

Statistics for 2017 TCRSF

At TCRSF, 656 students registered for projects & 261 for papers = 917 student registrations (709 unique students)

TCRSF projects, 257 students presented 203 HS projects,
399 students presented 357 middle school projects,
656 total students presented 560 total projects

TCRSF papers: 50 middle school students competed with 45 middle school papers (5 team papers) and
211 high school students competed with 196 high school papers (15 team papers).

261 total students competed with 241 total research papers (total of 20 2-person papers).

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

Middle school: 67/357 projects = 18.8% of middle school projects from TCRSF to state

High School: 86/203 projects = 42.4% of high school projects from TCRSF to state

Total of 153 / 560 total projects = 27.3% sent to state overall

Competing at state middle school papers: 10/45 (only grades 6-8) = 22.2% of those able to advance and

Competing at Tri-State JSHS for high school papers: 34/196 papers = 17.3% 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. 3 of the 5 HS projects sent to ISEF from state were from TCRSF (and an alternate team to ISEF from state was from TCRSF).

43 students middle school students advanced from TCRSF (top 10% of each affiliation) and **5 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**):

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 **1st, 2nd, 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 each **won 2nd place in their category: \$8,000 scholarship!**

Harini K., Eden Prairie, "A cost-effective, patient-friendly, and biocompatible treatment for chronic pain and peripheral nerve damage using genetically engineered 'smart' nanoparticles"

Manashree P., Woodbury, "Unleading the way: Remediation of lead-contaminated water with Coriandrum Savitvum (cilantro) biochar

The 5th place from Tristate won an honorable mention with her poster presentation **at national JSHS:**

Kerui Y., Eden Prairie, received honorable mention in her poster category for "Effects of pH on polyvinyl alcohol behavior in aqueous solutions."

TCRSF named **4 projects** to compete at ISWEEEP (**International Sustainable World Energy Engineering Environment Project Olympiad**) held in Houston, TX – and **3 additional projects** from TCRSF applied and were accepted into the competition on their own for a **total of 7 projects (8 students)**. TCRSF students won two gold awards and four bronze awards at ISWEEEP.

At ISEF (International Science and Engineering Fair – the best in the world!), TCRSF named 8 projects (9 students) to compete and 2 more of our projects were named to ISEF from state for a total of 10 TCRSF projects with 11 students competing. 6 alternates also attended ISEF in Los Angeles.

(awards continued on page 2)

Awards won by TCRSF students who competed at ISEF:

A project entitled "*Unleading the Way! Remediation of Lead Contaminated Water with Coriandrum sativum (Cilantro) Biochar*" in the Environmental Engineering category, by Manashree Padiyath won:
Intel ISEF **First Grand Award of \$3,000** in Environmental Engineering
Ceres program asteroid named for student
U.S. Agency for International Development USAID Global Development **Innovation - First Award of \$3,000**

A project entitled "*Inexpensive Glucose Monitoring Device for Diabetics Using Capillary Action of Crosslinked Sensing Fluid, Year II*" in Biomedical Engineering category by Serena Jing won:
Intel ISEF **Second Grand Award of \$1,500** in Biomedical Engineering
Ceres program asteroid named for student

A project entitled "*Bioengineering the Lung: Directed Differentiation of Human Pluripotent Stem Cells into Definitive Endoderm on a Lung Extracellular Matrix*" in Biomedical Engineering category by Meghana Iyer won:
Intel ISEF **Fourth Grand Award of \$500** in Biomedical Engineering

A project entitled "*Window to the Brain: Using Retinal Biomarkers to Predict Progression of Alzheimer's and Parkinson's Diseases*" in Computational Biology & Bioinformatics category by Archana Murali won:
Patent and Trademark Office Society First Award of \$1,000, an American flag, and a framed copy of the first patent granted in the United States of America

A project entitled "*3D Printable Transtibial Prosthetic*" in Biomedical Engineering category by Everett Kroll won:
U.S. Agency for International Development USAID Global Development **Innovation Second Award of \$2,000**

A project entitled "*The Effects of Bacillus Bacteria on the Invasive Species Lemna minor (Duckweed)*" in Earth & Environmental Sciences category by Claire Wentzlaff won:
A **comprehensive college scholarship to Arizona State University**, renewable for four years.

All ISEF finalists who competed won the all-expense paid trip to compete in Los Angeles, California and a finalist medal & certificate plus Wolfram Mathematica software.