THE 34TH ANNUAL YORK COUNTY SCIENCE AND ENGINEERING FAIR

MARCH 6, 2017 - MARCH 8, 2017

AWARDS CEREMONY
MARCH 8, 2017 AT 7:00PM

THE PULLO FAMILY PERFORMING ARTS
Penn State York Campus
## YCSEF 2016-2017 Financial Supporters

### Premier Sponsor ($1,000+)

- Voith Hydro, Inc.
- York Consolidate Waste and Refuse Authority

### Prime Sponsor ($500 to $999)

- BAE Systems
- Exelon Corporation
- Peoples Bank
- Precision Custom Components, LLC
- R.H. Sheppard Company, Inc.
- York College of Pennsylvania
- York County Medical Foundation

### Patrons ($100 to $199)

- Brett G. Butler
- Fairfax Environmental
- I.B. Abel, Inc.
- Wm. H. Payne, DDS
- York Traditions Bank

### Sponsors ($200 to $499)

- Barton Associates
- Mr. & Mrs. Gary C. Butler, P.E.
- C.S. Davidson, Inc.
- Conner Family (In Memory of Troy Conner)
- First Capital Engineering
- Mr. Brian Funkhouser
- Glafelter Insurance Group (Tony Campisi)
- Johnson, Mirmiran & Thompson
- Martin’s Consign and Design, LLC
- M&T Charitable Foundation
- Mark A. Taddionio, DMD
- John and Rebecca Rinehart
- Shipley Energy
- Stewart & Tate, Inc.

### Participants ($10 to $99)

- LSC Design Inc.
- Ronald J. Reinhard M.D.

### Special Thank You To

**Buchart Horn**

Coordinating sponsor of the 2017 York County Science and Engineering Fair

**The Pennsylvania State University York Campus**

For the use of the campus gymnasium and conference rooms during the Exhibit Display and for the use of the Pullo Family Performing Arts Center for our Awards Ceremony on March 8, 2017.

**Precision Custom Components, LLC**

For the design and printing of the 2017 York County Science and Engineering Fair Program

Contributions to YCSEF, a 501(c)#3, may be made via Susan Sprague, P.E. at 741-6222, or through the United Way Campaign by designating YCSEF.
**PURPOSE OF THE FAIR**

The York County Science and Engineering Fair is planned by a committee of local volunteers representing technical and educational organizations for the purpose of providing York County students with an opportunity to expand and increase their expertise in science and engineering. The Fair provides additional incentive by offering awards, scholarships, and an occasion to receive expert evaluation of projects for future science fair participants.

**PHILOSOPHY OF JUDGING**

In our quest to fairly judge the student entrants, the York County Science and Engineering Fair Committee encourages judges to adopt a consistent and equitable strategy in awarding points that encourages the individual student through a combination of praise and constructive suggestions.

Although the judge must provide discrimination separating students into award groups, their greater responsibility is fostering an interest in science and engineering that will continue throughout the student’s life. The point system is designed to assist the judge in accomplishing these two objectives. On the first day of judging, students are judged against specific and objective criteria and are not compared against each other. Therefore, judges often award points that generate multiple place awards in each award category. No student receives less than an Honorable Mention.

Most of the special awards are judged by individuals representing the organization providing the award. Each organization designs their specific criteria and judging methods for their special award.

**AWARDS CEREMONY**

- Welcome: Gary Butler, PE
- Opening Remarks: Dr. Robert Farrell
- Project Ribbon Placement: Fair Committee Members
- National Awards: Rebecca Warner
- YCSEF Professional Awards: Susan Sprague, PE
- Adhesives Research Award: Michael Koons
- York College Award: Dr. Daniel Green
- Voith Hydro Award: John Seifarth
- Pennsylvania State University Award: Dr. Robert Farrell
- Junior Division Reserve and Grand Champions: Gary Butler, PE
- Senior Division Reserve and Grand Champions: Dr. Robert Farrell
- Closing Remarks: Ben Smith
2017 YCSEF Professional Awards

American Chemical Society - Southeastern PA Section
American Statistical Association - Harrisburg Chapter
ASM South Central PA Chapter
Aptagen
Barbara Wills Spirit Award
Eisenhart Memorial Award

Engineering Society of York
JAMES R. HOLLEY & ASSOCIATES, INC.
Pennsylvania Society of Professional Engineers
Society of Manufacturing Engineers
York Township

National Science & Engineering Fair Awards

American Meteorological Society
American Psychological Association
ASM Materials Education Foundation
Association for Women Geoscientists
ASU Walton Sustainability Solutions Initiatives
Intel Excellence in Computer Science
Mu Alpha Theta
Broadcom Masters
National Oceanic and Atmospheric Administration

NASA Earth System Science Award
RICOH Americas Corporation
Society for In Vitro Biology
Stockholm Junior Water Prize
United States Metric Association
Yale Science and Engineering Association
United States Air Force
Office of Naval Research
Regeneron Science Talent Search

Adhesive Research Inc.

Presents the top cash award of the YCSEF of $1,500 to an outstanding application in Chemistry.

York College of Pennsylvania

Voith Hydro, Inc.

The Pennsylvania State University York Campus

Junior Division Grand and Reserve Grand Champion

The Junior Division Grand Champion is awarded to the best Junior Division project, and the Junior Division Reserve Grand Champion is awarded to the second best Junior Division Project.

Senior Division Grand and Reserve Grand Champion

The two Grand Champions in the Senior Division from the York County Science and Engineering Fair will advance to compete in the Intel International Science and Engineering Fair (ISEF). The Grand Champions will travel to Los Angeles, California in May for the International competition.
YCSEF 2016-2017 Officers

President
Gary Butler, P.E.
First Vice President (Co-Director)
George Kazakos
Second Vice President (Judging)
James Nealon
Treasurer
Susan Sprague, P.E.
Secretary
Michael Tapp
Fair Director
Ben Smith
Special Awards Chair
Rebecca Warntz

Teachers Making a Difference

The YCSEF extends a special thank you to the following School Teachers for their time and effort that makes this fair a success every year and being excellent mentors for the students of our fair.

Bermudian Springs (BS)
Kami Greenwalt
Central York (CY)
Dianna Guise
Dallastown (DT)
Ellen Connelly
Kristin Gaynor
Taylor Green
Christy Hartman
Daniel Herbert
Mark Ilyes
Heather Lloyd
Kelley Mathias
Kristen Moose
Steve Stauffer

Delone Catholic (DC)
Janis Gadow

Red Lion (RL)
Nathan Barrett
J.D. Granger
Valerie Stone
Christopher Vrabel

St. Francis Xavier (SFX)
Amy Woods
York Catholic (YC)
Jeanette Craymer
Christine Schneider
York Suburban (YS)
Leslie Gentyel
Jamie McFadden

Fair Judges

The YSCEF would also like to thank the Fair Judges who were able to review all of the project entries and share their professional expertise with the students of our fair.
Welcome to the Next 150 Years

VOITH

PRECISION CUSTOM COMPONENTS

TRADITION QUALITY ADVANCEMENT

Keeping the Environment Clean & the Nation Secure

For over 130 years PCC has manufactured high-quality custom fabricated pressure vessels, equipment, and specialty manufactured components. PCC's 250,000 square feet of precision machining, fabrication and non-destructive examination capability is dedicated to serving the Nuclear Industry.

717-848-1126 x2400
www.pcc-york.com
ANIMAL SCIENCE

J-101 Alexandrea Little
Bermudian Springs

Does the genre of music affect a horse’s heart rate, respiration rate, and cortisol level?

J-102 Miles Cox
York Catholic

The Effect of Heat on Academic Success

J-103 Gwen Lloyd
Red Lion

Organic Apple Vs Traditionally Grown Apples: Can Wild Animals Detect the Difference

J-104 Josie Gonzalez
Red Lion

Is Bio-Friendly Detergent Really Bio-Friendly?

J-105 Kiersten Lloyd
Red Lion

Which Type of Egg Carton Prevents the Least Amount of Water Loss in Eggs?

BEHAVIORAL AND SOCIAL SCIENCE

J-106 Julia Stell
York Suburban

Does Eye Color Affect the Ability of Sight

J-107 Kristen Hackos
York Suburban

Don’t Stand So Close To Me!

J-108 Nicholas Aparicio
York Suburban

A Decision to Sleep on

J-109 Eli Smith
York Suburban

Does Music Affect Reaction Time

J-110 Emma Salazar
York Suburban

Now You See It, Now You Do Not

J-111 Leon Bellenbaum
York Suburban

Are Composite Faces More Attractive Than Real Faces

J-112 Rory Noble
York Suburban

Does Personality Type correlate with Music Preference?

J-113 Benjamin Farah
York Suburban

The Power of Pareidolia

J-114 Estelle Hackos
York Suburban

Keep Calm and WAIT... I forgot. How typography has an influence on the human memory.

J-115 Andrew Warthen
St. Francis Xavier

Face Shape and Perception of Kindness.

J-116 Astha Ray
Dallastown

Dominance and Sensitivity

J-117 Emma Tibbett
York Suburban

Do scent and color affect taste perception?

J-118 John Baublitz
Red Lion

Think Fast

J-118 Nick Winters
Red Lion

Think Fast

J-119 Daniella Feistritzer
Central York

Student Advertising: How Effective?

J-120 Keertana Davuluri
Central York

Using Stuffed Animals to Reduce Test Stress

J-120 Julia Eaton
Central York

Using Stuffed Animals to Reduce Test Stress

J-121 Sandra Faller
Red Lion

Here’s a Drink To Heart Rate

BEHAVIORAL AND SOCIAL SCIENCE

J-122 Anette Lu
Bermudian Springs

How Confident Are You?

J-123 Elise Guth
Red Lion

Stroop Effect by Gender

BIOCHEMISTRY

J-124 Caroline Perkins
York Suburban

The Amazing Pancreas

J-127 Natalie Fuhrman
York Suburban

How Images Elicit Micro-expressions.

BIOMEDICAL AND HEALTH SCIENCES

J-125 Jamlyn Hepner
York Suburban

How Does Screen Time Affect Eye Sight?

J-126 Hannah Brainard
St. Francis Xavier

The Effects of Indoor Pool Air Quality on Swimmers

J-127 Tessa Rill
St. Francis Xavier

The Whitening Effects of Different Toothpaste on Coke Stained Eggs

J-128 Kristian Sprankle
York Suburban

How Age Affects Cognition

J-129 Luke Passariello
York Suburban

How does time affect the electrolyte content in fruit?

J-130 Ibnat Meah
Dallastown

Testing the Susceptibility of Pseudomonas and Staphylococcus to Manuka Honey

J-131 Blake Young
Bermudian Springs

Is Your Dominant Hand More Sensitive?

J-132 Katherine Magac
York Catholic

Liquids’ Effect on Tooth Color

J-133 Hannah Kibler
Central York

Zoonotic Diseases in Animal Species

CHEMISTRY

J-136 Brooke Sargen
York Suburban

What type of sports drinks provide the most electrolytes?

J-137 Bethany Taylor
York Suburban

What household acids dissolve limestone the most efficiently?

J-138 Ella Dunmire
York Suburban

The Affect That Freezing Chemicals Have On Different Plastics

J-139 Grace Richardson
York Suburban

How does acidity in different types of sodas affect tooth enamel?

J-140 Taylor Moyer
York Suburban

How does fuel type affect fuel efficiency?

J-141 Dermot Pogson
York Suburban

Liquid Pool Covers: Are they worth it?

J-142 Mackenzie Corsa
York Suburban

How does temperature change affect the pH value of acids?

J-143 Cora Johns
York Suburban

What Effect Does Temperature Have on Maple Syrup Saturation?
### Chemistry (Continued)

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>J-144</td>
<td>Emily Dancyk</td>
<td>York Catholic</td>
</tr>
<tr>
<td>J-145</td>
<td>Michael Forster</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-146</td>
<td>J. Rose Beyer</td>
<td>Dallastown</td>
</tr>
<tr>
<td>J-147</td>
<td>Ismail Guler</td>
<td>Red Lion</td>
</tr>
<tr>
<td>J-148</td>
<td>Tia Mathias</td>
<td>Dallastown</td>
</tr>
<tr>
<td>J-150</td>
<td>Kayla Peters</td>
<td>Dallastown</td>
</tr>
<tr>
<td>J-151</td>
<td>Samantha Strausbaugh</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-152</td>
<td>Caitlin Springer</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-153</td>
<td>Daisy Pfiaum</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-154</td>
<td>Hannah Burkhart</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-155</td>
<td>Alexandra Scott</td>
<td>Dallastown</td>
</tr>
<tr>
<td>J-156</td>
<td>Gage Donagher</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-157</td>
<td>Veronica Marchak</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-158</td>
<td>Jonah Brainard</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-159</td>
<td>Austin Stiles</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-160</td>
<td>Walter Kotlinski</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-161</td>
<td>Dylan Staub</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-162</td>
<td>Jovany Barrera</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-163</td>
<td>Griffin Kibler</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-164</td>
<td>Robert Quan</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-165</td>
<td>Trinity Wajda</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-166</td>
<td>Rebekah Gerringer</td>
<td>Bermudian Springs</td>
</tr>
</tbody>
</table>

### Earth and Space Science

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>J-151</td>
<td>Samantha Strausbaugh</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-152</td>
<td>Caitlin Springer</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-153</td>
<td>Daisy Pfiaum</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-154</td>
<td>Hannah Burkhart</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-155</td>
<td>Alexandra Scott</td>
<td>Dallastown</td>
</tr>
<tr>
<td>J-156</td>
<td>Gage Donagher</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-157</td>
<td>Veronica Marchak</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-158</td>
<td>Jonah Brainard</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-159</td>
<td>Austin Stiles</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-160</td>
<td>Walter Kotlinski</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-161</td>
<td>Dylan Staub</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-162</td>
<td>Jovany Barrera</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-163</td>
<td>Griffin Kibler</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-164</td>
<td>Robert Quan</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-165</td>
<td>Trinity Wajda</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-166</td>
<td>Rebekah Gerringer</td>
<td>Bermudian Springs</td>
</tr>
</tbody>
</table>

### Engineering

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>J-167</td>
<td>Ethan Beachy</td>
<td>Bermudian Springs</td>
</tr>
<tr>
<td>J-168</td>
<td>Lahanna Means</td>
<td>Bermudian Springs</td>
</tr>
<tr>
<td>J-169</td>
<td>Patrick Rehmeyer</td>
<td>Central York</td>
</tr>
<tr>
<td>J-170</td>
<td>Luke Zeidman</td>
<td>Red Lion</td>
</tr>
</tbody>
</table>

### Environmental Science

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>J-171</td>
<td>Lucy Rogers</td>
<td>Delone Catholic</td>
</tr>
<tr>
<td>J-172</td>
<td>Tyler Brockington</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-173</td>
<td>Sharron Tum</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-174</td>
<td>Alex Gleba</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-175</td>
<td>Logan Zeiders</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-176</td>
<td>Keegan Rahman</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-177</td>
<td>Elisabeth Aparicio</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-178</td>
<td>Madyesen Geib</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-179</td>
<td>Benjamin Martin</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-180</td>
<td>Emily Malesky</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-181</td>
<td>Leanna Myers</td>
<td>St. Francis Xavier</td>
</tr>
<tr>
<td>J-182</td>
<td>Carson Hall</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-183</td>
<td>Lucas Strickland</td>
<td>York Suburban</td>
</tr>
<tr>
<td>J-184</td>
<td>Bailey Callahan</td>
<td>Red Lion</td>
</tr>
<tr>
<td>J-185</td>
<td>Emily Herbert</td>
<td>Red Lion</td>
</tr>
<tr>
<td>J-186</td>
<td>Megan Holtzinger</td>
<td>Bermudian Springs</td>
</tr>
</tbody>
</table>

### Other Projects

- Adsorption and Absorption of Marinades
- Toothpick Trouble
- Creating a Crank
- What Plastic Wrap Keeps Moisture in Containers the Best?
- Aerodynamics In Cars
- Relationship Between the Sunspot Cycle and Coronal Mass Ejections
- How does glucose concentration affect electrolyte amount?
- How does food coloring affect the population growth of Daphnia magna?
Environmental Sciences (continued)

J-188  Cameron Carrollus  Bermudian Springs
Dirt...What is in it?

J-188  Jacob Ohrum  Bermudian Springs
Dirt...What is in it?

J-189  Rachel Conrad  Red Lion
Preventing Damage Caused By Inland Flooding

J-190  Ameer-uddin Maniar  Dallastown
A Thirst for Clean Water

Material Sciences

J-191  Aidan Hughley  York Suburban
What type of wood is the best against environmental effects?

J-192  Macie Brown  York Suburban
Stick to the facts

J-193  Jack Ports  York Suburban
Burn Speeds of Various Fabrics

J-194  Zachary Parr  St. Francis Xavier
A Comparison of Light Bulbs: Efficiency, Longevity, Coolness, Luminosity, Durability, and Price

J-195  Riley Trout  York Suburban
How do certain types of swimsuits affect time results?

J-196  Robert Blanchard  Red Lion
Solar Furnace

Microbiology

J-198  Maya Kemper  Bermudian Springs
Eww! Dog Drool!

J-198  Lillian LaBure  Bermudian Springs
Eww! Dog Drool!

J-199  Sophia Guyer  York Suburban
How the food irradiation process affects pathogen amount or disease risk

Physics

J-200  Maddison Perring  York Suburban
The Angular Position's Effect on a Solar Panel's Efficiency

J-201  Nicholas Richardson  York Suburban
Which type of material on each bat helps to hit the ball?

J-202  Sarah Rivera  York Suburban
How does light color affect solar cell efficiency?

J-203  Hannah Drahusz  York Suburban
Soccer Shooters

J-204  Victoria Crispo  York Suburban
How Accurate are the Zodiac Signs

J-205  Alexandra Clancy  York Suburban
Will various eye acuity affect the magnification formula?

J-206  Rebecca Norris  St. Francis Xavier
The Effect of Wind Resistance on Car Design

J-207  Spencer Butz  York Suburban
Science Fair

J-208  Brenden Petersen  York Suburban
How does the wood of the trebuchet arm affect projectile range?

J-209  Arnav Bal  Dallastown
How does the shape of the projector affect the holographic image?

J-210  Ethan King  Bermudian Springs
Fish On!

J-211  Kane Forsythe  Bermudian Springs
PST and Potatoes

J-212  Benjamin Cunningham  Central York
The Phenomenon of Measuring Light

J-213  Megan Dubien  Dallastown
How Does the Salinity of Water Affect How Much Water a Boat Displaces?

J-214  Karissa Silar  Dallastown
Springs and Hooke's Law

J-215  Ini Efion-Ekaha  York Suburban
How does the composition of a volleyball affect its movement?

J-216  Ean Dudley  York Suburban
How Luminous Intensity Affects Refractive Index

J-219  Charles Sebright  Bermudian Springs
What Makes Your Garden Grow?

J-220  Devon Irizarry  Red Lion
Organic Vs. Chemical Vs. None The Effects of Fertilizers on Plant Growth

J-221  Alyssa Lutz  Red Lion
Effects of Aqueous Solutions on Green Beans

J-222  Evan Cashman  Bermudian Springs
Enlightened Plants

J-223  Madison Perry  York Catholic
Distilled Vinegar and Vegetable Oil Impact Growth of Fittonia Nerve Plant

J-224  Owen Leese  York Catholic
The Effect of Pesticides on Plant Health

J-225  Steven File  York Suburban
The Effect Of Hydroponics vs. Traditional Methods
<table>
<thead>
<tr>
<th>BEHAVIORAL AND SOCIAL SCIENCE</th>
<th>CHEMISTRY</th>
<th>BIOCHEMISTRY</th>
<th>COMPUTER SCIENCE</th>
<th>ENGINEERING</th>
<th>BIOMEDICAL AND HEALTH SCIENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-501</td>
<td>Zak Keener</td>
<td>Red Lion</td>
<td>S-518</td>
<td>Ian Smith</td>
<td>Dallastown</td>
</tr>
<tr>
<td>Nothing But Net</td>
<td>Elijah Workinger</td>
<td>Red Lion</td>
<td>S-519</td>
<td>Amy Zhong</td>
<td>Dallastown</td>
</tr>
<tr>
<td>S-501</td>
<td>Carlie Pearson</td>
<td>Red Lion</td>
<td>S-520</td>
<td>Bryce Champaign</td>
<td>Red Lion</td>
</tr>
<tr>
<td>How Personality and Music Type Affect Cognitive Ability</td>
<td>Qi Li</td>
<td>Red Lion</td>
<td>The Effectivity of Multiple Cores in a Central Processing Unit</td>
<td>David Dalby</td>
<td>Red Lion</td>
</tr>
<tr>
<td>S-503</td>
<td>Summer Hinton</td>
<td>Red Lion</td>
<td>S-521</td>
<td>Philip Zeidman</td>
<td>Red Lion</td>
</tr>
<tr>
<td>Blind Confidence: The Significance of Visual Cues in Weight Perception</td>
<td>Nathan Snyder</td>
<td>Red Lion</td>
<td>Forklift Efficiency</td>
<td>Marisa Hilbert</td>
<td>Red Lion</td>
</tr>
<tr>
<td>S-504</td>
<td>Knock McKie</td>
<td>Red Lion</td>
<td>S-521</td>
<td>Marcos Zarragoitia</td>
<td>Red Lion</td>
</tr>
<tr>
<td>Effects of Conversation on Concentration</td>
<td>Eve Wolfe</td>
<td>Dallastown</td>
<td>Forklift Efficiency</td>
<td>Sandra Phan</td>
<td>Red Lion</td>
</tr>
<tr>
<td>S-505</td>
<td>Makayla Braham</td>
<td>Dallastown</td>
<td>S-522</td>
<td>Sean Schreckengast</td>
<td>Red Lion</td>
</tr>
<tr>
<td>The Truth About Bluetooth Devices</td>
<td>Destiny Mann</td>
<td>Red Lion</td>
<td>Charging a Capacitor with Human Energy</td>
<td>Samuel Zamora</td>
<td>Red Lion</td>
</tr>
<tr>
<td>S-506</td>
<td>C-300</td>
<td>Dallastown</td>
<td>S-522</td>
<td>Mariza Mitzel</td>
<td>Red Lion</td>
</tr>
<tr>
<td>The Deception of the Eyes</td>
<td>Meghan Williams</td>
<td>Dallastown</td>
<td>Charging a Capacitor with Human Energy</td>
<td>Michael Lorenzen</td>
<td>Red Lion</td>
</tr>
<tr>
<td>BIOCHEMISTRY</td>
<td></td>
<td></td>
<td>S-521</td>
<td>Increasing the Output of Homopolar Generators</td>
<td>Central York</td>
</tr>
<tr>
<td>S-507</td>
<td>Meghan Williams</td>
<td>Dallastown</td>
<td>S-523</td>
<td>Ziyue Zhang</td>
<td>Dallastown</td>
</tr>
<tr>
<td>Observing the Effects of Aspirin on Parsley Plants</td>
<td>Levina Kara</td>
<td>Dallastown</td>
<td>Concentrated Solar Power</td>
<td>John Brownsword</td>
<td>Red Lion</td>
</tr>
<tr>
<td>S-508</td>
<td>Elizabeth Huh</td>
<td>York Suburban</td>
<td>S-530</td>
<td>Efficiency of Harnessing Solar Energy</td>
<td>Red Lion</td>
</tr>
<tr>
<td>How Elements Affect Plant Growth</td>
<td>Eva Wolfe</td>
<td>Dallastown</td>
<td>S-531</td>
<td>Christopher Thiess</td>
<td>Dallastown</td>
</tr>
<tr>
<td>The Effect of the pH of Shampoo on the Strength of Human Hair</td>
<td>Clayton Hillson</td>
<td>Delone Catholic</td>
<td>S-533</td>
<td>Leah Franciscus</td>
<td>Red Lion</td>
</tr>
<tr>
<td>S-510</td>
<td>Kristen Landsman</td>
<td>Delone Catholic</td>
<td>S-533</td>
<td>Hydroelectric Dams, Beneficial or Hazardous?</td>
<td>Red Lion</td>
</tr>
<tr>
<td>How does music effect blood pressure and heart rate</td>
<td>Lan Qin Cao</td>
<td>Delone Catholic</td>
<td>S-534</td>
<td>Vincent Villani</td>
<td>Dallastown</td>
</tr>
<tr>
<td>the effects of different carbohydrate on type II diabetes patients</td>
<td>Sean Schreckengast</td>
<td>Dallastown</td>
<td>The Impact Various Road Deicers Have On Soil Fertility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-511</td>
<td>Elizabeth Huh</td>
<td>York Suburban</td>
<td>S-515</td>
<td>Zoe Prats</td>
<td>Red Lion</td>
</tr>
<tr>
<td>The Regulation of ATF4/CHOP by c-Myc in NSAID-induced Chemoprevention</td>
<td>Paul Lipinski</td>
<td>Dallastown</td>
<td>Enhancement of Radiation Cytotoxicity by Gold and Iron Oxide Nanoparticles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-514</td>
<td>Matthew Figdore</td>
<td>Dallastown</td>
<td>S-516</td>
<td>David White</td>
<td>Red Lion</td>
</tr>
<tr>
<td>Silk-based Scaffold for Ligament Tissue Engineering</td>
<td>Clayton Hillson</td>
<td>Delone Catholic</td>
<td>S-516</td>
<td>Phillip Douglass</td>
<td>Red Lion</td>
</tr>
<tr>
<td>S-514</td>
<td>C-300</td>
<td>Delone Catholic</td>
<td>S-517</td>
<td>Paul Lipinski</td>
<td>Dallastown</td>
</tr>
<tr>
<td>Does scholastic performance influence health among children?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CELLULAR AND MOLECULAR BIOLOGY</td>
<td></td>
<td></td>
<td>S-532</td>
<td>Abigail Mitzel</td>
<td>Red Lion</td>
</tr>
<tr>
<td>S-515</td>
<td>Zoe Prats</td>
<td>York Suburban</td>
<td>S-533</td>
<td>Leah Franciscus</td>
<td>Red Lion</td>
</tr>
<tr>
<td>Enhancement of Radiation Cytotoxicity by Gold and Iron Oxide Nanoparticles</td>
<td></td>
<td></td>
<td>S-533</td>
<td>Hydroelectric Dams, Beneficial or Hazardous?</td>
<td>Red Lion</td>
</tr>
<tr>
<td>S-517</td>
<td>Paul Lipinski</td>
<td>Dallastown</td>
<td>S-534</td>
<td>Vincent Villani</td>
<td>Dallastown</td>
</tr>
<tr>
<td>Comparing Thinking Abilities with Intake of Macromolecules</td>
<td></td>
<td></td>
<td>S-534</td>
<td>The Impact Various Road Deicers Have On Soil Fertility</td>
<td></td>
</tr>
<tr>
<td>MICROBIOLOGY</td>
<td></td>
<td></td>
<td>S-532</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-516</td>
<td>David White</td>
<td>Red Lion</td>
<td>S-532</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salmonella: Can’t Take the Heat in the Kitchen</td>
<td></td>
<td></td>
<td>S-533</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-516</td>
<td>Phillip Douglass</td>
<td>Red Lion</td>
<td>S-533</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salmonella: Can’t Take the Heat in the Kitchen</td>
<td></td>
<td></td>
<td>S-534</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MATERIAL SCIENCES

S-536  Hannah Eisenhart-Seitz  Red Lion
Robust Bonds: Optimising Adhesive Strength Through Material Applications

S-537  Brady Brenner  Red Lion
Metals To Alloys

S-537  Thomas Wolf  Red Lion
Metals To Alloys

S-538  Alex Sun  Red Lion
Efficiency of UV Light Curing Systems

S-539  Jacob Franciscus  Red Lion
Preventing Dirty Radiation

S-540  Jessica Sun  Red Lion
Synthesizing 3D Printable Self-Healing Materials

S-541  Mickayla Smith  Red Lion
Low Density Polyethylene Terephthalate as a Permanent Substitute for Polystyrene

S-542  Anthony Migash  Red Lion
Cardboard Construction Material, Waterproofing

PLANT SCIENCES

S-554  Emma Ashlin  Dallastown
Analyzing How Vegetables Affect Soil Erosion

S-555  Taylor Jones  Dallastown
Identifying the Best Light Color to Stimulate Pea Plant Growth

S-556  Sam Betz  Dallastown
Analyzing the Effects of Carbon Dioxide on Plant Growth

S-557  Melissa Sawor  Dallastown
The Effect of Plants on Soil Erosion

S-558  Caitlin Turnley  Dallastown
In What Liquids Do Plants Grow Best?

S-559  Raahi Modi  Dallastown
The Effect of Microwaves on Organic Material

S-560  Molly Lohss  Dallastown
The Effect of Surface Area on Leaf Strength

MUSIC SCIENCES

S-551  Anne Bobin  Dallastown
The Effect of Types of Worms on Plant Growth

S-552  Austin Herbst  Dallastown
Observing the Effects of Different Soil on Radishes
## YCSEF Past Grand Champions

### Junior Division

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>Bryce Ignore</td>
<td>York Country Day School</td>
</tr>
<tr>
<td>1997</td>
<td>Steven Cross</td>
<td>York Suburban High School</td>
</tr>
<tr>
<td>1998</td>
<td>Brandon Host</td>
<td>Spring Grove Jr. High School</td>
</tr>
<tr>
<td>1999</td>
<td>Dean Stankowski</td>
<td>York Suburban High School</td>
</tr>
<tr>
<td>2000</td>
<td>Lindsay Walker</td>
<td>Red Lion High School</td>
</tr>
<tr>
<td>2001</td>
<td>Karina Collamer</td>
<td>South Western High School</td>
</tr>
<tr>
<td>2002</td>
<td>John Adams</td>
<td>Central York High School</td>
</tr>
<tr>
<td>2003</td>
<td>Joshua Weinstein</td>
<td>York Suburban High School</td>
</tr>
<tr>
<td>2004</td>
<td>Mary Panos</td>
<td>Dallastown Middle School</td>
</tr>
<tr>
<td>2005</td>
<td>Alexandra Ghaben</td>
<td>Central York High School</td>
</tr>
<tr>
<td>2006</td>
<td>Alexandra Ghaben</td>
<td>Central York High School</td>
</tr>
<tr>
<td>2007</td>
<td>Nicholas Schrading</td>
<td>York Suburban High School</td>
</tr>
<tr>
<td>2008</td>
<td>Alex Gayrama</td>
<td>Red Lion High School (ISEF – Phoenix, AZ)</td>
</tr>
<tr>
<td>2009</td>
<td>Michelle Wenz</td>
<td>Red Lion High School (ISEF – Reno, NV)</td>
</tr>
<tr>
<td>2010</td>
<td>Purnima Malik</td>
<td>Central York High School (ISEF – San Jose, CA)</td>
</tr>
<tr>
<td>2011</td>
<td>Yanqi-Tyson Chen</td>
<td>Central York High School</td>
</tr>
<tr>
<td>2012</td>
<td>Yanqi-Tyson Chen</td>
<td>Central York High School</td>
</tr>
<tr>
<td>2013</td>
<td>Yanqi-Tyson Chen</td>
<td>Central York High School</td>
</tr>
<tr>
<td>2014</td>
<td>Alexander Feistritzer</td>
<td>Central York High School</td>
</tr>
<tr>
<td>2015</td>
<td>Katie Salotto</td>
<td>Dallastown High School (ISEF – Los Angeles, CA)</td>
</tr>
<tr>
<td>2016</td>
<td>Zoe Prats</td>
<td>York Suburban Middle School</td>
</tr>
</tbody>
</table>

### Senior Division

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>Andrew McManus</td>
<td>South Western High School (3rd ISEF – Philadelphia, PA)</td>
</tr>
<tr>
<td>2000</td>
<td>Than Ha</td>
<td>York Catholic High School (4th ISEF – Detroit, MI)</td>
</tr>
<tr>
<td>2001</td>
<td>Anne Jensen</td>
<td>York Suburban High School (ISEF – San Jose, CA)</td>
</tr>
<tr>
<td>2002</td>
<td>Arthur Petron</td>
<td>Dallastown High School (ISEF – Louisville, KY)</td>
</tr>
<tr>
<td>2003</td>
<td>Andrew Herron</td>
<td>Dallastown High School (ISEF – Louisville, KY)</td>
</tr>
<tr>
<td>2004</td>
<td>Arthur Petron</td>
<td>Dallastown High School (ISEF – Cleveland, OH)</td>
</tr>
<tr>
<td>2005</td>
<td>Peter Allen</td>
<td>York Catholic High School (ISEF – Portland, OR)</td>
</tr>
<tr>
<td>2006</td>
<td>Ally Owen</td>
<td>Dallastown High School (ISEF – Indianapolis, IN)</td>
</tr>
<tr>
<td>2007</td>
<td>Dan Zortman</td>
<td>Dallastown High School (ISEF – Albuquerque, NM)</td>
</tr>
<tr>
<td>2008</td>
<td>Ally Owen</td>
<td>Dallastown High School (ISEF – Atlanta, GA)</td>
</tr>
<tr>
<td>2009</td>
<td>Michelle Wenz</td>
<td>Red Lion High School (ISEF – Reno, NV)</td>
</tr>
<tr>
<td>2010</td>
<td>Purnima Malik</td>
<td>Central York High School (ISEF – San Jose, CA)</td>
</tr>
<tr>
<td>2011</td>
<td>Yanqi-Tyson Chen</td>
<td>Central York High School (ISEF – Los Angeles, CA)</td>
</tr>
<tr>
<td>2012</td>
<td>Yanqi-Tyson Chen</td>
<td>Central York High School (ISEF – Los Angeles, CA)</td>
</tr>
<tr>
<td>2013</td>
<td>Yanqi-Tyson Chen</td>
<td>Central York High School (ISEF – Los Angeles, CA)</td>
</tr>
<tr>
<td>2014</td>
<td>Alexander Feistritzer</td>
<td>Central York High School (ISEF – Los Angeles, CA)</td>
</tr>
<tr>
<td>2015</td>
<td>Alec Gayrama</td>
<td>Red Lion High School (3rd ISEF – Pittsburgh, PA)</td>
</tr>
<tr>
<td>2016</td>
<td>Levi Jones &amp; Mickayla Smith</td>
<td>Red Lion High School (ISEF – Phoenix, AZ)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dallastown High School (4th ISEF – Phoenix, AZ)</td>
</tr>
</tbody>
</table>