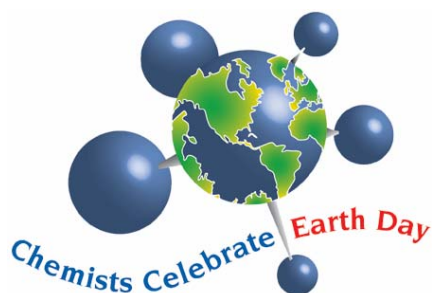


# Mid-Hudson Chemist



Spring 2015



**Earth Day is April 22**

**16<sup>TH</sup> ANNUAL MID-HUDSON ACS  
UNDERGRADUATE RESEARCH SYMPOSIUM**

**PLACE: SUNY NEW PALTZ**

**DATE: APRIL 24**

**SPEAKER: RUBEN L. GONZALEZ, JR.  
COLUMBIA UNIVERSITY**

*PLEASE SEE ANNOUNCEMENT ON P.3.*



## 2015 Executive Committee

**Chair:** William Maelia; **Chair-Elect:** Marianne Scheffler; **Past Chair:** Cynthia MacMahon; **Treasurer:** Joan Skinner; **Secretary:** Jocelyn Nadeau; **Councilor:** George Ruger; **Alternate Councilor:** Timothy MacMahon; **Members-at-Large:** Joseph Tanski, Patti Cusatis, Neil Fitzgerald; **NCW Co-Chairs:** Cynthia MacMahon and Timothy MacMahon; **Science Olympiad Chair:** Lynn Maelia; **Awards Co-Chairs:** Patti Cusatis, Lynn Maelia, and Marianne Scheffler; **Government Affairs Chair:** George Ruger; **WCC Chair:** Lynn Robinson; **YCC Chair:** Michelle Robinson; **Publicity Chair:** Chet Dziobkowski; **Webmaster:** William Maelia; **Mid-Hudson Chemist Editor/Publisher:** Gissel Mentore

### ~Join the Mid-Hudson ACS Discussion List~

The following website may be used to subscribe, unsubscribe, or view the archive:

[lists.msmc.edu/mailman/listinfo/acs-mh](http://lists.msmc.edu/mailman/listinfo/acs-mh)

To post a message to all the list members, send e-mail to [acs-mh@lists.msmc.edu](mailto:acs-mh@lists.msmc.edu).

Mid-Hudson ACS Website: [www.midhudsonacs.org](http://www.midhudsonacs.org)

Our website is currently undergoing a transformation! Please visit our updated site and contact our Webmaster ([William.Maelia@gmail.com](mailto:William.Maelia@gmail.com)) with your comments or additional items to be posted.

### ~Join the Mid-Hudson ACS WCC Discussion List~

The following website may be used to subscribe, unsubscribe, or view the archive:

[lists.msmc.edu/mailman/listinfo/wcc-mh](http://lists.msmc.edu/mailman/listinfo/wcc-mh)

To post a message to all the list members, send e-mail to [wcc-mh@lists.msmc.edu](mailto:wcc-mh@lists.msmc.edu).

## Hudson Valley Science Café

A Science Café is a monthly gathering in a café, pub or restaurant, open to the public, with a short presentation of a topic followed by discussion. The essence of a Science Café is informality, with groups seated around tables with food and drink to encourage conversation. Hudson Valley Science Café usually meets on the 4<sup>th</sup> **Wednesday** of the month, except where noted.

### Website:

[http://www.cafescientifique.org/index.php?option=com\\_contentbuilder&title=north-america-hudson-valley&controller=details&id=1&record\\_id=104&Itemid=492&limitstart=20&filter\\_order=](http://www.cafescientifique.org/index.php?option=com_contentbuilder&title=north-america-hudson-valley&controller=details&id=1&record_id=104&Itemid=492&limitstart=20&filter_order=)

Check website for details. Updates will be sent to the MHACS discussion list. Upcoming talks:

**April 22:** Ebola (title to be announced), Rolande Hodel, Ph.D., President & Founder, AIDSfreeAFRICA

**May 27:** Solar to fuel (title to be announced), Michael Machczynski, Ph.D., Asst. Prof. Chemistry, SUNY New Paltz

**June 24:** Good Dogs, Bad Genes, Toby Rossman, Ph.D., Prof. of Environmental Medicine, NYU-Langone School of Medicine

**September 16: (3<sup>rd</sup> Wednesday)** Predatory Bacteria (title to be announced), Megan A. Ferguson, Ph.D., Associate Professor of Chemistry, SUNY New Paltz

Hudson Valley Science Café has received start-up funds from WGBH-NOVA and the American Chemical Society. To suggest a speaker (yourself included), please contact Dr. Toby Rossman ([tobyrossman@yahoo.com](mailto:tobyrossman@yahoo.com)).

## 50- and 60-Year Members Save the Date

This year, the Mid-Hudson Section will honor several members celebrating 50- and 60- year ACS membership. The honorees will be guests of the Mid-Hudson Section at the Research Symposium on April 24<sup>th</sup>. Formal invitations will be mailed. Please save the date!



The Mid-Hudson Section of the American Chemical Society and SUNY New Paltz Present the

## 16<sup>th</sup> Annual Undergraduate Research Symposium, Friday April 24, 2015

This symposium provides a chance for undergraduate students in the chemical sciences to present their research. All areas of chemistry, environmental science, molecular biology, and related fields are welcome. A seminar given by a guest speaker will be followed by a poster session and buffet dinner.

### Conference Program

Poster Set-up: 3:30–4:00 PM, Awards and Announcements: 4:00–4:15 PM, Seminar: 4:15–5:15 PM, Buffet Dinner beginning at 5:30 PM, and Poster Session: 6:15–7:15 PM (Poster session A) and 7:15–8:15 PM (Poster session B)

Reservations required for dinner but the seminar and poster session are open to all.

**Guest Speaker:** Ruben L. Gonzalez, Jr., Department of Chemistry, Columbia University

**“Ribosomes in motion: the dynamics of nature’s protein synthetic machinery”**

The ribosome can be regarded as a molecular machine that converts chemical and thermal energy into productive mechanical work. This chemo- and thermomechanical view of ribosome function continues to fuel efforts to identify the mobile components of the ribosomal machine, characterize the structural dynamics of these components, and develop an understanding of how these dynamics are regulated in order to direct mechanical processes during protein synthesis. It is within this context that my research group has developed a fully reconstituted, fluorescently labeled in vitro translation system and used it for single-molecule fluorescence imaging studies of protein synthesis. Together with ensemble biochemical investigations of protein synthesis by the ribosome and structural studies of functional ribosomal complexes, single-molecule fluorescence imaging of protein synthesis continues to provide unique and powerful mechanistic insights into this fundamental biological process. In my talk, I will present recent and ongoing work from my research group aimed at developing an ever-deeper understanding of the function of the ribosome during protein synthesis. In addition, I will discuss what I envision lies ahead as single-molecule fluorescence imaging approaches continue to evolve and expand to address increasingly complex mechanistic and regulatory aspects of fundamental biological processes.

**About the speaker:** Ruben Gonzalez graduated cum laude from Florida International University (FIU) with a B.S. in Chemistry and Biochemistry in 1995. While at FIU, Ruben did undergraduate research with Prof. Stephen Winkle in the Department of Chemistry and Biochemistry, where he investigated the thermodynamics and kinetics of protein and carcinogen binding to unusual DNA structures. Notably, Ruben’s research in Prof. Winkle’s laboratory demonstrated that RNA polymerases could specifically recognize unusual DNA structures formed at the junction of B- and Z-form DNA. Ruben next moved to the Department of Chemistry at the University of California, Berkeley to do his doctoral research with Prof. Ignacio Tinoco. While in Prof. Tinoco’s laboratory, Ruben’s research interests focused on the structure and thermodynamics of a specific RNA structure, known as an RNA pseudoknot, which is involved in the translational control of gene expression in many viruses. In particular, Ruben was interested in how specific binding of divalent metal ions stabilize RNA pseudoknot structures. As part of his research in Prof. Tinoco’s laboratory, Ruben helped develop now widely-used methodology for using cobalt (III) hexamine as a mimic of magnesium (II) hexahydrate in order to determine the solution structure of a divalent metal ion binding site in an RNA pseudoknot using nuclear magnetic resonance spectroscopy. Upon obtaining his Ph.D. in Chemistry in 2000, Ruben moved to Stanford University where he did postdoctoral research as an American Cancer Society Postdoctoral Fellow in the laboratories of Prof. Joseph D. Puglisi in the Department of Structural Biology and Prof. Steven Chu in the Department of Physics and Applied Physics. While at Stanford, Ruben helped integrate expertise from Profs. Puglisi’s and Chu’s laboratories in order to pioneer the first single-molecule fluorescence investigations of the ribosome, the universally-conserved RNA-based molecular machine responsible for protein synthesis in all living cells. Ruben joined the Department of Chemistry at Columbia University as an Assistant Professor in 2006. Research in his laboratory focuses on the biophysical chemistry and biochemistry of Nature’s RNA-based molecular machines, with a current emphasis on the mechanism and regulation of protein synthesis by the ribosome. Research in Ruben’s laboratory has been recognized with numerous awards, including a Burroughs Wellcome Fund Career Award in the Biomedical Sciences, a National Science Foundation CAREER Award, an American Cancer Society Research Scholar Award, a Columbia University RISE Award, a Distinguished Columbia Faculty Award, a Camille Dreyfus Teacher-Scholar Award, and most recently, Ruben has been selected as a Finalist for a Blavatnick National Award for Young Scientists.

**Call for Abstracts:** To present a poster, please submit an abstract of 200 words or less. The format for the abstract should adhere to the following guidelines:

- 1) Use 12 point Times-Roman font with one inch margins.
- 2) The file should be an MS Word document.
- 3) The title should be typed in capital letters, followed by the authors’ names and institution name, institution address, and email in lower case letters. The advisor’s name should be followed by an asterisk (\*).
- 4) Please submit the abstract as an attachment no later than **April 5** by e-mail to: [mhacs@newpaltz.edu](mailto:mhacs@newpaltz.edu). If you are unable to meet this deadline, please contact Dr. Frantz Andersen by e-mail at [andersef@newpaltz.edu](mailto:andersef@newpaltz.edu). There is a \$25 conference fee per poster up to \$200 maximum per school.

**Posters:** In order for posters to fit on the poster boards, posters should be approximately 46 inches wide by 36 inches in height.

**Dinner:** The buffet dinner will accompany the poster session (\$23/person). Please RSVP to [mhacs@newpaltz.edu](mailto:mhacs@newpaltz.edu) by April 5 with the following information: 1. Names and number of participants that will be attending the symposium. 2. Names and number of participants that will be attending the buffet dinner. You will receive a confirmation email within the next few weeks regarding your dinner reservation and the scheduling of your poster.

**Directions and Parking:** The poster session (and set-up) is scheduled in the Multi-purpose Room on the second floor of the Student Union Building (SUB) and all attendees should park in the Route 32 Parking Lot 28 (please see links to maps below). The talk will take place on the first floor of Coykendall Science Building in the Auditorium (CSB AUD), which is a short walk from the SUB. There will be signs posted along Rt. 32 and on campus directing attendees to the talk, poster session, and dinner.

Please see the following link on the SUNY New Paltz web site regarding directions to the campus:

[http://www.newpaltz.edu/about/directions\\_text.html](http://www.newpaltz.edu/about/directions_text.html) Please see the following link for a map to Lot 28 and SUB and CSB on campus:  
<http://www.newpaltz.edu/map/>

We look forward to seeing you at the annual Mid-Hudson ACS symposium.

**Call for Applications for  
2015 Undergraduate Student Research Awards**

The Mid-Hudson Section of the American Chemical Society invites applications for the prestigious 2015 Mid-Hudson valley ACS Undergraduate Research Awards from student researchers who plan to present their work at the 2015 undergraduate poster symposium. **Outstanding submissions will be selected to each receive a monetary award.** This is a separate application and is not required of all students presenting posters only those students who wish to be considered for this very prestigious award need apply.

*Rationale*

The Mid-Hudson Section wishes to reward undergraduate students who choose to write a short summary about their research and scholarship activities.

*Criteria*

Research work should be completed by a student currently enrolled (2014-2015 academic year) as an undergraduate at one of colleges in the Mid-Hudson ACS area. Students must also present their work at the 2015 Mid-Hudson ACS Undergraduate Research Poster Symposium.

*Application Format and Procedure: All papers submitted must be primarily chemistry, not biology or physics.*

*Format: The paper must be written in Microsoft Word with a font type of New Times Roman and a font size 12. Margins should be set to the Narrow setting in Word. The description part of the paper may not be longer than two pages; however, the Acknowledgments and References may cause the paper to run longer. **Any papers longer than the requested two written pages will not be considered.***

The summary should be written in normal scientific format and divided into appropriate sections in the following order:

- 1) **Title with authors:** The title of the paper should be at the top with the authors underneath. The student submitting the paper for the award must be clearly indicated. This can be done by bolding and underlining that author.
- 2) **Introduction:** Keep in mind that the judges for the paper come from a wide variety of chemical backgrounds including all the major disciplines of chemistry so the background material must be comprehensible to all judges, not just to those in your specialty. This means you must explain all chemistry and related information for a wide ranging audience and not to just one chemical specialty that your research involves.
- 3) **Experimental:** Just a brief review of your experimental design is needed.
- 4) **Results and Discussion:** This, along with the introduction and conclusion, are the most important parts of the paper. This is your chance to wow the judges with your fabulous work. Remember the judges will not be familiar with your work so you must educate them. Now, after years of learning and studying, is your chance to educate us. Make sure you include all chemical structures, equations and reactions. Remember, although you have spent many hours intimately involved in this research and thus all the reactions and chemicals are as familiar to you as your best buddies, they are probably new to the judges. The better the judges understand exactly what you are doing and what you have accomplished the better your chances at winning the grand prize. Do not be shy about drawing chemical structures and writing out the reactions as these are some of the best ways to help the judges understand exactly what your research is about.
- 5) **Conclusion:** This needs to be consistent with the introduction and should obviously quickly summarize what your research has accomplished and, if applicable, where it will be going in the near future.
- 6) **Acknowledgments and References:** This part of the paper may exceed the two page limit and should be as extensive and comprehensive as needed.
- 7) **In Summary:** Again, it is important to remember the judges are not experts in your area of research so your job is to educate them on your research and WOW them with the work you have been doing. This does not mean you should be overly technical in your writing. You should include all the relevant chemistry, being careful to include all important chemical structures and reactions, but make sure the paper is readable and flows well. The judges volunteer their time to judge this competition and will not spend excessive amounts of time trying to decipher cryptic or non-coherent writing. As a parting note, remember the judges must be able to understand exactly what you have accomplished so a poorly organized and worded paper will not impress the judges. Good luck on your submission and the judges are looking forward to learning about your research.

**Submission procedure:**

Applications should be sent by e-mail as an attached Word Document to Dr. Timothy MacMahon e-mail: [timothy.macmahon@sunyorange.edu](mailto:timothy.macmahon@sunyorange.edu) by Monday **April 20, 2015**. Please indicate in the subject line of the e-mail that you are submitting an application for the URS student research award. Confirmation that the submission has been received will be sent via e-mail.

## College Recognition Awards to be Presented in April

The 2015 College Recognition Awards will be presented at the upcoming Undergraduate Research Symposium which will be held on April 24<sup>th</sup>. The purpose of the award is to recognize achievement in the field of chemistry and to encourage further study in chemistry. One student from each of the colleges in the Mid-Hudson Section will be presented with a certificate and a monetary award. The names of the worthy recipients and their research advisors are listed below.

Educational Institution	Student	Advisor
Mount Saint Mary College	Annie Frank	Lynn Maelia
United States Military Academy at West Point	Shaun Robertson	Dawn Riegner/Caitlin Kneapler
Bard College	Matthew Greenberg	Craig M. Anderson
Vassar College	Sean Majer	Joe Tanski
SUNY Dutchess	Emily C. Avis	Jeff Cavalieri
SUNY Orange	Juli McPhillips	Tim MacMahon
Marist College	Croix James Laconsay	John Galbraith
SUNY New Paltz	Kathleen Westervelt	Pamela St. John

### Senior Chemist StoryCorps

Senior Chemist StoryCorps (a.k.a. (SC)<sup>2</sup>)

Event: 5:00 - 6:30 pm on Wednesday, June 3, 2015 at Mount Saint Mary College

Senior ACS members since 1975 are invited to participate...

Senior chemists in the Mid-Hudson ACS will be asked "What is your fondest memory as a chemist?" and their oral response will be recorded, compiled electronically, and posted on the MHACS website. MHACS members will vote on the best story and it will be submitted to StoryCorps. Each record will be 5 minutes or less.

StoryCorps is one of the largest oral history projects of its kind. Since 2003, StoryCorps has collected and archived more than 50,000 interviews from more than 80,000 participants. Each conversation is recorded on a free CD to share, and is preserved at the American Folklife Center at the Library of Congress. Millions listen to the weekly broadcasts on NPR's *Morning Edition* and on StoryCorps' Listen Page.

To kick off the program, MHACS would host a guest speaker who is an expert in preservation of Oral History and invite senior members as special guests to the event. Each senior member will receive a commemorative lapel pin from the ACS store. Oral histories would be recorded that night. Pairs/groups of chemists sharing the same story would be encouraged.

The goal is to have a record for future generations, to show the value of the past, to affirm what these individuals have done is meaningful, and to ask the question how does this memorable event spark the next scientific breakthrough in the future? Seniors, please RSVP [roddenm@msn.com](mailto:roddenm@msn.com) or 845.338.3922 by May 15<sup>th</sup>.



## American Chemical Society Poem Contest

sponsored by the

Mid-Hudson Section of the American Chemical Society

The Mid-Hudson Section of the American Chemical Society has chosen the following students to receive recognition for their work and efforts in the 2014 National Chemistry Week poetry contest with the theme "The Sweet Side of Chemistry - Candy". Students from seven schools participated in the contest. First place winning posters in each category were submitted to the national competition for judging.

### 3-5

- 1<sup>st</sup> place: Aarov Shah – Bishop Dunn Memorial School
- 2<sup>nd</sup> place: Emilia Pastorello – Bishop Dunn Memorial School
- 3<sup>rd</sup> place: Tudor Wolfson – Bishop Dunn Memorial School
- 3<sup>rd</sup> place: Hunter Castro – Bishop Dunn Memorial School

### 6-8

- 1<sup>st</sup> place: Devin Scully – Bishop Dunn Memorial School
- 2<sup>nd</sup> place: Matthew Osborne – Bishop Dunn Memorial School
- 3<sup>rd</sup> place: Nicholas Albano – Bishop Dunn Memorial School

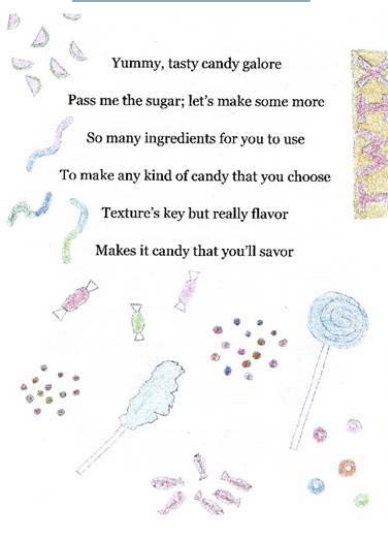
### 9-12

- 1<sup>st</sup> place: Greer Gervolino – Valley Central High School
- 2<sup>nd</sup> place: Olivia Lopez – Pine Bush High School
- 3<sup>rd</sup> place: Victoria Fenton – Pine Bush High School

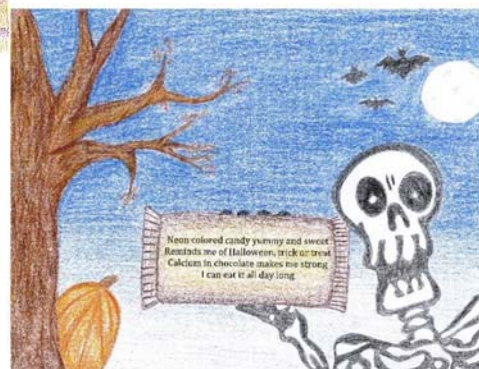
Aarov Shah  
3-5 Local Winner



Devin Scully  
6-8 Local Winner



Greer Gervolino  
9-12 Local Winner





## ACS Mid-Hudson Section

### Event Report: 56<sup>th</sup> Dutchess County Regional Science Fair Results- March 21, 2015

Our **judges** reviewed exciting presentations totaling over **55** chemistry-related exhibits out of **235** at the Dutchess County Regional Science Fair. This represents over 23 % of the exhibits at the fair that our ACS section judges reviewed. There were many young promising scientists presenting at this year's science fair. It was a very challenging job to view so many exhibits in such a short time. But our judges accomplished the job!

I would like to acknowledge our **Special Judges** who volunteered their time on Saturday representing ACS Mid-Hudson Section. Kudos to our Special Judges:

**Larissa Cohen**  
**Dominic Schepis**  
**Beth Baumert**  
**Margaret Larrousse**  
**Jason Wertz**  
**Cynthia Colón**  
**Ellie Vasconez**  
**Elisabeth Harris**  
**Jason Pavlich**  
**Heather Wheeler**  
**Veronica Schepis**  
**Chester Dziobkowski - St Columba Science Fair**

Our judges selected the student subject matter expert (SME) per the Dutchess County Regional Science Fair based on the judging criteria below:

- 1. Scientific Thought: (30 points):**  
The student demonstrates verification of laws, cause and effect, presents models or methods to support scientific facts and theories. The presentation was thorough for the models and methods scientific facts, theories and important scientific concepts.
- 2. Creative Ability: (30 points):**  
The student demonstrates creativity for the development of concepts, design, construction and application for the equipment, analysis, interpretation of the data and approach to solving the problem.
- 3. Skills (15 points):**  
The student exhibit the skills required to do all the work necessary to obtain the data to support the project. This includes the design, laboratory and computational and observations skills. The student did not need outside help from others. The student built the equipment independently.
- 4. Thoroughness (15 points):**  
The exhibit completed the purpose for the subject matter. The conclusions were based on a single experiment or a series of replications. The completeness of the notebook or recordings of the data was presented.
- 5. Clarity (10 points):**  
The student was able to describe and discuss the project. Determine if the speech was memorized or had little understanding of the principles.

We congratulate the ACS Mid-Hudson Award recipients (listed on the next page).

Respectively yours,

*Marianne Scheffler*

Marianne Scheffler  
Dutchess County Regional Science Fair – 2015 ACS Mid-Hudson DCRCF Event Chair

### Outstanding ACS Award

#### Award: \$50 Barnes & Noble Gift Card / ACS Certificate / ACS Medallion

Category	Level	Student	Exhibit	School
Chemistry	Senior Division	Nikhil Dawan*	Synthetic Cryolite: A potential rare earth doped host material capable of matching the refractive index of various biological fluids	Spackenkill High School
Chemistry	8 <sup>th</sup> Grade	Michelle Lam	Dye sensitized solar cells from berries	St Mary Fishkill

\*Nikhil Dawan won the overall DCRSF competition and will be going to Nationals. Congrats!

### Superior ACS Award

#### Award: \$25 Barnes & Noble Gift Card / ACS Certificate / ACS Medallion

Category	Level	Student	Exhibit	School
Chemistry	5 <sup>th</sup> Grade	Samuel Thomas	What salt melts ice fastest	Sheafe Road Elementary
Chemistry	5 <sup>th</sup> Grade	Amanda Reeves	Bioplastic: Can milk be turned into plastic	St Mary Fishkill
Chemistry	5 <sup>th</sup> Grade	Patrick Yang	Acid Rain	Noxon Road Elementary
Engineering	6 <sup>th</sup> Grade	Luciano Hoinkis	Sunlight conversion efficiency	St Mary Fishkill
Chemistry	7 <sup>th</sup> Grade	Kristopher Bobak	Amazing Graphene	Union Vale Middle School
Chemistry	8 <sup>th</sup> Grade	Aidan Mauer	Smooth Operator: How emulsifiers affect your food	Poughkeepsie Middle School

### Honorable Mention

#### Award: ACS Certificate / ACS Medallion

Category	Level	Student	Exhibit	School
Chemistry	5 <sup>th</sup> Grade	Aiden Cardel	Surface Tension	St Mary Fishkill
Chemistry	5 <sup>th</sup> Grade	Brian Zhu	The interaction among detergent, water and oil	St Martin de Porres
Chemistry	5 <sup>th</sup> Grade	Trinity Ng	Which antacid works best for heartburn	St. Martin de Porres
Chemistry	5 <sup>th</sup> Grade	Isabela De Jesus-Forero	Differences in high versus low attitude baking	St Martin de Porres
Physics	5 <sup>th</sup> Grade	Rachel Soliman	How does color affect eyesight	St Mary's Wappinger
Chemistry	5 <sup>th</sup> Grade	Sean Boschulte, II	Boiling Water	Evans Elementary School
Chemistry	6 <sup>th</sup> Grade	Bailey Johnson	Which salt melts ice the fastest	Kinry Road Elementary
Chemistry	6 <sup>th</sup> Grade	Michael Espino	Glue strength Comparison: casein glue Vs commercial glues	Holy Trinity
Chemistry	6 <sup>th</sup> Grade	Daniela Murphy	Do white candles burn faster than colored candles	St Denis/St Columba
Chemistry	6 <sup>th</sup> Grade	Vasuda Veeder Sha	Which flour has more gluten	St Mary's Wappinger
Chemistry	7 <sup>th</sup> Grade	SkyLa LaFumee	Mini cannon	Haviland Middle School
Biology	7 <sup>th</sup> Grade	Elizabeth Greene	Let it glow	St Mary Fishkill
Chemistry	7 <sup>th</sup> Grade	William Farrell	Tame the Flame	St Mary Fishkill
Chemistry	7 <sup>th</sup> Grade	Amanda Romero	Food Spoilage	St Martin de Porres
Chemistry	7 <sup>th</sup> Grade	Kiely Irwin	Which flour contains the most gluten	St Denis/St Columba
Chemistry	8 <sup>th</sup> Grade	Morgan Rogers	Vitamin C in Citrus Fruit	St Denis/St Columba
Chemistry	8 <sup>th</sup> Grade	Catherine Swartvagher	Power in your sports drink	Van Wyck Junior High
Physics	9 <sup>th</sup> Grade	Sri Drishaal Kumar	Using refraction to measure sugar concentration	John Jay High School