



# Louisville Regional Science & Engineering Fair

## Promoting creativity and building the future for kids

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The **2018 Louisville Regional Science & Engineering Fair** was held on **March 3** at the Kentucky Science Center with **283 students** in grades 6-12 registering **251 different projects**. Students served were from Jefferson, Marion and Oldham counties. The Science Center welcomed the event for the **fourth year**, and more than 1,000 guests from the public engaged with the students to learn about Engineering, Microbiology, Chemistry, Plant Science and more. Over **\$10,000** in cash was awarded to students along with trophies, certificates and ribbons in 22 different STEM categories. Included were over **60 special awards** sponsored by local or national companies and nonprofits. **LRSEF volunteers included over 200 judges** with expertise in the STEM fields and nearly 50 community volunteers serving as hosts.

**LRSEF will be held at the Kentucky Science Center for this academic year on Saturday, March 2, 2019. For more information see lrsef.org**

LRSEF normally awards the top **four high school projects** with an all-expenses paid trip to the **Intel International Science & Engineering Fair (ISEF)**. This year, one LRSEF student won top honors at the Kentucky Science & Engineering Fair (KY-SEF), so subsequently Joshua Jacobs attended ISEF with a KY-SEF grant. This allowed LRSEF to promote the student with the fifth-place project to receive a ISEF grant. As a result, **five high school LRSEF projects** were selected to compete in **ISEF in Pittsburgh, PA** from May 13-18, 2018. Students and projects were:

- **Joshua Jacob (LRSEF and KY-SEF) - Saint Xavier High School**, Development of a Hybrid Direct Write 3D Printer: A Novel One-Step Approach to Fabricating Multi-Layer Functional Devices and Flexible Electronics Through Reactive Inkjet Printing (Engineering Mechanics)
- **Collin Kemper - Saint Xavier High School**, Essential Features of Hyperloop Systems (Energy: Physical)
- **Shirlin Kingston - Ballard High School**, Can the Efficiency of Hydrogen Gas Productions by Electrolysis be Increased? (Chemical Energy)
- **Rachel Spaulding - Eastern High School**, Solar Updraft Tower-Wind Turbine Hybrid: Optimizing Power Generation in Multifarious Climatic Conditions Using Computational Fluid Dynamics Analysis (Engineering Mechanics)
- **Edward Zhong - Kentucky Country Day**, Can Yeast Help Boost the Immune Response to Cancer? (Cellular & Molecular Biology)

The top seven projects at LRSEF won **Best of Fair Awards** from a special 10-year grant of innovation funds established by Kevin Nolan of GE Appliances in 2014.



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The 2018 Senior Best of Fair winners (\$420 and trophy) were **Joshua Jacob, Collin Kemper, Rachel Spaulding and Edward Zhong; (St. Xavier -2, Eastern and Kentucky Country Day.)**

All 2018 Junior Best of Fair winners (\$240 and trophy) were from **St. Francis of Assisi:**

- **Liv Ashley** - Exploring Possible Impact of Antidepressants on Developing Brains (Biomedical & Health Sciences)
- **Hayden Harned** - Modeling Real World Conditions in Droplet Placement (Physics & Astronomy)
- **Henry Murr** - Noninvasive Drug Testing via Image Processing (Embedded Systems)

The LRSEF Senior division included **130 students from nine high schools**. Schools were Ballard, J. Graham Brown School, Central, Eastern, Kentucky Country Day, North Oldham, South Oldham, St. Xavier, and Valley. **The winning high schools** receiving trophies and cash awards were **Ballard (first place \$375), Eastern (second place \$225) and Valley (third place \$150).**

The LRSEF Junior division included **153 students from 11 middle and junior high schools**. These schools included Anchorage Independent Public School, Carrithers, Crosby, Kammerer, Newburg, Noe, North Oldham, Nur Islamic School of Louisville, St. Augustine Catholic School, St. Francis of Assisi and The Walden School. **The winning middle schools** receiving trophies and cash awards were **St. Francis of Assisi (first place \$375), Carrithers (second place \$225) and Nur Islamic School (third place \$150).**

LRSEF hosted GE Appliances Executives Derrick Little and David Zhou as Masters of Ceremonies at the Award Ceremonies and hosted a video link with NASA Marshall Space Flight Center engineer and Kentucky native **Dr. Tracie Prater** to inspire students.

On March 24, **87 winning Junior & Senior projects** were selected at LRSEF to promote students to compete in the **Kentucky State Science & Engineering Fair (KY-SEF)** held at Eastern Kentucky University in Richmond. Prizes at state are \$75 for first place and \$50 for second, with ribbons awarded for third. LRSEF students earned **four BEST OF FAIR** (out of 12) top awards with a **First Place in Physical Sciences to Josh Jacobs, St. Xavier, First Place and Third Place in Life Sciences to Avery Ramsay and Jady Balsamo** respectively, and a **Third Place in Physical Sciences to Samuel Flynn**, all from St. Francis of Assisi. LRSEF students also earned **36 DIVISION awards, five Special Awards** and **eight** students were nominated to Broadcom MASTERS.

<http://kysciencefair.org/2018-ky-sef-award-winners/>

On March 27, the LRSEF Best of Fair students and representatives from winning schools **were honored** in our annual day in Frankfort, the state capital. Schools represented were **Ballard, Eastern, Valley and Kentucky Country Day** high schools and **St. Francis of Assisi, Carrithers and Nur Islamic** middle schools. Students were presented certificates signed by their legislators and were introduced by Rep. Mary Lou Marizan in the House of Representatives. The student group of 18, joined by six parents and five teachers met with both **Lt. Governor Jenean Hampton** and **Secretary**



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of State Allison Lundgren-Grimes, and toured the Governor's Mansion. LRSEF treated the students to lunch in the Capitol lunchroom.

At LRSEF the top **10 percent of students in the Junior division** (19 students) were awarded invitations to enter the **Broadcom MASTERS** national competition. On September 5, **eight KY students** were chosen among the 2,537 applicants as national semi-finalists. **Three of the eight were LRSEF students**, all from St. Francis of Assisi: **John Mulvihill, Katie Quinn, and Avery Ramsay**. On September 18, **Katie Quinn from LRSEF & KY-SEF was selected as one of 30 FINALISTS**. She won a **\$500 cash award and a trip to DC October 19-24** where she engaged in immersive STEM activities, along with one other FINALIST from KY—Shreyas Kar from Meyzeek Middle School. Broadcom MASTERS also recognizes FINALISTS' science teachers with a one-year subscription to *Science News* magazine and awards the finalists' schools with \$1,000 each to use toward STEM activities.

The FINALISTS met with dignitaries and showcased their projects to the public at the National Geographic Society on October 20. During an awards ceremony on October 23 at the Carnegie Institution for Science, **Katie received the Rising Star Award, including a trip to Phoenix, Arizona in May 2019 as the United States delegate to Broadcom MASTERS International and Official Observer at ISEF**. <https://www.societyforscience.org/content/press-release/middle-school-student-develops-novel-solar-panel-system-wins-25000-top-award-national-broadcom>

In May 2018, LRSEF sent **four high school winners and two teachers to ISEF in Pittsburgh, PA**. An additional LRSEF student attended ISEF through a grant from KY-SEF. For ISEF 2018, LRSEF students Joshua Jacob (St. Xavier High School) **won second place** with a \$1,500 award and Rachel Spaulding (Eastern High School) **won fourth place** and a \$500 award **in Engineering Mechanics**. **Team Kentucky** had a total of 20 projects and 23 students participating, and 10 out of the 20 projects won awards. Each year at ISEF, approximately 1,800 high school students from 420 affiliated fairs from more than 75 countries compete for about \$5 million in prizes.

<https://www.societyforscience.org/content/press-room/intel-international-science-and-engineering-fair-2018-grand-award-winners>

*LRSEF thanks its partners the SPOG-Science Policy Outreach Groups at University of Louisville, Kentucky Science Center, STEM Wizard/GLOW TOUCH and LRSEF Title sponsor GE Appliances, a Haier company and the GE/APAF volunteers, as well as many other donors and volunteers.*



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