Statistics for 2022 Virtual TCRSF

2022 was the second virtual TCRSF and had more projects and research papers than in 2021, although it was still smaller than in-person fairs. The quality of the projects was so excellent that we were able to send over half our projects to state! TCRSF again covered 9 Minnesota counties.

At TCRSF, 278 students registered for projects & 161 for papers = 439 student registrations

TCRSF projects, 153 students presented 135 HS projects
125 students presented 114 middle school projects,
278 total students presented 249 total projects
TCRSF papers: 16 middle school students competed with 16 middle school papers and
145 high school students competed with 130 high school papers (13 2-person team papers & one 3-person team paper)
161 total students competed with 146 total research papers

The Minnesota State Science and Engineering Fair and the tri-state North Central Regional Junior Science and Humanities Symposium were held virtually in 2022. National JSHS 2022 was also virtual.
Competing at state from TCRSF: (projects, not students; team project counts as one)
Middle school: 80/165 projects = 48.5% of middle school projects at state were from TCRSF
High School: 87/147 projects = 59.2% of high school projects at state were from TCRSF
TCRSF had 167 total projects at state out of 312 projects at state for **53.5% of all state**
(but TCRSF students won 56.4% of all state awards)

Competing at Tri-State JSHS for high school papers: 45/130 HS papers = 34.6% of all HS papers to advance
45 of the papers in Tri-state's 61 total papers were from TCRSF, so 73.8% were from TCRSF
TCRSF research papers won 74% of all tri-state JSHS awards and out of the 5 papers advancing to nationals, TCRSF took 4/5 of the positions = 80%

Our TCRSF students competed extremely well at the Minnesota State Science and Engineering Fair. TCRSF students earned many awards at state. State named 6 projects to compete as finalists at ISEF (International Science & Engineering Fair) and another 6 projects as alternates. Although TCRSF already had 11 projects competing at ISEF, 2 more were chosen as finalists from state, and all 6 alternate projects were from TCRSF. That means 16 students from our 9-county metro area are finalists competing at the 2022l International Science and Engineering Fair (ISEF) in Atlanta, GA (or virtually if the finalist chose to not travel)..

TCRSF had 2 middle school students qualify for the top 300 middle school projects in the national Broadcom MASTERS! We are so proud of John Liu (grade 8) and Gabriella Sofia Olson (grade 6) for their accomplishments!

At ISEF (International Science and Engineering Fair – the best in the world!), TCRSF named 11 projects (13 students) to compete and 2 more of our projects (3 more students) were named to ISEF from state for a total of 16 TCRSF students as finalists at ISEF. ISEF was held as a mixed fair in 2022, both virtually and in-person in Atlanta, GA.

ISEF Finalists 2022:

All finalists have won Wolfram Alpha Mathematica software for finalists (world's most powerful and all-encompassing computational software), finalist medal, and certificate – and the right to compete in the world's largest and most prestigious pre-collegiate scientific competition. Those who chose to compete in person also won an all-expense paid trip to ISEF in Atlanta, GA.

Ruth Mellin & Alexander Moore (team), both grade 12, St. Paul Academy & Summit School, *Project SERSI: Smartphone Enabled Robotic Sign-Language Interpreter*, won a 3rd Grand Award of $1000

Elizabeth Levinshteyn, grade 9, Spring Lake Park HS, *A Look into the Tiny Earth: Finding Antibiotic Producing Bacteria in Yellowstone Soil;* won a University of Arizona Renewal Tuition scholarship

Shreshth Shrivastava, grade 10, Eden Prairie HS, *Wi-C.A.R.E: Wifi Computer-Assisted Remote Eldercare (Year 3);* won a 2nd award from the Patent Office Society of $500

Srinath Hariharan, grade 11, Woodbury HS, *Tumor Targeting: Utilizing spatial data science techniques to decode the enigmatic immune response with the goal of informing further efforts to develop immunotherapies for tumor treatment;* won a 4th Grand Award of $500

Maggie Banks, grade10, Mounds Park Academy, *A Plant With Promise: Using Engineering Principles to Create an Eco-Friendly Manufacturing Process for a Biodegradable Piezoelectric Transducer*

Karen Nakamura, grade 11, Math and Science Academy, *The Electromyographic Evaluation of the Bilateral Muscle Asymmetry of the Latissimus Dorsi in Martial Arts and the Effect of Real-Time Biofeedback on Technique Improvement*

Caroline Schlehuber, grade 12, Convent of the Visitation School, *New Research, Old Medicine: Exploring Antibacterial Properties of Plants and Fungi Used in Indigenous Medicine*

Nickolas Zander, grade 12, New Life Academy, *Automated Sorting Device Using Sensors and Motor Control*

Ava Jaffe & Amrit Menon (team), grades 11 & 12, Breck School, *Essential Protection: Using UV-sensitive yeast to evaluate essential oils as an alternative to sunscreen*

Krish Inba Rajashankar, grade11, Minnetonka HS, *Medical device recall prediction using MAUDE reports*

Jared Geppert, grade 9, Blaine HS Center for Engineering, Mathematics, and Science, *3D Printing Layer Angles*

Named finalist from state:
Adhvaith Sridhar, grade12, Wayzata HS, *Immune System Innovation: Ushering in a new era of immunology research by characterizing cell populations most impacted by normal microbial exposure for preclinical research and healthcare treatment development success;* won 3rd Grand Award of $1000