



## **2017 Maine State Science Fair Awards**

### **SPECIAL AWARDS**

#### **American Meteorological Society**

Alexander Moreira  
Old Town High School  
*Heron Project*

Cam Doughty and Hannah Dunn  
Bangor High School  
*The process of monitoring temperatures in the beehive*

#### **American Psychological Association**

Noah Robinson  
Bangor High School  
*Testing cognitive bias in relation to the Big-5 personality type model, age, and gender*

Meghan Dye  
Falmouth High School  
*Having your cake and eating it too: Maximizing the impact and accuracy of graphical visuals*

#### **ASM Materials Education Association**

Marina Mohawass  
Bangor High School  
*The construction of biodegradable, disposable diapers from cellulose nanofibers*

Emma Payne  
Bangor High School  
*Porous filtration membranes made from cellulose nanofibers*

#### **Association of Women Geoscientists**

Sarah Marcotte  
Bangor High School  
*Exploration of relationships between metal deposition and vegetation composition in a Floridian sediment core*

Lauren Wallace  
Washington Academy  
*Chandler River pollution study*

**GENIUS Olympiad**

Elyse Daub

Bangor High School

*New England's most valuable resource: Is increasing white pine (*Pinus strobus*) damage associated with a single fungal species or a community of fungi?*

Dwight Knightly

Bangor High School

*Snowfall quality as a measurement of particulate matter*

Kaitlyn Dunham

Old Town High School

*Do *Polydora websteri* prefer a certain temperature?*

**Institute of Food Technologists**

Ibrahim Saleh

Greely High School

*The effect of glycine max heat exposure on the quantification of GMO events*

**Intel Excellence in Computer Science**

SeungHeon Song

Gould Academy

*Smart road signs*

**Mu Alpha Theta Mathematics Award**

Jack Prior

Bangor High School

*Applying O-Ring theory to the NBA and MLB*

**NASA Earth System Science Award**

Nick Baron

Old Town High School

*Investigating habitat for a great blue heron in Penobscot County, Maine*

**NOAA: Taking the Pulse of the Planet Award**

David Rubin

Bangor High School

*Modeling forest composition and water quality changes in Maine due to climate change*

Kashmir Owen

Islesboro Central School

*The impacts of ocean acidification on marine calcifiers*

**Ricoh Sustainable Development Award**

Anthony Caccese, Jesse Karnes, and David Brown

Bangor High School

*Designing a desk base containment system to improve the efficacy of a CPU heat-sink cooling system*

Gina Vo

Bangor High School

*Can a cost-effective aquaponics system be produced using kale and convict cichlids?*

**Society for Science and the Public Award for Community Innovation**

Spencer Krebs, Aiden McDonough, and Colby Grimble

Bangor High School

*The effects of compost produced by mealworms through the consumption of polystyrene*

**Stockholm Junior Water Prize**

Mei Tian

Bangor High School

*Testing the effectiveness of mycorrhizae in the remediation of phosphorus from stormwater*

**The Jackson Laboratory Future Innovator Award**

Mack D'Angelo

Robert W. Traip Academy

*Does learning style impact how you perform on optical illusion tests?*

John Wahlig

Falmouth High School

*Headfirst*

John Connors and Jordyn Miller

Bangor High School

*Studying the reactivation of biosand filters using microbiological testing*

**Reach Center Award, Maine Mathematics and Science Alliance**

Usira Ali

Portland High School

*Nanoparticles: the effects of shell size on optical memory*

Emma Hargreaves

Old Town High School

*Reproductive cycles in *Polydora websteri**

Ezra Smith

Lincoln Academy

*A prototype of bone conducting headphones*

Alexis Allard

Nokomis Regional High School

*S.C.O.B.Y sugar trials*

Nursultan Rosen

Brunswick High School

*What are the best conditions for preventing bread mold?*

**U.S. Air Force**

Alexander Inman

Bangor High School

*Behavioral analysis of a 6 meter HIAD structure and components*

Maggie Nolan

Greely High School

*Development of rapid detection procedures for gamma-hydroxybutyrate derivative gamma-butyrolactone in varying liquid matrices*

Minjeong Kim  
Gould Academy  
*Investigating the toxicity and mutagenicity of PHMG*

**U.S. Metric Association**

William Lehan and Alex Saros  
Bangor High School  
*Acoustic analysis of various instruments, distortions, and tuning forks*

**Yale Science and Engineering Association**

Ban Shoukeir  
Bangor High School  
*Extracting four major phenolic compounds from chaga mushroom*

**CATEGORY AWARDS**

**Animal Sciences**

3rd Award - Kaitlyn Dunham  
Old Town High School  
*Do *Polydora websteri* prefer a certain temperature?*

2nd Award - Chelsea Hoyt  
Robert W Traip Academy  
*Biomechanics of jumping in equines: How jump height affects potential energy stored in the suspension apparatus*

1st Award – Amara Ifeji  
Bangor High School  
*Biodegradation and mineralization of polystyrene and polyethylene terephthalate (PET) by plastic-eating worms *Tenebrio molitor* and *Zophobas morio**

**Behavioral and Social Sciences**

3rd Award - Megan Peach  
Dexter Regional High School  
*The psychology of emojis*

2nd Award - Hannah Farrar  
Dexter Regional High School  
*Training for peace*

1st Award - Meghan Dye  
Falmouth High School  
*Having your cake and eating it too: Maximizing the impact and accuracy of graphical visuals*

**Behavioral and Social Sciences: Cognitive Psychology**

3rd Award – Amelia Ring  
Falmouth High School  
*Peppermint's impact on test taking speed*

2nd Award – Meghan Cantlin and Alison Noyes  
Falmouth High School  
*Personality!*

1st Award – Noah Robinson  
Bangor High School  
*Testing cognitive bias in relation to the Big-5 personality type model, age, and gender*

### **Biological Sciences and Engineering**

3rd Award - Robert Denegre, Taki Ishimura, and Nicholas Reznik  
Mount Desert Island High School  
*Elucidating the underlying genetic pathways of beta-cell proliferation through quantitative trait locus analysis to shed new light in the pathogenesis of type 2 diabetes*

2nd Award – Jacob Cote  
Brewer High School  
*Sequence analysis of rRNA and natural ribozymes*

1st Award – Sydney McDonald  
Bangor High School  
*The future of prosthesis: The design & analysis of artificial muscle comprised of ionic-polymer metal composites*

### **Biomedical and Health Sciences**

3rd Award – Christopher Allen, Eleanor Bridgers, and Nick Stanley  
Mount Desert Island High School  
*Connecting circadian rhythm to type II diabetes using quantitative trait analysis*

2nd Award – Jacob Freudenberger  
Nokomis Regional High School  
*The long term effects of a concussion*

1st Award – Lily Waddell  
Bangor High School  
*Developing an alternative treatment for luminal B breast cancer by targeting DNA repair mechanisms*

### **Chemistry and Materials**

3rd Award – Emma Payne  
Bangor High School  
*Porous filtration membranes made from cellulose nanofibers*

2nd Award - Marina Mohawass  
Bangor High School  
*The construction of biodegradable, disposable diapers from cellulose nanofibers*

1st Award - Maggie Nolan  
Greely High School  
*Development of rapid detection procedures for gamma-hydroxybutyrate derivative gamma-butyrolactone in varying liquid matrices*

## **Computer Sciences**

3rd Award - David Brown, Anthony Caccese, and Jesse Karnes  
Bangor High School

*Designing a desk base containment system to improve the efficacy of a CPU heat-sink cooling system*

2nd Award - Spencer Campbell  
Bangor High School

*The creation of a masking program and a 3D triangulation program to assist in the optimization of a HIAD*

1st Award - SeungHeon Song  
Gould Academy  
*Smart road signs*

## **Earth and Environmental Sciences: Energy, Climate, Weather**

3rd Award - Dwight Knightly  
Bangor High School

*Snowfall quality as a measurement of particulate matter*

2nd Award - David Rubin  
Bangor High School

*Modeling forest composition and water quality changes in Maine due to climate change*

1st Award - Tyler Delargy  
Bangor High School

*A solution to the heat efficiency and environmental side-effects of oil boilers*

## **Earth and Environmental Sciences: Water**

3rd Award - Omar Alsamsam and Hassan Qureshi  
Bangor High School

*Storm water management research*

2nd Award – Naomi Moynihan  
Bangor High School

*How does road salt affect the Kenduskeag Stream?*

1st Award - Mei Tian  
Bangor High School

*Testing the effectiveness of mycorrhizae in the remediation of phosphorus from stormwater*

## **Microbiology**

3rd Award - Alexis Allard  
Nokomis Regional High School  
*S.C.O.B.Y sugar trials*

2nd Award - Cecelia Ford, Nick Luce, and Lauren Richardson  
Brewer High School

*Does sound affect bacterial growth?*

1st Award - Corrigan Farnham  
Greely High School  
*Modeling ultraviolet germicidal irradiation through Vibrio fischeri quorum sensing communication*

### **Physics and Astronomy**

3rd Award - Moonhwe Jang  
Gould Academy  
*Considering the future of rocket nozzles*

2nd Award - Ezra Smith  
Lincoln Academy  
*A prototype of bone conducting headphones*

1st Award - Samuel Bonnevie and Patrick Lyden  
Greely High School  
*The effect of shoe sole tread design on the coefficient of friction*

### **Plant Sciences**

3rd Award - Ibrahim Saleh  
Greely High School  
*The effect of glycine max heat exposure on the quantification of GMO events*

2nd Award - Hallie Macdougall  
Watershed School  
*Oxygen production of phytoplankton*

1st Award - Elyse Daub  
Bangor High School  
*New England's most valuable resource: Is increasing white pine (*Pinus strobus*) damage associated with a single fungal species or a community of fungi?*

## **SCHOLARSHIPS**

The following students are recipients of a \$4,000 Presidential Scholarship to the **University of Southern Maine**, renewable for up to four years.

Gina Vo, Bangor High School  
Delana Bennet, Westbrook High School  
Usira Ali, Portland High School  
Jacob Freudenberger, Nokomis Regional High School  
Isaac Sewell, Bangor High School  
Jacob Cote, Brewer High School  
Hannah Farar, Dexter Regional High School  
Emily Elwell, Nokomis Regional High School  
Haley Macdougall, Watershed School  
Moonhwe Jang, Gould Academy  
Corrigan Farnham, Greely High School  
Alexander Moreira, Old Town High School

The following students are invited to join the **University of Maine** Top Scholar program. The program includes a full-tuition scholarship renewable for four years, admission to the UMaine Honors College, match with a UMaine faculty mentor, and a research supply stipend.

Mei Tian, Bangor High School  
David Rubin, Bangor High School  
Ashley Reynolds, Dexter Regional High School  
Kashmir Owen, Islesboro High School  
Maggie Nolan, Greely High School  
Chelsea Hoyt, Robert W. Traip Academy  
Elise Daub, Bangor High School  
Jacob Cote, Brewer High School  
Spencer Campbell, Bangor High School  
Haley Macdougall, Watershed School  
Samuel Bonnevie, Greely High School  
Emma Bragdon, John Bapst Memorial High School

The following students are recipients of a \$25,000 scholarship to **College of the Atlantic**, renewable for up to four years.

Kashmir Owen, Islesboro High School  
Gina Vo, Bangor High School



## **GRAND AWARDS**

**3<sup>rd</sup> Grand Award** - Lily Waddell

Bangor High School

*Developing an alternative treatment for luminal B breast cancer by targeting DNA repair mechanisms*

**2<sup>nd</sup> Grand Award** - Sydney McDonald

Bangor High School

*The future of prosthesis: The design & analysis of artificial muscle comprised of ionic-polymer metal composites*

**1<sup>st</sup> Grand Award** - SeungHeon Song

Gould Academy

*Smart road signs*