

Statistics for 2018 TCRSF

At TCRSF, 459 students registered for projects & 274 for papers = 733 student registrations (574 unique students)

TCRSF projects, 213 students presented 163 HS projects,
246 students presented 213 middle school projects,
459 total students presented 376 total projects

TCRSF papers: 28 middle school students competed with 25 middle school papers (3 team papers) and
246 high school students competed with 222 high school papers (23 team papers, one 3-person
and 22 2-person).

274 total students competed with 247 total research papers (total of 25 2-person papers & 1 3-person
paper).

Competing at state from TCRSF: (projects, not students; team project counts as one)

Middle school: 74/213 projects = 34.7% of middle school projects from TCRSF to state

High School: 94/163 projects = 57.7% of high school projects from TCRSF to state

Total of 168 /376 total projects = 44.7% sent to state overall

Competing at state middle school papers: 17/25 (only grades 6-8) =68.0% of those able to advance and

Competing at Tri-State JSHS for high school papers: 52/222 papers = 23.4% of all HS papers to advance

Our TCRSF students competed extremely well at the Minnesota State Science and Engineering Fair. TCRSF students earned many awards at state. All 5 of the 5 HS projects sent to ISEF from state were from TCRSF (and an alternate team to ISEF from state was from TCRSF). 10 HS students on 8 projects advanced to ISEF from TCRSF and another 8 HS students on 5 HS projects advanced to ISEF from state! That means 18 students from our 4-county metro area compete at the 2018 International Science and Engineering Fair (ISEF).

53 students middle school students advanced from TCRSF (top 10% of each affiliation) and **10 TCRSF students** advanced from the state science fair to compete in the **National Broadcom MASTERS** (grades 6-8) competition, with national winners announced in the fall. We had **2 students** earn **national semifinalist** status in Broadcom MASTERS (**two of the top 300 in the nation**) in 2017. **2018 results will be announced in September.**

Julia Brouwer (8th Grade) Eagan, Minnesota

Calvin Christian School

Leafy Green Astronauts Year Two: How Space Radiation Impacts Seed Germination and Subsequent Plant Growth of Monocot Versus Dicot Seeds

Rikhil Seshadri (7th Grade), Woodbury, Minnesota; nominated by both TCRSF & state

Math and Science Academy

Low Cost Supercapacitors for Energy Storage

At the Tri-state (MN, ND, & SD) North Central Regional Jr. Science & Humanities Symposium (JSHS, research paper competition), TCRSF students earned several awards, including **2nd, 3rd, 4th, & 5th place. 4 out of the 5 research paper winners that advanced to National JSHS this year are from TCRSF.**

The **top 2** presented their papers **at nationals** and our 2nd place winner won a **Nationals 2nd place in their category: \$8,000** scholarship!

Cole Maxwell, Breck School, with his presentation of his paper entitled *More Than Skin Deep: Deciphering the Role of Bartonella henselae Infection in Melanoma Cancer Metastasis (Phase 2)*

At ISEF (International Science and Engineering Fair – the best in the world!), TCRSF named 8 projects (10 students) to compete and 5 more of our projects (8 more students) were named to ISEF from state for an **unprecedented total** of 13 TCRSF projects with 18 students competing. Four alternates also attended ISEF in Pittsburgh.

Six of our Twin Cities students had the privilege of **representing our USA** at the 2018 Shout Out in which every country selects representatives to represent their nation at the Opening Ceremonies – much like the Olympics has each nation select an Olympian to carry their national flag in their opening ceremonies. This is an experience that none of these 6 Twin Cities will ever forget, representing the entire United States at the International Science and Engineering Fair!

(awards continued on page 2)

Awards won by TCRSF students who competed at ISEF:

A project entitled “*3D Printable Prosthetic Foot*” in the Biomedical Engineering category, by Everett Kroll (Stillwater Area High School) won:

*Intel ISEF **First Grand Award of \$3,000** in Biomedical Engineering

***Ceres program** asteroid named for student

*International Council on Systems Engineering – INCOSE Special Systems Engineering Prosthesis **second award of \$500.**

A project entitled “*More than Skin Deep: Deciphering the Role of Bartonella henselae Infection in Melanoma Metastasis, (Phase Two)*” in Biomedical and Health Services category by Cole Maxwell (Breck School) won:

*Intel ISEF **Fourth Grand Award of \$500** in Biomedical and Health Sciences

A project entitled “*Development of Autonomous Unmanned Aerial Systems for Semi-Dense Point Cloud Generation in Disaster Scenarios*” in Robotics and Intelligent Machines category by Parthiv Krishna (Minnetonka High School) won:

*Intel ISEF **Fourth Grand Award of \$500** in Robotics and Intelligent Machines

A project entitled “*Unplugged: Quantifying the Effects of Technology on Adolescent Sleep and Mood*” in Behavioral Sciences category by Louise Kim & Spencer Yueh (Breck School) won:

American Psychological Association **Honorable Mention

A project entitled “*Holding Your Heart in Your Hand: 3D-Printing a Mechanically Accurate Aortic Valve Model*” in Biomedical Engineering category by Alexander Anderson & Siyuan Ma (Breck School) won:
National Anti-Vivisection Society **second award of \$5,000.**

A project entitled “*CARL: A Convolutional Neural Network Powered Self-Driving Car*” in Robotics and Intelligent Machines category by Daniel Ellis & Michael Hall (St. Paul Academy & Summit School) won:

*Air Force Research Laboratory **first award of \$750 and an engraved glass trophy.**

All ISEF finalists who competed won the all-expense paid trip to compete in Pittsburgh, Pennsylvania, and a finalist medal & certificate.

All ISEF finalists and alternates attending ISEF won Mathematica software by Wolfram Research.