civil, Chemical

### MATHEMATICS SCIENCE

Numerical and algebraic computations, statistics

### PHYSICS & ASTRONOMY

Theories, principles and laws governing the physical universe

## JUDGING CRITERIA

Here are the maximum points attainable in each area for each division:

	ELEMENTARY	JUNIOR	SENIOR
Creative Ability	30	20	30
Scientific Thought/Engineering	15	20	30
Thoroughness	20	20	15
Skill	15	20	15
Clarity	20	20	10

Projects that are not true experiments are very unlikely to win the FRSS. All decisions of judges are final. The judges will examine and score each exhibit and interview each entrant on the basis of the following criteria:

### CREATIVE ABILITY

Does the project show creative ability and originality in the question asked and the approach to solving the problem? Does the project show creative use of materials and equipment?

### SCIENTIFIC THOUGHT/ENGINEERING GOALS

Was the problem stated clearly, and was it limited so that it was possible to attack it? Was there a plan for reaching a solution? Are the variables clearly defined? Is there enough data to support the conclusion?

### THOROUGHNESS

How completely has the problem been covered in the project? Are the conclusions on a single experiment or several? How much time was spent on the project?

### SKILL

Does the student have the laboratory, computation and design skills required to gather data to support the project? Where was the project done? What help did the student have? Was the equipment used built by the student or was it borrowed?

### CLARITY

Are the statements of the question or problem explored and results on the display? Is all spelling correct? Does the display show the effective use of graphs and pictures?

### REMEMBER...

This is a science fair, not an arts and crafts show. Was the experimentally collected data relevant to the project question? Was the scientific method used? Was there sufficient experimentation to justify the total score? Be sure to include a written report. Finalists are selected on the basis of the written report and display.



# 2017 Science Fair Winners

## Senior Division

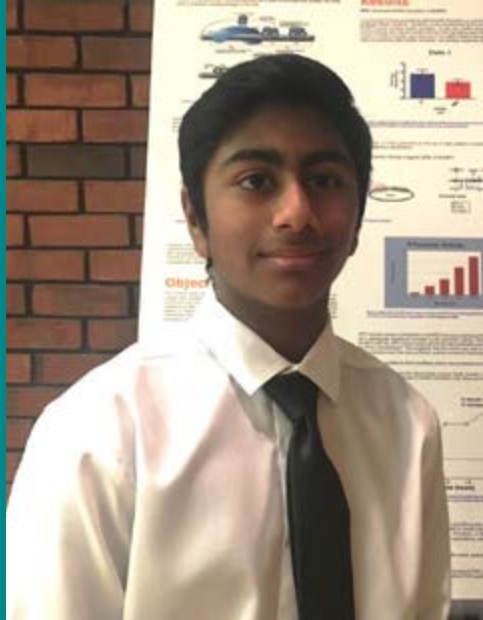
## Elementary Division



**First Place**

Clara Wagner

Saginaw Arts & Sciences Academy



**Second Place**

Neehal Tumma

Port Huron Northern High School

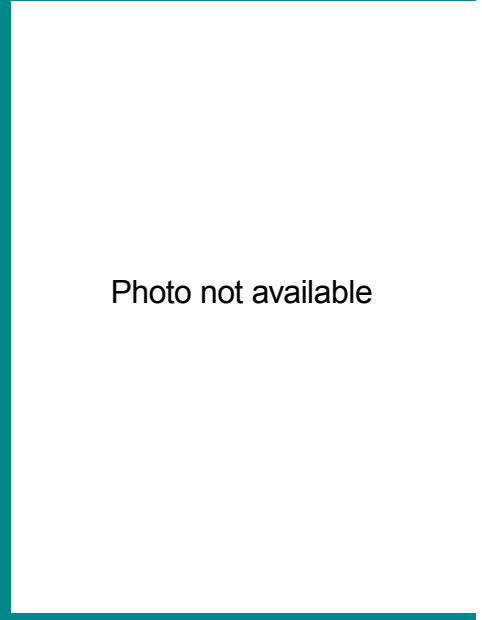


Photo not available

**First Place**

Saria Saeed

Genesee Academy

## JUNIOR DIVISION

### Earth/Chemistry

### Life Science

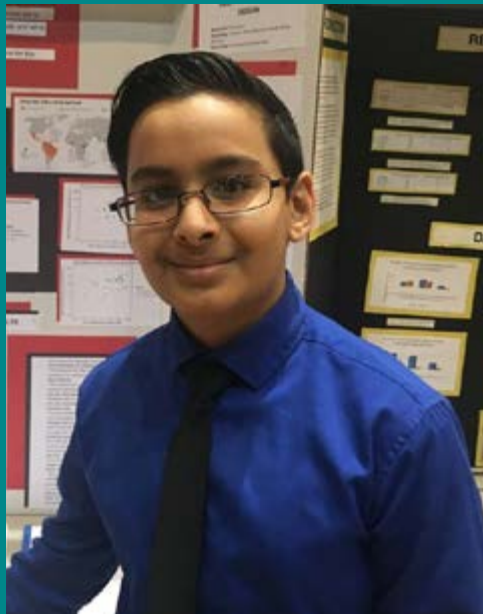
### Physical/Engineering



**First Place and Grand Award**

Ibraheem Najjar

Genesee Academy



**First Place**

Sinan Lai

Fort Gratiot Middle School



**First Place**

Nick Shepich

Saginaw Arts & Sciences Academy

# 2017 Science Fair Finalists

## Elementary Division

1st Place	\$400	Saria Saeed
2nd Place	\$300	Nour Almounajed
3rd Place	\$200	Samuel Gagnon
4th Place	\$100	Yaman Abdulrazzak
	\$100	Alyssa Armata
	\$100	Shayan Lai
	\$100	Morgan Vermeesch
	\$100	Elena Wells
5th Place	\$50	Sarah Abdelhay
	\$50	Obai Abdelhay
	\$50	Siena Asiala
	\$50	Taylor Fields
	\$50	Haydn Kotowski
	\$50	Lily Makedonsky
6th Place	\$25	Aya Elbakheet
	\$25	Lexa Forti
	\$25	Mariah Melton
	\$25	Ibraheem Sajid

## Junior Division

1st Place & Grand Prize	\$750	Ibraheem Najjar
1st Place	\$500	Sinan Lai
	\$500	Nick Shepich
2nd Place	\$400	Serena Ahmad
	\$400	Affan Ahmed
	\$400	Hamza Alam
	\$400	Matt Davison
3rd Place	\$300	Akshanth Bandia
	\$300	Jack Banes
	\$300	Natalie Benjamin
	\$300	Steven Mauer
4th Place	\$200	Zara Ahmed
	\$200	Anna Ehline
	\$200	Emily Kinnicutt
	\$200	Grayson Lumsden
	\$200	Katie McCarthy
	\$200	Andrew Meike
	\$200	Xavier Murphy
	\$200	Shriya Reddy
	\$200	Hayden Sitko
	\$200	Delvin Wieszczecinski
5th Place	\$100	Areesha Ahmed
	\$100	Hailey Croff
	\$100	Terry Dean
	\$100	Julianna Deming
	\$100	Hannah Eller
	\$100	Eric Hunsinger
	\$100	Areeb Islam
	\$100	Ember Martin
	\$100	Crystal Pace
	\$100	Toby Powers
	\$100	Safa Sajid
	\$100	Harry Unger

## Senior Division

1st Place	\$500	ISEF Participant Clara Wagner	
2nd Place	\$500	ISEF Participant Neehal Tuma	
3rd Place	\$500	ISEF Participant Samuel Maher	
4th Place	\$400	ISEF Participant Zaid Haque	
	\$400	Grace Macomber	
5th Place	\$250	Jarrod Griffus	
	\$250	Alex Kleinfeld	
	\$250	Aarzo Mahajan	
	\$250	ISEF Observer Darla Martinez	
6th Place	\$150	Mesk Abdulhay	\$150 Mahah Naveed
	\$150	ISEF Observer Brandon Davis	\$150 Celine Rajoulh
	\$150	Henna Haque	\$150 Rachel Stockman
	\$150	Mika Hill	\$150 Alex Wang
	\$150	Nikhil Korrapati	

## Special Congratulations

### INTEL International Science & Engineering Fair (ISEF) held in Los Angeles, CA

Six students from FRSF attended ISEF: Clara Wagner, Neehal Tuma, Samuel Maher and Zaid Haque to compete; Darla Martinez and Brandon Davis attended as Observers. Clara, who won a trip to ISEF by placing 1st place in the FRSF, was able to pass that seat to another student when she won a trip to ISEF by winning the Michigan Science & Engineering Fair. At ISEF, Clara and Neehal earned the following recognitions:

**Clara Wagner** for *Investigating Tuned Magneto-Rheological Reservoirs, Compression Systems, and Shear Thickening Fluids to Improve Mean Peak Acceleration as Measured by High-G Accelerometers in Hockey Headgear*

- 1st Place and Best in Category (Biomedical Engineering) Grand Award (\$8,000)
- Intel-Indo US Science and Technology Forum Visit to India (two-week science and cultural exchange, including participation in the National Fair of India)
- Air Force Award

**Neehal Tuma** for *Elucidating The Mechanism Of Virulence In E.coli O104:H4: Identification Of The Role Of Biofilms In Stx-phage Induction*

- 4th Place Grand Award (\$500) in the Microbiology category

### 23rd Annual Michigan Science & Engineering Fair held at Kettering University

**Clara Wagner** - 1st Place, Grand Award, Trip to ISEF, American Statistical Association Award

**Arzo Mahajan** - 2nd Place, ASU Walton Sustainability Solutions Award, Stockholm Water Environment Federation Award, four-year Kettering Scholarship

**Grace Macomber** - 3rd Place, ASU Walton Sustainability Solutions Award, National Oceanic & Atmospheric Administration (NOAA) Award

**Darla Martinez** - 3rd Place

**Samuel Maher** - 3rd Place, US Navy Award, Yale Science & Engineering Association Award, four-year Kettering Scholarship

**Zaid Haque** - 4th Place

**Brandon Davis** - 4th Place, American Statistical Association Award

**Henna Haque** - American Statistical Association Award

### International Sustainable World Energy Engineering Environment Project

**Grace Macomber** – Gold Medal, Environment-Management & Pollution

### FRSF Teacher of the Year Award

**David Allen, Ph.D.**, Saginaw Arts & Sciences Academy

# 2017 Science Fair Winners

## Elementary Finalist

Sarah Abdelhay  
Obai Abdulhay  
Yaman Abdulrazzak  
Nour Almounajed  
Alyssa Armata  
Siena Asiala  
Aya Elbakheet  
Taylor Fields  
Lexa Forti  
Samuel Gagnon  
Haydn Kotowski  
Shayan Lal  
Lily Makedonsky  
Mariah Melton  
Saria Saeed  
Ibraheem Sajid  
Morgan Vermeesch  
Elena Wells

## Elementary Research Fellow

Bryce Cromwell  
Allan Cummins  
Ryan Dombrowski  
Kenneth H. Gocha  
Vivian Graver  
Aniya Hall  
Ethan Hughes  
Kiya Johnson  
Madison Klee  
Anastasia Livingston  
Caleb Melton  
Jett Miller  
Farah Naguib  
Andrew Shorkey  
Dane Steffy  
Paige Virgo  
Bailey Wood

## Elementary Honorable Mention

Brianna Arrand  
Alyssa Barnett  
Nick Chind  
Ari Cochran  
Dominic Deshazor  
Jacobus Fleming  
Toryn Fykes  
Mason Goings  
Robert Graham  
Keanna Gray  
Lillian Hemgesberg  
Tavin Hill  
Taylor Hill  
Zaylon Jenkins  
Aiden Kerr  
Anajah King  
Skylar LeGrande  
Aurora MCGowan  
Sean Nickerson  
Yousuf Nounou  
Amr Rizk  
Licia Schullar  
Donovan Shaw  
Bayan Tarakji  
James Thorpe  
Harmony Turner  
Sebastian Wells

Conner Wildie  
Ashley Williams-Bell  
Nariah Williams  
Sarai Wysinger

## Junior Division Finalist

Serena Ahmed  
Affan Ahmed  
Areesha Ahmed  
Zara Ahmed  
Hamza Alam  
Akshanth Bandla  
Jack Banes  
Natalie Benjamin  
Hailey Croff  
Matt Davidson  
Terry Dean  
Julianna Deming  
Anna Ehline  
Hannah Eller  
Eric Hunsinger  
Areeb Islam  
Emily Kinnicutt  
Sinan Lal  
Grayson Lumsden  
Ember Martin  
Steven Maurer  
Katie McCarthy  
Andrew Meikle  
Xavier Murphy  
Ibraheem Najjar  
Crystal Pace  
Toby Powers  
Shriya Reddy  
Safa Sajid  
Nick Shepich  
Hayden Sitko  
Harry Unger  
Devlin Wieszczeccinski

## Junior Division Research Fellow

Amjad Abdulrazzak  
Isabella Allen  
Samha Amin  
Mia Aubuchon  
Paul Badour  
Silas Baker  
Elizabeth Brandes  
Nolan Close  
Gabrielle Collick  
Lauren Coughlin  
Jordanne Dankert  
Poulomi Dey  
Hudson Doyle  
AJ Flores  
Loraine Gigi  
Cole Haraf  
Gabriel Howald  
Colton Jeffries  
Tyler Jobe  
Sydney Jones  
Alivia Katrinic  
Pahulpreet Kaur  
Parsa Kazemi  
Isabelle Keeler  
Umaiyal Kogulan  
Corey Koscinski

Owen La Fontaine  
Michael LaBean  
Mara Lieske  
Cameron Livingston  
Bhava Loganathan  
Jillian Lorf  
Andre Luna  
Jenna MacDonald  
Armaan Mahajan  
Tanvi Malewar  
Bailey Maloney  
August Masley  
Raine Milledge  
Gabrielle Monreal  
Mariano Moritz  
Mallory Morton  
Madison Murphy  
Josh Parashar  
Payton Pizzala  
April Princing  
Tejal Richardson  
Melinda Rogers  
Bailey Saffron  
Lucas Schattenmann  
Joseph Schiestel  
Ivan Sies  
Noah Slagle  
Brevik Tefft  
Mia Telke  
Krislin Weier  
Katrina Wells  
Madison Woodell  
Nabil Zaman

## Junior Division Honorable Mention

Bishr Abdulrazzak  
Khaleel Ahmad  
Lylah Aikoye  
Safiya Alkotob  
Parker Arnold  
Levi Asiala  
Tessia Auger  
Dominic Barker  
Enoch Berhe  
Ryan Bierbusse  
Taylor Bogard  
Graham Borton  
Grace Boyer  
Rogan Caballero  
Josie Chandler  
Samira Chetta  
Tyler Chorley  
Neal Clayton  
Naima Cleveland  
Joseph Crachiola  
Carson Craig  
Joey Crowley  
Ella Cumpata  
Ellary Darling  
Brendan DeLay  
Brielle Doyle  
Kaden Duckworth  
Mitchell Dyer  
Donovan Estes  
Brendan Fosgitt  
Abigail Francis  
Tyler Gibbard

Claire Goulet  
Jack Griswold  
Trayza Haido  
Marwa Hammami  
Adil Hasan  
Kinda Hashish  
Lucas Hicks  
Evan Hodack  
Lucas Hufton  
Allycia Katrinic  
Molly Killian  
Cash King  
Landon Kish  
Meenal Kogulan  
Andres Lambaria  
Ivan Larr  
Emma Lewandowski  
Luke Malenich  
Caleb Manville  
Kaitlyn McMartin  
Braeden Moore  
Zoiya Morell  
Sebastian Munsey  
Shelby Murphy  
Adrianna Nellet  
Jessalyn Peavyhouse  
Erin Raspberry  
Peyton Reitz  
Magdelene Rose  
Molly Russell  
Lauren Sayles  
Clarissa Simmonds  
Jack Slezak  
Emily Smith  
Regan Snyder  
Keegan Stamper  
Makela Stone  
Talia Swayze  
Jillian Tate  
Grace Thomas  
Gabriella Watt  
Dylan Wendel  
Elizabeth Williams  
Elise Willingham  
Destiny Wilson  
Troy Wittke

## Senior Division Finalist

Mesk Abdulhay  
Brandon Davis  
Jarrod Griffus  
Henna Haque  
Zaid Haque  
Mika Hill  
Alex Kleinfeld  
Nikhil Korrapati  
Grace Macomber  
Aarzo Mahajan  
Samuel Maher  
Darla Martinez  
Mahah Naveed  
Celine Rajouh  
Rachel Stockman  
Neehal Tumma  
Clara Wagner  
Alex Wang

## Senior Division Research Fellow

Michael Anscorb  
Denitra Brinson  
Elizabeth Burkhardt  
Saarthak Johri  
DyTerres Lindsey  
Ricardo Martin  
Treasure Page  
William Pan  
Ryan Peplinski  
Kye Richmond  
Benjamin Schall  
Tanvi Sharma  
Jim Shepich  
Sam Shepich  
Jashan Singh  
Safi-ur-Rahman Syed  
Sarah Syeda  
Ifeoma Uwaje  
Daniel Webster  
Lewis Wolf  
Kevin Yin

## Senior Division Honorable Mention

Yuen Azu  
Elexa Baldwin-Cote  
Denarion Benjamin  
Philip Even Bernardino  
Sierra Cleland  
Ajaybir Gill  
Yuvraj Gill  
Kyle Graf  
Perry Hamilton  
Jonathon Harris  
Joseph Kopka  
Tre'Quan LaFond  
Nasir Roberts  
Mallory Snyder  
Ian Szejbach  
Amaka Unobagha

# 2017 Special Award Sponsors and Winners

Div	Special Award Sponsor	Notes
<b>American Meteorological Society</b>		
J	Jessalyn Peavyhouse	
S	Ricardo Martin	
<b>American Psychological Association</b>		
J	Nolan Close	
<b>ASM International Foundation</b>		
S	Alex Kleinfeld	
<b>ASU Rob &amp; Melani Walton Sustainability Solutions</b>		
S	Ajaybir Gill	
S	Treasure Page	
<b>Association for Women Geoscientists</b>		
S	Aarzo Mahajan	
<b>Broadcom MASTERS</b>		
J	Affan Ahmed	
J	Zara Ahmed	
J	Hamza Alam	
J	Akshanth Bandla	
J	Jack Banes	
J	Natalie Benjamin	
J	Matt Davidson	
J	Anna Ehline	
J	Emily Kinnicutt	
J	Sinan Lal	
J	Grayson Lumsden	
J	Steven Maurer	
J	Katie McCarthy	
J	Andrew Meikle	
J	Xavier Murphy	
J	Ibraheem Najjar	
J	Shriya Reddy	
J	Nick Shepich	
J	Hayden Sitko	
J	Devlin Wieszczecinski	
<b>City of Flint / Office of the Mayor</b>		
E	Saria Saeed	
J	Sinan Lal	
J	Ibraheem Najjar	
J	Nick Shepich	
S	Clara Wagner	
<b>City of Flint / Water Treatment Plant &amp; Facilities</b>		
E	Ibraheem Sajid	
J	Grayson Lumsden	
J	Ember Martin	
J	Andrew Meikle	
J	Ibraheem Najjar	
J	Crystal Pace	

Div	Special Award Sponsor	Notes
<b>City of Flint / Water Treatment Plant &amp; Facilities, Cont.</b>		
S	Jarrold Griffus	
S	Grace Macomber	
S	Aarzo Mahajan	
<b>Delta College Summer Camp</b>		
E	Siena Asiala	
<b>Dr. Michael Farney Award</b>		
S	Samuel Maher	
<b>MIDHHS Explore Lab Science Program</b>		
E	Alyssa Armata	Gold
E	Aya Elbakheet	Silver
E	Taylor Fields	Bronze
J	Andrew Meikle	Gold
J	Sinan Lal	Silver
J	Pahulpreet Kaur	Bronze
S	Jarrold Griffus	Gold
S	Alex Wang	Silver
S	Benjamin Schall	Bronze
<b>FIRST Robotics - Kettering Robotics</b>		
E	Ari Cochran	
E	Allan Cummins	
J	Katrina Wells	
J	Elise Willingham	
S	Philip Even Bernardino	
S	Samuel Maher	
<b>Flint Children's Museum</b>		
E	Obai Abdulhay	
E	Yaman Abdulrazzak	
E	Aya Elbakheet	
E	Samuel Gagnon	
E	Ethan Hughes	
E	Elena Wells	
<b>Flint River Watershed Coalition</b>		
E	Ibraheem Sajid	
E	Andrew Shorkey	
J	Natalie Benjamin	
J	Ibraheem Najjar	
S	Jarrold Griffus	
S	Aarzo Mahajan	
<b>Genesee County Medical Society</b>		
E	Alyssa Armata	
J	Sinan Lal	
S	Neehal Tumma	

Div	Special Award Sponsor	Notes
<b>Genesys Regional Health Center</b>		
E	Shayan Lal	Behavioral & Social Science
J	Josie Chandler	Behavioral & Social Science
S	Kevin Yin	Behavioral & Social Science
E	Nour Almounajed	Biochemistry, Earth, and Environmental
J	Natalie Benjamin	Biochemistry, Earth, and Environmental
S	Brandon Davis	Biochemistry, Earth, and Environmental
E	Yaman Abdulrazzak	Medicine & Health Sciences
J	Zara Ahmed	Medicine & Health Sciences
S	Darla Martinez	Medicine & Health Sciences
E	Alyssa Armata	Microbiology
J	Affan Ahmed	Microbiology
S	Mahah Naveed	Microbiology
<b>Hurley Medical Center</b>		
E	Aya Elbakheet	
J	Affan Ahmed	
S	Henna Haque	
<b>Intel Computer Award</b>		
S	Samuel Maher	
<b>ISWEEEP</b>		
S	Grace Macomber	
<b>Kettering University</b>		
S	Samuel Maher	Computer Engineering
S	Safi-ur-Rahman Syed	Computer Engineering
<b>Matthew Bauerle Mathematics Award</b>		
E	Elena Wells	
J	Steven Maurer	
S	Clara Wagner	
<b>McLaren Health Care Corporation</b>		
E	Elena Wells	Behavioral & Social Science
J	Tejal Richardson	Behavioral & Social Science
S	Yuvraj Gill	Behavioral & Social Science
E	Obai Abdulhay	Biochemistry
J	Grayson Lumsden	Biochemistry
S	Grace Macomber	Biochemistry
E	Alyssa Armata	Cellular & Molecular Biology
J	Shriya Reddy	Cellular & Molecular Biology
S	Zaid Haque	Cellular & Molecular Biology
E	Shayan Lal	Medicine & Health
J	Hamza Alam	Medicine & Health
S	Clara Wagner	Medicine & Health
E	Haydn Kotowski	Microbiology
J	Shriya Reddy	Microbiology

Div	Special Award Sponsor	Notes
<b>Michigan Association of Hazardous Material Professionals</b>		
E	Obai Abdulhay	
J	Andrew Meikle	
S	Aarzo Mahajan	
<b>Mid Michigan Ambulatory Physicians</b>		
E	Yaman Abdulrazzak	
E	Aya Elbakheet	
J	Crystal Pace	
J	Bailey Saffron	
J	Sinan Lal	
<b>MU Alpha Theta</b>		
S	Clara Wagner	
<b>National Aeronautics &amp; Space Administration (NASA)</b>		
S	Samuel Maher	
<b>National Oceanographic Atmospheric Administration (NOAA)</b>		
S	Ricardo Martin	
<b>Ricoh Sustainable Award</b>		
S	Grace Macomber	
<b>Society for In Vitro Biology</b>		
S	Zaid Haque	
<b>Stockholm Junior Water Prize</b>		
S	Jarroff Griffus	
S	Grace Macomber	
S	Aarzo Mahajan	
S	Samuel Maher	
<b>U.S. Air Force</b>		
S	Jarroff Griffus	
S	Grace Macomber	
S	Samuel Maher	
S	Clara Wagner	
<b>U.S. Metric Association</b>		
J	Katrina Wells	
<b>U.S. Navy Office of Naval Research</b>		
J	Kaden Duckworth	
J	Tyler Gibbard	
J	Mara Lieske	
J	Crystal Pace	
J	Nick Shepich	
S	Jarroff Griffus	
S	Clara Wagner	
<b>Yale Science &amp; Engineering Association</b>		
S	Samuel Maher	



---

# What Happens at the Fair?

## A Day-by-Day Guide

### Set-Up

#### Friday Afternoon, March 16, 2018

1. When you arrive at Kettering, take your project into the lobby, load it onto an elevator and go to the 5th floor.
2. At the 5th floor, find your registration table where you will be given a form. This will have your name and project title on it. (If you have registered and there are no forms for you, go immediately to the help table and talk with the Fair Director.)
3. Take the form and your project into the International Room where projects are being set up. Find your division. (Grades 4 and 5 are Elementary; Grades 6, 7, 8 are Junior; Grade 9–12 are Senior.)
4. Find a spot to set up your project. Leave tables next to walls for those who need 110-volt power. If you have a problem or need help, find a Fair Representative. They should have tape, tools, markers, pens, etc. for last-minute repairs.
5. After your project is set up, get it approved by a Fair Representative. They will tell you if anything is wrong with your set-up. Common problems include: live creatures; displaying food, molds and cultures; or projects that are too big.
6. After your project has been approved and the form you were given has been signed by the Fair Representative, you may leave. The signed form should stay with your project.
7. After you have completed ALL items listed above, you may go.

**YOU MUST BE FINISHED BY 6:30 pm.**

### Judging Interviews

#### Saturday, March 17, 2018

The examination of your research by other scientists is part of the scientific method. This type of examination is used throughout the scientific world to confirm the correctness of research. This is an educational experience for both the experimenter and the examiner. The interviewer needs to know everything about your experiment. It is their job to find out how much you know about your project. By asking progressively harder questions, the judge learns more about our world through your work. They should point out possible sources of error or oversights. You will be graded on how well you actually did your project, not on how well you could have done it.

1. Check the timetable in your handbook supplement and arrive on time for your division. Dress nicely. Be prepared to stay until at least noon. We are planning fun activities. Please do not go to the 5th floor until it is your turn to be judged.
2. When your group of ticket numbers is called, ride up to the 5th floor. You are expected to be well behaved and quiet.
3. You are free to go after your interview; however, you are encouraged to take an hour or more to explain your project to the public on Saturday between 2:00 and 6:00 pm.
4. Follow the plans carefully for Saturday morning judging.

Other Items for your Information:

- The snack bar will be open on Saturday.
- Please confine your travels through Kettering to those areas being used by the Fair.
- Only students being interviewed are allowed on 5th floor during judging.

### Awards and Honors

#### Sunday, March 18, 2018

1. The two Awards Ceremonies will be held in the McKinnon Theater located in the classroom part of the Kettering complex. Signs and guides will direct you from either the lobby or the fifth floor. Plan to walk a distance and climb stairs. Please see a FRSF official if barrier-free access is needed.
2. The Awards Ceremony will consist of interesting speakers, recognition of the entrants with their project rankings and the distribution of special awards, major prizes, gift cards and scholarships.
3. Everyone who enters the Fair gets a prize. These will be distributed after the ceremony back on the 5th floor. On Sunday, or Monday evening, take your display slip to the prize distribution table for your bag of goodies.
4. Owners of all projects, especially finalists' experiments, are asked to exhibit for an additional day so area school children may enjoy the Fair.

### Display and Removal

#### Monday, March 19, 2018

The Fair reserves the Monday after the event for area schools to bring field trips in to view the displays.

It is not mandatory that you leave your display on-site after the awards ceremony on Monday; however, the opportunity to see as many different projects as possible might inspire another student to participate next year.

Project removal (if left for Monday): 3:00 - 7:00 pm

Display area tear down begins: 7:00 pm

**Displays not removed by 7:00 pm Monday will be saved outside the International Room for one day, and then will be recycled.**



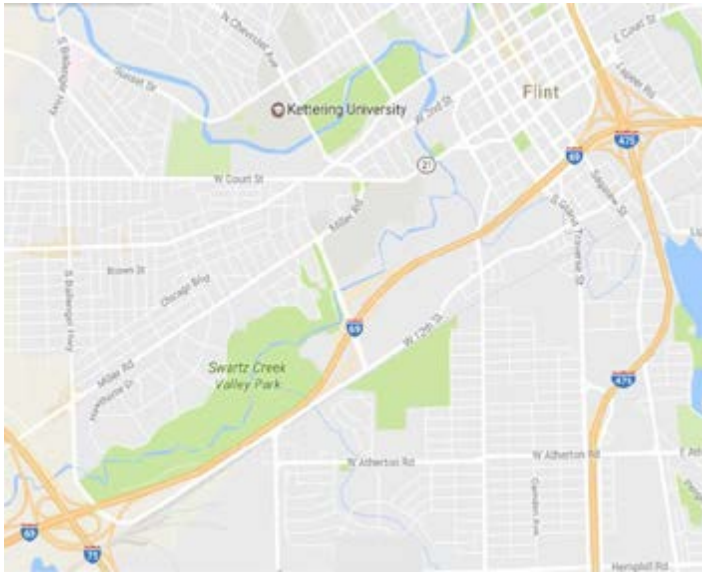
---

---

# Site of the 2018 Science Fair

The Flint Regional Science Fair is held at Kettering University. The primary site is in the International Room on the 5th floor of the Campus Center building on the southwest corner of Chevrolet Avenue and University (Third) Avenue in Flint.

For a more detailed map and directions, visit "Directions" on the FRSF website ([www.flintsciencefair.org](http://www.flintsciencefair.org)).



Parking space is available in several lots around Kettering. A loading and unloading zone is available in front of the lobby of the Campus Center building. After you unload your project, park as directed by the arrows.

**On Saturday morning, students will be required to remain in the second floor lobby and/or Sunrise Lounge while judging is underway.** Please plan to bring some personal activities to occupy your free time and take advantage of the science and vendor exhibits presented in the Sunrise Lounge.

**NOTE: The 5th floor Science Fair exhibit area is restricted during judging times. Only judges, aides and students being interviewed are allowed in the International Room during judging.**

---

---

## Schedule of Events

### March 16-19, 2018

#### FRIDAY, March 16, 2018

- 2:30 pm–6:30 pm Registration and set-up. **All projects must be set up by 6:30 pm**
- 7:30 pm–9:30 pm Preliminary judging takes place (No students present)

#### SATURDAY, March 17, 2018 (all times approximate)

- 8:30 am Senior Division judging interviews begin
- 9:30 am Junior Division judging interviews begin
- 11:00 am Elementary Division judging interviews begin
- 2:00 pm Fair open to the public until 6:00 pm
- Only students being interviewed are allowed on the 5th floor during judging

#### SUNDAY, March 18, 2018

- 12:00 pm–5:00 pm Open viewing of projects
- 1:30 pm–2:30 pm Awards Ceremony—Elementary Division
- 3:15 pm–4:45 pm Awards Ceremony—Junior and Senior Division
- 5:00 pm–5:30 pm Media interviews and photo sessions with Elementary, Junior and Senior Division First and Second Place Winners
- 5:30 pm–6:30 pm Meeting with ISEF-bound students and their parents

#### MONDAY, March 19, 2018

- 9:00 am–3:00 pm All projects on display for school field trips
- Tours available by reservation only; Call 810-797-5290 or email: [director@flintsciencefair.org](mailto:director@flintsciencefair.org)
- 3:00 pm–7:00 pm Removal of all projects

**Projects not picked up Monday night will be stacked on the 5th floor for an additional day and then be recycled.**



## Flint Regional Science Fair

P.O. Box 687  
Flint, MI 48501

Location of the Fair:

**Kettering University** - Campus Center

1700 University Avenue  
(Intersection of University and Chevrolet Ave.)

Flint, MI 48504

[www.kettering.edu/about/campus-map/directions](http://www.kettering.edu/about/campus-map/directions)

### Questions?

Email: [director@flintsciencefair.org](mailto:director@flintsciencefair.org)

Call: 810-797-5290



Subscribe to the FRSF mailing list for notices, news and to request material on our web site or email [info@inlntsciencefair.org](mailto:info@inlntsciencefair.org).